An Assessment of the Drug Handling System in IPD at Asian Heart Institute & Research Centre, Mumbai

A dissertation submitted in partial fulfillment of the requirements for the award of

Post- Graduate Diploma in Health and Hospital Management

By

ANIL KHAN

PG/11/011

International Institute of Health Management Research

New Delhi- 110075

April, 2013

An Assessment of the Drug Handling System in IPD at Asian Heart Institute & Research Centre, Mumbai

A dissertation submitted in partial fulfillment of the requirements for the award of

Post- Graduate Diploma in Health and Hospital Management

By

ANIL KHAN

PG/11/011

International Institute of Health Management Research

New Delhi- 110075

April, 2013

An Assessment of the Drug Handling System in IPD at Asian Heart Institute & Research Centre, Mumbai

A dissertation submitted in partial fulfillment of the requirements for the award of

Post- Graduate Diploma in Health and Hospital Management

By

ANIL KHAN

PG/11/011

International Institute of Health Management Research

New Delhi- 110075

April, 2013

ASIAN HEART INSTITUTE

THE HIGHEST ACCREDITED HOSPITAL IN INDIA

ISO 9001:2000 CERTIFIED

JOINT COMMISSION INTERNATIONAL

NIAHO®

Certificate of Internship Completion

Date: April 25, 2013

TO WHOM IT MAY CONCERN

This is to certify that **Mr. Anil Khan** has successfully completed his 3 months internship in **Asian Heart Institute & Research Centre, Mumbai** from **January 02, 2013 to April 25, 2013.** During his intern he has worked as Management Trainee in the Pharmacy department under the guidance of dedicated team of professionals at Asian Heart Institute, Mumbai. During his tenure he has satisfactorily completed all the tasks assigned to him and has shown complete sincerity and professionalism throughout.

We wish him good luck for his future assignments.

For Asian Heart Institute

.....

Mr Mukul Sharma

Sr. Manager – Human Resources

ASIAN HEART INSTITUTE

Every heart deserves the best

Asian Heart Institute & Research Centre Pvt. Ltd.
G/N Block, Bandra-Kurla Complex, Bandra (East), Mumbai - 400 051.
Tel. : (91-22) 6698 6666 ◆ Fax : (91-22) 6698 6506 ◆ E-mail : info@ahirc.com ◆ Website : www.asianheartinstitute.org

FEEDBACK FORM

Name of the Student: Anil Khan.

Dissertation Organisation: Asian Heart Institute

Area of Dissertation: Pharmacy.

Attendance: 100 -/.

Objectives achieved: Yes.

Deliverables:
1. Supervising Pharmacy.
2. Daily tracking of pharmacy parameter
3. Compliance to min. std.

Strengths:
1. Hard worker
2. leadership qualities
3.

Suggestions for Improvement:
1. Turnaround time for various activities
2. Needs to focus on task at hand.
3. Needs to improve speed.

Signature of the Officer-in-Charge/ Organisation Mentor (Dissertation)

Date: 23/4/13.
Place: Mumbai.

ASIAN HEART INSTITUTE

Certificate of Approval

The following dissertation titled **"To Study the Handling of the Drug Distribution System in IPD in Asian Heart Institute & Research Center, Mumbai"** is hereby approved as a certified study in management carried out and presented in a manner satisfactory 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
DR. BRIJENDER SINGH DHILLON	4/5/13

Certification from Dissertation Advisory Committee

This is to certify that **Mr. Anil Khan**, a graduate student of Post – Graduate Diploma in Hospital and Health Management, has worked under our guidance and supervision. He is submitting this dissertation titled "**Evaluation of Drug Distribution System in Asian Heart Institute, Mumbai**" in partial fulfillment of the requirements for the award of the Post – Graduate Diploma in Hospital and Health Management.

This dissertation had 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.

Saumya Pathak

Dr. Pawan Kumar Taneja
Associate Professor
IIHMR
New Delhi
Date:

Ms Saumya Pathak
Deputy Manager
Finance & Accounts
AHIRC, Mumbai
Date:

ASIAN HEART INSTITUTE

ABSTRACT

Statement of the problem:

"An assessment of the drug handling system in IPD at Asian heart Institute & Research Center, Mumbai."

Background:

Drug distribution is an essential part in any hospital. An organized drug distribution can bring a sense of structure to a potentially chaotic situation. Drug distribution is usually stocked with medications for almost all potential situation.. Many research studies reveal that, generally the practice level of nurses are inadequate.

Objectives

1) To develop a standard operating protocol for drug distribution system for Asian Heart Hospital

2) To assess the level practice of nurses and hospital regarding organized drug distribution system

3) To recommend course of action for adoption to SOPs for identified gaps in practices.

Assumption

It is assumed that nurses lack efficiency in utilization of drug distribution system.

