

Establishing and implementing the role of pharmacy informatics lab in a tertiary care hospital

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Abstract

Department of Pharmacy Services is a part of the clinical support services available in LRH-MTI. Pharmacy informatics lab was established with an aim to develop an interdepartmental drug information system that will record individual patient's medications history, drug allergies, prescribed and dispensed medications and current as well as past drug treatments. The prime focus of the system is to perform automatic drug-interaction checks while adding to the patients' medication profiles. With the establishment of the first Pharmacy informatics lab of the region, the department of pharmacy services LRH-MTI has achieved two major objectives; implementation of electronic prescribing and administration systems and pharmacy information management system. Vigorous and ongoing trainings of all healthcare professionals including pharmacists, prescribers, nursing team, technicians and nursing care assistants by the faculty of Pharmacy informatics lab, collaboration of information technology professionals and the commitment of all other health care professionals towards digitalization helped achieved this goal.

Keywords

Pharmacy• Informatics Lab• Implementation• Tertiary Care Hospital

Introduction

The health care is increasingly moving forward and the role of pharmacy services in the provision of service delivery is rapidly advancing as well. In this evolution of healthcare, there is a dire need of information technology in order to revolutionize this care known as "Informatics". Conventionally, medical informatics is "An area of information science related to analysis, use and communication of data including medical record and information through computer applications in a number of aspects of health care and medicine" [1].

While exploring further in to medical informatics, pharmacy informatics is a field that deals with applying pharmacy-related health data for a number of reasons. The American Society of Health-Systems Pharmacists (ASHP) has defined pharmacy informatics as "The integration and use of data, information, technology, automation and knowledge in the medication management process in order to improve patient care, efficiency and safety [2]. More precisely stating, pharmacy informatics is the integration of electronic health data in order to adopt medication use process that is safe and effective. Pharmacy informatics is a broad area where one can experience a number of areas of medicines management, from drug utilization review (DUR), to incorporation of barcoding's at the time of

dispensing and implementation of alert systems for improving prescriber's accuracy as well as dispensing of medications. The field is highly dependent on extensive collaboration of pharmacists, officers of information technology, prescribers, nursing staff and other health care professionals.

The duties and responsibilities of a pharmacist related to the provision of informatics progress with the advent of opportunities in pharmacy informatics. Health information systems (HIS) enable pharmacists to involve in a number of health care settings, including computerized prescriber order entry (CPOE), electronic prescribing, electronic health records (EHRs), electronic medical records (EMRs), controlled substance or prescription drug monitoring program (PDMP) databases, bar code dispensing and administration systems (BCMAS). In order to incorporate clinical, regulatory, technical and practical insight into health information systems, pharmacists are vital to be recruited for more technology-driven roles. Pharmacy specialists working in informatics are often referred to as pharmacy informaticists [3]. While a number of pharmacists till date have either very little no formal credentials in informatics, many are willing to the adopt the field as it has been recognized as an area where pharmacists can flourish in automation.

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Establishment of Pharmacy Informatics Lab

Lady Reading Hospital-Medical Teaching institution (LRH-MTI) is one of the largest tertiary hospitals of Khyber Pakhtunkhwa Province of Pakistan. The Department of Pharmacy Services is a part of the clinical support services available in LRH-MTI. Providing quality in-patient and ambulatory care services are the main objectives. Moreover, effective clinical pharmacy services through optimal individualized pharmaceutical care to patients is also the main focus. The department also plays a vital role in forecasting the needs of drugs and consumables and acts as key player in promoting cost-effective and rational medication use through an efficient drug distribution system [4].

Keeping in view the high influx of patients from across the province and with dispensing around 900,000 items monthly, pharmacy department is one of the busiest units in this tertiary care hospital. As part of a goal towards paperless and error free medication management and digitalized patient care while keeping in view the limited national resources, pharmacy department initiated a unique step towards the establishment of Pharmacy informatics lab in September 2020 being entitled as a pioneer pharmacy informatics lab established in any public sector hospital of the region.

Pharmacy informatics lab was established with an aim to develop an interdepartmental drug information system that will record individual patient's medications history, drug allergies, prescribed and dispensed medications and current as well as past drug treatments. The system will focus to perform automatic drug-interaction checks while adding to the patients' medication profiles. Health care professionals including physicians, pharmacists and nurses will be supplied with data in order support applicable and accurate prescribing, dispensing and administration, thus avoiding adverse drug events and drug-related mortalities.

