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A DETAILED REVIEW DRUG INFORMATION SERVICES IN HOSPITAL PHARMACY

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ABSTRACT

The Drug Information Center (DIC) plays a vital role in the healthcare settings by providing evidence-based unbiased drug information to healthcare professionals such as physicians and pharmacists. As drug therapies and guidelines become increasingly complex, DICs provide a way to help close the gap between the rapid evolution of the drug literature and patient care. Studies have shown that DICs answer questions of drug identification, dosage, adverse reactions, and drug interactions and that there are many important questions from the patient. The process of providing information is structured including documentation, literature search and evidence evaluation. The challenges faced include declining use and information retrieval issues, but the opportunities presented by telepharmacy and digital services provide opportunities for improved accessibility and patient education in future DIC operations. DICs are generally important for promoting safe and effective medication practices in hospitals.

KEYWORDS: Drug Information Services; Hospital Pharmacy; Drug Information Queries; Evidence-Based Medicine; Medication Safety.

INTRODUCTION

Drug Information Centre (DIC) is a specialized service that provides accurate, unbiased, evidence-based and updated information related to medicines and drug therapy to healthcare professionals. In a hospital setting, the DIC acts as an important source of medication-related information for physicians, pharmacists, nurses and other healthcare professionals. The concept of DIC has become increasingly important because of the continuous introduction of new medicines and the rapidly changing therapeutic information available in both print and electronic resources. A study conducted at a

tertiary care teaching hospital in South Telangana described drug information service as the provision of written or verbal information regarding the safe use of medicines or drug therapy in response to healthcare professionals' requests. The study also emphasized that trained clinical pharmacists review the queries, search appropriate drug-information resources and provide structured, evidence based response.[1]

The primary objective of a DIC is to provide reliable, current and unbiased drug information that can assist healthcare professionals in making appropriate therapeutic decisions. The service aims to support rational use of medicines, improve the quality of patient care and help healthcare professionals obtain relevant information regarding drug selection, dosage, contraindications, adverse effects, drug interactions and other medication-related problems. In a study to evaluate a pharmacist-led drug information service in a tertiary care hospital in India, the service was designed to evaluate and ensure the quality of drug-related information provided to health care professionals. During the two-year study period, 469 drug information queries were received. Requests were mainly for the purpose of updating knowledge and improving patient care. The results show that DIC services can be a structured source of drug-related information for health professionals and help them in clinical decision making.[2]

The need for DICs has increased with the growing number of medicines, expanding scientific literature and frequent changes in treatment guidelines. Healthcare professionals may not always have sufficient time to search and critically evaluate the large volume of available drug information during routine patient care. Therefore, a hospital-based DIC can provide timely and individualized information to assist in evidence-based and rational pharmacotherapy. A study conducted in a South Indian tertiary care hospital reported that drug information services were used for various clinical problems, particularly antimicrobial and anticoagulant-related queries, and that most queries were answered within 24 hours. The authors concluded that DIS can be a referral service in a tertiary care hospital when used appropriately. In this way, DIC can help bridge the gap between the rapidly growing drug literature and its practical application to patient care.[3]

Sources

Drug information sources are essential for hospital pharmacists because the quality of drug-related decisions depends on access to current, reliable and appropriate information. A recent survey of 166 hospital pharmacists responsible for drug information services evaluated the use of different information sources in clinical practice. According to the study, the most frequently used sources of drug information were package inserts and interview forms . Pharmaceutical companies were frequently approached for more information or missing information. Pharmacists also used review reports and common technical documents. The study further indicated that pharmacists with professional qualifications were more likely to conduct their own research when information was insufficient. These findings demonstrate that hospital pharmacists use a combination of standardized

drug-information resources and additional sources to obtain complete information for clinical practice.[4]

The selection of drug information sources also depends on accessibility, reliability and the clinical requirements of healthcare professionals. A cross-sectional study among hospital prescribers in Saudi Arabia assessed the sources used for obtaining drug information and found that the internet and reference textbooks were the most commonly used general sources. Among electronic resources, UpToDate, Medscape and FDA resources were frequently utilized. Importantly, 67.11% of hospital prescribers considered pharmacists to be reliable sources of drug information. Prescribers commonly sought information from pharmacists regarding drug alternatives, drug interactions, adverse effects and indications. The findings indicate that hospital drug information services should provide access to both reliable electronic and conventional resources while maintaining the pharmacist as an important professional source of evidence-based medication information.[5