Methods:

Descriptive design was used to assess the practice of organized drug distribution system among nurses with a view to develop a protocol. The target population of the study was nurses who are working in hospital. A total of 50 nurses were selected by using purposive sampling technique. An observational checklist was used to collect the data. Reliability of the tool was tested and validity was ensured in consultation with guides and experts in the fields of nursing and medicine. The study was carried out in Asian Heart Institute & Research Center, Mumbai.

Results:

- The overall mean practice score of the subjects was 13.86, the mean Percentage was 51.3 and SD was 13.7
- Out of the 50 subjects 21(42 percent) have unsatisfactory level of practice i.e. less than 50% and 29 (58 percent) have moderately satisfactory practice levels i.e. 51-75%.
- These findings show that no subjects have satisfactory practice levels i.e. above 75%.
- There was significant association found with practice score of the subjects and age as well as area of working of the subjects

Interpretation and Conclusion:

This study showed that none of the subjects had satisfactory level of practice regarding drug distribution and it insists the importance of educating the staff nurses regarding the practice of organized drug distribution system.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABBREVATIONS

AMS – Assistant Medical Superintendent

Cath Lab – Catheterization Laboratory

CSSD – Central Sterilization Supply Department

CT – Computerized Tomography

EDP – Electronic Data Processing

ENT – Ear, Nose & Throat

ERCP – Endoscopic Retrograde Cholangiopancreatography

GS – General Surgery

Gyn – Gynaecology

HDU – High Dependency Unit

ICU – Intensive Care Unit

ICCU – Intensive Coronary Care Unit

IPD – Inpatient Department

MICU – Medical Intensive Care Unit

MRD – Medical Records Department

MRI – Magnetic Resonance Imaging

OPD – Out Patient Department

Ophth – Ophthalmology

Ortho – Orthopaedics

ACKNOWLEDGEMENT

I have taken efforts in this project. However, it would not have been possible without the kind support and help of many individuals in the organization. I would like to extend my sincere thanks to all of them.

I am highly indebted to **Dr. Ramakant Panda (VCMD, Asian Heart Institute),** for their guidance and constant supervision as well as for providing necessary information regarding the project & also for their support in completing the project.

The guidance and support received from all the members of Pharmacy Department including **Mr. Dinesh Jadhav**, and **Mr. S.N Pal** and nursing department including Mr. Ashish (Nursing educator) who contributed to this project, was vital for the success of the project. I am grateful to each member of Asian Heart Institute for their constant support and help.

I would also like to express my gratitude towards **Dr. Pawan Kumar Taneja (Associate Professor)** for their kind co-operation and encouragement at each step, which helped me in completion of this project.

DATE – 25th April 2013 ANIL KHAN

HOSPITAL PROFILE

Asian Heart Institute (AHI) has been set up with an aim to provide world-class cardiac care in India. It is situated at the Bandra-Kurla Complex (BKC), a mere 15-minute drive from the domestic and international airports. The hospital promises to provide quality cardiac care to patients at reasonable costs.

A dream of leading cardiac specialists of Mumbai, **Dr. Ramakanta Panda, Dr. Sudhir Vaishnav, and Dr. Tilak Suvarna**. AHI was set up with a holistic approach to heart care based on ethics, quality care and professional backed by competitive prices. It prides itself on quality in terms of design, patient care, medical, paramedical and general staff and infrastructure facilities.

The hospital has a Patient-centric design with stress on safety and comfort of Patients. All Patient areas have been designed to minimize the risk of infection. Internationally accredited with ISO 9001:2000, JCI & NIAHO, AHI reaffirms its commitment towards world class cardiac care by being the **India's Highest Accredited Hospital.**

The hospital was started to set a benchmark in quality care, ethical practice, reasonable costs and training for those in the profession. Patients are not charged premium rates for the care they receive. In fact, the charges are reasonable and probably even 10-15 per cent cheaper compared to other hospitals

To operate as a world – class heart hospital, incorporating the latest technological advances and ethical practices to provide quality heart care at reasonable cost.

a) AHI VISION

Globally preferred centre of excellence.

b) CORE VALUES

- Customer Satisfaction
- Highest Quality
- Culture of High Performance
- Integrity & Ethical Practices
- Innovation & Change

(1) AHI ACHIEVEMNTS

(2) Coronary Artery Bypass Grafting (CABG)

(3) Achievements of AHI in the last 10 years.

