A need to be fulfilled:Drug Information services

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ABSTRACT:- 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. 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. The lack of adequate drug information due to limited availability of current literature, and poor documentation and dissemination of the little available information leads to an unbiased and current drug references which were not available in most clinical facilities and to officials and committees developing drug lists and making procurement decisions. The irrational use of drugsare still in evidence as 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 patientinformation 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. . In view of the above mentioned facts, fully active, unbiased and objective drug information services are the need of the hour and it is the objective of this study to determine the various drug information services available in present day scenario.

I. INTRODUCTION

1.1 Drug information

Knowledge of facts through reading, study, or practical experience on chemical substance that is used in Diagnosis, Prevention and treatment of a disease. It covers all types of information including objective and subjective information as well as information gathered by scientific observation or practical experience [1]. Drug information service (DIS) is the service that encompasses the activities of specially trained individuals to provide accurate, unbiased, factual information, primarily in response to patient-oriented drug problems received from various members of the healthcare team [2]. In the past, the number of drugs available was less and thus, the need for drug information was limited. But now, the scenario has come a long way with new modes of therapy and vast number of drug products being available. It is not humanly possible to remember such vast information on drugs. There has also been a great explosion in the number of biomedical journals published each year. Hence, it is very important to retrieve specific unbiased information [3]. A clinical pharmacist is professionally trained and legally competent to provide drug information, which is also a key component of his/her daily activities. In India, the concept of rational drug use is yet a long way to go. Lack of unbiased drug information and lack of time are some of the factors that makes the physicians unable to update their knowledge about drugs which have resulted in an increasing demand for independent and unbiased information about drugs for better patient care [4,5]. It is important, to periodically evaluate the mode of functioning and quality of the services provided by the center, [6] so that necessary modifications can be made for better functioning. The drug information center is a part of the department of pharmacy practice, and is internationally recognized. The centre should well equipped with trained staff and a library consisting of textbooks, National and International journals, computer and Internet facilities along with electronic databases such as IDIS and MICROMEDEX. The centre should be managed by the faculty members and postgraduate students of the pharmacy practice department. The service should be provided between 8 A.M and 6 P.M on all days except Sundays and public holidays. The drug information centre caters to the needs of all health care professionals working in various departments of the hospital. Drug information services can be accessed by telephone, intranet, direct access, and also during ward rounds. Drug information request forms are also available on-line, which are to be duly filled and submitted for further processing of answer. The drug information queries are evaluated and answers are provided according to the modified systematic approach. The drug information requests and answers are documented and maintained in the drug information documentation files of the department.Assessment and evaluation of drug information services were carried out in three steps.

The first step involved retrospective evaluation of drug information request and documentation forms for a period of 12 months. The evaluation was based on the following parameters such as professional status of the enquirer, specialty of practice, mode of receipt of query, purpose of enquiry, time frame to reply, category of question, and references used.

Secondly, the quality of services provided was assessed from the receivers perspective through a questionnaire comprising questions, pertaining to awareness, utilization, opinion, and the quality of service provided by the centre. Questionnaire was given to 40 health care professionals, who agreed to give a feedback on the service, and this included clinicians and postgraduate trainees of various units of the hospital where the clinical pharmacists were attending ward rounds. The filled questionnaires were collected after 2 days from individualrespondents.

The third step involved the assessment of quality of drug information services from the provider's perspective by using the guidelines from the DSE/WHO seminar [7]. According to these guidelines, the queries were categorized into judgmental and nonjudgmental types. A judgmental type of queries requires judgment, integration of new data with preexisting knowledge and experience, and extensive searching of secondary and tertiary references and a primary literature review. Judgmental types of queries are often patient specific. Nonjudgmental responses represent a lower degree of sophistication and do not require judgment. The aspects, which were considered during the evaluation phase, included effectiveness in obtaining the demographic data of the enquirer and collecting background information, level of understanding of the question, using the search strategy, evaluation of literature, and the response given by the provider. Queries after evaluation were scored from 1 to 5, 5 indicating that the information given was excellent; 4 - very good, 3 - good, 2 - adequate and 1 - indicating that the consultation was unacceptable for use. The minimum acceptable level of rating was considered to be 3. During the study, a total of 20 queries were selected for evaluation - 10 each of the judgmental and nonjudgmental types. Two internal auditors who were well experienced in providing drug information service evaluated responses to these queries using the questionnaire. These queries were graded on the basis of the scores given by the authors.

1.2. Sources of Drug information [8,9,10]

1.2.1 Drugs: The overall amount of medical information is growing at an alarming rate, even the body of knowledge covering only drug information seems to be endless. There are vast amounts of data on drugs that are approved by the Food and Drug Administration (FDA), and on agents undergoing clinical investigation. The sources of information for drugs are:

- **Primary Literature**- Primary literature is comprised of original research that is written in the author(s) own words. It consists of research studies, case reports, editorials, and letters to the editor. Examples of primary literature resources include research articles and studies published in vraious international and national Journals.
- **Secondary literature**- The secondary literature is compiled by indexing and abstracting services that can be used to systematically locate various types of published literature. The indexing system usually provides bibliographic information indexed by topic and will allow the user to view a brief description of the information within most citations. Examples of secondary literature databases are PubMed (Medline), Embase, National Library of Medicine Gateway, International Pharmacy Abstracts, Scopus, and Toxline.
- **Tertiary Literature-** The information presented in tertiary literature is core knowledge established via primary literature or accepted as standard of practice within the medical community. Drug information contained in the tertiary literature is generally well-established information that is approved and accepted by the FDA (i.e. a FDA labeled indication) or well founded in the primary care literature.Tertiary references may be of textbooks on various drug or disease topics (e.g. Pharmacotherapy), compendia or online, full-text databases.

