Use of a pilot drug information centre

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Abstract

Introduction: Provision of access to drug information by prescribers and other health care professionals is important in pharmacotherapy. At the time of this study there was very scanty literature in this area from Africa.

Objective: To assess use of a pilot drug information centre (DIC) which was set up in a department of Pharmacology and Therapeutics in a university teaching hospital in Uganda.

Methods: This was a situational analysis with a prospective study design. The pilot DIC was established and its use over an eleven-month period was assessed. The received queries were evaluated for source of the query, reason for the query and type of query.

Results: During the 11 months 297 queries were received, 72.3% of which were from public hospitals. Most werefrom prescribing doctors (54.2%). Majority were on drug-drug interaction (41.2%), followed by therapy (23.2%). Out of 197 specific drug requests, 65.5% were on antiretroviral.

Conclusion: We found that healthcare professionals were enthusiastically using the drug information centre. It is, therefore, necessary and feasible to establish a DIC in Uganda that will enable these professionals to readily access drug information.

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Introduction

The extensive and increasing range of pharmaceuticals on the market has given prescribers a wide range of therapeutic choices. But this poses certain challenges. While the task of remaining informed about clinically relevant aspects of benefits and safety of drugs is critical for optimal patient care, it is often not easy for the healthcare professionals to keep abreast with all the current information[1]. Access to unbiased drug information is a cornerstone to improving rational drug use. In high-income countries, the modern healthcare professional "swims in a river" of clinical evidence, including pharmaceutical information[2]. However, healthcare professionals in many poor resource countries, particularly in Sub-Saharan Africa, have inadequate access to up-to-date information[3-7].

Irrespective of the country, the practicing healthcare professional lacks the time to access and systematically review the available literature on drug therapy. To minimize this challenge, many countries have setup drug information centres (DICs) that provide to healthcare professionals and patients systematically analyzed drug information. The first DICs were established in the United States of America and Germany in 1960s, in the United Kingdom and Sweden in 1970s[8-10]. Since then many have been established in several high and middle-income countries[11-14]. In Africa drug information centres have been established in South Africa and Zimbabwe[14]. But the only one which, at the time of this study, was fully and actively functioning was the Medicines Information Centre in South Africa[14].

In our previous study we found that majority of prescribers in public hospitals in Uganda had limited access to unbiased drug information[15]. In the same study most of the interviewed physicians expressed the need for a drug information centre. Therefore as a follow-up, a pilot DIC was established in the Department of Pharmacology and Therapeutics, College of Health Sciences, Makerere University. We present results of assessment of its use over the first 11 month of its establishment.

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Methods

This was a situational analysis with a prospective study design. The pilot DIC was setup in February 2005. The pilot DIC was staffed by a pharmacist and a non-specialist medical doctor, who collected the data. The centre was open from 9.00 am to 5.00 pm from Monday to Friday, except on public holidays.

Two desktop computers, a landline telephone with internet connection, Drugdex software and basic pharmacology reference books were obtained. An internal communication telephone line that facilitates communication to clinical departments in the Mulago National Referral Hospital was provided by the hospital. A brochure and a poster in which the objectives and functions of the centre and methods of contact were outlined were designed. A Standard Operating Procedure (SOP) manual containing information on the process of receiving, searching for appropriate answers and communicating the reply to the inquirer was designed. The SOP manual was used to train the data collectors in the techniques of handling a query.

Healthcare professionals, who were the major potential users, were sensitized using three methods. These included conducting seminars, presentations at professional conferences, and distributing materials (brochures and posters) to healthcare facilities and individuals. Between January and May 2005 seminars were conducted in the National Referral Hospital and in each of the three largest non-governmental Hospitals in Kampala. These hospitals were targeted because they employ the largest proportion of the hospital-based healthcare professionals in the country. In the National Referral Hospitalthe seminars were conducted separately in each department, but in the other smaller hospitals only one seminar per hospital was conducted for all healthcare professionals. At these seminars the objectives and functions of the centre were outlined. Brochures were distributed to the participants. Posters were also displayed on notice boards in wards, outpatient clinics and departmental offices of the hospitals.