	2007	**2008**	**2009**
Total no. of CABG surgeries	1242	1258	1449
Off Pump (Beating heart surgery)	99.75 %	99.9 %	99.9 %
Mortality % in Off Pump surgeries	0.5%	0.3%	0.7%
Redo (Repeat) surgeries	52	58	52
Mortality % in Redo surgeries	0%	0%	0%

- India's Highest Accredited Hospital with JCI, NIAHO & ISO certification
- Adjudged 'India's Best Private Cardiac Care' two years in a row in The WEEK-Hansa Research.
- Over 1,65,000 patients treated by AHI Doctors in over 10 years
- One of the lowest surgical mortality rates in the world: 0.26% in isolated bypass surgeries and an overall mortality of 0.8%
- Over 17,000 cardiac surgeries performed in last 10 years
- Over 25,000 angiographies and over 5000 interventional procedures which include complex coronary as well as non coronary intervention
- Amongst the lowest documented infection rates in India which is on par with the best in the world
- One of the few centers' in the world doing nearly 100% of bypass surgeries on a beating heart and with a very significant percentage using total arterial grafting
- Only comprehensive Pediatric Care Centre in Western India'.

- Was the team specially chosen for Hon'ble Prime Minister Dr. Manmohan Singh's redo bypass surgery and post operative care
- Pioneered Robotic Surgery in Mumbai and Western India. The da Vinci Si Robotic Surgical system in use is one of the very first in the Asia-Pacific region.

AHI is a very highly certified and accredited hospital.
We are ISO certified, and accredited by **JCI (Joint Commission International) and NIAHO (National Integrated Accreditation for Healthcare Organizations).**

AHI is now known as a source of world-class cardiac care in India, and the number of international patients traveling to AHI from many countries is increasing by the day.

Our staff is very highly respected and coveted by leading global hospitals. AHI is now known as the kind of top-flight world-class workplace that is perfect for beginning or consolidating a career.

Asian Heart Institute requires the following personnel immediately for its new expansions...
AHI has just entered into its second decade of providing world-class cardiac care to its patients. And we are now widely acknowledged as 'The best Private Cardiac Care' in India.

To achieve this calls for the collective efforts of dedicated individuals working as a team and giving nothing less than 100% every day.

We now have an entire core A Team of these 'keepers of the flame'. For the next 3 weeks (and some days) we will introduce you to our 'Ambassadors'. These are the the embodiment of everything that AHI wants to offer to each and every patient: they are experts in their own field, they are passionate about their work, they have a deep heart for healing and caring, and they love seeing people go home hale and hearty. AHI is featuring this band of exemplaries one by one, every day, so that all our patients can see, 'face to face', the individuals who make AHI the world-class hospital it is. Each one of them will also be sporting the AHI Ambassador badge while in the hospital, so you can recognise them immediately, and approach them for anything you need, at any time.

CHAPTER 1: INTRODUCTION

Drug distribution is an essential part of emergency procedure in any hospital. An organized drug distribution can bring a sense of structure to a potentially chaotic situation. Drug distributions are usually stocked with emergency medications for almost all potential emergency situations. Apart from emergency medication, they contain various other equipments like resuscitation set, organized into various drawers & modules like intubation module, intravenous module etc.

A well organized drug distribution can save a lot of time & confusion during an emergency, which in turn can save a life. Some drug distributions are organized into drawers with color code for different types of situations.

In hospital emergency rooms, intensive care units and other areas cardiac arrest is quite common.. When this occurs immediate care must be provided with in few minutes to prevent permanent brain cell damage. To speed the delivery of necessary drugs and equipment, drug distributions are used by designated teams of nurses and doctors. Drug distribution systems in the hospital setting should ideally prevent medication errors from occurring. When errors do occur, the system should facilitate their early detection, enabling corrective steps to be taken to prevent their recurrence and to minimize any adverse effects on the patient. Hospital drug distribution systems should also facilitate the appropriate allocation and use of available resources. The unit dose drug distribution system is endorsed by The Canadian Society of Hospital Pharmacists as the drug distribution system of choice in organized healthcare settings because it provides improvements in medication safety, overall system efficiency, job satisfaction, and effective use of human resources.

• Centralized unit dose systems, in which unit dose medications are selected and assembled in the pharmacy department, for each patient, were reported to be in use by 64% (103/162) of all respondents (Table D-1). For hospitals with 201-500 beds and for hospitals with more than 500 beds, there was little change in the per cent of respondents reporting use of centralized unit dose systems in 2007/08, compared to the results of the 2005/06 survey. The per cent of respondents reporting the use of centralized

unit dose systems in hospitals with 100-200 beds was 48% (13/27) in 2005/06 compared to 36% (12/33) of hospitals with 50-200 beds in 2007/08. The inclusion of smaller hospitals in the 2007/08 survey may have contributed to this change.

- Regional differences in the use of centralized unit dose systems were noted with 48% (10/21) of respondents reporting a unit dose system in B.C., 50% (8/16) in Atlantic Canada, 66% (33/50) in Quebec, 67% (30/45) in Ontario and 73% (22/30) in the Prairies.

- The number of respondents reporting the use of automation in a centralized unit dose system was 66% (65/98) in 2005/06, compared to 75% (77/102) in 2007/08.

