



## Computers as a Part of Pharmacy

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### Abstract

Now a day's computers are used in pharmaceutical industries, hospitals and in various departments for drug information, education, evaluation, analysis, medication history and for maintenance of financial records etc.,. Effective functioning of any organization largely depends upon continues flow of information i.e. receiving of information, processing and storage. Computers play important role in for retrieval of information. In hospitals data management involves creating, modifying, adding and deleting data in patients file to generate reports.

**Keywords:** Computer Pharmacy System, optimal drug therapy, electronic data processing equipment, Pharmacokinetic, General Practice (GP) systems.

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### 1. Introduction

Now a day's computers are used in pharmaceutical industries, hospitals and in various departments for drug information, education, evaluation, analysis, medication history and for maintenance of financial records etc.,. Effective functioning of any organization largely depends upon continues flow of information i.e. receiving of information, processing and storage. Computers play important role in for retrieval of information. In hospitals data management involves creating, modifying, adding and deleting data in patients file to generate reports.

### 2. Description

#### Discussion:

In the following fields of Pharmacy, the Computers are playing a vital role for the betterment growth of Pharmacy.

#### 1. Patient monitoring

It includes monitoring of physiological processes in patient such as blood pressure, pulse rate, temperature etc. It helps in giving warning of critical conditions of immediate nursing attention and enables medical staff to make accurate judgment of patient's progress.

#### 2. Medical monitoring

To meet the goal of optimal drug therapy, medical monitoring is very essential. In this case prescription of patients received over a period of time is entered into the computer data.

Computers provide two types of information:

#### 3. Pharmacokinetic

“NINLIN” is a computer program which can predict pharmacokinetic parameters very easily for maintaining dosage schedule of various drugs. MEDIPHORE” (monitoring and evaluation of drug interactions by a pharmacy oriented reporting) and PAD (pharmacy automated drug interaction screening) are the available programmes for Non pharmacokinetic type. It includes various allergic reactions, drug interactions, adverse drug reactions etc.

### **3. Maintain of records**

Various records like patient’s history, current treatment and financial records etc are maintained in computers. MEDILINE is a data base package used for such purpose.

### **4. Material management:**

Computers play a vital role in material planning, purchasing, and inventory control and for casting prizes. Generally there are two systems for inventory control.

- I. Periodic inventory control
- II. Perpetual system
- III. The information as output from the computer may be obtained in various forms like
  - a. Planning of material
  - b. Drugs formulary
  - c. Vendor details for procurement
  - d. Tender rate and analysis
  - e. Determination of EOQ
  - f. Pending supply orders
  - g. Inventory analysis
  - h. Records points
  - i. Safety stocks
  - j. Ledger for narcotics
  - k. Over/ under stocking
  - l. Slow moving/ fast moving items
  - m. Expired drugs

### **5. Data storing and retrieval**

Input of drug information into electronic data processing equipment to be by pharmacist or under the supervision of a pharmacist. When electronic data processing equipment is employed by a pharmacy, input of drug information shall be performed only by a pharmacist or under the immediate and personal supervision of a pharmacist. If orders are entered by other personnel, the pharmacist must certify the accuracy of the information entered and verify the prescription order prior to the dispensing of the medication. The identity of the pharmacist must be retained in the record.

### **6. Diagnostic laboratories**

The last two decades have brought considerable advances in the field of computer-based medical systems. These advances have resulted in noticeable improvements in medical care, starting from ease of storage and access of digital imaging through gathering of computerized medical data, accessing on-line literature, patient monitoring, and therapy planning. Systems addressing the task of diagnosis, however, have rarely been adopted in clinical practice, which has raised questions about their usefulness and feasibility. We show in this paper a practical application of a computer-based diagnostic system, HEPAR II, to training beginning diagnosticians.

