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Review Article

Drug information services in Nepal: The changing perspectives

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There are a growing number of drugs and vast literature coming through every day. Clinicians are hard pressed to keep up with all the recent advents due to shortage of time, however, for safe and efficacious use of medicines, unbiased, up to date and objective information about the drugs is essential. Medicines are now considered as active substances plus information[1]. Information obtained from manufacturers is liable to be biased, and in the present day of therapeutic and information explosion, a quick referral to a pharmacopoeia or formularies is hardly sufficient for adequate information on the vast number of drugs and dosage forms available in the market in all the different brand names.

Drug information (DI): DI is defined as the knowledge of facts acquired through reading, study or practical experience, concerning any chemical substance intended for use in diagnosis, prevention or treatment of disease. It covers all types of information provided, including subjective and objective information, as well as information gathered by scientific observation or practical experience[2]**.**

Drug Information Services (DIS): DIS encompasses the activities of specially trained individuals to provide accurate, unbiased, and factual information primarily given in response to patient oriented drug problems received from pharmacists, nurses, clinicians and other healthcare professionals[2].

Need of DIS in Nepal: Like most other developing countries, Nepal also suffers from lack of adequate drug information due to limited availability of current literature, and poor documentation and dissemination of the little available information[3]. According to one study in 1993[4], unbiased and current drug references were not available in most clinical facilities and to officials and committees developing drug lists and making procurement decisions. Some examples of irrational use of drugs still in evidence in Nepal are: polypharmacy, use of expired drugs, irrational combination of drugs, and overuse of antibiotics, vitamins / herbal remedies, brand prescribing, retail shop prescribing and unethical dispensing. Such irrational practices, combined with lack of patient information on proper handling and use of drugs can lead to wastage of medicine as well as other serious consequences like adverse drug reactions and drug interactions[4]. In addition, there are other factors like remote rural population, few hospitals, shortage of pharmacies in most of the existing hospitals, poverty, illiteracy, high demand for drugs not consistent with rational use in rural areas, and no sense of risk in taking drugs which further complicate appropriate use of drugs. In view of the above mentioned facts, fully active, unbiased and objective drug information services are the need of the hour for a developing country like Nepal.

Sources of DI[3,5,6]. Generally, sources of drug information are divided into four classes:

1. **Primary sources**: These are various journals containing original articles. They have the advantage of being authentic, up to date and the best source of drug information, but the disadvantage is that they are costly and time consuming. Examples: Annals of Pharmacotherapy, British Medical Journal, Annals of Internal Medicine, The Lancet, etc.

2. **Secondary sources**: These are the bibliographic, indexing and abstracting services that serve as a door for selective screening of the primary sources. They also have the disadvantage of being expensive and difficult to obtain and maintain. Examples: Embase, PubMed, Medline, International pharmaceutical abstracts, Micromedex, etc.

3. **Tertiary sources**: These are books, which are composite, condensed and compact sources of information. They often provide easy and convenient access to information and are probably the most commonly used reference materials, the main disadvantage being that the information is usually lagging behind compared to those in primary and secondary sources.

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Examples: Merck manual. Berkow R, ed; Meyler's Side Effects of Drugs. Dukes MNG, ed; Avery's Drug Treatment. Speight TM, ed; Martindale: The extra pharmacopoeia. Reynolds JEF, ed; AHFS Drug Information (and supplements). McEvoy GK, ed. etc.

4. **Internet source:** These are many biomedical and journal databases that are available free on the internet catering to various needs ranging from multispecialty databases (Medline and PubMed) to retrieval of specific biomedical literatures that focus on countries (IndMed), regions (Caribbean:Lilac), disease entities (cancer), specialties (PsychLit), evidence- based medicine (Bandolier) and randomized controlled trials (Cochrane). However, while referring the internet source one should look for the sponsors and should also check whether the information given is by the manufacturer or otherwise. Internet sources which do not mention reference sources should be examined before acceptance. Examples: Medline: www.nlm.nih.gov, PubMed central: www.pubmedcentral.nih.gov, TRIP database: www.tripdatabase.com/index.cfm, Cochrane Library: www.cochranelibrary.com etc.