Besides the seminars, the outline of the objectives and activities of the centre were presented at three physicians' conferences, attended by a large number of healthcare professionals from many parts of the country. One conference took place in May, the second in September and the third in October 2005. Brochures and posters were also sent to all public hospitals in the country through the hospital administrators or healthcare professionals attending these conferences.

The data collectors received queries and provided answers to the inquirer. The queries were delivered to the centre by walking-in, telephoning, emailing or faxing. The information regarding the query was filled on a specific form. This form contained the following sections: source of the query, reason why the information is required, specific patient information where the query was concerning a specific patient, type of query, and characteristics of the reply. Comprehensive literature search by the data collectors was done. The answers were provided by one of the following methods:
(i) only telephoning back if the query and the answers were simple and short,
(ii) telephoning back to give a summary of the answer followed by a detailed written reply,
(iii) e-mailing reply, or iv) pickup of the reply by the inquirer.

Analysis is based on queries received in eleven months from February to December 2005. The data was entered using Microsoft Access, cleaned and then transferred to SPSS 10.0 for windows for analysis. Descriptive statistics, using proportions were employed.

Results

Number and distribution of queries by source
During the 11 months of the pilot study the DIC received 297 queries (Table 1), the majority of which were from public hospitals (72.3%), followed by the Makerere University's College of Health Sciences' basic science departments (15%). Most of the requests were from physicians (54.2%), and only 4.4% were from the layperson. More than half of the queries (56.6%) were delivered by inquirers who walked into the centre, and the rest were received through telephone. Fourteen of the queries had two requests each, thus totalling to 311 questions.

Table 1: Origin of the query

Origin	Frequency	%
Facility		
Public Hospital	214	72.3
Makerere University non-clinical departments	45	15.0
Private Hospital	12	4.0
Private Clinic	6	2.0
Health Centre	3	1.0
NGO Hospital	1	0.3

Continuation of table 1

Origin	Frequency	%
Drug shop	1	0.3
Others	15	5.1
Total	297	100
Profession		
Medical officers	112	37.7
Specialist doctors	31	10.4
Senior house officers (SHO)	15	5.1
Intern doctor	3	1.0
Undergraduate Medical student	27	9.1
Pharmacist	26	8.8
Nurse/midwife	25	8.4
Other health professionals	45	15.1
Layperson	13	4.4
Total	297	100.0

Type of queries

The majority of the requests, (95.6%), were for academic purpose, i.e. the inquirer just wanted to get the knowledge but not for any particular patient. Only eight queries (2.7%) were on specific patients, four of which were from attending doctors and the other four from patients themselves. The characteristics of the requests are shown in Figure 1. Most frequently encountered requests were related to drug-drug interactions (41%), followed by therapy (22%) and pharmacology (21%). The requests grouped under pharmacology included queries on specific drug classification, pharmacokinetics and pharmacodynamics, efficacy studies and formulation of specific drug preparations.

Figure 1: Type of drug information requests
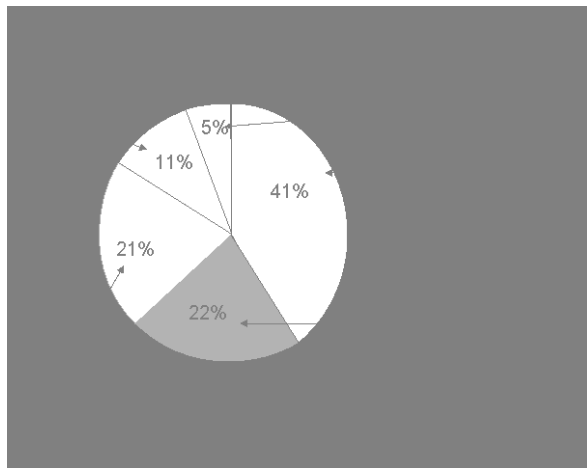
Specific drug related requests

There were 197 requests that were about specific drugs (Table 2). Most of these concerned anti-infectives for systemic use (74.6%), of which the majority were antiretrovirals. This was followed by drugs for the nervous system (10.2%), which were dominated by analgesic and antipsychotic drugs. Most of the queries on antiretrovirals were about drug-drug interaction.

