East African Medical Journal Vol. 78 No. 10 October 2001
PRESCRIBING HABITS IN CHURCH-OWNED PRIMARY HEALTH CARE FACILITIES IN DAR ES SALAAM AND OTHER TANZANIAN COAST REGIONS
A.Y. Massele, MD (UDSM); MSc, PhD (Bradford), S.E.D. Nsimba DDS (UDSM) MSc (Ireland) and G. Rimoy MD (UDSM) Ph.D (Nottingham), Department of Clinical Pharmacology, Faculty of Medicine, Muhimbili University College of Health Sciences, P.O. Box 65010, Dar es Salaam, Tanzania.

Request for reprints to: Dr. A.Y. Massele, Department of Clinical Pharmacology, Faculty of Medicine, Muhimbili University College of Health Sciences, P.O. Box 65010, Dar es Salaam, Tanzania.

PRESCRIBING HABITS IN CHURCH-OWNED PRIMARY HEALTH CARE FACILITIES IN DAR ES SALAAM AND OTHER TANZANIAN COAST REGIONS

A.Y. MASSELE, S.E.D. NSIMBA and G. RIMOY

ABSTRACT

Objective: **To assess prescribing practice of Primary Health Care (PHC) workers in church owned health care facilities using WHO drug use indicators.**

Design: **A cross-sectional study in which twenty primary health care facilities were randomly selected. Prescribing indicators were obtained by analysing outpatient records retrospectively for the past 14 months between January 1997 and February 1998. This period was chosen because of compete records of outpatient attendances. Patient care and facility indicators were recorded prospectively during the study period.**

Setting: **The study was conducted in the Coast and Dar es Salaam regions of Tanzania. Six districts were randomly selected from both regions. The selected districts included Ilala, Temeke and Kinondoni in Dar es Salaam, Kibiti, Bagamoyo and Kisarawe in Coast region.**

Subjects/materials: **Twenty primary health care facilities were randomly selected from the chosen districts. Patient registers were collected and patients' characteristics including age, sex, diagnosis, and drugs prescribed for the period January 1997 to February 1998 were recorded on data collection forms. Patient care indicators were measured by recording consultation time, dispensing time, per cent of drugs actually dispensed and adequately labelled whereas patients' knowledge of correct drug dosage was obtained using exit interviews. Verification of facility indicators was done by direct observation.**

Results: **The average number of drugs per prescription was 2.3 (range 1.8 – 2.8). Generic prescribing prevailed with a mean of 75.5% of all drugs. Antibiotic and injection encounters per prescription was 35.4 and 19%, respectively. Most drugs were prescribed according to the essential drug list of Tanzania (NEDLIT). Patient's average consultation time was 3.6 minutes whereas average dispensing time was 39.9 seconds. On average, 87% of all drugs dispensed were adequately labelled and patients' knowledge of correct dose was adequate. All facilities possessed drugs for treating important illnesses, all had reference educational materials.**

Conclusion: **The study shows that there is an overuse of injections 19% ±1.7 (range 0-73%) compared to the recommended figure of 15%. The use of antibiotics appears appropriate when compared with the morbidity patterns in the study areas. A focus group discussion with prescribers in these facilities to address the question of overuse of injections is needed in order to plan an appropriate intervention.**

INTRODUCTION

Modern health care services in Tanzania are mainly provided by two sectors. The Government/Public sector and the Non governmental sector (NGO), mainly missions. Overlapping these two sectors are the private PHCs (dispensaries and health centres) which are widely distributed throughout the country. The network of health facilities includes hospitals, health centres, dispensaries and a variety of smaller health facilities like village health posts. Primary health care facilities refer to those health units attending to the majority of the rural population.

