To aid interpretation, we have colour-coded each row in the following tables by *pandemic scenario*, according to the colour scheme shown below. Green represents low transmission (Scenarios 1, 3, 6), blue represents medium transmission (Scenario 4) and red represents high transmission (Scenarios 2, 5, 7), while the colour intensity represents the pandemic severity.

| Scenario 6       | Scenario 7       |
|------------------|------------------|
| Low transmission | High transmission|
| High severity    | High severity    |

| Scenario 3       | Scenario 4       |
|------------------|------------------|
| Low transmission | Medium transmission|
| Moderate severity| Moderate severity |

| Scenario 1       | Scenario 2       |
|------------------|------------------|
| Low transmission | High transmission|
| Mild severity    | Mild severity    |

Table S1: The colour scheme used to identify each pandemic scenario.

We report outcome measures in terms of their median, 5th and 95th percentiles, and arithmetic mean, for each of the Targeted Action Stage strategies:

1: **Rx All/PEP Eld, HR** Treatment of all identified cases regardless of risk stratum or setting of care, and provision of prophylaxis for individuals in the “Elderly” and “High-Risk” strata.

2: **Rx All** Treatment of all identified cases regardless of risk stratum or setting of care, and no recommendation for prophylaxis.

3: **Rx At-Risk, Hosp** Treatment of all identified cases in the “Children”, “Elderly”, “High-Risk” and “HCW” strata, and of all cases in hospital and ICU settings.

4: **Rx Hosp** Treatment of all cases in hospital and ICU settings.
| Scenario       | Strategy | High-Risk          | Others            |
|---------------|----------|--------------------|-------------------|
| Low Tx/ Mild  | 1        | 1.7% (0.2%, 3.1%)  | 1.7% (0.2%, 3.1%) |
|               | 2        | 1.7% (0.2%, 3.1%)  | 1.7% (0.2%, 3.1%) |
|               | 3        | 1.9% (0.5%, 3.3%)  | 1.9% (0.5%, 3.3%) |
|               | 4        | 2.0% (0.6%, 3.5%)  | 2.0% (0.6%, 3.4%) |
| Low Tx/ Mod   | 1        | 2.0% (0.2%, 3.9%)  | 1.8% (0.1%, 3.5%) |
|               | 2        | 2.1% (0.2%, 4.0%)  | 1.9% (0.2%, 3.6%) |
|               | 3        | 2.4% (0.5%, 4.4%)  | 2.2% (0.5%, 3.8%) |
|               | 4        | 2.5% (0.7%, 4.5%)  | 2.3% (0.6%, 4.0%) |
| Low Tx/ Sev   | 1        | 2.1% (0.0%, 9.3%)  | 1.6% (0.0%, 6.6%) |
|               | 2        | 2.5% (0.0%, 9.9%)  | 1.8% (0.0%, 6.9%) |
|               | 3        | 4.7% (0.1%, 12.5%) | 3.5% (0.1%, 9.0%) |
|               | 4        | 5.5% (0.4%, 14.3%) | 4.1% (0.3%, 10.3%)|
| Med Tx/ Mod   | 1        | 4.9% (3.1%, 7.6%)  | 4.4% (2.8%, 6.7%) |
|               | 2        | 5.0% (3.1%, 7.7%)  | 4.5% (2.8%, 6.7%) |
|               | 3        | 5.1% (3.2%, 7.9%)  | 4.6% (2.9%, 6.9%) |
|               | 4        | 5.2% (3.3%, 8.0%)  | 4.7% (3.0%, 7.0%) |
| High Tx/ Mild | 1        | 5.9% (3.9%, 8.1%)  | 5.8% (3.9%, 8.1%) |
|               | 2        | 5.9% (3.9%, 8.2%)  | 5.8% (3.9%, 8.1%) |
|               | 3        | 6.0% (4.0%, 8.2%)  | 5.9% (3.9%, 8.1%) |
|               | 4        | 6.0% (4.0%, 8.3%)  | 5.9% (3.9%, 8.2%) |
| High Tx/ Sev  | 1        | 7.5% (4.9%, 11.1%) | 6.8% (4.4%, 9.7%) |
|               | 2        | 7.5% (4.9%, 11.1%) | 6.8% (4.4%, 9.7%) |
|               | 3        | 7.6% (4.9%, 11.2%) | 6.8% (4.5%, 9.8%) |
|               | 4        | 7.7% (5.0%, 11.3%) | 6.9% (4.5%, 9.9%) |
| High Tx/ Sev  | 1        | 19.9% (10.2%, 40.5%) | 14.3% (7.6%, 30.0%) |
|               | 2        | 20.0% (10.3%, 40.6%) | 14.3% (7.7%, 30.0%) |
|               | 3        | 20.4% (10.4%, 41.0%) | 14.6% (7.7%, 30.4%) |
|               | 4        | 20.6% (10.5%, 41.6%) | 14.8% (7.8%, 30.7%) |