Approach to provide DI:[7,8,9] There are various approaches in providing drug information. The 'modified systemic approach' is most widely used for providing quality DI. DICs may use this system, or an adaptation of it, as a basis for responding to drug information queries.
The steps involved in the modified systematic approach are discussed below.

1. **Requestor Demographics**: Although the presentation of the initial question provides insight to the requestor's sophistication and knowledge regarding the subject matter, it is important to directly determine the requestor's position, training and anticipated knowledge so as to be able to provide the information in a language understandable to the requester.

2. **Background Questions**: Examples of general background questions are requestor's name, location and affiliation (institution or practice), resources that the requestor already consulted, whether the request is patient specific or academics, patient diagnosis other medications and pertinent medical information, urgency of request (i.e. negotiate the time response). Other background information should be specific for nature of the request

3. **Categorization of question**: Categorization of the question is useful not only for the initial development of the search strategy, but also for the determination of resources. Once an ultimate question is categorized, the development of a search strategy can be initiated.

4. **Search Strategy**: The categorization of the question helps the resource selection process. Once resources have been selected, they are prioritized based on probability of containing the information or data desired.

5. **Data evaluation, analysis and synthesis**: At this step, the information retrieved must be objectively critiqued. The analysis and synthesis of answer must be performed with consideration of background information obtained previously.

6. **Formulation and provision of response**: If the literature includes conflicting data that must be presented to the requestor, the DI personnel may need to use a logical argument, which includes steps like: present the competing view points or considerations, state assessment of literature or information reviewed and claim the superior view point, briefly disprove the major strengths and present the weaknesses of the inferior view point, repeat the final assessment in support of superior view point. The utilization of good verbal communication skills, from confident delivery to correct pronunciation of all terms, is imperative for ideal response provision.
7. **Follow up, follow through and documentation**: Follow up is the process of verifying the appropriateness, correctness and completeness of a response following the communication.

Appropriate documentation of all requests and consultations should be maintained and such records should contain sufficient data to enable statistical evaluation for purposes of quantifying workload and periodic quality assurance review and assessment. Records of patient- specific requests must be retrievable.

Drug information centre (DIC): DIC refers to a facility specifically set aside for, and specializing in, the provision drug information[6]. The main objective of a DIC in a hospital is to facilitate the practice of rational pharmacotherapy.

Minimum requirements for running a DIC:[2,4,6] DIC is defined by the World Health Organization (WHO) as an independent centre that is accessible to any health professional regarding all queries about drug. This definition, however, excludes DICs situated in a hospital or those which specialize in a specific area of drug information e.g. toxicology. DICs, in general, are service units committed to

providing drug information as it relates to therapies, pharmacoeconomics, education and research programs. For proper establishment and proper functioning, a DIC must fulfil minimum requirements regarding resources, facilities, organization and budget.

1. **Resources**
a) *Personnel*: The drug information personnel must possess appropriate qualifications and must be familiar with all resources relevant to the centre's function. Additional training in drug information and computer based information systems is desirable.

b) *Reference materials*: the centre must maintain a current collection of literature appropriate to the scope and nature of the services provided, including books, journals, reprints, drug profiles, manufacturers' literature and other related drug information resources.

2. **Facilities**: The facilities of a drug information centre must include the following.
a) Space and equipment sufficient for storage of a reference collection and provision of services. A list of equipment required might be as follows:
Filing cabinets, shelves, desks, chairs, journal display rack, microfiche reader or reader-printer, microfiche storage cabinets, telephones, computer terminal and modem, access to photocopier, access to facsimile machine, etc.

b) Access to medical library, interlibrary loan facilities and computer search facilities

3. **Organization**: The organization of a DIC must include the following:
a) The maintenance of a current policy and procedure manual including information and guidelines appropriate to the services provided.
b) An adequate staff establishment
c) Appropriate hours of service: DIS services must be available during normal working hours and appropriate arrangements should be made for after hour services.

4. **Budget**: There must be adequate funding to cover capital and operating costs and to ensure sustainability of the service. Resources should be reviewed annually.