- Among respondents who reported using centralized automated dispensing systems, 94% (72/77) use a canister type system and 12% (9/77) use a robotic system (four respondents in Ontario, three in Quebec and one in each of B.C. and Atlantic Canada).

- Decentralized automated unit dose systems were reported by 36% (59/162) of respondents. Of the 59 respondents who reported the use of decentralized automated unit dose systems, 43 respondents indicated the percentage of beds provide information on the percentage of beds serviced are only using the cabinets in areas like the emergency room and operating room, where there are no "inpatient beds". Fifty one of the 59 respondents reporting use of decentralized automated unit dose systems provided information on the location where the cabinets are used (e.g. general inpatient units, operating room, etc.) and 8 respondents provided no information on the location or % of beds serviced with these systems.

- Among the 51 respondents reporting the use and location of decentralized, automated unit dose systems, 80% (41/51) reported that they use the technology in the emergency department, 51% (26/51) use it in critical care units for regularly scheduled medications, 49% (25/51) use it in critical care units only for narcotics and/or ward stock, 49% (25/51) use it in the operating room, 28% (14/51) use it in general inpatient units for regularly scheduled medications, 39% (20/51) use it in general inpatient units only for narcotics and/or ward stock, and 43% (22/51) use it in the recovery room.

(*Canadian Society of Hospital Pharmacists Background Paper: Medication Safety and*

Drug Use Management Enhanced by Drug Distribution. Ottawa, Ontario, June 2008, available at http://www.cshp.ca)

Responsibilities of the nurse in charge are restocking of drug distribution immediately after every shift, verifying contents of the cart with the supply personnel, verifying the presence and expiry date of all items on carts at least every month, reporting to supply department if expiry date is exceeded or seal is broken.

Because of the number of personnel on an emergency team and the necessity for speed in the delivery of care, confusion quite often occurs when the first drugs to be administered were in one drawer while an equally important piece of equipment was in another drawer. Because of the structure of the equipment box access to more than one drawer at a time was impossible causing serious delays. Further these carts were organized in as much as first used drugs were in a specific drawer, respirator equipment in another drawer etc. This means one drawer after another must be opened and closed repeatedly.

Here it was felt that a study was needed to assess the knowledge about the full potential of drug distribution system among nurses. Further, the study will go into the existing drug distribution practices among the nurses. This would help in bringing out the need for organized drug distribution system awareness among nurses on the need & importance of drug distribution system.

CHAPTER 2: RATIONALE OF THE STUDY

Drug distribution is an essential part in any hospital .An organized drug distribution can bring a sense of structure to a potentially chaotic situation. Drug distribution is usually stocked with medications for almost all potential situation. Many research studies reveal that, generally the practice level of nurses are inadequate. To find the awareness and practice level of nurses, this study was conducted. To find out the association between practice of nurses regarding drug distribution and selected variables and to develop a protocol on organized drug distribution, study was conducted.

CHAPTER 3: REVIEW OF LITERATURE

According to a study on rational drug prescribing and dispensing in outpatients in a tertiary care teaching hospital of western Nepal by Alam et al which concludes that there is a need for educational intervention for prescribers and both managerial and educational intervention for the hospital nurses and pharmacists to improve prescribing and dispensing emergency drug in IPD during emergency conditions. It was a cross sectional, descriptive study with findings as **t**otally 247 prescriptions were randomly selected for analysis, wherein 720 drugs were prescribed. Only 15% of drugs were prescribed by generic name, 21.67% of the total drugs consisted of fixed-dose combinations, only 40% of drugs were from the Essential drug list of Nepal and 29.44% (n=212) were from the WHO Essential drug list. It was found that more than half (54.17 %) of the drugs were from Nepalese National Formulary and 35.69% were from WHO model formulary. Dermatological products were most commonly prescribed followed by drugs acting on central nervous system, antimicrobials and drugs acting on cardiovascular system.

Among the drugs dispensed, 79.16% were oral followed by topical (18.19%) and parenteral forms (2.98%). Diagnosis was mentioned only in 3.23% (n=8) of the prescriptions and the average cost per prescription was found to be 241.11 Nepalese rupees (US$ 3.26). It was found out that pharmacist labelled only 0.4% of the medication envelopes with the name of the patient. However, 82.6% of the medication

envelopes were labelled with name of the drug and 87.0 % with drug strength. Only 53.8% (n=133) of the patient knew both the duration of the therapy and administration time of drugs.

CHAPTER 4: OBJECTIVES

Statement of the Problem:

"To study the handling of the drug distribution system in IPD and to assess the level of practice in nurses in Asian heart Institute & research center, Mumbai"

Objectives of the Study:

Evaluation of drug distribution system in Asian heart Hospital.

