## Table S1: Certainty of Evidence for the Primary Objective

| GRADE Evidence Profile: Mass Testing and Contact Tracing compared to Conventional Test and Trace | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | No of Studies (Design) | Quality of Evidence Factors | | | | | Direction of Effect Summary of Findings | | Quality of evidence |
| | | Study bias | Heterogeneity | Indirectness | Imprecision | Publication Bias | Conventional Test and Trace | Mass Test and Trace | |
| | | | | | | | Control of SARS-CoV-2/COVID-19 Transmissions | | |
| **Effectiveness** | | | | | | | | | |
| | n=11 (Modeling studies) | Serious[a] | Serious[b] | Serious[c] | Serious[d] | Unlikely | **Emery et al** [44] 53% (95% Posterior Interval, PI: 51-56%) of asymptomatic carriers under symptom-based testing went undetected compared to mass testing. | ↑ | ●○○○ |
| | | | | | | | **Grassly et al** [45] Test and trace will reduce $R^e$ by 8% (95% Uncertainty Interval 5–11) for 50% coverage and 48-hour sample-quarantine delay, compared to mass PCR testing | ↓ | |
| | | | | | | | Tsou et al [46] Symptom-based testing prevented no subclinical case while symptom-based plus at-risk group testing prevented 40%, 60%, and 80% of subclinical cases | ↑ | |
| | | | | | | | **Mizumoto et al** [47] A total of 634 detected due to mass testing compared to 306 symptomatic | ↑ | |

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| | | | | | | | cases that would have been detected through the symptom-based approach | | |
| | | | | | | | **Sasmita et al** [48] Contact tracing (test trace) combined with other measures showed to be more effective than mass testing combined with other measures in outbreak prediction | ↓ | |
| | | | | | | | **Moghadas et al** [49] Symptom-based test and trace must be combined with testing irrespective of symptomology | ↑ | |
| | | | | | | | **Bracis et al** [50] Symptom test and trace was more effective than mass testing in reducing daily deaths and when aiming for 70% post-COVID-19 physical interactions | ↓ | |
| | | | | | | | **Pollmann et al** [51] Mass random testing and contact tracing can control the outbreak as oppose to contact tracing (test and trace) | ↑ | |
| | | | | | | | **Hill et al** [52] | ↑ | |

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| | | | | | | | Control of SARS-CoV-2/COVID-19 Transmissions | |
| | | | | | | | Regular mass testing and contact tracing reduced infections by more than 50% compared to when there is no mass testing | |
| | | | | | | | **Gorji et al** \|53] Mass testing (about 166 per 100,000) based on contact counting is more effective, reducing reproduction number from R = 2.4 to R = 1 | ↑ |
| | | | | | | | **Alsing at al** \|54] Mass testing and contact tracing can contain 74% of the outbreak and get R below 1 more than contact tracing | ↑ |
| **Effectiveness** | | | | | | | | |
| | n=1 (Cross-sectional) | Serious[f] | Unlikely | Serious[g] | Serious[h] | Unlikely | **Hagan et al** \|55] Mass testing identified 8,239 (Range; 10-2193, Median=403) compared to 642 (Range: 2-181, Median=19) during symptom-based testing | ↑ ⬤○○○ |
| **Cost-effectiveness** | | | | | | | | |
| | n=1 | Serious[i] | Unlikely | Serious[j] | Serious[k] | Unlikely | **Paltiel et al** \|56] | ↑ ⬤○○○ |

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| No of Studies (Design) | Study bias | Heterogeneity | Indirectness | Imprecision | Publication Bias | Conventional Test and Trace | Mass Test and Trace | Quality of evidence |
| | | | | | | Control of SARS-CoV-2/COVID-19 Transmissions | | |
| (Modeling study) | | | | | | Mass testing/screening (every 1, 2, or 7days) was found to be more effective for R=3.5, 2.5, or 1.5 respectively, compared to symptom-based screening | | |

Favorable ↑ unfavorable ↓ Null effect ↔

[a] Internal validation for most studies and treatment of parameter/structural uncertainties unclear for some studies.
[b] Differences in study populations and settings. Lack of confidence intervals and statistical significance
[c] Population and settings in 5 studies were not representative
[d] No precise effect estimates in reported prediction in 8 studies.
[e] R = Reproduction number
[f] Possible methodological issues around subjects' recruitment and outcome measurements
[g] Unrepresentative population and setting
[h] Unreported effect estimates.
[i] No use of real-world data set and lack of clear external and internal validation process
[j] Unsuitable population and setting
[k] No precision in effect estimates.