Table S2: The Clinical Attack Rate (CAR), reported for the High-Risk stratum and for all other strata combined (“Others”). **Key message:** Except in the low-transmission high-severity scenario (dark green), the choice of strategy for the Targeted Action Phase has minimal effect on the Clinical Attack Rate.
| Scenario      | Strategy | Net Usage (100,000s) | Hospital Rx (100,000s) |
|--------------|----------|----------------------|------------------------|
| Low Tx/ Mild | 1        | 7.11 (0.93, 23.18)   | 9.24 (0.1, 5.0)       |
| Low Tx/ Mild | 2        | 3.14 (0.48, 10.74)   | 4.26 (0.1, 5.0)       |
| Low Tx/ Mild | 3        | 1.24 (0.27, 3.27)    | 1.51 (0.3, 5.4)       |
| Low Tx/ Mild | 4        | 0.04 (0.02, 0.11)    | 0.06 (0.4, 5.6)       |
| Low Tx/ Mod  | 1        | 7.90 (0.74, 23.69)   | 9.67 (1.0, 46.8)      |
| Low Tx/ Mod  | 2        | 3.51 (0.38, 10.99)   | 4.49 (1.1, 47.9)      |
| Low Tx/ Mod  | 3        | 1.60 (0.31, 3.60)    | 1.76 (2.9, 52.5)      |
| Low Tx/ Mod  | 4        | 0.18 (0.05, 0.61)    | 0.24 (3.6, 54.7)      |
| Low Tx/ Sev  | 1        | 7.48 (0.03, 26.99)   | 9.29 (0.2, 262.9)     |
| Low Tx/ Sev  | 2        | 3.92 (0.03, 13.02)   | 4.64 (0.2, 286.6)     |
| Low Tx/ Sev  | 3        | 2.91 (0.08, 7.75)    | 3.24 (2.7, 391.0)     |
| Low Tx/ Sev  | 4        | 1.20 (0.11, 4.53)    | 1.63 (9.8, 448.4)     |
| Med Tx/ Mod  | 1        | 13.42 (5.16, 29.48)  | 14.86 (11.2, 94.9)    |
| Med Tx/ Mod  | 2        | 6.52 (2.10, 14.66)   | 7.22 (11.5, 95.6)     |
| Med Tx/ Mod  | 3        | 3.03 (1.43, 5.88)    | 3.26 (11.9, 98.1)     |
| Med Tx/ Mod  | 4        | 0.57 (0.18, 2.19)    | 0.78 (12.1, 99.8)     |
| High Tx/ Mild| 1        | 12.51 (3.57, 28.85)  | 13.88 (1.8, 14.1)     |
| High Tx/ Mild| 2        | 6.18 (1.54, 16.36)   | 7.25 (1.8, 14.1)      |
| High Tx/ Mild| 3        | 3.50 (1.30, 7.58)    | 3.82 (1.8, 14.3)      |
| High Tx/ Mild| 4        | 0.63 (0.16, 4.06)    | 1.16 (1.8, 14.4)      |
| High Tx/ Mod | 1        | 13.75 (4.21, 31.76)  | 15.26 (17.5, 139.5)   |
| High Tx/ Mod | 2        | 6.86 (2.04, 18.15)   | 8.16 (17.7, 140.3)    |
| High Tx/ Mod | 3        | 4.24 (1.74, 8.59)    | 4.57 (17.9, 142.1)    |
| High Tx/ Mod | 4        | 1.27 (0.41, 4.46)    | 1.67 (18.0, 143.3)    |
| High Tx/ Sev | 1        | 21.81 (7.85, 50.82)  | 24.83 (167.6, 1298.2) |
| High Tx/ Sev | 2        | 13.55 (4.75, 33.58)  | 15.51 (174.4, 1309.7) |
| High Tx/ Sev | 3        | 10.28 (4.22, 22.10)  | 11.36 (177.5, 1327.1) |
| High Tx/ Sev | 4        | 5.94 (2.19, 14.66)   | 6.94 (178.9, 1355.6)  |

