Inappropriate drug treatment for hospitalized patients at two Dar es Salaam City hospitals

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In-patient drug management data of 140 randomly selected cases from seven diseases that are the common causes of admission at two Dar es Salaam City hospitals has been analyzed for quality of care given. Analysis criteria included the consistence of treatment with diagnosis, polypharmacy, drug duplication, drug interaction and preferred treatment instructions. Implication of shortfalls is discussed.

Key Words: In patients, polypharmacy, drug interaction, drug utilization studies.

INTRODUCTION

In-patients are those considered clinically sufficiently ill to require hospitalization in order that their treatment be supervised closely by qualified clinical staff.

Considering the high potency that the modern drugs used in the treatment have, and their cost then their rational use is crucial if the drugs are to play a pivotal role in the disease management of in-patients. In addition to these matters there are other important factors for consideration as well as adverse drug reactions, the cost of hospitalization and the need to conserve often-stretched hospital resources. The two studied hospitals were a publicly owned and a private one.

This study was carried out to assess the quality of health care given to in-patients by assessing the level of efficiency of rational use of drugs in the management of the diseases among in-patients. This was achieved by retrospectively analyzing the prescriptions** of a three year-period. To the best of our knowledge no similar study to this one has ever been done in Tanzania. However Drug utilization studies have been extensively done in the last few years for out-patients and recently a manual of its kind on how to assess the quality of care given to patients at out-patient health facilities has been published [1].

We considered four interrelated elements of management that constitute inappropriate drug for in-

patients as follows:

- the diagnosis given was not reflected in the drug selection for treatment.

- drug interaction was likely to occur but there was no caution given in the treatment orders.

- presence of polypharmacy.

- the lack of or incomplete instructions given on how to use the drugs in the prescription

The study objectives were as follows:

1. to assess for agreement of drug treatment with a given diagnosis.

2. to document polypharmacy.

3. to document drug duplication and presence of unnecessary diagnosis.

4. to document presence of drug interaction.

5. to document the adequacy or otherwise of instructions for the proper interpretation of the prescription by the attending nurses.

METHODOLOGY

For each of the seven most common diseases encountered at each of the two hospitals for the period 1989-91, ten cases were picked at random giving a total of 140 cases. For each of the cases the following data were recorded: the age and sex of the patient, the diagnosis and the treatment given. The studied diseases were malaria, pulmonary tuberculosis, essential hypertension, disorders involving the immune system; especially HIV disease; congestive cardiac failure (CCF), diabetes mellitus and asthma. In the following section we discuss the results of the findings relative to each of the five objectives mentioned above.

**   For in-patients no prescriptions in the strict legal sense are written. Drug ordered are recorded in the file and/or treatment card which are used as prescriptions to procure and administer the drugs.

RESULTS

Incorrect drug selection

An incorrect drug selection or wrong treatment occurred when the prescribed drug could not have treated the underlying diagnosed disease condition. With the possible exception of HIV disease where a rigorous criterion for treatment is difficult to define, a total of ten and fifteen incorrect drug selections for hospitals A and B respectively were encountered.

The following prescriptions illustrate the magnitude of the problem:

1. Adult male; diagnosis — Pulmonary tuberculosis
   ℞
   1. I.V. drip 5% Dextrose 1 litre
   2. Inj. Ampicillin 500 mg 6 hourly
   3. Inj. PPF 1.2 M.U. bd
   4. Tab. Panadol 2 prn
   5. Septrin Tab 4 tds 5/7
   6. Tab moloxolon 1 tds

2. Adult male; diagnosis — Pulmonary tuberculosis
   ℞
   1. Pen inj. 2 MU IM 6hrly for 48 h then inj. PPF 1.2 M.U. of 5/7
   2. Tab Septrin II bd 5/7
   3. I.V. fluids: Ringers Lactate alternating with 5% dextrose drip to three litres/24h.
   4. Tab Panadol II tds 3/7

3. Adult male; diagnosis — Pneumonia
   ℞
   1. Cough Mixt.
   2. Salbutamol 1 mg bd 5/12

The drug selections for each of the three examples do not support the diagnosis given.

