# Report on Basic Findings in Outpatient Facility Evaluations in Arusha Municipality, Arumeru District and Monduli District, Arusha Region, Tanzania

Kenneth L. Leonard* Melkiory Masatu†

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*Department of Economics MC 3308, 420 W 118th Street, Columbia University, New York, New York 10027 KL206@columbia.edu

†CEDHA, Arusha TZ cmasatu@cedha.ac.tz

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# 1 Introduction

This report details the findings of follow up visits to 40 health facilities in the Arusha region conducted during the months of February, March and April of 2003. An effort was made to visit facilities on days when there were more likely to be patients attending (clinic days or markets days), though it was not possible to do this with each facility. Three of the facilities have been closed in the last few years, and at one facility

Table 1: Facitlities Examined

| Code | Facility | Ownership | Type | District | Division | Note |
|---|---|---|---|---|---|---|
| A01 | Ngarenaro | Govt | Disp | Arusha | Municip | |
| A02 | Levolosi | Govt | HCenter | Arusha | Municip | |
| A03 | St. Elizabeth | RC | Hospital | Arusha | Municip | |
| A04 | Kaloleni | Govt | HCenter | Arusha | Municip | |
| A05 | Mt. Meru Hosp. | Govt | Hospital | Arusha | Municip | |
| A06 | Njiro | SDA | Disp | Arusha | Municip | Closed |
| A07 | Makao Mapya | SDA | Disp | Arusha | Municip | Closed |
| AM01 | Selian | Luth | Hospital | Arumeru | Muklat | |
| AM02 | ArumeruHosp. | Govt | Hospital | Arumeru | Poli | |
| AM03 | Olkokola | Govt | Disp | Arumeru | Muklat | |
| AM04 | Oldonyo Sambu | Govt | Disp | Arumeru | Muklat | |
| AM05 | Octurmet | Govt | HCenter | Arumeru | Muklat | |
| AM06 | Kisongo | Luth | Disp | Arumeru | Muklat | |
| AM07 | Kisongo2 | SDA | Disp | Arumeru | Muklat | |
| AM08 | Olkokola | RC | Disp | AruMeru | Muklat | |
| AM09 | Musa | Govt | Disp | Arumeru | Muklat | |
| AM10 | Mwandet | Govt | Disp | Arumeru | Muklat | |
| AM11 | Ngaremtoni | COGI | Disp | AruMeru | Muklat | |
| AM12 | Oldonyo Sambu | COGI | Disp | AruMeru | Muklat | |
| M01 | Monduli | Govt | Hospital | Monduli | Kisongo | |
| M02 | Namanga | Govt | Disp | Monduli | Longido | |
| M03 | MonduliJuu | Govt | Disp | Monduli | Kisongo | |
| M04 | Lepurko | Govt | Disp | Monduli | Kisongo | |
| M05 | Longido | Govt | HCenter | Monduli | Longido | |
| M06 | Kimokowa | Luth | Disp | Monduli | Longido | |
| M07 | Engarenaibor | Govt | Disp | Monduli | Longido | |
| M08 | Arkatan | Govt | Disp | Monduli | Kisongo | |
| M09 | Engikariet | RC | Disp | Monduli | Longido | |
| M10 | Kitumbeine | Luth | Disp | Monduli | Longido | |
| M11 | Elangatadapash | Govt | Disp | Monduli | Longido | |
| M12 | Gelai Lumbwa | Luth | Disp | Monduli | Longido | |
| M13 | Gelai Bomba | Govt | Disp | Monduli | Longido | No health worker found |
| M14 | TMA | Govt | Disp | Monduli | Kisongo | |
| M15 | Mferiji | Govt | Disp | Monduli | Kisongo | |
| M16 | Elwai | Luth | Disp | Monduli | Kisongo | Closed |
| M17 | Mundarara | Priv | Phmy | Monduli | Longido | |
| M18 | Mundarara | Govt | Disp | Monduli | Longido | |
| M19 | Namanga | COGI | Disp | Monduli | Longido | |
| PT01 | AICC | Parastatal | Hospital | Arusha | Municip | |
| PT02 | Ithna Asheri | Islamic | Hospital | Arusha | Municip | |

we found no one present. Otherwise, the staff were receptive and cooperative with our research team. In addition, patients, particularly in the rural areas, were happy to see facilities being evaluated. We sought permission from every patient before the quality of the services they were receiving was evaluated and in almost every single case this permission was granted.

We evaluated the facility according to the standards that would be expected of a dispensary. We looked

for supplies and infrastructure that would be expected at the basic dispensary level, and we examined the competence of nurses and clinicians for procedures and illnesses that could be treated at a dispensary. Thus, all facilities were evaluated on the same basis, whether dispensary, health center or hospital. Thus, if we conclude that hospital is well equipped this does not mean that they are as well as equipped as they should be since we did not examine supplies or equipment that would be expected at a hospital.

At each facility, we used the surveys shown as Figures 1 through 16 in appendix A.1. The first stage of the research was to obtain the permission of patients to observe their consultation, as well as drug dispensing, injections or wound dressing if necessary. To do this we read the text on the patient card (Figure 1) and then gave them this card (which also contained a patient number with which to identify patients.) Patients were understanding and few objected to our observing the procedures. The fact that all the researchers were medical personnel made patients more comfortable. Many stated that they were pleased to see people asking questions about quality.

Once the patient had agreed to be observed we watched them receive services in consultation (Figures 3, 4 and 5 with results shown in Section 7) drug dispensing, injections and wound dressing (Figure 6 and Figure 7 with results shown in Section 6) and finally they were asked to respond to an exit interview (Figure 10 with results shown in Section 9).

In addition each facility was evaluated for physical infrastructure (Figure 8 with results shown in Section 3) and drug availability (Figure 9 with results shown in Section 4).

Each physician was evaluated for quality by the team using vignettes as shown in Figure 11 through 16 explained in Section 8.1 with results shown in Section 8.2.

## 2 Absenteeism among medical personnel

The first item of quality is the presence of medical personnel at the facility. With this in mind we evaluated all facilities according to two basic criteria, were the proper medical personnel posted to the facility, and were the personnel posted actually present?

Table 2: Number of personnel posted to facilities

| | hospital | | | health center | | | dispensary | | |
|---|---|---|---|---|---|---|---|---|---|
| type | total | avg | min | total | avg | min | total | avg | min |
| Number of Facilities | 7 | | | 5 | | | 24 | | |
| Medical Officer | 12 | 1.71 | 3 | | | | | | |
| Assistant Medical Officer | 12 | 1.71 | | 4 | 0.80 | 1 | 1 | 0.04 | |
| Clinical Officer | 40 | 5.71 | 6 | 15 | 3.00 | 4 | 10 | 0.42 | 1 |
| Clinical Assistant | 4 | 0.57 | | 8 | 1.60 | | 13 | 0.54 | 1 |
| All Clinicians | 68 | 9.71 | 9 | 27 | 5.40 | 5 | 24 | 1.00 | 2 |
| Nursing Officer | 15 | 2.14 | | | | | | | |
| Public Health Nurse (Grade B) | 10 | 1.43 | | 8 | 1.60 | 2 | 2 | 0.08 | 1 |
| Registered Nurse Midwife | 60 | 8.57 | | 10 | 2.00 | 2 | 6 | 0.25 | 1 |
| MCH aide | 8 | 1.14 | | 19 | 3.80 | 2 | 13 | 0.54 | 1 |
| All Nurses | 93 | 13.29 | | 37 | 7.40 | 6 | 21 | 0.88 | 3 |
| Radiographer | 6 | 0.86 | | | | | | | |
| Laboratory Technician | 11 | 1.57 | 2 | | | | 1 | 0.04 | |
| Laboratory Assistant | 8 | 1.14 | 2 | 3 | 0.60 | 1 | 3 | 0.13 | 1 |
| Pharmacist | 2 | 0.29 | 1 | | | | | | |
| Pharmaceutical Assistant | 7 | 1.00 | | 1 | 0.20 | | | | |
| Medical Attendent | 105 | 15.00 | | 71 | 14.20 | 2 | 26 | 1.08 | |
| Health Officer | | | | 1 | 0.20 | | 3 | 0.13 | |
| Health Assistant | | | | | | | 5 | 0.21 | |
| Other Medical | 9 | 1.29 | | 3 | 0.60 | | 1 | 0.04 | |
| Other Non Medical | 24 | 3.43 | | 7 | 1.40 | | 7 | 0.29 | |

Clinicians are listed in order of cadre and nurses broadly in order of cadre. A medical attendant is not qualified as either a nurse or a clinician and is a primary school leaver with basic medical training. Health officers and assistants are primarily public health officers who do outreach to the community and are not qualified as either a nurse nor a clinician. Other Medical includes dentists and dental assistants. Other non medical includes janitors and security officers.

Table 2 shows the number of personnel posted to each facility we visited compared to the government mandated minimum number of personnel. The government mandate is a guideline and is not legally binding, but it is designed to be a minimum for effective functioning. It is not secret that facilities fall short on this measure, but we are trying to get an idea of the characteristics of facilities that fall short.

There are three basic categories of personnel, clinicians, nurses and others. We will focus only on the clinicians and nurses. The minimum staffing of nurses in a hospital is a function of the number of beds in the hospital and this is difficult to determine accurately. Therefore we have not examined this category.

In some cases facilities have cadre of above minimum qualifications and in some cases facilities have cadre of below minimum qualifications. To compare the absolute number of personnel we include the total for each category. Thus, while the average hospital has only 1.71 medical officers posted, they have 9.71 clinicians compared to a minimum number of 9.

In this table we can see that hospitals and health centers are, on average, adequately staffed in the overall categories. However dispensaries are not adequately staffed for either clinicians or nurses. In many cases the dispensaries are staffed with medical attendants rather than clinicians or nurses. This is not an adequate substitute.

In order to compare the staffing in various facilities we introduce the following categories:

**Level** Hospital, Health Center and Dispensary (only the government operates health centers).

**District** We surveyed three districts, Arusha, Arumeru and Monduli. These districts are broadly urban, semi-urban and rural, so we use these titles instead.

**Zone** We also use the category zone which is slightly different from District. Two facilities can be in the same district but in different zones, and a few facilities are in the same zone, but in different districts.

**Urban/City** Within the limits of the regional capital.

**Major town** Placed in a town that has a transportation hub, multiple markets, telephone access, etc (but not the regional capital).

**Close to trunk road** Place within easy walking distance of inexpensive transportation to the regional capital (but does not include the major town category)

**Far from trunk road** Not within walking distance of transportation, but within 2 to 3 hours of a trunk road by vehicle

**Very far from a trunk road** At least a days travel from a main road.

**Owner** There are three major systems operating in this area, government, church owned and private or other. Other includes parastatal, Islamic and COGI (Church of God in Christ) facilities. We call these private because their religious affiliation is for tax purposes only. There is no medical oversight given by the religious body. In contrast the facilities that we call church-owned are monitored by a diocesan medical office headed by a bishop.

We show our analysis by district and zone separately. District is less detailed than zone but is informative because all government facilities within a district are governed by the same district medical officer. Thus the district category reflects the difficulties faced by the DMO as well and the difficulties of living in a remote posting. The zone category will overlap the districts to a certain degree but is also more informative for the church and private/other categories since government in these cases does not follow district boundaries.

## 2.1 Comparing postings to standards

Table 3 and Table 4 show the number of personnel posted to a facility compared to the minimum level according to government standards. In these graphs we compared postings to standards only for the collection of clinicians and nurses. In other words this does not measure the degree to which posted personnel are less qualified than government standards demand, but the degree to which the number of clinicians and nurses falls below standards.

We use three different measures:

**Difference** The average difference between posted and standard. Some categories of facility have more than the minimum number and this might balance facilities that have less than the minimum.

**Num Below** The average number by which a facility falls short of standards. Thus, over staffed facilities are assigned a zero and under staffed facilities a negative number.

**Percent Under** Percent of facilities that are under staffed.

We report these for clinicians and nurses separately. Nurse staffing for hospitals is not reported.

Table 3 shows that 91% of dispensaries are under staffed with nurses and 83% of dispensaries are under staffed with clinicians. In contrast many fewer health centers and hospitals are under staffed. The rural district faces greater shortages of both nurses and clinicians, and the semi-rural faces greater shortages than the urban district. In fact the urban district has, on average, too many nurses and clinicians assigned. This is important because it suggests that reallocation might improve staffing. There is a net shortage, but there is also room for reallocation.

It is interesting to note that under staffing is not a government problem. The problem faces government facilities, church facilities and private facilities. In both urban and semi-urban districts the government does a marginally better job of staffing facilities than do the church operated systems. In addition, in both the rural and semi-rural districts private facilities are better staffed. However in the urban district they are under staffed whereas the government and church operated facilities are over staffed. The urban private facilities are hospitals and the urban rural facilities are dispensaries so it is dangerous to infer too much, but the private facilities are allocating staff in a different manner than government or church facilities.

Table 4 is the same basic table as Table 3, but by zone, not district. With the exception of the major town category, there is a progression towards under staffing as you get further from the city. There is over

Table 3: Posted personnel compared to government standards by district level and system

| Level | District | Owner | # of facs | Difference | | Num Below | | Percent Under | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | nurses | clin. | nurses | clin. | nurses | clin. |
| Disp | rural | church | 4 | -2.50 | -1.50 | -2.50 | -1.50 | 100 | 100 |
| Disp | rural | government | 9 | -2.22 | -1.33 | -2.22 | -1.33 | 100 | 100 |
| Disp | rural | private/other | 2 | -3.00 | 0.00 | -3.00 | -0.50 | 100 | 50 |
| Disp | rural | | 15 | -2.40 | -1.20 | -2.40 | -1.27 | 100 | 93 |
| Disp | semi rural | church | 3 | -2.00 | -1.00 | -2.00 | -1.00 | 100 | 100 |
| Disp | semi rural | government | 4 | -1.75 | -0.50 | -1.75 | -0.50 | 75 | 50 |
| Disp | semi rural | private/other | 2 | -1.00 | -0.50 | -1.00 | -0.50 | 50 | 50 |
| Disp | semi rural | | 9 | -1.67 | -0.67 | -1.67 | -0.67 | 77 | 66 |
| Disp | | church | 7 | -2.29 | -1.29 | -2.29 | -1.29 | 100 | 100 |
| Disp | | government | 13 | -2.08 | -1.08 | -2.08 | -1.08 | 92 | 84 |
| Disp | | private/other | 4 | -2.00 | -0.25 | -2.00 | -0.50 | 75 | 50 |
| HCenter | rural | government | 1 | -2.00 | -2.00 | -2.00 | -2.00 | 100 | 100 |
| HCenter | semi rural | government | 1 | -1.00 | -1.00 | -1.00 | -1.00 | 100 | 100 |
| HCenter | urban | government | 3 | 3.33 | 1.67 | -1.33 | 0.00 | 33 | 0 |
| HCenter | | government | 5 | 1.40 | 0.40 | -1.40 | -0.60 | 60 | 40 |
| Hospital | rural | government | 1 | | 3.00 | | 0.00 | | 0 |
| Hospital | rural | | 1 | | 3.00 | | 0.00 | | 0 |
| Hospital | semi rural | church | 1 | | -3.00 | | -3.00 | | 100 |
| Hospital | semi rural | government | 1 | | 11.00 | | 0.00 | | 0 |
| Hospital | semi rural | | 2 | | 4.00 | | -1.50 | | 50 |
| Hospital | urban | church | 1 | | 0.00 | | 0.00 | | 0 |
| Hospital | urban | government | 1 | | 1.00 | | 0.00 | | 0 |
| Hospital | urban | private/other | 2 | | -3.50 | | -3.50 | | 100 |
| Hospital | urban | | 4 | | -1.50 | | -1.75 | | 50 |
| Hospital | | church | 2 | | -1.50 | | -1.50 | | 50 |
| Hospital | | government | 3 | | 5.00 | | 0.00 | | 0 |
| Hospital | | private/other | 2 | | -3.50 | | -3.50 | | 100 |
| | rural | church | 4 | -2.50 | -1.50 | -2.50 | -1.50 | 100 | 100 |
| | rural | government | 11 | -2.20 | -1.00 | -2.20 | -1.27 | 100 | 90 |
| | rural | private/other | 2 | -3.00 | 0.00 | -3.00 | -0.50 | 100 | 50 |
| | semi rural | church | 4 | -2.00 | -1.50 | -2.00 | -1.50 | 100 | 100 |
| | semi rural | government | 6 | -1.60 | 1.33 | -1.60 | -0.50 | 80 | 50 |
| | semi rural | private/other | 2 | -1.00 | -0.50 | -1.00 | -0.50 | 50 | 50 |
| | urban | church | 1 | | 0.00 | | 0.00 | | 0 |
| | urban | government | 4 | 3.33 | 1.50 | -1.33 | 0.00 | 33 | 0 |
| | urban | private/other | 2 | | -3.50 | | -3.50 | | 100 |
| Disp | | | 24 | -2.13 | -1.00 | -2.13 | -1.04 | 91 | 83 |
| HCenter | | | 5 | 1.40 | 0.40 | -1.40 | -0.60 | 60 | 40 |
| Hospital | | | 7 | | 0.71 | | -1.43 | | 42 |
| | rural | | 17 | -2.38 | -1.00 | -2.38 | -1.24 | 100 | 88 |
| | semi rural | | 12 | -1.60 | 0.08 | -1.60 | -0.83 | 80 | 66 |
| | urban | | 7 | 3.33 | -0.14 | -1.33 | -1.00 | 33 | 28 |
| | | church | 9 | -2.29 | -1.33 | -2.29 | -1.33 | 100 | 88 |
| | | government | 21 | -1.11 | 0.14 | -1.89 | -0.81 | 83 | 61 |
| | | private/other | 6 | -2.00 | -1.33 | -2.00 | -1.50 | 75 | 66 |

staffing of clinicians and nurses in the urban/city category and major town category and then mover and more severe under staffing as you mover further out. Again this suggests a poor allocation of resources. There is some complication in these figures due to the fact that nurses are not counted in hospitals.

Table 5 is a regression analysis of the data presented in Table 4. The regression assumes a linear structure that is probably not valid, but we are limited by the number of observations. In other words, in

Table 4: Posted personnel compared to government standards by zone level and system

| Zone | Level | Owner | # of facs | Difference | | Num Below | | Percent Under | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | nurses | clin. | nurses | clin. | nurses | clin. |
| Urban/City | Disp | private/other | 1 | 0.00 | -1.00 | 0.00 | -1.00 | 0 | 100 |
| Urban/City | Disp | | 1 | 0.00 | -1.00 | 0.00 | -1.00 | 0 | 100 |
| Urban/City | HCenter | government | 3 | 3.33 | 1.67 | -1.33 | 0.00 | 33 | 0 |
| Urban/City | Hospital | church | 2 | | -1.50 | | -1.50 | | 50 |
| Urban/City | Hospital | government | 1 | | 1.00 | | 0.00 | | 0 |
| Urban/City | Hospital | private/other | 2 | | -3.50 | | -3.50 | | 100 |
| Urban/City | Hospital | | 5 | | -1.80 | | -2.00 | | 60 |
| Urban/City | | church | 2 | | -1.50 | | -1.50 | | 50 |
| Urban/City | | government | 4 | 3.33 | 1.50 | -1.33 | 0.00 | 33 | 0 |
| Urban/City | | private/other | 3 | 0.00 | -2.67 | 0.00 | -2.67 | 0 | 100 |
| Major Town | HCenter | government | 1 | -2.00 | -2.00 | -2.00 | -2.00 | 100 | 100 |
| Major Town | Hospital | government | 2 | | 7.00 | | 0.00 | | 0 |
| Major Town | Hospital | | 2 | | 7.00 | | 0.00 | | 0 |
| Major Town | | government | 3 | -2.00 | 4.00 | -2.00 | -0.67 | 100 | 33 |
| Close to trunk | Disp | church | 5 | -2.20 | -1.40 | -2.20 | -1.40 | 100 | 100 |
| Close to trunk | Disp | government | 7 | -1.71 | -0.86 | -1.71 | -0.86 | 85 | 71 |
| Close to trunk | Disp | private/other | 2 | -2.50 | 0.50 | -2.50 | 0.00 | 100 | 0 |
| Close to trunk | Disp | | 14 | -2.00 | -0.86 | -2.00 | -0.93 | 92 | 71 |
| Close to trunk | HCenter | government | 1 | -1.00 | -1.00 | -1.00 | -1.00 | 100 | 100 |
| Close to trunk | | church | 5 | -2.20 | -1.40 | -2.20 | -1.40 | 100 | 100 |
| Close to trunk | | government | 8 | -1.63 | -0.88 | -1.63 | -0.88 | 87 | 75 |
| Close to trunk | | private/other | 2 | -2.50 | 0.50 | -2.50 | 0.00 | 100 | 0 |
| Far fr. trunk | Disp | church | 1 | -2.00 | -1.00 | -2.00 | -1.00 | 100 | 100 |
| Far fr. trunk | Disp | government | 2 | -2.50 | -1.00 | -2.50 | -1.00 | 100 | 100 |
| Far fr. trunk | Disp | private/other | 1 | -3.00 | -1.00 | -3.00 | -1.00 | 100 | 100 |
| Far fr. trunk | Disp | | 4 | -2.50 | -1.00 | -2.50 | -1.00 | 100 | 100 |
| Far fr. trunk | | church | 1 | -2.00 | -1.00 | -2.00 | -1.00 | 100 | 100 |
| Far fr. trunk | | government | 2 | -2.50 | -1.00 | -2.50 | -1.00 | 100 | 100 |
| Far fr. trunk | | private/other | 1 | -3.00 | -1.00 | -3.00 | -1.00 | 100 | 100 |
| V. far fr. trunk | Disp | church | 1 | -3.00 | -1.00 | -3.00 | -1.00 | 100 | 100 |
| V. far fr. trunk | Disp | government | 4 | -2.50 | -1.50 | -2.50 | -1.50 | 100 | 100 |
| V. far fr. trunk | Disp | | 5 | -2.60 | -1.40 | -2.60 | -1.40 | 100 | 100 |
| V. far fr. trunk | | church | 1 | -3.00 | -1.00 | -3.00 | -1.00 | 100 | 100 |
| V. far fr. trunk | | government | 4 | -2.50 | -1.50 | -2.50 | -1.50 | 100 | 100 |
| Urban/City | | | 9 | 2.50 | -0.56 | -1.00 | -1.22 | 25 | 44 |
| Major Town | | | 3 | -2.00 | 4.00 | -2.00 | -0.67 | 100 | 33 |
| Close to trunk | | | 15 | -1.93 | -0.87 | -1.93 | -0.93 | 93 | 73 |
| Far fr. trunk | | | 4 | -2.50 | -1.00 | -2.50 | -1.00 | 100 | 100 |
| V. far fr. trunk | | | 5 | -2.60 | -1.40 | -2.60 | -1.40 | 100 | 100 |

this regression, the impact of zone is the same for each system, and the impact of system is the same for each zone. It is more likely that different systems will respond differently to zones.

In Table 5, there are not many statistically significant variables. Being very far away from a major road predicts average staffing levels, degree of under staffing and the percent of facilities that are under staffed, and the sign of the variables for close to trunk and far from trunk are correct. However, there is no evidence that government or church operated facilities have any different posting habits than private facilities (with this linear specification).

Table 5: Regression analysis of posted personnel compared to government standards

| | Posted/Minimum | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | difference | | | num below | | | percent under | | |
| | Coef. | Std. Err | | Coef. | Std. Err | | Coef. | Std. Err | |
| major town | 1.55 | 1.39 | | -0.01 | 0.60 | | 0.17 | 0.22 | |
| close to trunk | -1.88 | 1.34 | | -0.72 | 0.58 | | 0.49 | 0.21 | * |
| far fr. trunk | -2.14 | 1.55 | | -1.03 | 0.67 | | 0.67 | 0.25 | * |
| v far fr. trunk | -2.79 | 1.59 | * | -1.46 | 0.69 | * | 0.71 | 0.25 | * |
| government | 1.38 | 0.95 | | 0.62 | 0.41 | | -0.11 | 0.15 | |
| church | 0.46 | 1.00 | | 0.17 | 0.43 | | 0.09 | 0.16 | |
| hospital | -0.41 | 1.28 | | -0.78 | 0.55 | | -0.02 | 0.20 | |
| dispensary | 0.01 | 1.38 | | 0.40 | 0.60 | | -0.12 | 0.22 | |
| clinicians | 0.76 | 0.62 | | 1.03 | 0.27 | * | -0.10 | 0.10 | |
| constant | -0.80 | 1.21 | | -1.99 | 0.52 | * | 0.53 | 0.19 | * |
| adj R-square | 17% | | | 20% | | | 33% | | |

* significant at the 90% level for a two sided test.

## 2.2 Scheduled personnel: Present and not present

We have been looking at the number of personnel who are posted to a facility. At this point we turn to the number of personnel who are physically present when they are scheduled to be present. A posted person can be either scheduled or not scheduled, and a scheduled person can be either present or not present. We collected data on the following categories:

**posted** Assigned to facility

**scheduled** Scheduled to be present on the day and time of our visit

**not scheduled** Officially off work when we visited. This category is especially important for hospitals and health facilities that staff night hours. All our visits were during normal working hours.

**present** At the facility and working or ready to work at the time we visited.

**present nearby** In rural dispensaries, the clinician is frequently making housecalls or at home not working but prepared to come to the clinic for any emergency. When the clinician came to the clinic shortly after we arrived or was easy to find (and ready to work), this category applied.

**not present but frequently present** When we could not find the clinician we asked people in the village or community if the clinician was often there or not. If they said yes we counted the person as not present but frequently present.

**not present** Not present at the facility.

We cannot know whether a clinician who was present nearby would have come to the facility for any patient, or if they came just for us, but it seems reasonable to give them the benefit of the doubt and we merged the present and present nearby categories into one present category. We remain of two minds about the "not present but frequently present" category. Clearly they are not present, but they are not the same category as someone who was posted and has never come to the facility. We retain this as a separate category.

Table 6, Table 7 and Table 8 examine the presence of nurses, clinicians and combined doctors and nurses by district, level and system. These number are compared only to the total number of personnel scheduled to be present, not the number posted or the government standards. Table 9, Table 10 and Table 11 present the same basic data but by zone not district.

Table 6 shows that dispensaries hospitals and health centers have similar rates of absenteeism among nurses, although health centers appear to do better. The rate of absenteeism between rural, semi-rural and urban districts follows the expected pattern, with absenteeism less in urban districts and worst in rural districts.

Nurses in the government system are more likely to be absent than in either the church or private systems. These trends are true at both the hospital and dispensary level. Overall 81% of nurses who were supposed to be on duty were present when we visited. In many of the facilities, all nurses were present, and in the rural government hospital only 55% of posted nurses were present.

Table 7 shows the same basic data but for clinicians. The rate of presence for clinicians is significantly lower than that for nurses, 73% compared to 81%. Dispensaries have a much higher rate of absenteeism than hospitals, but health centers are the worst for clinicians. Comparing rural to semi-rural to urban districts requires taking a stand on the category of "frequently present." If you consider these people as not being different from "not present" then the appropriate column is the "present" column, and the urban and semi-rural districts are similar and better than the rural district. On the other hand if they are considered as being similar to the "present" category, then the appropriate column is the "not present" column, and the urban district is superior to the semi-rural district and vastly superior to the rural district.

We suggest that "frequently present" is probably closer to "not present", than to "present" for our purposes. This is because, while randomly sampling facilities, we pick up some of the frequently present as present and some of the frequently present as not present. On average, we are measuring the average number of days that people in the category are present. When they are not present they cannot serve patients.

Again, considering "frequently present" as being "not present" we see that government and church facilities are not very different from each other, and marginally worse than private facilities.

Table 6: Scheduled personnel present and not present by district level and system: Nurses

| Level | District | Owner | scheduled | Present | | Freq Pres | | Not Pres | |
|---|---|---|---|---|---|---|---|---|---|
| Disp | rural | church | 2 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Disp | rural | government | 7 | 71% | (0.24) | 0% | (0.00) | 28% | (0.24) |
| Disp | semi rural | church | 3 | 66% | (0.33) | 0% | (0.00) | 33% | (0.33) |
| Disp | semi rural | government | 5 | 80% | (0.20) | 0% | (0.00) | 20% | (0.20) |
| Disp | semi rural | private/other | 4 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| HCenter | rural | government | 3 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| HCenter | semi rural | government | 4 | 75% | (0.25) | 0% | (0.00) | 25% | (0.25) |
| HCenter | urban | government | 26 | 88% | (0.11) | 3% | (0.04) | 7% | (0.07) |
| Hospital | rural | government | 9 | 55% | (0.28) | 0% | (0.00) | 44% | (0.28) |
| Hospital | semi rural | church | 2 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Hospital | semi rural | government | 26 | 80% | (0.16) | 0% | (0.00) | 19% | (0.16) |
| Hospital | urban | church | 9 | 88% | (0.11) | 11% | (0.11) | 0% | (0.00) |
| Hospital | urban | private/other | 11 | 81% | (0.16) | 0% | (0.00) | 18% | (0.16) |
| Disp | rural | | 9 | 77% | (0.19) | 0% | (0.00) | 22% | (0.19) |
| Disp | semi rural | | 12 | 83% | (0.15) | 0% | (0.00) | 16% | (0.15) |
| Disp | | church | 5 | 80% | (0.20) | 0% | (0.00) | 20% | (0.20) |
| Disp | | government | 12 | 75% | (0.20) | 0% | (0.00) | 25% | (0.20) |
| Disp | | private/other | 4 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| HCenter | | government | 33 | 87% | (0.11) | 3% | (0.03) | 9% | (0.09) |
| Hospital | rural | | 9 | 55% | (0.28) | 0% | (0.00) | 44% | (0.28) |
| Hospital | semi rural | | 28 | 82% | (0.15) | 0% | (0.00) | 17% | (0.15) |
| Hospital | urban | | 20 | 85% | (0.13) | 5% | (0.05) | 10% | (0.09) |
| Hospital | | church | 11 | 90% | (0.09) | 9% | (0.09) | 0% | (0.00) |
| Hospital | | government | 35 | 74% | (0.20) | 0% | (0.00) | 25% | (0.20) |
| Hospital | | private/other | 11 | 81% | (0.16) | 0% | (0.00) | 18% | (0.16) |
| | rural | church | 2 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| | rural | government | 19 | 68% | (0.23) | 0% | (0.00) | 31% | (0.23) |
| | rural | private/other | 0 | % | () | % | () | % | () |
| | semi rural | church | 5 | 80% | (0.20) | 0% | (0.00) | 20% | (0.20) |
| | semi rural | government | 35 | 80% | (0.16) | 0% | (0.00) | 20% | (0.16) |
| | semi rural | private/other | 4 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| | urban | church | 9 | 88% | (0.11) | 11% | (0.11) | 0% | (0.00) |
| | urban | government | 26 | 88% | (0.11) | 3% | (0.04) | 7% | (0.07) |
| | urban | private/other | 11 | 81% | (0.16) | 0% | (0.00) | 18% | (0.16) |
| Disp | | | 21 | 80% | (0.16) | 0% | (0.00) | 19% | (0.16) |
| HCenter | | | 33 | 87% | (0.11) | 3% | (0.03) | 9% | (0.09) |
| Hospital | | | 57 | 78% | (0.17) | 1% | (0.02) | 19% | (0.16) |
| | rural | | 21 | 71% | (0.21) | 0% | (0.00) | 28% | (0.21) |
| | semi rural | | 44 | 81% | (0.15) | 0% | (0.00) | 18% | (0.15) |
| | urban | | 46 | 86% | (0.12) | 4% | (0.04) | 8% | (0.08) |
| | | church | 16 | 87% | (0.12) | 6% | (0.06) | 6% | (0.06) |
| | | government | 80 | 80% | (0.16) | 1% | (0.01) | 18% | (0.15) |
| | | private/other | 15 | 86% | (0.12) | 0% | (0.00) | 13% | (0.12) |
| | | | 111 | 81% | (0.15) | 1% | (0.02) | 16% | (0.14) |

Standard errors in parentheses

Table 7: Scheduled personnel present and not present by district level and system: Clinicians

| Level | District | Owner | scheduled | Present | | Freq Pres | | Not Pres | |
|---|---|---|---|---|---|---|---|---|---|
| Disp | rural | church | 2 | 0% | (0.00) | 50% | (0.50) | 50% | (0.50) |
| Disp | rural | government | 6 | 83% | (0.17) | 0% | (0.00) | 16% | (0.17) |
| Disp | rural | private/other | 4 | 50% | (0.33) | 0% | (0.00) | 50% | (0.33) |
| Disp | semi rural | church | 3 | 66% | (0.33) | 0% | (0.00) | 33% | (0.33) |
| Disp | semi rural | government | 6 | 83% | (0.17) | 0% | (0.00) | 16% | (0.17) |
| Disp | semi rural | private/other | 3 | 66% | (0.33) | 0% | (0.00) | 33% | (0.33) |
| HCenter | rural | government | 2 | 0% | (0.00) | 0% | (0.00) | 100% | (0.00) |
| HCenter | semi rural | government | 2 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| HCenter | urban | government | 15 | 53% | (0.27) | 13% | (0.12) | 33% | (0.24) |
| Hospital | rural | government | 8 | 87% | (0.13) | 0% | (0.00) | 12% | (0.13) |
| Hospital | semi rural | church | 3 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Hospital | semi rural | government | 14 | 64% | (0.25) | 0% | (0.00) | 35% | (0.25) |
| Hospital | urban | church | 7 | 85% | (0.14) | 14% | (0.14) | 0% | (0.00) |
| Hospital | urban | government | 6 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Hospital | urban | private/other | 8 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Disp | rural | | 12 | 58% | (0.27) | 8% | (0.08) | 33% | (0.24) |
| Disp | semi rural | | 12 | 75% | (0.20) | 0% | (0.00) | 25% | (0.20) |
| Disp | | church | 5 | 40% | (0.30) | 20% | (0.20) | 40% | (0.30) |
| Disp | | government | 12 | 83% | (0.15) | 0% | (0.00) | 16% | (0.15) |
| Disp | | private/other | 7 | 57% | (0.29) | 0% | (0.00) | 42% | (0.29) |
| HCenter | | government | 19 | 52% | (0.26) | 10% | (0.10) | 36% | (0.25) |
| Hospital | rural | | 8 | 87% | (0.13) | 0% | (0.00) | 12% | (0.13) |
| Hospital | semi rural | | 17 | 70% | (0.22) | 0% | (0.00) | 29% | (0.22) |
| Hospital | urban | | 21 | 95% | (0.05) | 4% | (0.05) | 0% | (0.00) |
| Hospital | | church | 10 | 90% | (0.10) | 10% | (0.10) | 0% | (0.00) |
| Hospital | | government | 28 | 78% | (0.17) | 0% | (0.00) | 21% | (0.17) |
| Hospital | | private/other | 8 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| | rural | church | 2 | 0% | (0.00) | 50% | (0.50) | 50% | (0.50) |
| | rural | government | 16 | 75% | (0.20) | 0% | (0.00) | 25% | (0.20) |
| | rural | private/other | 4 | 50% | (0.33) | 0% | (0.00) | 50% | (0.33) |
| | semi rural | church | 6 | 83% | (0.17) | 0% | (0.00) | 16% | (0.17) |
| | semi rural | government | 22 | 72% | (0.21) | 0% | (0.00) | 27% | (0.21) |
| | semi rural | private/other | 3 | 66% | (0.33) | 0% | (0.00) | 33% | (0.33) |
| | urban | church | 7 | 85% | (0.14) | 14% | (0.14) | 0% | (0.00) |
| | urban | government | 21 | 66% | (0.23) | 9% | (0.09) | 23% | (0.19) |
| | urban | private/other | 8 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Disp | | | 24 | 66% | (0.23) | 4% | (0.04) | 29% | (0.22) |
| HCenter | | | 19 | 52% | (0.26) | 10% | (0.10) | 36% | (0.25) |
| Hospital | | | 46 | 84% | (0.13) | 2% | (0.02) | 13% | (0.12) |
| | rural | | 22 | 63% | (0.24) | 4% | (0.05) | 31% | (0.23) |
| | semi rural | | 31 | 74% | (0.20) | 0% | (0.00) | 25% | (0.20) |
| | urban | | 36 | 77% | (0.18) | 8% | (0.08) | 13% | (0.12) |
| | | church | 15 | 73% | (0.21) | 13% | (0.12) | 13% | (0.12) |
| | | government | 59 | 71% | (0.21) | 3% | (0.03) | 25% | (0.19) |
| | | private/other | 15 | 80% | (0.17) | 0% | (0.00) | 20% | (0.17) |
| | | | 89 | 73% | (0.20) | 4% | (0.04) | 22% | (0.18) |