Types

Drug identification and product-related information constitute important categories of queries handled by a Drug Information Centre (DIC). In a retrospective study conducted at the Drug Information Centre of King Saud Medical City, 139 drug-information queries received from healthcare professionals over one year were evaluated. The investigators classified queries into several categories, including drug identification, adverse drug reactions, pharmacokinetics, dosage and administration, drug availability or formulary information, stability and compatibility, drug–drug interactions, drug–nutrition interactions, pregnancy and lactation, abuse or addiction, literature retrieval, and therapeutic use. The study demonstrated that DIC pharmacists systematically addressed these drug-related questions, employing relevant sources of information, and provided evidence-based responses. This demonstrates that drug identification and product related queries are integrated in the structured information services provided by hospital based DICs to assist healthcare professionals to find accurate medication information.[6]

Dosage and administration are important types of drug-information queries because appropriate dose selection and correct administration are essential for achieving therapeutic effectiveness while minimizing medication-related risks. Hospital pharmacists may be consulted regarding dose, dosage schedule, route of administration and adjustments required for individual patients. A cross-sectional study among community and hospital pharmacists found that drug dosage was the most frequently required type of drug information among hospital pharmacists, with a mean frequency score of 4.61 ± 0.49. The study also identified drug interactions, side effects and drug use during pregnancy among the other commonly required information categories. The results indicate that information on dosage relationships is a major part of the information needs of hospital pharmacists.[7]

An important category of information offered by drug information services is related to drug indications and therapeutic use. Healthcare professionals usually need evidence-based information to

decide if a medicine is suitable for a specific disease or clinical situation. In a clinical-pharmacological study at the Drug Information Center, 594 questions were collected at the Hannover Medical School from October 2018 to April 2022. Queries about indications and contraindications were among the most common, representing 43.3% of all questions. Many questions were also patient specific, which suggests that individualized drug information is important in therapeutic decision making, according to the study. Thus, DIS can provide health professionals with clinically relevant information on the appropriate indications, contraindications and therapeutic use of medicines.

(ADR)-related queries represent an important category of drug information because healthcare professionals require dependable information to diagnose, assess and manage suspected adverse effects of medications. A clinical-pharmacological study of the Drug Information Center at Hannover Medical School analyzed 594 questions between 2018 and 2022 . ADRs were the most frequently addressed category and accounted for 44.8% of all questions . The patient-specific inquiries were particularly loaded with questions concerning ADRs. The study also showed that Drug Information Centers are faced with clinically complex medication related problems that require evaluation of individual patient circumstances. This emphasizes the role of DIS in improving medication safety and providing health care professionals with evidence-based information on suspected adverse drug reactions.[8]

Use in Specific Populations Drug-information services include special populations such as pregnant women and nursing mothers where safety and therapeutic benefits of drugs need to be carefully considered. In 2024, we conducted a questionnaire survey to investigate the participation of hospital pharmacists in Japan in the provision of drug information for pharmacotherapy in pregnancy and lactation. The study found hospitals with obstetric services were also more likely to receive questions on the safety of medications during pregnancy and lactation. Pharmacists were involved in counselling pregnant women and nursing mothers in approximately 30–50% of hospitals with delivery facilities, indicating an important but still developing role for hospital pharmacists in this area. The findings demonstrate that special-population drug information is an important component of hospital pharmacy services, particularly where medication safety requires individualized assessment.[9]

Drug–drug interaction is an important category of drug-information queries received by hospital-based Drug Information Centres because interactions may influence the effectiveness and safety of pharmacotherapy. A ten-year descriptive analysis of drug-interaction queries received by a Drug Information Centre evaluated the nature of questions submitted by healthcare professionals and the responses provided by the centre. The study found that many interaction queries were related to individual patients and required consideration of the patient's clinical circumstances before providing an appropriate recommendation. In a substantial proportion of cases, the Drug Information Centre recommended a specific action regarding drug treatment, including modification of therapy or appropriate follow-up. These results emphasize the role of the Drug Information Center in the

assessment of suspected or potential drug–drug interactions and in providing clinically relevant recommendations for the improvement of safe medication use.[10]