Primary health care facilities such as health centres and dispensaries are the backbone of health care in Tanzania. The government owns most of these health facilities. In addition to government health facilities, there are about 80 health facilities owned and operated by missionaries. The missions owning these include Lutheran, Catholic, Swedish Free Church, Moravin, Church of Christ and Africa Inland Church among others. These facilities are scattered all over the country. In some regions like Dar es Salaam and Coast, Catholic, Anglican, Lutheran, Seventh Day Adventist and Evangelical Assemblies of God mainly own the facilities. Operationally as far as health matters

are concerned they are under the umbrella of Christian Social Services Commission (CSSC), while, administratively they are directly under the individual missions(1). Tanzania established an essential drug programme in 1983 with the assistance of WHO and UNICEF such that, by 1984 the whole country had been covered(2). Although the essential drug programme covers the public sector, we do not know to what extent the private sector, including mission health facilities are involved. The aim of this study was therefore to assess prescribing practice in mission PHCs using established WHO drug use indicators and to communicate our findings to CSSC for policy and operational research. As far as it could be ascertained such studies have not been conducted in Dar es Salaam and Coast regions.

MATERIALS AND METHODS

Study site: Six districts were randomly selected. The chosen districts included Ilala, Temeke and Kinondoni in Dar es Salaam region, Kibiti, Bagamoyo and Kisarawe in coast region (Table 1).

Study permission: Permission to carry out the study was firstly sought from the Ministry of Health (MOH). However, the final permission was obtained from CSSC and diocesan health co-ordinators for each mission.

Table 1

Location of study facilities

Code	Name of dispensary	District	Region
01	St. Thomas Yombo	Temeke	Dar es Salaam
02	Msimbazi Mission	Temeke	Dar es Salaam
03	Buguruni	Ilala	Dares Salaam
04	Kilimahewa	Kibiti	Coast
05	Mbweni	Kinondoni	Dar es Salaam
06	Tegeta	Kinondoni	Dar es Salaam
07	Kibiti	Kibiti	Coast
08	Visiga (St. Mary's)	Kibaha	Coast
09	St. Francis Xavier	Temeke	Dar es Salaam
10	Ubungo	Kinondoni	Dar es Salaam
11	Averna	Temeke	Dar es Salaam
12	Mbagala Consolata	Temeke	Dar es Salaam
13	Ukonga	Ilala	Dar es Salaam
14	St. Camilus	Temeke	Dar es Salaam
15	Airport Health Centre	Ilala	Dar es Salaam
16	Mtoni Lutheran	Temeke	Dar es Salaam
17	Chalinze R.C.	Bagamoyo	Coast
18	Mwalusembe	Kisarawe	Coast
19	Mjawa	Kisarawe	Coast
20	SDA	Temeke	Dar es Salaam

Materials (instruments): WHO drug use indicator forms were used. Information obtained was recorded on these forms. Three types of forms were available, these are:

Prescribing indicators: average number of drugs per encounter; per cent of drugs prescribed by generic name; per cent of encounters with an antibiotic prescribed; per cent of encounters with an injection prescribed and; per cent of drugs prescribed from an essential drug list or formularly.

Patient care indicators: Average consultation time; average dispensing time; per cent of drugs actually dispensed and; patient's knowledge of correct dosage.

Facility indicators: Availability of copy of essential drug list or formulary; availability of key drugs and; these indicators have been well illustrated from WHO manual(3).

The information for prescribing indicators (Table 2) was obtained by randomly selecting prescription records from patient registers. A table of simple random number was used to pick prescriptions. Only new cases were recorded and re-attendances were rejected. For each selected prescription the following information was recorded; name, age, sex, diagnosis and treatment was recorded for the period January 1997 to February 1998. We collected a sample of sixty prescriptions retrospectively per facility.

Patient care indicators (Table 3) was measured prospectively from thirty randomly selected patients per facility. We used a table of simple random numbers to select patients. Consultation time was recorded by observing doctor patient interaction time, while dispensing time was recorded as time spent by a dispenser for instructing a patient on drug use on the other hand, drugs actually dispensed were compared with the number of items on the patients prescription. Drug packets/wrappings were examined to determine number of drugs correctly labelled. Patients knowledge of dosage was recorded through exit interviews by intercepting patients after they left the dispensing window and requesting them gently to repeat the dosing instructions.