Standard errors in parentheses

Table 8: Scheduled personnel present and not present by district level and system: Clinicians and Nurses

| Level | District | Owner | scheduled | Present | | Freq Pres | | Not Pres | |
|---|---|---|---|---|---|---|---|---|---|
| Disp | rural | church | 4 | 50% | (0.33) | 25% | (0.25) | 25% | (0.25) |
| Disp | rural | government | 13 | 76% | (0.19) | 0% | (0.00) | 23% | (0.19) |
| Disp | rural | private/other | 4 | 50% | (0.33) | 0% | (0.00) | 50% | (0.33) |
| Disp | semi rural | church | 6 | 66% | (0.27) | 0% | (0.00) | 33% | (0.27) |
| Disp | semi rural | government | 11 | 81% | (0.16) | 0% | (0.00) | 18% | (0.16) |
| Disp | semi rural | private/other | 7 | 85% | (0.14) | 0% | (0.00) | 14% | (0.14) |
| HCenter | rural | government | 5 | 60% | (0.30) | 0% | (0.00) | 40% | (0.30) |
| HCenter | semi rural | government | 6 | 83% | (0.17) | 0% | (0.00) | 16% | (0.17) |
| HCenter | urban | government | 41 | 75% | (0.19) | 7% | (0.07) | 17% | (0.15) |
| Hospital | rural | government | 17 | 70% | (0.22) | 0% | (0.00) | 29% | (0.22) |
| Hospital | semi rural | church | 5 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Hospital | semi rural | government | 40 | 75% | (0.19) | 0% | (0.00) | 25% | (0.19) |
| Hospital | urban | church | 16 | 87% | (0.12) | 12% | (0.12) | 0% | (0.00) |
| Hospital | urban | government | 6 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Hospital | urban | private/other | 19 | 89% | (0.10) | 0% | (0.00) | 10% | (0.10) |
| Disp | rural | | 21 | 66% | (0.23) | 4% | (0.05) | 28% | (0.21) |
| Disp | semi rural | | 24 | 79% | (0.17) | 0% | (0.00) | 20% | (0.17) |
| Disp | | church | 10 | 60% | (0.27) | 10% | (0.10) | 30% | (0.23) |
| Disp | | government | 24 | 79% | (0.17) | 0% | (0.00) | 20% | (0.17) |
| Disp | | private/other | 11 | 72% | (0.22) | 0% | (0.00) | 27% | (0.22) |
| HCenter | | government | 52 | 75% | (0.19) | 5% | (0.06) | 19% | (0.16) |
| Hospital | rural | | 17 | 70% | (0.22) | 0% | (0.00) | 29% | (0.22) |
| Hospital | semi rural | | 45 | 77% | (0.18) | 0% | (0.00) | 22% | (0.18) |
| Hospital | urban | | 41 | 90% | (0.09) | 4% | (0.05) | 4% | (0.05) |
| Hospital | | church | 21 | 90% | (0.09) | 9% | (0.09) | 0% | (0.00) |
| Hospital | | government | 63 | 76% | (0.18) | 0% | (0.00) | 23% | (0.18) |
| Hospital | | private/other | 19 | 89% | (0.10) | 0% | (0.00) | 10% | (0.10) |
| | rural | church | 4 | 50% | (0.33) | 25% | (0.25) | 25% | (0.25) |
| | rural | government | 35 | 71% | (0.21) | 0% | (0.00) | 28% | (0.21) |
| | rural | private/other | 4 | 50% | (0.33) | 0% | (0.00) | 50% | (0.33) |
| | semi rural | church | 11 | 81% | (0.16) | 0% | (0.00) | 18% | (0.16) |
| | semi rural | government | 57 | 77% | (0.18) | 0% | (0.00) | 22% | (0.18) |
| | semi rural | private/other | 7 | 85% | (0.14) | 0% | (0.00) | 14% | (0.14) |
| | urban | church | 16 | 87% | (0.12) | 12% | (0.12) | 0% | (0.00) |
| | urban | government | 47 | 78% | (0.17) | 6% | (0.06) | 14% | (0.13) |
| | urban | private/other | 19 | 89% | (0.10) | 0% | (0.00) | 10% | (0.10) |
| Disp | | | 45 | 73% | (0.20) | 2% | (0.02) | 24% | (0.19) |
| HCenter | | | 52 | 75% | (0.19) | 5% | (0.06) | 19% | (0.16) |
| Hospital | | | 103 | 81% | (0.15) | 1% | (0.02) | 16% | (0.14) |
| | rural | | 43 | 67% | (0.22) | 2% | (0.02) | 30% | (0.22) |
| | semi rural | | 75 | 78% | (0.17) | 0% | (0.00) | 21% | (0.17) |
| | urban | | 82 | 82% | (0.14) | 6% | (0.06) | 10% | (0.10) |
| | | church | 31 | 80% | (0.16) | 9% | (0.09) | 9% | (0.09) |
| | | government | 139 | 76% | (0.18) | 2% | (0.02) | 21% | (0.17) |
| | | private/other | 30 | 83% | (0.14) | 0% | (0.00) | 16% | (0.14) |
| | | | 200 | 78% | (0.17) | 3% | (0.03) | 19% | (0.15) |

Standard errors in parentheses

Table 9: Scheduled personnel present and not present by zone level and system: Nurses

| Zone | Level | Owner | scheduled | Present | | Freq Pres | | Not Pres | |
|---|---|---|---|---|---|---|---|---|---|
| Urban/City | Disp | private/other | 3 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Urban/City | HCenter | government | 26 | 88% | (0.11) | 3% | (0.04) | 7% | (0.07) |
| Urban/City | Hospital | church | 11 | 90% | (0.09) | 9% | (0.09) | 0% | (0.00) |
| Urban/City | Hospital | private/other | 11 | 81% | (0.16) | 0% | (0.00) | 18% | (0.16) |
| Major Town | HCenter | government | 3 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Major Town | Hospital | government | 35 | 74% | (0.20) | 0% | (0.00) | 25% | (0.20) |
| Close to trunk | Disp | church | 4 | 75% | (0.25) | 0% | (0.00) | 25% | (0.25) |
| Close to trunk | Disp | government | 9 | 88% | (0.11) | 0% | (0.00) | 11% | (0.11) |
| Close to trunk | Disp | private/other | 1 | 100% | () | 0% | () | 0% | () |
| Close to trunk | HCenter | government | 4 | 75% | (0.25) | 0% | (0.00) | 25% | (0.25) |
| Far from trunk | Disp | church | 1 | 100% | () | 0% | () | 0% | () |
| Far from trunk | Disp | government | 1 | 0% | () | 0% | () | 100% | () |
| Very far from trunk | Disp | government | 2 | 50% | (0.50) | 0% | (0.00) | 50% | (0.50) |
| Urban/City | Disp | | 3 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Urban/City | Hospital | | 22 | 86% | (0.12) | 4% | (0.05) | 9% | (0.09) |
| Urban/City | | church | 11 | 90% | (0.09) | 9% | (0.09) | 0% | (0.00) |
| Urban/City | | government | 26 | 88% | (0.11) | 3% | (0.04) | 7% | (0.07) |
| Urban/City | | private/other | 14 | 85% | (0.13) | 0% | (0.00) | 14% | (0.13) |
| Major Town | Hospital | | 35 | 74% | (0.20) | 0% | (0.00) | 25% | (0.20) |
| Major Town | | government | 38 | 76% | (0.19) | 0% | (0.00) | 23% | (0.19) |
| Close to trunk | Disp | | 14 | 85% | (0.13) | 0% | (0.00) | 14% | (0.13) |
| Close to trunk | | church | 4 | 75% | (0.25) | 0% | (0.00) | 25% | (0.25) |
| Close to trunk | | government | 13 | 84% | (0.14) | 0% | (0.00) | 15% | (0.14) |
| Close to trunk | | private/other | 1 | 100% | () | 0% | () | 0% | () |
| Far from trunk | Disp | | 2 | 50% | (0.50) | 0% | (0.00) | 50% | (0.50) |
| Far from trunk | | church | 1 | 100% | () | 0% | () | 0% | () |
| Far from trunk | | government | 1 | 0% | () | 0% | () | 100% | () |
| Very far from trunk | Disp | | 2 | 50% | (0.50) | 0% | (0.00) | 50% | (0.50) |
| Very far from trunk | | government | 2 | 50% | (0.50) | 0% | (0.00) | 50% | (0.50) |
| Urban/City | | | 51 | 88% | (0.11) | 3% | (0.04) | 7% | (0.07) |
| Major Town | | | 38 | 76% | (0.19) | 0% | (0.00) | 23% | (0.19) |
| Close to trunk | | | 18 | 83% | (0.15) | 0% | (0.00) | 16% | (0.15) |
| Far from trunk | | | 2 | 50% | (0.50) | 0% | (0.00) | 50% | (0.50) |
| Very far from trunk | | | 2 | 50% | (0.50) | 0% | (0.00) | 50% | (0.50) |

Standard errors in parentheses

Table 8 shows the combined numbers for nurses and clinicians. With the combined categories health centers are not very different from dispensaries and both are worse than hospitals. Rural is worse than semi-rural and they are both worse than urban. And the government has the highest rate of absenteeism, with the private category doing the best.

Table 9 shows the same results as above, but by zone rather than district. Absenteism increases as we move outwards in zones, but not smoothly. In particular nurses are less likely to be present if the facility is in a major town than if the facility is close to a major road. This might indicate that personnel in towns are more likely to report to their post, but less likely to work according to the schedule. Those in more remote areas are more likely to come to work every day once they have decided to report to the post. In the very remote areas the decision not to report to the post becomes a strong impact.

The same basic pattern is observed for clinicians (Table 10) but where as being "far from a trunk road" and "very far from a trunk road" were similar for nurses, they are different for clinicians.

Notice as well a pattern we will test statistically. In the urban areas, the government has a much higher rate of absenteeism than other systems, whereas in the rural areas the rate is better than other systems.

Table 11 combines both nurses and clinicians. The same basic patterns appear in this graph. The more remote the greater the rate of absenteeism and the government is better in rural than it is urban areas.

Table 10: Scheduled personnel present and not present by zone level and system: Clinicians

| Zone | Level | Owner | scheduled | Present | | Freq Pres | | Not Pres | |
|---|---|---|---|---|---|---|---|---|---|
| Urban/City | Disp | private/other | 1 | 100% | () | 0% | () | 0% | () |
| Urban/City | HCenter | government | 15 | 53% | (0.27) | 13% | (0.12) | 33% | (0.24) |
| Urban/City | Hospital | church | 10 | 90% | (0.10) | 10% | (0.10) | 0% | (0.00) |
| Urban/City | Hospital | government | 6 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Urban/City | Hospital | private/other | 8 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Major Town | HCenter | government | 2 | 0% | (0.00) | 0% | (0.00) | 100% | (0.00) |
| Major Town | Hospital | government | 22 | 72% | (0.21) | 0% | (0.00) | 27% | (0.21) |
| Close to trunk | Disp | church | 3 | 66% | (0.33) | 0% | (0.00) | 33% | (0.33) |
| Close to trunk | Disp | government | 8 | 87% | (0.13) | 0% | (0.00) | 12% | (0.13) |
| Close to trunk | Disp | private/other | 5 | 40% | (0.30) | 0% | (0.00) | 60% | (0.30) |
| Close to trunk | HCenter | government | 2 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Far from trunk | Disp | church | 1 | 0% | () | 100% | () | 0% | () |
| Far from trunk | Disp | government | 2 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Far from trunk | Disp | private/other | 1 | 100% | () | 0% | () | 0% | () |
| Very far from trunk | Disp | church | 1 | 0% | () | 0% | () | 100% | () |
| Very far from trunk | Disp | government | 2 | 50% | (0.50) | 0% | (0.00) | 50% | (0.50) |
| Urban/City | Disp | | 1 | 100% | () | 0% | () | 0% | () |
| Urban/City | Hospital | | 24 | 95% | (0.04) | 4% | (0.04) | 0% | (0.00) |
| Urban/City | | church | 10 | 90% | (0.10) | 10% | (0.10) | 0% | (0.00) |
| Urban/City | | government | 21 | 66% | (0.23) | 9% | (0.09) | 23% | (0.19) |
| Urban/City | | private/other | 9 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Major Town | Hospital | | 22 | 72% | (0.21) | 0% | (0.00) | 27% | (0.21) |
| Major Town | | government | 24 | 66% | (0.23) | 0% | (0.00) | 33% | (0.23) |
| Close to trunk | Disp | | 16 | 68% | (0.23) | 0% | (0.00) | 31% | (0.23) |
| Close to trunk | | church | 3 | 66% | (0.33) | 0% | (0.00) | 33% | (0.33) |
| Close to trunk | | government | 10 | 90% | (0.10) | 0% | (0.00) | 10% | (0.10) |
| Close to trunk | | private/other | 5 | 40% | (0.30) | 0% | (0.00) | 60% | (0.30) |
| Far from trunk | Disp | | 4 | 75% | (0.25) | 25% | (0.25) | 0% | (0.00) |
| Far from trunk | | church | 1 | 0% | () | 100% | () | 0% | () |
| Far from trunk | | government | 2 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Far from trunk | | private/other | 1 | 100% | () | 0% | () | 0% | () |
| Very far from trunk | Disp | | 3 | 33% | (0.33) | 0% | (0.00) | 66% | (0.33) |
| Very far from trunk | | church | 1 | 0% | () | 0% | () | 100% | () |
| Very far from trunk | | government | 2 | 50% | (0.50) | 0% | (0.00) | 50% | (0.50) |
| Urban/City | | | 40 | 80% | (0.16) | 7% | (0.07) | 12% | (0.11) |
| Major Town | | | 24 | 66% | (0.23) | 0% | (0.00) | 33% | (0.23) |
| Close to trunk | | | 18 | 72% | (0.21) | 0% | (0.00) | 27% | (0.21) |
| Far from trunk | | | 4 | 75% | (0.25) | 25% | (0.25) | 0% | (0.00) |
| Very far from trunk | | | 3 | 33% | (0.33) | 0% | (0.00) | 66% | (0.33) |

Standard errors in parentheses

Table 11: Scheduled personnel present and not present by zone level and system: Clinicians and Nurses

| Zone | Level | Owner | scheduled | Present | | Freq Pres | | Not Pres | |
|---|---|---|---|---|---|---|---|---|---|
| Urban/City | Disp | private/other | 4 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Urban/City | HCenter | government | 41 | 75% | (0.19) | 7% | (0.07) | 17% | (0.15) |
| Urban/City | Hospital | church | 21 | 90% | (0.09) | 9% | (0.09) | 0% | (0.00) |
| Urban/City | Hospital | government | 6 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Urban/City | Hospital | private/other | 19 | 89% | (0.10) | 0% | (0.00) | 10% | (0.10) |
| Major Town | HCenter | government | 5 | 60% | (0.30) | 0% | (0.00) | 40% | (0.30) |
| Major Town | Hospital | government | 57 | 73% | (0.20) | 0% | (0.00) | 26% | (0.20) |
| Close to trunk | Disp | church | 7 | 71% | (0.24) | 0% | (0.00) | 28% | (0.24) |
| Close to trunk | Disp | government | 17 | 88% | (0.11) | 0% | (0.00) | 11% | (0.11) |
| Close to trunk | Disp | private/other | 6 | 50% | (0.30) | 0% | (0.00) | 50% | (0.30) |
| Close to trunk | HCenter | government | 6 | 83% | (0.17) | 0% | (0.00) | 16% | (0.17) |
| Far from trunk | Disp | church | 2 | 50% | (0.50) | 50% | (0.50) | 0% | (0.00) |
| Far from trunk | Disp | government | 3 | 66% | (0.33) | 0% | (0.00) | 33% | (0.33) |
| Far from trunk | Disp | private/other | 1 | 100% | () | 0% | () | 0% | () |
| Very far from trunk | Disp | church | 1 | 0% | () | 0% | () | 100% | () |
| Very far from trunk | Disp | government | 4 | 50% | (0.33) | 0% | (0.00) | 50% | (0.33) |
| Urban/City | Disp | | 4 | 100% | (0.00) | 0% | (0.00) | 0% | (0.00) |
| Urban/City | Hospital | | 46 | 91% | (0.08) | 4% | (0.04) | 4% | (0.04) |
| Urban/City | | church | 21 | 90% | (0.09) | 9% | (0.09) | 0% | (0.00) |
| Urban/City | | government | 47 | 78% | (0.17) | 6% | (0.06) | 14% | (0.13) |
| Urban/City | | private/other | 23 | 91% | (0.08) | 0% | (0.00) | 8% | (0.08) |
| Major Town | Hospital | | 57 | 73% | (0.20) | 0% | (0.00) | 26% | (0.20) |
| Major Town | | government | 62 | 72% | (0.20) | 0% | (0.00) | 27% | (0.20) |
| Close to trunk | Disp | | 30 | 76% | (0.19) | 0% | (0.00) | 23% | (0.19) |
| Close to trunk | | church | 7 | 71% | (0.24) | 0% | (0.00) | 28% | (0.24) |
| Close to trunk | | government | 23 | 86% | (0.12) | 0% | (0.00) | 13% | (0.12) |
| Close to trunk | | private/other | 6 | 50% | (0.30) | 0% | (0.00) | 50% | (0.30) |
| Far from trunk | Disp | | 6 | 66% | (0.27) | 16% | (0.17) | 16% | (0.17) |
| Far from trunk | | church | 2 | 50% | (0.50) | 50% | (0.50) | 0% | (0.00) |
| Far from trunk | | government | 3 | 66% | (0.33) | 0% | (0.00) | 33% | (0.33) |
| Far from trunk | | private/other | 1 | 100% | () | 0% | () | 0% | () |
| Very far from trunk | Disp | | 5 | 40% | (0.30) | 0% | (0.00) | 60% | (0.30) |
| Very far from trunk | | church | 1 | 0% | () | 0% | () | 100% | () |
| Very far from trunk | | government | 4 | 50% | (0.33) | 0% | (0.00) | 50% | (0.33) |
| Urban/City | | | 91 | 84% | (0.13) | 5% | (0.05) | 9% | (0.09) |
| Major Town | | | 62 | 72% | (0.20) | 0% | (0.00) | 27% | (0.20) |
| Close to trunk | | | 36 | 77% | (0.18) | 0% | (0.00) | 22% | (0.18) |
| Far from trunk | | | 6 | 66% | (0.27) | 16% | (0.17) | 16% | (0.17) |
| Very far from trunk | | | 5 | 40% | (0.30) | 0% | (0.00) | 60% | (0.30) |

Standard errors in parentheses

Table 12: Regression analysis of present and not present personnel

| | % Present | | | % Present | | | % Not Present | | | % Not Present | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coef. | Std. Err | | Coef. | Std. Err | | Coef. | Std. Err | | Coef. | Std. Err | |
| major town | -0.12 | 0.08 | | -0.42 | 0.16 | * | 0.17 | 0.08 | * | 0.43 | 0.16 | * |
| close to trunk | -0.09 | 0.16 | | -0.33 | 0.19 | * | 0.14 | 0.15 | | 0.35 | 0.19 | * |
| far from trunk | -0.19 | 0.24 | | -0.41 | 0.25 | | 0.09 | 0.24 | | 0.28 | 0.25 | |
| very far from trunk | -0.46 | 0.26 | * | -0.75 | 0.28 | * | 0.52 | 0.26 | * | 0.78 | 0.28 | * |
| dispensary | 0.03 | 0.16 | | 0.07 | 0.15 | | -0.02 | 0.15 | | -0.06 | 0.15 | |
| government | -0.01 | 0.10 | | 0.25 | 0.15 | | -0.09 | 0.11 | | -0.26 | 0.15 | * |
| church | 0.00 | 0.12 | | 0.02 | 0.11 | | -0.09 | 0.11 | | -0.11 | 0.11 | |
| clinician | -0.09 | 0.06 | | -0.07 | 0.06 | | 0.06 | 0.06 | | 0.05 | 0.06 | |
| gov * urban | | | | -0.35 | 0.16 | * | | | | 0.30 | 0.16 | * |
| constant | 0.89 | 0.09 | * | 0.93 | 0.09 | * | 0.11 | 0.09 | * | 0.08 | 0.09 | |
| Adj R-square | 2% | | | 9% | | | 7% | | | 12% | | |

* significant at the 90% level for a two sided test.

Table 12 shows a regression in which we control for the impact of the different variables simultaneously. We show regressions on the percentage of personnel who are present as well as a regression on the percentage of personnel who are not present. The results are very similar, with one important difference. In addition we include the interaction term of government and urban to test whether or not there is a difference in the absenteeism of government personnel in the urban compared to the rural areas. The idea behind this variable is the following: the government is restricted in its ability to hire and fire personnel and therefore can only present low powered incentives to its personnel. On the other hand church services can afford to be much stricter with personnel. However high powered incentives are more useful with frequent monitoring. In the rural areas there is less monitoring but both the government and the church services. Thus, if there is going to be a strong difference between government and church services it should show up in the urban areas. There should be difference in the rural areas, but it would not be as strong.

Distance is clearly an important indicator in all four regressions. Being very far from a main road decreases the probability of presence and increases the probability of absence in all four regressions. In addition being in a major town has a smaller but significant impact. This could lend weight to the argument that issues with absenteeism are not simply due to difficulty in reaching the post, but also do to the availability of nearby distractions.

The interaction term for the government and the urban area is significant and has sign such that absenteeism is a greater issue for the government in the urban area. In the last regression the government is seen to be less likely overall to experience absenteeism, but more likely to experience it in the urban areas.

# 3 Physical Infrastructure and Equipment Availability

Infrastructure was evaluated using the survey form shown in Figure 8. These scores are shown according to district for government facilities (Table 13), level (Table 14) and owner (Table 15).

Table 13: Facility Infrastructure by District

| | Arumeru | Arusha | Monduli |
|---|---|---|---|
| | Waiting Rooms | | |
| ROOM OBS | 13 | 10 | 20 |
| WAIT ROOM | 1 | 1 | 1 |
| SIT | 1 | 1 | .86 |
| GOOD COND | 1 | 1 | .93 |
| VENTILATED | .75 | .88 | 1 |
| FACILITY OBS | 8 | 4 | 14 |
| | Physical Infrastructure | | |
| NURSE ROOM | .13 | 1 | .29 |
| GENERAL COND | .13 | 1 | .29 |
| VENT/LIT | .13 | 1 | .29 |
| INJ ROOM | .63 | 1 | .71 |
| REST ROOM | .75 | .75 | .79 |
| LATRINE | .88 | 1 | 1 |
| LAT COND | .5 | .75 | .86 |
| WATER | .5 | .75 | .5 |
| | Equipment Availability | | |
| SCALE | .88 | .75 | .79 |
| HEIGHT | .63 | .75 | .79 |
| ORS MAT | .5 | .75 | .46 |
| SYR & NDLE | 1 | .75 | 1 |
| STERILIZE | 1 | 1 | 1 |
| ANTISEPTIC | 1 | 1 | 1 |
| BANDAGES | 1 | 1 | 1 |
| PLASTER | 1 | 1 | 1 |
| SCISSORS | .75 | 1 | .86 |
| FORCEPS | .63 | 1 | .79 |
| SUTURES | .88 | 1 | 1 |
| NEEDLE HLD | .5 | 1 | .71 |
| ENVELOPES | 1 | .75 | 1 |
| MICROSCOPE | .25 | .75 | .43 |
| | Totals | | |
| PHYSICAL INF | 3.63 | 7.25 | 4.71 |
| EQUIPMENT | 11 | 12.5 | 12 |
| TOTAL INF | 14.63 | 19.75 | 16.5 |
| | Building | | |
| PAINT: POOR | .38 | 0 | .14 |
| PAINT: ACCPT | .63 | .5 | .79 |
| PAINT: EXCEL | 0 | .5 | .07 |
| ROOF: POOR | .25 | .25 | .14 |
| ROOF: ACCPT | .75 | 0 | .79 |
| ROOF: EXCEL | 0 | .75 | .07 |
| GRDS: POOR | .25 | 0 | .14 |
| GRDS: ACCPT | .75 | 1 | .86 |
| GRDS: EXCEL | 0 | 0 | 0 |

Reported is number of facilities observed and fraction of all facilities that scored 1 for present, or acceptable.

Table 14: Facility Infrastructure by Level

| | Dispensary | Health Center | Hospital |
|---|---|---|---|
| | Waiting Rooms | | |
| ROOM OBS | 43 | 9 | 11 |
| WAIT ROOM | .97 | 1 | 1 |
| SIT | .84 | 1 | 1 |
| GOOD COND | .97 | 1 | 1 |
| VENTILATED | .94 | .9 | 1 |
| | Physical Infrastructure | | |
| FACILITY OBS | 31 | 5 | 8 |
| NURSE ROOM | .1 | .8 | 1 |
| GENERAL COND | .1 | .8 | 1 |
| VENT/LIT | .1 | .8 | 1 |
| INJ ROOM | .65 | 1 | 1 |
| REST ROOM | .71 | 1 | 1 |
| LATRINE | .94 | 1 | 1 |
| LAT COND | .71 | 1 | 1 |
| WATER | .53 | .6 | .88 |
| | Equipment Availability | | |
| SCALE | .83 | .8 | 1 |
| HEIGHT | .7 | .8 | 1 |
| ORS MAT | .4 | 1 | .63 |
| SYR & NDLE | 1 | .8 | 1 |
| STERILIZE | .97 | 1 | 1 |
| ANTISEPTIC | .97 | 1 | 1 |
| BANDAGES | 1 | 1 | 1 |
| PLASTER | .97 | 1 | 1 |
| SCISSORS | .9 | .6 | 1 |
| FORCEPS | .74 | 1 | 1 |
| SUTURES | .94 | 1 | 1 |
| NEEDLE HLD | .71 | .8 | 1 |
| ENVELOPES | .9 | 1 | .88 |
| MICROSCOPE | .35 | 1 | 1 |
| | Totals | | |
| PHYSICAL INF | 3.8 | 7 | 7.88 |
| EQUIPMENT | 11.41 | 12.75 | 13.5 |
| TOTAL INF | 15.14 | 19.5 | 21.38 |
| | Building | | |
| PAINT: POOR | .13 | 0 | .13 |
| PAINT: ACCPT | .84 | .8 | .63 |
| PAINT: EXCEL | .03 | .2 | .25 |
| ROOF: POOR | .1 | .2 | .25 |
| ROOF: ACCPT | .84 | .6 | .5 |
| ROOF: EXCEL | .06 | .2 | .25 |
| GRDS: POOR | .06 | 0 | .25 |
| GRDS: ACCPT | .94 | 1 | .63 |
| GRDS: EXCEL | 0 | 0 | .13 |

Reported is number of facilities observed and fraction of all facilities that scored 1 for present, or acceptable.

Table 15: Facility Infrastructure by Owner

| | COGI | Govt | Islamic | Luth | RC | SDA |
|---|---|---|---|---|---|---|
| | | | Waiting Rooms | | | |
| ROOM OBS | 3 | 43 | 0 | 9 | 3 | 4 |
| WAIT ROOM | 1 | 1 | | 1 | 1 | 1 |
| SIT | 1 | .92 | | .83 | .67 | 1 |
| GOOD COND | 1 | .96 | | 1 | 1 | 1 |
| VENTILATED | 1 | .9 | | 1 | 1 | 1 |
| | | | Physical Infrastructure | | | |
| FACILITY OBS | 3 | 26 | 1 | 6 | 3 | 3 |
| NURSE ROOM | 0 | .35 | 1 | .17 | .33 | .67 |
| GENERAL COND | 0 | .35 | 1 | .17 | .33 | .67 |
| VENT/LIT | 0 | .35 | 1 | .17 | .33 | .67 |
| INJ ROOM | .67 | .73 | 1 | .67 | 1 | 1 |
| REST ROOM | .67 | .77 | 1 | 1 | 1 | .67 |
| LATRINE | 1 | .96 | 1 | .83 | 1 | 1 |
| LAT COND | 1 | .73 | 1 | .83 | .67 | 1 |
| WATER | 0 | .54 | 1 | 1 | 1 | .67 |
| | | | Equipment Availability | | | |
| SCALE | 1 | .81 | 1 | 1 | 1 | 1 |
| HEIGHT | 0 | .73 | 1 | 1 | 1 | 1 |
| ORS MAT | .5 | .52 | 1 | .5 | .67 | .33 |
| SYR & NDLE | 1 | .96 | 1 | 1 | 1 | 1 |
| STERILIZE | 1 | 1 | 1 | 1 | 1 | 1 |
| ANTISEPTIC | 1 | 1 | 1 | 1 | 1 | 1 |
| BANDAGES | 1 | 1 | 1 | 1 | 1 | 1 |
| PLASTER | 1 | 1 | 1 | 1 | 1 | 1 |
| SCISSORS | 1 | .85 | 1 | 1 | 1 | 1 |
| FORCEPS | .67 | .77 | 1 | 1 | 1 | 1 |
| SUTURES | 1 | .96 | 1 | 1 | 1 | 1 |
| NEEDLE HLD | .67 | .69 | 1 | 1 | 1 | 1 |
| ENVELOPES | 1 | .96 | 1 | .83 | 1 | .67 |
| MICROSCOPE | .67 | .42 | 1 | .67 | .67 | 1 |
| | | | Totals | | | |
| PHYSICAL INF | 3.33 | 4.77 | 8 | 4.8 | 5.67 | 6.33 |
| EQUIPMENT | 11 | 11.75 | 14 | 13 | 13.33 | 13 |
| TOTAL INF | 14.5 | 16.42 | 22 | 17.6 | 19 | 19.33 |
| | | | Building | | | |
| PAINT: POOR | 0 | .19 | 0 | 0 | 0 | 0 |
| PAINT: ACCPT | 1 | .69 | 1 | 1 | 1 | 1 |
| PAINT: EXCEL | 0 | .12 | 0 | 0 | 0 | 0 |
| ROOF: POOR | .33 | .19 | 0 | 0 | 0 | 0 |
| ROOF: ACCPT | .67 | .65 | 1 | 1 | 1 | 1 |
| ROOF: EXCEL | 0 | .15 | 0 | 0 | 0 | 0 |
| GRDS: POOR | 0 | .15 | 0 | 0 | 0 | 0 |
| GRDS: ACCPT | 1 | .85 | 1 | 1 | 1 | 1 |
| GRDS: EXCEL | 0 | 0 | 0 | 0 | 0 | 0 |

Reported is number of facilities observed and fraction of all facilities that scored 1 for present, or acceptable.

# 4 Pharmaceutical Availability

Each facility was evaluated for the presence of pharmaceutical supplies that would be expected at a dispensary (shown in Figure 9). Shown here is the breakdown according to district for government facilities (Table 16), owner (Table 18) and level (Table 17). The number shown is the fraction of facilities for which that drug is present as well as a total score showing the percentage of all drugs that is present for each type of facility. DELIV DAYS is the number of days since the last delivery of drugs. Table 19 shows the presence of drugs for the 4 quartiles of facilities by days since the last delivery, where the first quartile represents less time passed between our evaluation and the last delivery and the fourth quartile represents facilities that have seen the most time pass since the last delivery.

Table 16: Pharmaceutical Availability Evaluation by District

| | Arumeru | Arusha | Monduli |
|---|---|---|---|
| MED OBS | 8 | 4 | 14 |
| LITPRES | 1 | 1 | .86 |
| SP | 1 | 1 | .93 |
| AMODIAQUIN | .88 | .75 | .93 |
| QUIN INJ | .25 | .75 | .29 |
| QUIN TAB | .25 | 1 | .5 |
| ASA TAB | 1 | 1 | .93 |
| PCM | 1 | 1 | .93 |
| ORS | 1 | 1 | 1 |
| COTRI TAB | 1 | 1 | .93 |
| COTRI SYR | 1 | 1 | 1 |
| PEN G | 1 | 1 | .93 |
| PEN V | 1 | 1 | .93 |
| AMP TAB | 0 | 0 | .21 |
| AMP SYR | 0 | 0 | .21 |
| TETRA | .38 | .25 | .5 |
| METRONIDAZ | 1 | 1 | 1 |
| MEBENDAZOL | 1 | 1 | 1 |
| TETRA EYE | 1 | 1 | .86 |
| BBE | 1 | 1 | .93 |
| MULTI VIT | .13 | .25 | .07 |
| DRUG SUPPLY | .73 | .79 | .74 |
| DELIV DAYS | 21.5 | 16.3 | 16.3 |

Reported is number of facilities observed and fraction of all facilities that scored 1 for having the drug present.

Table 17: Pharmaceutical Availability Evaluation by Level

| | Dispensary | Health Center | Hospital |
|---|---|---|---|
| MED OBS | 31 | 5 | 8 |
| LITPRES | .84 | 1 | 1 |
| SP | 1 | 1 | .88 |
| AMODIAQUIN | .84 | 1 | .5 |
| QUIN INJ | .42 | .4 | 1 |
| QUIN TAB | .55 | .8 | 1 |
| ASA TAB | .97 | 1 | 1 |
| PCM | .97 | 1 | 1 |
| ORS | .94 | 1 | 1 |
| COTRI TAB | .97 | 1 | 1 |
| COTRI SYR | 1 | 1 | 1 |
| PEN G | .97 | 1 | 1 |
| PEN V | .84 | 1 | 1 |
| AMP TAB | .32 | .2 | .5 |
| AMP SYR | .39 | .2 | .5 |
| TETRA | .45 | .4 | 1 |
| METRONIDAZ | .97 | 1 | 1 |
| MEBENDAZOL | 1 | 1 | 1 |
| TETRA EYE | .9 | 1 | .88 |
| BBE | .97 | 1 | 1 |
| MULTI VIT | .42 | 0 | .5 |
| DRUG SUPPLY | .78 | .79 | .88 |
| DELIV DAYS | 18.5 | 18.6 | 16.5 |

Reported is number of facilities observed and fraction of all facilities that scored 1 for having the drug present.

Table 18: Pharmaceutical Availability Evaluation by Owner

| | COGI | Govt | Islamic | Luth | RC | SDA |
|---|---|---|---|---|---|---|
| MED OBS | 3 | 26 | 1 | 6 | 3 | 3 |
| LITPRES | .67 | .92 | 1 | 1 | .67 | 1 |
| SP | 1 | .96 | 1 | 1 | 1 | 1 |
| AMODIAQUIN | .67 | .88 | 1 | .83 | 0 | 1 |
| QUIN INJ | 1 | .35 | 1 | 1 | .67 | .33 |
| QUIN TAB | 1 | .5 | 1 | 1 | 1 | .67 |
| ASA TAB | 1 | .96 | 1 | 1 | 1 | 1 |
| PCM | 1 | .96 | 1 | 1 | 1 | 1 |
| ORS | 1 | 1 | 1 | .83 | 1 | 1 |
| COTRI TAB | 1 | .96 | 1 | 1 | 1 | 1 |
| COTRI SYR | 1 | 1 | 1 | 1 | 1 | 1 |
| PEN G | 1 | .96 | 1 | 1 | 1 | 1 |
| PEN V | 1 | .96 | 1 | .67 | .67 | 1 |
| AMP TAB | 1 | .12 | 0 | .67 | .33 | 1 |
| AMP SYR | 1 | .12 | 0 | .83 | .67 | 1 |
| TETRA | 1 | .42 | 1 | .67 | .33 | .67 |
| METRONIDAZ | .67 | 1 | 1 | 1 | 1 | 1 |
| MEBENDAZOL | 1 | 1 | 1 | 1 | 1 | 1 |
| TETRA EYE | 1 | .92 | 1 | .83 | 1 | 1 |
| BBE | 1 | .96 | 1 | 1 | 1 | 1 |
| MULTI VIT | 1 | .12 | 1 | .67 | .67 | 1 |
| DRUG SUPPLY | .96 | .74 | .89 | .89 | .81 | .93 |
| DELIV DAYS | 3 | 17.9 | 8 | 24 | 30.7 | 22 |

Reported is number of facilities observed and fraction of all facilities that scored 1 for having the drug present.

