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Factors Determining Prescribers' Initiation Of Emperical Antibiotic Therapy

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Abstract

Antibiotics are among the most widely used drugs to treat patients with various diseases in public and private health institutions. Some factors has been noted to affect the prescriber`s reason for empirically initiating antibiotic therapy in different disease conditions. These factors include; News letter, Drug presentation by pharmacy representatives, drugs in stock in hospital pharmacy, drugs in essential medicine list, age of the patient, adverse drug reaction, cost of the drug, appropriate indication and the clinical state of the patient.. The aim of the study was to determine the most common factors responsible for the prescriber`s initiation of empirical antibiotic therapy. At the end it was discovered that the clinical state of the patient, appropriate indication and the cost of the drug ranked high among the list of the factors that determine empirical antibiotic therapy.

Key words: antibiotics, prescription, factors, treatment, therapy

INTRODUCTION

Drug use studies are a necessary tool for assessing prescribing patterns in hospitals, recognizing areas for improvement and improving drug prescribing practices in these facilities. Assessment of drug use patterns with World Health Organization [WHO] Drug Use Indicators is becoming increasingly necessary towards promoting rational drug use in developing countries (Enwere et al. 2007).

Use of antibacterial drugs over the last 60 years has triggered a combination of genetic and biochemical mechanisms within the bacteria to secure their survival in environments where antibiotics are present. Bacterial clones with natural and acquired resistance have continuously been selected as an evolutionary response to the use of antibiotics.

Resistance can be acquired as a result of genetic events causing alterations in the pre-existing bacterial genome, such as point mutations and gene amplifications. The other major mechanism is horizontal gene transfer between species, where transposons, integrons or plasmids are introduced into an organism (Mordi et al. 2008).

Resistance development is a natural biological outcome of antibiotic use. The more we use these drugs the more we increase the speed of emergence and selection of resistant bacteria. In different parts of the world there is an extensive overuse of antibiotics e.g. use based on incorrect medical indication as well as misuse by prescribing the wrong agent, administration route, dose and treatment duration (Erah et al. 2003).

A study by Isah et al (1998) using the WHO Drug use indicators to delineate drug use patterns suggests some inappropriate use of drugs which may in turn reflect current practice throughout Nigeria.

These indicators include: average number of drugs per-encounter, percentage of drugs prescribed by generic name, percentage of encounters with an antibiotic prescribed. percentage of encounters with an injection prescribed and percentage of drugs prescribed from essential drug list or formulary. The aim of this study is to identify pertinent factors influencing initiation of antibiotic therapy mong

among doctors in two different geographically located tertiary institutions in Nigeria.

MATERIALS AND METHOD

Study Setting:

The study was conducted in two centers. The first Institution was University of Benin Teaching Hospital which is located in Benin City, the capital of Edo state in Southern Nigeria (a rain forest zone). It is a 628 bed tertiary institution in Edo state serving as a referral centre for hospitals both in Edo state and parts of the surrounding Delta and Ondo states.

The second Institution is Usman Danfodio University Teaching Hospital which is located in Sokoto the capital of Sokoto State in the North Western part of Nigeria [Savanah zone]. It is a 548 bed tertiary institution serving as a referral centre for hospitals in Sokoto and the surrounding Kebbi and Zamfara states.

Study Design:

An assessment of some factors determining prescriber's initiation of empirical antibiotic therapy.

Prescribers were surveyed to determine factors influencing initiation of empirical antibiotic therapy, where a convenient sample of one hundred (100) medical practitioners, 50 from each hospital was used. They were administered a questionnaire to obtain information on the factors determining the initiation of antibiotic therapy whenever they come across patients that need antibiotic treatment.

Analytical Method:

Other information sought included, demographic characteristics of prescribers, antibiotic of choice in initiation of therapy for patients among others. Information on factors determining prescribers' initiation of antibiotic therapy was sought using a structured questionnaire on 50 doctors (prescribers) in each hospital.

RESULTS AND DISCUSSION

The age and sex distribution of the respondents were as illustrated in Table 1. They were predominantly young doctors with male to female ratio of 1.78:1 (UBTH) and 1.6:1 (UDUTH) respectively.

