Supplement 2: Study characteristics by receipt of antibiotic prescription

| Characteristic (N = 770)                          | Antibiotic prescription, n (%) |   |   |   |
|--------------------------------------------------|-------------------------------|---|---|---|
|                                                  | No                            | Yes|   |   |
| **Age in years**                                 |                               |   |   |   |
| Children (< 18 years)                            | 73 (34.6)                     | 138 (65.4) | < 0.01 |
| Adults (18-59 years)                             | 223 (54.8)                    | 184 (45.2) |   |   |
| Elderly (≥ 60 years)                             | 117 (77.0)                    | 35 (23.0)  |   |   |
| **Sex**                                          |                               |   |   |   |
| Male                                             | 165 (52.2)                    | 151 (47.8) | 0.51  |
| Female                                           | 248 (54.6)                    | 206 (45.4) |   |   |
| **Level of health facility**                     |                               |   |   |   |
| Dispensary                                       | 23 (23.0)                     | 77 (77.0)  | < 0.01 |
| Health Centre/Stand-alone clinic by ADO          | 39 (36.4)                     | 68 (63.6)  |   |   |
| District Hospital/Clinic L1 by MO/DO             | 26 (28.0)                     | 67 (72.0)  |   |   |
| Regional Hospital/Clinic L2 by specialist        | 70 (68.0)                     | 33 (32.0)  |   |   |
| Referral/National/Zonal Hospital/Clinic L3 by SS | 255 (69.5)                    | 112 (30.5) |   |   |
| **Ownership of health facility**                 |                               |   |   |   |
| Public                                           | 195 (62.7)                    | 116 (37.3) | < 0.01 |
| Private/Non-governmental                         | 218 (47.5)                    | 241 (52.5) |   |   |
| **Department visited**                           |                               |   |   |   |
| Outpatient                                       | 408 (54.2)                    | 345 (45.8) | 0.04  |
| Inpatient                                        | 5 (29.4)                      | 12 (70.6)  |   |   |
| **Select Diagnosis**                             |                               |   |   |   |
| Other disorders of urinary system                |                               |   |   |   |
| No                                               | 407 (60.3)                    | 268 (39.7) | < 0.01 |
| Yes                                              | 6 (6.3)                       | 89 (93.7)  |   |   |
| Acute and URTI of multiple and unspecified sites |                               |   |   |   |
| No                                               | 400 (56.7)                    | 306 (43.3) | < 0.01 |
| Yes                                              | 13 (20.3)                     | 51 (79.7)  |   |   |
| Other sepsis                                     |                               |   |   |   |
| No                                               | 409 (54.8)                    | 338 (45.2) | < 0.01*|
| Yes                                              | 4 (17.4)                      | 19 (82.6)  |   |   |
| Acute tonsillitis                                |                               |   |   |   |
| No                                               | 412 (55.2)                    | 334 (44.8) | < 0.01*|
| Yes                                              | 1 (4.2)                       | 23 (95.8)  |   |   |

*p-values are from Pearson Chi-Square Test or Fisher's Exact Test (*); SS, Super Specialist
### Supplement 2: Study characteristics by receipt of antibiotic prescription (Continued)

