

Internship Training

at

Cantonment General Hospital, Delhi Cantonment, New Delhi

**To Study The Existing Level Of I.T Penetration In The Medical
Stores Of**

**Cantonment General Hospital With A View To Suggest
Achievable Changes**

By

Col B Anil Kumar

PG/15/021

Under the guidance of

Internal Mentor

**Dr. A.K Agarwal
Dean, Academics & Student
Affairs
IIHMR, New Delhi**

External Mentor

**Dr. Gurdev Singh
Chief Medical Officer
Cantonment General Hospital
Delhi Cantonment, New Delhi**

Post Graduate Diploma in Hospital and Health Management

2015-17



International Institute of Health Management Research

New Delhi

Internship Training

at

Cantonment General Hospital, Delhi Cantonment, New Delhi

**To Study The Existing Level Of I.T Penetration In The Medical Stores Of
Cantonment General Hospital With A View To Suggest Achievable Changes**

By

Col B Anil Kumar

PG/15/021

Under the guidance of

Internal Mentor

**Dr. A.K Agarwal
Dean, Academics & Student Affairs
IIHMR, New Delhi**

External Mentor

**Dr. Gurdev Singh
Chief Medical Officer
Cantonment General Hospital
Delhi Cantonment, New Delhi**

Post Graduate Diploma in Hospital and Health Management

2015-17



International Institute of Health Management Research

New Delhi

ABSTRACT

TITLE OF THE DISSERTATION:

TO STUDY THE EXISTING LEVEL OF I.T PENETRATION IN THE MEDICAL STORES OF CANTT GENERAL HOSPITAL WITH A VIEW TO SUGGEST ACHIEVABLE CHANGES

INTRODUCTION

Much of the present day improved status of health care is due to the contribution made by the pharmaceutical sciences. Pharmacy is the health profession that links the health sciences with the chemical sciences. Pharmaceutical sciences ensure safe and effective use of medications. The traditional role of pharmacy is compounding and dispensing medications.

Over a period of time, the pharmacy profession has greatly changed from being primarily concerned with safe, effective and appropriate use of medication and enhanced pharmacy services to patients. High technological advancement and information explosion have significantly raised the knowledge and quality level.

The modern roles of the Pharmacists as revised by the WHO are those of Care giver, Decision maker, Communicator, Leader, Manager, Lifelong learner and Teacher.

The modern role of the Pharmacists needs the help of information technology to a great extent.

GENERAL OBJECTIVE

To study the existing level of I.T penetration in the Medical Stores of Cantonment General Hospital with a view to suggest achievable changes.

SPECIFIC OBJECTIVES

1. To obtain information on the role of the present day hospital pharmacies.
2. To obtain information on the level of automation and the degree of use of information technology in hospital pharmacies in India and other developed and developing countries in order to perform their present day role.
3. To study the organisation, functions and role of the medical stores (pharmacy) of the hospital under investigation.
4. To determine the level of automation and the degree of use of information technology in pharmacy of the hospital under study.
5. To investigate the feasibility of implementation of modern information technology in the hospital pharmacy with a view to improve efficiency, user satisfaction, economics of operation and patient safety.
6. To identify the areas those require improvement in planning and organising the same.
7. To identify the barriers in implementation of automation and adoption of modern information technology in the hospital pharmacy.
8. To recommend strategies for adoption of modern information technology and automation in the hospital pharmacy.

METHODOLOGY

Study Setting: The study has been carried out at Cantonment General Hospital, New Delhi which is a Government Hospital. The hospital is a 100 bedded facility at present, providing General Medical and Primary Emergency Care Services including Laboratory, X-ray and Delivery Services. The hospital is located in Sadar Bazaar, Delhi Cantt.