Table 2: Drug specific queries

| Anatomical main group	Pharmacological/ Therapeutic main group	Frequency	Anatomical main group total (%)
Alimentary tract andmetabolism	Vitamins & minerals	11	11 (5.6)
Cardiovascular system	Cardiac therapy agents	1	1 (0.5)
Dermatological	Antiseptic and disinfectants	1	1 (0.5)
Antiinfectives for systemic use	AntiretroviralsAntibacterials	12918	147 (74.6)
Antineoplastic and immuno-modulating agents	Antineoplastic agents	1	1 (0.5)
Musculo-skeletal system	Antigout preparations	2	2 (1.0)
Nervous system	AnalgesicsAnaestheticsAntipsychotic drugs	938	20 (10.2)
Various	Diagnostic agents (Contrast media)	5	5 (2.5)
Antiparastic products	Antimalarials	8	8 (4.1)
Sensory system	Ophthalmological	1	1 (0.5)
Total		197	100

Characteristics of the replies

Replies to the majority of the queries (67%) were given within 24 hours of receiving the query (Figure 2). In 97% of the queries the inquirer received written reply. For the remaining queries only oral reply was given. Out of the 288 written replies, 63.5% were picked by the inquirer, 38.2 % sent by e-mail, and the rest were hand-delivered by a staff of the centre.

In addition to the written reply, reference literature was given for 95% of the queries.

Figure 2: Time taken to provide the reply to a query
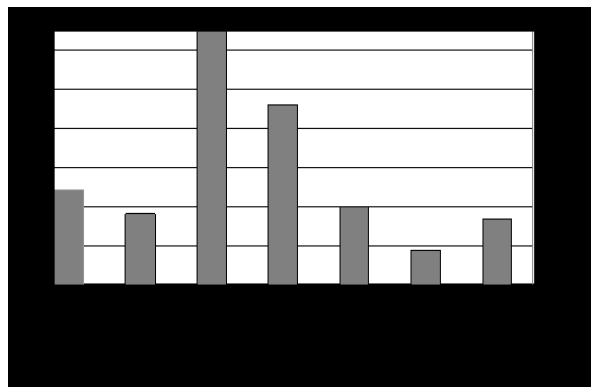
Discussion

The establishment of the pilot drug information centre at the Department of Pharmacology and Therapeutics, College of Health Science, Makerere University, was an effort to explore the feasibility of improving the drug information system in the health care delivery of the country. This was a follow-up to the study that investigated the available sources of drug information for physicians in public hospitals and their opinions on establishing a centre in Uganda in which several access barriers were identified[15]. The centre would enable the healthcare providers, lectures and students in the various health institutions, and the public to have ready access to independent up-to-date and contextual drug information. Availability of appropriate drug information is one of the important elements in promoting rational drug use.

The location of a DIC has been reported to ranges from a department in a hospital to pharmacists association office[13, 16, 17]. The location of the pilot centre in a university department is similar to a number of other centres (1, 18-21). We found that this central location and which is within a university faculty of medicine provides a network of medical disciplines that support and enrich the functioning of the centre. It also favours access to libraries, research facilities, and academic and patient care facilities.

During the 11 months of the pilot study the DIC received 297 queries giving an average of 27 queries per month. This is comparable to 28 queries per month received by the drug information service in Nepal[1], whose assessment was done after 2 years. However, this is much higher than what was reported from two centres assessed several years after establishment where the figures were six and eight queries per month respectively[20, 21]. Still in another centre where the evaluation was done seven months after the opening, an average of only 10 queries per month was reported[18]. Therefore, based on the results of this pilot DIC, it appears that the healthcare professionals need and have acknowledged the establishment of the service. Therefore, more queries could be expected with time.

Though sensitization of some kind had reached health care professionals in a large number of health care facilities, the majority of queries were from only two public hospitals, followed by the Makerere University's College of Health Sciences' non-clinical departments which are in the vicinity of the centre. One of these hospitals was Mulago which is the Makerere University's College of Health Sciences teaching hospital while the other was Rakai District Hospital which is over 200 kilometres away. The proximity of the centre to Mulago Hospital and Makerere University non-clinical departments partly explains the large number of queries from these facilities. However, the receipt of some queries from far could be an indication that with improvement in publicity on the existence and functioning of the centre, the number of users is likely to increase.