With the establishment of Pharmacy informatics lab, the department of pharmacy services LRH-MTI has achieved two major objectives; implementation of electronic prescribing and administration systems and pharmacy information management system. The e-prescribing system allows recording medications management cycle in a computer based system by health care professionals. Pharmacy information system collects, stores and manages information associated with medications and their use in the patient care process. Transition from manual ordering, issuing and recording medications to a computerized system was a key objective to achieve. Vigorous and ongoing trainings of all healthcare professionals including pharmacists, prescribers, nursing team, technicians and nursing care assistants by the faculty of Pharmacy informatics lab, collaboration of information technology professionals and the commitment of all other health care professionals towards digitalization helped achieved this goal.

Roles and Responsibilities

It is a well-known fact that Pharmacists practicing informatics are required to collaborate with relevant healthcare and information technology professionals for promoting safe, effective, timely, efficient, and optimum medications use. Their contribution is based

on transforming healthcare by designing, analyzing, implementing, evaluating and maintaining such information and communication systems that are able to progress towards medication/healthcare outcomes and strengthening pharmacist–patient relationship.

The role of pharmacy informaticists gyrates around their knowledge of safe medication use, pharmacy practice, improvement of medication therapy outcomes, clinical decision-making, as well as understanding the discipline of informatics [5]. Their key roles and responsibilities comprise of the following categories;

Training and communication

An efficient, effective and ongoing trainings can help in reduction of prescribing, dispensing and administration errors as well as increase user confidence level towards the system. Conducting constant training sessions are the among the key performance indicators to prepare end-users in adopting the system more efficiently. Effective communication between pharmacy informatics lab and users also play a vital role in increasing the satisfaction level and maintaining decent relationship. Pharmacy informatics lab in LRH-MTI has been actively involved in consistent trainings of a number of healthcare professionals as part of its primary responsibility.

Knowledge, information and data management

Pharmacy informaticists are responsible for sustaining the information, data and knowledge resources within the systems supporting medication management cycle. They are contributory in safeguarding data safety and quality, and affirming medication-related data, minimizing data-quality risks, information, and knowledge management best practices by ensuring that data are complete, accessible, timely, accurate, consistent and precise. They also ensure that information and data are being audited, routinely optimized, evaluated for effectiveness, rapidly accessed and understood within a system.

Information and knowledge delivery

Healthcare delivery has always been integrally knowledge dependent and complex and it is growing even more exciting for healthcare providers in integrating the growing intensity of understanding needed for safe and effective patient care. The available clinical knowledge is frequently misaligned, disagreeing, and not readily available or identified at the point of delivery of care. In order to serve the purpose of such clinical encounters, relevant patient centered knowledge is required to be available to a healthcare professional providing health care at the time of service delivery. The delivery of knowledge can be achieved through proactive or interactive measures. Our informatics lab has achieved the goal of sharing information and knowledge delivery by establishing an online formulary portal that is accessible widely to all health care professionals at the time of clinical intervention.

Leading and managing change

Informatics pharmacists are anticipated to lead and manage the associated risks and challenges of development and new implementations, safety and use of systems supporting medicines management in order to ensure the fact that health care information

systems support safe and effective medication use process. Pharmacy informatics lab is closely monitoring the management, assessment and communications of the potential challenging factors of a newly introduced system and developing road maps to alleviate the possible risk factors [6].

Achievements

With establishing the first pharmacy informatics lab of the region in LRH-MTI, the organization has successfully implemented online nursing order entry and computerized prescriber order entry systems, ongoing trainings mechanisms for all healthcare professionals within the organization and halted the traditional register system used for inventory management implemented from decades. In addition to this, medicines consumption has been controlled with production of precise audited inventory records.

Recommendations and Future Perspective

To explore new trends of technology based patient care, implementing the role pharmacy informatics lab in public sector healthcare settings is need of the day. Informatics lab is critically managing prescribing patterns by analyzing the medication orders, dispensing and administration and is focused on lessening the burden on healthcare professionals developed through system transition phase. In addition to this, it is also looking into patient's management, drug distribution, inventory and documents management through a close review system. From transition to traditional medication management processes to a more advance technology based informatics system, it is vital that all the interdisciplinary units collaborate to support the flow. Additionally, it is extremely important to identify and counteract the user, organization and technology factors responsible for smooth implementation of pharmacy informatics.

Establishment of informatics lab in healthcare settings shall be mandatory by the authorities for the provision of optimum pharmacy service delivery. An update to current pharmacy course contents and

introduction of relevant specialized courses/certifications with respect to informatics is required in order to equip our next batches with the recent technological advancements. Besides this, specialized trainings in healthcare setups are vital to be implemented accordingly. In near future, Pharmacy informatics is going to play a knockout and revolutionary role in designing, development, implementation and evaluation.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity.

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