Table S3: Stockpile usage is reported in terms of the total number of packets that were distributed for treatment of community and hospital presentations and for post-exposure prophylaxis ("Net Usage") and also by the number of packets that were used to treat hospitalised cases ("Hospital Rx"). **Key message:** Liberal antiviral use in the community ("Rx All/PEP Eld, HR" and "Rx All" strategies) increases the net stockpile consumption but can decrease hospital consumption in the high-severity scenarios. Prophylaxis makes a substantial additional drain on the stockpile.
| Scenario        | Strategy | Outpatient Flu (100,000s) | Outpatient Non-Flu (100,000s) |
|-----------------|----------|---------------------------|------------------------------|
| Low Tx/ Mild    | 1        | 2.00 (0.26, 4.28) 2.08    | 0.00 (0.00, 7.77) 2.05       |
|                 | 2        | 2.04 (0.29, 4.36) 2.13    | 0.00 (0.00, 7.79) 2.08       |
|                 | 3        | 0.79 (0.19, 1.53) 0.82    | 0.00 (0.00, 2.32) 0.72       |
|                 | 4        | 0.00 (0.00, 0.01) 0.00    | 0.00 (0.00, 0.00) 0.00       |
| Low Tx/ Mod     | 1        | 2.11 (0.20, 4.69) 2.21    | 0.00 (0.00, 7.57) 1.99       |
|                 | 2        | 2.16 (0.23, 4.79) 2.27    | 0.00 (0.00, 7.60) 2.02       |
|                 | 3        | 0.87 (0.19, 1.71) 0.90    | 0.00 (0.00, 2.27) 0.72       |
|                 | 4        | 0.00 (0.00, 0.01) 0.00    | 0.00 (0.00, 0.00) 0.00       |
| Low Tx/ Sev     | 1        | 1.55 (0.01, 6.39) 2.12    | 0.00 (0.00, 6.53) 1.44       |
|                 | 2        | 1.75 (0.01, 6.72) 2.29    | 0.00 (0.00, 6.64) 1.52       |
|                 | 3        | 1.20 (0.02, 2.94) 1.27    | 0.00 (0.00, 2.21) 0.71       |
|                 | 4        | 0.00 (0.00, 0.01) 0.00    | 0.00 (0.00, 0.00) 0.00       |
| Med Tx/ Mod     | 1        | 3.83 (0.83, 8.16) 4.01    | 2.22 (0.00, 6.12) 2.43       |
|                 | 2        | 3.88 (0.84, 8.28) 4.05    | 2.27 (0.00, 6.18) 2.48       |
|                 | 3        | 1.60 (0.69, 2.92) 1.67    | 1.06 (0.00, 2.13) 1.00       |
|                 | 4        | 0.01 (0.00, 0.03) 0.01    | 0.00 (0.00, 0.03) 0.06       |
| High Tx/ Mild   | 1        | 3.07 (0.53, 9.39) 3.84    | 2.00 (0.00, 5.78) 2.41       |
|                 | 2        | 3.11 (0.54, 9.44) 3.88    | 2.04 (0.00, 5.82) 2.44       |
|                 | 3        | 1.78 (0.50, 3.57) 1.84    | 1.11 (0.00, 2.35) 1.16       |
|                 | 4        | 0.05 (0.02, 0.26) 0.09    | 0.00 (0.00, 0.58) 0.14       |
| High Tx/ Mod    | 1        | 3.17 (0.55, 10.24) 4.10   | 2.05 (0.18, 6.19) 2.54       |
|                 | 2        | 3.20 (0.55, 10.34) 4.14   | 2.10 (0.33, 6.24) 2.58       |
|                 | 3        | 1.91 (0.51, 3.98) 2.00    | 1.18 (0.27, 2.54) 1.24       |
|                 | 4        | 0.05 (0.01, 0.24) 0.08    | 0.00 (0.00, 0.55) 0.13       |
| High Tx/ Sev    | 1        | 3.71 (0.63, 15.89) 5.52   | 2.32 (0.49, 9.04) 3.28       |
|                 | 2        | 3.82 (0.64, 16.14) 5.65   | 2.39 (0.53, 9.17) 3.37       |
|                 | 3        | 2.59 (0.58, 7.44) 3.08    | 1.54 (0.39, 4.22) 1.81       |
|                 | 4        | 0.03 (0.01, 0.19) 0.06    | 0.00 (0.00, 0.48) 0.11       |

Table S4: Outpatient stockpile usage is reported in terms of the number of treatment packets that were distributed to persons infected with pandemic influenza ("Outpatient Flu") and to persons not infected with pandemic influenza but presenting with ILI ("Outpatient Non-Flu"), who may receive treatment when a syndromic indication is considered sufficient for initiation of treatment. **Key message:** When using syndromic indication to initiate treatment in the community, the number of doses provided to patients that are not infected with pandemic influenza is less than the number used for effective treatment in the community.
Table S5: Initial Action Phase stockpile usage is reported in terms of the number of packets that were distributed for treatment (“Treatment”) and in total (“Net”).

**Key message:** Stockpile consumption in the Initial Action Phase is very low in all pandemic scenarios, compared to the net consumption over the course of the entire epidemic (previous tables), even when the number of prophylaxis courses greatly exceeds the number of treatment courses.