Objective of the study with details:

1. To develop a standard operating protocol for drug distribution system for Asian Heart Hospital
2. To assess the level practice of nurses and hospital regarding organized drug distribution system
3. To recommend course of action for adoption to SOPs for identified gaps in practices

CHAPTER 5: METHODOLOGY

Study area:

The study is conducted at Asian Heart Institute & Research center, Mumbai

Study Time: The total time period is 3 weeks i.e 20 days from 9/4/2013 to 29/04/2013

Sample size: The total sample size is 50 hospital nurses.

Study Design:

The study type is descriptive study

Study Population:

The study population is te hospital nurses at Asian heart Institute,Mumbai.

Sample and Sample Design:

The Convenience sampling technique is used for sampling .

Data Collection tools and techniques:

Sampling Tool – Observational Checklists are used for sample collection

Sampling Technique – One to one interview are done .

CHAPTER 6: STUDY FINDINGS

RESULTS

The data themselves do not provide us with answers to, our research questions. Ordinarily, the amount of data collected in a study is extensive to be reliably described by mere perusal. In order to meaningfully answer the research question, the data must be processed and analyzed in some order, so that relationship can be discerned. The term analysis refers to number of closely related operations, which are performed with the purpose of summarizing the collected data and organizing the data in such a manner that they answer the research questions.

This section presents the analysis and interpretation of data collected from 50 staff nurses in order to assess the practice regarding the drug distribution system. The data collected were organized, tabulated, analyzed and interpreted by means of statistical tables and graphs.

FIGURE-1 (Year, Gender & Marital status Distribution)

Diagram showing age, gender and marital status distribution of the subjects

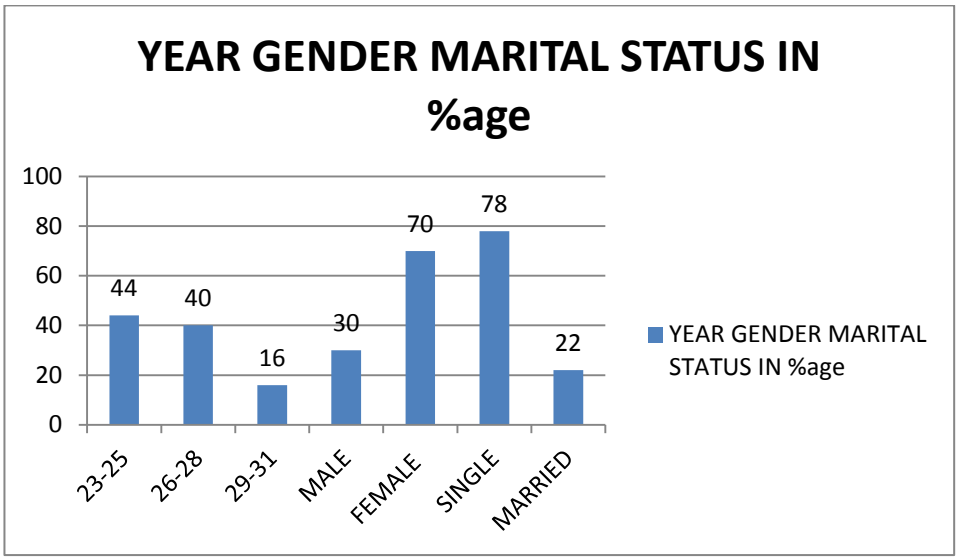


Figure 1 shows that 22 (44 percent) of the subjects were in the age group of 23-25 years, 20 (40 percent) in 26-28 years and 8 (16 percent) were in the age group of 29-31 years. Majority of the subjects 35(70 percent) were females and only 15 (30 percent) were males. 39(78 percent) of the subjects were single and 11(22 percent) were married.

Figure 2(Qualification, area of working & experience distribution)

