A BASELINE STUDY OF DRUG PRESCRIBING PRACTICES IN A NIGERIAN MILITARY HOSPITAL.

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ABSTRACT

Background: In many developing countries, drug costs form an important portion of government and household expenditure. Also, improper use of drugs is a major health hazard and increases treatment costs. However, while the problem of irrational use of drugs is worldwide, it has not been adequately studied especially in developing countries such as Nigeria. Military facilities provide health care services to an important segment of both the military and civil population.

Methods: The aim of this study was to evaluate drug prescribing practices at a Nigerian military hospital (Military Hospital, Ikoyi, Lagos) and to make recommendations for its improvement. Using WHO rational drug use (RDU) criteria, prescribing and facility care indicators were studied using case notes of general out patients seen between March 2006 and February 2007. Also, a knowledge, attitude and practice (KAP) study of prescribers and dispensers at the hospital to complement the study of indicators was also undertaken.

Results: Based on systematic sample of 180 case notes collected over the study period, the average number of drugs per encounter was higher (3.0 ± 1.5) than other African values. Also, 43.8% of drugs were prescribed using their generic names which is low. A high number of patients were prescribed antibiotics (27.8%) and injections (23.9%). From the KAP study of 29 respondents, only one (3.4%) was not aware of the existence of the Essential Drug List (EDL) while 50.0% claimed ownership of a copy of the EDL. Few (13.9%) respondents, could accurately detail the 5 steps in issuing a prescription.

Conclusion: This study revealed gaps between the actual level of knowledge of prescribers/dispensers about RDU and actual practice. The need for further studies and focused interventions are outlined.

INTRODUCTION

Drugs are essential to optimum care of patients; its availability confers credibility and is essential to the utilization of the health care system. In many parts of the world including Nigeria however, drug use practices are not rational or appropriate [1, 2]. According to the World Bank, [3] between 20% and 50% of the health expenditure of developing countries are spent on drugs and other medical sundries. In developed economies, the main problem confronting health care is cost containment while in less endowed countries such as Nigeria; it is mainly inadequate resource allocation to health [4, 5]. Hence, optimal use of drugs is important to policy makers, health managers and consumers of health services. Drug usage is influenced by drug availability, prescribers experience, health budget, promotion activities of the pharmaceutical industry, cultural factors, the communication system and the interaction between these factors. It is more of a social than biomedical science [1]. ccording to Otoom et al., [6] it involves the prescriber, a the patient (client)

and pharmaceutical institutions. Rational drug use (RDU) is when patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, and the lowest cost to them and their Community [7]. It involves appropriate indication with proper identification of cause or nature of disease(s) and need for drug therapy; appropriate drug i.e. one best suited for the condition in terms of efficacy, cost, sensitivity and side-effect profile: appropriate patient; appropriate information is given to the patient (client) on the disease and the treatment (drug and non-drug) and appropriate monitoring [7]. Drug use is measured in a standardized manner in outpatient facilities using drug use indicators [1]. When studied together, drug use indicators provide a measure of the optimal use of drug resources, assist in detecting problems and recommending solutions. Since 1994, declining economic fortunes has necessitated the introduction of the drug -revolving scheme (DRS) as the mainstay for drugs supply and purchase in Nigerian military health institutions. Hence, drug costs are often borne by clients' out- of pocket. In 2005, the government launched the National Health Insurance Scheme (NHIS), a form of social insurance to improve access

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to and efficiency of health care by reducing the need for out-of-pocket expenditure for health [8]. Payment for drugs under the scheme is based mostly on prescriptions from the Essential Drugs List 2003 (EDL) [9]. The formal sector component of the NHIS is soon to be operational in all Military health institutions in Nigeria. Health insurance depends on rational use of services and resources including drugs for its viability and sustainability. Hence, the institutions in Nigeria.Health insurance depends on rational use of services and resources including drugs for its viability and sustainability. Hence, the need to evaluate prescribing practices in health facilities. In Nigeria, studies of RDU are few. To our knowledge, no published studies from Nigerian Military health institutions exist. These institutions serve a significant segment of the population especially the military and civilian population around its location. The aim of this study was to establish baseline-prescribing practices at Military Hospital, Lagos- a secondary health facility of the Nigerian Army and to recommend modalities to improve RDU and patient care in military health institutions generally.