Various activities of a DIC: The DIC maintains current references for the easy accessibility of the information to the health care professionals. In addition to providing information, the centre also trains students on the use of various resources to answer the queries, which are received while they are in the wards as well as in the department. It also develops criteria/guidelines for the rational drug use by the health care professionals. Apart from answering the queries on drug related issues, the DIC can also perform other roles such as publishing drug information bulletins, providing information on new drugs, providing support for Drug and Therapeutic Committees (DTCs) and drug formularies, coordinating adverse drug reaction reporting schemes, providing education and training, participating in ward rounds and organizing aspects of clinical trials.

Ethical issues of drug information: While responding to a query the drug information personnel must take several ethical issues into account. Some of the ethical issues needing consideration while answering queries are: patient privacy must be protected, professional ethics must be maintained, the patient -physician relationship must not be breached. Response is not necessary if the enquirer intends to misuse or abuse information that is provided[10].

Problems in effective running of a DIC: In developed countries information flow and practice of DIS is satisfactory. In developing countries, though few DICs exist, the effectiveness of centres in providing DI is questionable due to various reasons. Some of them are lack of funds, lack of trained staff, limited availability of current literature, limited or no availability of research based periodic drugs and therapeutic information, poor documentation and dissemination of the little available information and poor or no information exchange services. As improper functioning results in provision of biased and limited information, which can greatly contribute to the poor patient outcomes in terms of health and economics, it is essential that the services provided by DICs be of quality[11].

Quality assurance (QA) of DIC: DICs aims to achieve the quality use of medicines by providing and communicating timely, accurate, balanced and comprehensive information on drugs and their usage. The objectives of quality improvement program are to identify key areas of drug information practice, establish indicators of quality for these key areas, establish minimum acceptable levels of performance for these indicators, review performance against indicators, identify opportunities for improvement and develop and implement plans for improvement[6]. It is necessary to perform the QA program for the DICs periodically so as to assess their functioning.

Current status of DIS in Nepal:[4,12] In 1992, The United States Pharmacopoeia (USP), a voluntary, non-profit, health care organization, began working in developing countries through the Rational Pharmaceutical Management (RPM) project with an aim to improve access to essential drugs, increase rational drug use and to increase local capacity to develop, package and disseminate unbiased, and locally-specific drug information. Important findings from the RPM project led to the formulation of a strategy to continuously meet the drug information needs of the key users, i.e. physicians, pharmacists, government administrators and consumers. Four organizations in Kathmandu were initially identified as potential sites for drug information centres:

1. Department of Drug Administration (DDA), Ministry of Health
2. Institute of Medicine (IOM), Tribhuvan University Teaching Hospital
3. Resource for Primary Health Care (RECPHEC), a local non-governmental organization
4. Nepal Chemists and Druggists Association (NCDA), a professional association for retailers and wholesalers
5. A fifth organization, Nepal Health Research Council, (NHRC), also expressed interest in establishing a DIC and has remained peripherally involved with DI development in Nepal.

In 1995, His Majesty's Government of Nepal established a National Drug Policy, which included an objective to improve the dissemination of accurate and unbiased drug information within the country. To fulfil this objective, The **Drug Information Network of Nepal (DINoN)** was established on November 23, 1996. The mission of DINoN is to develop and disseminate information about the proper use of drugs, possible adverse reactions, contraindications, toxicity, drug standards and efficacy. At present, there are nine members of DINoN, including five founder members and four ordinary members. The founder members were the initial five members identified by the RPM in 1993. The ordinary members are

1. United Hands to Nepal Poison Information Centre (UHN)
2. Britain Nepal Medical Trust (BNMT)
3. B.P Koirala Institute of Health Sciences, Dharan (BPKIHS)
4. Manipal College of Medical Sciences, Pokhara (MCOMS) /Manipal Teaching Hospital (MTH)

Drug Information Centre at MCOMS/MTH: The first DIC in private sector was established in Manipal Teaching Hospital, a tertiary care hospital (also the teaching hospital of MCOMS) in western Nepal in November, 2003 in collaboration with United States Pharmacopoeia Drug Quality Information/ United States Agency for International development (USPDQI / USAID). Since its establishment, the DIC at MCOMS has been engaged in various activities with the objectives of practicing evidence based medicine and rational pharmacotherapy. Some of the important activities of the centre are mentioned below.