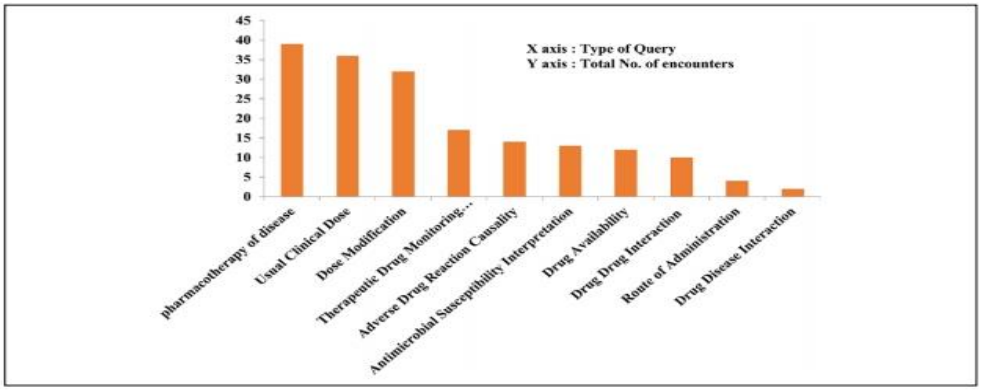


Fig.,Types of queries.

Drug Information Center

A Drug Information Centre (DIC) functions as a specialized service for providing evidence-based information related to medicines and pharmacotherapy to heathcare professionals. A multicentre observational study conducted across eight Scandinavian DICs evaluated the workload associated with answering drug-related queries and demonstrated that DIC activities involve systematic literature searching, critical evaluation of available evidence, formulation of responses, and quality assurance. Among 718 analysed queries. 77,7% were patient-specific and 88.6% resulted in one or more recommendations. The mem time required to answer a query was 178 minutes, with greater time requirements associated with multiple information sources, lack of documentation, conflicting evidence, complet patient cases, and limited staff experience. The results emphasize the importance of trained personnel, sufficient information resources, and good structured processes in wering clinical drug - information questions reliably for an effective DIC.[11]

The role and functioning of a DIC within a hospital setting were also demonstrated in a two-year observational study conducted at Gondar University Specialized Hospital, Ethiopia. In the study period, a total of 781 drug information questions were collected, of which 697 were included for analysis. Information requests came predominantly from pharmacists (45.3%), followed by general practitioners and nurses. The most common category of information requested was therapeutic information (51.9%), followed by adverse drug-event, pharmacology and dosage-related queries. Over half of the queries were patient-specific, indicating that the center was used to meet individual medication needs. In-house databases, internet resources, and reference books were commonly used to formulate responses. The study therefore demonstrates the practical function of a DIC as a hospital-based resource for responding to therapeutic and patient-specific drug-information needs.[12]

A retrospective study conducted at the Drug Information Centre of Hospital das Clínicas, University of São Paulo, evaluated requests received from healthcare professionals over a seven-year period

(2015–2021). The center received and responded to 3,442 queries, with the number of requests increasing during the study period. Most requests were answered within 1 hour. Pharmacists and nurses were the biggest groups of requestors. The most requested information was drug administration (37%), stability (19%), institutional standardization (11.3%) and indication (5.7%). The study demonstrates the DIC to be a useful hospital resource, allowing health care professionals to search, appraise, and dispense accurate, medication-related information, which has the potential to contribute to safer and more dependable medication-use practices.[13]

Process of providing Drug Information:

Receiving and documenting the query : The process begins by receiving and documenting the query through direct access, telephone, emain or ward rounds. A study Ethiopian Drug Information Centers reported collection of requester details, query category, date and time, clinical context, medication history and response time, while confirming that the questions was understood.[14]