In assessing the facility indicators, the research team requested to see a copy of national essential drug list or formularly. The research team also inspected the availability of key drugs used to treat common diseases. The list of common illnesses in the study facilities was obtained from outpatient monthly attendance/disease statistics. Based on disease statistics kept at each health facility, the research team therefore expected to find the following drugs in each facility during the time of visit: Chloroquine (tablets and injectables), paracetamol tablets, ferrous sulphate tablets, folic acid tablets, metronidazole tablets Co-trimoxazole tablets, penicillin (oral and injectables), tetracycline capsules/eye ointments magnesium trisilicate tablets and mebendazole tablets (Table 4). Top ten diseases treated at each health facility from which the above list of drugs was drawn as shown in Table 5. This prospective study was conducted form October 1998 to June 1999.

RESULTS

Prescribing indicators: This study took place in 20 church-owned PHC facilities. The facilities are shown in Table 1. The average number of drugs per encounter was 2.3 (range 1.8-2.8). Generic prescribing prevailed in these health facilities with a mean of 75.5% of all drugs prescribed being generic (Table 2). Percentage of encounter with an antibiotic and injection prescribed was 35.4% and 19% respectively (Table 2). Injection encounter ranged from 0 to 73%. Most drugs were prescribed from the essential drug list of Tanzania (Table 2).

Table 2

Prescribing indicators

Facility Code#	Denomination	Average # drugs prescribed	% generics	% antibiotics	% injections	% EDL	No of prescriptions
01	Anglican	2.7	83.5	36.8	23.1	95.0	60.0
02	Roman Catholic	1.6	83.2	19.0	14.7	89.5	60.0
03	Anglican	2.5	79.7	30.2	28.2	89.0	60.0
04	Roman Catholic	2.5	83.7	30.6	12.2	89.0	60.0
05	Roman Catholic	1.8	80.0	32.7	15.5	96.4	60.0
06	Roman Catholic	2.2	84.3	16.4	12.0	86.6	60.0
07	Roman Catholic	1.4	78.0	37.2	3.5	87.2	60.0
08	Roman Catholic	2.3	75.9	24.1	15.3	92.7	60.0
09	Roman Catholic	3.2	50.0	24.5	0.6	49.0	60.0
10	Anglican	2.7	71.3	29.8	16.5	93.8	60.0
11	Roman Catholic	3.0	80.0	26.0	2.8	82.0	60.0
12	Roman Catholic	1.8	82.7	34.6	10.0	98.0	60.0
13	Roman Catholic	2.8	47.1	15.3	6.4	49.0	60.0
14	Roman Catholic	2.6	89.7	22.4	18.6	97.4	60.0
15	Assemblies of God	2.7	65.9	18.0	20.0	98.7	60.0
16	Lutheran	2.7	68.8	66.7	73.3	97.5	60.0
17	Roman Catholic	1.4	83.3	46.7	0.00	88.1	60.0
18	Lutheran	2.3	70.1	66.7	30.0	85.3	60.0
19	Lutheran	2.0	75.4	66.7	46.7	100.00	60.0
20	Seventh Day Adventist (SDA)	2.3	78.3	63.3	30.0	78.3	60.0
	Mean ± SD	2.3 ± 0.5	75.5 ± 11.0	35.4 ± 17.4	19 ± 17.2	87.1 ± 14.3	1200.0

Table 3

Patient care indicators

Facility Code #	Average consultation time (minutes)	Average dispensing time (seconds)	% Drugs actually dispensed	% Adequately labelled	Patients knowledge of correct dose (%)
01	3.2	40.0	90.0	80.0	100.0
02	3.9	42.0	96.7	89.7	100.0
03	3.6	50.0	80.0	90.0	100.0
04	2.8	55.0	82.0	90.0	100.0
05	2.8	50.0	85.0	80.0	90.0
06	3.3	36.0	100.0	100.0	100.0
07	4.0	38.0	92.0	92.0	100.0
08	3.4	42.0	100.0	50.0	50.0
09	3.8	40.0	100.0	50.0	100.0
10	3.5	50.0	90.0	80.0	100.0
11	4.0	25	100.0	100.	100.0
12	4.8	29.0	99.0	100.0	100.0
13	3.5	28.0	100.0	100.0	100.0
14	3.2	26.0	87.0	100.0	96.7
15	3.6	40.0	80.0	90.0	92.0
16	3.5	50.0	82.0	92.0	100.0
17	3.4	50.0	90.0	92.0	100.0
18	3.7	33.5	97.8	86.2	93.3
19	3.6	35.0	90.0	96.0	100.0
20	3.8	38.0	90.0	94.0	100.0
Mean ± SD	3.6 4	39.9 8.9	91.6 7.3	87.6 14.1	96.1 11.3