| Scenario     | Strategy | Treatment (100,000s) | Net (100,000s) |
|--------------|----------|---------------------|----------------|
| Low Tx/ Mild | 1        | 0.00 (0.00, 0.01)   | 0.01 (0.00, 0.01) |
| Low Tx/ Mild | 2        | 0.00 (0.00, 0.01)   | 0.01 (0.00, 0.01) |
| Low Tx/ Mild | 3        | 0.00 (0.00, 0.01)   | 0.01 (0.00, 0.01) |
| Low Tx/ Mild | 4        | 0.00 (0.00, 0.01)   | 0.01 (0.00, 0.01) |
| Low Tx/ Mod  | 1        | 0.00 (0.00, 0.01)   | 0.02 (0.00, 0.01) |
| Low Tx/ Mod  | 2        | 0.00 (0.00, 0.01)   | 0.02 (0.00, 0.01) |
| Low Tx/ Mod  | 3        | 0.00 (0.00, 0.01)   | 0.02 (0.00, 0.01) |
| Low Tx/ Mod  | 4        | 0.00 (0.00, 0.01)   | 0.02 (0.00, 0.01) |
| Low Tx/ Sev  | 1        | 0.00 (0.00, 0.01)   | 0.02 (0.00, 0.01) |
| Low Tx/ Sev  | 2        | 0.00 (0.00, 0.01)   | 0.02 (0.00, 0.01) |
| Low Tx/ Sev  | 3        | 0.00 (0.00, 0.01)   | 0.02 (0.00, 0.01) |
| Low Tx/ Sev  | 4        | 0.00 (0.00, 0.01)   | 0.02 (0.00, 0.01) |
| Med Tx/ Mod  | 1        | 0.01 (0.01, 0.35)   | 0.09 (0.03, 1.73) |
| Med Tx/ Mod  | 2        | 0.01 (0.01, 0.35)   | 0.09 (0.03, 1.73) |
| Med Tx/ Mod  | 3        | 0.01 (0.01, 0.35)   | 0.09 (0.03, 1.73) |
| Med Tx/ Mod  | 4        | 0.01 (0.01, 0.35)   | 0.09 (0.03, 1.73) |
| High Tx/ Mild| 1        | 0.11 (0.02, 0.70)   | 0.56 (0.11, 4.01) |
| High Tx/ Mild| 2        | 0.11 (0.02, 0.70)   | 0.56 (0.11, 4.01) |
| High Tx/ Mild| 3        | 0.11 (0.02, 0.70)   | 0.56 (0.11, 4.01) |
| High Tx/ Mild| 4        | 0.11 (0.02, 0.70)   | 0.56 (0.11, 4.01) |
| High Tx/ Mod | 1        | 0.10 (0.02, 0.68)   | 0.53 (0.11, 3.83) |
| High Tx/ Mod | 2        | 0.10 (0.02, 0.68)   | 0.53 (0.11, 3.83) |
| High Tx/ Mod | 3        | 0.10 (0.02, 0.68)   | 0.53 (0.11, 3.83) |
| High Tx/ Mod | 4        | 0.10 (0.02, 0.68)   | 0.53 (0.11, 3.83) |
| High Tx/ Sev | 1        | 0.08 (0.01, 0.60)   | 0.43 (0.09, 3.32) |
| High Tx/ Sev | 2        | 0.08 (0.01, 0.60)   | 0.43 (0.09, 3.32) |
| High Tx/ Sev | 3        | 0.08 (0.01, 0.60)   | 0.43 (0.09, 3.32) |
| High Tx/ Sev | 4        | 0.08 (0.01, 0.60)   | 0.43 (0.09, 3.32) |
Table S6: Peak hospital utilisation is reported separately for ICUs and general wards; the maximum capacities are 1,000 and 27,600 beds, respectively. **Key message:** ICU capacity is only exceeded in high-severity scenarios, while general ward capacity is only exceeded in the high-transmission high-severity (worst case) scenario. Liberal antiviral use in the community (“Rx All/PEP Eld, HR” and “Rx All” strategies) can reduce the hospital burden.
### Table S7

Cumulative hospital utilisation is reported separately for ICUs and general wards. **Key message:** Liberal antiviral use in the community ("Rx All/PEP Eld, HR" and "Rx All" strategies) can reduce the hospital burden, but in the high-severity scenarios these reductions are only minor when compared to the scale of the epidemic.