Diagram showing the Qualification, area of working and experience of the subject

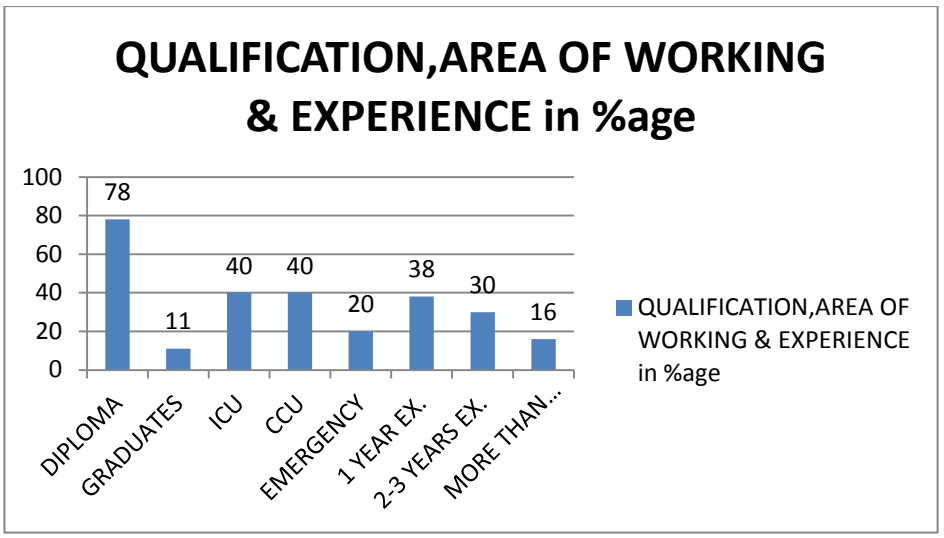


Figure 2 shows that 39(78 percent) of the subjects were diploma and 11(22 percent) were graduates. 20(40 percent) of the subjects were working in ICU, 20(40 percent) were working in CCU and 10(20 percent) were working in Emergency departments. 19(38 percent) of the subjects have 1year, 15(30 percent) were between 2-3 years and 16(32 percent) were having more than 4 years of experience.

Figure 3:

Association between Age and practice level on Emergency drug distribution system

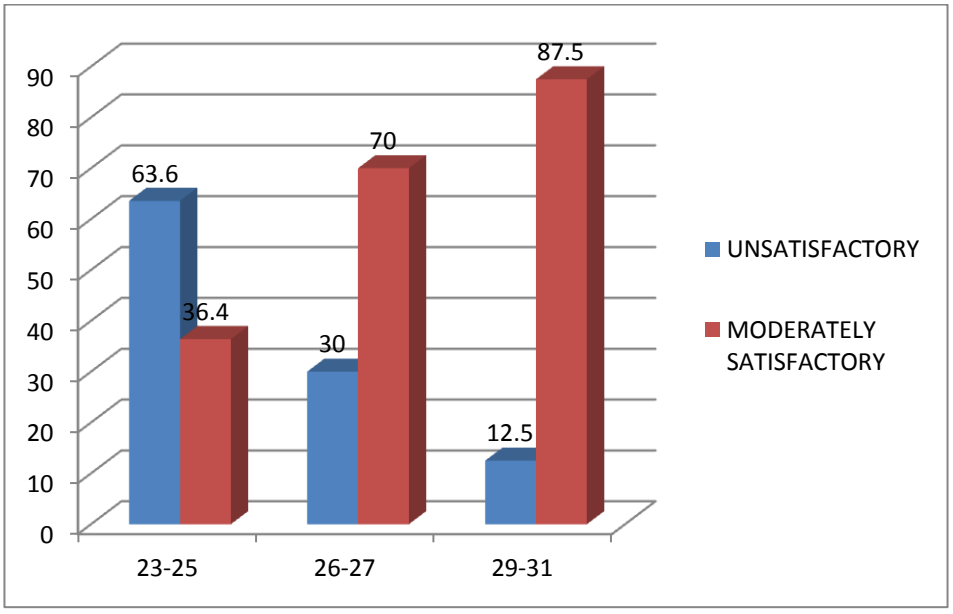


Figure 3 shows that in age group of 23-25 , 63.6% of nurses are unsatisfactory & 36.4 % of nurses are moderately satisfactory. In age group of 26-27, 30% of nurses are unsatisfactory and 70% are moderately satisfactory. In age group of 29-31, 12.5 % nurses are unsatisfactory & 87.5% are moderately satisfactory.

Figure-4:

Association between Marital status and practice level on Emergency drug distribution system.

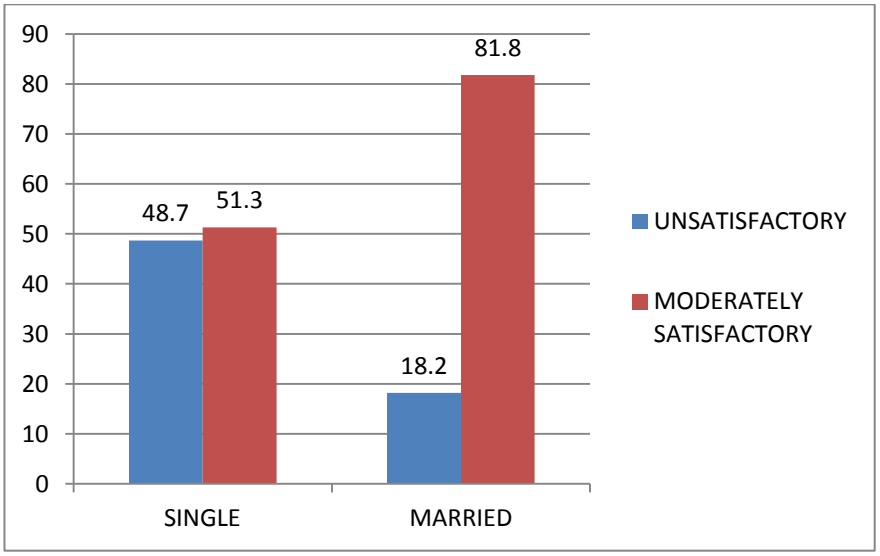


Figure 4 shows that in category of Single nurses 48.7% of nurses are unsatisfactory & 51.3% of nurses are moderately satisfactory. While in category of married nurses only 18.2 % of nurses are unsatisfactory & 81.8% of nurses are moderately satisfactory.