MATERIALS AND METHOD

Study setting: Military Hospital, Lagos (MHL) is a secondary health care facility located in the highbrow Ikoyi area of Lagos, Nigeria's commercial capital. It was opened in 1983 to serve commissioned officers of the Nigerian armed forces, their families and top civil servants. It now serves both the military and civil population without discrimination. The hospital has 30 doctors, 2 pharmacists and 45 nurses. It has a general out patient department where primary medical care is given 24 hours a day. Drugs are stocked on the basis of the essential drug list while clients purchase health services on a user fees basis.

Design: The study was made up of retrospective review (March 2006-February 2007) of a sample of general outpatients' case notes for prescribing data, an inspection of the general out patient clinics and dispensary for facility care indicators and a knowledge, attitude and practice (KAP) survey of prescribers and dispensers for the concept of RDU. Prescribing and facility care indicators were calculated using guidelines as in the WHO manual for investigation of drug use in health facilities [1]. These guidelines require a minimum of 100 sample case notes collected over a one year period. This study used 180 case notes to improve the quality of data collected. From the general outpatient records, a systematic sample based on a sampling fraction to yield 15 case notes per month was used for the study period. Records of those attending for the first time for curative treatment only were utilized. The KAP study involved prescribers and dispensers working in the hospital and who consented to participate in the study. It was done through a self- administered questionnaire to obtain information from respondents on KAP on RDU. Information required included knowledge of steps in issuing a rational prescription, definition of RDU and prescription pattern (generic, branded or both) among others.

Quantitative data such as demographics, number of drugs prescribed, presence of antibiotics in prescription and other data as in WHO guidelines [1] were collected. These data were filled into appropriate WHO proforma and analyzed using Microsoft Excel software.

RESULTS
Core prescribing indicators of RDU

From the analysis of 180 case records, the age range was 0.25-81.0 years (mean 32.1±16.1, median 28) with 102 cases (56.6%) between 20-39 years old. Slightly more were males (n=93) than females (n=87) giving a male to female ratio of 1.1:1. Five hundred and thirty-seven drugs were recorded on 168 prescriptions. Twelve patients (6.6%) had no drugs prescribed for them. The average number of drugs per patient encounter was 3.0±1.5 (range 1-8). Table 1 shows the drugs distribution pattern recorded. Most patients (n=86, 51.2%) had 3-4 drugs, only a few (1.8%) had 7 or more drugs.Out of 537 prescribed drugs, the generic name was used in 235, thus generic drugs prescribed was 43.8% of total drugs prescribed. Using the EDL, 442 prescribed drugs (82.3%) were on the list. Fifty patients had one or more antibiotics prescribed giving an antibiotic encounter rate of 27.8%. Injections were prescribed for 43 clients, an injection encounter rate of 23.9%.

Facility care indicators

On inspection, no EDL was found in the general outpatient clinics and the dispensary. There were 13 drugs available out of 16 recommended in the WHO checklist for Primary Health Care facilities giving a rate of 81.2%.

Analysis of KAP study

A total of 36 questionnaires were distributed for the KAP study, of these 28 (77.8%) were suitable for analysis. The rest were not analyzed as they lacked professional designation (prescriber, dispenser or nurse) or the respondents did not answer the questions. Data is not available on the characteristics of those who chose not to participate. Among the 28 respondents, most were doctors (n=24,85.7%), the rest were pharmacists (n= 2, 7.2%) and nurses (7.2%). Based on the duration of professional practice, the doctors had between 1 year and over 37 years of practice (median 7.5years). Only 4 doctors (16.7%) had practiced for less than one year. Most (n=15, 62.5%) had practiced for more than 5years. Only one