Table 4

Top ten drugs commonly prescribed by 20 church owned PHC facilities

1. Chloroquine tablets/syrups/injections
2. Paracetamol tablets
3. Folic acid tablets
4. Metronidazole tablets
5. Penicillin (oral and injectables)
6. Tetracycline caps and eye ointment
7. Mebendazole tabs/syrups
8. Ferrous sulphate tablets
9. Co-trimoxazole tablets/syrups
10. Magnesium trisilicate.

Table 5

Top ten diseases in 20 church owned PHC facilities

SN		No.	%
1	Malaria	360.0	45.0
2	ARI/pneumonia	67.0	13.2
3.	Helminths	67.0	8.3
4.	Dermatitis	60.0	7.5
5	Gastroenteritis	59.0	7.4
6	Wounds	42.0	5.3
7	Urinary tract infections	37.0	4.6
8.	Arthrits	14.0	1.8
9.	Otitis media	13.0	1.6
10	Miscellaneous	42.0	5.3
	Total	800.0	100.0

Patient cares indicators: These indicators were studied prospectively (Table 3). The average consultation time was 3.6 minutes, while the dispensing time was 39.9 seconds. Percentage of drugs actually dispensed was high with an average of 91.6% of all prescribed drugs dispensed at health facilities. When we examined adequacy of labelling, on average, 87% of all drugs dispensed were correctly labelled according to good pharmacy practice(4). Patients knowledge of correct dose was adequate, on average, 96.1% of all interviewed patients (exit interviews) understood the dosing instructions.

Facility indicators: On inspection, all facilities possessed drugs for treating important and prevalent diseases in their areas and all facilities possessed an essential drug list.

DISCUSSION

Rational drug use in developing countries remains a serious problem(1). To quantify drug use in a health facility, drug use indicators have been developed by WHO(3). The main purpose of introducing these indicators is to define objective measures that can be used to describe the drug situation in a country, region or institution(3). This would allow health policy makers or researchers to compare drug use situations in different areas or at different times. Also, when an intervention is undertaken to improve aspects of drug use, indicators could form the basis of measuring impact. A further use of indicators would be as supervisory tools, which could be used to monitor the quality of care, delivered to patients(3). Assessing prescribing practice in any health facility seems to be the most obvious way of measuring the rational use of drugs. The most commonly used indicators for assessing prescribing practice are shown above. The choice of these indicators has been conditioned by the relative ease with which this data can be collected. In this study the average number of drugs per encounter was 2.3 compared to recommended target of 1.5-2.0(5). Using the same WHO indicators, a study conducted in Lagos University Hospital in Nigeria revealed an average of 5.2 drugs per encounter(5). The Nigerian findings are much higher than in our facilities. Levels of health care could explain this difference. In the Nigerian study, hospitals were used whose drug formulary is broader than the PHC in this study, in addition morbidity patterns in Nigeria may not be comparable to the Tanzanian study facilities but the number of drugs per encounters in this study is comparable to previously reported figures in government PHC facilities in Tanzania(6).