Materials and Methods: The following methodology was adopted for the study:

- Review of Literature –

- Proposed Document Study –
 - Ledgers of the Consumable items
 - Indent cum issue vouchers (Convenience Sampling)
 - Indenting Procedure (policy document)
 - SOP for Local Purchase of Consumables
 - Reports and Returns

- **Interview with the functionaries** : Structured Interview with the help of a Questionnaire was conducted with the functionaries in order to obtain data regarding:
 - Organisation of Pharmacy
 - Human Resources of the Pharmacy
 - Education Level of the functionaries
 - Job Description and Role of the Pharmacists
 - Availability of Computer Hardware and Software
 - View of pharmacy functionaries regarding automation and adoption of Modern Information Technology

- **Observation** –
 - Methods and procedure to carry out various functions in the Pharmacy
 - Availability of Computers and Printers
 - Availability of Software
 - Networking with Hospital LAN
 - Availability of Automation Equipment
 - Availability of Internet connection

SCOPE OF THE STUDY

The Pharmacy deals with all types of Medical stores – both consumables and non-consumables. The study is restricted to only consumable medical stores.

Only the aspects of functioning of the Medical stores that impacts the actual and potential use of Information Technology and automation have been studied.

CONSTRAINTS

Availability of time has been a constraint as this is a Single Investigator Study. Most of the quantitative data has been collected on the basis of Convenience Sampling.

BASIC FINDINGS

The Pharmacy has one Senior Pharmacist who is the IC of the Medical Stores. In addition, there is an Asstt Pharmacist who is the IC of the Dispensary. The Asstt Pharmacist is assisted by two Jr. Pharmacists (both contractual) in the Dispensary. The Jr Pharmacists do multitasking between the Medical Stores and the Dispensary. In addition to the above, there are two Data Entry Operators and a House Keeping Attendant in the Medical Store.

The job description of the Pharmacist does not mention that Pharmaceutical care is one of the roles of the Pharmacists of this hospital. They carry out the traditional role of product procurement, storage, distribution and record keeping. The Pharmacists are not aware about the terminologies of the Pharmaceutical care.

There are a total of three Computers and two Printers. Two Computers and two Printers in the Medical Stores and one Computer in the Dispensary. There is no Pharmacy Management Software available for their day to day functioning. Computers are used at a very basic level (MS Excel) for duplicating the data of the ledgers on a monthly basis

for Updation of stock availability at the beginning and end of the month as well as for preparation of indents.

Tremendous potential of the Information Technology has not been harnessed by this Medical Store/ Pharmacy.

CONCLUSION

To examine the feasibility of implementation of the Information Technology in this hospital, to bridge the gap between what presently exists and what should be, a systems review needs to be taken. The hospital does not function in isolation. It is a part of the much bigger system. Both internal as well as external environment, have their influence on the feasibility of implementation of Information Technology in the Medical stores of this hospital.

The external environment that can influence the feasibility aspects are: the Technological System, the socio- economic system, the education system, the legal system and so on.

The internal environments that have influence on the feasibility of implementation are: acceptance of need, priority in patient safety, availability of finance, availability of expertise and competence, need for cultural change in doing a thing in a different way than hither-to-fore being done and the availability of support services external to this organisation.

Some bigger and radical implementation will need support at a higher level. The less costly implementation needing less education and training and shorter time line can be implemented within the hospital level itself, provided the need is accepted at the decision making level.



This Certificate is awarded to

Col B Anil Kumar

In recognition of having successfully completed his

Internship in the Department of

Pharmacy and Medical Stores

and has successfully completed his Dissertation on

“To Study The Existing Level Of I.T Penetration In The Medical Stores Of

Cantt General Hospital With A View To Suggest Achievable Changes”



७५ May 2017

Cantt General Hospital, Delhi Cantt.

The Officer comes across as a committed, sincere & diligent person who has a strong drive and zeal for learning. I wish him all the best for future endeavours.



Dr. Gurdev Singh
Chief Medical Officer,
Cantt General Hospital,
Delhi Cantt.

डॉ. गुरदेव सिंह
Dr. Gurdev Singh
मुख्य चिकित्सा अधिकारी प्र
Chief Medical Officer I/C
छावनी सार्वजनिक अस्पताल
Cantonment General Hospital
दिल्ली छावनी-10
Delhi Cantt-10



TO WHOMSOEVER IT MAY CONCERN

This is to certify that Col B Anil Kumar, student of Post Graduate Diploma in Hospital and Health Management (PGDHM) from International Institute of Health Management Research, New Delhi has undergone internship training at Cantt General Hospital, Delhi Cantt, New Delhi from 01 Feb 2017 to 30 Apr 2017.