(3.4%) respondent claimed ignorance of EDL while 11 (37.9%) claimed possession of a copy. Out of 26 who responded to the question, 13(50.0%) utilized the EDL. Only 4 (13.9%) of 29 respondents could accurately detail the 5 steps in issuing a prescription while 13 (44.8%) could correctly give at least 2 steps. Regarding usual choice of drugs, more respondents (n =19, 65.5%) prescribed a mixture of branded and generic drugs than generics only (n=10, 34.5%). None claimed usual prescription of branded drugs only. Factors that influence prescribing in descending order was: use of EDL, personal experience and patients' choice. Most respondents (n=22, 78.6%) expressed need for education on RDU, a few were not sure (n=3, 10.7%) or felt they had no need (10.7%). Definitions given for RDU included "appropriate drug considering efficiency, availability and less side effect", "judicious use of drugs to benefit patient" and "use of most basic and cheap drugs to achieve maximum effect".

Table 1: **Distribution of Prescribed Drugs in a Nigerian Military Health Facility in Lagos.**

Number of Drugs	Number of Clients (% of Total)
1-2	54 (32.1)
3-4	86 (51.2)
5-6	25 (14.9)
7-8	3 (1.8)
Total	**168 (100.0)**

DISCUSSION

According to Laporte [10,] a prescription provides an insight into a prescribers' attitude to the disease being treated and the nature of health care delivery system in the community. This study revealed weaknesses in the way Military Hospital, Ikoyi, Lagos (MHL) manages diseases that may be a reflection of the entire health system of the Nigerian Armed Forces. Among 12 countries, the average number of drugs given per encounter in Nigeria was found to be high [1]. While Zimbabwe has 1.3 [11], Sudan 1.4 [12], Nigeria has an average of 3.8 drugs given per prescription in public health institutions [13, 14]. This study got an average of 3.0 that is similar to an earlier finding by Adikwu [15]. While some prescribers resort to poly pharmacy as a means of "covering more ground" due to inadequate knowledge of disease aetiology or its treatment, others claim the patients desire several drugs to "ensure that everything has been done" [16.] With this high rate of drug use in an urbanbased health facility as MHL, it would be interesting to ascertain the pattern in lower level military health facilities in Nigeria where staffing and equipment are inadequate. Bosu and Ofori-Adjei [17] found that health centres had worse drug use indicators than hospitals in Ghana. The prescription of generics could substantially reduce cost of drugs for the patients and improve management of the essential drugs policy [9, 18, 19.] However, there is low frequency of generic prescribing in most Nigerian hospitals. In Zimbabwe, 94.0% of prescribed drugs were in the generic form [11]. Erah et al., [20], found that only 54.0% of prescriptions in a Nigerian public hospital were generic products as compared with Tanzania (84.0%) [21]. Our finding in this study was that only 43.8% of drugs were prescribed in the generic form. In the KAP study, more respondents (65.5%) claimed preference for a mixture of generic and branded drugs. Reasons attributed for such preference include greater confidence in the quality of branded drugs over generics due to the high rate of drug faking in Nigeria, the unbridled influence of drug/pharmaceutical representatives who promote the use of branded drugs in our Nigerian health institutions and the preference of many prescribers for 'known" brands of drugs. There is need to strengthen the regulatory agencies to curb the production, sale and distribution of counterfeit and fake drugs in Nigeria. Also prescribers and patients need education to promote the use of generics in Nigeria. Prescriptions from the EDL accounted for 82.3% of total drugs in this study. This is comparable to another result from West Africa [17]. The difference between rate of generic prescription (43.8%) and that from the EDL (82.3%) was because several brands of a drug available in the EDL are marketed in Nigeria. Though EDL contains drugs in their generic names, marketers advertise in the brand names to prescribers and dispensers to increase their market share. The benefit of the use of the EDL is limited by the low rate of generic prescribing even in public health institutions in Nigeria. From the KAP study, 62.1% of prescribers claimed not to have copies of the EDL. Also, no copy was found on inspection of the general outpatient clinics and dispensary of the hospital. Hence, the good performance on this criterion of RDU in the hospital is possibly because there is a wide range of common brands of drugs in the EDL. There would be problems when such prescriptions written in brand names are taken outside the hospital for filling as cost could limit the ability of clients to purchase them. Public hospitals in Nigeria need to make copies of the EDL available to all prescribers, dispensers and nurses and promote its utilization. According to the WHO, not more than 20.0% of general outpatient prescriptions ought to be antibiotics. However, in developing countries like Nigeria, antibiotic usage is often uncontrolled. In the Republic of Sudan, 63.0% of patients are prescribed antibiotics [12]. Possibly such misuse is responsible for increasing microbial resistance to antibiotic therapy [22]. More than half of Nigerian patients encounter antibiotics.