Figure. 5: **Association between Qualification and practice level on Emergency drug distribution system**

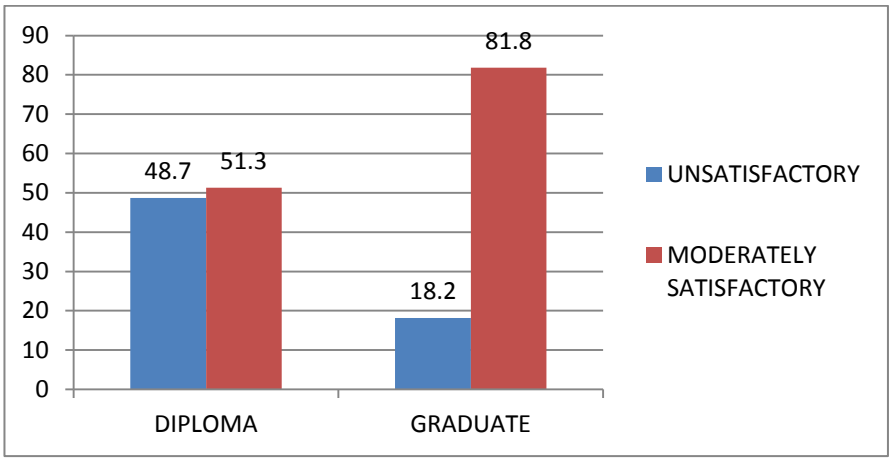


Figure 5 shows that 48.7% DIPLOMA holders are unsatisfactory & 51.3 % DIPLOMA holders are moderately satisfactory. In case of graduates 18.2 % are unsatisfactory & 81.8% of nurses are moderately satisfactory.

Figure .6: Association between Experience and practice level on Emergency crash cart system

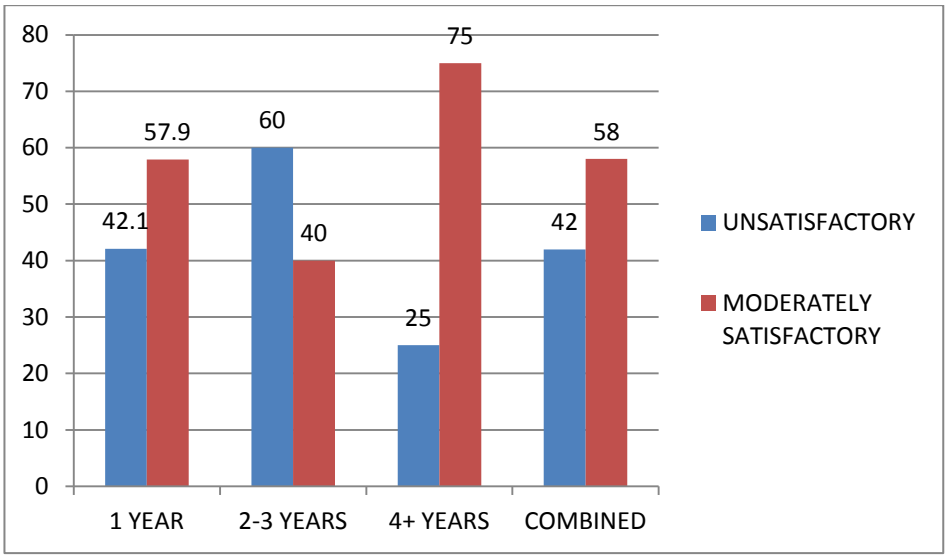


Figure 6 shows that for 1 years experience nurses 42.1% are unsatisfactory and 57.9% are moderately satisfactory. For 2-3 years experience nurses 60% are unsatisfactory & only 40% are moderately satisfactory. For 4+years experience nurses only 25% nurses are unsatisfactory & 75% of nurses are moderately satisfactory. In combined or total unsatisfactory level is 42% and moderately satisfactory is 58% of nurses.