### **7. Pharmaceutical education**

Pharmacy has an established history of technology use to support business processes. Pharmacy informatics education within doctor of pharmacy programs, however, is inconsistent, despite its inclusion as a requirement in the 2007 Accreditation Council for Pharmacy Education Standards and Guidelines. This manuscript describes pharmacy informatics knowledge and skills that all graduating pharmacy students should possess, conceptualized within the framework of the medication use process. Additionally, we suggest core source materials and specific learning activities to support pharmacy informatics education. We conclude with a brief discussion of emerging changes in the practice model. These changes are facilitated by pharmacy informatics and will inevitably become commonplace in our graduates’ practice environment

### **8. Hospital pharmacy and retail pharmacy**

Pharmacists were among the first healthcare professionals to recognize the benefits of technology, and we have continued to lead the way through the years. From Creative Pharmacist and the Healthy Heart Club, which help us partner with patients in the comforts of home, to National Community Pharmacists Association's "Simplify My Meds" program, technology is the pharmacist's toolbox.

Ever since the invention of the iPad, the first "tablet computer," media outlets have talked about the benefits tablet computers will provide to patient care. Nowadays, there are more than 500,000 applications, better known as "apps," in the Apple store and another 200,000 in the Android store. Unfortunately, very few pharmacies attempt to use this technology. The reason could be simply that we are scared.

### 9. Patient counseling

Ongoing changes in health care, which include legislated reimbursement for educational interventions, are increasing the attention placed on patient education. Patient education has emerged as an important component of many health promotion and disease management programs. Responding to increased pressure to provide more informed and interactive information resources to patients at less cost, patient educators are beginning to realize the benefits of using computer technology to support the health care learning process. The findings presented in this paper suggest that the use of technology to improve patients' knowledge and to involve them in health care decisions leads to better health outcomes. The purpose of this article is to explore the evolution of computer technology in health care education and, in particular, to examine the application of technology in the process of knowledge transfer and skill development necessary for self-health promotion and disease self-management. A systematic review of the published literature on the development and use of computer-based patient education is followed by a discussion of the application of research findings to practice.

### 10. Drug interactions

Automated drug interaction alerts have the potential to dramatically increase clinicians' recognition of selected drug interactions. However, perceived poor specificity of drug alerts may be an important obstacle to efficient utilization of information and may impede the ability of such alerts to improve patient safety.

### 11. Community pharmacy

The computer systems in use in community pharmacy are the result of many years' development and enhancement. The marketplace is similar in complexity and maturity to the marketplace for General Practice (GP) systems. Whilst in some circumstances this is a strength, it also represents a historical tradition which is difficult to break, where radical change is required and paradigm shift may be needed to provide step change in efficiency and the delivery process. Systems have become efficient at supporting the traditional delivery of medication and healthcare, but now face the challenges of data sharing, services delivery and recording, and the population identification, focused delivery and outcomes justification for public health initiatives. Advances in IT techniques, hardware, software engineering, connectivity and the legacy of the NHS National Programme for IT offer new opportunities to advance the collective aspirations of the industry, professions and Government to meet these challenges. Indeed, a report for the Health Policy Forum<sup>1</sup> in 2008 made a number of recommendations in this regard: Technologies can support the shift of health services from secondary to primary care; they can help healthcare professionals based in the community – including but not exclusively community pharmacists – to deliver a patient-focused service to the whole community; they can improve and supplement, rather than replace, face-to-face care; and they can be deliverable at a similar cost to existing service models. These opportunities cannot and should not be realised outside the context of what is commercially and professionally feasible and desirable. IT is a potential enabler, not an end in and of itself. Experience has shown that the development and delivery of the technically possible is not necessarily going to yield the anticipated benefits if the innovation is not a solution to the priority problem. It is important to be informed of the potential of new technologies to facilitate solutions but only as part of the decision-making to prioritise the problems and issues for solution. An IT strategy cannot be defined in isolation, only as a contributor to the process of defining the problems that are most urgent and cost-effective to solve.

### 12. Drug information services

The Drug Information Service Center maintains a comprehensive collection of reference texts and computer resources. Additional resources available to the Drug Information Service Center include the computer resources and 154,000 volumes of the Coy C. Carpenter Library. The Drug Information Service Center combines information retrieval with a critical evaluation of the literature and, when available, incorporates patient specific information to provide health care professionals with a timely, clinically useful response to requests for information on medication use.

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