| Characteristic (N = 770)                        | Antibiotic prescription, n (%)                  | P value |
|------------------------------------------------|------------------------------------------------|---------|
| **Diseases of pulp and periapical tissues**    |                                               |         |
| No                                             | 413 (54.3)                                     | 347 (45.7) | < 0.01* |
| Yes                                            | 0 (0.0)                                        | 10 (100.0) |         |
| **Candidiasis**                                |                                               |         |
| No                                             | 411 (54.4)                                     | 345 (45.6) | 0.01   |
| Yes                                            | 2 (14.3)                                       | 12 (85.7)  |         |
| **Bacterial infection of unspecified site**     |                                               |         |
| No                                             | 411 (54.2)                                     | 348 (45.8) | 0.03*  |
| Yes                                            | 2 (18.2)                                       | 9 (81.8)  |         |
| **Pneumonia, unspecified organism**             |                                               |         |
| No                                             | 411 (54.1)                                     | 349 (45.9) | 0.05*  |
| Yes                                            | 2 (20.0)                                       | 8 (80.0)  |         |
| **Cystitis**                                   |                                               |         |
| No                                             | 413 (54.3)                                     | 348 (45.7) | < 0.01* |
| Yes                                            | 0 (0.0)                                        | 9 (100.0)  |         |
| **Other female pelvic inflammatory diseases**   |                                               |         |
| No                                             | 412 (54.0)                                     | 351 (46.0) | 0.05*  |
| Yes                                            | 1 (14.3)                                       | 6 (85.7)  |         |
| **Other disorders of bladder**                  |                                               |         |
| No                                             | 413 (54.1)                                     | 350 (45.9) | < 0.01* |
| Yes                                            | 0 (0.0)                                        | 7 (100.0)  |         |
| **Amoebiasis**                                 |                                               |         |
| No                                             | 413 (54.1)                                     | 350 (45.9) | < 0.01* |
| Yes                                            | 0 (0.0)                                        | 7 (100.0)  |         |
| **Cellulitis**                                 |                                               |         |
| No                                             | 413 (53.9)                                     | 353 (46.1) | 0.05*  |
| Yes                                            | 0 (0.0)                                        | 4 (100.0)  |         |
| **Infections of genitourinary tract in pregnancy** |                                           |         |
| No                                             | 413 (53.9)                                     | 353 (46.1) | 0.05*  |
| Yes                                            | 0 (0.0)                                        | 4 (100.0)  |         |
| **Chronic rhinitis, nasopharyngitis and pharyngitis** |                       |         |
| No                                             | 413 (53.9)                                     | 353 (46.1) | 0.05*  |
| Yes                                            | 0 (0.0)                                        | 4 (100.0)  |         |

P-values are from Pearson Chi-Square Test or Fisher's Exact Test (*)
### Supplement 2: Study characteristics by receipt of antibiotic prescription (Continued)

| Characteristic (N = 770)                                      | Antibiotic prescription, n (%) | P value |
|--------------------------------------------------------------|--------------------------------|---------|
| **Cutaneous abscess, furuncle and carbuncle**                |                                |         |
| No                                                           | 413 (53.9)                      | 353 (46.1) | 0.05* |
| Yes                                                          | 0 (0.0)                         | 4 (100.0)   |      |
| **Other gastroenteritis and colitis of infectious and unspecified origin** |                                |         |
| No                                                           | 412 (54.0)                      | 351 (46.0) | 0.05* |
| Yes                                                          | 1 (14.3)                        | 6 (85.7)   |      |
| **Acute nasopharyngitis (common cold)**                       |                                |         |
| No                                                           | 404 (54.1)                      | 343 (45.9) | 0.16  |
| Yes                                                          | 9 (39.1)                        | 14 (60.9)  |      |
| **Conjunctivitis**                                           |                                |         |
| No                                                           | 408 (54.0)                      | 347 (46.0) | 0.11  |
| Yes                                                          | 5 (33.3)                        | 10 (66.7)  |      |
| **Cough**                                                    |                                |         |
| No                                                           | 408 (54.1)                      | 346 (45.9) | 0.07  |
| Yes                                                          | 5 (31.3)                        | 11 (68.8)  |      |
| **Gingivitis and periodontal diseases**                      |                                |         |
| No                                                           | 412 (53.9)                      | 353 (46.1) | 0.19* |
| Yes                                                          | 1 (20.0)                        | 4 (80.0)   |      |
| **Acute pharyngitis**                                        |                                |         |
| No                                                           | 412 (53.9)                      | 352 (46.1) | 0.10* |
| Yes                                                          | 1 (16.7)                        | 5 (83.3)   |      |
| **Bacterial pneumonia, not elsewhere classified**            |                                |         |
| No                                                           | 412 (53.9)                      | 352 (46.1) | 0.10* |
| Yes                                                          | 1 (16.7)                        | 5 (83.3)   |      |
| **Unspecified acute lower respiratory infection**            |                                |         |
| No                                                           | 412 (53.9)                      | 353 (46.1) | 0.19* |
| Yes                                                          | 1 (20.0)                        | 4 (80.0)   |      |
| **Other diseases of upper respiratory tract**                |                                |         |
| No                                                           | 412 (53.9)                      | 352 (46.1) | 0.10* |
| Yes                                                          | 1 (16.7)                        | 5 (83.3)   |      |