A look at the number of years of experience showed that the respondents at UBTH had more years of experience than their counterparts at UDUTH and most of the doctors were from Internal Medicine Department. The doctors at UBTH used more samples than those at UDUTH for M/C/S.

TABLE: 1:Age and Sex Distribution of Respondents in UBTH and UDUTH.

Age Range(Years)	UBTH Number (%)	UDUTH Number (%)	Total (%)
<40	48(96.00)	43(86)	91(91)
>40	2(4.00)	7(14.00)	9(9)
Total	50(100)	50(100)	100(100)
Sex			
Male	32(64.00)	31(62.00)	63(63)
Female	18(36.00)	19(38.00)	37(37)
Total	50(100)	50(100)	100(100)

Factors affecting initiation of antibiotic therapy were as shown in the chart and this shows that the clinical state of patient, appropriate indication and the cost of the drug ranked high in both hospitals among others while news letter and drug presentation by sales representatives were the least determining factors in both hospitals.

The choice of route of drug administration showed that most doctors preferred oral route to parenteral route. This however is easier both for the doctor and the patient unless where the patient cannot take orally.

The pertinent factors identified in the study to affect initiation of antibiotic therapy were, clinical state of patient, appropriate indication and cost of drug. These factors ranked high in both hospitals and are critical issues to be considered as they will determine the outcome of the treatment of the patient, while drug presentation by pharmaceutical industry representatives and newsletter were the least option in both centers. Although as noted by Akoria and Isah many doctors in Nigeria do not admit to their susceptibility to pressure by the pharmaceutical industry representatives (Akoria et al. 2008).

Some factors such as hospital pharmacy, essential drug list and ADR were prominent factors considered at UBTH than at UDUTH as factors affecting initiation of empirical antibiotic therapy, this may not be unconnected with the fact that UBTH is a well recognized center for drug administration and monitoring (Clinical Pharmacology Center) as two experts in the field

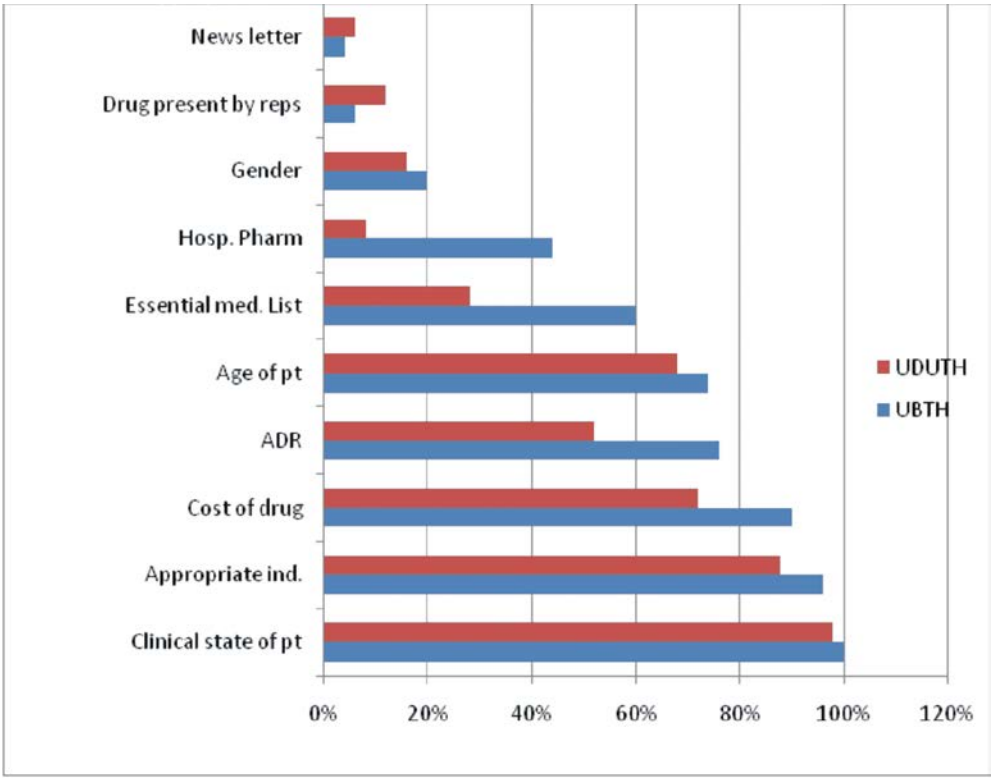

Figure 1: Factors that influence antibiotic choice on initiation of therapy.