Table 19: Pharmaceutical Availability by Quartile of Last Delivery of Drugs

| | Days since Last Delivery | | | |
|---|---|---|---|---|
| Quartile | first | second | third | fourth |
| MED OBS | 11 | 12 | 10 | 11 |
| LITPRES | .82 | .83 | 1 | .91 |
| SP | .91 | 1 | 1 | 1 |
| AMODIAQUIN | .64 | .92 | 1 | .64 |
| QUIN INJ | .73 | .42 | .3 | .64 |
| QUIN TAB | .91 | .5 | .4 | .82 |
| ASA TAB | 1 | 1 | .9 | 1 |
| PCM | 1 | 1 | .9 | 1 |
| ORS | 1 | .92 | .9 | 1 |
| COTRI TAB | 1 | 1 | .9 | 1 |
| COTRI SYR | 1 | 1 | 1 | 1 |
| PEN G | .91 | 1 | 1 | 1 |
| PEN V | 1 | .92 | .8 | .82 |
| AMP TAB | .55 | .25 | .2 | .36 |
| AMP SYR | .55 | .25 | .3 | .45 |
| TETRA | .82 | .5 | .4 | .45 |
| METRONIDAZ | .91 | 1 | 1 | 1 |
| MEBENDAZOL | 1 | 1 | 1 | 1 |
| TETRA EYE | .91 | .92 | 1 | .82 |
| BBE | 1 | 1 | 1 | .91 |
| MULTI VIT | .64 | .25 | .2 | .45 |
| DRUG SUPPLY | .87 | .78 | .75 | .81 |

Reported is number of facilities observed and fraction of all facilities that scored 1 for having the drug present.

# 5 Examination Room Evaluation and Clinician Qualifications

As well as the general equipment available in each facility we evaluated the presence of necessary equipment in the consultation room. As shown in Figure 2, this is a list of equipment that would be necessary to evaluate or diagnose the range of illnesses that should be expected at a dispensary.

In addition, we show here some basic statistics about the qualifications of the clinician evaluated.

The qualifications and consultation room equipment are shown broken down by district (Table 20), owner (Table 22) and level (Table 21).

Table 20: Clinician Qualification and Examining Room Characteristics by District

| | Arumeru | Arusha | Monduli |
|---|---|---|---|
| | Clinician characterisitcs | | |
| CLINICN OBS | 9 | 11 | 18 |
| DOCTOR | 0 | .27 | .06 |
| OFFICER | .33 | .45 | .33 |
| ASSISTANT | .44 | .18 | .44 |
| NURSE | .22 | 0 | .17 |
| EXPERIENCE | 13.56 | 17.8 | 15.33 |
| TENURE | 4.02 | 10.83 | 9.69 |
| | Examining room | | |
| TABLE | 1 | 1 | 1 |
| BED | .67 | .8 | .88 |
| WASH BASIN | .22 | .8 | .44 |
| STETHO | 1 | .9 | 1 |
| THERMO | .89 | 1 | 1 |
| BP MACHINE | .33 | .8 | .94 |
| OTOSCOPE | .11 | .2 | 0 |
| SPATULA | .33 | .5 | .25 |
| TORCH | 0 | 0 | .06 |
| GLOVES | .78 | .6 | .88 |
| CARDS | .89 | .8 | .88 |
| WELL LIT | .67 | .9 | 1 |

Reported is number of clinicians or consulting rooms seen and the fraction of the clinicians with a given characteristic or of consulting rooms with a given feature present.

Table 21: Clinician Qualification and Examining Room Characteristics by Level

| | Dispensary | Health Center | Hospital |
|---|---|---|---|
| | Clinician characterisitcs | | |
| CLINICN OBS | 38 | 8 | 23 |
| DOCTOR | .08 | .25 | .26 |
| OFFICER | .34 | .5 | .61 |
| ASSISTANT | .34 | .25 | .04 |
| NURSE | .21 | 0 | 0 |
| EXPERIENCE | 14.43 | 15.5 | 15.43 |
| TENURE | 6.59 | 2.67 | 9.81 |
| | Examining room | | |
| TABLE | .97 | 1 | 1 |
| BED | .81 | .86 | 1 |
| WASH BASIN | .49 | 1 | .84 |
| STETHO | 1 | .86 | .95 |
| THERMO | 1 | 1 | .89 |
| BP MACHINE | .84 | .86 | .84 |
| OTOSCOPE | .16 | .14 | .53 |
| SPATULA | .38 | .29 | .63 |
| TORCH | .32 | 0 | .47 |
| GLOVES | .95 | .71 | .68 |
| CARDS | .92 | .71 | .79 |
| WELL LIT | .89 | .86 | 1 |

Reported is number of clinicians or consulting rooms seen and the fraction of the clinicians with a given characteristic or of consulting rooms with a given feature present.

Table 22: Clinician Qualification and Examining Room Characteristics by Owner

| | COGI | Govt | Islamic | Luth | RC | SDA |
|---|---|---|---|---|---|---|
| | Clinician characterisitcs | | | | | |
| CLINICN OBS | 3 | 38 | 3 | 12 | 5 | 4 |
| DOCTOR | .67 | .11 | .67 | 0 | 0 | 0 |
| OFFICER | .33 | .37 | .33 | .75 | .4 | .75 |
| ASSISTANT | 0 | .37 | 0 | .08 | .2 | 0 |
| NURSE | 0 | .13 | 0 | .17 | .2 | 0 |
| EXPERIENCE | 21 | 15.57 | 19.33 | 9.75 | 14 | 10.67 |
| TENURE | 5.21 | 8.62 | 12.44 | 2.74 | 3.46 | 2.31 |
| | Examining room | | | | | |
| TABLE | 1 | 1 | 1 | 1 | 1 | 1 |
| BED | 1 | .8 | 1 | 1 | 1 | 1 |
| WASH BASIN | 1 | .49 | 1 | .73 | 1 | 1 |
| STETHO | 1 | .97 | 1 | 1 | 1 | 1 |
| THERMO | 1 | .97 | .67 | 1 | 1 | 1 |
| BP MACHINE | 1 | .74 | 1 | 1 | 1 | 1 |
| OTOSCOPE | 0 | .09 | 1 | .55 | .5 | .33 |
| SPATULA | .33 | .34 | 1 | .55 | .25 | 1 |
| TORCH | 1 | .03 | 1 | .64 | .5 | .67 |
| GLOVES | 1 | .77 | 1 | 1 | .75 | 1 |
| CARDS | 1 | .86 | 1 | .91 | .5 | 1 |
| WELL LIT | 1 | .89 | 1 | 1 | 1 | 1 |

Reported is number of clinicians or consulting rooms seen and the fraction of the clinicians with a given characteristic or of consulting rooms with a given feature present.

# 6 Nursing Quality (Dispensing, Injections and Dressing)

Nursing quality was evaluated for quality in the dispensing of drugs (see Figure 6), giving injections and dressing wounds (see Figure 7). There were different numbers of observations for these three procedures. We saw many drug dispensing procedures and considerably fewer wound dressings. The results are shown by district (Table 23), owner (Table 25) and level (Table 24).

Table 23: Nursing Quality (Dispensing, Injections and Dressing) by District

| | Arumeru | Arusha | Monduli |
|---|---|---|---|
| DRUG OBS | 139 | 109 | 182 |
| DISPENSE | 1 | .99 | .98 |
| LABEL | .68 | .95 | .84 |
| EXPLAIN | .93 | .88 | .96 |
| SIDE EFF | .02 | .35 | .05 |
| COMPLET | .02 | .28 | .1 |
| UNDERSTOOD | .78 | .73 | .79 |
| POLITE | .95 | .85 | .98 |
| WASH HAND | .36 | .92 | .38 |
| INJCTN OBS | 64 | 25 | 55 |
| LOAD PRES | 1 | 1 | .96 |
| LOAD CORR | .94 | 1 | .89 |
| GIVE INJ | .88 | 1 | .85 |
| STERILE | .97 | 1 | 1 |
| DISASSEM | .55 | .12 | .16 |
| WOUND OBS | 9 | 6 | 10 |
| TECHNIQUE | 0 | .5 | .5 |
| CLEAN | .22 | .83 | .5 |
| DRESS | .44 | 1 | .9 |

Reported is number of observations of drug dispensing, injections and wound dressing as well as the fraction of each observation that correctly followed the given procedure.

Table 24: Nursing Quality (Dispensing, Injections and Dressing) by Facility Level

| | Dispensary | Health Center | Hospital |
|---|---|---|---|
| DRUG OBS | 259 | 144 | 125 |
| DISPENSE | .98 | 1 | .98 |
| LABEL | .67 | .94 | .95 |
| EXPLAIN | .96 | .9 | .92 |
| SIDE EFF | .05 | .22 | .09 |
| COMPLET | .09 | .2 | .09 |
| UNDERSTOOD | .76 | .83 | .79 |
| POLITE | .98 | .9 | .95 |
| WASH HAND | .4 | .56 | .64 |
| INJCTN OBS | 127 | 35 | 20 |
| LOAD PRES | .98 | 1 | 1 |
| LOAD CORR | .95 | .89 | .9 |
| GIVE INJ | .87 | .97 | 1 |
| STERILE | .98 | 1 | .95 |
| DISASSEM | .39 | .09 | .3 |
| WOUND OBS | 21 | 7 | 17 |
| TECHNIQUE | .24 | .43 | .59 |
| CLEAN | .33 | .71 | .82 |
| DRESS | .57 | 1 | .82 |

Reported is number of observations of drug dispensing, injections and wound dressing as well as the fraction of each observation that correctly followed the given procedure.

Table 25: Nursing Quality (Dispensing, Injections and Dressing) by Facility Owner

| | COGI | Govt | Islamic | Luth | RC | SDA |
|---|---|---|---|---|---|---|
| DRUG OBS | 24 | 430 | 11 | 34 | 15 | 5 |
| DISPENSE | 1 | .99 | .82 | 1 | 1 | 1 |
| LABEL | .33 | .82 | 1 | .91 | .87 | 1 |
| EXPLAIN | 1 | .93 | .82 | .97 | .8 | 1 |
| SIDE EFF | .05 | .11 | .2 | .09 | .15 | 0 |
| COMPLET | .08 | .12 | 0 | .03 | .36 | .5 |
| UNDERSTOOD | .88 | .77 | .64 | 1 | .8 | 1 |
| POLITE | 1 | .94 | 1 | 1 | 1 | 1 |
| WASH HAND | 1 | .48 | 0 | .61 | .53 | .4 |
| INJCTN OBS | 9 | 144 | 4 | 12 | 4 | 2 |
| LOAD PRES | 1 | .99 | 1 | 1 | 1 | .5 |
| LOAD CORR | 1 | .93 | .75 | 1 | .75 | 1 |
| GIVE INJ | 1 | .89 | 1 | 1 | 1 | 1 |
| STERILE | 1 | .99 | 1 | 1 | 1 | 1 |
| DISASSEM | .75 | .33 | 0 | 0 | .25 | 0 |
| WOUND OBS | 2 | 25 | 4 | 8 | 3 | 1 |
| TECHNIQUE | 1 | .32 | .25 | .63 | 0 | 0 |
| CLEAN | 1 | .48 | .25 | .75 | 1 | 0 |
| DRESS | 1 | .76 | .25 | .75 | 1 | 0 |

Reported is number of observations of drug dispensing, injections and wound dressing as well as the fraction of each observation that correctly followed the given procedure.

# 7 Consultation Quality

Clinicians from our team sat in on the consultations that were done by the clinicians being observed. In each consultation they observed what was done by the clinician and compared that to a checklist (see Figure 3, 4, and 5). For many of the items it is straightforward to judge whether or not the clinician performed the activity and therefore to evaluate the quality with which he performs services. However, each patient is different and there are times when a clinician should examine the patient for certain things and times when he does not need to. To get around this problem we developed 4 conditions that we expected to observe very closely (fever, cough, diarrhea, and symptoms indicative of STDs). For these conditions is was more clear what the clinician should do, and what he was not expected to do. For any of these 4 conditions, then, we filled a more detailed check list.

The results are divided into three sets of tables. In the first set of tables (examined by district for government facilities (Table 26), owner (Table 26), level (Table 29), cadre (Table 35), quartiles of experience (Table 38)) and both cadre and quartile of experience (Table 41)) we show the score (where 1 indicates they did the activity listed, 0 that they did not, and any score between 0 and 1 is the fraction of observations observed for which we observed the clinician as performing that activity), on welcoming, general history taking and closing as well as the scores for illnesses with fever as a major symptom. In the second set of tables (examined by district for government facilities (Table 27), owner (Table 27), level (Table 30), cadre (Table 36), quartiles of experience (Table 39) and both cadre and quartile of experience (Table 42)) we show the results for cough, diarrhea, symptoms indicative of STDs and general conditions. In the third set of tables (examined by district for government facilities (Table 28), owner (Table 28), level (Table 31), cadre (Table 37), quartiles of experience (Table 40) and both cadre and quartile of experience (Table 43)) we show overall scores in the categories of opening the consultation, explaining the diagnosis and closing the consultation, history taking, physical examination and a combination of history taking and physical examination. The quartiles of experience go from the least experience to the most.

To achieve each overall score we calculated the score as a percent of the total possible score[1]. To compare fever, cough and diarrhea (we drop STD and general in the total score) we normalize each final score so that the scores across each illness type have a mean of 0 and a standard deviation of 1. The we take the total across all three presenting symptoms. This method allows us to compare the quality of a fever consultation with that of a diarrhea consultation.

[1]Taking into account conditions for which a particular question or procedure is not applicable (asking about vaccination history for a 25 year old with a cough, for example).

Table 26: Consultation Quality by District: Details (part I)

| | Arumeru | Arusha | Monduli |
|---|---|---|---|
| | Receiving Patients | | |
| BEGIN CONS | 176 | 180 | 220 |
| WELCOME | .33 | .83 | .56 |
| GREET | .28 | .68 | .51 |
| LOOK AT | .86 | .88 | .83 |
| CHAIR | .97 | .88 | .95 |
| | Basic History Taking | | |
| CONS | 136 | 170 | 194 |
| SYMP DURATION | .79 | .94 | .82 |
| PROBE DEEPER | .65 | .54 | .76 |
| OTHER SYMPTOMS | .54 | .53 | .61 |
| O SYMPT DURATION | .09 | .53 | .25 |
| OTHR TREATMENT | .24 | .47 | .39 |
| | Ending the Consultation | | |
| CLOSE CONS | 131 | 154 | 181 |
| TELL DIAGNOSIS | .05 | .55 | .16 |
| EXPLAIN DIAGNOSIS | .16 | .77 | .25 |
| EXPLAIN TREATMENT | .5 | .81 | .59 |
| HEALTH EDUCATION | .21 | .54 | .27 |
| DISCUSS RETURN | .14 | .51 | .2 |
| LISTEN | .93 | .98 | .92 |
| LET TALK | .9 | .97 | .93 |
| ENSURE UNDERSD | .64 | .48 | .34 |
| | Fever | | |
| FEVER OBS | 27 | 72 | 59 |
| FEVER PATTERN | .82 | .89 | .92 |
| CHILLS SWEATS | .14 | .14 | .15 |
| COUGH IN FEVER | .43 | .51 | .41 |
| DIARRHEA/VOMIT | .14 | .59 | .29 |
| CONVULSIONS | .04 | 0 | .04 |
| FEVER: GEN EXAM | .59 | .69 | .58 |
| TEMP FOR FEVER | .36 | .71 | .59 |
| ANEMIA | .25 | .44 | .25 |
| EAR/THROAT | .25 | .44 | .24 |
| PALPATE SPLEEN | .18 | .11 | .03 |
| BLOOD SLIDE | .14 | .19 | .22 |

Reported is the number of consultations observed and the fraction of each consultation that exhibited a particular procedure (if appropriate).

Table 27: Consultation Quality by District: Details (part II)

| | Arumeru | Arusha | Monduli |
|---|---|---|---|
| | | Cough | |
| COUGH OBS | 59 | 54 | 68 |
| DURATION OF COUGH | .81 | .94 | .79 |
| SPUTUM PROD | .29 | .45 | .39 |
| BLOOD SPUT | .03 | .08 | .09 |
| CHEST PAIN | .12 | .31 | .38 |
| DIFF BREATHING | .09 | .42 | .13 |
| VACCINATIONS | .04 | .09 | .11 |
| FEVER W/ COUGH | .58 | 0 | .31 |
| COUGH: GEN EXAM | .25 | .69 | .53 |
| RESP RATE | .05 | .43 | .04 |
| INDRAWING | .05 | .5 | .1 |
| THROAT | .14 | .37 | .19 |
| AUSCULTATE | .81 | .37 | .68 |
| TEMP FOR COUGH | .16 | 0 | .19 |
| | | Diarr | |
| DIARRHEA OBS | 8 | 14 | 16 |
| FREQUENCY | .75 | .86 | .56 |
| CONSISTENCY | .5 | .64 | .63 |
| BLOOD/MUCUS | .13 | .54 | .44 |
| VOMITING | .38 | .64 | .31 |
| FEVER W/ DIARR | .63 | .64 | .5 |
| DIARR: GEN EXAM | .5 | .5 | .5 |
| LETHARGY | .5 | .71 | .31 |
| FONTANELLA | .14 | .14 | .25 |
| PINCH SKIN | .14 | .54 | 0 |
| WEIGH | .14 | .79 | .2 |
| TEMP FOR DIARR | .13 | .14 | .13 |
| | | STD | |
| STD OBS | 1 | 16 | 5 |
| DISCHARGE/ULCER | 1 | .75 | .6 |
| PAIN OR ITCHING | 1 | .4 | .4 |
| FEVER W/ STD | 0 | .19 | 0 |
| PAIN ON URINATION | 0 | .5 | .4 |
| SEXUAL HISTORY | 0 | .13 | 0 |
| PREV EXPOSURE | 0 | 0 | 0 |
| PARTNERS | 0 | .18 | 0 |
| STD: GEN EXAM | 0 | .5 | .4 |
| SKIN RASH | 0 | .13 | .2 |
| LYMPH NODES | 0 | .25 | 0 |
| TENDERNESS | 1 | .6 | .8 |
| GENITALIA | 1 | .5 | .6 |
| PRECAUTIONS | 0 | .2 | 0 |
| | | Other | |
| GENERAL OBS | 41 | 45 | 57 |
| HISTORY TO SYMPT | .96 | .88 | .94 |
| OTHER: GEN EXAM | .46 | .49 | .26 |
| EXAM TO SYMPTS | .59 | .75 | .57 |

Reported is the number of consultations observed and the fraction of each consultation that exhibited a particular procedure (if appropriate).

Table 28: Consultation Quality by District: Total Scores

| | Arumeru | Arusha | Monduli |
|---|---|---|---|
| SUMMARY OBS | 89 | 128 | 139 |
| O: OPEN (AVG) | -.48 | .21 | -.14 |
| O: EXPL (AVG) | -.61 | .63 | -.38 |
| O: CLOSE (AVG) | .19 | .07 | -.07 |
| O: SCORE (AVG) | -.39 | .25 | -.24 |
| O: HIST (AVG) | -.13 | .2 | 0 |
| O: EXAM (AVG) | -.46 | .16 | -.33 |

Reported is the number of consultations observed and the fraction of each consultation that exhibited a particular procedure (if appropriate).

Table 29: Consultation Quality by Facility Level: Details (part I)

| | Dispensary | Health Center | Hospital |
|---|---|---|---|
| | Receiving Patients | | |
| BEGIN CONS | 361 | 172 | 207 |
| WELCOME | .57 | .54 | .84 |
| GREET | .51 | .47 | .75 |
| LOOK AT | .86 | .78 | .97 |
| CHAIR | .92 | .92 | .99 |
| | Basic History Taking | | |
| CONS | 289 | 155 | 191 |
| SYMP DURATION | .82 | .9 | .83 |
| PROBE DEEPER | .58 | .73 | .69 |
| OTHER SYMPTOMS | .61 | .48 | .49 |
| O SYMPT DURATION | .25 | .23 | .33 |
| OTHR TREATMENT | .37 | .26 | .47 |
| | Ending the Consultation | | |
| CLOSE CONS | 279 | 142 | 155 |
| TELL DIAGNOSIS | .24 | .25 | .48 |
| EXPLAIN DIAGNOSIS | .34 | .49 | .57 |
| EXPLAIN TREATMENT | .63 | .77 | .62 |
| HEALTH EDUCATION | .35 | .36 | .44 |
| DISCUSS RETURN | .3 | .37 | .32 |
| LISTEN | .92 | .98 | .92 |
| LET TALK | .93 | .96 | .9 |
| ENSURE UNDERSD | .5 | .45 | .41 |
| | Fever | | |
| FEVER OBS | 87 | 48 | 72 |
| FEVER PATTERN | .85 | .89 | .79 |
| CHILLS SWEATS | .13 | .11 | .17 |
| COUGH IN FEVER | .45 | .49 | .4 |
| DIARRHEA/VOMIT | .38 | .47 | .24 |
| CONVULSIONS | .01 | .02 | .07 |
| FEVER: GEN EXAM | .62 | .69 | .78 |
| TEMP FOR FEVER | .8 | .54 | .42 |
| ANEMIA | .25 | .56 | .44 |
| EAR/THROAT | .28 | .52 | .47 |
| PALPATE SPLEEN | .05 | .15 | .33 |
| BLOOD SLIDE | .15 | .19 | .43 |

Reported is the number of consultations observed and the fraction of each consultation that exhibited a particular procedure (if appropriate).

Table 30: Consultation Quality by Facility Level: Details (part II)

| | Dispensary | Health Center | Hospital |
|---|---|---|---|
| | | Cough | |
| COUGH OBS | 110 | 55 | 56 |
| DURATION OF COUGH | .83 | .95 | .8 |
| SPUTUM PROD | .32 | .42 | .33 |
| BLOOD SPUT | .04 | .07 | .13 |
| CHEST PAIN | .31 | .3 | .33 |
| DIFF BREATHING | .21 | .24 | .16 |
| VACCINATIONS | .14 | 0 | .07 |
| FEVER W/ COUGH | .39 | .23 | .15 |
| COUGH: GEN EXAM | .44 | .53 | .75 |
| RESP RATE | .17 | .16 | .11 |
| INDRAWING | .21 | .2 | .25 |
| THROAT | .2 | .31 | .48 |
| AUSCULTATE | .59 | .64 | .86 |
| TEMP FOR COUGH | .28 | .02 | .04 |
| | | Diarr | |
| FREQUENCY | .75 | .71 | .75 |
| CONSISTENCY | .68 | .57 | .67 |
| BLOOD/MUCUS | .52 | .14 | .25 |
| VOMITING | .5 | 0 | .67 |
| FEVER W/ DIARR | .61 | .29 | .67 |
| DIARR: GEN EXAM | .54 | .29 | .75 |
| LETHARGY | .57 | .29 | .83 |
| FONTANELLA | .19 | 0 | .5 |
| PINCH SKIN | .3 | 0 | .1 |
| WEIGH | .54 | .14 | .42 |
| TEMP FOR DIARR | .19 | 0 | .17 |
| | | STD | |
| DIARRHEA OBS | 28 | 7 | 12 |
| STD OBS | 8 | 13 | 6 |
| DISCHARGE/ULCER | .63 | .77 | .5 |
| PAIN OR ITCHING | .63 | .33 | .33 |
| FEVER W/ STD | 0 | .23 | 0 |
| PAIN ON URINATION | .63 | .31 | .67 |
| SEXUAL HISTORY | 0 | .08 | .33 |
| PREV EXPOSURE | 0 | 0 | 0 |
| PARTNERS | .13 | .11 | 0 |
| STD: GEN EXAM | .13 | .62 | .67 |
| SKIN RASH | 0 | .23 | 0 |
| LYMPH NODES | .13 | .15 | .33 |
| TENDERNESS | .5 | .75 | .67 |
| GENITALIA | .38 | .62 | .17 |
| PRECAUTIONS | .25 | .08 | .17 |
| | | Other | |
| GENERAL OBS | 80 | 40 | 60 |
| HISTORY TO SYMPT | .96 | .84 | .91 |
| OTHER: GEN EXAM | .39 | .38 | .47 |
| EXAM TO SYMPTS | .66 | .71 | .64 |

Reported is the number of consultations observed and the fraction of each consultation that exhibited a particular procedure (if appropriate).

Table 31: Consultation Quality by Facility Level: Total Scores

| | Dispensary | Health Center | Hospital |
|---|---|---|---|
| SUMMARY OBS | 210 | 106 | 138 |
| O: OPEN (AVG) | -.13 | -.25 | .45 |
| O: EXPL (AVG) | -.14 | .08 | .18 |
| O: CLOSE (AVG) | .09 | .02 | -.17 |
| O: SCORE (AVG) | -.03 | -.04 | .08 |
| O: HIST (AVG) | .09 | .01 | -.15 |
| O: EXAM (AVG) | -.15 | -.09 | .3 |

Reported is the number of consultations observed and the fraction of each consultation that exhibited a particular procedure (if appropriate).

Table 32: Consultation Quality by Facility Owner: Details (part I)

| | COGI | Govt | Islamic | Luth | RC | SDA |
|---|---|---|---|---|---|---|
| | Receiving Patients | | | | | |
| BEGIN CONS | 32 | 576 | 25 | 49 | 26 | 6 |
| WELCOME | .88 | .57 | .92 | .78 | .81 | 1 |
| GREET | .88 | .49 | .92 | .9 | .54 | 1 |
| LOOK AT | .88 | .86 | .96 | .98 | .96 | 1 |
| CHAIR | .88 | .93 | .96 | 1 | .96 | 1 |
| | Basic History Taking | | | | | |
| CONS | 25 | 500 | 25 | 33 | 25 | 5 |
| SYMP DURATION | .88 | .85 | .88 | .88 | .88 | 1 |
| PROBE DEEPER | .48 | .66 | .4 | .95 | .5 | 1 |
| OTHER SYMPTOMS | .84 | .56 | .64 | .4 | .13 | .4 |
| O SYMPT DURATION | .12 | .29 | .4 | .13 | .29 | 0 |
| OTHR TREATMENT | .36 | .38 | .16 | .54 | .36 | .6 |
| | Ending the Consultation | | | | | |
| CLOSE CONS | 23 | 466 | 17 | 28 | 16 | 4 |
| TELL DIAGNOSIS | .65 | .26 | .76 | .29 | .25 | .25 |
| EXPLAIN DIAGNOSIS | .57 | .4 | .59 | .64 | .44 | .75 |
| EXPLAIN TREATMENT | .87 | .64 | .76 | .93 | .69 | 1 |
| HEALTH EDUCATION | .65 | .34 | .71 | .61 | .13 | .5 |
| DISCUSS RETURN | .57 | .29 | .71 | .36 | .13 | 1 |
| LISTEN | 1 | .94 | .83 | 1 | .94 | 1 |
| LET TALK | 1 | .93 | .83 | 1 | .94 | 1 |
| ENSURE UNDERSD | .43 | .48 | .39 | .47 | .18 | .5 |
| | Fever | | | | | |
| FEVER OBS | 10 | 158 | 18 | 4 | 10 | 1 |
| FEVER PATTERN | .8 | .89 | .33 | 1 | 1 | 1 |
| CHILLS SWEATS | 0 | .15 | .11 | .25 | 0 | 0 |
| COUGH IN FEVER | .3 | .46 | .33 | 0 | .5 | 0 |
| DIARRHEA/VOMIT | .1 | .4 | .17 | 0 | .3 | 0 |
| CONVULSIONS | 0 | .02 | 0 | 0 | .44 | 0 |
| FEVER: GEN EXAM | .9 | .63 | 1 | .75 | .9 | 0 |
| TEMP FOR FEVER | .8 | .6 | .28 | .75 | .9 | 0 |
| ANEMIA | .4 | .34 | .89 | .5 | .3 | 0 |
| EAR/THROAT | .5 | .33 | .89 | .25 | .4 | 1 |
| PALPATE SPLEEN | .2 | .09 | .83 | 0 | .2 | 0 |
| BLOOD SLIDE | .6 | .19 | .17 | .75 | .5 | 0 |

Reported is the number of consultations observed and the fraction of each consultation that exhibited a particular procedure (if appropriate).

Table 33: Consultation Quality by Facility Owner: Details (part II)

| | COGI | Govt | Islamic | Luth | RC | SDA |
|---|---|---|---|---|---|---|
| | | | Cough | | | |
| COUGH OBS | 7 | 181 | 12 | 8 | 7 | 0 |
| DURATION OF COUGH | 1 | .84 | .83 | .88 | 1 | |
| SPUTUM PROD | .2 | .38 | .17 | .5 | .14 | |
| BLOOD SPUT | .2 | .07 | 0 | .17 | .2 | |
| CHEST PAIN | .4 | .28 | .42 | .5 | .14 | |
| DIFF BREATHING | .43 | .2 | .33 | .13 | .14 | |
| VACCINATIONS | .5 | .08 | .17 | 0 | 0 | |
| FEVER W/ COUGH | .71 | .3 | 0 | .25 | .14 | |
| COUGH: GEN EXAM | .86 | .49 | 1 | .38 | 1 | |
| RESP RATE | 0 | .16 | .33 | 0 | 0 | |
| INDRAWING | .29 | .21 | .58 | .25 | 0 | |
| THROAT | .86 | .23 | .83 | .13 | .71 | |
| AUSCULTATE | .86 | .63 | .83 | .88 | .86 | |
| TEMP FOR COUGH | .86 | .12 | 0 | .38 | .14 | |
| | | | Diarr | | | |
| DIARRHEA OBS | 0 | 38 | 2 | 2 | 2 | 1 |
| FREQUENCY | | .71 | .5 | 1 | 1 | 1 |
| CONSISTENCY | | .61 | .5 | 1 | 1 | 1 |
| BLOOD/MUCUS | | .41 | .5 | 0 | .5 | 0 |
| VOMITING | | .45 | .5 | .5 | 1 | 0 |
| FEVER W/ DIARR | | .58 | .5 | .5 | 1 | 1 |
| DIARR: GEN EXAM | | .5 | 1 | .5 | 1 | 1 |
| LETHARGY | | .5 | 1 | 1 | 1 | 1 |
| FONTANELLA | | .19 | .5 | .5 | 1 | 0 |
| PINCH SKIN | | .22 | 0 | 1 | 0 | 0 |
| WEIGH | | .42 | 0 | 0 | 1 | 1 |
| TEMP FOR DIARR | | .14 | 0 | .5 | .5 | 0 |
| | | | STD | | | |
| STD OBS | 0 | 22 | 1 | 3 | 1 | 0 |
| DISCHARGE/ULCER | | .73 | 0 | .33 | 1 | |
| PAIN OR ITCHING | | .43 | 0 | .33 | 1 | |
| FEVER W/ STD | | .14 | 0 | 0 | 0 | |
| PAIN ON URINATION | | .45 | 0 | 1 | 0 | |
| SEXUAL HISTORY | | .1 | 0 | .33 | 0 | |
| PREV EXPOSURE | | 0 | 0 | 0 | 0 | |
| PARTNERS | | .12 | 0 | 0 | 0 | |
| STD: GEN EXAM | | .45 | 1 | .33 | 1 | |
| SKIN RASH | | .14 | 0 | 0 | 0 | |
| LYMPH NODES | | .18 | 1 | 0 | 0 | |
| TENDERNESS | | .67 | 1 | .33 | 1 | |
| GENITALIA | | .55 | 0 | 0 | 0 | |
| PRECAUTIONS | | .14 | 0 | .33 | 0 | |
| | | | Other | | | |
| GENERAL OBS | 9 | 143 | 5 | 14 | 1 | 3 |
| HISTORY TO SYMPT | .96 | .92 | .83 | 1 | 1 | 1 |
| OTHER: GEN EXAM | .56 | .39 | .8 | .43 | 1 | .33 |
| EXAM TO SYMPTS | .79 | .65 | .87 | .35 | .79 | .4 |

Reported is the number of consultations observed and the fraction of each consultation that exhibited a particular procedure (if appropriate).

Table 34: Consultation Quality by Facility Owner: Total Scores

| | COGI | Govt | Islamic | Luth | RC | SDA |
|---|---|---|---|---|---|---|
| SUMMARY OBS | 17 | 356 | 32 | 14 | 19 | 2 |
| O: OPEN (AVG) | .41 | -.14 | .63 | .54 | .21 | .83 |
| O: EXPL (AVG) | .7 | -.11 | .84 | .42 | -.28 | .82 |
| O: CLOSE (AVG) | .08 | .06 | -.42 | .1 | -.35 | .17 |
| O: SCORE (AVG) | .65 | -.1 | .31 | .07 | .54 | -.49 |
| O: HIST (AVG) | .06 | .04 | -.66 | -.04 | .25 | -.37 |
| O: EXAM (AVG) | .9 | -.18 | 1.06 | .16 | .65 | -.26 |

Reported is the number of consultations observed and the fraction of each consultation that exhibited a particular procedure (if appropriate).

Table 35: Consultation Quality by Cadre: Details (part I)

| | doctor | officer | assist | nurse |
|---|---|---|---|---|
| | Receiving Patients | | | |
| BEGIN CONS | 76 | 203 | 329 | 132 |
| WELCOME | .33 | .58 | .62 | .94 |
| GREET | .3 | .48 | .6 | .8 |
| LOOK AT | .89 | .84 | .86 | .95 |
| CHAIR | .99 | .9 | .94 | .97 |
| | Basic History Taking | | | |
| CONS | 57 | 176 | 281 | 121 |
| SYMP DURATION | .79 | .82 | .88 | .83 |
| PROBE DEEPER | .63 | .55 | .72 | .56 |
| OTHER SYMPTOMS | .38 | .5 | .6 | .53 |
| O SYMPT DURATION | .09 | .17 | .3 | .4 |
| OTHR TREATMENT | .23 | .31 | .45 | .36 |
| | Ending the Consultation | | | |
| CLOSE CONS | 57 | 164 | 247 | 108 |
| TELL DIAGNOSIS | .05 | .19 | .37 | .49 |
| EXPLAIN DIAGNOSIS | .05 | .37 | .48 | .65 |
| EXPLAIN TREATMENT | .54 | .55 | .75 | .68 |
| HEALTH EDUCATION | .16 | .26 | .46 | .5 |
| DISCUSS RETURN | .14 | .23 | .36 | .46 |
| LISTEN | .92 | .95 | .95 | .91 |
| LET TALK | .93 | .94 | .94 | .89 |
| ENSURE UNDERSD | .49 | .37 | .52 | .43 |
| | Fever | | | |
| FEVER OBS | 12 | 47 | 95 | 53 |
| FEVER PATTERN | .67 | .96 | .92 | .63 |
| CHILLS SWEATS | .17 | .11 | .18 | .08 |
| COUGH IN FEVER | .33 | .38 | .48 | .45 |
| DIARRHEA/VOMIT | .08 | .45 | .31 | .38 |
| CONVULSIONS | 0 | .02 | .07 | 0 |
| FEVER: GEN EXAM | .33 | .79 | .64 | .77 |
| TEMP FOR FEVER | .5 | .81 | .53 | .58 |
| ANEMIA | .25 | .23 | .39 | .57 |
| EAR/THROAT | .25 | .28 | .4 | .57 |
| PALPATE SPLEEN | 0 | .19 | .1 | .3 |
| BLOOD SLIDE | 0 | .17 | .3 | .3 |

Reported is the number of consultations observed and the fraction of each consultation that exhibited a particular procedure (if appropriate).

Table 36: Consultation Quality by Cadre: Details (part II)

| | doctor | officer | assist | nurse |
|---|---|---|---|---|
| | Cough | | | |
| COUGH OBS | 27 | 58 | 98 | 38 |
| DURATION OF COUGH | .77 | .84 | .89 | .84 |
| SPUTUM PROD | .2 | .35 | .38 | .35 |
| BLOOD SPUT | 0 | .1 | .08 | .07 |
| CHEST PAIN | .4 | .25 | .28 | .43 |
| DIFF BREATHING | .07 | .1 | .33 | .14 |
| VACCINATIONS | .19 | .03 | .07 | .12 |
| FEVER W/ COUGH | .59 | .16 | .35 | .11 |
| COUGH: GEN EXAM | .22 | .53 | .54 | .76 |
| RESP RATE | 0 | .12 | .21 | .16 |
| INDRAWING | .04 | .14 | .28 | .32 |
| THROAT | .11 | .21 | .31 | .55 |
| AUSCULTATE | .59 | .71 | .65 | .71 |
| TEMP FOR COUGH | .33 | .21 | .07 | .13 |
| | Diarr | | | |
| DIARRHEA OBS | 4 | 15 | 22 | 6 |
| FREQUENCY | .5 | .87 | .73 | .67 |
| CONSISTENCY | .75 | .67 | .64 | .67 |
| BLOOD/MUCUS | .5 | .33 | .43 | .33 |
| VOMITING | 0 | .53 | .5 | .5 |
| FEVER W/ DIARR | 0 | .6 | .68 | .5 |
| DIARR: GEN EXAM | .25 | .67 | .59 | .33 |
| LETHARGY | .25 | .53 | .68 | .67 |
| FONTANELLA | .25 | .14 | .32 | .17 |
| PINCH SKIN | 0 | .23 | .25 | .17 |
| WEIGH | 0 | .5 | .45 | .5 |
| TEMP FOR DIARR | .33 | .13 | .18 | 0 |
| | STD | | | |
| STD OBS | 2 | 6 | 12 | 7 |
| DISCHARGE/ULCER | 0 | .83 | .75 | .57 |
| PAIN OR ITCHING | .5 | .2 | .5 | .43 |
| FEVER W/ STD | 0 | .33 | 0 | .14 |
| PAIN ON URINATION | .5 | .5 | .58 | .29 |
| SEXUAL HISTORY | 0 | .2 | .17 | 0 |
| PREV EXPOSURE | 0 | 0 | 0 | 0 |
| PARTNERS | 0 | 0 | .18 | 0 |
| STD: GEN EXAM | 0 | .5 | .5 | .57 |
| SKIN RASH | 0 | .33 | .08 | 0 |
| LYMPH NODES | 0 | 0 | .17 | .43 |
| TENDERNESS | .5 | .6 | .75 | .57 |
| GENITALIA | .5 | .67 | .33 | .43 |
| PRECAUTIONS | 0 | .2 | .17 | .14 |
| | Other | | | |
| GENERAL OBS | 19 | 51 | 76 | 34 |
| HISTORY TO SYMPT | 1 | .9 | .92 | .9 |
| OTHER: GEN EXAM | .05 | .57 | .43 | .32 |
| EXAM TO SYMPTS | .5 | .64 | .66 | .77 |

Reported is the number of consultations observed and the fraction of each consultation that exhibited a particular procedure (if appropriate).