The Mulago Hospital complex has a well stocked library and several internet connection points. Therefore, the use of the centre by health care professionals in this hospital is an indication of the need for already analyzed drug information. These professionals most likely lack time to sift through all the available information sources. Use by the district hospital is most likely because the drug information sources at the facility are very limited, therefore, the doctors found the centre to be the most accessible source for unbiased up-to-date information. The large number of queries received from the faculty's non-clinical departments is an indication of the role of the centre as an academic resource.

The source of queries to the established centres varies from centre to centre. Most receive queries from both the public and health care professionals. The predominance of physicians was reported in a number of studies[1, 18, 22, 23]. In only one study was the commonest source the pharmacists[21]. In our study the predominance of physicians may be explained by the strife of physicians, who are the main prescribers, to access appropriate drug information. Though, at the time of inquiring, most

of the queries were not patient specific, most likely the inquirers had met a challenge before, and therefore, wanted to be equipped with the appropriate knowledge in case a similar situation arose.

Despite the fact that the public had not received any sensitization, some queries were received from the patients and lay persons. These patients and public probably had received information about the existence of the centre by word of mouth from the sensitized healthcare professionals, or from posters in the healthcare facilities. However, this shows that patients are also in need of a reliable source of unbiased, objective, and contextual up-to-date drug information.

Drug information is an essential element in achieving improvement in the quality of pharmacotherapy, and subsequently improved clinical outcomes. Therefore, as much as the commonest type of query varies from centre to centre, basically queries are mainly on issues directly concerned with improving the quality of patient care. In most studies queries on therapy were reported to be the commonest[1,19,23]. In the current study similar results were observed. Therefore, this emphases the likely role of the DIC in improving the quality of patient care.

When drug-specific requests are considered, anti-infectives were the commonest drug class. Similar findings, though with lower figures (22% - 56%), were reported in previous studies[1, 20-22]. The predominance of ARVs among the drug specific queries in our study is most likely due to the fact that these are relatively new drugs on the market, and also healthcare professionals are aware of the associated high risk of ADRs.

Most of the inquirers delivered their queries by walking to the centre. This enabled the inquirer to get more information about the functioning of the centre, thus providing another form of publicity for the centre. Delivery of queries through telephone communication was easy because of tremendous growth in this sector leading to availability of both public and cellular phones[24,25]. Therefore, tapping this important form of communication will help to improve access to appropriate drug information from the centre by both the urban and rural healthcare professionals and the public. This makes it much cheaper for the health care system to have one well stalked and staffed central drug information centre with smaller striate units at regional and district level.

Then cross-consultation can be made through telephone communication.

Study limitations
To create awareness about the pilot centre, sensitization of the target users was done. However, seminars were limited to few hospitals because of resource constraint. Though brochures and posters were sent to the majority of health facilities in the country, we did not assess the coverage and health professionals' awareness of the centre. Therefore, it is most likely that the recognition and access by the users, and publicity problems, which are some of the major challenges to operating a DIC, existed. The use of the centre was assessed over an 11 months period. This may have been too short to project future use. Also we did not evaluate the rating of the answers provided to the inquirers.

Conclusion
The assessment of the performance of the pilot DIC has shown that it is feasible to establish a drug information centre in Uganda. By providing analyzed and contextual drug information to the prescribers and other healthcare professionals, the centre will reduce barriers to unbiased and up-to-date information for pharmacotherapy decision making. Further more it will provide information for identification and management of ADRs. The centre will also participate in pharmacovigilance functions.