The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical.

The Internship is in fulfilment of the course requirements.

I wish him all success in all his future endeavours.

A handwritten signature in blue ink, appearing to read 'A.K. Agarwal'.

Dr. A.K Agarwal
Dean, Academics & Student Affairs
IIHMR, New Delhi

A handwritten signature in blue ink, appearing to read 'A.K. Agarwal'.

Dr. A.K Agarwal
Mentor
IIHMR, New Delhi



Certificate of Approval

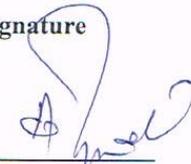
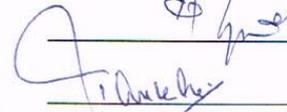
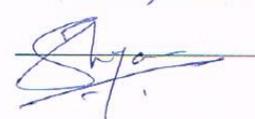
The following dissertation titled “**To Study The Existing Level Of I.T Penetration In The Medical Stores Of Cantt General Hospital With A View To Suggest Achievable Changes**” is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of Post Graduate Diploma in Health and Hospital Management for which it has been submitted. It is understood, that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein ,but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation.

Name

Signature

Prof A. K. Agarwal
Dr. Pankaj Talreja
Dr. Shyama Nayyar



Certificate from Dissertation Advisory Committee

This is to certify that Col B Anil Kumar, a student of the Post-Graduate Diploma in Health and Hospital Management has worked under our guidance and supervision. He is submitting this dissertation titled **“To Study The Existing Level Of I.T Penetration In The Medical Stores Of Cantt General Hospital With A View To Suggest Achievable Changes”** at Cantt General Hospital, Delhi Cantt, New Delhi in partial fulfilment of the requirement for the award of the **Post Graduate Diploma in Health and Hospital Management.**

The dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

Dr. A.K Agarwal
Dean, Academics & Student Affairs
IIHMR, New Delhi



Dr. Gurdev Singh
Chief Medical Officer,
Cantt General Hospital,
Delhi Cantt, New Delhi

डॉ. सुरदेव सिंह
Dr. Gurdev Singh
मुख्य चिकित्सा अधिकारी प्र
Chief Medical Officer I/C
छावनी सार्वजनिक अस्पताल
Cantonment General Hospital
दिल्ली छावनी-10
Delhi Cantt-10



INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH,
NEW DELHI

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **“To Study The Existing Level Of I.T Penetration In The Medical Stores Of Cantt General Hospital With A View To Suggest Achievable Changes”** and submitted by Col B Anil Kumar, Enrolment No. PG/15/021 under the supervision of Dr. Gurdev Singh, Chief Medical Officer, Cantt General Hospital for award of Post Graduate Diploma in Hospital and Health Management of the Institute carried out during the period from 01 Feb 2017 to 30 April 2017 embodies my original work and has not formed the basis for the award of any degree, diploma associateship, fellowship, titles in this or any other Institute or other similar institutions of higher learning.

Signature

FEEDBACK FORM

Name of the Student : Col B Anil Kumar

Dissertation Organisation : Cantonment General Hospital,
Delhi Cantt, New Delhi

Area of Dissertation : Pharmacy & Medical Stores Department

Attendance : Full

Objectives achieved : The desired objectives have been achieved very well which would help in enhancement of Operational Efficiency through I.T penetration in the Pharmacy & Medical Stores Department of the Hospital

Deliverables : Adequate on all aspects of Organisation, Function & role of Medical Stores, level of automation & degree of use of I.T in the Medical Stores & Pharmacy of the Hospital

Strengths : A sincere, dedicated, matured and balanced Officer who is full of zeal, enthusiasm and passion for the Hospital & Healthcare Industry.

Suggestions for Improvement : The Officer needs to continue with his professional and personal traits as displayed during the internship for future success. Keep it up, best wishes always.

Signature of the Officer-in-Charge/ Organisation Mentor


डॉ. गुरदेव सिंह
Dr. Gurdev Singh
मुख्य चिकित्सा अधिकारी प
Chief Medical Officer I/C
कैंटनमेंट मेडिकल भवन
Cantonment Medical Stores
दिल्ली कैंटनमेंट-10
Delhi Cantt-10



Date: 5 May 2017

Place: Delhi Cantt

ACKNOWLEDGEMENTS:

I express my gratitude and sincere thanks to Dr A K Agarwal, Dean Academics & Student Affairs at International Institute of Health Management and Research, New Delhi for his valuable guidance and co-operation in my endeavour.