Table 37: Consultation Quality by Cadre: Total Scores

| | NURSE | ASSISTANT | OFFICER | DOCTOR |
|---|---|---|---|---|
| SUMMARY OBS | 42 | 117 | 202 | 93 |
| O: OPEN (AVG) | -.43 | -.18 | 0 | .53 |
| O: EXPL (AVG) | -.68 | -.3 | .19 | .39 |
| O: CLOSE (AVG) | .09 | -.04 | .08 | -.17 |
| O: SCORE (AVG) | -.53 | -.07 | .08 | .15 |
| O: HIST (AVG) | -.17 | -.04 | .16 | -.22 |
| O: EXAM (AVG) | -.63 | -.06 | -.01 | .39 |

Reported is the number of consultations observed and the fraction of each consultation that exhibited a particular procedure (if appropriate).

Table 38: Consultation Quality by Quartile of Experience: Details (part I)

| Quartile | first | second | third | fourth |
|---|---|---|---|---|
| | Receiving Patients | | | |
| BEGIN CONS | 139 | 176 | 181 | 244 |
| WELCOME | .47 | .62 | .76 | .66 |
| GREET | .51 | .46 | .72 | .57 |
| LOOK AT | .81 | .96 | .87 | .84 |
| CHAIR | .96 | .95 | .92 | .94 |
| | Basic History Taking | | | |
| CONS | 117 | 143 | 161 | 214 |
| SYMP DURATION | .75 | .9 | .93 | .79 |
| PROBE DEEPER | .54 | .93 | .65 | .55 |
| OTHER SYMPTOMS | .58 | .55 | .71 | .38 |
| O SYMPT DURATION | .12 | .34 | .41 | .2 |
| OTHR TREATMENT | .28 | .51 | .42 | .3 |
| | Ending the Consultation | | | |
| CLOSE CONS | 113 | 133 | 140 | 190 |
| TELL DIAGNOSIS | .13 | .28 | .46 | .33 |
| EXPLAIN DIAGNOSIS | .22 | .42 | .57 | .48 |
| EXPLAIN TREATMENT | .65 | .65 | .74 | .62 |
| HEALTH EDUCATION | .22 | .45 | .46 | .36 |
| DISCUSS RETURN | .19 | .3 | .48 | .29 |
| LISTEN | .93 | .95 | .95 | .92 |
| LET TALK | .9 | .94 | .94 | .93 |
| ENSURE UNDERSD | .63 | .45 | .45 | .36 |
| | Fever | | | |
| FEVER OBS | 19 | 39 | 74 | 75 |
| FEVER PATTERN | .84 | .82 | .78 | .91 |
| CHILLS SWEATS | .11 | .21 | .12 | .12 |
| COUGH IN FEVER | .37 | .28 | .52 | .47 |
| DIARRHEA/VOMIT | .21 | .17 | .41 | .41 |
| CONVULSIONS | .08 | 0 | .01 | .07 |
| FEVER: GEN EXAM | .37 | .67 | .74 | .73 |
| TEMP FOR FEVER | .47 | .35 | .74 | .64 |
| ANEMIA | .21 | .2 | .42 | .51 |
| EAR/THROAT | .37 | .2 | .46 | .47 |
| PALPATE SPLEEN | .11 | .1 | .2 | .19 |
| BLOOD SLIDE | .3 | .28 | .18 | .31 |

Reported is the number of consultations observed and the fraction of each consultation that exhibited a particular procedure (if appropriate).

Table 39: Consultation Quality by Quartile of Experience: Details (part II)

| | first | second | third | fourth |
|---|---|---|---|---|
| | Cough | | | |
| COUGH OBS | 44 | 49 | 57 | 71 |
| DURATION OF COUGH | .84 | .94 | .88 | .79 |
| SPUTUM PROD | .38 | .51 | .31 | .25 |
| BLOOD SPUT | .06 | 0 | .13 | .07 |
| CHEST PAIN | .29 | .27 | .34 | .32 |
| DIFF BREATHING | .07 | .13 | .46 | .14 |
| VACCINATIONS | 0 | .03 | .19 | .08 |
| FEVER W/ COUGH | .6 | .28 | .16 | .22 |
| COUGH: GEN EXAM | .3 | .53 | .74 | .54 |
| RESP RATE | .02 | .15 | .32 | .1 |
| INDRAWING | .02 | .21 | .4 | .2 |
| THROAT | .14 | .22 | .42 | .35 |
| AUSCULTATE | .77 | .61 | .54 | .75 |
| TEMP FOR COUGH | .25 | .06 | .21 | .1 |
| | Diarr | | | |
| DIARRHEA OBS | 9 | 6 | 16 | 16 |
| FREQUENCY | .78 | 1 | .69 | .69 |
| CONSISTENCY | .78 | .67 | .63 | .63 |
| BLOOD/MUCUS | .56 | .33 | .53 | .19 |
| VOMITING | .11 | .5 | .75 | .38 |
| FEVER W/ DIARR | .33 | .83 | .75 | .44 |
| DIARR: GEN EXAM | .33 | .83 | .69 | .44 |
| LETHARGY | .22 | .83 | .69 | .63 |
| FONTANELLA | .13 | .5 | .25 | .19 |
| PINCH SKIN | 0 | .4 | .31 | .15 |
| WEIGH | .14 | .33 | .63 | .44 |
| TEMP FOR DIARR | .13 | .17 | .25 | .06 |
| | STD | | | |
| STD OBS | 2 | 4 | 8 | 13 |
| DISCHARGE/ULCER | 1 | .75 | .63 | .62 |
| PAIN OR ITCHING | 0 | .5 | .63 | .33 |
| FEVER W/ STD | 0 | 0 | 0 | .23 |
| PAIN ON URINATION | 0 | .5 | .38 | .62 |
| SEXUAL HISTORY | 0 | .25 | 0 | .17 |
| PREV EXPOSURE | 0 | 0 | 0 | 0 |
| PARTNERS | 0 | 0 | .29 | 0 |
| STD: GEN EXAM | .5 | .25 | .38 | .62 |
| SKIN RASH | .5 | 0 | 0 | .15 |
| LYMPH NODES | 0 | .5 | .38 | 0 |
| TENDERNESS | 1 | 1 | .75 | .42 |
| GENITALIA | 1 | .75 | .25 | .38 |
| PRECAUTIONS | 0 | .5 | .13 | .08 |
| | Other | | | |
| GENERAL OBS | 40 | 53 | 42 | 45 |
| HISTORY TO SYMPT | .96 | .96 | .89 | .89 |
| OTHER: GEN EXAM | .5 | .49 | .24 | .4 |
| EXAM TO SYMPTS | .65 | .61 | .84 | .57 |

Reported is the number of consultations observed and the fraction of each consultation that exhibited a particular procedure (if appropriate).

Table 40: Consultation Quality by Quartile of Experience: Total Scores

| | first | second | third | fourth |
|---|---|---|---|---|
| SUMMARY OBS | 70 | 86 | 139 | 159 |
| O: OPEN (AVG) | -.23 | -.02 | .21 | -.01 |
| O: EXPL (AVG) | -.4 | 0 | .35 | -.02 |
| O: CLOSE (AVG) | .11 | .1 | .04 | -.17 |
| O: SCORE (AVG) | -.31 | -.29 | .31 | .02 |
| O: HIST (AVG) | 0 | -.14 | .15 | -.05 |
| O: EXAM (AVG) | -.47 | -.27 | .3 | .09 |

Reported is the number of consultations observed and the fraction of each consultation that exhibited a particular procedure (if appropriate).

Table 41: Consultation Quality by Quartile of Experience and Cadre: Details (part I)

| Cadre | Doctor | | | | C. Officer | | | | C. Assist | | | | Nurse | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exp. Quartile | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| | Receiving Patients | | | | | | | | | | | | | | | |
| BEGIN CONS | 12 | 19 | 5 | 40 | 38 | 51 | 34 | 80 | 80 | 91 | 81 | 77 | 9 | 15 | 61 | 47 |
| WELCOME | .83 | .05 | .8 | .25 | .63 | .57 | .41 | .64 | .29 | .7 | .79 | .69 | .89 | 1 | .9 | .98 |
| GREET | .67 | .05 | 1 | .22 | .58 | .24 | .56 | .56 | .41 | .6 | .73 | .64 | .89 | .87 | .79 | .77 |
| LOOK AT | 1 | 1 | 1 | .8 | .87 | .88 | .85 | .8 | .76 | .99 | .81 | .84 | .78 | 1 | .95 | .96 |
| CHAIR | 1 | 1 | 1 | .98 | .89 | .86 | 1 | .89 | .98 | .99 | .83 | .97 | 1 | 1 | .98 | .94 |
| | Basic History Taking | | | | | | | | | | | | | | | |
| CONS | 12 | 8 | 5 | 32 | 37 | 43 | 27 | 69 | 60 | 78 | 73 | 70 | 8 | 14 | 56 | 43 |
| SYMP DURATION | .75 | 1 | .8 | .75 | .54 | .88 | .93 | .9 | .9 | .92 | .96 | .71 | .63 | .79 | .91 | .77 |
| PROBE DEEPER | .5 | 1 | .8 | .5 | .07 | .93 | .93 | .6 | .75 | .98 | .56 | .69 | .63 | .67 | .7 | .28 |
| OTHER SYMPTOMS | .09 | .7 | .2 | .41 | .59 | .26 | .74 | .51 | .67 | .61 | .77 | .36 | .5 | 1 | .67 | .21 |
| O SYMPT DURATION | .33 | .11 | 0 | .07 | .03 | .36 | .09 | .18 | .12 | .27 | .45 | .31 | .38 | .71 | .46 | .18 |
| OTHR TREATMENT | .27 | .13 | .2 | .25 | .35 | .3 | .48 | .23 | .25 | .67 | .41 | .41 | .25 | .5 | .41 | .28 |
| | Ending the Consultation | | | | | | | | | | | | | | | |
| CLOSE CONS | 12 | 10 | 5 | 30 | 34 | 39 | 25 | 66 | 60 | 69 | 63 | 55 | 7 | 15 | 47 | 39 |
| TELL DIAGNOSIS | .08 | 0 | .2 | .03 | .06 | .21 | .04 | .3 | .08 | .29 | .68 | .42 | 1 | .6 | .4 | .46 |
| EXPLAIN DIAGNOSIS | .08 | 0 | .2 | .03 | .12 | .44 | .2 | .52 | .22 | .42 | .76 | .53 | 1 | .67 | .55 | .69 |
| EXPLAIN TREATMENT | .92 | .4 | 1 | .37 | .32 | .62 | .44 | .68 | .78 | .68 | .9 | .64 | .71 | .73 | .66 | .67 |
| HEALTH EDUCATION | .25 | .1 | 0 | .17 | .09 | .33 | 0 | .39 | .27 | .49 | .71 | .33 | .43 | .8 | .4 | .51 |
| DISCUSS RETURN | .17 | .1 | .2 | .13 | .06 | .21 | .08 | .38 | .2 | .35 | .73 | .13 | .86 | .47 | .38 | .49 |
| LISTEN | 1 | .9 | 1 | .88 | .85 | .93 | .96 | 1 | .95 | .97 | .99 | .86 | 1 | .94 | .9 | .9 |
| LET TALK | 1 | 1 | 1 | .88 | .85 | .91 | .92 | 1 | .9 | .97 | .99 | .9 | 1 | .88 | .88 | .9 |
| ENSURE UNDERSD | .25 | 0 | .8 | .56 | .64 | .31 | .38 | .26 | .71 | .5 | .46 | .4 | .5 | .63 | .41 | .36 |
| | Fever | | | | | | | | | | | | | | | |
| FEVER OBS | 4 | 3 | 0 | 5 | 4 | 11 | 11 | 21 | 10 | 21 | 39 | 25 | 1 | 4 | 24 | 24 |
| FEVER PATTERN | .75 | 0 | | 1 | .75 | .91 | 1 | 1 | 1 | .95 | .9 | .88 | 0 | .5 | .48 | .83 |
| CHILLS SWEATS | .25 | 0 | | .2 | 0 | .27 | 0 | .1 | .1 | .18 | .24 | .12 | 0 | .5 | 0 | .13 |
| COUGH IN FEVER | .25 | .67 | | .2 | .5 | .36 | .64 | .24 | .4 | .23 | .59 | .56 | 0 | 0 | .35 | .63 |
| DIARRHEA/VOMIT | 0 | 0 | | .2 | .5 | .18 | .45 | .57 | .1 | .18 | .51 | .2 | 1 | .25 | .22 | .54 |
| CONVULSIONS | 0 | 0 | | 0 | 0 | 0 | .09 | 0 | .13 | 0 | 0 | .2 | 0 | 0 | 0 | 0 |
| FEVER: GEN EXAM | .5 | .67 | | 0 | .25 | .82 | .91 | .81 | .4 | .67 | .69 | .64 | 0 | .25 | .75 | .92 |
| TEMP FOR FEVER | .5 | .67 | | .4 | .75 | .55 | 1 | .86 | .3 | .27 | .69 | .6 | 1 | 0 | .71 | .54 |
| ANEMIA | .25 | .67 | | 0 | 0 | .09 | 0 | .48 | .3 | .18 | .44 | .52 | 0 | .25 | .58 | .63 |
| EAR/THROAT | .25 | .67 | | 0 | .25 | 0 | .09 | .52 | .5 | .18 | .44 | .48 | 0 | .5 | .67 | .5 |
| PALPATE SPLEEN | 0 | 0 | | 0 | .25 | .27 | 0 | .24 | .1 | .05 | .1 | .16 | 0 | 0 | .46 | .21 |
| BLOOD SLIDE | 0 | 0 | | 0 | .4 | .18 | 0 | .19 | .3 | .41 | .18 | .4 | 1 | 0 | .25 | .38 |

Reported is the number of consultations observed and the fraction of each consultation that exhibited a particular procedure (if appropriate).

Table 42: Consultation Quality by Quartile of Experience and Cadre: Details (part II)

| Cadre | Doctor | | | | C. Officer | | | | C. Assist | | | | Nurse | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exp. Quartile | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| | Cough | | | | | | | | | | | | | | | |
| COUGH OBS | 8 | 4 | 1 | 14 | 12 | 15 | 10 | 21 | 23 | 24 | 30 | 21 | 1 | 6 | 16 | 15 |
| DURATION OF COUGH | 1 | 1 | 0 | .64 | .58 | 1 | .8 | .9 | .96 | .96 | .97 | .62 | 0 | .67 | .81 | 1 |
| SPUTUM PROD | .5 | 0 | 0 | 0 | .38 | .57 | .38 | .19 | .35 | .53 | .33 | .31 | 0 | .33 | .25 | .47 |
| BLOOD SPUT | 0 | 0 | 0 | 0 | .13 | 0 | .33 | .1 | .06 | 0 | .09 | .18 | 0 | 0 | .17 | 0 |
| CHEST PAIN | .63 | 0 | 0 | .3 | .25 | .33 | .13 | .24 | .12 | .21 | .38 | .38 | 1 | .5 | .42 | .4 |
| DIFF BREATHING | 0 | .25 | 0 | .07 | 0 | .2 | .1 | .1 | .13 | .09 | .73 | .24 | 0 | 0 | .19 | .13 |
| VACCINATIONS | | 0 | 1 | .17 | 0 | 0 | 0 | .06 | 0 | .06 | .14 | .07 | 0 | 0 | .3 | 0 |
| FEVER W/ COUGH | .63 | .75 | 1 | .5 | .64 | 0 | .2 | 0 | .59 | .45 | .07 | .4 | 0 | 0 | .25 | 0 |
| COUGH: GEN EXAM | .75 | 0 | 0 | 0 | .17 | .73 | .6 | .57 | .22 | .58 | .73 | .57 | 0 | .17 | .88 | .93 |
| RESP RATE | 0 | 0 | 0 | 0 | 0 | .13 | 0 | .24 | .04 | .13 | .5 | .05 | 0 | .33 | .19 | .07 |
| INDRAWING | 0 | 0 | 0 | .07 | 0 | .07 | .1 | .29 | .04 | .3 | .57 | .1 | 0 | .33 | .31 | .33 |
| THROAT | .38 | 0 | 0 | 0 | .17 | 0 | .2 | .38 | .04 | .33 | .4 | .43 | 0 | .5 | .63 | .53 |
| AUSCULTATE | .38 | 0 | 1 | .86 | .83 | .53 | .9 | .67 | .91 | .83 | .23 | .76 | 0 | .33 | .88 | .73 |
| TEMP FOR COUGH | .5 | .5 | 1 | .14 | .42 | 0 | .4 | .14 | .09 | .05 | .07 | .1 | 0 | 0 | .31 | 0 |
| | Diarr | | | | | | | | | | | | | | | |
| DIARRHEA OBS | 2 | 0 | 1 | 1 | 2 | 1 | 6 | 6 | 4 | 4 | 8 | 6 | 1 | 1 | 1 | 3 |
| FREQUENCY | .5 | | 0 | 1 | 1 | 1 | .83 | .83 | .75 | 1 | .75 | .5 | 1 | 1 | 0 | .67 |
| CONSISTENCY | 1 | | 0 | 1 | .5 | 1 | .67 | .67 | .75 | .5 | .63 | .67 | 1 | 1 | 1 | .33 |
| BLOOD/MUCUS | .5 | | 0 | 1 | .5 | 1 | .33 | .17 | .5 | 0 | .86 | .17 | 1 | 1 | 0 | 0 |
| VOMITING | 0 | | 0 | 0 | 0 | 0 | .83 | .5 | 0 | .5 | .75 | .5 | 1 | 1 | 1 | 0 |
| FEVER W/ DIARR | 0 | | 0 | 0 | .5 | 0 | .83 | .5 | .5 | 1 | .75 | .5 | 0 | 1 | 1 | .33 |
| DIARR: GEN EXAM | .5 | | 0 | 0 | .5 | 1 | .83 | .5 | 0 | 1 | .75 | .5 | 1 | 0 | 0 | .33 |
| LETHARGY | 0 | | 0 | 1 | 0 | 1 | .67 | .5 | .25 | .75 | .88 | .67 | 1 | 1 | 0 | .67 |
| FONTANELLA | .5 | | 0 | 0 | 0 | 0 | .33 | 0 | 0 | .5 | .25 | .5 | 0 | 1 | 0 | 0 |
| PINCH SKIN | 0 | | 0 | 0 | 0 | | .17 | .4 | 0 | .25 | .5 | 0 | 0 | 1 | 0 | 0 |
| WEIGH | 0 | | 0 | 0 | 0 | 1 | .33 | .67 | 0 | .25 | .88 | .33 | 1 | 0 | 1 | .33 |
| TEMP FOR DIARR | 1 | | 0 | 0 | 0 | 0 | .33 | 0 | 0 | .25 | .25 | .17 | 0 | 0 | 0 | 0 |
| | STD | | | | | | | | | | | | | | | |
| STD OBS | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 6 | 2 | 3 | 3 | 4 | 0 | 1 | 4 | 2 |
| DISCHARGE/ULCER | | | 0 | 0 | | | | .83 | 1 | .67 | .67 | .75 | | 1 | .75 | 0 |
| PAIN OR ITCHING | | | 0 | 1 | | | | .2 | 0 | .67 | .67 | .5 | | 0 | .75 | 0 |
| FEVER W/ STD | | | 0 | 0 | | | | .33 | 0 | 0 | 0 | 0 | | 0 | 0 | .5 |
| PAIN ON URINATION | | | 0 | 1 | | | | .5 | 0 | .67 | .67 | .75 | | 0 | .25 | .5 |
| SEXUAL HISTORY | | | 0 | 0 | | | | .2 | 0 | .33 | 0 | .25 | | 0 | 0 | 0 |
| PREV EXPOSURE | | | 0 | 0 | | | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 |
| PARTNERS | | | 0 | 0 | | | | 0 | 0 | 0 | .67 | 0 | | 0 | 0 | 0 |
| STD: GEN EXAM | | | 0 | 0 | | | | .5 | .5 | .33 | .33 | .75 | | 0 | .5 | 1 |
| SKIN RASH | | | 0 | 0 | | | | .33 | .5 | 0 | 0 | 0 | | 0 | 0 | 0 |
| LYMPH NODES | | | 0 | 0 | | | | 0 | 0 | .33 | .33 | 0 | | 1 | .5 | 0 |
| TENDERNESS | | | 1 | 0 | | | | .6 | 1 | 1 | .67 | .5 | | 1 | .75 | 0 |
| GENITALIA | | | 0 | 1 | | | | .67 | 1 | .67 | 0 | 0 | | 1 | .5 | 0 |
| PRECAUTIONS | | | 0 | 0 | | | | .2 | 0 | .33 | .33 | 0 | | 1 | 0 | 0 |
| | Other | | | | | | | | | | | | | | | |
| GENERAL OBS | 2 | 3 | 1 | 13 | 11 | 18 | 5 | 17 | 23 | 27 | 16 | 10 | 4 | 5 | 20 | 5 |
| HISTORY TO SYMPT | 1 | 1 | 1 | 1 | 1 | 1 | .83 | .76 | .93 | .95 | .88 | .94 | .83 | .86 | .89 | .93 |
| OTHER: GEN EXAM | .5 | 0 | 0 | 0 | .91 | .67 | 0 | .41 | .39 | .44 | .31 | .7 | 0 | .4 | .25 | .8 |
| EXAM TO SYMPTS | .58 | 0 | 1 | .5 | .58 | .6 | .67 | .71 | .72 | .64 | .84 | .39 | .67 | .71 | .86 | .67 |

Reported is the number of consultations observed and the fraction of each consultation that exhibited a particular procedure (if appropriate).

Table 43: Consultation Quality by Quartile of Experience and Cadre: Total Scores

| Cadre | Doctor | | | | C. Officer | | | | C. Assist | | | | Nurse | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exp. Quartile | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| SUMMARY OBS | 14 | 6 | 2 | 20 | 17 | 27 | 27 | 46 | 36 | 45 | 70 | 51 | 3 | 8 | 40 | 42 |
| O: OPEN (AVG) | .41 | -.77 | .66 | -.65 | -.04 | -.4 | -.17 | -.11 | -.49 | .22 | .12 | .1 | .45 | .72 | .51 | .52 |
| O: EXPL (AVG) | -.36 | -.89 | -.3 | -.81 | -.86 | -.18 | -.79 | .1 | -.33 | .07 | .99 | -.04 | 1.11 | .68 | .18 | .42 |
| O: CLOSE (AVG) | -.17 | .5 | .56 | -.02 | -.06 | -.12 | .38 | -.13 | .25 | .19 | .07 | -.21 | .17 | .08 | -.21 | -.29 |
| O: SCORE (AVG) | -.11 | -.55 | -1.07 | -.76 | -.31 | -.34 | .11 | .06 | -.37 | -.18 | .46 | .12 | -.6 | -.57 | .25 | .24 |
| O: HIST (AVG) | .07 | -.39 | -1.22 | -.18 | -.03 | -.08 | .28 | -.19 | .01 | -.08 | .43 | .09 | -.34 | -.46 | -.37 | -.02 |
| O: EXAM (AVG) | -.21 | -.64 | -.7 | -.92 | -.45 | -.38 | -.03 | .25 | -.57 | -.11 | .24 | .1 | -.48 | -.48 | .69 | .37 |

Reported is the number of consultations observed and the fraction of each consultation that exhibited a particular procedure (if appropriate).

# 8 Consultation Quality (Using Vignettes)

As should be apparent from the quality scores above, there are at least two problems with assessing quality by observing consultations. In the first place there are a series of facilities that have very few patients (or none at all). With so few observations we cannot authoritatively say we have seen anything representative of the facility. Second, the illnesses observed at one facility are very different from those observed at another, and therefore the things clinicians should do when diagnosing them are different. We have tried to correct for this problem by following four conditions and by normalizing scores before comparing them, but this is a crude correction.

In close collaboration with the entire research team as well as Dr. Masatu and Dr. Jincen of CEDHA we developed a series of 6 vignettes or case study patients. In these vignettes we control for the symptoms presented because we have developed them ourselves. In addition, we can use the same evaluation at any facility whether or not there are patients.

## 8.1 The use of vignettes as a quality evaluation technique

In order to assess certain levels of quality, we used vignettes or case study patients. In these cases we tried to imitate the consultation that might take place between a physician and a patient as closely as possible. We designed the case studies and knew what the correct diagnosis, treatment, and history taking should be. Therefore we were able to judge how well the clinician did compared to what was expected. All illnesses were specifically designed so that clinicians at any level of facility could properly diagnosis the condition. There was no condition for which a laboratory test was necessary to achieve correct diagnosis and no condition requiring medicines not available at all levels of facility. That does not mean that every level would respond in the same manner, but that a clinician at any level could achieve the perfect score. Each vignette and the instructions for administering the vignette can be found in Section A.2.

**Explanation of scores** For each vignette the practitioner was judged against a list of questions that should be asked in history taking, a list of procedures that should be used to perform a physical examination and a list of points he should raise in health education. For each of these scores we derived two scores, a total score (V: HIST (ALL) for history taking, V: EXAM (ALL) for physical examination and V: EDUC (ALL) for health education) and a score based on the most important of these questions (HIST IMP for history taking, EXAM IMP for physical examination and EDUC IMP for health education). The physician was compared to the average score for that vignette by normalizing the scores. Then all scores were summed. Thus each physician received a score based on his performance in 6 vignettes.

In addition, we judged diagnosis, treatment use of lab tests and prescription by the following measures:

- Diagnosis
  - Correct. (DIAG: CORRECT)
  - Incomplete, but contains partial diagnosis. (DIAG: INCOMPL)
  - Extra diagnosis; the correct diagnosis is present, but so are other diagnoses the clinician should be able to eliminate. (DIAG: EXTRA)
  - Wrong. (DIAG: WRONG)
- Treatment
  - Exactly correct. (TREAT: CORR)
  - Correct enough. It will cure the patient, but is not the treatment regime that would normally be recommended. (TREAT: ENOUGH)
  - Useful but not complete. It might help, but is incomplete. This is different from the previous category because the error in treatment reduces the chance of recovery. (TREAT: USEFUL)
  - Incorrect and will provide no relief. (TREAT: INCOMPL)
  - Dangerous. Could potentially make the patient worse off. (TREAT: DANGER)
- Use of Lab Tests

  - No test used (always correct by design: no vignette required a lab test for proper diagnosis) (LAB: ABSENT)
  - Test used which is cautionary, but not necessary. For example, a blood slide for malaria parasites when it is very clear the patient has malaria. (LAB: CAUTION)
  - Excessive use of lab test which is justifiable, but not necessary. In this case, the clinician should no that this labtest is unnecessary and excessive, however there is some link between the symptom presented and the labtest being prescribed. (LAB: JUST).
  - Excessive and unjustifiable use of lab test. (LAB: NOT JUST)

- Prescription These scores are completely independent of the treatment scores. A prescription can be both rational and wrong (in the sense that it does not cure the patient). There is some overlap between the three categories other than rational.
  - Rational, correct. (D USE: RATION)
  - Polypharmacy. Unnecessary extra drugs. (D USE: POLYPHCY)
  - Irrational. Two drugs which perform the same function. (D USE: IRRATION).
  - Unnecessarily Expensive; An expensive drug where an inexpensive will do. (D USE: EXPENSV).

## 8.2 Results using Evaluation with Vignettes

We present the results of the scoring on vignettes by 5 different categories: by district for government facilities (Table 44), owner (Table 44), level (Table 45), cadre (Table 47), and quartiles of experience (Table 48).

There are a few different types of scores presented. We calculated a score based on all the history taking, physical examinations and health education questions that we expected (V: HIST (ALL), V: EXAM (ALL), and V: EDUC (ALL)) as well as a subset of the more important of these questions (HIST IMP, EXAM IMP, and EDUC IMP). The evaluations of diagnosis, treatment, lab test and drug use are shown in the tables as described above. Each category is mutually exclusive and a particular diagnosis, treatment, lab use or drug use must fit one of the described categories. The scores are the percentage of observed vignettes that fit into each of the categories.

Table 44: Vignette Quality by District

| | Arumeru | Arusha | Monduli |
|---|---|---|---|
| VIGNETTE OBS | 54 | 44 | 98 |
| V: HIST (ALL) | -.08 | .14 | -.25 |
| HIST IMP | -.09 | .11 | -.2 |
| V: EXAM (ALL) | -.26 | -.08 | -.12 |
| EXAM IMP | -.09 | -.13 | -.06 |
| V: EDUC (ALL) | .09 | .17 | -.03 |
| EDUC IMP | -.09 | .15 | 0 |
| DIAG: CORRECT | 56% | 57% | 53% |
| DIAG: INCOMPL | 24% | 23% | 31% |
| DIAG: EXTRA | 9% | 11% | 4% |
| DIAG: WRONG | 11% | 9% | 12% |
| TREAT: CORR | 37% | 30% | 28% |
| TREAT: ENOUGH | 48% | 55% | 49% |
| TREAT: USEFUL | 7% | 9% | 10% |
| TREAT: INCOMPL | 4% | 5% | 10% |
| TREAT: DANGER | 4% | 2% | 3% |
| LAB: ABSENT | 56% | 43% | 63% |
| LAB: CAUTION | 28% | 30% | 21% |
| LAB: JUST | 9% | 5% | 8% |
| LAB: NOT JUST | 7% | 23% | 7% |
| D USE: RATION | 67% | 77% | 67% |
| D USE: POLYPHCY | 15% | 9% | 11% |
| D USE: IRRATION | | 2% | 2% |
| D USE: EXPENSV | 19% | 11% | 19% |

Reported is the number of vignette observations for each category. Scores V: HIST (ALL) through EXAM IMP are normalized within each vignette. Therefore, negative scores are below average and positive scores are above average. Scores DIAG: CORRECT through D USE: EXPENSV are the percentage of all vignettes observed that fit into the respective category. Scores within score type (for example DIAG: CORRECT, DIAG: INCOMPL, DIAG: EXTRA and DIAG: WRONG) sum to 100%.

Table 45: Vignette Quality by Facility Level

| | Disp | HCenter | Hospital |
|---|---|---|---|
| VIGNETTE OBS | 206 | 40 | 110 |
| V: HIST (ALL) | -.16 | .12 | .26 |
| V: EXAM (ALL) | -.06 | -.24 | .19 |
| V: EDUC (ALL) | -.02 | .25 | -.06 |
| DIAG: CORRECT | 60% | 55% | 53% |
| DIAG: INCOMPL | 23% | 30% | 23% |
| DIAG: EXTRA | 6% | 5% | 13% |
| DIAG: WRONG | 11% | 10% | 12% |
| TREAT: CORR | 29% | 32% | 28% |
| TREAT: ENOUGH | 50% | 52% | 58% |
| TREAT: USEFUL | 11% | 3% | 8% |
| TREAT: INCOMPL | 8% | 13% | 5% |
| TREAT: DANGER | 2% | | |
| LAB: ABSENT | 56% | 32% | 35% |
| LAB: CAUTION | 24% | 38% | 29% |
| LAB: JUST | 15% | 22% | 22% |
| LAB: NOT JUST | 6% | 8% | 15% |
| D USE: RATION | 68% | 65% | 73% |
| D USE: POLYPHCY | 12% | 10% | 11% |
| D USE: IRRATION | 1% | 3% | 1% |
| D USE: EXPENSV | 19% | 22% | 15% |

Reported is the number of vignette observations for each category. Scores V: HIST (ALL) through EXAM IMP are normalized within each vignette. Therefore, negative scores are below average and positive scores are above average. Scores DIAG: CORRECT through D USE: EXPENSV are the percentage of all vignettes observed that fit into the respective category. Scores within score type (for example DIAG: CORRECT, DIAG: INCOMPL, DIAG: EXTRA and DIAG: WRONG) sum to 100%.

Table 46: Vignette Quality by Facility Owner

| | COGI | Govt | Islamic | Luth | RC | SDA |
|---|---|---|---|---|---|---|
| VIGNETTE OBS | 18 | 196 | 12 | 62 | 26 | 24 |
| V: HIST (ALL) | -.31 | -.11 | 1.14 | .25 | -.44 | .29 |
| HIST IMP | -.16 | -.1 | .66 | .23 | -.36 | .19 |
| V: EXAM (ALL) | .03 | -.15 | 1.57 | .16 | -.55 | .53 |
| EXAM IMP | -.03 | -.08 | .99 | .06 | -.4 | .39 |
| V: EDUC (ALL) | -.42 | .05 | .79 | -.1 | -.49 | .43 |
| EDUC IMP | -.31 | .01 | .64 | .02 | -.42 | .41 |
| DIAG: CORRECT | 56% | 55% | 58% | 71% | 38% | 67% |
| DIAG: INCOMPL | 11% | 27% | 17% | 19% | 35% | 21% |
| DIAG: EXTRA | 17% | 7% | 25% | 6% | 8% | |
| DIAG: WRONG | 17% | 11% | | 3% | 19% | 13% |
| TREAT: CORR | 28% | 31% | 25% | 34% | 19% | 33% |
| TREAT: ENOUGH | 50% | 50% | 58% | 53% | 62% | 63% |
| TREAT: USEFUL | | 9% | 17% | 10% | 8% | |
| TREAT: INCOMPL | | 7% | | 3% | 12% | 4% |
| TREAT: DANGER | 22% | 3% | | | | |
| LAB: ABSENT | 33% | 57% | 33% | 35% | 42% | 25% |
| LAB: CAUTION | 33% | 25% | 25% | 31% | 23% | 33% |
| LAB: JUST | 11% | 8% | 25% | 13% | 12% | 21% |
| LAB: NOT JUST | 22% | 11% | 17% | 21% | 23% | 21% |
| D USE: RATION | 56% | 69% | 83% | 77% | 54% | 63% |
| D USE: POLYPHCY | 17% | 12% | | 2% | 27% | 13% |
| D USE: IRRATION | | 2% | | 2% | | 8% |
| D USE: EXPENSV | 28% | 17% | 17% | 19% | 19% | 17% |

Reported is the number of vignette observations for each category. Scores V: HIST (ALL) through EXAM IMP are normalized within each vignette. Therefore, negative scores are below average and positive scores are above average. Scores DIAG: CORRECT through D USE: EXPENSV are the percentage of all vignettes observed that fit into the respective category. Scores within score type (for example DIAG: CORRECT, DIAG: INCOMPL, DIAG: EXTRA and DIAG: WRONG) sum to 100%.