Drug interaction

The studied case revealed 16 drugs that interacted with other drugs or with food giving instances of 16 and 31 for hospitals A and B respectively. The most frequent interaction was that between Frusemide and Digoxin where no indication for monitoring of potassium or giving potassium supplement was given.

TABLE I: Drugs that interact with other drugs or with food

Drugs that cause interaction	Hospital A Number found	Hospital B Number found
Digoxin vs Frusemide	10	5
Digoxin vs Magnesium trisillicate	1	2
Chlorpropamide vs septrim	1	0
Ampicillin vs Chloramphenicol	1	0
Inderal vs Rifampicin	0	2
Inderal vs Adalat	0	2
Valium vs Rifampicin	0	2
Panadol vs Rifampicin	0	4
Zantac vs Adalat	0	1
Digoxin vs Captopril	0	4
Digoxin vs Lorazepam	0	2
Food vs Captopril	0	3
Food vs Adalat	2	3
Food vs Furadantin	0	1
Benzyl penicillin vs Chloramphenicol	1	0
Acebutolol vs hydralazine	1	0
Total	17	31

Polypharmacy

Polypharmacy is difficult to rigorously define. The current practice within INRUD[*] is that for out-patients at least a prescription with more than 2.7 items is counted as having polypharmacy. In the absence of an acceptable standard or practice for in-patients we define polypharmacy as the number of drugs prescribed in excess of the incident average which in this study was found to be 4.5 items per prescription.[+] Cases of polypharmacy accounted for 8 and 40 prescriptions for hospitals A and B in that order. We emphasize that the criterion we have adopted constitutes a moving standard and we expect more such studies will be done in the future to help set an acceptable practice standard.

Drug duplication and unneccesary drugs

Drugs were considered to be duplicated or unnecessary when more than one item of the same pharmacological or therapeutic category were prescribed to the same patient concurrently. There were found 16 instances of drug duplication in each hospital. The following is one such example.

Male 65 yrs diagnosis — Hypertension with ischaemic heart disease (IHD)

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*   International Network for Rational Use of Drugs

+   We have used the lower of the two values calculated for each hospital.

℞ 1. Tab aprinox 5mg of
    2. Inj. Lasix 40 mg I.V. stat
    3. Tab Isordil 10 mg 6 hrly 7/7
    4. Nitrobid 1 tab 2 hrly
    5. Diltiazen 30 mg tds
    6. Tab panadol 2 prn
    7. Tab Lorazepam 2 mg tds
    8. Mucaine 2 tsp 6 hrly
    9. Liquid Paraffin 1 oz of
    10. Tolmicen local app. bd.

Items (3) and (4) are of the same class, so are (1) and (2).   More importantly is the use of the three antihypertensives (1,2, & 5) at the same time. No indications for (8) and (10) were given. The dose interval for Nitrobid of a tablet every 2 hours constituted a serious overdose.

Lack or incomplete treatment instruction

The average number of drugs per prescription was found to be 4.5 and 5.8 for hospitals A and B respectively. In most of the prescriptions as can be seen in all the preceding examples there were varying inadequate instructions for the proper use of the drugs. There was frequent lapse to indicate the intervals between doses, duration of treatment instructions were given for only 56.87% and 13% for hospitals A and B respectively. The following prescription perhaps represents the extreme end of the spectrum of this problem:

Male adult; diagnosis — Bronchial asthma
℞ 1. Aminophylline
    2. Salbutamol
    3. Lasix
    4. MES
    5. Ampicillin

CONCLUSION

It has been established that many incorrect drug selection for in-patients were made, where drug interaction occurred no caution was given, that a number of drug duplication was done and that the majority of cases treatment instructions were inadequate and in some cases absent all together.

REFERENCE

[1]   How to Investigate Drug Use in Health Facilities. Selected Drug Use Indicators. WHO/DAP/93.1