I am thankful to the management of Cantonment General Hospital at Delhi Cantt, New Delhi for giving me the opportunity to carry-out Internship cum Dissertation in their esteemed hospital.

I am deeply indebted to Dr. Gurdev Singh, Chief Medical officer, Cantonment General Hospital for his foresight and generous support, without which I would not have been able to set the objectives for my Dissertation.

My heartfelt thanks to Shri.Sankar Babu Reddy, Chief Executive Officer, Delhi Cantt for the professional guidance at all stages. His incisive knowledge, precision and professional approach of continuous guidance has been the strongest foundation in this endeavour of the Study.

I am greatly indebted to Dr PP Singh, OIC Dispensary & Medical Stores, Cantonment General Hospital, Delhi Cantt, without whom this study would not have been possible.

The training schedule ensured that there was adequate in-built flexibility provided to me to understand detailed nuances of hospital administration. Thus, the Internship-cum-dissertation training has equipped me with an expertise which will ensure my appropriate employability as Hospital Administrator within the Army as well as in other tertiary care hospitals post retirement.

I also wish to express my sincere gratitude to my wife, Mrs Anita Kumar, without whose active encouragement and continuous support, it would not have been possible to complete this project report.

Lastly I would like to thank the entire staff of Cantt General Hospital, Delhi Cantt in general and in particular, the staff of the Pharmacy and Medical Stores Departments, who were extremely helpful in elucidating in detail, the nuances of their tasks / duties performed by them and for extending all the help and timely support.


Anil Kumar
Col

TABLE OF CONTENTS

S.No	Contents	Pages
1.	Section – 1 Internship Report	1
2.	Chapter 1 Introduction	2-7
3.	Chapter 2 Overview Of Services Provided By The Cantonment General Hospital	8-17
4.	Chapter 3 Observations And Recommendations	18-23
5.	Section 2 : Project Report	24
6.	Chapter 4 Introduction	25-28
7.	Chapter 5 Review Of Literature	29-79
8.	Chapter 6 Objectives Of The Study	80
9.	Chapter 7 Methodology Of The Study	81-83
10.	Chapter 8 Findings	84-91
11.	Chapter 9 Discussion	92-97
12.	Chapter 10 Recommendations And Conclusion	98-99

LIST OF FIGURES

Figure.No	Title	Page No
1.1	Cantonment General Hospital, Sadar Bazar, Delhi Cantt	06
1.2	OPD Block	06
2.1	ALS Ambulance	09
2.2	Various Facilities Available	14
2.3	Various Facilities Available	15
2.4	Various Facilities Available	16
2.5	Various Facilities Available	17
5.1	Evidence Based Medicine	37
5.2	Pharmacy Information Technology System	42
5.3	Electronic Health Record	44
5.4	E-Prescription	46
5.5	CPOE	47
5.6	CDSS Flow Chart	50
5.7	HIS Modules	54
5.8	Unit Dose Drug Distribution System	56
5.9	Barcode Technology in Medication Administration	58
5.10	Pillpick System	59
5.11	Medication Supply Management	63
5.12	Material Management-Adapted from Purchasing & Inventory Control	65
5.13	Steps of Procurement Cycle	66
5.14	Ideal Inventory Control Model	69
5.15	Balancing Benefits & Costs in Inventory Management	70
5.16	Pneumatic Tube Station	78
8.1	Organisation of Medical Stores	84
8.2	Functions of Medical Stores	86
8.3	Stock balance manually fed to Computers	88
8.4	Medicines stocked at the Medical Stores	90

LIST OF TABLES

Table No.	Title	Page No.
8.1	Service Level Determination	90
8.2	Service Level depiction in Graphical form	91

LIST OF INSTRUMENTATION

S.NO.	Title	Instrument No	Page No.
1.	Questionnaire for functionaries/Pharmacists/staff of Medical Stores	A	100-102