After receiving a drug-information request, the pharmacist clarifies the question and records relevant details before processing it. In a prospective hospital study, queries were documented according to the enquirer, clinical specialty, mode of receipt, category of question, purpose of enquiry, required response time, and information and facilitates. appropriate resources used. Such systematic classification helps define the exact information requirement the handling of query.[15]

Search and Assess Information Literature searching involves the selection of appropriate tertiary, secondary and primary sources and the critical evaluation of the evidence retrieved. A study by a Brazilian Drug Information Centre found that tertiary sources were frequently used and that difficult hospital enquiries required additional searching. The pharmacist reviewed the evidence, considered its applicability, and determined if the information was sufficiently conclusive.[16]

Preparing and Implementing the Response The pharmacist then crafts a direct response to the question that is appropriate to the questioner. The responses were evaluated for accuracy, completeness, timeliness, documentation and appropriateness in a South Indian hospital study. Responses were communicated through printed, verbal, email, or written formats requested.[17]

Follow-up and documentation are important end pieces of the drug information process. In a tertiary care hospital, the responses to the drug-information queries were recorded and saved in the Drug Information Centre for future reference. Quality assessment included documentation and follow-up assessment. Appropriate follow-up, according to user feedback, could enhance satisfaction and quality of service.[18]

Documentation and QA

Documentation of drug-information activities is an essential component of quality assurance because it provides a record of the enquiry, information sources, response, and follow-up. In a hospital-based evaluation, drug-information worksheets were systematically reviewed using process indicators such

as completeness of requester information, search strategy, literature evaluation, documentation of retrieved information, timeliness, and follow-up communication.[19]

Quality assurance of drug information can be assessed through structured evaluation of the content and format of responses. A study involving six Drug Information Centres evaluated 172 responses using an external expert review process. The quality scores of the centres varied and this indicated the need for a standardised evaluation and periodic assessment to identify services. deficiencies and improve drug-information.[20]

Quality assurance of drug information services requires regular assessment of the accuracy and completeness of responses. A five year review of hospital pharmacies showed that the complexity of enquiry affected the quality of content. Specialised drug information centres had better content and structural quality than less specialised setups. The study also showed that quality was improved through a second review of responses, thus supporting its use as a quality-assurance measure.[21]

CHALLENGES

A major challenge for Drug Information Centres is the declining use of their services by healthcare professionals because alternative information sources are readily available. In a cross-sectional study of 405 healthcare professionals, mobile internet, departmental reference libraries, limited time, lack of awareness about DIC contact details and services, and inconvenient location reported as important barriers.[22]

Another important challenge is the difficulty of obtaining conclusive evidence for complex drug-information enquiries. A study analysing hospital enquiries received by a Drug Information Centre found that 25% of enquiries lacked conclusive information in the consulted literature. The greatest difficulties involved off-label drug administration and indication, demonstrating the challenges of evidence retrieval and interpretation in complex clinical questions.[23]

Future Scope

Telepharmacy and digital services can help Drug Information Centers to expand their resch A telepharmacy study carried out online proved that digital platforms can be used to recette process and answer drug-information queries, including outside of conventional working bours. Such services con increase accessibility and be a naslel for hire Drug Information Services with secure online communication and struchaud digital workflows.[24]

The future sustainability of Drug Information Centres may depend on developing active information services in addition to responding to indivischial enquiries. A retrospective ahady of a Drug Information Centre found a reduction in information requests over time and suggested production of informative materials as one approach to sustain the service Newsletters, educational materials, and other proactive communication may therefore complement conventional passive drug-information services[25]

Future scope of Drug Information Services include wider adoption of telepharmacy and other digital platforms to improve accessibility, patient education and medication safety. Ngo et al. (2024) evaluated a pharmacist-led university-based telepharmacy drug information service . The study found highly positive perceptions of drug information received by clients, and high client satisfaction with the drug information service . The service was found to improve decision-making about medications and understanding of medication safety in the 72 respondents, and significant positive associations were found between drug information advice and decision-making and medication safety. The study shows that digital Drug Information Services can provide reliable and accessible medication information in settings other than the traditional face-to-face setting. The addition of telepharmacy, online question platforms and digital counseling by pharmacists in future Drug Information Services may have the potential to increase their reach and result in safer and more informed use of medicines.[26]

