**Supplementary Methods and Table. Equations and assumptions for calculating the number of missed infections per round, and results**

To estimate the number of infections missed by the limit of detection (LoD) of RDTs, a sub-sample of 3.5% of the filter papers from individuals who were RDT negative from Round 1 were randomly selected and tested by PCR; the all-age proportion of RDT negative individuals that were PCR positive was 13.5%[1]. We applied the following equations and assumptions on published data from the MTaT rounds[1] to estimate the number and percentages of infections estimated to be missed by:

Equation 1:

Equation 2:

Equation 3:

Where: Ax = number tested who were RDT positive during round x; Bx = number tested who were RDT negative during round x; Cx = (number people missed) RoundX who would have been RDT positive; Dx = (number of people missed) RoundX who would have been RDT negative; 0.135 = proportion of RDT negative that would be PCR positive

Assumptions: 1) all individuals who were RDT positive were infected, 2) the proportion of RDT positivity amongst those missed during a round was the same as those tested during the respective round, and 3) the proportion of RDT negative samples that were PCR positive remained constant across rounds. The data used to generate these calculations were published elsewhere[1], and appear below.

**Supplementary Table. Infections missed during MTaT rounds**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Round** | **Population Denominator** | **# Tested** | **# RDT Positive (%)** | **# Estimated Infections Missed by RDT LoD Amongst Tested (%)1** | **# Estimated RDT Positive Amongst Untested2** | **# Estimated Infections Missed by RDT LoD Amongst Untested3** | **Estimated Total Number of Infections** | **# Estimated Infections Missed by Incomplete Coverage (%)4** | **Estimated Total Infections Missed by RDT LoD and Incomplete Coverage (%)5** |
| 1 | 30968 | 23226 | 9690 (41.7) | 1827 (15.9) | 3230 | 609 | 15356 | 3839 (25.0) | 5666 (36.9) |
| 2 | 29037 | 23624 | 11417 (48.3) | 1648 (12.6) | 2616 | 378 | 16059 | 2994 (18.6) | 4648 (28.9) |
| 3 | 29508 | 24365 | 9972 (40.9) | 1943 (16.3) | 2105 | 410 | 14430 | 2515 (17.4) | 4458 (30.9) |
| 4 | 31866 | 26098 | 10402 (39.9) | 2119 (16.9) | 2299 | 468 | 15288 | 2767 (18.1) | 4886 (32.0) |
| 5 | 31215 | 26212 | 11368 (43.3) | 2004 (15.0) | 2170 | 382 | 15924 | 2552 (16.0) | 4556 (28.6) |
| 6 | 27930 | 26342 | 9377 (35.6) | 2290 (19.6) | 565 | 138 | 12371 | 703 (5.7) | 2994 (24.2) |

1Calculated using Equation 1; 2Calculated by multiplying percent RDT positive by round to untested population; 3Calculated by multiplying 13.5% by estimated RDT negative. 4Calculated using Equation 2. 5Calculated using Equation 3. Data from columns 1-4 taken published elsewhere[1].

1. Desai M, Samuels AM, Odongo, W, Williamson, J, Odero, N, Otieno, K, Shi, YP, Kachur, SP, Hamel, MJ, Kariuki, SK, Lindblade, K. Impact of intermitent mass testing and treatment on incidence of malaria infection in a high transmission area of western Kenya. American Journal of Tropical Medicine & Hygiene **2020**.