S.NO.	Title	Page No.
1.	Bibliography	103-106

ABBREVIATIONS

ABC- Always Better Control

ACLS- Advance Cardiac Life Support

ADE- Adverse Drug Event

ADMS- Automated Drug Management System

ADR- Adverse Drug Reaction

AEPTA- Army Environment Park and Training Area

AFB- Acid Fast Bacillus

AHRR- Army Hospital (Research and Referral)

AIDS- Acquired Immune Deficiency Syndrome

ALS- Advance Life Support

AMDD- Automated medicine Dispensing Device

ANM- Auxiliary Nurse Midwife

ART- Antiretroviral Therapy

ASHP- American Society of Health-System Pharmacists (formerly American Society of Hospital Pharmacists)

Asst- Assistant

BCMA- Bar Coded Medication Administration

BLS- basic Life Support

BNF- British National Formulary

BP- Blood Pressure

Brig- Brigadier

Cantt- Cantonment

CATS- Centralised Accident & Trauma Service

CCRH- Central Council for Research in Homeopathy

C-DAC- Centre for Development of Advanced Computing.

CDSS- Clinical Decision Support System

CEO- Chief Executive Officer

CGH- Cantonment General Hospital

CMO- Chief Medical Officer

CNS- Central Nervous System

CPMS- Computerised Pharmacy Management System

CPOE- Computer Physician Order Entry/ Computer Provider Order Entry

CPR- Cardio Pulmonary Resuscitation

DDI- Drug Drug Interaction

DGDE- Director General Defence Estates

DOTS- Directly Observed Treatment Short Course

DSOI- Defence Service Officers Institute

DTC- Drug and Therapeutics Committee

DUR- Drug Utilization Review

EBM- Evidence Based Medicine

EBP- Evidence Based Pharmacy

ECG- Electro Cardio Gram

EHR- Electronic Health Record

EMD –Earnest Money Deposit

EMR- Electronic Medical Record

ENT- Ear Nose Throat

E-prescribing- Electronic Prescribing

Etc- et cetera

FIP- Federation of International Pharmacists

FR- Fundamental Rules

Gen Medicine- General Medicine

GFR- General Financial Rules

GI- Gastro Intestinal

GP- General Practitioner

GS1- Standard of Bar coding

HIT- Health Information Technology

HIV- Human Immuno Deficiency Virus

HQ-Headquarter

IC- In charge

ICD- Implantable Cardioverter Defibrillators

ICN- International Council of Nurses

ICU- Intensive Care Unit

IDES- Indian Defence Estates Service

IFPMM- International Federation of Purchasing and Materials Management

IHQ of MOD- Integrated Head Quarters of Ministry of Defence

IMA- Indian Medical Association

IOM- Institute of Medicine

IPGA- Indian Pharmacy Graduates Association

IPP- Intensified Pulse Polio

IT- Information Technology

Jr- Junior

MDR- Multi Drug Resistant

MIMS- Monthly Index of Medical Specialities

NABH- National Accreditation Board for Hospitals and Healthcare Providers

NGO- Non Government Organisation

NHS,UK- National Health System, United Kingdom

NLEM- National List Of Essential Medicines

Obs & Gynae- Obstetrics and Gynaecology

ONC- Office of the National Coordinator

OPD- Out Patient Department

PBG- Performance Bank Guarantee

PCB- President Cantonment Board

PCDS- Pharmacy Clinical Decision Support

PCS- Pharmaceutical Care Services

PDA- Personal Digital Assistant

Pgme- Programme

PIMS- Pharmacy Inventory Management System

PITS- Pharmacy Information Technology System

PMS- Procurement Management System

PPE- Personal Protective Equipment

QA- Quality Assurance

RFID- Radio Frequency Identification

Sr- Senior

SR- Supplementary Rules

SRPG- Shared Record Professional Guidance

UDDS- Unit Dose Drug Distribution System

USP- United States Pharmacopeia

USPDI- United States Pharmacopeia Dispensing Information

VED- Vital Essential Desirable

WDF- World Dental Federation

WHO- World Health Organisation

WHPA- World Health Professions Alliance

WMA- World Medical Association

WMF- Weekly Maintenance Figure