Adikwu, found 64.7% [15], Chukwuani et al., got 50.3% [23], while Odusanya recorded 54.8% from a study in Lagos [24]. In the Lagos study [24], the commonly used antibiotics were amoxycillin and ampicillin+cloxacillin. In our study, 27.8% of the patients encountered antibiotics with commonly used drugs been rocephin, ceftriaxone and co-amoxiclav. The antibiotic encounter rate is low from this study but the pattern is worrisome. The preference for late generation penicillins and cephalosporins in a general outpatient setting without laboratory proof of resistance to more common antibiotics indicates inappropriate drug use. In an earlier study, Chukwuani et al., [23] found that only 4.2% of in-patients had antibiotics based on microbial sensitivity tests. considering that general out patients in many developing countries purchase their drugs out-of-pocket due to absence of health insurance schemes; the high cost of antibiotics could limit compliance. In addition, use of such drugs could limit future therapeutic options. Clinicians should be educated on the cost implications of irrational prescriptions [25], its harmful prospects [2] and the possibility of limiting future therapeutic options. The inappropriate use of injectable drugs is another significant problem in Nigeria. According to Wyatt [26], injections are popular in Third World countries because the syringe and needle are seen as symbols of Western medicine. Also, they appear to connote disease control as they were used for yaws, smallpox, kalaazar and measles eradication campaigns in the recent past. Irrational use of injections is suspected in the resurgence of poliomyelitis in some countries [26]. In a Nigerian study by Adikwu [15], 61.0% of patients encountered injections. Our results (23.9%) are lower but still higher than another Nigerian result [24]. One reason for the high injection rate in our study was that some of the antibiotics prescribed are only available in injectable form.Injections are more expensive and dangerous than oral drugs. Expenses associated with injection use include cost to patients, health staff time and sterilization equipment. Dangers include injection abscess, paralysis, and injection of deadly viruses such as hepatitis and the human immunodeficiency virus [2].

In evaluating the utilization of EDL, half of the respondents (n=13) were not utilising it in their prescriptions. This correlates with the low number who posses the document (37.9%), marked preference for mixture of generic and branded drugs (65.5%) and low rate of generic prescribing (43.8%). It is unlikely that their claim of basing prescriptions on the EDL is true in practice. It seems as if personal experience and the influence of the marketers of branded pharmaceutical products are more important to the prescription behaviour than the claim of use of the EDL. The gap between knowledge, attitude and actual practice is well known in communication science as the KAP gap. Interventions to bridge this gap can only be effective if based on serious qualitative study of the motivational factors influencing the prescription behaviour of prescribers. Most respondents in this study (78.6%) expressed the need for education on RDU. Such education is strongly recommended to ensure optimum patient care, reduce waste of resources and minimise risk of adverse drug effects. A limitation in this study was the low number of nurses who participated in the KAP study. However, their impact on prescriptions in secondary health facilities is low as they rarely issue prescriptions in such facilities.

CONCLUSION
Based on a study of prescribing and facility care indicators as recommended by the WHO, it was observed that patient care parameters such as average rate of patient encounter with drugs, rate of generic prescribing and antibiotic usage are high in an urban-based Nigerian military health care facility. From the qualitative study of prescribers, dispensers and nurses, a significant gap exists between the knowledge and attitude of workers to the ingredients of RDU and their actual practice. The inability of most to correctly enumerate the steps in issuing a prescription shows that such an important duty is often performed unscientifically. The need for further studies and focused interventions are outlined.

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