CONCLUSION

Conclusion Drug Information Services are an integral part of hospital pharmacy, providing accurate, reliable and timeous information on medicines for healthcare professionals and patients. They systematically identify drug information requests, use appropriate and reliable information sources, critically evaluate the evidence, and communicate and document responses appropriately. Good documentation and quality assurance help keep things consistent and to judge how well these services work. The integration of telepharmacy and digital technologies offers promising opportunities to improve accessibility, efficiency and medication safety in the future hospital pharmacy practice in spite of challenges like limited resources, awareness and workload.

REFERENCES

1. Adepu R, et al. Initiation and Evaluation of Drug Information Services at a Tertiary Care Teaching Hospital in South Telangana. Indian J Pharm Sci. 2022;84(6):1536–1543. DOI: 10.36468/pharmaceutical-sciences.1052.
2. Rajanandh MG, Seenivasan P, Ahalya SP, Anjali R. Assessment of Pharmacists-led Drug Information Service in a Tertiary Care Hospital in India. J Med Sci. 2017;17(2):102-106. doi:10.3923/jms.2017.102.106.
3. Behera SK, Xavier AS, Gunaseelan V, Ravindra BK, et al. Drug information center as referral service in a South Indian tertiary care hospital. Int J Pharm Investig. 2017;7(4):182-186. doi:10.4103/jphi.JPHI_90_17.
4. Shimeno R, Tanaka M, Ohara R, Yamada T, Masuyama K, Kitagaki K. Survey on the utilization of drug information sources and methods to supplement the missing drug information among hospital pharmacists in charge of drug information. Iryo Yakugaku. 2025;51(2):81-89. doi:10.5649/jjphcs.51.81.

5. Abdel-Latif MM, Elewa HA, El-Kholy AAES. Perceptions and attitudes of hospital' prescribers towards drug information sources and prescribing practices. Braz J Pharm Sci. 2022;58:e20498. doi:10.1590/S2175-97902022e20498.
6. Almazrou DA, Ali S, Alzhrani JA. Assessment of Queries Received by the Drug Information Center at King Saud Medical City. J Pharm Bioallied Sci. 2017;9(4):246–250. doi:10.4103/jpbs.JPBS_166_17.
7. Iheanacho CO, Odili VU, Oluigbo KE. Predominant sources of pharmacists' drug information, and identification of drug information needs from pharmacists in community and hospital settings. Indian J Pharm Pract. 2021;14(1):46-53. doi:10.5530/ijopp.14.1.9.
8. Heck J, et al. Clinical-pharmacological drug information center of Hannover Medical School: experiences and analysis from a tertiary care university hospital. Sci Rep. 2022;12. doi:10.1038/s41598-022-24005-y.
9. Hatakeyama S, Uemura N, Endo S, Obata H, Karasawa M, Takeda K, et al. Survey on the current situation of drug information provision for pharmacotherapy during pregnancy or lactation by hospital pharmacists. Iryo Yakugaku. 2024;50(4):198-207. doi:10.5649/jjphcs.50.198.
10. Tukukino C, Wallerstedt SM. Drug information centre queries and responses about drug interactions over 10 years—A descriptive analysis. Basic Clin Pharmacol Toxicol. 2020;127(6):470-478. doi:10.1111/bcpt.13294.
11. Reppe LA, Spigset O, Böttiger Y, Christensen HR, Kampmann JP, Damkier P, et al. Factors associated with time consumption when answering drug-related queries to Scandinavian drug information centres: a multi-centre study. Eur J Clin Pharmacol. 2014;70(11):1395-1401. doi:10.1007/s00228-014-1749-z.
12. Tefera YG, Gebresillassie BM, Ayele AA, Belay YB, Emiru YK. The characteristics of drug information inquiries in an Ethiopian university hospital: a two-year observational study. Sci Rep. 2019;9:13835. doi:10.1038/s41598-019-50204-1.
13. Sforsin AC, Pinto VB, Castro TL, Silva GC, Santos GR, Carneiro GA, et al. The drug information center: a central piece to evidence-based decision making. Rev Bras Farm Hosp Serv Saude. 2022;13(4):0869. doi:10.30968/rbfhss.2022.134.0869.
14. Ashenef A, Reshid E, Yilma Z, Melaku T, Chane T. Assessment of the use and status of new drug information centers in a developing country, Ethiopia: the case of public university hospital drug information centers. Biomed Res Int. 2018;2018:3840976. doi:10.1155/2018/3840976.
15. Jeevangi VM, Patil N, Geni AB, Hinchageri SS, Manjunath G, Shantveer H. Assessment and evaluation of drug information service provided by pharmacy practice department based on enquirer's perspective. Int Res J Pharm. 2012;3(10):193-199.