| Scenario     | Strategy | ICU Utilisation | Ward Utilisation |
|--------------|----------|-----------------|------------------|
| Low Tx/ Mild | 1        | 158 (19, 692)   | 420 (50, 1828)   |
|              | 2        | 163 (20, 702)   | 432 (54, 1854)   |
|              | 3        | 199 (40, 794)   | 533 (110, 2121)  |
|              | 4        | 242 (55, 941)   | 619 (143, 2386)  |
| Low Tx/ Mod  | 1        | 1709 (158, 9465)| 4485 (420, 24318)|
| Low Tx/ Mod  | 2        | 1765 (173, 9664)| 4621 (460, 24805)|
| Low Tx/ Mod  | 3        | 2272 (423, 11118)| 6005 (1143, 28878)|
| Low Tx/ Mod  | 4        | 2836 (597, 13550)| 7108 (1521, 33161)|
| Low Tx/ Sev  | 1        | 12993 (145, 123102)| 32951 (362, 404972)|
| Low Tx/ Sev  | 2        | 14725 (145, 128318)| 37251 (362, 443462)|
| Low Tx/ Sev  | 3        | 32279 (1333, 156164)| 82310 (3432, 845478)|
| Low Tx/ Sev  | 4        | 48493 (4679, 167957)| 116724 (11497, 1176200)|
| Med Tx/ Mod  | 1        | 5158 (1508, 19953)| 13427 (3967, 51165)|
| Med Tx/ Mod  | 2        | 5206 (1521, 20128)| 13536 (4000, 51533)|
| Med Tx/ Mod  | 3        | 5592 (1630, 21618)| 14755 (4332, 56089)|
| Med Tx/ Mod  | 4        | 6507 (1894, 25470)| 16320 (4789, 62711)|
| High Tx/ Mild| 1        | 663 (216, 2067)  | 1756 (571, 5453)  |
| High Tx/ Mild| 2        | 665 (216, 2073)  | 1761 (572, 5470)  |
| High Tx/ Mild| 3        | 697 (226, 2170)  | 1866 (606, 5795)  |
| High Tx/ Mild| 4        | 800 (259, 2491)  | 2037 (661, 6323)  |
| High Tx/ Mod | 1        | 7865 (2321, 27141)| 20521 (6104, 80036)|
| High Tx/ Mod | 2        | 7906 (2329, 27182)| 20577 (6112, 80224)|
| High Tx/ Mod | 3        | 8277 (2440, 27883)| 21851 (6487, 85782)|
| High Tx/ Mod | 4        | 9558 (2807, 30185)| 23886 (7095, 97601)|
| High Tx/ Sev | 1        | 53644 (30919, 93677)| 603711 (104847, 1481173)|
| High Tx/ Sev | 2        | 53499 (30938, 92672)| 605288 (105224, 1471503)|
| High Tx/ Sev | 3        | 53229 (31314, 87888)| 630356 (112720, 1449222)|
| High Tx/ Sev | 4        | 54322 (32959, 87684)| 688154 (128880, 1468331)|
| Scenario       | Strategy | High-Risk Deaths | Total Deaths |
|----------------|----------|------------------|--------------|
| Low Tx/ Mild   | 1        | 4 (0, 17) 6      | 8 (1, 34) 11 |
|                | 2        | 4 (1, 18) 6      | 8 (1, 34) 12 |
|                | 3        | 5 (1, 19) 7      | 10 (2, 38) 14|
|                | 4        | 7 (2, 27) 10     | 12 (3, 47) 17|
| Low Tx/ Mod    | 1        | 45 (4, 257) 76   | 84 (8, 467) 140 |
|                | 2        | 46 (5, 265) 79   | 87 (9, 478) 145 |
|                | 3        | 58 (11, 294) 93  | 112 (21, 546) 176 |
|                | 4        | 83 (17, 415) 132 | 143 (30, 685) 222 |
| Low Tx/ Sev    | 1        | 378 (4, 4538) 1069 | 658 (7, 7719) 1794 |
|                | 2        | 427 (4, 5045) 1200 | 743 (7, 8467) 1997 |
|                | 3        | 917 (39, 8236) 2077 | 1618 (69, 14373) 3609 |
|                | 4        | 1591 (159, 12995) 3413 | 2504 (250, 20459) 5349 |
| Med Tx/ Mod    | 1        | 134 (38, 547) 196 | 253 (74, 986) 361 |
|                | 2        | 136 (39, 554) 198 | 255 (74, 994) 364 |
|                | 3        | 141 (40, 568) 205 | 272 (79, 1061) 388 |
|                | 4        | 191 (54, 776) 278 | 326 (94, 1283) 467 |
| High Tx/ Mild  | 1        | 16 (5, 52) 21    | 32 (10, 101) 41 |
|                | 2        | 17 (5, 52) 21    | 32 (10, 101) 41 |
|                | 3        | 17 (5, 52) 21    | 34 (11, 105) 43 |
|                | 4        | 22 (7, 70) 29    | 40 (13, 124) 51 |
| High Tx/ Mod   | 1        | 205 (59, 828) 298 | 385 (113, 1488) 548 |
|                | 2        | 206 (59, 832) 299 | 387 (113, 1496) 550 |
|                | 3        | 209 (60, 840) 302 | 404 (118, 1558) 572 |
|                | 4        | 280 (80, 1127) 405 | 478 (140, 1863) 680 |
| High Tx/ Sev   | 1        | 6671 (1110, 62967) 15400 | 11077 (1952, 87849) 23180 |
|                | 2        | 6717 (1118, 63409) 15499 | 11112 (1960, 88400) 23290 |
|                | 3        | 6302 (1128, 57863) 14430 | 10877 (2040, 84924) 22795 |
|                | 4        | 7982 (1516, 60049) 16803 | 12603 (2447, 88091) 25317 |

Table S8: Deaths are reported for the High-Risk stratum and for the entire population.

**Key message:** In all scenarios, liberal antiviral use in the community (“Rx All/PEP Ekd, HR”, “Rx All” and “Rx At-Risk, Hosp” strategies) can prevent more deaths than is achieved by providing treatment solely to hospitalised cases (“Rx Hosp” strategy).
Table S9: The relative risks of presenting (at either an outpatient or inpatient setting) and of requiring hospitalisation (regardless of actual bed capacity) are shown below. These relative risks are calculated with respect to identical pandemic scenarios in the absence of antiviral interventions for both the Initial Action and Targeted Action phases. **Key message:** Antiviral interventions produce minor reductions in the relative risk of presentation (except when the intervention can mitigate the epidemic), but can significantly reduce the relative risk of hospitalisation in even the most severe scenarios through the provision of early treatment (in the community) to cases that would otherwise require hospitalisation.