1.2.2 Health science libraries

- Pharmacology And Drug Information Resources
- Drug Interaction Resources
- Medical And Pharmacy Therapeutics Resources
- Information On Drug Side Effects

1.2.3 Drug information on the internet

Free Drug and Medicine Information Internet Sites are-
- U.S. Food & Drug Administration   http://www.fda.gov/
- National Guideline Clearinghouse http://guidelines.gov
- MerckMedicushttp://www.merckmedicus.com/pp/us/hcp/hcp_home.jsp

- BestBetshttp://www.bestbets.org/home/bets-introduction.php
- NHS-NICEPrescribingSupportCenterhttp://www.nice.org.uk/mpc/

1.3 Informational sources for Disease [11]

- Notifiable diseases- by law, some diseases are "notifiable", which means that a doctor should report them on the basis of the symptoms alone, rather than waiting for laboratory confirmation.
- Laboratory reports - if a doctor sends a sample from a patient for testing, the laboratory can confirm what germ (if any) is making the person sick.
- Clinician reporting - for some diseases of particular public health importance, doctors are asked to report key items of information to ensure that appropriate public health action can be taken.Each source of information provides a different perspective on the frequency and distribution (the epidemiology) of disease. Combining the information gathered from these different sources often gives a more complete and accurate picture of disease than is obtained by looking at the data from one source only.

1.4 Computerised services

These information systems are organized to serve the needs of developed as well as developing countries on co-operative basis as these are established to store recorded information and retrieve it expeditiously and provide free exchange of information among scientists in various countries. The major International information systems & services are INIS, AGRIS, INSPEC, BIOSIS, MEDLARS, MEDLINE etc. Computer- based products & services

- AVLINE (Audio-Visual Online)
- CANCERLIT (Cancer Literature)
- CATLINE (Catalogue Online)
- CHEMLINE (Chemical Dictionary Online)
- TOXLINE (Toxicology information Online)
- SDILINE (Selective Dissemination of Information Online)
- SERLINE (Serials Online)
- POPLINE (Population Information Online)

MEDLINE is a literature database of life sciences and biomedical information introduced in 1971. It includes medicine, nursing, pharmacy, dentistry, veterinary medicine & health care. It can be searchable via PubMed & NLM's National Center for Biotechnology Information's Entrez system. MEDLINE uses Medical Subject Headings (MeSH) for information retrieval. Engines designed to search MEDLINE (such as PubMed &Entrez) generally use a Boolean expression combining MeSH terms, words in abstract and title of the article, author names, date of publication, etc. More than 6,000 of the world's leading biomedical journals are indexed in MEDLINE. Selection is based on the recommendations of a panel, the Literature Selection Technical Review Committee (LSTRC), based on scientific policy and scientific quality. PubMed is a free database comprises more than 22 million citations for biomedical literature from MEDLINE, life science journals, & other online books. Citations may include links to full- text content from PubMed Central & publisher websites. Available via the NCBI Entrez retrieval system.MedlinePlus is a free web service produced & maintained by NLM. Provides consumer health information for patients, families, & health care providers. Brings together information from the US. NLM, the National Institutes of Health (NIH), other US.govt.agencies& health related organizations [7]

1.5 Medication error

Medicine cure infectious diseases, prevent problems from chronic diseases, and ease pain. But medicines can also cause harmful reactions if not used correctly. Errors can happen in the hospital, at the doctor's office, at the pharmacy, or at home [8] Errors can be prevented by Knowing about medicines. Keeping a list of the names of the medicines Including over-the-counter medicines, vitamins, and supplements and herbs [9] Reading medicine labels and following the directions. Taking extra caution while giving medicines to children.

1.6 Approaches to provide Drug information

The steps involved in the modified systematic approach are discussed below [10,11,12]**.** 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. 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. 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 requestCategorization 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. 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.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.

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 disprovethe 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 statisticalevaluation for purposes of quantifying workload and periodic quality assurance review and assessment. Records of patient- specific requests must be retrievable.

1.7 Drug Information Centre

DIC refers to a facility specifically set aside for, and specializing in, the provision drug information. The main objective of a DIC in a hospital is to facilitate the practice of rational pharmacotherapy. Minimum requirements for running a DIC: 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 toproviding 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. 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 druginformation 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. 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, thepatient -physician relationship must not be breached.

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..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 improvementand develop and implement plans for improvement. It is necessary to perform the QA program for the DICs periodically so as to assess their functioning.

II.   CONCLUSION

DIS is well advanced in developed countries like the United States and United Kingdom, but in developingcountries, it is still a new concept. Lack of information is one of the major causes of irrational use of drugs leading to therapeutic failure andadverse 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.Therefore, more awareness program should be held frequently to promote and encourage the full utilization of the services.

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