Table 47: Vignette Quality by Cadre

| | NURSE | ASSISTANT | OFFICER | DOCTOR |
|---|---|---|---|---|
| VIGNETTE OBS | 42 | 84 | 168 | 46 |
| V: HIST (ALL) | -.52 | -.27 | .21 | .32 |
| V: EXAM (ALL) | -.53 | -.36 | .19 | .45 |
| V: EDUC (ALL) | -.39 | -.08 | .17 | .01 |
| DIAG: CORRECT | 55% | 55% | 60% | 59% |
| DIAG: INCOMPL | 36% | 26% | 22% | 15% |
| DIAG: EXTRA | 5% | 6% | 8% | 13% |
| DIAG: WRONG | 5% | 13% | 10% | 13% |
| TREAT: CORR | 31% | 27% | 30% | 30% |
| TREAT: ENOUGH | 52% | 48% | 54% | 52% |
| TREAT: USEFUL | 12% | 11% | 8% | 7% |
| TREAT: INCOMPL | 5% | 11% | 7% | 9% |
| TREAT: DANGER | | 4% | 1% | 2% |
| LAB: ABSENT | 83% | 61% | 37% | 30% |
| LAB: CAUTION | 14% | 29% | 29% | 30% |
| LAB: JUST | 2% | 10% | 22% | 28% |
| LAB: NOT JUST | | 1% | 12% | 11% |
| D USE: RATION | 67% | 70% | 69% | 76% |
| D USE: POLYPHCY | 14% | 11% | 11% | 4% |
| D USE: IRRATION | | 1% | 2% | 2% |
| D USE: EXPENSV | 19% | 18% | 18% | 17% |

Reported is the number of vignette observations for each category. Scores V: HIST (ALL) through EXAM IMP are normalized within each vignette. Therefore, negative scores are below average and positive scores are above average. Scores DIAG: CORRECT through D USE: EXPENSV are the percentage of all vignettes observed that fit into the respective category. Scores within score type (for example DIAG: CORRECT, DIAG: INCOMPL, DIAG: EXTRA and DIAG: WRONG) sum to 100%.

Table 48: Vignette Quality by Quartile of Experience

| | first | second | third | fourth |
|---|---|---|---|---|
| VIGNETTE OBS | 94 | 86 | 86 | 90 |
| V: HIST (ALL) | -.03 | .16 | -.13 | 0 |
| V: EXAM (ALL) | -.12 | .15 | -.11 | .08 |
| V: EDUC (ALL) | -.15 | .27 | -.05 | -.05 |
| DIAG: CORRECT | 55% | 64% | 56% | 54% |
| DIAG: INCOMPL | 23% | 23% | 27% | 22% |
| DIAG: EXTRA | 12% | 3% | 6% | 10% |
| DIAG: WRONG | 10% | 9% | 12% | 13% |
| TREAT: CORR | 21% | 36% | 34% | 27% |
| TREAT: ENOUGH | 55% | 51% | 51% | 53% |
| TREAT: USEFUL | 14% | 9% | 5% | 8% |
| TREAT: INCOMPL | 7% | 3% | 8% | 11% |
| TREAT: DANGER | 2% | | 2% | 1% |
| LAB: ABSENT | 51% | 50% | 49% | 37% |
| LAB: CAUTION | 22% | 28% | 29% | 29% |
| LAB: JUST | 20% | 17% | 14% | 19% |
| LAB: NOT JUST | 6% | 5% | 8% | 16% |
| D USE: RATION | 57% | 85% | 73% | 62% |
| D USE: POLYPHCY | 15% | 7% | 9% | 13% |
| D USE: IRRATION | 2% | | 2% | 1% |
| D USE: EXPENSV | 26% | 8% | 15% | 23% |

Reported is the number of vignette observations for each category. Scores V: HIST (ALL) through EXAM IMP are normalized within each vignette. Therefore, negative scores are below average and positive scores are above average. Scores DIAG: CORRECT through D USE: EXPENSV are the percentage of all vignettes observed that fit into the respective category. Scores within score type (for example DIAG: CORRECT, DIAG: INCOMPL, DIAG: EXTRA and DIAG: WRONG) sum to 100%.

## 8.3 Vignette Composition

In this section we examine the process by which vignette scores were established. We look at the scores for diagnosis, treatment, prescription and laboratory use and the correspondance between the actual diagnoses, treatments, prescriptions and labtests used and the scores that were assigned.

### 8.3.1 Labratory Use

Table 49: Number of Labtests ordered for each Vignette

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LAB TESTS 1 | 1 | .55 | 1.25 | 1 | 2 | 1.33 | 1.4 | 2 | .5 | .67 | 1 |
| LAB TESTS 2 | .33 | .3 | 1.13 | .56 | 1.5 | 1 | 1.8 | 2 | 1 | 1.67 | 1.25 |
| LAB TESTS 3 | .67 | .3 | .75 | 1.22 | 1 | .5 | 1.4 | 1.5 | .5 | 2 | .75 |
| LAB TESTS 4 | .67 | .2 | .75 | .11 | .5 | .17 | 1.2 | .5 | 0 | .67 | 1.5 |
| LAB TESTS 5 | .33 | .13 | .25 | 0 | 0 | 0 | .33 | 0 | 0 | 0 | .75 |
| LAB TESTS 6 | 1 | .93 | 1 | 1.4 | 1 | .83 | 1 | 1 | .5 | 1 | 2 |
| LAB TESTS TOT | -.02 | -.43 | .21 | -.06 | .31 | -.14 | .69 | .5 | -.44 | .44 | .76 |

For each of the six vignettes the number of labtests ordered is reported. This can be less than one since often no labtest is ordered. The total reflects the normalized (subtract mean and devide by standard deviation) for each vignette. Thus the sample average for the total number is zero by definition. Negative scores are below average. Positive scores are above average.

Table 50: Labtest use by Owner Level breakdown: Vignette #1

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NO TEST | 0 | .55 | .13 | .22 | 0 | .17 | 0 | 0 | .5 | .33 | 0 |
| BS MALARIA | .67 | .45 | .88 | .78 | 1 | .83 | 1 | 1 | .5 | .67 | 1 |
| FBP | .33 | 0 | .13 | .11 | 0 | .17 | 0 | .5 | 0 | 0 | 0 |
| LUMBAR | 0 | 0 | 0 | .11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| HB | 0 | .05 | 0 | 0 | .5 | .17 | 0 | 0 | 0 | 0 | 0 |
| STOOL | 0 | 0 | 0 | 0 | .5 | .17 | .2 | 0 | 0 | 0 | 0 |
| URINE | 0 | 0 | .13 | 0 | 0 | 0 | .2 | .5 | 0 | 0 | 0 |
| WIDAL | 0 | .05 | .13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Fraction of vignettes with given diagnosis, treatment or labtest.

Table 51: Labtest use by Owner Level breakdown: Vignette #2

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NO TEST | .67 | .75 | .25 | .67 | 0 | .17 | 0 | 0 | 0 | 0 | .25 |
| URINE | 0 | .15 | .63 | .33 | .5 | .5 | .8 | .5 | 1 | 1 | .5 |
| HVS | 0 | .1 | .5 | 0 | 1 | .33 | .6 | .5 | 0 | 0 | .25 |
| FBP | 0 | 0 | 0 | .11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| STOOL | 0 | 0 | 0 | .11 | 0 | 0 | 0 | 0 | 0 | 0 | .5 |
| X RAY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .5 | 0 | 0 | 0 |
| ULTRASOUND | 0 | .05 | 0 | 0 | 0 | 0 | .4 | .5 | 0 | .33 | 0 |
| VDRL | 0 | 0 | 0 | 0 | 0 | .17 | 0 | 0 | 0 | 0 | 0 |
| PREG TEST | .33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WBC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .33 | 0 |

Fraction of vignettes with given diagnosis, treatment or labtest.

### 8.3.2 Diagnosis

Table 52: Labtest use by Owner Level breakdown: Vignette #3

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NO TEST | .33 | .75 | .38 | .22 | .5 | .67 | .2 | 0 | .5 | 0 | .5 |
| STOOL | .33 | .15 | .5 | .56 | .5 | .33 | .8 | 1 | .5 | 1 | .5 |
| FBP | 0 | .05 | .13 | .22 | 0 | 0 | .2 | .5 | 0 | 0 | 0 |
| BS MALARIA | .33 | .05 | .13 | .22 | 0 | .17 | .4 | 0 | 0 | 1 | .25 |
| UNSPECIFIED | 0 | .05 | 0 | .11 | .5 | 0 | 0 | 0 | 0 | 0 | 0 |
| ENT EXAM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| URINE | 0 | 0 | 0 | .11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Fraction of vignettes with given diagnosis, treatment or labtest.

Table 53: Labtest use by Owner Level breakdown: Vignette #4

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NO TEST | .33 | .8 | .38 | .89 | .5 | .83 | .2 | .5 | 1 | .67 | .25 |
| SPUTUM | 0 | .15 | .38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .25 |
| X RAY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .5 | 0 | 0 | 0 |
| BS MALARIA | 0 | .05 | .38 | .11 | 0 | 0 | .4 | 0 | 0 | .33 | .5 |
| WBC | 0 | 0 | 0 | 0 | 0 | 0 | .6 | 0 | 0 | 0 | 0 |
| STOOL | .67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .33 | .25 |
| URINE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .25 |
| UNSPECIFIED | 0 | 0 | 0 | 0 | .5 | .17 | .2 | 0 | 0 | 0 | .25 |

Fraction of vignettes with given diagnosis, treatment or labtest.

Table 54: Labtest use by Owner Level breakdown: Vignette #5

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NO TEST | .67 | .87 | .75 | 1 | 1 | 1 | .67 | 1 | 1 | 1 | .5 |
| BS MALARIA | .33 | .13 | 0 | 0 | 0 | 0 | .33 | 0 | 0 | 0 | .5 |
| UNSPECIFIED | 0 | 0 | .25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .25 |

Fraction of vignettes with given diagnosis, treatment or labtest.

Table 55: Labtest use by Owner Level breakdown: Vignette #6

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NO TEST | 0 | .33 | .25 | 0 | 0 | .17 | 0 | 0 | .5 | 0 | 0 |
| STOOL | 1 | .67 | .75 | 1 | 1 | .83 | 1 | 1 | .5 | 1 | 1 |
| HB | 0 | .2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BS MALARIA | 0 | .07 | .25 | .2 | 0 | 0 | 0 | 0 | 0 | 0 | .25 |
| UNSPECIFIED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .25 |
| URINE | 0 | 0 | 0 | .2 | 0 | 0 | 0 | 0 | 0 | 0 | .25 |
| WIDAL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .25 |

Fraction of vignettes with given diagnosis, treatment or labtest.

Table 56: Diagnosis by Owner Level breakdown: Vignette #1

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MALARIA | 1 | .95 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| ANEMIA | .33 | .15 | .13 | .11 | .5 | .17 | 0 | 0 | 0 | 0 | .25 |
| AC BRONCHITIS | 0 | 0 | .13 | 0 | 0 | .17 | 0 | 0 | 0 | 0 | 0 |
| NONE | 0 | .05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| URTI | 0 | 0 | 0 | .11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| UTI | 0 | 0 | 0 | .11 | 0 | 0 | 0 | .5 | 0 | 0 | 0 |

Fraction of vignettes with given diagnosis, treatment or labtest.

Table 57: Diagnosis by Owner Level breakdown: Vignette #2

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PID | .67 | .55 | .38 | .67 | 1 | 1 | .4 | .5 | .5 | 1 | .5 |
| UTI | 0 | .05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VAG DISCH SYN | 0 | .05 | 0 | .11 | 0 | 0 | .2 | 0 | 0 | 0 | .25 |
| GONORRHOEA | 0 | .05 | .38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VAG INFECTION | 0 | .25 | .13 | 0 | 1 | 0 | .2 | 0 | 0 | 0 | 0 |
| OVARIAN CYST | 0 | 0 | 0 | .11 | 0 | 0 | 0 | .5 | 0 | 0 | 0 |
| APPENDICITIS | .33 | .05 | .13 | .11 | 0 | 0 | 0 | 0 | 0 | .33 | .25 |
| MALARIA | 0 | .05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LOWER AND PAIN | 0 | .05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NONE | 0 | 0 | 0 | 0 | 0 | 0 | .4 | 0 | .5 | 0 | 0 |
| KIDNEY | 0 | 0 | .13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Fraction of vignettes with given diagnosis, treatment or labtest.

Table 58: Diagnosis by Owner Level breakdown: Vignette #3

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AC DIARR DIS | 0 | .45 | .38 | .22 | 0 | .67 | 0 | 1 | 0 | 0 | .5 |
| DEHYDRATION | .67 | .35 | .63 | .56 | .5 | .67 | .8 | .5 | .5 | 0 | .5 |
| MALARIA | .33 | .1 | .13 | .22 | 0 | 0 | 0 | 0 | 0 | 0 | .25 |
| G ENTERITIS | 1 | .3 | .13 | .44 | 1 | .17 | .6 | 0 | .5 | 1 | 0 |
| AMOEBAS | 0 | .05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CHOLORA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .5 | 0 | 0 |
| WORMS | 0 | 0 | 0 | .11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INF DIARR | 0 | 0 | 0 | .11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NONE | 0 | .05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Fraction of vignettes with given diagnosis, treatment or labtest.

Table 59: Diagnosis by Owner Level breakdown: Vignette #4

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PNEUMONIA | .67 | .7 | .88 | .89 | 1 | .83 | .8 | 1 | 1 | 1 | .75 |
| S PNEUMONIA | 0 | 0 | 0 | 0 | 0 | 0 | .2 | 0 | 0 | 0 | 0 |
| AC BRONCHITIS | .33 | .2 | .13 | .11 | 0 | .17 | 0 | 0 | 0 | 0 | .25 |
| PTB | 0 | .05 | .13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MALARIA | 0 | .05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .33 | 0 |
| WORMS | .33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Fraction of vignettes with given diagnosis, treatment or labtest.

Table 60: Diagnosis by Owner Level breakdown: Vignette #5

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FLU | 1 | .93 | .75 | .8 | 1 | 1 | 1 | 1 | .5 | 1 | .75 |
| ALLERGY | .33 | 0 | .25 | .2 | 0 | 0 | 0 | 0 | 0 | 0 | .25 |
| URTI | 0 | .07 | 0 | 0 | 0 | 0 | 0 | .5 | .5 | 0 | 0 |
| N POLYPS | 0 | 0 | .25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Fraction of vignettes with given diagnosis, treatment or labtest.

Table 61: Diagnosis by Owner Level breakdown: Vignette #6

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WORMS | 1 | .8 | .75 | .6 | 1 | 1 | 1 | .5 | .5 | 0 | 1 |
| AC DIARR DIS | 0 | .07 | 0 | .2 | 0 | 0 | 0 | 0 | .5 | 0 | 0 |
| DYSENTERY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| AMOEBAS | 0 | 0 | .25 | 0 | .5 | 0 | 0 | 0 | 0 | 0 | 0 |
| COLITIS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .5 | 0 | 0 | 0 |
| G ENTERITIS | 0 | 0 | 0 | 0 | .5 | 0 | 0 | 0 | 0 | 0 | 0 |
| MALARIA | 0 | .13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| URTI | 0 | .13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NONE | 0 | 0 | 0 | .2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Fraction of vignettes with given diagnosis, treatment or labtest.

### 8.3.3 Treatment and Prescription Practice

Table 62: Drugs (treatment) used by Owner Level breakdown: Vignette #1

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S/P | 1 | .8 | .88 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| IMQ | 0 | .05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FOLIC | 0 | .1 | .13 | .11 | .5 | .17 | 0 | 0 | 0 | 0 | .25 |
| ANTI-EM | .33 | 0 | 0 | 0 | 0 | .17 | 0 | 0 | 0 | .33 | .25 |
| PCM | .33 | .3 | .25 | .56 | .5 | .5 | .2 | .5 | 1 | 1 | .5 |
| ORS | 0 | .15 | 0 | .11 | 0 | 0 | 0 | 0 | .5 | 0 | .25 |
| CQ | 0 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CQINJ | 0 | 0 | .13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MES | 0 | 0 | .13 | 0 | 0 | .17 | 0 | 0 | 0 | .33 | 0 |
| VIT | 0 | .05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .25 |
| AMODIAQ | 0 | 0 | .13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AMOX | 0 | 0 | 0 | .22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Fraction of vignettes with given diagnosis, treatment or labtest.

Table 63: Drugs (treatment) used by Owner Level breakdown: Vignette #2

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| COTRIM | 0 | .4 | .88 | .56 | 0 | .83 | .2 | 0 | .5 | .33 | .5 |
| DOXYC | .33 | .65 | .75 | .78 | 0 | .67 | .6 | .5 | .5 | .67 | .75 |
| METRON | .67 | .6 | .75 | .89 | 1 | .83 | .2 | 0 | 0 | .33 | .75 |
| REF | 0 | .05 | 0 | 0 | 0 | 0 | .4 | 0 | .5 | 0 | .25 |
| PCM | .33 | .15 | 0 | .11 | .5 | 0 | .4 | 0 | 0 | 0 | 0 |
| ASA | 0 | .1 | 0 | 0 | 0 | .17 | 0 | 0 | 0 | 0 | 0 |
| AMOX | 0 | .05 | 0 | .11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PPF | 0 | .05 | .13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIPRO | 0 | .1 | 0 | .11 | .5 | .17 | .2 | .5 | 0 | .33 | .25 |
| PESS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .25 |
| BUSCO | 0 | .05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .33 | .25 |
| CIMET | .33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KANAMY | 0 | .05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NYSTAT | 0 | .05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GRISEO | 0 | .05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BELLA | 0 | 0 | .13 | 0 | 0 | 0 | 0 | 0 | 0 | .33 | 0 |
| ERYTHRO | 0 | .05 | .13 | 0 | 0 | 0 | 0 | 0 | 0 | .33 | 0 |
| FLAGYL | 0 | 0 | .13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CLOXA | 0 | 0 | 0 | .11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DICLO | 0 | 0 | 0 | .11 | 0 | 0 | 0 | .5 | 0 | 0 | 0 |
| CLOTRIM | 0 | 0 | 0 | 0 | 0 | 0 | .2 | 0 | 0 | 0 | 0 |
| KETOC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .5 | 0 | 0 | 0 |
| BCO | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .33 | 0 |
| NIMD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .5 | 0 | 0 | 0 |
| PHENO | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .33 | 0 |
| TINID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .5 | 0 | 0 | 0 |
| XPEN | 0 | 0 | 0 | .11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Fraction of vignettes with given diagnosis, treatment or labtest.

Table 64: Drugs (treatment) used by Owner Level breakdown: Vignette #3

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ORS | .33 | .75 | .63 | .44 | 1 | .67 | 0 | .5 | .5 | .33 | .75 |
| IVDRIP | 0 | .05 | .38 | .44 | 1 | .17 | .8 | 1 | 0 | .67 | 0 |
| OBSERVE | 0 | .15 | .5 | .22 | .5 | .17 | .2 | .5 | 0 | .33 | .25 |
| REF | .33 | .05 | .13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ANTIPARS | 0 | .1 | 0 | .22 | 0 | .17 | 0 | 0 | 0 | 0 | 0 |
| ANTIBIOT | .33 | .35 | .38 | .33 | 0 | .33 | 0 | 0 | 1 | .33 | .25 |
| ANTIDIAR | .33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SALT | 0 | .05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ANTI-EM | 0 | 0 | 0 | 0 | 0 | .33 | 0 | 0 | 0 | .33 | .25 |
| IVSALT | 0 | 0 | 0 | .11 | 0 | .17 | .2 | .5 | .5 | 0 | .5 |
| PCM | .33 | .2 | .25 | 0 | 0 | .17 | 0 | 0 | 0 | 0 | 0 |
| HOME RDY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .5 | 0 | 0 | 0 |
| S/P | .33 | .05 | .13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .25 |
| ANTI-EM | 0 | 0 | .13 | 0 | 0 | .17 | 0 | 0 | 0 | .33 | 0 |
| MAGNES | 0 | .05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| UNTREATED | 0 | .1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Fraction of vignettes with given diagnosis, treatment or labtest.

Table 65: Drugs (treatment) used by Owner Level breakdown: Vignette #4

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| COTRIM | .33 | .1 | .13 | 0 | 0 | .17 | .6 | 0 | 0 | 0 | 0 |
| ANTIPYR | 1 | .65 | .63 | .89 | 1 | .67 | .6 | 1 | .5 | .33 | 1 |
| PPF | 0 | .35 | .13 | .11 | 0 | .33 | 0 | 0 | .5 | 0 | 0 |
| XPEN | .33 | .45 | .5 | .67 | .5 | 0 | .2 | .5 | .5 | .33 | 0 |
| AMOX | .67 | .2 | .5 | .78 | .5 | .33 | .2 | .5 | .5 | .33 | .75 |
| BRONCH | 0 | .1 | .25 | .33 | .5 | .33 | .2 | .5 | 0 | .67 | 0 |
| MES | .33 | .05 | 0 | .11 | 0 | .17 | 0 | 0 | 0 | 0 | 0 |
| PENV | 0 | .15 | 0 | 0 | 0 | .17 | 0 | 0 | 0 | 0 | 0 |
| CHLORAMP | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .5 | 0 | 0 | .25 |
| AMPCLOX | 0 | 0 | 0 | 0 | .5 | 0 | 0 | 0 | 0 | .33 | 0 |
| ERYTHRO | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .33 | .25 |
| S/P | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .5 | 0 | 0 |
| AMPICILLIN | 0 | .05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| HOME RDY | 0 | .05 | 0 | 0 | .5 | 0 | 0 | 0 | 0 | 0 | 0 |
| PIRITON | 0 | 0 | .13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MUCOLY | 0 | .05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VIT | .33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LEVIMOS | .33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| UNTREATED | 0 | .05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Fraction of vignettes with given diagnosis, treatment or labtest.

Table 66: Drugs (treatment) used by Owner Level breakdown: Vignette #5

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ANALGES | .33 | .93 | .5 | .8 | .5 | .83 | 0 | .5 | 0 | 1 | .75 |
| ANTIPYR | .67 | .07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EPHIDR | 0 | .07 | .5 | .4 | .5 | .17 | 0 | 0 | .5 | 0 | .5 |
| PIRITON | .33 | .4 | .25 | .6 | .5 | .33 | .33 | .5 | .5 | 0 | .25 |
| AMPICILLIN | 0 | 0 | 0 | 0 | 0 | .17 | 0 | 0 | 0 | 0 | 0 |
| ANTI-EM | 0 | .07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ERYTHRO | 0 | .07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| HOME RDY | 0 | 0 | 0 | 0 | .5 | 0 | 0 | 0 | 0 | 0 | 0 |
| OBSERVE | 0 | 0 | 0 | 0 | 0 | 0 | .33 | 0 | 0 | 0 | 0 |
| UNTREATED | 0 | 0 | .25 | 0 | 0 | 0 | .33 | 0 | 0 | 0 | 0 |

Fraction of vignettes with given diagnosis, treatment or labtest.

Table 67: Drugs (treatment) used by Owner Level breakdown: Vignette #6

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MEBEND | .67 | .67 | .75 | .4 | 0 | .83 | 1 | .5 | .5 | 1 | .75 |
| ZENTEL | 0 | .07 | 0 | 0 | .5 | 0 | 0 | 0 | 0 | 0 | 0 |
| ALBEND | 0 | 0 | 0 | .2 | .5 | .17 | 0 | 0 | 0 | 0 | .25 |
| KETRAX | .33 | .07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PCM | .33 | .2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ORS | 0 | .07 | .25 | .2 | 0 | 0 | 0 | 0 | .5 | 1 | 0 |
| ERYTHRO | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .5 | 0 | 1 | 0 |
| MES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .25 |
| FLAGYL | 0 | .07 | .25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| METRON | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .5 | 0 | 0 | 0 |
| PENV | 0 | .07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| S/P | 0 | .07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VIT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .25 |
| UNTREATED | 0 | 0 | 0 | .2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Fraction of vignettes with given diagnosis, treatment or labtest.

Table 68: Number of Drugs prescribed for each Vignette

| | COGI d | Gt D | Gt HC | Gt H | Im H | Lh d | Lh h | Ps h | RC d | RC h | SDA d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DRUGS 1 | 1.67 | 1.6 | 1.63 | 2 | 2 | 2 | 1.2 | 1.5 | 2.5 | 2.67 | 2.5 |
| DRUGS 2 | 1.33 | 2.33 | 2.88 | 2.78 | 1.5 | 2.5 | 2.33 | 3 | 2 | 3.33 | 3.33 |
| DRUGS 3 | 1.33 | .94 | 1.63 | 1.33 | 1.5 | 1.5 | 1.2 | 2 | 1.5 | 2 | 1.5 |
| DRUGS 4 | 2.33 | 1.58 | 1.63 | 2 | 2 | 1.5 | 1.2 | 2 | 2 | 2 | 1.25 |
| DRUGS 5 | .33 | .6 | 1 | 1 | 1 | .67 | .5 | .5 | 1 | 0 | .75 |
| DRUGS 6 | 1 | 1 | 1 | .75 | 1 | 1 | 1 | 1.5 | .5 | 2 | 1.5 |
| DRUG TOT | -.2 | -.25 | .12 | .18 | .04 | .01 | -.44 | .38 | .09 | .81 | .4 |

For each of the six vignettes the number of drugs prescribed is reported. Analgesics, vitamins or home remedies (lemon tea for example) do not count as a drug. If the clinician refused to give a prescription there is no score (this is not counted as zero drugs prescribed.) The total reflects the normalized (subtract mean and devide by standard deviation) for each vignette. Thus the sample average for the total number is zero by definition. Negative scores are below average. Positive scores are above average.

# 9 Exit Interview: Visit Reasons and Quality Evaluation

In addition to evaluating quality we also interviewed patients about their assessment of quality. Many questions focused on how much they paid and how they traveled to that facility (see Figure 10) data which is not presented here. However, patients were asked their reason for coming (they could provide multiple reasons), whether they had visited before, whether or not they would return, their assessment of the reception and quality of both clinicians and nursing staff and about the perceived availability of drugs. The results of those questions are shown below reason district for government facilities (Table 69), owner (Table 69), and level (Table 70). The scores CLIN: NICE, CLIN: SERVICE, NURSE: NICE, NURSE: SERVICE and DRUG AVAIL are all normalized to a mean of zero and a standard deviation of one. Thus the average of the whole data set is zero for each of these scores and negative numbers are below average and positive numbers are above average.

Table 69: Visit Reason and Quality Evaluation by District

| | Arumeru | Arusha | Monduli |
|---|---|---|---|
| | Reasons for Visiting this Faciility | | |
| SURVEY OBS | 171 | 160 | 206 |
| QUALIFICATION | .25 | .59 | .31 |
| CLOSE | .48 | .12 | .43 |
| EXPERIENCE (PER) | .1 | .1 | .17 |
| OWNER | .09 | .16 | .12 |
| EXPERIENCE (OTH) | .04 | .09 | .03 |
| NO OTHER CHOICE | .05 | 0 | .19 |
| INEXPENSIVE | .05 | .11 | .05 |
| DRUGS | .06 | .02 | .03 |
| LEVEL | .01 | .06 | .04 |
| EMPLOYER | .01 | 0 | .02 |
| KNOW PERSON | 0 | .01 | .01 |
| REFERAL | 0 | .04 | 0 |
| | Opinion of Clinical and Nursing Services | | |
| HERE BEFORE | .89 | .82 | .9 |
| RETURN | .98 | .93 | .98 |
| CLIN: NICE | -.22 | .35 | -.32 |
| CLIN: SERVICE | -.19 | .4 | -.33 |
| NURSE: NICE | -.16 | .36 | -.32 |
| NURSE: SERVICE | -.16 | .35 | -.31 |
| DRUG AVAIL | .23 | -.66 | -.29 |

## 9.1 Patient opinion compared to research team evaluation

As can be seen by the tables above, patients did not provide a lot of information about their opinion of quality and reception at facilities. Almost all patients said reception or quality were very good or good. There are two possible reasons for these answers. First, they did not feel free to talk to the enumerators. They were uneasy complaining. Second, they had chosen to visit the facility for some reason so they were less likely to complain. In other words, if we interviewed people who were not at the facility they might have had more critical things to say.

Nonetheless, with the little bit of information that we do have we can ask whether or not the opinions of patients have any bearing on what we observed. We kept track of patients throughout the process and can therefore pair most patients to the services they received. Not all patients receiving services were interviewed, and not all patients interviewed were observed by our team while they were receiving services, but most interviews do match to services provided. To that end we compare the following:

- Comparing patient assessment of drug availability and the research team's findings on drug availability (Table 72).

Table 70: Visit Reason and Quality Evaluation by Facility Level

| | Dispensary | Health Center | Hospital |
|---|---|---|---|
| | Reasons for Visiting this Faciility | | |
| SURVEY OBS | 338 | 158 | 186 |
| QUALIFICATION | .36 | .41 | .47 |
| CLOSE | .43 | .22 | .21 |
| EXPERIENCE (PER) | .15 | .06 | .15 |
| OWNER | .08 | .15 | .09 |
| EXPERIENCE (OTH) | .07 | .07 | .1 |
| NO OTHER CHOICE | .06 | .08 | .08 |
| INEXPENSIVE | .06 | .11 | .05 |
| DRUGS | .04 | .02 | .12 |
| LEVEL | .01 | .01 | .1 |
| EMPLOYER | .01 | 0 | .09 |
| KNOW PERSON | .01 | 0 | .02 |
| REFERAL | 0 | 0 | .03 |
| | Opinion of Clinical and Nursing Services | | |
| HERE BEFORE | .86 | .86 | .77 |
| RETURN | .98 | .95 | .87 |
| CLIN: NICE | -.1 | .05 | .13 |
| CLIN: SERVICE | -.07 | .08 | .06 |
| NURSE: NICE | -.08 | .1 | .05 |
| NURSE: SERVICE | -.08 | .11 | .05 |
| DRUG AVAIL | .09 | -.5 | .27 |

Table 71: Visit Reason and Quality Evaluation by Facility Owner

| | COGI | Govt | Islamic | Luth | RC | SDA |
|---|---|---|---|---|---|---|
| | Reasons for Visiting this Faciility | | | | | |
| SURVEY OBS | 24 | 537 | 30 | 45 | 20 | 6 |
| QUALIFICATION | .58 | .37 | .57 | .49 | .45 | .33 |
| CLOSE | .08 | .35 | .13 | .24 | .25 | .5 |
| EXPERIENCE (PER) | .04 | .12 | .4 | .07 | .05 | .33 |
| OWNER | 0 | .12 | 0 | 0 | 0 | .17 |
| EXPERIENCE (OTH) | .25 | .05 | .17 | .24 | .2 | 0 |
| NO OTHER CHOICE | 0 | .09 | 0 | 0 | .05 | 0 |
| INEXPENSIVE | .04 | .07 | .2 | .02 | .05 | 0 |
| DRUGS | .08 | .04 | .47 | .04 | .1 | 0 |
| LEVEL | 0 | .04 | 0 | .04 | .05 | 0 |
| EMPLOYER | 0 | .01 | .23 | .07 | .05 | 0 |
| KNOW PERSON | 0 | .01 | .07 | 0 | .05 | 0 |
| REFERAL | 0 | .01 | 0 | 0 | 0 | 0 |
| | Opinion of Clinical and Nursing Services | | | | | |
| HERE BEFORE | .71 | .87 | .73 | .61 | .7 | .83 |
| RETURN | 1 | .96 | .76 | 1 | .89 | 1 |
| CLIN: NICE | .22 | -.08 | 1.37 | -.32 | -.39 | -.39 |
| CLIN: SERVICE | .25 | -.06 | 1.37 | -.3 | -.37 | -.37 |
| NURSE: NICE | .3 | -.06 | .88 | -.28 | -.35 | -.35 |
| NURSE: SERVICE | .31 | -.05 | 1.18 | -.27 | -.34 | -.34 |
| DRUG AVAIL | .96 | -.25 | 1.07 | .66 | 1.04 | .84 |

- Comparing patient opinion of nursing reception and quality to the research team's evaluation of nursing services namely, dispensing, injections and wound dressing (Table 73).
- Comparing patient opinion of clinician reception and quality to the research team's evaluation of consultation quality (Table 74). This compares each consultation with each patient's opinion of the reception and quality of that consultation.
- Comparing facility averages of opinion of clinician reception and quality to the facility average of our teams evaluation of consultation quality.
- Comparing patient opinion of clinician reception and quality to the quality scores from the Vignette evaluation.

Table 72: Patient opinion on drug availability and Drug Evaluation

| DRUG AVAIL | always | sometime | rarely |
|---|---|---|---|
| MED OBS | 206 | 253 | 94 |
| LITPRES | .91 | .96 | .98 |
| SP | .99 | .87 | .99 |
| AMODIAQUIN | .87 | .81 | .85 |
| QUIN INJ | .69 | .49 | .56 |
| QUIN TAB | .74 | .68 | .93 |
| ASA TAB | 1 | .95 | .99 |
| PCM | 1 | .95 | .99 |
| ORS | 1 | 1 | 1 |
| COTRI TAB | 1 | .95 | .99 |
| COTRI SYR | 1 | 1 | 1 |
| PEN G | .98 | .99 | .99 |
| PEN V | .94 | .93 | .99 |
| AMP TAB | .41 | .12 | .09 |
| AMP SYR | .39 | .13 | .11 |
| TETRA | .64 | .48 | .3 |
| METRONIDAZ | .99 | 1 | 1 |
| MEBENDAZOL | 1 | 1 | 1 |
| TETRA EYE | .99 | .84 | .96 |
| BBE | 1 | .97 | .97 |
| MULTI VIT | .5 | .15 | .21 |
| DRUG SUPPLY | .85 | .75 | .78 |
| DELIV DAYS | 11.8 | 18.7 | 22.3 |

## 9.2 Discussion

Patients have opinions about drug availability that broadly match what we found (though certainly not exactly). When the facility had waited a longer time since the last delivery, patients suggested it was less likely to always have drugs. Facilities rated well by patients were much more likely to have ampicillin (tablets and injection) and tetracycline.

For nursing services there is precisely no difference at all between facilities that patients rate highly and facilities that patients do not rate highly.

For consultation quality there are differences but they are quite small. The scores are normalize so that the standard deviation is equal to one so that the differences can be seen to be quite small. With normalized scores, the average is always zero and therefore a negative number is below average and a positive number is above average, by construction. Patients think clinicians received them well when they explain the diagnosis well and when they open the consultation well, but they do not appear see the close of the consultation as reflective of a good reception. They agree with our clinicians only on the physical examination. When the clinician does a good physical examination the patients believe they have received good quality services. On history taking and overall score they disagree with the research team.

Table 73: Patient Opinion of Nursing Quality compared to Evaluation of Nursing Quality

| nursing | reception | | services | |
|---|---|---|---|---|
| | better | worse | better | worse |
| DRUG OBS | 145 | 383 | 144 | 384 |
| DISPENSE | .97 | .99 | .97 | .99 |
| LABEL | .81 | .81 | .81 | .81 |
| EXPLAIN | .92 | .94 | .92 | .94 |
| SIDE EFF | .13 | .1 | .13 | .1 |
| COMPLET | .15 | .11 | .15 | .11 |
| UNDERSTOOD | .79 | .79 | .78 | .79 |
| POLITE | .96 | .95 | .96 | .95 |
| WASH HAND | .46 | .52 | .47 | .52 |
| INJCTN OBS | 57 | 125 | 57 | 125 |
| LOAD PRES | .96 | .99 | .96 | .99 |
| LOAD CORR | .95 | .93 | .95 | .93 |
| GIVE INJ | .89 | .91 | .89 | .91 |
| STERILE | .95 | 1 | .95 | 1 |
| DISASSEM | .35 | .31 | .35 | .31 |
| WOUND OBS | 15 | 30 | 16 | 29 |
| TECHNIQUE | .4 | .4 | .44 | .38 |
| CLEAN | .6 | .57 | .63 | .55 |
| DRESS | .67 | .77 | .69 | .76 |

Table 74: Patient Opinion of Consultation Quality and Research Team Evaluation

| consultation | reception | | services | |
|---|---|---|---|---|
| | better | worse | better | worse |
| SUMMARY OBS | 185 | 269 | 183 | 271 |
| O: OPEN (AVG) | .03 | -.02 | .03 | -.02 |
| O: EXPL (AVG) | .04 | -.02 | .03 | -.02 |
| O: CLOSE (AVG) | -.11 | .06 | -.12 | .07 |
| O: SCORE (AVG) | .01 | -.01 | -.02 | .01 |
| O: HIST (AVG) | -.07 | .05 | -.11 | .07 |
| O: EXAM (AVG) | .09 | -.06 | .08 | -.05 |

Table 75: Patient Opinion of Consultation Quality (Facility Average) and Research Team Evaluation (Facility Average)

| consultation | reception | | services | |
|---|---|---|---|---|
| | better | worse | better | worse |
| SUMMARY OBS | 18 | 14 | 17 | 15 |
| O: OPEN (AVG) | .03 | .24 | .08 | .18 |
| O: EXPL (AVG) | .07 | -.06 | .12 | -.11 |
| O: CLOSE (AVG) | .03 | -.01 | .01 | .01 |
| O: SCORE (AVG) | .06 | -.03 | .08 | -.04 |
| O: HIST (AVG) | .01 | .04 | .01 | .03 |
| O: EXAM (AVG) | .08 | -.06 | .11 | -.07 |

Table 76: Patient Opinion of Consultation Quality and Vignette Quality

For vignettes there is more variety in the different types of scores and in some cases patients appear to know what clinicians are doing (again the differences are too small to make conclusive statements), but in other cases they do not. Overall there is no significant pattern.