| Scenario            | Strategy | Presentation          | Hospitalisation           |
|---------------------|----------|-----------------------|--------------------------|
| Low Tx/ Mild        | 1        | 0.845 (0.273, 0.959) 0.763 | 0.734 (0.237, 0.833) 0.663 |
| Low Tx/ Mild        | 2        | 0.858 (0.295, 0.965) 0.779 | 0.748 (0.258, 0.841) 0.680 |
| Low Tx/ Mild        | 3        | 0.956 (0.714, 0.985) 0.921 | 0.875 (0.654, 0.902) 0.843 |
| Low Tx/ Mild        | 4        | 0.998 (0.916, 1.000) 0.986 | 0.998 (0.916, 0.999) 0.986 |
| Low Tx/ Mod         | 1        | 0.810 (0.167, 0.950) 0.715 | 0.700 (0.144, 0.822) 0.618 |
| Low Tx/ Mod         | 2        | 0.827 (0.190, 0.957) 0.733 | 0.718 (0.165, 0.831) 0.637 |
| Low Tx/ Mod         | 3        | 0.939 (0.599, 0.980) 0.891 | 0.854 (0.544, 0.893) 0.811 |
| Low Tx/ Mod         | 4        | 0.987 (0.835, 0.997) 0.965 | 0.987 (0.835, 0.997) 0.965 |
| Low Tx/ Sev         | 1        | 0.376 (0.001, 0.891) 0.394 | 0.320 (0.001, 0.763) 0.337 |
| Low Tx/ Sev         | 2        | 0.437 (0.001, 0.902) 0.419 | 0.375 (0.001, 0.777) 0.360 |
| Low Tx/ Sev         | 3        | 0.771 (0.020, 0.945) 0.641 | 0.693 (0.018, 0.851) 0.577 |
| Low Tx/ Sev         | 4        | 0.879 (0.104, 0.976) 0.766 | 0.879 (0.104, 0.976) 0.766 |
| Med Tx/ Mod         | 1        | 0.955 (0.855, 0.989) 0.942 | 0.827 (0.738, 0.858) 0.816 |
| Med Tx/ Mod         | 2        | 0.959 (0.862, 0.991) 0.946 | 0.832 (0.748, 0.862) 0.822 |
| Med Tx/ Mod         | 3        | 0.980 (0.952, 0.993) 0.977 | 0.892 (0.864, 0.906) 0.890 |
| Med Tx/ Mod         | 4        | 0.996 (0.987, 0.999) 0.995 | 0.996 (0.987, 0.999) 0.995 |
| High Tx/ Mild       | 1        | 0.989 (0.951, 0.998) 0.983 | 0.860 (0.828, 0.869) 0.856 |
| High Tx/ Mild       | 2        | 0.990 (0.953, 0.998) 0.984 | 0.863 (0.831, 0.870) 0.858 |
| High Tx/ Mild       | 3        | 0.994 (0.984, 0.998) 0.993 | 0.909 (0.900, 0.913) 0.908 |
| High Tx/ Mild       | 4        | 0.999 (0.999, 1.000) 0.999 | 0.999 (0.995, 0.999) 0.998 |
| High Tx/ Mod        | 1        | 0.986 (0.942, 0.997) 0.980 | 0.854 (0.816, 0.866) 0.849 |
| High Tx/ Mod        | 2        | 0.987 (0.943, 0.997) 0.981 | 0.856 (0.819, 0.867) 0.851 |
| High Tx/ Mod        | 3        | 0.992 (0.978, 0.997) 0.990 | 0.902 (0.887, 0.910) 0.901 |
| High Tx/ Mod        | 4        | 0.998 (0.993, 0.999) 0.997 | 0.997 (0.992, 0.999) 0.996 |
| High Tx/ Sev        | 1        | 0.962 (0.854, 0.990) 0.947 | 0.825 (0.730, 0.852) 0.812 |
| High Tx/ Sev        | 2        | 0.963 (0.855, 0.990) 0.947 | 0.827 (0.735, 0.854) 0.815 |
| High Tx/ Sev        | 3        | 0.971 (0.904, 0.991) 0.962 | 0.872 (0.811, 0.895) 0.865 |
| High Tx/ Sev        | 4        | 0.982 (0.933, 0.995) 0.975 | 0.981 (0.933, 0.994) 0.975 |
### Table S10: The relative risks of requiring ICU admission (regardless of actual ICU capacity) and death are shown below. These relative risks are calculated with respect to identical pandemic scenarios in the absence of antiviral interventions for both the Initial Action and Targeted Action phases. **Key message:** The relative risks of ICU admission and deaths are substantially reduced when treatment is only provided to hospitalized cases (“Rx Hosp” strategy). Additional provision of treatment to community presentations reduce these risks even further — compare the relative risks in the worst case scenario (high-transmission high-severity) for the liberal strategies (“Rx All/PEP Eld HR” and “Rx All”) to the “Rx Hosp” strategy.