The average per cent of drugs prescribed in generic was 75.7 compared to an international target of 100(5). These results are comparable to those in public PHC facilities(6). This indicator agrees with Tanzania's drug policy where teaching of all health cadres with respect to purchasing, prescribing and dispensing must be in generic(2). The average percent of encounters with an antibiotic and injection prescribed are shown in Table 2. Antibiotic and injection were prescribed in all health facilities with average per cent encounters of 35.4 (range 15-66.7) and 19 (range 0-73), respectively. Although Tanzania has no gold standards for these indicators, comparing these indicators to prevalent diseases in the areas of study support the high use of antibiotics we report in this study. The recommended target for injection exposure is 15% or less(4). The high antibiotic and injection use in these facilities were due to lack of diagnostic facilities(6). Lack of diagnostic facilities like microscopes lead to presumptive treatment of all cases. Thus, these indicators do not reflect the true indication for prescribing these medications. Presumptive diagnosis and subsequent prescribing of antibiotics and injections is irrational prescribing and may predispose to emergence of bacterial resistance and predispose patients to diseases like HIV/AIDS and hepatitis B respectively when injections are used indiscriminately. WHO has been active in this area of injection practice discouraging the indiscriminate use of injections.

Prescribing according to NEDLIT was also surveyed. Approximately 87% of drugs were prescribed according to the essential drug list of Tanzania (Table 2). This was due to the fact that these facilities purchase all their pharmaceuticals from the essential drug list. This procurement procedure has led to rational prescribing in these facilities. Since we have no comparison with facilities that do not buy drugs according to NEDLIT it is difficult to conclude whether prescribers understand the basis for using NEDLIT. However, prescribing is also influenced by the presence of formularies, essential drug books and or calendars. It was noted that all facilities had at least a drug formulary. Again there is need to compare data collected from facilities without such references to measure the impact on prescribing. Patient care indicators were measured prospectively. Consultation time was considered adequate if physical examination was done, and in our study the average value was 3.6 minutes, whereas the average dispensing time was 39.9 seconds (Table 3). Similar results have been published from developing countries but there are no gold standards(6). A large workload seen in our study facilities could be a factor which influenced consultation and dispensing time. However, despite the short dispensing time, patients could remember what they had been prescribed. The number of drugs prescribed to each patient was generally limited to two (Table 2); their availability and familiarity may have influenced their recall.

Drug prescribing is influenced by many other factors of which drug availability, patient's demand, education of prescribe, drug information sources and diagnostic facilities are important. However, without good comparison of data collected from areas without drug information sources and infrequent availability of drugs, it is difficult to determine whether these factors have an impact on prescribing patterns in these facilities. Chloroquine, paracetamol, folic acid, metronidazole and penicillin accounted for the highest percentage of all drugs in stock on the days of our visit. The stocking of these drugs was consistent with the prevailing diseases in these facility areas.

CONCLUSION

This study indicates that except for overuse of injections, mission health facilities perform favourably as measured by these indicators. We propose a focus group discussion with the prescribers in these facilities to address the question of overuse of injections and plan appropriate interventions.

ACKNOWLEDGEMENTS

To Christian Social Services Commission (CSSC) and the Ministry of Health for giving us permission to undertake this study. The Principal, Muhimbili University College of Health Sciences for assisting us with transport and Community Initiatives Support Services (CISS) International Nairobi for financial support.

REFERENCES

1. Mujinja, P.G.M. A National Study. The relationship between the government and mission hospitals in Tanzania. A report to the Ministry of Health, Tanzania, 1996.
2. Ministry of Health. Essential Drug list of the United Republic of Tanzania 1997.
3. How to investigate drug use in health facilities. WHO/DAP/93. 1 Manual
4. Good Pharmacy Practice (GPP) in Community and Hospital Pharmacy Settings. WHO/PHARM1DAP/96. 1
5. A.F.BioalaMabadeje, A. A. Akintonwa and R. B. Ashorobi. The value and effects of implementing an essential drug list in the Lagos University Teaching Hospital. *Clin. Pharm. Therapeut.* 1991; **50**:121-123.
6. Massele A.Y. and Nsimba S.E.D. Comparison of drug utilisation in public and private PHC clinics in Tanzania. *East Afr. Med. J.* 1997; **74**:420-422.
7. World Health Organisation. An informal workshop on injection practices research, Geneva. WHO 1991,WHO/DAP/91.8.