These results lead me to conclude that patients are not very good at evaluating the quality of services they receive. They do not know the difference between a good consultation and a bad consultation. They might know something about whether or not they were politely received but they know little about the requirements of proper care. This should come as no surprise. This is why they seek medical care: they know less than clinicians.

However, if we examine Table 75, we see that patients are generally correct about the overall consultation quality score. When patients think particular facilities are better, those facilities tend to be better. The evidence is weak (and needs to be confirmed), but it is the authors belief that patients can evaluate the overall quality of a facility but are very poor at evaluation the quality of services that they just received.

# Glossary

## C

**Catholic** Roman Catholic Church, Arusha Diocese.

**COGI** Church of Gospel International, Arusha.

**COGI d** COGI dispensary.

## E

**ELCT** The Evangelical Lutheran Church of Tanzania, Arusha Diocese.

## G

**Gt D** Government Dispensary.

**Gt H** Government Hospital.

**Gt HC** Government Health Center.

## I

**Im H** Islamic Hospital, operated by Ithna Asheri Mosque. It is called the Ithna Asheri clinic, but it better described as a hospital.

**Ithna Asheri** Ithna Asheri Mosque, Arusha.

## L

**Lh d** Lutheran dispensary.

**Lh h** Luteran hospital: Selian Lutheran Hospital.

## P

**Ps h** Parastatal Hospital: AICC hospital.

## R

**RC d** Roman Catholic Dispensary.

**RC h** Roman Catholic Hospital.

## S

**SDA** The Seventh Day Adventist Church, Arusha.

**SDA d** Seventh Day Adventist dispensary.

## Infrastructure Evaluation (variables derived from Figure 8, page 84)

ANTISEPTIC Does the facility have broad spectrum antiseptic.

BANDAGES Does the facility have bandages.

ENVELOPES Does the facility have drug envelopes.

EQUIPMENT Total equipment availability score.

FACILITY OBS Number of observations used in calculating average score for drug dispensing.

FORCEPS Does the facility have forceps (dressing and dissection).

GENERAL COND Is it in good general condition.

GOOD COND Is the waiting area in good condition.

GRDS: ACCPT Grounds of facility are in acceptable condition.

GRDS: EXCEL Grounds of facility are in excellent condition.

GRDS: POOR Grounds of facility are in poor condition.

HEIGHT Does the facility have a method of determining a patient's height.

INJ ROOM Is there a space or room to get injections in privacy.

LAT COND Is it in good general condition.

LATRINE Is there at least one latrine.

MICROSCOPE Does the facility have a working microscope.

NEEDLE HLD Does the facility have needle holder.

NURSE ROOM Is there at least one room for nursing activities.

ORS MAT Does the facility have materials to prepare and administer ORS solution.

PAINT: ACCPT Paint of facility is in acceptable condition.

PAINT: EXCEL Paint of facility is in excellent condition.

PAINT: POOR Paint of facility is in poor condition.

PHYSICAL INF Total physical infrastructure score.

PLASTER Does the facility have plaster.

REST ROOM Is there a room for patients to rest.

ROOF: ACCPT Roof of facility is in acceptable condition.

ROOF: EXCEL Roof of facility is in excellent condition.

ROOF: POOR Roof of facility is in poor condition.

ROOM OBS Number of examination rooms.

SCALE Does the facility have a functioning scale for weighing.

SCISSORS Does the facility have scissors.

SIT Is there a place for patients to sit.

STERILIZE Does the facility have sterilizer and a stove.

SUTURES Does the facility have sutures.

SYR & NDLE Does the facility have syringes and needles.

TOTAL INF Total infrastructure score.

VENT/LIT Is the consulting room ventilated and well lit.

VENTILATED Is the waiting area well ventilated.

WAIT ROOM Is there a room/veranda for patients to wait.

WATER Is there piped water.

## Pharmaceutical Availability Evaluation (variables derived from Figure 9, page 85)

AMODIAQUIN Does the facility have amodiaquine.

AMP SYR Does the facility have ampicillin syrup.

AMP TAB Does the facility have ampicillin tablets.

ASA TAB Does the facility have ASA tablets.

BBE Does the facility have BBE.

COTRI SYR Does the facility have cotrimoxazole syrup.

COTRI TAB Does the facility have cotrimoxazole tablets.

DELIV DAYS Days since the last delivery of drugs (from the day of our visit).

DRUG SUPPLY Score for the number of necessary medications that are present (1 = 100%, 0 = 0%).

LITPRES Is literature on the new malaria protocol present.

MEBENDAZOL Does the facility have mebendazole.

MED OBS Number of Observations of Medical Stores.

METRONIDAZ Does the facility have metronidazole.

MULTI VIT Does the facility have multivitamins.

ORS Does the facility have ORS sachets.

PCM Does the facility have paracetamol.

PEN G Does the facility have penicillin G.

PEN V Does the facility have penicillin V.

QUIN INJ Does the facility have quinine injections.

QUIN TAB Does the facility have quinine tablets.

SP Does the facility have SP.

TETRA EYE Does the facility have tetracycline eye drops.

TETRA Does the facility have tetracycline.

## Consulting Room Equipment and Clinician Characteristics Evaluation (variables derived from Figure 2, on page 78)

ASSISTANT Cadre of the attending clinician: Clinical Assistant (CA).

BED Is the following available in the consultation room: An examination bed.

BP MACHINE Is the following available in the consultation room: A functioning sphygmomanometer.

CARDS Is the following available in the consultation room: New patient cards.

CLINICN OBS Number of Clinicians Observed.

DOCTOR Cadre of the attending clinician: Medical Officer (MO) or Assistant Medical Officer (AMO).

EXPERIENCE For the attending clinician: Years of experience in medical field.

GLOVES Is the following available in the consultation room: Gloves.

NURSE Cadre of the attending clinician: Nurse attendant, MCH aide, other.

OFFICER Cadre of the attending clinician: Clinical Officer (CO).

OTOSCOPE Is the following available in the consultation room: A functioning otoscope.

SPATULA Is the following available in the consultation room: Some spatula.

STETHO Is the following available in the consultation room: A functioning stethoscope.

TABLE Is the following available in the consultation room: At least one table and two chairs.

TENURE For the attending clinician: Length of time served at this post (at the time of the survey).

THERMO Is the following available in the consultation room: A functioning thermometer.

TORCH Is the following available in the consultation room: A functioning torch.

WASH BASIN Is the following available in the consultation room: A way to wash hands.

WELL LIT Is the following available in the consultation room: Is the room adequately lit.

## Nursing Quality Evaluation (variable derived from Figure 6 and 7 on pages 82 and 83)

CLEAN Clean wound properly.

COMPLET Discuss importance of completing dosage, if applicable.

DISASSEM Disassemble needle properly.

DRESS Dress wound properly.

DRUG OBS Number of observations used in calculating average score for drug dispensing.

GIVE INJ Give injection properly.

INJCTN OBS Number of observations used in calculating average score for administration of injections.

LOAD CORR Load needle correctly.

LOAD PRES Load prescription into needle properly.

POLITE Be polite to the patient.

STERILE Follow proper sterile procedure.

TECHNIQUE Technique.

UNDERSTOOD Make sure patient has understood.

WASH HAND Wash hands or insure there is no contamination.

WOUND OBS Number of observations used in calculating average score for wound dressing.

DISPENSE Dispense medication according to prescription.

EXPLAIN Explain how to take medication.

LABEL Properly label medication.

SIDE EFF Discuss side effects, if applicable.

## Consultation Evaluation (variables derived from Figure 3, 4 and 5 on pages 79 to 81)

ANEMIA Fever physical examination: checks for anemia.

AUSCULTATE Cough physical examination: Auscultate the chest.

BEGIN CONS Number of consultation beginnings observed.

BLOOD SLIDE Fever physical examination: order a blood slide.

BLOOD SPUT Cough history taking: Presence of blood in sputum.

BLOOD/MUCUS Diarrhea history taking: presence of blood and/or mucus in stools.

CHAIR Opening the consultation: Does the patient have a chair to sit on.

CHEST PAIN Cough history taking: Presence of chest pain.

CHILLS SWEATS Fever history taking: presence of chills, sweats.

CLOSE CONS Number of consultation closings observed.

CONSISTENCY Diarrhea history taking: consistency of stools.

CONS Number of consultations observed in their main part (diagnosis).

CONVULSIONS Fever history taking: presence of convulsions.

COUGH IN FEVER Fever history taking: presence of cough, sore throat, pain during swallowing.

COUGH OBS Number of patients presenting with cough as a major symptom.

COUGH: GEN EXAM Cough: Perform general physical examination, inspection.

DIARR: GEN EXAM Diarrhea: Perform general physical examination, inspection.

DIARRHEA OBS Number of patients presenting with diarrhea as a major symptom.

DIARRHEA/VOMIT Fever history taking: presence of diarrhea or vomiting.

DIFF BREATHING Cough history taking: Presence of difficulty in breathing.

DISCHARGE/ULCER STD history taking: type of discharge, or how ulcer started.

DISCUSS RETURN Closing the consultation: Explain whether or not to return for further treatment.

DURATION OF COUGH Cough history taking: The duration of cough.

EAR/THROAT Fever physical examination: checks ear/throat.

ENSURE UNDERSD General behavior in consultation: Ensure patient had understood diagnosis, etc.

EXAM TO SYMPTS Other history taking: Physical Examination is according to the symptoms.

EXPLAIN DIAGNOSIS Closing the consultation: Explain the diagnosis (in common language).

EXPLAIN TREATMENT Closing the consultation: Explain the treatment being provided.

FEVER OBS Number of patients presenting with fever as a major symptom.

FEVER PATTERN Fever history taking: pattern (periodicity) of fever.

FEVER W/ COUGH Cough history taking: Presence of fever.

FEVER W/ DIARR Diarrhea history taking: presence of fever.

FEVER W/ STD STD history taking: presence of fever.

FEVER: GEN EXAM Fever: Perform general physical examination, inspection.

FONTANELLA Diarrhea physical examination: examine for sunken front fontanelle/eyes.

FREQUENCY Diarrhea history taking: frequency of stools.

GENERAL OBS Number of patients presenting with general symptoms other than, fever, cough, diarrhea, or symptoms indicative of STDs.

GENITALIA STD history taking: Examine genitalia.

GREET Opening the consultation: Greet the patient.

HEALTH EDUCATION Closing the consultation: Give any health education related to diagnosis.

HISTORY TO SYMPT Other history taking: Take history according to symptoms.

INDRAWING Cough physical examination: Observe breathing for chest indrawing.

LET TALK General behavior in consultation: Did the health worker allow the patient to talk.

LETHARGY Diarrhea physical examination: assesses general status (alert or lethargic).

LISTEN General behavior in consultation: Did the health worker listen to the patient/caregiver.

LOOK AT Opening the consultation: Look at the patient while he or she is talking.

LYMPH NODES STD history taking: Palpates for swollen lymph nodes.

O SYMPT DURATION Basic history taking in consultation: Duration of other symptoms.

O: CLOSE (AVG) Average score of the questions on how the clinician closes the consultation.

O: EXAM (AVG) Total Consultation physical examination score (for fever, cough and diarrhea). This is an average across all three types of consultation with the scores within each type of symptom normalized.

O: EXPL (AVG) Average score for how the clinician explains the diagnosis to the patient. This is an average for all consultations.

O: HIST (AVG) Total consultation history taking score (for fever, cough and diarrhea). This is an average across all three types of consultation with the scores within each type of symptom normalized.

O: OPEN (AVG) Average score for how the clinician welcomes the patient.

O: SCORE (AVG) Total consultation diagnosis score including both history taking and physical examination (for fever, cough and diarrhea).

OTHER SYMPTOMS Basic history taking in consultation: Asking if there are other associated symptoms.

OTHER: GEN EXAM Other: Perform general physical examination, inspection.

OTHR TREATMENT Basic history taking in consultation: If received treatment elsewhere or taken medicines.

PAIN ON URINATION STD history taking: pain on urination.

PAIN OR ITCHING STD history taking: presence of pain or itching.

PALPATE SPLEEN Fever physical examination: palpates for the spleen.

PARTNERS STD history taking: any treatment given to sexual partners.

PINCH SKIN Diarrhea physical examination: pinches abdominal skin to assess degree of dehydration.

PRECAUTIONS STD history taking: Takes precautions to minimize exposure to infection.

PREV EXPOSURE STD history taking: any previous exposure to STDs.

PROBE DEEPER Basic history taking in consultation: Probe regarding symptoms if patient was brief.

RESP RATE Cough physical examination: Count respiratory rate.

SEXUAL HISTORY STD history taking: history of recent sexual contact.

SKIN RASH STD history taking: Examines for presence of skin rash.

SPUTUM PROD Cough history taking: Sputum production or dry cough.

STD OBS Number of patients presenting with symptoms indicative of STDs.

STD: GEN EXAM Sexually transmitted disease: Perform general physical examination, inspection.

SUMMARY OBS Number of observations used in calculating summary scores.

SYMP DURATION Basic history taking in consultation: Duration of primary symptom.

TELL DIAGNOSIS Closing the consultation: Tell the patient his or her diagnosis (any name).

TEMP FOR COUGH Cough physical examination: Take the patient's temperature.

TEMP FOR DIARR Diarrhea physical examination: takes temperature.

TEMP FOR FEVER Fever physical examination: checks temperature with thermometer.

TENDERNESS STD history taking: Examines for lower abdominal tenderness (female).

THROAT Cough physical examination: Examine throat.

VACCINATIONS Cough history taking: If child is under 5, history of vaccinations.

VOMITING Diarrhea history taking: presence of vomiting.

WEIGH Diarrhea physical examination: takes weight (in case of a child below 5 years).

WELCOME Opening the consultation: Welcome the patient.

## Vignette Evaluation (variables derived from Figure 11 through Figure 16 on pages 96 to 101)

D USE: EXPENSV Drug use: Unnecessarily Expensive: Using and expensive medication when a less expensive and available medication serves the same purpose.

D USE: IRRATION Drug use: Irrational. Using two drugs which have the same effect. Wasteful behavior.

D USE: POLYPHCY Drug use: Polypharmacy. Using unnecessary additional drugs. Additional drugs serve no purpose for the diagnosed condition.

D USE: RATION Drug use: Reasonable. Proper use of drugs.

DIAG: CORRECT Diagnosis: Correct. As indicated by symptoms. Will help patient.

DIAG: EXTRA Diagnosis: Extra. Has diagnosed patient with illnesses from which the patient does not suffer.

DIAG: INCOMPL Diagnosis: Incorrect. Not as indicated by symptoms, but could be helpful to patient. For example, diagnose part of illness but not complete diagnosis.

DIAG: WRONG Diagnosis: Wrong. Will not help relieve symptoms or cure illness in any way.

EDUC IMP Health Education Score: All necessary or important health education points.

EXAM IMP Physical Examination Score: All necessary or important examination procedures.

HIST IMP History Taking Score: All necessary or important history taking questions.

LAB: ABSENT Use of Lab Tests: No test prescribed (always correct).

LAB: CAUTION Use of Lab Tests: Cautionary. Use of lab test to confirm a diagnosis that could have been made clinically (blood smear for malaria for example).

LAB: JUST Use of Lab Tests: Excessive use of lab test, that could potentially be justified by the clinician. The test is not necessary, but is defensible.

LAB: NOT JUST Use of Lab Tests: Excessive and not justified. A lab test that does not help to diagnosis the condition.

TREAT: CORR Treatment: Correct. The best possible treatment regime to help this patient.

TREAT: DANGER Treatment: Dangerous. Treatment will cause additional harm to the health of the patient.

TREAT: ENOUGH Treatment: Enough. The treatment regime will cause the patient to be cured, but is not best possible practice.

TREAT: INCOMPL Treatment: Wrong. Treatment will serve no purpose for the patient.

TREAT: USEFUL Treatment: Useful. Incorrect treatment, but the regime will help the patient nonetheless.

V: EDUC (ALL) Health Education Score: All useful health education points. For all vignettes; normalized within each vignette.

V: EXAM (ALL) Physical Examination Score: All useful examination procedures. For all vignettes; normalized within each vignette.

V: HIST (ALL) History Taking Score: All useful history taking questions. For all vignettes; normalized within each vignette.

VIGNETTE OBS Number of vignettes observed.

## Vignette Score Derivation: Diagnosis

AC BRONCHITIS Diagnosis: Acute Bronchitis, Bronchitis, Acute Respiratory tract infection.

AC DIARR DIS Diagnosis: Acute Diarrhea Disease.

ALLERGY Diagnosis: Allergy (nasal), Sinitis.

AMOEBAS Diagnosis: Amoebas, Amoebiasis.

ANEMIA Diagnosis: Anemia.

APPENDICITIS Diagnosis: Appendicitis.

CHOLORA Diagnosis: Cholora.

COLITIS Diagnosis: Colitis.

DEHYDRATION Diagnosis: Dehydration.

DYSENTERY Diagnosis: Dysentery.

FLU Diagnosis: Flu.

G ENTERITIS Diagnosis: Gastro Enteritis.

GONORRHOEA Diagnosis: Gonorrhoea, chronic gonorrhoea.

INF DIARR Diagnosis: Infective Diarrhea.

KIDNEY Diagnosis: Kidney Disease.

LOWER AND PAIN Diagnosis: Lower Abdominal Pain.

MALARIA Diagnosis: Malaria.

N POLYPS Diagnosis: Nasal Polyps.

NONE Diagnosis: No diagnosis given, unable to reach preliminary diagnosis given symptoms and physical examination.

OVARIAN CYST Diagnosis: Cystitis, Ovarian cysts.

PID Diagnosis: Pelvic Inflammatory Disease (PID).

PNEUMONIA Diagnosis: Pneumonia.

PTB Diagnosis: Pulmonary Tuberculosis (PTB).

S PNEUMONIA Diagnosis: Severe Pneumonia.

URTI Diagnosis: Upper Resipiratory Tract Infection.

UTI Diagnosis: Urinary Tract Infection.

VAG DISCH SYN Diagnosis: Vaginal discharge syndrome, genital discharge syndrome.

VAG INFECTION Diagnosis: Endometritis, urinary tract fungus, salpingitis, trichomonas.

WORMS Diagnosis: Worm Infestation, Helminthiasis.

## Vignette Score Derivation: Labtest

BS MALARIA B/S Malaria.

ENT EXAM Ent Exam.

FBP Full Blood Picture (FBP).

HB Hemoglobin (HB).

HVS HVS for wet preparation: High Vaginal Smear.

LAB TESTS 1 Number of Labaratory tests ordered for Vignette # 1.

LAB TESTS 2 Number of Labaratory tests ordered for Vignette # 2.

LAB TESTS 3 Number of Labaratory tests ordered for Vignette # 3.

LAB TESTS 4 Number of Labaratory tests ordered for Vignette # 4.

LAB TESTS 5 Number of Labaratory tests ordered for Vignette # 5.

LAB TESTS 6 Number of Labaratory tests ordered for Vignette # 6.

LAB TESTS TOT Total measure of the total number of laboratory tests ordered for all 6 vignettes, normalized for each vignette. Thus the average is 0 and standard deviation is 1.

LUMBAR Lumbar puncture.

NO TEST No test ordered.

PREG TEST Pregnancy Test: Urine.

SPUTUM Sputum for acid-fast bacilli (AFB). A feature of mycobacterium tuberculosis, a bacteria that causes tuberculosis.

STOOL Stool.

ULTRASOUND Ultrasound.

UNSPECIFIED Unspecified.

URINE Urinalysis.

VDRL Venereal Disease Research Laboratory: Lab test for syphilis.

WBC White blood cell count.

WIDAL Widal test for typhoid.

X RAY X-ray.

## Vignette Score Derivation: Treatment and Drug Use

ALBEND Drug: Albendazole (Zentel) "This medicine is similar to mebendazole, but often more expensive. It works against hookworm, whipworm, Strongyloides, roundworm and pinworm. Side effects are rare.".

AMODIAQ Drug: Amodiaquine.

AMOX Drug: Amoxicillin.

AMPCLOX Drug: a drug containing ampicillin and cloxacillin.

AMPICILLIN Drug: Ampicillin.

ANALGES Drug: Analgesic.

ANTI-EM Drug: Antiemetic, Promethazine (Phenergan). For allergic reactions and vomiting. Phenergan is a brand name.

ANTIBIOT Drug: Antibiotic. No particular type specified.

ANTIDIAR Drug: Antidiarrheol. No particular brand specified.

ANTIPARS Drug: Antiparasitic.

ANTIPYR Drug: Antipyretic such as paractemol (PCM).

ASA Drug: ASA.

BCO Drug: Vitamin B-complex (BCO).

BELLA Drug: Belladona and Hyoscyamine Anitspasmodic for gut cramps.

BRONCH Drug: Bronchiodialator.

BUSCO Drug: Buscopan.

CHLORAMP Drug: Chloramphenical "Chloramphenical should be used only for tyhpoid and for very serous infections that are not cured by sulfas, penicillin, tetracycline, or ampicillin ... Ampicillin usually works as well as or better than chloramphenicol, and is much safer.".

CHLORPROM Drug: Chlorpormazine. Can be used as an anti-emtic, but is primarily as an anti-psychotic and is therefore very dangerous when used only as an anti-emetic.

CIMET Drug: Cimetidine (Tagamet) “Cimetidine is an expensive but effective treatment for ulcers of the stomach and the gut.”.

CIPRO Drug: Ciproflaxine Expensive medicine for gonorrhea.

CLOTRIM Drug: Clotrimoxazole??

CLOXA Drug: Cloxacilline Special form of penicillin.

COTRIM Drug: Cotrimoxazole.

CQINJ Drug: Chloroqine injection.

CQ Drug: Chloroquine.

DICLO Drug: Diclofenac.

DOXYC Drug: Doxycycline.

DRUG TOT Total measure of the total number of drugs used for all 6 vignettes, normalized for each vignette. Thus the average is 0 and standard deviation is 1.

DRUGS 1 Total number of drugs prescribed for vignette #1. This score does not count any case in which the patient is untreated or was referred. Home remedies, antipyretics and ORS are not considered drugs for the purpose of calculating this score. If a clinician referred the patient that observation is dropped from this calculation. If he prescribed only PCM it is as if he did not make any prescription (0).

DRUGS 2 Total number of drugs prescribed for vignette #2. This score does not count any case in which the patient is untreated or was referred. Home remedies, antipyretics and ORS are not considered drugs for the purpose of calculating this score. If a clinician referred the patient that observation is dropped from this calculation. If he prescribed only PCM it is as if he did not make any prescription (0).

DRUGS 3 Total number of drugs prescribed for vignette #3. This score does not count any case in which the patient is untreated or was referred. Home remedies, antipyretics and ORS are not considered drugs for the purpose of calculating this score. If a clinician referred the patient that observation is dropped from this calculation. If he prescribed only PCM it is as if he did not make any prescription (0).

DRUGS 4 Total number of drugs prescribed for vignette #4. This score does not count any case in which the patient is untreated or was referred. Home remedies, antipyretics and ORS are not considered drugs for the purpose of calculating this score. If a clinician referred the patient that observation is dropped from this calculation. If he prescribed only PCM it is as if he did not make any prescription (0).

DRUGS 5 Total number of drugs prescribed for vignette #5. This score does not count any case in which the patient is untreated or was referred. Home remedies, antipyretics and ORS are not considered drugs for the purpose of calculating this score. If a clinician referred the patient that observation is dropped from this calculation. If he prescribed only PCM it is as if he did not make any prescription (0).

DRUGS 6 Total number of drugs prescribed for vignette #6. This score does not count any case in which the patient is untreated or was referred. Home remedies, antipyretics and ORS are not considered drugs for the purpose of calculating this score. If a clinician referred the patient that observation is dropped from this calculation. If he prescribed only PCM it is as if he did not make any prescription (0).

EPHIDR Drug: Ephedrine.

ERYTHRO Drug: Erythormycine.

FLAGYL Drug: Flagyl Name brand for Metronidazole.

FOLIC Drug: Folic Acid/ Iron supplement.

GRISEO Drug: Griseofulvine "This is very expensive and should be used only for severe fungus infections of the skin and scalp.".

HOME RDY Drug: Home remedies such as lemon tea, liquids, breastfeeding, etc, as appropriate.

IMQ Drug: Intra muscular quinine.

IVDRIP Drug: IV drip (fluids).

IVSALT Drug: Intravenous fluids.

KANAMY Drug: Kanamycine "Kanamycin [is an] injectible antibiotic that [is] greatly overused in some countries. Use of these dangerous medicines should be very limited, because they can cause deafness and damage to the kidneys. ... They should be given by experienced health workers only, for certain severe infections when other, safer medicines are not available or are too expensive. Kanamycin is sometimes used to treat gonorrhea.".

KETOC Drug: Ketoconazole. A potent but expensive antifungal drug.

KETRAX Drug: Ketrax Is this Levimisole? Is it expensive?

LEVIMOS Drug: Levimosole. Antihelmithic, especially for round-worms.

MAGNES Drug: Magnesium Sulfate "Used as a laxative and antacid. "Laxatives are used far too much. They should be used on occasionally to help soften hard stools (constipation). Never give laxatives to anyone who has diarrhea or gut pain or who is dehydrated.".

MEBEND Drug: Mebendazole "This medicine works against hookworm, whipworm, roundworm, pinworm and ... Strongyloides. Side effects are rare.".

MES Drug: Cough Suppressant.

METRON Drug: Metronidazole (Flagyl).

MUCOLY Drug: Mucolyne. Brand name of one form of cough suppressant.

NIMD Drug: Nimulid. A pain killer.

NYSTAT Drug: Nystatine "Used for treating yeast infections.".

OBSERVE Drug: Observe the patient to see if the condition gets worse.

ORS Drug: ORS. Oral rehydration solution. Used to correct dehydration following diarrhea.

PCM Drug: PCM.

PENV Drug: Penicillin V.

PESS Drug: Pessiaries for vaginal candidiasis.

PHENO Drug: Phenobarbitone.

PIRITON Drug: Piriton. An anithistamine (Chlorpheniramine).

PPF Drug: PPF.

REF Drug: Referral.

S/P Drug: Combination of Sulfadoxin and Pyrimethamine (S/P). This is the recommended first line anti-malarial in Tanzania.

SALT Drug: Salt solution (not ORS therapy).

TINID Drug: Tinidazole. A potent but expenisve antifungal.

UNTREATED Drug: Untreated Clinician would not make a prescription (this is distinct from the condition where the prescription contains no drugs or the clinician states no drugs are necessary).

VIT Drug: Multivitamins.

XPEN Drug: Injectable crystalline penicillin (X-Pen).

ZENTEL Drug: Zentel: a brand name of Albendazole.

## Exit Interviews (variables derived from Figure 10 on page 86)

CLIN: NICE Patient assessment of: Reception by clinical staff (larger number implies better perception).

CLIN: SERVICE Patient assessment of: Reception by nursing staff (larger implies better perception).

CLOSE Reason for visit: It was close.

DRUG AVAIL Patient assessment of: Drug availability in the facility (larger implies more likely to be available).

DRUGS Reason for visit: It has drugs.

EMPLOYER Reason for visit: My employer has an arrangement with this facility (and usually pays for services).

EXPERIENCE (OTH) Reason for visit: Previous experience of other people (related to me).

EXPERIENCE (PER) Reason for visit: Personal previous experience.

HERE BEFORE Response to the question: Have you visited this facility before.

INEXPENSIVE Reason for visit: It is inexpensive.

KNOW PERSON Reason for visit: I know someone who works at this facility.

LEVEL Reason for visit: The qualifications of the staff or the supplies. Patients might say, it is a hospital, or It has an x-ray machine.

NO OTHER CHOICE Reason for visit: There is no other choice.

NURSE: NICE Patient assessment of: Quality of services delivered by clinical staff (larger implies better perception).

NURSE: SERVICE Patient assessment of: Quality of services provided by nursing staff (larger implies better perception).

OWNER Reason for visit: I prefer to seek care at facilities with this owner. Often patients say It is a government facility: it is our facility, or I prefer this facility because of my religion.

QUALIFICATION Reason for visit: The quality of services provided is good.

REFERAL Reason for visit: Referred to this facility.

RETURN Response to the question: If you suffered from this condition again, would you return to this facility.

SURVEY OBS Number of exit interviews filled.

# A Instruments

## A.1 Facility Evaluation Forms

Sisi ni wataalamu wa Afya.
Tunafanya utafiti juu ya ubora wa huduma za Afya
Tungependa kuwa nawe wakati unapohudumiwa
hapa kituoni endapo utaturuhusu.
Usipotutruhusu hatutakuwa nawe wakati
ukihudumiwa.
Kama umekubali tunakupa kadi ambayo
utamwonyesha mtafiti hapo ndani.

Figure 1: Patient Permission Card

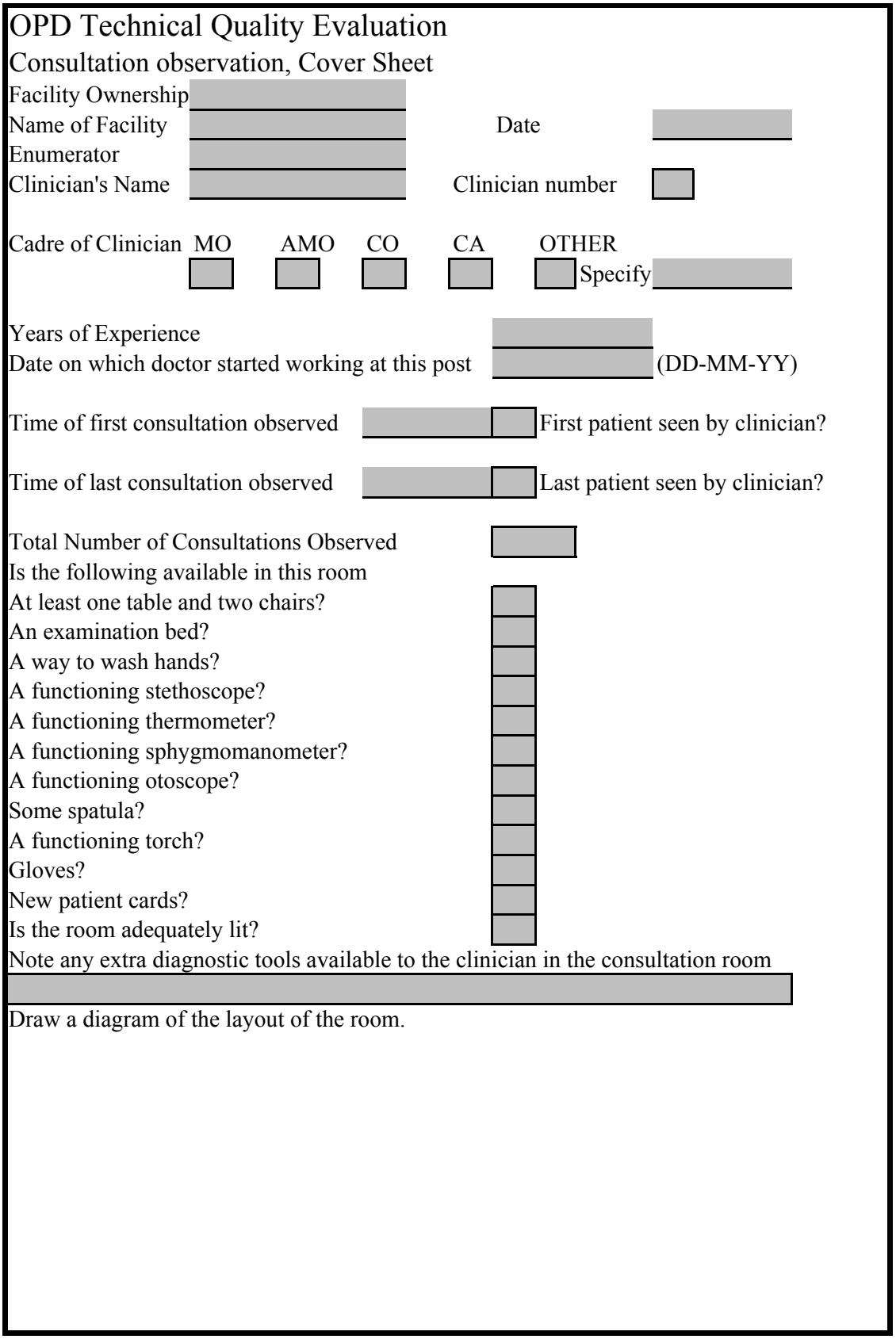


Figure 2: Consultation Observation: Cover Sheet

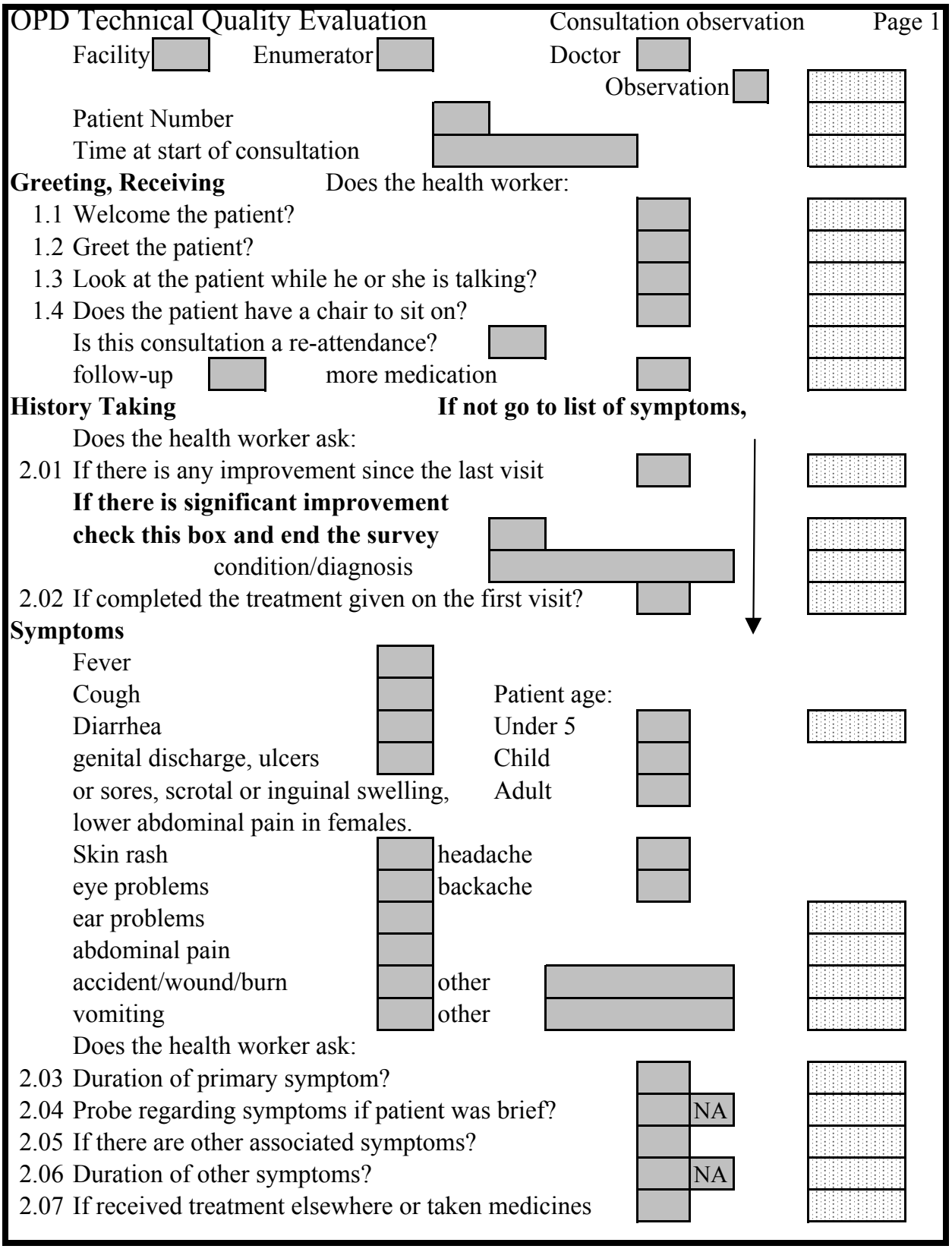


Figure 3: Consultation Observation: Evaluation (page 1)

OPD Technical Quality Evaluation — Consultation observation — Page 2

**History Taking (continued)**

**Fever** ☐ Check if this is a primary or significant symptom

| | | | |
|---|---|---|---|
| 3.01 | pattern (periodicity) of fever? | | |
| 3.02 | presence of chills, sweats? | | |
| 3.03 | presence of cough, sore throat, pain during swallowing | | |
| 3.04 | presence of diarrhea or vomiting? | | |
| 3.05 | presence of convulsions | NA | |

**Cough** ☐ Check if this is a primary or significant symptom

| | | | |
|---|---|---|---|
| 3.06 | The duration of cough | | |
| 3.07 | Sputum production or dry cough | NA | |
| 3.08 | Presence of blood in sputum | NA | |
| 3.09 | Presence of chest pain | NA | |
| 3.10 | Presence of difficulty in breathing | | |
| 3.11 | If child is under 5, history of vaccinations | NA | |
| 3.12 | Presence of fever | | |

**Diarrhea** ☐ Check if this is a primary or significant symptom

| | | | |
|---|---|---|---|
| 3.13 | frequency of stools? | | |
| 3.14 | consistency of stools? | | |
| 3.15 | presence of blood and/or mucus in stools? | | |
| 3.16 | presence of vomiting? | | |
| 3.17 | presence of fever? | | |

**STD symptoms** ☐ Check if this is a primary or significant symptom

| | | | |
|---|---|---|---|
| 3.18 | type of discharge, or how ulcer started | | |
| 3.19 | presence of pain or itching | | |
| 3.20 | presence of fever | | |
| 3.21 | pain on urination | | |
| 3.22 | history of recent sexual contact | | |
| 3.23 | any previous exposure to STDs | | |
| 3.24 | any treatment given to sexual partners | NA | |

**General**

| | | | |
|---|---|---|---|
| 3.25 | Take history according to symptoms? | | |

Note any significant faults in investigation here:

**Physical Examination** — Page 3

Does the health worker:

| | | | |
|---|---|---|---|
| 4.01 | Perform general physical examination, inspection | | |

**Fever**

| | | | |
|---|---|---|---|
| 4.02 | checks temperature with thermometer | | |
| 4.03 | checks for anemia | | |
| 4.04 | checks ear/throat | | |
| 4.05 | palpates for the spleen | | |
| 4.06 | order a blood slide | | |

**Cough**

| | | | |
|---|---|---|---|
| 4.07 | Count respiratory rate | | |
| 4.08 | Observe breathing for chest indrawing | NA | |
| 4.09 | Examine throat | | |
| 4.1 | Auscultate the chest | | |
| 4.11 | Take the patient's temperature | | |

**Diarrhea**

| | | | |
|---|---|---|---|
| 4.12 | assesses general status (alert or lethargic) | | |
| 4.13 | examine for sunken front fontanelle\eyes | | |
| 4.14 | pinches abdominal skin to assess degree of dehydration | | |
| 4.15 | takes weight (in case of a child below 5 years) | | |
| 4.16 | takes temperature | | |

**STD symptoms**

| | | | |
|---|---|---|---|
| 4.17 | Examines for presence of skin rash | | |
| 4.18 | Palpates for swollen lymph nodes | NA | |
| 4.19 | Examines for lower abdominal tenderness (female) | | |
| 4.2 | Examine genitalia | NA | |
| 4.21 | Takes precautions to minimize exposure to infection | | |

**General**

| | | | |
|---|---|---|---|
| 4.22 | Physical Examination is according to the symptoms | | |

Note any significant faults in examination here:

Figure 4: Consultation Observation: Evaluation (page 2 & 3)

**Laboratory or other investigative tests**

If health worker sends patients for lab tests before making diagnosis check here and note time

If patient is returning from lab test, note patient number at bottom of this page cross out page 1 and note time at this new entry here

**Diagnosis, Treatment and Explanation**

What is the physician's diagnosis? (if known)

Does the health worker:

5.1 Tell the patient his or her diagnosis (any name)
5.2 Explain the diagnosis (in common language)
5.3 Explain the treatment being provided
5.4 Give any health education related to diagnosis?
5.5 Explain whether or not to return for further treatment

**Referral**

Is the patient referred to another facility/clinician?