| Scenario       | Strategy | ICU Admission | Death              |
|----------------|----------|---------------|--------------------|
| Low Tx/ Mild   | 1        | 0.527 (0.171, 0.599) 0.477 | 0.352 (0.115, 0.400) 0.318 |
| Low Tx/ Mild   | 2        | 0.538 (0.186, 0.605) 0.489 | 0.359 (0.125, 0.404) 0.327 |
| Low Tx/ Mild   | 3        | 0.623 (0.466, 0.642) 0.601 | 0.413 (0.310, 0.426) 0.398 |
| Low Tx/ Mild   | 4        | 0.741 (0.681, 0.743) 0.732 | 0.505 (0.465, 0.506) 0.499 |
| Low Tx/ Mild   | 1        | 0.498 (0.103, 0.586) 0.441 | 0.330 (0.069, 0.389) 0.292 |
| Low Tx/ Mild   | 2        | 0.512 (0.118, 0.593) 0.454 | 0.339 (0.078, 0.394) 0.302 |
| Low Tx/ Mild   | 3        | 0.602 (0.383, 0.633) 0.573 | 0.397 (0.253, 0.418) 0.378 |
| Low Tx/ Mod    | 4        | 0.727 (0.615, 0.739) 0.712 | 0.491 (0.417, 0.502) 0.482 |
| Low Tx/ Sev    | 1        | 0.223 (0.001, 0.538) 0.236 | 0.146 (0.000, 0.353) 0.155 |
| Low Tx/ Sev    | 2        | 0.263 (0.001, 0.549) 0.253 | 0.172 (0.000, 0.361) 0.167 |
| Low Tx/ Sev    | 3        | 0.480 (0.012, 0.593) 0.400 | 0.312 (0.008, 0.388) 0.261 |
| Low Tx/ Sev    | 4        | 0.637 (0.075, 0.711) 0.556 | 0.426 (0.050, 0.477) 0.372 |
| Med Tx/ Mod    | 1        | 0.589 (0.525, 0.614) 0.581 | 0.390 (0.348, 0.408) 0.385 |
| Med Tx/ Mod    | 2        | 0.593 (0.533, 0.617) 0.586 | 0.393 (0.353, 0.410) 0.389 |
| Med Tx/ Mod    | 3        | 0.630 (0.607, 0.643) 0.628 | 0.415 (0.398, 0.425) 0.414 |
| Med Tx/ Mod    | 4        | 0.735 (0.722, 0.740) 0.733 | 0.498 (0.485, 0.503) 0.496 |
| High Tx/ Mild  | 1        | 0.619 (0.595, 0.625) 0.615 | 0.413 (0.397, 0.418) 0.411 |
| High Tx/ Mild  | 2        | 0.621 (0.598, 0.626) 0.617 | 0.414 (0.399, 0.418) 0.412 |
| High Tx/ Mild  | 3        | 0.647 (0.641, 0.651) 0.647 | 0.429 (0.425, 0.432) 0.429 |
| High Tx/ Mild  | 4        | 0.742 (0.738, 0.743) 0.741 | 0.505 (0.502, 0.506) 0.505 |
| High Tx/ Mod   | 1        | 0.608 (0.580, 0.621) 0.605 | 0.403 (0.383, 0.413) 0.401 |
| High Tx/ Mod   | 2        | 0.610 (0.582, 0.622) 0.607 | 0.404 (0.385, 0.414) 0.403 |
| High Tx/ Mod   | 3        | 0.637 (0.622, 0.646) 0.636 | 0.420 (0.407, 0.428) 0.419 |
| High Tx/ Mod   | 4        | 0.735 (0.725, 0.740) 0.734 | 0.498 (0.488, 0.503) 0.497 |
| High Tx/ Sev   | 1        | 0.591 (0.512, 0.766) 0.616 | 0.389 (0.335, 0.724) 0.457 |
| High Tx/ Sev   | 2        | 0.593 (0.515, 0.769) 0.618 | 0.390 (0.337, 0.727) 0.459 |
| High Tx/ Sev   | 3        | 0.615 (0.566, 0.779) 0.636 | 0.402 (0.367, 0.720) 0.453 |
| High Tx/ Sev   | 4        | 0.719 (0.685, 0.857) 0.733 | 0.482 (0.457, 0.759) 0.517 |
S2 Model equations

The transmission model used in this paper involves one major modification to the contact model first introduced in [1] and further developed in [2, 3]. In this study, the population was stratified into five distinct risk groups (young children, elderly, high-risk, health care workers, and the general adult population), to allow for differential risks of severe outcomes, differential benefits conferred by antiviral treatment, and targeted treatment and prophylaxis strategies. We assumed these groups mixed homogeneously. The model structure is shown in Figure S1.

![Diagram of the model equations]

Figure S1: The flow between the state variables in the model where $\psi$ and $\epsilon$ are functions of time, as introduced in [3]. The contact classes $C_{np}$ and $C_p$ are labels for tracking contact status and are orthogonal to the SEIR states; see [1] for further details.

The proportion of all infected cases that present ($\alpha$) is the sum of the severe cases (all of which present) and the proportion ($\alpha_M$) of the remaining (i.e., mild) cases that present:
\[ \alpha = \eta + \alpha_M(1 - \eta) \]  

(S1)

We have assumed that \( \alpha_M \) is dependent on the severity of the epidemic (\( \eta \)), as first defined in [3] and illustrated in Figure S2.

In recognition that not all contacts of an infectious individual can be identified and provided with post-exposure prophylaxis, the parameter \( \sigma \) defines the proportion of contacts that are potentially identifiable. Accordingly, the proportion of all contacts that receive prophylaxis (\( \epsilon \)) cannot exceed \( \sigma \).