1. Drug Information Services: The queries are asked to the DIC either through telephone, through drug information request forms available in all the wards and out patient departments, or through direct visit the centre to the DIC. These queries are mainly related to drug dose, indication, adverse drug reactions, dosage adjustment in renal failure etc. In a few instances, the patients themselves visit the centre to get their queries answered and doubts cleared. The answer to the queries is provided with high quality reference sources that are available at the DIC.

2. Publication of Drug Information Bulletin: The DIC at MCOMS has been publishing drug information bulletins quarterly for health care providers. The bulletins are circulated to all the doctors of MTH, Medical colleges throughout the country, drug regulatory authority of Nepal and to a few other educational and health care institutions abroad.

3. Medication counselling services: The DIC also runs a Medication Counselling Centre (MCC) as one of its unit. The main focus of the MCC is to provide counselling to specialized patient population such as illiterate patients, patients with specialized dosage forms (inhalers, rotahalers, spacers, suppositories, pessaries, insulin injections, insulin pens etc), Patients with drugs of narrow therapeutic index (lithium, digoxin, carbamazepine, valproate etc), Patients on drugs which require special precautions (oral contraceptives, low dose methotrexate, corticosteroids etc), patients on drugs known to cause side effects frequently (Antibiotics), paediatric patients, psychiatric patients, non intentional non-compliers and the patients more prone to concurrent use of (Over The Counter) OTC drugs. The centre is well equipped with necessary DI sources. The counselling is provided by the hospital pharmacists working in the Pharmacy department of MTH as per the standard guidelines.

4. Contribution in the Drugs and Therapeutics Committee (DTC): The DTC of MTH was reorganized in the hospital in May 2004. The main objective of the committee is to ensure rational drug use in the hospital. The committee is headed by a Chairman (Professor of Medicine department) and a member Secretary (Chief, Pharmaceutical Services). The committee consists of members from all the clinical specialties of the hospital. The committee meets once in every three months. The agenda for the discussion is prepared by the member secretary and are circulated to the members well in advance. The committee decides on inclusion and exclusion of the drugs in the hospital pharmacy as per the following criteria: Safety, efficacy, availability, suitability and cost. The DIC helps the committee in providing necessary drug information regarding the new drugs that are to be added to the hospital as well any drug safety issues.

5. Pharmacovigilance activities: The DIC has started pharmacovigilance activity from September 2004 to ensure consumer safety regarding drug use. To begin with, the centre has started a spontaneous reporting program. The Adverse Drug Reactions (ADRs) reporting forms are placed in all the wards and outpatient departments of MTH. All healthcare workers are requested to fill the ADR reporting forms whenever they detect ARDs and send them to the Pharmacovigilance cell of the hospital. Upon receiving the reporting forms, the pharmacovigilance cell personnel provide drug related and any other relevant information to the concerned clinician or other healthcare professional regarding the management of the ADRs. The spontaneous reporting program is expected to be expanded to a full fledged pharmacovigilance program in the near future.

6. Continuing Pharmacy Education (CPE) program: The DIC also conducts the CPE program for the hospital pharmacists of MTH on a weekly basis. During the program the pharmacists are trained in the area of pharmacotherapeutics with special reference to drug dispensing and patient counselling. To begin with the program is focused on chronic disease like diabetes and asthma. Besides these the DIC at MTH is also involved in conducting several research activities in the areas of adverse drug reaction monitoring, patient counselling, drug utilization, pharmacoeconomics etc. The member of the DIC also participates in the ward rounds with the clinicians and the drug related queries arising during the rounds are cleared by the DIC personnel.

Conclusion

DIS is well advanced in developed countries like the United States and United Kingdom, but in developing countries, it is still a new concept. Lack of information is one of the major causes of irrational use of drugs leading to therapeutic failure and adverse drug reactions. It is difficult for any healthcare provider to be updated with increasing therapeutic and information explosion, to choose appropriate drug and to provide appropriate drug information to the patients. In the era of "evidence based medicine", the valuable role of DICs cannot be ignored.

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