(ADR=Adverse drug reaction)

Preference for antibiotic choice in initiation of empirical antibiotic therapy were also similar in both centers as in UBTH Ciprofloxacin (26%), Co-amoxyclav (20%), and Ceftriazone (16%) ranked high and in UDUTH Ciprofloxacin (20%), Co-amoxyclav (12%),and ceftriazone (12%) were the preference in that order. In some cases the response to questions were left open (22%) in

UBTH and (20%) in UDUTH. The reason the respondents gave most of the time was that antibiotic choice on initiation of empirical treatment depends on the suspected diagnosis as well as severity of the illness.

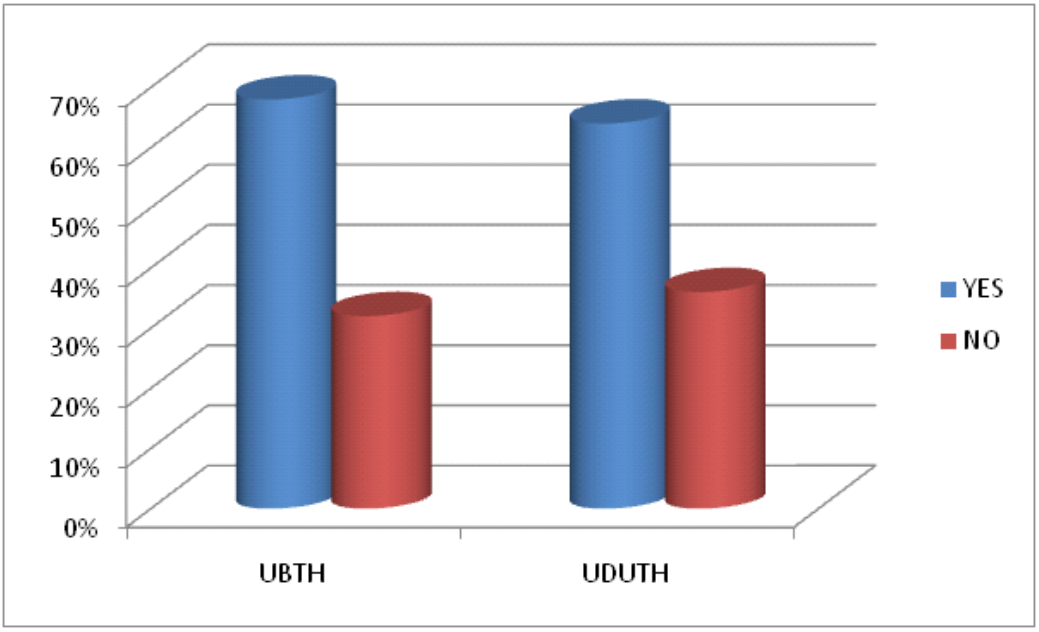

Figure 2: Response by the prescribers as to whether M/C/S is necessary prior to antibiotic therapy.

Choice of route of drug administration was mostly oral in both centres, (86%) in UBTH and (76%) in UDUTH Chi-square 0.421 df 1 p= 0.561 statistically no significant difference in the two centres. About 68% of prescribers considered m/c/s necessary prior to initiation of antibiotic therapy in UBTH and 64% in UDUTH (Figure 2).

CONCLUSION

This study shows that initiation of antibiotic therapy is dependent on some factors as enumerated in the body of this study. However some factors such as clinical state of patient, appropriate indication and cost of drug ranked high among the list of factors that determine empirical antibiotic therapy.

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