**(If not skip to last section)**

Does the health worker:

6.1 Explain why the patient is being referred
6.2 Explain what the patient must do (get letter, etc.).

Time at end of consultation

7.1 Did the health worker listen to the patient/caregiver?
7.2 Did the health worker allow the patient to talk?
7.3 Ensure patient had understood diagnosis, etc.? NA

**If the diagnosis is not according to symptoms presented and this failure could be dangerous to the health of the patient you must ask the patient for his or her "card" and make a mark that identifies you on the card.**

Patient number

Figure 5: Consultation Observation: Evaluation (page 4)

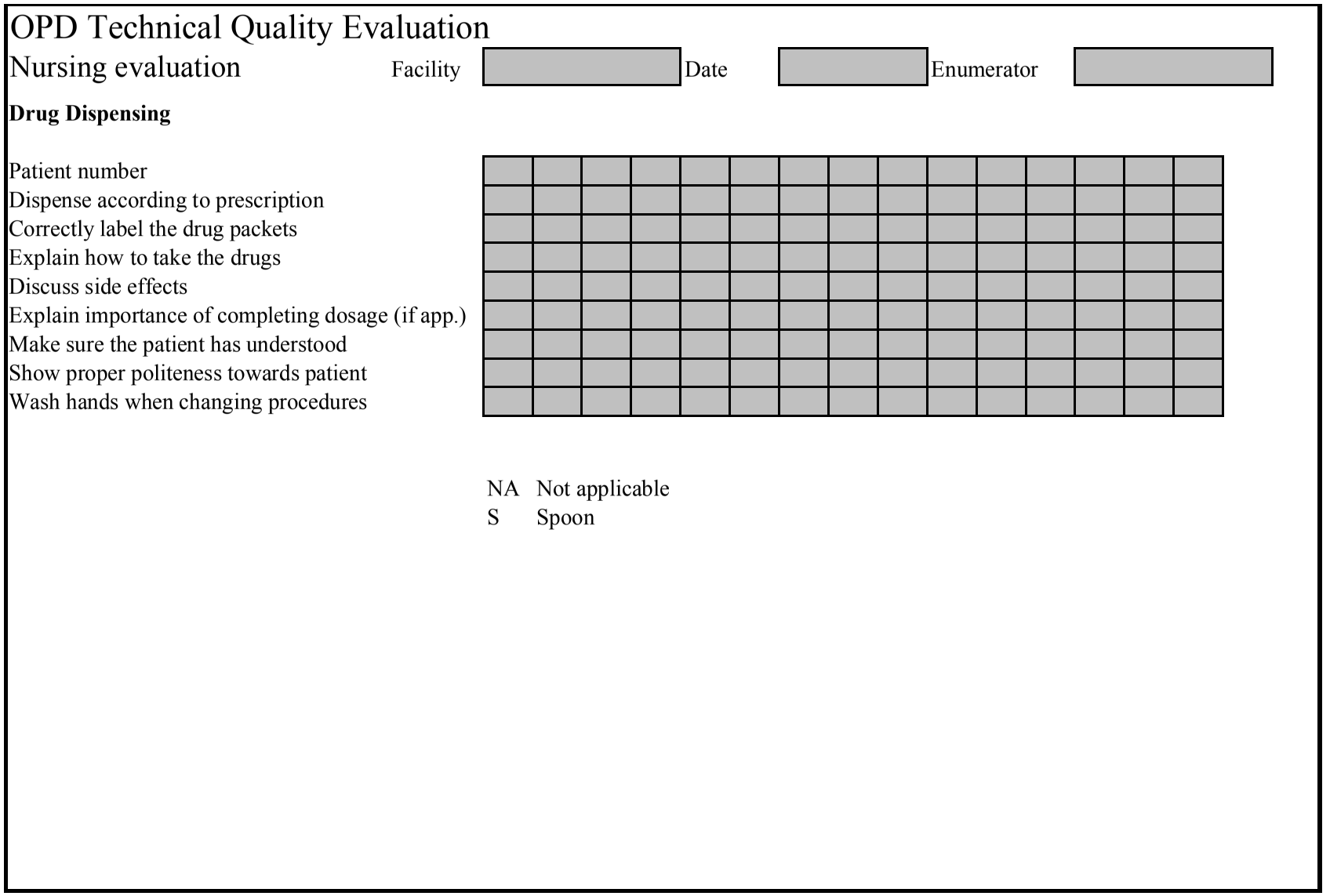


Figure 6: Nursing Evaluation: Drug Dispensing

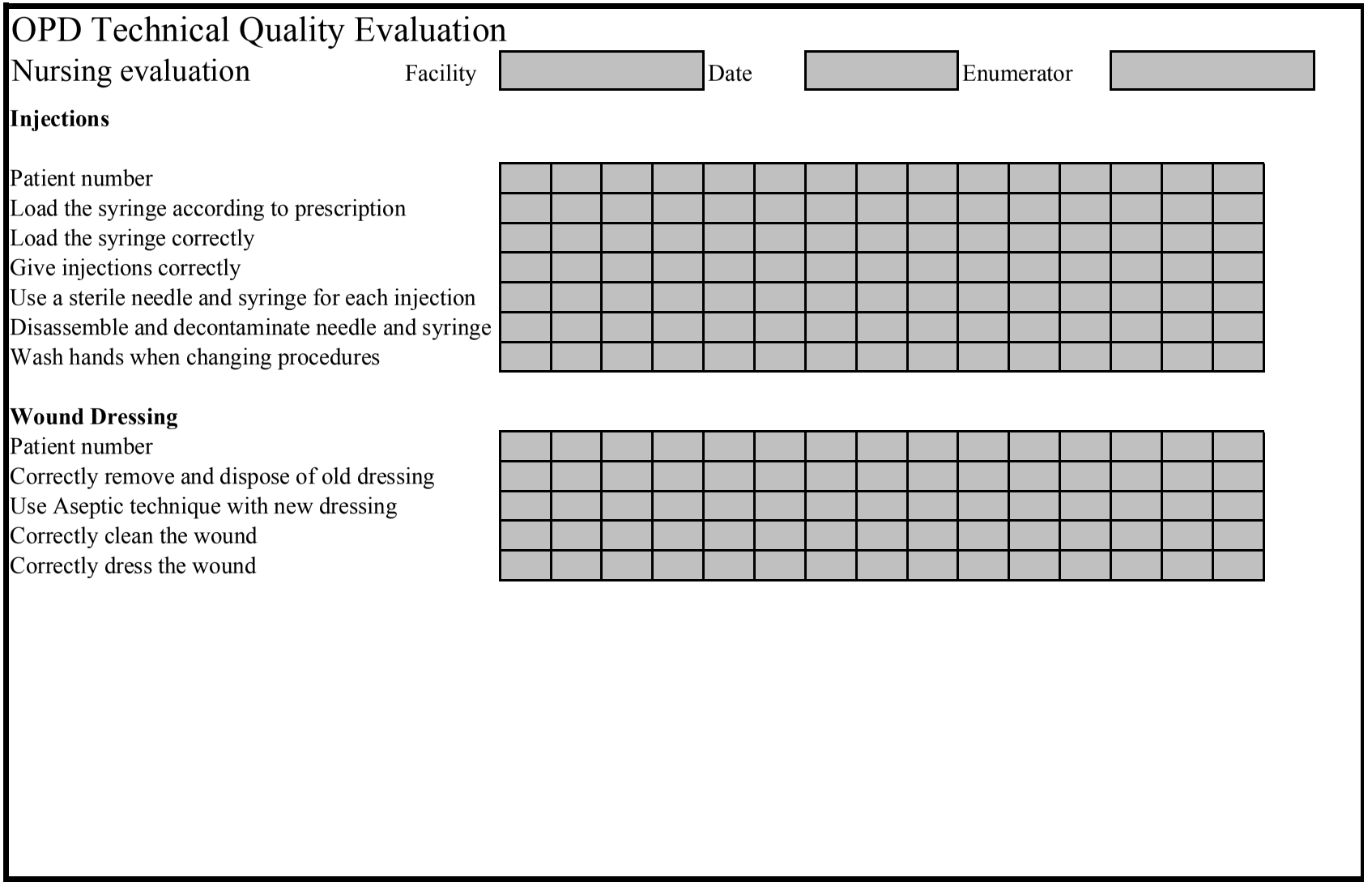


Figure 7: Nursing Evaluation: Injection Administration & Wound Dressing

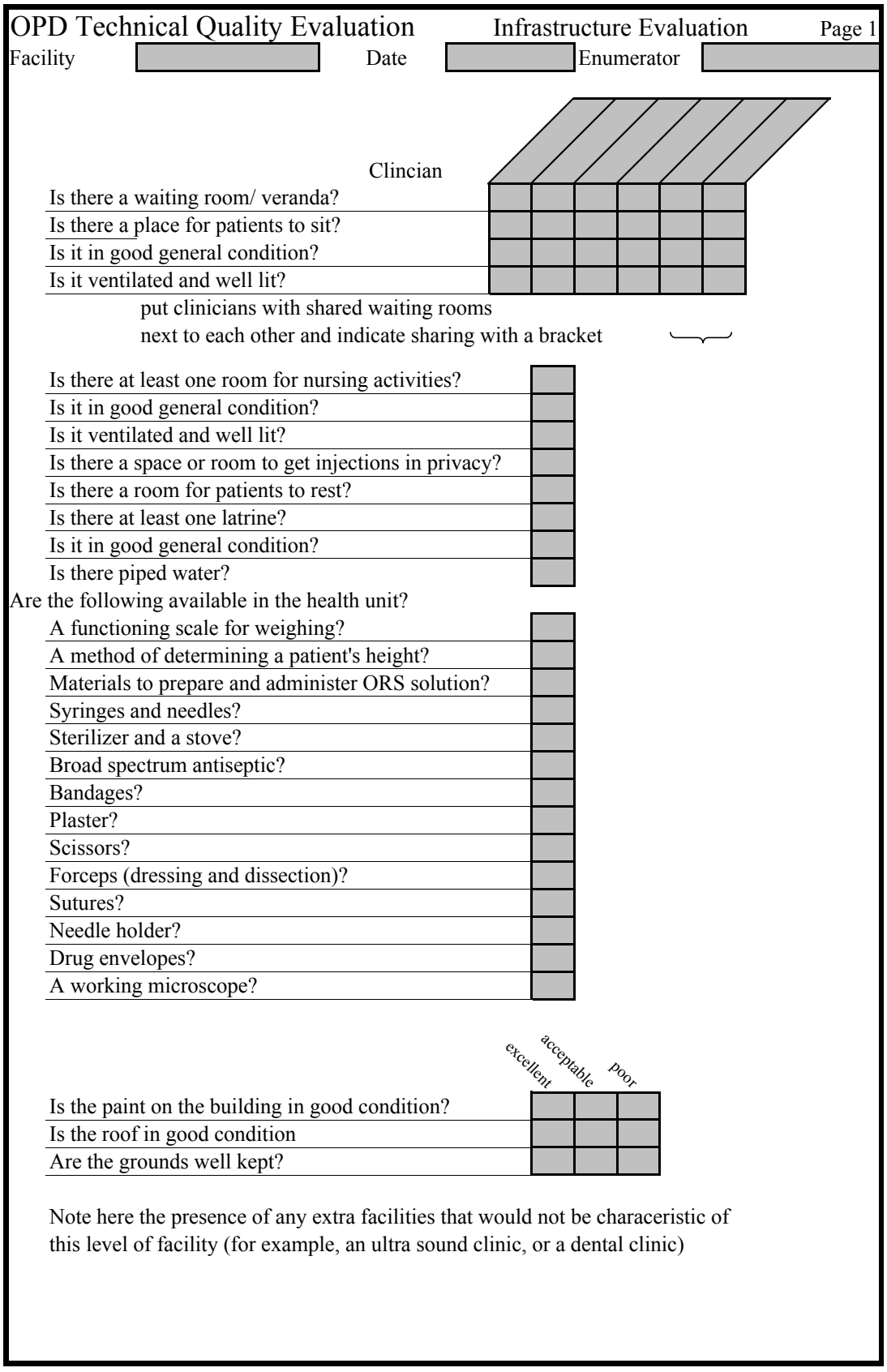


Figure 8: Infrastructure and Equipment Evaluation

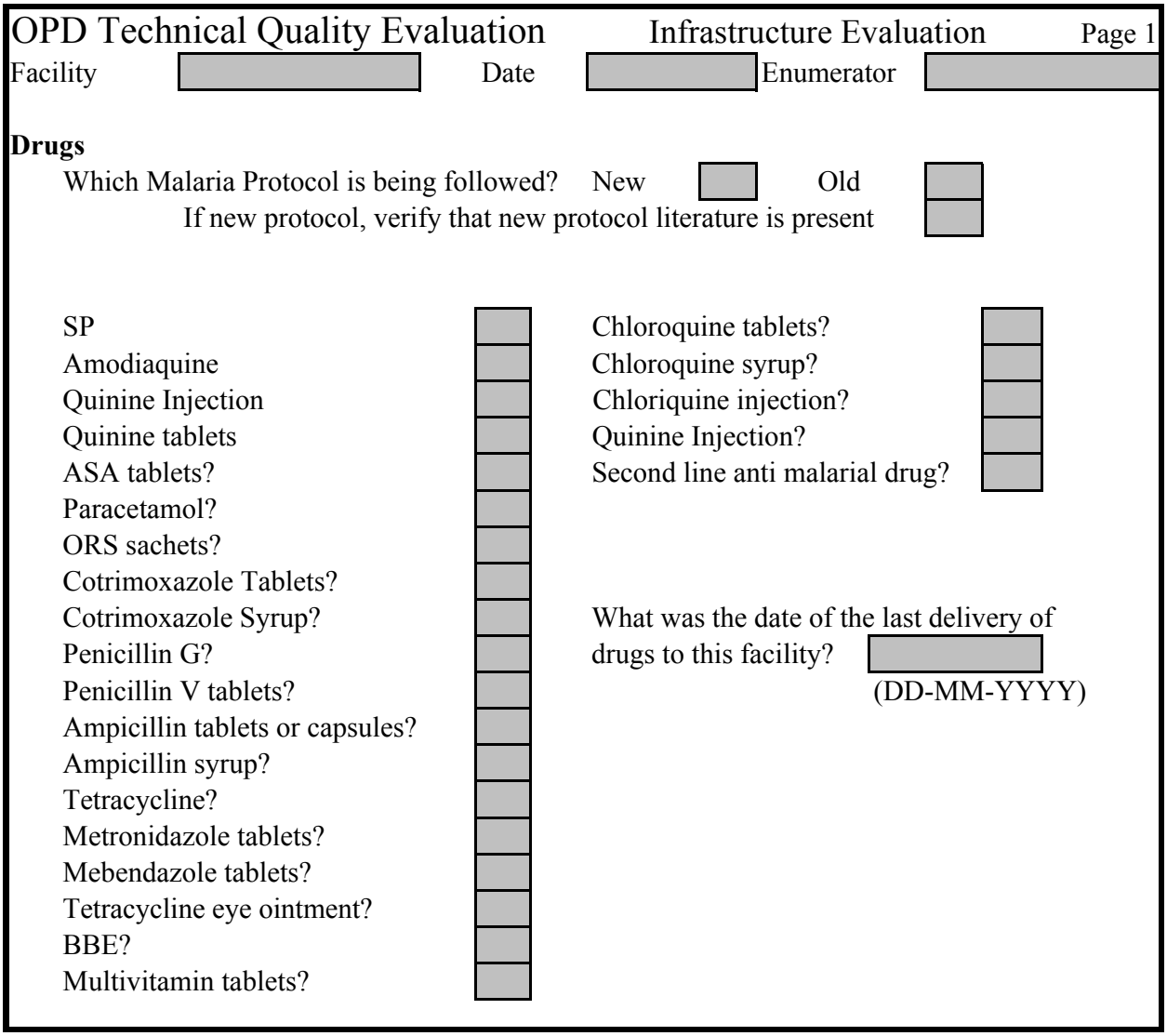


Figure 9: Pharmacy Stock Evaluation

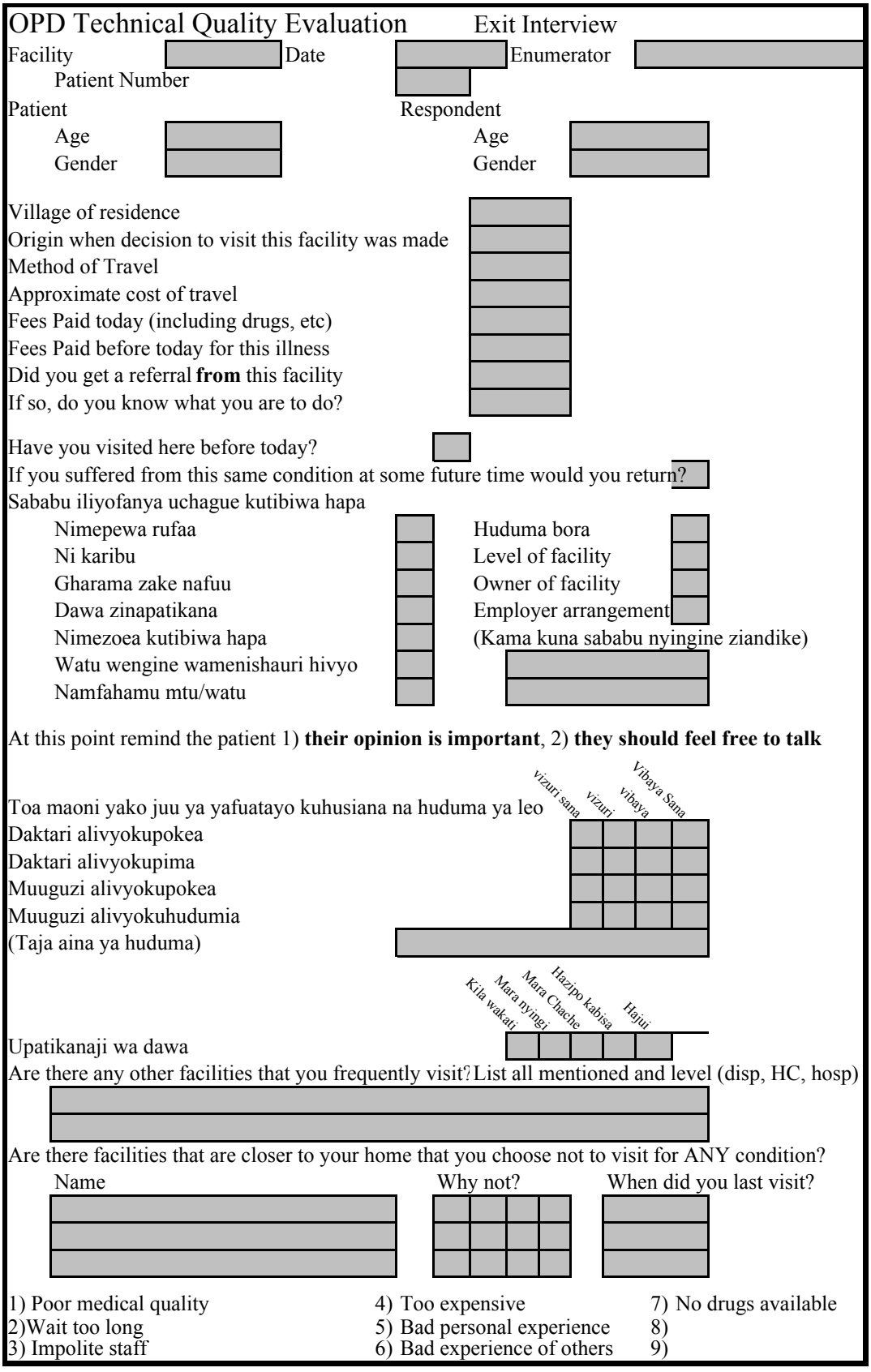


Figure 10: Exit Interview

## A.2 Vignettes

### A.2.1 Instructions

Vignette reader: The responses to questions are given in bold type. If possible, only give these answers and only as they are written. Use your judgment for questions for which there are no answers. The basic rule is that unless it is specifically stated here, all other signs and symptoms should be normal. Questions in italics are meant to represent the possible questions clinicians might ask.

Vignette Observer: This patient has a very specific diagnosis. The goal of the clinician is to discover this diagnosis. As part of this task he or she must also rule out other possible conditions. Thus, the correct completion of this vignette, will involve

- Reaching the correct diagnosis (preliminary diagnosis)
- Writing a correct prescription (there may be more than one correct prescription and this can vary from facility to facility).
- Ruling out other possible diagnoses.

### A.2.2 Sample Vignette

Read this to the clinician.

> We will observe you consulting a case study patient. We have created some case studies of typical patients. Someone from our team will act as the case study patient. She is acting as a patient suffering from a particular condition that needs diagnosis and treatment. You should diagnose the patient and then suggest a course of treatment. If in the course of a normal examination you would ask the patient a question, ask it of the person acting as a case study patient. If in the course of a normal consultation you would perform some physical examinations, you should describe to the case study patient the examination you would perform. She will then tell you what you would have found. Then make a diagnosis or preliminary diagnosis, write a prescription for the case study patient and tell the researcher acting as a case study patient what you would tell the patient.
>
> A second researcher will observe your case study consultation.
>
> Because this is new to you, we will act out a case study presentation. One of our staff will be a clinician and one a case study patient. Our intention is to show you how a case study consultation should work.

| | |
|---|---|
| Reader: | I am a 30 year old man. I do not feel well and I have had a fever for three days. I think I have malaria. |
| Observer as Clinician: | Do you have any other symptoms? |
| Reader: | I feel weak, I have a headache and nausea. |
| Observer as Clinician: | Is the fever persistent or intermittent? |
| Reader: | It comes and goes. |
| Observer as Clinician: | Do you have pain while swallowing? |
| Reader: | No. |
| Observer as Clinician: | Do you have abdominal pain? |
| Reader: | No. |
| Observer as Guide: | At this point I need to examine the patient. I will tell the patient what I am doing and she will tell me what I would find. |
| Observer as Clinician: | I would take the patient's temperature. |
| Reader: | The temperature is 38 degrees. |
| Observer as Clinician: | I would take the patient's pulse. |

Reader: The pulse is 90 beats per minute.

Observer as Guide: I will now tell you what I think is the correct diagnosis and prescription.

Observer as Clinician: I will diagnose this patient as having malaria and will write a prescription for S/P, three tables STAT.

Observer as Guide: Now I will address the patient as I would a normal patient. I would say to the patient:

Observer as Clinician: You have malaria. I am writing you a prescription for medicine that will help you. If you do not feel better after 5 days you should return to see me.

### A.2.3 Vignette #1

The reader is the mother of 4-year-old boy.

Introduction: This 4 year old boy is my son. He has had a fever now for one week. Now he is vomiting and he is worse, so I have come to you for help.

**Potential History Taking Questions and their Response**

Clinician: How long has he had a fever?

Reader: One week.

Clinician: Is it a steady fever?

Reader: Some days he is fine others he is very sick.

Clinician: Does he eat well?

Reader: He eats, but not as much as usual and sometimes he will vomit.

Clinician: Does he vomit?

Reader: Yes.

Clinician: Does he shiver, or sweat?

Reader: Yes.

Clinician: Does he have a cough?

Reader: Yes.

Clinician: Is it severe?

Reader: No.

Clinician: Is it dry or productive?

Reader: Dry.

Clinician: Does your son have difficulty in breathing?

Reader: No.

Clinician: Has he received any treatment for this?

Reader: I started to give him Panadol.

Clinician: How much?

Reader: One two days ago, one yesterday and one this morning.

Clinician: Has he had any convulsions?

Reader: No.

**Potential Physical Examination Questions**

Clinician: I would examine hands;

Reader: You will find pale nail beds.

Clinician: I would examine tongue;

Reader: The tongue is pale.

Clinician: I would examine eyes;

Reader: What are you looking for?

Clinician: Sunken eyes;

Reader: No, they are normal.

Clinician: Pale colour;

Reader: Yes, they are pale.

Clinician: I would examine responsiveness of boy;

Reader: He is awake, but lethargic.

Clinician: I would pinch skin of patient;

Reader: There is no loss of skin elasticity.

Clinician: I would take temperature;

Reader: 37.2 degrees.

Clinician: I would take the pulse;

Reader: 95.

Clinician: I would examine patient for stiffness in his neck;

Reader: The neck is not stiff

Clinician: I would look for puffy face and/or swelling of the feet;

Reader: The face is not puffy and/or the feet are not swollen

Clinician: I would palpate the liver or spleen for organomegally;

Reader: It is normal size and not tender

Clinician: I would order a blood slide and/or a full blood check;

Reader: You have to wait for the results and form a preliminary diagnosis without these results

### A.2.4 Vignette #2

The reader is a shy woman.

Introduction: I am a 34 year old woman and I have been suffering from pain right here [*indicate right lower abdomen*] on and off for about 3 months.

**Potential History Taking Questions and their Response**

Clinician: Where is the pain strongest?

Reader: Here, [*point to right lower abdomen*]

Clinician: Is the pain sharp?

Reader: Not so sharp

Clinician: Does it hurt anywhere else?

Reader: It will move around towards my back.

Clinician: Is the pain constant?
Reader: It is on and off
Clinician: When was you last period.
Reader: Two weeks ago
Clinician: Was it normal
Reader: Yes
Clinician: Was it as long as usual, longer or shorter
Reader: It was only three days and before it has been longer
Clinician: Is the pain ever worse?
Reader: It is worse before my period, and it gets a little better after
Clinician: Do you have any vaginal discharge?
Reader: No
Clinician: Do you experience any vaginal pain or itching?
Reader: No
Clinician: Do you have a fever, or have you been suffering from a fever?
Reader: I'm not sure. Sometimes I feel cold
Clinician: Do you experience pain on urination?
Reader: No
Clinician: What is your history of recent sexual contact?
Reader: I am married
Clinician: Do you have any other sexual partners?
Reader: No.
Clinician: When was your last sexual contact?
Reader: Just these last few days.
Clinician: Do you experience pain in intercourse?
Reader: No.
Clinician: Do you experience bleeding, post coitus?
Reader: No.
Clinician: Do you have children?
Reader: I have three
Clinician: How old is your youngest child?
Reader: Two.
Clinician: Have you ever had any complications in pregnancy?
Reader: No
Clinician: Have you every had any STD?
Reader: No
Clinician: Are you using any method of birth control?
Reader: No.
Clinician: Have you taken any treatment so far?
Reader: Paracetemol
Clinician: Is your husband taking any treatment?
Reader: My husband is not sick

**Potential Physical Examination Questions**

Clinician: Clinician examines for the presence of skin rash, sores or rash on lips;

Reader: There is no rash

Clinician: I would take temperature;

Reader: The temperature is normal, 38 degrees.

Clinician: I would palpate for swollen lymph nodes in the neck, armpit or groin;

Reader: Slightly swollen

Clinician: I would examine for lower abdominal tenderness;

Reader: Lower abdomen is tender

Clinician: I would examine the vagina;

Reader: There are no sores. There is some yellowish, foul smelling, discharge

### A.2.5 Vignette #3

The reader is the mother of a 1 year old boy.

Introcution: Doctor, my son has diarrhea and vomiting since yesterday.

**Potential History Taking Questions and their Response**

Clincian: How long has he been having diarrhea?

Reader: Since yesterday morning.

Clincian: How often does he vomit or have a stool?

Reader: He vomits at any feed, and has a stool soon after.

Clincian: How are the stools?

Reader: Like water.

Clincian: Is there blood in them.

Reader: No, makamasi

Clincian: Are you breastfeeding this child?

Reader: Yes.

Clincian: How is he breastfeeding?

Reader: Not very well.

Clincian: Is he tired?

Reader: Amechoka sana.

Clincian: Does he have a fever?

Reader: No.

Clincian: When he cries are there tears?

Reader: No.

**Physical Examination**

Clinician: I would examine the front of the fontanel to see if it is sunken;

Reader: It is sunken.

Clinician: I would look at the eyeballs to see if they are sunken;

Reader: They are sunken.

Clinician: I would pinch the skin of the child;

Reader: There is loss of skin elasticity.

Clinician: I would give a drink to the baby to see if he is thirsty;

Reader: The child is thirsty.

Clinician: I would evaluate the general condition of the child, responsiveness to stimulus, etc.

Reader: The child is awake, but lethargic.

Clinician: I would weigh the child.

Reader: The child weighs 9 kilos.

Clinician: I would examine the child for signs of malnutrition.

Reader: Everything is normal.

### A.2.6 Vignette #4

The reader is the mother of an 8 year old girl.

Introduction: She has a cough.

**Potential History Taking Questions and their Response**

Clinician: How long has she had a cough?

Reader: 5 days.

Clinician: Does she have a fever?

Reader: Yes

Clinician: Does she have convulsions?

Reader: No

Clinician: How is her appetite?

Reader: There is no loss of appetite.

Clinician: Is she tired?

Reader: No, she is not tired.

Clinician: Is the cough dry, or productive?

Reader: It is productive.

Clinician: What color is the sputum?

Reader: It is yellow.

Clinician: Is there ever any blood in the sputum?

Reader: No.

Clinician: Does she have difficulty in breathing?

Reader: Yes.

Clinician: Is there any chest pain?

Reader: Yes.

**Physical Examination**

Clinician: Clinician checks the rib cage for chest indrawing;

Reader: There is no chest indrawing.

Clinician: Clinician measures the respiratory rate;

Reader: The rate is 24 breaths per minute.

Clinician: Clinician looks for nasal flaring;

Reader: There is no flaring.

Clinician: Clinician auscultates the chest;

Reader: There is crepitation.

Clinician: Clinician takes the patient's temperature;

Reader: The temperature is 38.5 degrees.

Clinician: Clinician listens to the patient breathing;

Reader: There is no wheezing.

Clinician: Clinician examines the ears;

Reader: There is no sign of redness.

Clinician: Clinician examines the throat.

Reader: There is no sign of redness.

Clinician: Clinician examines the any lymph nodes.

Reader: They are not swollen.

Clinician: Clinician orders a sputum for AFB or a chest X-ray.

Reader: You have to wait for the results and form a preliminary diagnosis without these results

### A.2.7 Vignette #5

The reader is the mother of a 3 year old girl (Amina).

Introduction: This three year old girl is my daughter. She has had a history of a sudden onset of sneezing, running nose, associated with nasal congestion for one day. [She is coughing, she has a runny nose and she is stuffed up.]

**Potential History Taking Questions and their Response**

Clinician: Does she have any other symptoms?

Reader: Restless, low grade fever.

Clinician: Does she have a cough?

Reader: No cough

Clinician: Does she have difficulty breathing?

Reader: No

**Physical Examination**

Clinician: Clinician takes the patient's temperature;

Reader: The temperature is 36.8 degrees.

Clinician: Everything else is normal.

Reader: Any Lab test: You have to wait for the results and form a preliminary diagnosis without these results

### A.2.8 Vignette #5

The reader is the mother of a 5 year old boy (Hassani).

Introduction: My son Hassani is 5 years old. He has a loss of appetite, and is passing loose stool for the past two weeks.

**Potential History Taking Questions and their Response**

Clinician: Does he have any other problems?

Reader: He is complaining of abdominal pain.

Clinician: Does he have a cough?

Reader: Yes

Clinician: Is it productive or dry?

Reader: Dry

Clinician: Is he vomiting?

Reader: No

Clinician: Does he have a fever?

Reader: No

**Physical Examination**

Clinician: Clinician takes the patient's temperature;

Reader: The temperature is 37 degrees.

Clinician: Clinician examines the palm for anaemia;

Reader: They are not pale.

Clinician: Clinician checks the abdomen;

Reader: Not tender, no palpable mass.

Reader: Everything else is normal.