16. Flôres DRV, Sartori AAT, Antunes JB, Pinto AN, Pletsch J, Dal Pizzol TDS. Drug information center: challenges of the research process to answer enquiries in hospital pharmaceutical practices. Eur J Hosp Pharm. 2018;25(5):262-266. doi:10.1136/ejhpharm-2017-001417.
17. Mudigubba MK, Sowmya B, Dinesh R, Karthik M, Nagar AK, Yogananda R, et al. Evaluation of performance of drug information center providing quality of information services to healthcare professionals in a tertiary care teaching hospital of south India. Innov Pharm Pharmacother. 2013;1(2):81-90.
18. Anjali K, Bhatt SP. Quality Assurance of Drug Information Services in a Tertiary Care Hospital. Int J Drug Reg Affairs. 2025;13(1):55-59. doi:10.22270/ijdra.v13i1.750
19. Ng MCC, Loquias MM. Retrospective quality assessment of a hospital-based drug information service. Int J Pharm Teach Pract. 2013;4(3):724-730.
20. Wen MM, Aref H, Abozaid A, Kandil NH, Elsobky YH. Quality evaluation and survey of the essential need for drug information centers. Int J Pharm Pharm Sci. 2016;8(11):137-143. doi:10.22159/ijpps.2016v8i11.14085.
21. Schneider D, et al. Factors Determining Quality of Drug Information by Hospital Pharmacies—Results from Five-Year Annual Quality Assessment. Pharmacy (Basel). 2024;12(4):109. doi:10.3390/pharmacy12040109.
22. Muralidharan H, Venkatesan A, Venati R, Dhanasekaran ID, Suthahar T, Ahmed A, et al. Barriers of healthcare professionals in utilizing the service of drugs and poison information Centre: A cross-sectional study. Explor Res Clin Soc Pharm. 2022;6:100142. doi:10.1016/j.rcsop.2022.100142.
23. Flôres DRV, Sartori AAT, Antunes JB, Pinto AN, Pletsch J, Dal Pizzol TDS. Drug information center: challenges of the research process to answer enquiries in hospital pharmaceutical practices. Eur J Hosp Pharm. 2018;25(5):262-266. doi:10.1136/ejhpharm-2017-001417.
24. Plantado ANR, de Guzman HJdV, Mariano JEC, Salvan MRAR, Benosa CAC, Robles YR. Development of an online telepharmacy service in the Philippines and analysis of its usage during the COVID-19 pandemic. J Pharm Pract. 2023;36(2):227-237. doi:10.1177/08971900211033120.
25. Pereira-Silva JI, Anjos RP, Rocha-Liberato FL, Merencio-Silva PR, Brito-Passos AC, Monteiro MP. The contribution of a Drug Information Center to improve safety in the drug chain. Rev Bras Farm Hosp Serv Saude. 2023;14(3):0978. doi:10.30968/rbfhss.2023.143.0978.
26. Ngo FLU, Garcia KES, Loquias MM, Robles YR, Capule FR. Perceptions of clients on a university-based drug information service affecting medication safety. Acta Med Philipp. 2024;58(19):29-36. doi:10.47895/amp.vi0.7672.
27. Tefera YG, Gebresillassie BM, Ayele AA, Belay YB, Emiru YK. The characteristics of drug information inquiries in an Ethiopian university hospital: a two-year observational study. Sci Rep. 2019;9:13835–13841. doi:10.1038/s41598-019-50204-1.