Acknowledgement

References
1. Joshi MP. University hospital-based drug information service in a developing country. *Eur J Clin Pharmacol.* 1997;53(2):89-94.
2. NaylorCD. Putting evidence into practice. *Am J Med.* 2002; 113(2):161-3.
3. Kale R. Health information for the developing world. *BMJ.* 1994; 309(6959):939-42.
4. Godlee F, Horton R, Smith R. Global information flow. *Lancet.* 2000; 356(9236):1129-30.
5. Beveridge M, Howard A, Burton K, Holder W. The Ptolemy project: a scalable   model for delivering health information in Africa. *BMJ.* 2003; 327(7418):790-3.
6. McConnell H, Haile-Mariam T, Rangarajan S. The World Health Channel: an innovation for

health and development. *World Hosp Health Serv.* 2004; 40(4):36-9.

7. Mouhouelo P, Okessi A, Kabore MP. Where there is no Internet: delivering health information via the blue trunk libraries. *PLoS Med.* 2006;3(3):e77.

8. Davies DM, Ashton CH, Rao JG, Rawlins MD, Routledge PA, Savage RL, et al. Comprehensive clinical drug information service: first year's experience. *Br Med J.* 1977; 1(6053):89-90.

9. Alvan G, Öhman B, Sjöqvist F. Problem-oriented drug information: a clinical pharmacological service. *Lancet.* 1983; 2(8364):1410-2.

10. Tröger U, Meyer FP. The regional drug-therapy consultation service centre - a conception that has been serving patients and physicians alike for 30 years in Magdeburg (Germany). *Eur J Clin Pharmacol.* 2000; 55(10):707-11.

11. Taggiasco N, Sarrut B, Doreau CG. European survey of independent drug information centers. *Ann Pharmacother.* 1992; 26(3):422-8.

12. Drew AK, & O'Reilly, B. A. A survey of drug information centers in Australia. *Australian Journal of Hospital Pharmacy.* 1995; 25:433-6.

13. Mullerova H, Vlcek J. European drug information centres -survey of activities. *Pharmacy World & Science.* 1997a; 45:53-8.

14. Graeme V. International Register of Drug Information Services; http://www.shpa.org.au/docs/druginfo_int.html Downloaded on 9th June, 2007. 2007 [cited 2007 9th June 2007]; Available from:

15. Tumwikirize WA, Ogwal-Okeng JW, Vernby Å, Anokbonggo WW, Gustafsson L L , Lundborg CS. Access and use of medidines information sources by physicians in public hospitals in Uganda: a cross-sectional study. *Afr Health Sci.* 2008;8(4):220-6.

16. Lim LY, Chui WK. Pharmacist-operated drug information centres in Singapore. *J Clin Pharm Ther.* 1999;24(1):33-42.

17. Rosenberg JM, Koumis T, Nathan JP, Cicero LA, McGuire H. Current status of pharmacist-operated drug information centers in the United States. *Am J Health Syst Pharm.* 2004;61(19):2023-32.

18. Mullerova H, Vlcek J. Drug information centre—analysis of activities of a regional centre. *Int J Med Inform.* 1997;45(1-2):53-8.

19. Timpe EM, Motl SE. Frequency and complexity of queries to an academic drug information center, 1995-2004. *Am J Health Syst Pharm.* 2005; 62(23):2511-4.

20. Wawruch M, Bozekova L, Tisonova J, Raganova A, Lassanova M, Hudec R, et al. The Slovak Drug Information (Druginfo) Centre during the period 1997-2004. *Bratisl Lek Listy.* 2005; 106(3):133-6.

21. Ball DE, Tagwireyi D, Maponga CC. Drug information in Zimbabwe: 1990-1999. *Pharm World Sci.* 2007 Mar 7.

22. Lustig A. Experience with a recently introduced drug information service in an Israeli hospital pharmacy. *Pharm World Sci.* 1999; 21(1):32-4.

23. Nikfer S, Abdollahi, M. & Cheraghali, A. Going from strength to strength – Iran's drug and poisons information service Essential Drug Monitor, pp 30-1. 2000:30- 1.

24. UNCST. Uganda National Council for Science and Technology (UNCST) and National Foundation for Research and Development (NFRD). Status of ICT in Uganda, Uganda country report. April 2002; 2002.

25. Parkinson S. Uganda's experience with shared access centres and universal policy. In: Telecentres, Access and Development. Experience and lessons from Uganda and South Africa. (2005) Kampala: Fountain Publishers; 2005.