**Model Parameters**

| **CHANGING PARAMETERS ACROSS MODELS** | **Value** | **Reference** |
| --- | --- | --- |
| Basic reproductive number, R0 | 3.0 |  |
| Vaccination strategy |  |  |
| Vaccination coverage per age group |  |  |
| Maximum vaccines per day (MVC) |  |  |
| Final estimation of vaccine coverage (FVC). |  |  |

|  |  |  |
| --- | --- | --- |
| **FIXED PARAMETERS ACROSS MODELS** | **Value** | **Reference** |
| Mean Incubation Period | 4.6 days | Estimated to be 5.1 days ([Linton et al.](https://www.medrxiv.org/content/medrxiv/early/2020/01/28/2020.01.26.20018754.full.pdf); [Li et al.](https://www.nejm.org/doi/full/10.1056/NEJMoa2001316) The last 0.5 days are included in the I\_MILD and I\_CASE states to capture pre-symptomatic infectivity |
| Generation Time | 6.75 days | [Bi et al](https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30287-5/fulltext) |
| Mean Duration in I\_MILD | 2.1 days | Incorporates 0.5 days of infectiousness prior to symptoms; with parameters below ~95% of all infections are mild. In combination with mean duration in I\_CASE this gives a mean generation time as above |
| Mean Duration in I\_CASE | 4.5 days | Mean onset-to-admission of 4 days. Values in the literature range from 1.2 to 12 days. Includes 0.5 days of infectiousness prior to symptom onset |
| Mean Duration of Hospitalisation for non-critical Cases (I\_HOSP) if survive | 9 days | Median value from five studies ([Sreevalsan-Nair et al.](https://www.medrxiv.org/content/10.1101/2020.04.17.20069724v4), [Haw et al.](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7506175/), [Hawryluk et al.](https://www.medrxiv.org/content/10.1101/2020.07.15.20154617v2), [Oliveira et al.](https://www.medrxiv.org/content/10.1101/2020.08.25.20181909v1), South African COVID-19 Modelling Consortium). Range from 8-15 days. |
| Mean Duration of Hospitalisation for non-critical Cases (I\_HOSP) if die | 9 days | As above |
| Mean duration of Critical Care (I\_ICU) if survive | 14.8 days | Mean duration in ICU of 13.3 days [Pritchard et al.](https://www.medrxiv.org/content/10.1101/2020.07.17.20155218v4.full). Ratio of duration in critical care if die: duration in critical care if survive of 0.75 and 60.1% probability of survival in ICU ([ICNARC report](https://www.icnarc.org/Our-Audit/Audits/Cmp/Reports), from UK data, 16 October 2020) |
| Mean duration of Critical Care (I\_ICU) if die | 11.1 days | Mean duration in ICU of 13.3 days [Pritchard et al.](https://www.medrxiv.org/content/10.1101/2020.07.17.20155218v4.full). Ratio of duration in critical care if die: duration in critical care if survive of 0.75 and 60.1% probability of survival in ICU ([ICNARC report](https://www.icnarc.org/Our-Audit/Audits/Cmp/Reports), from UK data, 16 October 2020) |
| Mean duration of Stepdown post ICU (I\_Rec) | 3 days | Working assumption based on unpublished UK data |
| Mean duration of hospitalisation if require ICU but do not receive it and die | 1 day | Working assumption |
| Mean duration of hospitalisation if require ICU but do not receive it and survive | 7.4 days | Working assumption (Half duration of ICU and survive) |
| Mean duration of hospitalisation if require Oxygen but do not receive it and die | 4.5 days | Working assumption (Half duration of Oxygen and die) |
| Mean duration of hospitalisation if require Oxygen but do not receive it and survive | 4.5 days | Working assumption (Half duration of ICU and survive) |
| Probability of death if require critical care but do not receive it | 95% | Working assumption based on expert clinical opinion |
| Probability of death if require hospitalisation but do not receive it | 60% | Working assumption based on expert clinical opinion |

**Age-Specific Fixed Parameters**

| **Age-Group** | **Proportion of Infections Hospitalised** | **Proportion of hospitalised cases requiring critical care** | **Proportion of hospital deaths occurring in ICU** | **Proportion of non-critical care cases dying** | **Proportion of critical care cases dying** |
| --- | --- | --- | --- | --- | --- |
| 0 to 4 | 0.001 | 0.181 | 0.8 | 0.013 | 0.227 |
| 5 to 9 | 0.001 | 0.181 | 0.8 | 0.014 | 0.252 |
| 10 to 14 | 0.002 | 0.181 | 0.8 | 0.016 | 0.281 |
| 15 to 19 | 0.002 | 0.137 | 0.8 | 0.016 | 0.413 |
| 20 to 24 | 0.003 | 0.122 | 0.8 | 0.018 | 0.518 |
| 25 to 29 | 0.005 | 0.123 | 0.8 | 0.020 | 0.573 |
| 30 to 34 | 0.007 | 0.136 | 0.8 | 0.023 | 0.576 |
| 35 to 39 | 0.009 | 0.161 | 0.8 | 0.026 | 0.543 |
| 40 to 44 | 0.013 | 0.197 | 0.8 | 0.030 | 0.494 |
| 45 to 49 | 0.018 | 0.242 | 0.8 | 0.036 | 0.447 |
| 50 to 54 | 0.025 | 0.289 | 0.8 | 0.042 | 0.417 |
| 55 to 59 | 0.036 | 0.327 | 0.8 | 0.050 | 0.411 |
| 60 to 64 | 0.050 | 0.337 | 0.8 | 0.056 | 0.443 |
| 65 to 69 | 0.071 | 0.309 | 0.8 | 0.060 | 0.539 |
| 70 to 74 | 0.100 | 0.244 | 0.8 | 0.123 | 0.570 |
| 75 to 79 | 0.140 | 0.160 | 0.8 | 0.184 | 0.643 |
| 80+ | 0.233 | 0.057 | 0.8 | 0.341 | 0.993 |
| Source | [Salje et al.](http://dx.doi.org/10.1126/science.abc3517) | [Salje et al.](http://dx.doi.org/10.1126/science.abc3517) | Assumed | Calculated from IFR in [Report 34](https://www.imperial.ac.uk/mrc-global-infectious-disease-analysis/covid-19/report-34-ifr/) | Calculated from IFR in [Report 34](https://www.imperial.ac.uk/mrc-global-infectious-disease-analysis/covid-19/report-34-ifr/) |