Finally, the fraction of presenting cases that receive treatment (\( \psi \)) and the fraction of contacts that receive prophylaxis (\( \epsilon \)) are functions of time, since they are both affected by the logistical constraints introduced in this model and do not remain constant throughout an epidemic.

The original SEIR model [2] introduced \( \Theta_p \) and \( \Theta_{np} \), which define the proportion of susceptible contacts in the population:

\[ \Theta_p = \frac{e_s C_p}{C_p + C_{np}} \times \frac{S}{N} \]  

(S2)

\[ \Theta_{np} = \frac{C_{np}}{C_p + C_{np}} \times \frac{S}{N} \]  

(S3)

The force of infection (\( \lambda \)) arises from the five infectious classes just as in the original SEIR model [2], given the number of infections per unit time made by an infectious individual (\( \beta \)):

\[ \beta = R_0 \times \gamma \]  

(S4)

\[ \lambda_p = \beta e_s (I_p + A_p) \]  

(S5)

\[ \lambda_{np,nt} = \beta e_t (I_{np,nt} + A_{np}) \]  

(S6)

\[ \lambda_{np,t} = \beta e_t I_{np,t} \]  

(S7)

\[ \lambda = \lambda_p + \lambda_{np,nt} + \lambda_{np,t} \]  

(S8)

We have previously extended this model to include vaccination [3], but for the purposes of this study we assumed that no vaccine would be available.

**S3 Latin hypercube sampling**

Note that the combination of \( \alpha_{rel} \) and the most conservative value of \( e_s \) provides an upper bound matched to estimates of prevention of clinical symptoms and a lower bound consistent with greatest efficacy in household settings (Jefferson et al., *Cochrane Database Syst Rev*, 4:CD008965, 2014).
(a) The mean, minimum and maximum values for $\alpha_m$ are linear functions of $\eta$ ($\eta \in [0.1\%, 10\%]$).

(b) The probability distribution for $\alpha_m$ when $\eta = 0.1\%$, 2.575%, 5.05%, 7.525% and 10%; the distributions for $\eta = 0.1\%$ and $\eta = 10\%$ are shown in red and blue. This distribution is given by: $\min(\alpha_m) + [\max(\alpha_m) - \min(\alpha_m)] \times \text{Beta}(\mu = 0.5, V = 0.2)$.

Figure S2: The probability distribution for mild presentations ($\alpha_{m_f}$).
|   | A + B × Beta(μ, V)                          |   |   |   | Meaning                                      |
|---|--------------------------------------------|---|---|---|---------------------------------------------|
|  | A  | B  | μ   | V   |                                             |
| ω | 180 | 550 | 0.3364 | 0.1636 | Inverse latent period (years⁻¹)            |
| γ | 146 | 219 | 0.4444 | 0.2283 | Inverse infectious period (years⁻¹)        |
| δ | 121.6667 | 60.8333 | 0.4 | 0.1973 | Inverse contact period (years⁻¹)           |
| e_t | 0.5 | 0.4 | 0.5 | 0.25 | Relative infectiousness of treated cases    |
| e_i | 0.5 | 0.4 | 0.5 | 0.25 | Relative infectiousness of breakthrough cases |
| e_s | 0.4 | 0.6 | 0.7 | 0.1 | Relative susceptibility of those given PEP  |

|   |   |   |   |   |                                             |
| a | U(a, b) | b |                                             |
|---|---------|---|---------------------------------------------|
| O | 1 × 10⁶ | 20 × 10⁶ | Antiviral stockpile size                    |
| σ | 0.1 | 0.5 | Fraction of contacts that can receive PEP   |
| μ | 0.5 | 1.0 | Compliance at out-patient facilities        |

|   | exp₁₀ [U(a, b)] |   |   |   |                                             |
|---|-----------------|---|---|---|---------------------------------------------|
| D_c | 10³ | 10⁵ | Laboratory test capacity (per day)         |

|   |   |   |   |   |                                             |
|---|---|---|---|---|---------------------------------------------|
| N  | Population size |
| κ | Average number of contacts (per day) |
| χ | Relative infectiousness of sub-clinical cases |
| α_rel | Propensity of breakthrough cases to display symptoms and present |
| e_dp | Effectiveness of delayed PEP |
| e_dt | Effectiveness of delayed treatment |

Table S11: Model parameter distributions used in all pandemic scenarios. Each parameter is associated with a beta distribution (top), a uniform distribution (second), a log-uniform distribution (third), or a single value (bottom).

References

[1] James M. McCaw and Jodie McVernon. Prophylaxis or treatment? optimal use of an antiviral stockpile during an influenza pandemic. Mathematical Biosciences, 209 (2):336–360, Oct 2007. ISSN 0025-5564, doi:10.1016/j.mbs.2007.02.003.

[2] Jodie McVernon, James M. McCaw, and Terence M. Nolan. Modelling strategic use of the national antiviral stockpile during the CONTAIN and SUSTAIN phases of an Australian pandemic influenza response. Australian and New Zealand Journal of Public Health, 34(2):113–119, Apr 2010. ISSN 1753-6405, doi:10.1111/j.1753-6405.2010.00493.x.

[3] Robert Moss, James M. McCaw, and Jodie McVernon. Diagnosis and antiviral
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