p-values are from Pearson Chi-Square Test or Fisher's Exact Test (*)
### Supplement 2: Study characteristics by receipt of antibiotic prescription (Continued)

| Characteristic (N = 770)                    | Antibiotic prescription, n (%) | P value |
|--------------------------------------------|--------------------------------|---------|
|                                            | No                            | Yes     |         |
| Otitis externa                             | 413 (53.8)                    | 354 (46.2) | 0.10*  |
| Single delivery by caesarean section       | 413 (53.8)                    | 354 (46.2) | 0.10*  |
| Abdominal and pelvic pain                  | 413 (53.8)                    | 355 (46.2) | 0.22*  |
| Impetigo                                   | 413 (53.8)                    | 354 (46.2) | 0.10*  |
| Osteomyelitis                              | 413 (53.8)                    | 355 (46.2) | 0.22*  |
| Non-suppurative otitis media               | 413 (53.8)                    | 355 (46.2) | 0.22*  |
| Suppurative and unspecified otitis media   | 413 (53.8)                    | 355 (46.2) | 0.22*  |
| Acute sinusitis                            | 413 (53.8)                    | 355 (46.2) | 0.22*  |
| Respiratory disorders in diseases classified elsewhere | 413 (53.8) | 355 (46.2) | 0.22*  |
| Dislocation of wrist                       | 413 (53.8)                    | 355 (46.2) | 0.22*  |
| Any Procedure/Surgery done                 | 403 (54.4)                    | 338 (45.6) | 0.04   |

P-values are from Pearson Chi-Square Test or Fisher's Exact Test (*)
## Supplement 2: Study characteristics by receipt of antibiotic prescription (Continued)

| Characteristic | Antibiotic prescription, n (%) | P value |
|----------------|--------------------------------|---------|
| **Type of Procedure/Surgery (N = 29)** | | |
| Minor | 4 (40.0) | 6 (60.0) | 0.71* |
| Major | 0 (0.0) | 7 (100.0) | |
| Specialized | 6 (50.0) | 6 (50.0) | |
| **Prescriber Qualification (N = 770)** | | |
| Clinical Officer/Dental Therapist | 27 (21.3) | 100 (78.7) | < 0.01* |
| Assistant Medical Officer/Assistant Dental Officer | 3 (20.0) | 12 (80.0) | |
| Medical Officer/Dental Officer | 136 (48.6) | 144 (51.4) | |
| Specialist | 200 (69.7) | 87 (30.3) | |
| Super-specialist/Consultant | 47 (77.0) | 14 (23.0) | |
| **Prescriber Qualification Grouped (N = 770)** | | |
| Low level (Clinical Officer/DT/AMO/ADO) | 30 (21.1) | 112 (78.9) | < 0.01 |
| Mid-level (Medical/Dental Officer | 136 (48.9) | 144 (51.4) | |
| High level (Specialists/Consultants) | 247 (71.0) | 101 (29.0) | |
| **Polypharmacy of ≥ 5 Medications (N = 770)** | | |
| No | 346 (52.6) | 312 (47.4) | 0.16 |
| Yes | 67 (59.8) | 45 (40.2) | |
| **Availability of all medications prescribed in 2017 TZ NEMLIT (N = 770)** | | |
| No | 220 (72.6) | 83 (27.4) | < 0.01 |
| Yes | 193 (41.3) | 274 (58.7) | |
| **All medications prescribed using their generic names (N = 770)** | | |
| No | 171 (48.9) | 179 (51.1) | 0.02 |
| Yes | 242 (57.6) | 178 (42.4) | |
| **Was malaria treatment prescribed (N = 770)** | | |
| No | 407 (54.2) | 344 (45.8) | 0.05 |
| Yes | 6 (31.6) | 13 (68.4) | |
| **Presence of injectable formulation in the prescription (N = 770)** | | |
| No | 388 (55.0) | 317 (45.0) | 0.01 |
| Yes | 25 (38.5) | 40 (61.5) | |

P-values are from Pearson Chi-Square Test or Fisher's Exact Test (*); DT, Dental Therapist; AMO, Assistant Medical Officer; ADO, Assistant Dental Officer