Reader: Any Lab test: You have to wait for the results and form a preliminary diagnosis without these results

## A.3 Vignette Score Derivation

### A.3.1 Diagnosis

Table 77: Diagnosis and Diagnosis Score: Vignette #1

| | Correct | Incmpl | Extra | Wrong |
|---|---|---|---|---|
| MALARIA | | 50 (100%) | | |
| NONE | | | | 1 (100%) |
| MALARIA & ANEMIA | 9 (100%) | | | |
| MALARIA & AC BRONCHITIS | | | 2 (40%) | |
| MALARIA & URTI | | | 1 (20%) | |
| MALARIA & UTI | | | 2 (40%) | |

Table 78: Diagnosis and Diagnosis Score: Vignette #2

| | Correct | Incmpl | Extra | Wrong |
|---|---|---|---|---|
| PID | 35 (92%) | | | |
| VAG DISCH SYN | | 4 (31%) | | |
| GONORRHOEA | | 4 (31%) | | |
| VAG INFECTION | | 5 (38%) | | |
| OVARIAN CYST | | | | 2 (15%) |
| APPENDICITIS | | | | 4 (31%) |
| MALARIA | | | | 1 (8%) |
| LOWER AND PAIN | | | | 1 (8%) |
| NONE | | | | 3 (23%) |
| PID & VAG INFECTION | 3 (8%) | | | |
| PID & UTI & VAG INFECTION | | | 1 (100%) | |
| PID & APPENDICITIS | | | | 1 (8%) |
| APPENDICITIS & KIDNEY | | | | 1 (8%) |

Table 79: Diagnosis and Diagnosis Score: Vignette #3

| | Correct | Incmpl | Extra | Wrong |
|---|---|---|---|---|
| AC DIARR DIS | 10 (33%) | | | |
| DEHYDRATION | 10 (33%) | | | |
| MALARIA | | | | 3 (30%) |
| G ENTERITIS | | 13 (100%) | | |
| AMOEBAS | | | | 1 (10%) |
| WORMS | | | | 1 (10%) |
| INF DIARR | | | | 1 (10%) |
| NONE | | | | 1 (10%) |
| AC DIARR DIS & DEHYDRATION | 10 (33%) | | | |
| AC DIARR DIS & MALARIA | | | 1 (8%) | |
| DEHYDRATION & G ENTERITIS | | | 9 (75%) | |
| DEHYDRATION & CHOLORA | | | | 1 (10%) |
| DEHYDRATION & WORMS | | | 1 (8%) | |
| MALARIA & G ENTERITIS | | | | 2 (20%) |
| AC DIARR DIS & DEHYDRATION & MALARIA | | | 1 (8%) | |

Table 80: Diagnosis and Diagnosis Score: Vignette #4

| | Correct | Incmpl | Extra | Wrong |
|---|---|---|---|---|
| PNEUMONIA | 52 (98%) | | | |
| S PNEUMONIA | 1 (2%) | | | |
| AC BRONCHITIS | | 7 (78%) | | |
| PTB | | 1 (11%) | | |
| MALARIA | | | | 1 (50%) |
| PNEUMONIA & MALARIA | | | 1 (100%) | |
| AC BRONCHITIS & WORMS | | | | 1 (50%) |
| AC BRONCHITIS & PTB | | 1 (11%) | | |

Table 81: Diagnosis and Diagnosis Score: Vignette #5

| | Correct | Incmpl | Extra | Wrong |
|---|---|---|---|---|
| FLU | 40 (100%) | | | |
| ALLERGY | | | | 3 (100%) |
| URTI | | | 2 (40%) | |
| FLU & URTI | | | 1 (20%) | |
| FLU & ALLERGY | | | 1 (20%) | |
| FLU & N POLYPS | | | 1 (20%) | |

# OPD Technical Quality Evaluation

Vignette #1

Health Facility
Date
Clinician Name
Enumerator

**History Taking:**

- Pattern of fever
- Treatment received
- History of cough
- Convulsions
- Appetite
- Other

**Physical Examination**

- Level of consciousness
- Temperature
- Signs of dehydration
- Signs of anemia
- Signs of heart failure
- Neck stiffness

**Diagnosis:**

- Severe Malaria
- Malaria
- Anemia
- Meningitis
- Other

**Tests:**

- B/S malaria
- FBP
- Lumbar Puncture

**Treatment:**

| Dispensary | Health Centre | Hospital |
|---|---|---|
| S/P | S/P | S/P |
| I.M. Quinine | I.V. Quinine | I.V. Quinine |
| Folic Acid/Iron | Folic Acid/Iron | Folic Acid/ Iron |
| Anticonvulsant | Anticonvulsant | Anticonvulsant |
| Referral | Referral | Blood Transfusion |

**Health Education:**

- Importance of iron intake
- Date to return if no improvement is seen (malaria)
- Explain danger signs require patient return immediately
- When to return to re-evaluate anemia
- Explain how to use S/P with Folic Acid with Ferrous
- Insure patient understands how and when to take medication

Figure 11: Vignette Evaluation Sheet: Vignette #1

OPD Technical Quality Evaluation

Vignette #2

Health Facility
Date
Clinician Name
Enumerator

**History Taking:**

- Last normal menstrual period and pattern of cycle
- Sexual history
- Treatment given so far
- Vaginal discharge (presence, color)
- Nature of pain
- History of fever

**Physical Examination**

- Skin rash or sores
- Palpates for swollen lymph nodes
- Palpate abdomen
- Vaginal Examination

**Diagnosis:**

- Ectopic Pregnancy
- Unsafe abortion
- PID
- Other

**Tests:**

- Urine
- HVS for wet preparation

**Treatment**

| **Dispensary** | **Health Centre** | **Hospital** |
|---|---|---|
| Cotrimoxazole | Cotrimoxazole | Cotrimoxazole |
| Doxycycline | Doxycycline | Doxycycline |
| Metronidazole | Metronidazole | Metronidazole |
| Referral | Referral | Referral |

**Health Education:**

- Educate patient about how she got this condition
- Educate patient about potential dangers
- Importance of treatment for partner
- When to return if no improvement is seen
- Insure patient understands how and when to take medication
- Importance of use of condoms
- Provide condoms

Figure 12: Vignette Evaluation Sheet: Vignette #2

# OPD Technical Quality Evaluation

## Vignette #3

Observer Evaluation

Health Facility
Date
Clinician Name
Enumerator

**History Taking:**

- frequency of stools?
- consistency of stools?
- presence of blood and/or mucus in stools?
- presence of vomiting?
- Is it projectile or non-projectile vomiting?
- presence of fever?
- Is the mother breastfeeding?

**Physical Examination**

- assesses general status (alert or lethargic)
- check eyes, front of fontanelle, or check thirst
- pinches abdominal skin
- takes weight

**Diagnosis:**

- Acute Diarrhea disease
- Dehydration
- Malaria
- Other

**Tests:**

- Stool sample
- FBP
- Other

**Treatment:**

| **Dispensary** | | **Health Centre** | | **Hospital** | |
|---|---|---|---|---|---|
| 675-750 mls ORS | | 675-750 mls ORS | | 675-750 mls ORS | |
| | | IV drip | | IV drip | |
| Observation | | Observation | | Observation | |
| Referral | | Referral | | | |
| Antiparasitics | | Antiparasitics | | Antiparasitics | |
| Antibiotics | | Antibiotics | | Antibiotics | |
| Antidiarrheol | | Antidiarrheol | | Antidiarrheol | |

**Health Education:**

- Importance of rehydration
- Importance of observation
- What to do when she returns home

Figure 13: Vignette Evaluation Sheet: Vignette #3

OPD Technical Quality Evaluation

Vignette #4

Observer Evaluation

Health Facility
Date
Clinician Name
Enumerator

**History Taking:**

- The duration of cough
- Sputum production or dry cough
- Presence of blood in sputum
- Presence of chest pain
- Presence of fever
- Presence of difficulty in breathing

**Physical Examination**

- Count respiratory rate
- Observe breathing for chest indrawing
- Auscultate the chest
- Take temperature

**Diagnosis:**

- Pneumonia
- Severe Pneumonia
- Common Cold
- Athsma
- Other

**Tests:**

- Sputum for AFB
- Chest X-ray
- Other

**Treatment**

| Dispensary | Health Centre | Hospital |
|---|---|---|
| Cotrimoxazole | Cotrimoxazole | Cotrimoxazole |
| Antipyretic | Antipyretic | Antipyretic |
| PPF | PPF | PPF |
| Crystal X-pen | Crystal X-pen | Crystal X-pen |
| Gentamycin | Gentamycin | Gentamycin |
| Amoxycyline | Amoxycyline | Amoxycyline |
| Brochiodialator | Brochiodialator | Brochiodialator |
| Referral | Referral | |

**Health Education:**

- Danger signs to watch for
- When to return if no improvement is seen
- Insure patient understands how and when to take medication

Figure 14: Vignette Evaluation Sheet: Vignette #4

# OPD Technical Quality Evaluation

## Vignette #5

Health Facility
Date
Clinician Name
Enumerator

**History Taking:**

- History of sneezing
- Running Nose
- Fever
- Nasal Congestion
- Cough
- Difficulty Breathing

**Physical Examination**

- Temperature
- Assess General Condition
- Other

**Diagnosis:**

- Flu
- Acute Bronchitis
- Pneumonia
- Other

**Tests:**

- B/S malaria
- Other

**Treatment:**

All Levels
Analgesics
Antipyretics

**Health Education:**

- Keeping the home clean, reduce dust, etc
- Avoid exposure and cross infection
- Stay in well ventilated house
- Give food and fluids, soup and tea
- Keep child warm and covered

Figure 15: Vignette Evaluation Sheet: Vignette #5

# OPD Technical Quality Evaluation

Vignette #6

Health Facility
Date
Clinician Name
Enumerator

**History Taking:**

- History of loss of appetite
- History of loose stools
- Abdominal discomfort

**Physical Examination**

- Assess general condition
- Take temperature
- Palpate abdomen
- Examine palms

**Diagnosis:**

- Worm Infestation
- Acute diarrhoea disease
- abdominal pain
- Other

**Tests:**

- Stool
- Hgb
- Other

**Treatment**

**All facilities**

- Mebendazole
- Zentel
- Albendazole
- Magnesium
- Hyoscine
- Antepar
- Ketrax

**Health Education:**

- Proper use of latrines
- Personal hygiene
- Importance of clean food, fruits
- Proper disposal of faeces
- Treatment of infected person
- Deworming after every three months

Figure 16: Vignette Evaluation Sheet: Vignette #6

Table 82: Diagnosis and Diagnosis Score: Vignette #6

| | Correct | Incmpl | Extra | Wrong |
|---|---|---|---|---|
| WORMS | 34 (100%) | | | |
| AC DIARR DIS | | | | 3 (30%) |
| DYSENTERY | | | | 1 (10%) |
| AMOEBAS | | | | 2 (20%) |
| COLITIS | | | | 1 (10%) |
| MALARIA | | | | 1 (10%) |
| URTI | | | | 1 (10%) |
| NONE | | | | 1 (10%) |
| WORMS & AMOEBAS | | | 1 (25%) | |
| WORMS & G ENTERITIS | | | 1 (25%) | |
| WORMS & MALARIA | | | 1 (25%) | |
| WORMS & URTI | | | 1 (25%) | |

### A.3.2 Treatment

Table 83: Treatment and Treatment Score: Vignette #1

| | Correct | Enough | Useful | Incmpl | Danger |
|---|---|---|---|---|---|
| S/P | | 23 (41%) | 1 (50%) | | |
| CQ | | 1 (2%) | | | |
| S/P & FOLIC | 5 (83%) | | | | |
| MES & AMODIAQ | | 1 (2%) | | | |
| S/P & ANTI-EM | | 1 (2%) | | | |
| S/P & PCM | | 15 (27%) | 1 (50%) | | |
| S/P & ORS | | 3 (5%) | | | |
| S/P & CQINJ | | 1 (2%) | | | |
| IMQ & FOLIC | | 1 (2%) | | | |
| CQ & PCM& VIT | | 1 (2%) | | | |
| CHLORPROM & ORS | | | | | 1 (100%) |
| S/P & FOLIC & PCM | 1 (17%) | | | | |
| S/P & ANTI-EM & PCM | | 2 (4%) | | | |
| S/P & PCM & ORS | | 2 (4%) | | | |
| S/P & PCM & MES | | 1 (2%) | | | |
| S/P & PCM & VIT | | 1 (2%) | | | |
| S/P & PCM & AMOX | | 2 (4%) | | | |
| S/P & ANTI-EM & PCM & MES | | 1 (2%) | | | |

Table 84: Treatment and Treatment Score: Vignette #2

| | Correct | Enough | Useful | Incmpl | Danger |
|---|---|---|---|---|---|
| METRON | | | 1 (4%) | | |
| REF | | | 1 (4%) | 3 (27%) | |
| AMOX | | | 1 (4%) | | |
| CIMET | | | | 1 (9%) | |
| DICLO | | | 1 (4%) | | |
| COTRIM & PCM | | | 2 (9%) | | |
| COTRIM & DOXYC | | | 1 (4%) | | |
| COTRIM & METRON | | | 1 (4%) | | |
| COTRIM & CIPRO | | | 1 (4%) | | |
| COTRIM & BELLA | | | | 1 (9%) | |
| DOXYC & PCM | | | 1 (4%) | | |
| DOXYC & ASA | | | 1 (4%) | | |
| METRON & NYSTAT | | | 1 (4%) | | |
| REF & BUSCO | | | | 1 (9%) | |
| ASA & AMOX | | | 1 (4%) | | |
| PCM & PPF | | | | 1 (9%) | |
| METRON & PCM | | 1 (20%) | | | |
| DOXYC & METRON | | 1 (20%) | 3 (13%) | | |
| COTRIM & DOXYC & METRON | 19 (73%) | | | | |
| METRON & PCM & CIPRO | | | 1 (4%) | | |
| METRON & CLOXA & DICLO | | | 1 (4%) | | |
| COTRIM & PPF & FLAGYL | | | | 1 (9%) | |
| COTRIM & DOXYC & PCM | | | 1 (4%) | | |
| COTRIM & DOXYC & BUSCO | | | 1 (4%) | | |
| COTRIM & DOXYC & ERYTHRO | | | 1 (4%) | | |
| DOXYC & METRON & CIPRO | 4 (15%) | | | | |
| DOXYC & METRON & ERYTHRO | 1 (4%) | | | | |
| DOXYC & METRON & ASA | | 1 (20%) | | | |
| DOXYC & ASA & CIPRO | | | | 1 (9%) | |
| DOXYC & METRON & BUSCO & GRISEO | | | 1 (4%) | | |
| COTRIM & DOXYC & METRON & KANAMY | | 1 (20%) | | | |
| DOXYC & METRON & CIPRO & PESS | 1 (4%) | | | | |
| BELLA & ERYTHRO & BCO & PHENO | | | | 1 (9%) | |
| DOXYC & METRON & CIPRO & CLOTRIM | 1 (4%) | | | | |
| DOXYC & METRON & PCM & XPEN | | 1 (20%) | | | |
| DOXYC & CIPRO & KETOC & NIMD & TINID | | | 1 (4%) | | |

Table 85: Treatment and Treatment Score: Vignette #3

| | Correct | Enough | Useful | Incmpl | Danger |
|---|---|---|---|---|---|
| ORS | 3 (33%) | 2 (4%) | | | |
| IVDRIP | | 6 (13%) | | | |
| ANTIBIOT | | | | | 1 (25%) |
| IVSALT | | 4 (9%) | | | |
| UNTREATED | | | | 2 (67%) | |
| ORS & IVDRIP | | 1 (2%) | | | |
| ORS & OBSERVE | 2 (22%) | 1 (2%) | | | |
| ORS & REF | | 1 (2%) | | | |
| ORS & ANTIPARS | 1 (11%) | 2 (4%) | | | |
| ORS & ANTIBIOT | 1 (11%) | 6 (13%) | | | |
| ORS & S/P | | 2 (4%) | | | |
| ORS & ANTI-EM | | 1 (2%) | | | |
| IVDRIP & OBSERVE | | 5 (11%) | | | |
| IVDRIP & ANTIPARS | | 1 (2%) | | | |
| IVDRIP & SALT | | 1 (2%) | | | |
| REF & ANTIDIAR | | | | | 1 (25%) |
| PCM & S/P | | | | 1 (33%) | |
| ANTIBIOT & IVSALT | | 1 (2%) | | | |
| ORS & IVDRIP & OBSERVE | | 2 (4%) | | | |
| ORS & OBSERVE & REF | | | 1 (50%) | | |
| ORS & OBSERVE & ANTIBIOT | | 1 (2%) | | | |
| IVDRIP & OBSERVE & ANTIBIOT | | 1 (2%) | | | |
| ORS & OBSERVE & ANTI-EM | | 1 (2%) | | | |
| ORS & ANTIPARS & ANTIBIOT | | | 1 (50%) | | |
| ORS & ANTIBIOT & ANTI-EM | | 1 (2%) | | | |
| ORS & ANTIBIOT & PCM | 2 (22%) | 2 (4%) | | | |
| ORS & ANTI-EM & IVSALT | | 1 (2%) | | | |
| ANTIPARS & PCM & MAGNES | | | | | 1 (25%) |
| ANTIBIOT & PCM & S/P | | | | | 1 (25%) |
| IVDRIP & ANTIBIOT & ANTI-EM | | 1 (2%) | | | |
| ORS & ANTIBIOT & ANTI-EM & PCM | | 1 (2%) | | | |
| ORS & IVDRIP & IVSALT & HOME RDY | | 1 (2%) | | | |
| ORS & OBSERVE & ANTIBIOT & ANTI-EM | | 1 (2%) | | | |

Table 86: Treatment and Treatment Score: Vignette #4

| | Correct | Enough | Useful | Incmpl | Danger |
|---|---|---|---|---|---|
| COTRIM | 3 (17%) | | | | |
| XPEN | | 2 (5%) | | | |
| AMOX | | 1 (3%) | | | |
| BRONCH | | | | 1 (25%) | |
| ERYTHRO | 1 (6%) | | | | |
| UNTREATED | | | | 1 (25%) | |
| COTRIM & ANTIPYR | 2 (11%) | | | | |
| COTRIM & HOME RDY | 1 (6%) | | | | |
| ANTIPYR & PPF | | 5 (13%) | 1 (20%) | | |
| ANTIPYR & XPEN | | 2 (5%) | | | |
| ANTIPYR & AMOX | | 3 (8%) | | | |
| ANTIPYR & PENV | | | 2 (40%) | 2 (50%) | |
| ANTIPYR & CHLORAMP | | 1 (3%) | | | |
| XPEN & AMOX | 2 (11%) | | | | |
| AMOX & BRONCH | | 1 (3%) | | | |
| AMOX & MES | | | 1 (20%) | | |
| PPF & XPEN | | 1 (3%) | | | |
| COTRIM & ANTIPYR & XPEN | 1 (6%) | | | | |
| COTRIM & ANTIPYR & LEVIMOS | | 1 (3%) | | | |
| ANTIPYR & PPF & XPEN | | 1 (3%) | | | |
| ANTIPYR & PPF & BRONCH | | 1 (3%) | | | |
| ANTIPYR & PPF & MES | | 1 (3%) | | | |
| ANTIPYR & PPF & S/P | | 1 (3%) | | | |
| ANTIPYR & XPEN & AMOX | 6 (33%) | 2 (5%) | | | |
| ANTIPYR & XPEN & BRONCH | | 1 (3%) | | | |
| ANTIPYR & XPEN & CHLORAMP | | 1 (3%) | | | |
| ANTIPYR & AMOX & BRONCH | | 4 (11%) | | | |
| ANTIPYR & AMOX & ERYTHRO | | 1 (3%) | | | |
| ANTIPYR & AMOX & PIRITON | | 1 (3%) | | | |
| ANTIPYR & BRONCH & AMPCLOX | | 2 (5%) | | | |
| XPEN & AMOX & BRONCH | | 1 (3%) | | | |
| XPEN & AMOX & MUCOLY | 1 (6%) | | | | |
| ANTIPYR & XPEN & AMOX & BRONCH | | 1 (3%) | | | |
| ANTIPYR & PPF & XPEN & BRONCH | | 1 (3%) | | | |
| ANTIPYR & XPEN & AMOX & HOME RDY | 1 (6%) | | | | |
| XPEN & BRONCH & MES & AMPICILLIN | | 1 (3%) | | | |
| XPEN & AMOX & MES & VIT | | 1 (3%) | | | |
| ANTIPYR & PPF & XPEN & BRONCH & S/P | | | 1 (3%) | | |

Table 87: Treatment and Treatment Score: Vignette #5

| | Correct | Enough | Useful | Incmpl | Danger |
|---|---|---|---|---|---|
| ANALGES | 13 (87%) | 3 (9%) | | | |
| ANTIPYR | | 1 (3%) | | | |
| EPHIDR | | 4 (12%) | | | |
| PIRITON | | 4 (12%) | | | |
| HOME RDY | 1 (7%) | | | | |
| OBSERVE | 1 (7%) | | | | |
| UNTREATED | | 2 (6%) | | | |
| ANALGES & EPHIDR & PIRITON | | 2 (6%) | | | |
| ANALGES & ANTIPYR & PIRITON | | 1 (3%) | | | |
| ANALGES & ANTI-EM & ERYTHRO | | 1 (3%) | | | |
| ANALGES & EPHIDR | | 3 (9%) | | | |
| ANALGES & PIRITON | | 9 (27%) | | | |
| ANALGES & AMPICILLIN | | 1 (3%) | | | |
| ANTIPYR & PIRITON | | 1 (3%) | | | |
| EPHIDR & PIRITON | | 1 (3%) | | | |

Table 88: Treatment and Treatment Score: Vignette #6

| | Correct | Enough | Useful | Incmpl | Danger |
|---|---|---|---|---|---|
| MEBEND | 29 (97%) | | | | |
| ZENTEL | | 2 (22%) | | | |
| ALBEND | | 4 (44%) | | | |
| KETRAX | | 1 (11%) | | | |
| ORS | | | | 2 (22%) | |
| UNTREATED | | | | 2 (22%) | |
| PCM & PENV | | | | 1 (11%) | |
| PCM & S/P | | | | 1 (11%) | |
| ORS & FLAGYL | | | | 1 (11%) | |
| ERYTHRO & METRON | | | | 1 (11%) | |
| KETRAX & PCM | | 1 (11%) | | | |
| MEBEND & ORS & ERYTHRO | | 1 (11%) | | | |
| MEBEND & MES & VIT | 1 (3%) | | | | |
| PCM & ORS & FLAGYL | | | | 1 (11%) | |

### A.3.3 Druguse

Table 89: Treatment and Druguse Score: Vignette #1

| | Rational | Irration | Polyphcy | Expensv |
|---|---|---|---|---|
| S/P | 23 (42%) | | 1 (14%) | |
| CQ | 1 (2%) | | | |
| S/P & FOLIC | 5 (9%) | | | |
| MES & AMODIAQ | | | | 1 (33%) |
| S/P & ANTI-EM | | | 1 (14%) | |
| S/P & PCM | 16 (29%) | | | |
| S/P & ORS | 3 (5%) | | | |
| S/P & CQINJ | | | | 1 (33%) |
| IMQ & FOLIC | | | | 1 (33%) |
| CQ & PCM& VIT | 1 (2%) | | | |
| CHLORPROM & ORS | | | 1 (14%) | |
| S/P & FOLIC & PCM | 1 (2%) | | | |
| S/P & ANTI-EM & PCM | 1 (2%) | | 1 (14%) | |
| S/P & PCM & ORS | 2 (4%) | | | |
| S/P & PCM & MES | 1 (2%) | | | |
| S/P & PCM & VIT | 1 (2%) | | | |
| S/P & PCM & AMOX | | | 2 (29%) | |
| S/P & ANTI-EM & PCM & MES | | | 1 (14%) | |

Table 90: Treatment and Druguse Score: Vignette #2

| | Rational | Irration | Polyphcy | Expensv |
|---|---|---|---|---|
| METRON | 1 (2%) | | | |
| REF | 4 (7%) | | | |
| AMOX | 1 (2%) | | | |
| CIMET | | | | 1 (25%) |
| DICLO | 1 (2%) | | | |
| COTRIM & PCM | 2 (4%) | | | |
| COTRIM & DOXYC | 1 (2%) | | | |
| COTRIM & METRON | 1 (2%) | | | |
| COTRIM & CIPRO | | | | 1 (25%) |
| COTRIM & BELLA | 1 (2%) | | | |
| DOXYC & PCM | 1 (2%) | | | |
| DOXYC & ASA | 1 (2%) | | | |
| METRON & NYSTAT | 1 (2%) | | | |
| REF & BUSCO | | | 1 (20%) | |
| ASA & AMOX | 1 (2%) | | | |
| PCM & PPF | 1 (2%) | | | |
| METRON & PCM | 1 (2%) | | | |
| DOXYC & METRON | 4 (7%) | | | |
| COTRIM & DOXYC & METRON | 19 (35%) | | | |
| METRON & PCM & CIPRO | 1 (2%) | | | |
| METRON & CLOXA & DICLO | | | | 1 (25%) |
| COTRIM & PPF & FLAGYL | | 1 (50%) | | |
| COTRIM & DOXYC & PCM | 1 (2%) | | | |
| COTRIM & DOXYC & BUSCO | | | 1 (20%) | |
| COTRIM & DOXYC & ERYTHRO | | 1 (50%) | | |
| DOXYC & METRON & CIPRO | 4 (7%) | | | |
| DOXYC & METRON & ERYTHRO | 1 (2%) | | | |
| DOXYC & METRON & ASA | 1 (2%) | | | |
| DOXYC & ASA & CIPRO | 1 (2%) | | | |
| DOXYC & METRON & BUSCO & GRISEO | | | 1 (20%) | |
| COTRIM & DOXYC & METRON & KANAMY | | | 1 (20%) | |
| DOXYC & METRON & CIPRO & PESS | 1 (2%) | | | |
| BELLA & ERYTHRO & BCO & PHENO | | | 1 (20%) | |
| DOXYC & METRON & CIPRO & CLOTRIM | 1 (2%) | | | |
| DOXYC & METRON & PCM & XPEN | 1 (2%) | | | |
| DOXYC & CIPRO & KETOC & NIMD & TINID | | | | 1 (25%) |

Table 91: Treatment and Druguse Score: Vignette #3

| | Rational | Irration | Polyphcy | Expensv |
|---|---|---|---|---|
| ORS | 5 (14%) | | | |
| IVDRIP | 6 (16%) | | | |
| ANTIBIOT | | | 1 (6%) | |
| IVSALT | 4 (11%) | | | |
| UNTREATED | 2 (5%) | | | |
| ORS & IVDRIP | 1 (3%) | | | |
| ORS & OBSERVE | 3 (8%) | | | |
| ORS & REF | 1 (3%) | | | |
| ORS & ANTIPARS | 2 (5%) | | | 1 (10%) |
| ORS & ANTIBIOT | 1 (3%) | | 6 (33%) | |
| ORS & S/P | | | 2 (11%) | |
| ORS & ANTI-EM | | | 1 (6%) | |
| IVDRIP & OBSERVE | 5 (14%) | | | |
| IVDRIP & ANTIPARS | 1 (3%) | | | |
| IVDRIP & SALT | 1 (3%) | | | |
| REF & ANTIDIAR | | | | 1 (10%) |
| PCM & S/P | 1 (3%) | | | |
| ANTIBIOT & IVSALT | | | 1 (6%) | |
| ORS & IVDRIP & OBSERVE | 2 (5%) | | | |
| ORS & OBSERVE & REF | 1 (3%) | | | |
| ORS & OBSERVE & ANTIBIOT | | | 1 (6%) | |
| IVDRIP & OBSERVE & ANTIBIOT | | | 1 (6%) | |
| ORS & OBSERVE & ANTI-EM | | | | 1 (10%) |
| ORS & ANTIPARS & ANTIBIOT | | | | 1 (10%) |
| ORS & ANTIBIOT & ANTI-EM | | | | 1 (10%) |
| ORS & ANTIBIOT & PCM | | | 4 (22%) | |
| ORS & ANTI-EM & IVSALT | | | | 1 (10%) |
| ANTIPARS & PCM & MAGNES | | | | 1 (10%) |
| ANTIBIOT & PCM & S/P | | | 1 (6%) | |
| IVDRIP & ANTIBIOT & ANTI-EM | | | | 1 (10%) |
| ORS & ANTIBIOT & ANTI-EM & PCM | | | | 1 (10%) |
| ORS & IVDRIP & IVSALT & HOME RDY | 1 (3%) | | | |
| ORS & OBSERVE & ANTIBIOT & ANTI-EM | | | | 1 (10%) |

Table 92: Treatment and Druguse Score: Vignette #4

| | Rational | Irration | Polyphcy | Expensv |
|---|---|---|---|---|
| COTRIM | 3 (7%) | | | |
| XPEN | 2 (5%) | | | |
| AMOX | 1 (2%) | | | |
| BRONCH | | | | 1 (6%) |
| ERYTHRO | 1 (2%) | | | |
| UNTREATED | 1 (2%) | | | |
| COTRIM & ANTIPYR | 2 (5%) | | | |
| COTRIM & HOME RDY | 1 (2%) | | | |
| ANTIPYR & PPF | 6 (14%) | | | |
| ANTIPYR & XPEN | 2 (5%) | | | |
| ANTIPYR & AMOX | 3 (7%) | | | |
| ANTIPYR & PENV | 4 (10%) | | | |
| ANTIPYR & CHLORAMP | | 1 (33%) | | |
| XPEN & AMOX | 2 (5%) | | | |
| AMOX & BRONCH | | | | 1 (6%) |
| AMOX & MES | 1 (2%) | | | |
| PPF & XPEN | 1 (2%) | | | |
| COTRIM & ANTIPYR & XPEN | 1 (2%) | | | |
| COTRIM & ANTIPYR & LEVIMOS | | | | 1 (6%) |
| ANTIPYR & PPF & XPEN | | | 1 (25%) | |
| ANTIPYR & PPF & BRONCH | | | | 1 (6%) |
| ANTIPYR & PPF & MES | 1 (2%) | | | |
| ANTIPYR & PPF & S/P | 1 (2%) | | | |
| ANTIPYR & XPEN & AMOX | 7 (17%) | | 1 (25%) | |
| ANTIPYR & XPEN & BRONCH | | | | 1 (6%) |
| ANTIPYR & XPEN & CHLORAMP | | 1 (33%) | | |
| ANTIPYR & AMOX & BRONCH | | | | 4 (25%) |
| ANTIPYR & AMOX & ERYTHRO | | 1 (33%) | | |
| ANTIPYR & AMOX & PIRITON | | | 1 (25%) | |
| ANTIPYR & BRONCH & AMPCLOX | | | | 2 (13%) |
| XPEN & AMOX & BRONCH | | | | 1 (6%) |
| XPEN & AMOX & MUCOLY | 1 (2%) | | | |
| ANTIPYR & XPEN & AMOX & BRONCH | | | | 1 (6%) |
| ANTIPYR & PPF & XPEN & BRONCH | | | | 1 (6%) |
| ANTIPYR & XPEN & AMOX & HOME RDY | 1 (2%) | | | |
| XPEN & BRONCH & MES & AMPICILLIN | | | | 1 (6%) |
| XPEN & AMOX & MES & VIT | | | 1 (25%) | |
| ANTIPYR & PPF & XPEN & BRONCH & S/P | | | | 1 (2%) |

Table 93: Treatment and Druguse Score: Vignette #5

| | Rational | Irration | Polyphcy | Expensv |
|---|---|---|---|---|
| ANALGES | 13 (81%) | | | 3 (10%) |
| ANTIPYR | | | | 1 (3%) |
| EPHIDR | | | | 4 (13%) |
| PIRITON | | | | 4 (13%) |
| HOME RDY | 1 (6%) | | | |
| OBSERVE | 1 (6%) | | | |
| UNTREATED | 1 (6%) | | | 1 (3%) |
| ANALGES & EPHIDR & PIRITON | | | | 2 (6%) |
| ANALGES & ANTIPYR & PIRITON | | | | 1 (3%) |
| ANALGES & ANTI-EM & ERYTHRO | | | 1 (100%) | |
| ANALGES & EPHIDR | | | | 3 (10%) |
| ANALGES & PIRITON | | | | 9 (29%) |
| ANALGES & AMPICILLIN | | | | 1 (3%) |
| ANTIPYR & PIRITON | | | | 1 (3%) |
| EPHIDR & PIRITON | | | | 1 (3%) |

Table 94: Treatment and Druguse Score: Vignette #6

| | Rational | Irration | Polyphcy | Expensv |
|---|---|---|---|---|
| MEBEND | 29 (69%) | | | |
| ZENTEL | | | 1 (20%) | 1 (100%) |
| ALBEND | 4 (10%) | | | |
| KETRAX | 1 (2%) | | | |
| ORS | 2 (5%) | | | |
| UNTREATED | 2 (5%) | | | |
| PCM & PENV | | | 1 (20%) | |
| PCM & S/P | 1 (2%) | | | |
| ORS & FLAGYL | | | 1 (20%) | |
| ERYTHRO & METRON | 1 (2%) | | | |
| KETRAX & PCM | 1 (2%) | | | |
| MEBEND & ORS & ERYTHRO | | | 1 (20%) | |
| MEBEND & MES & VIT | 1 (2%) | | | |
| PCM & ORS & FLAGYL | | | 1 (20%) | |

### A.3.4 Laboratory Use

Table 95: Labtest use and Labtest Score: Vignette #1

| | Absent | Caution | Just | Not Just |
|---|---|---|---|---|
| NO TEST | 18 (100%) | | | |
| BS MALARIA | | 32 (100%) | | |
| FBP | | | 1 (9%) | |
| BS MALARIA & FBP | | | 3 (27%) | |
| BS MALARIA & FBP & LUMBAR | | | | 1 (25%) |
| BS MALARIA & HB | | | 3 (27%) | |
| BS MALARIA & STOOL | | | 2 (18%) | |
| BS MALARIA & URINE | | | 2 (18%) | |
| BS MALARIA & STOOL & URINE | | | | 1 (25%) |
| BS MALARIA & WIDAL | | | | 2 (50%) |

Table 96: Labtest use and Labtest Score: Vignette #2

| | Absent | Caution | Just | Not Just |
|---|---|---|---|---|
| NO TEST | 28 (100%) | | | |
| URINE | | | 12 (46%) | |
| HVS | | 7 (100%) | | |
| STOOL | | | | 1 (25%) |
| ULTRASOUND | | | 1 (4%) | |
| PREG TEST | | | 1 (4%) | |
| URINE & HVS | | | 7 (27%) | |
| URINE & FBP | | | 1 (4%) | |
| URINE & STOOL | | | | 1 (25%) |
| URINE & ULTRASOUND | | | 2 (8%) | |
| URINE & VDRL | | | 1 (4%) | |
| URINE & ULTRASOUND & WBC | | | 1 (4%) | |
| URINE & HVS & STOOL | | | | 1 (25%) |
| URINE & X RAY & ULTRASOUND | | | | 1 (25%) |

Table 97: Labtest use and Labtest Score: Vignette #3

| | Absent | Caution | Just | Not Just |
|---|---|---|---|---|
| NO TEST | 30 (100%) | | | |
| STOOL | | 13 (100%) | | |
| FBP | | | | 4 (44%) |
| BS MALARIA | | | 1 (8%) | |
| UNSPECIFIED | | | | 1 (11%) |
| STOOL & FBP | | | | 2 (22%) |
| STOOL & BS MALARIA | | | 11 (85%) | |
| STOOL & UNSPECIFIED | | | 1 (8%) | 1 (11%) |
| STOOL & BS MALARIA & URINE | | | | 1 (11%) |

Table 98: Labtest use and Labtest Score: Vignette #4

| | Absent | Caution | Just | Not Just |
|---|---|---|---|---|
| NO TEST | 41 (100%) | | | |
| SPUTUM | | 5 (42%) | | |
| X RAY | | | 1 (33%) | |
| BS MALARIA | | 5 (42%) | | |
| WBC | | | | 1 (11%) |
| STOOL | | | | 2 (22%) |
| UNSPECIFIED | | | 2 (67%) | 1 (11%) |
| SPUTUM & UNSPECIFIED | | 1 (8%) | | |
| BS MALARIA & SPUTUM | | 1 (8%) | | |
| BS MALARIA & WBC | | | | 2 (22%) |
| BS MALARIA & STOOL | | | | 2 (22%) |
| BS MALARIA & URINE | | | | 1 (11%) |

Table 99: Labtest use and Labtest Score: Vignette #5

| | Absent | Caution | Just | Not Just |
|---|---|---|---|---|
| NO TEST | 41 (100%) | | | |
| BS MALARIA | | | 5 (100%) | |
| UNSPECIFIED | | | | 1 (50%) |
| BS MALARIA & UNSPECIFIED | | | | 1 (50%) |

Table 100: Labtest use and Labtest Score: Vignette #6

| | Absent | Caution | Just | Not Just |
|---|---|---|---|---|
| NO TEST | 8 (100%) | | | |
| STOOL | | 32 (100%) | | |
| STOOL & HB | | | 2 (40%) | |
| STOOL & BS MALARIA | | | 2 (40%) | |
| STOOL & UNSPECIFIED | | | 1 (20%) | |
| STOOL & URINE | | | | 1 (33%) |
| STOOL & HB & BS MALARIA | | | 1 (20%) | |
| STOOL & BS MALARIA & URINE | | | | 1 (33%) |
| STOOL & BS MALARIA & WIDAL | | | | 1 (33%) |