FIGURE 7: **Association between area of working & practice level on emergency drug distribution system**

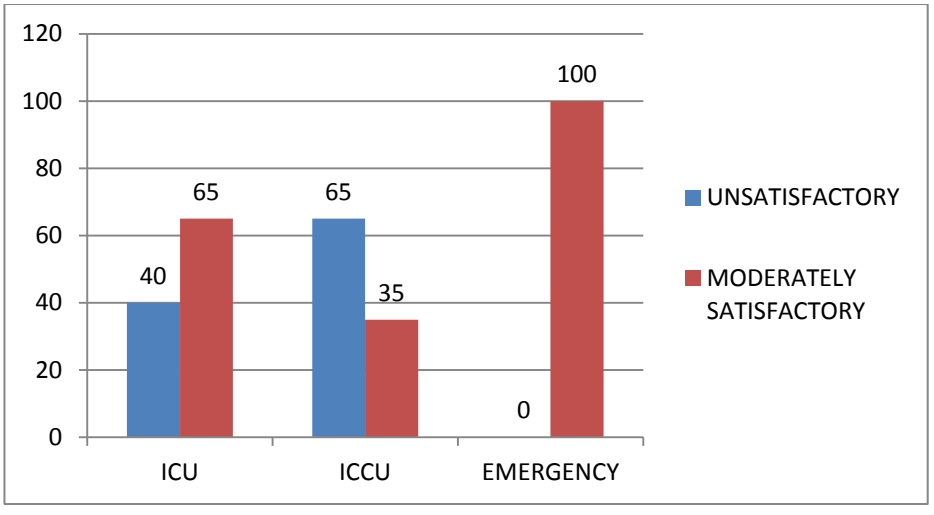


Figure 7 shows that in ICU 40% of nurses are unsatisfactory & 65% nurses are moderately satisfactory. In ICCU 65% are unsatisfactory & 35% of nurses are moderately satisfactory and in case of emergency 0% nurses are unsatisfactory & 100% nurses are moderately satisfactory.

SECTION-B

Table - 1 Assessment of level of Practice on Emergency drug distribution system among Nurses

Practice Levels	Respondent	
	Number	Percent
Unsatisfactory (< 50%)	21	42.00
Moderately satisfactory (51-75%)	29	48.00
Total	50	100.00

Table showing the total practice level of the subjects

Table 1 shows that 21(42 percent) of the subjects have unsatisfactory level of practice and 29(58 percent) were moderately satisfactory

Table - 2 Aspect wise Mean Practice on Emergency drug distribution system among Nurses

No.	Practice Aspects	Statements	Max. score	Range score	Practic		
					Mean	Mean %	SD%
I	Location	3	3	1-3	2.72	90.7	19.1
II	Maintenance	11	11	1-10	4.84	44.0	20.5
III	Arrangement	8	8	2-7	5.30	66.3	16.0
IV	Post emergency nursing action	3	3	0-2	0.74	24.7	25.9
V	Credentials of nurses	2	2	0-2	0.26	13.0	24.3
	Total	**27**	**27**	**8-20**	**13.86**	**51.3**	**13.7**

Table 2: Depicts the aspect wise mean practice on emergency drug distribution system among Nurses.

The above table is interpreted as follows:

The range of score on location of drug distribution was 1-3. Subjects scored a mean score of 2.72, the mean practice score percent was 90.7 and the standard deviation score was 19.1

The range of score on maintenance of drug distribution was 1-10. Subjects scored a mean score of 4.84, the mean practice score percent was 44.0 and the standard deviation score was 20.5. The range of score on arrangement of drug distribution was 2-7. Subjects scored a mean score of 5.30, the mean practice score percent was 66.3 and the standard deviation score was 16.0

The range of score on post emergency nursing action of drug distribution was 0-2. Subjects scored a mean score of 0.74, the mean practice score percent was 24.7 and the standard deviation score was 25.9 The range of score on credentials of nurses was 0-2. Subjects scored a mean score of 0.26, the mean practice score percent was 13.0 and the standard deviation score was 24.3

Table 3:

Association between practice score and demographic variables.

Sl. No.	Demographic Variables	Practice						X^2	df	P Value
		Unsatisfactory		Moderately Satisfactory		Total				
		N	%	N	%	N	%			
1	Age 23-25 26-27 28-31	14 6 1	63.6 30.0 12.5	8 14 7	36.4 70.0 87.5	22 20 8	22 20 8	8.27*	2	0.016
2	Gender Male Female	6 15	40.0 42.9	9 20	60.0 57.1	15 35	15 35	0.04	1	0.851
3	Marital Status Single Married	19 2	48.7 18.2	20 9	51.3 81.8	39 11	39 11	3.28	1	0.070
4	Professional Qualification Diploma Graduate	19 2	48.7 18.2	20 9	51.3 81.8	39 11	39 11	3.28	1	0.070

5	Total experience 1 Year 2-3 Year 4+ Year	 8 9 4	 42.1 60.0 25.0	 11 6 12	 57.9 40.0 75.0	 19 15 16	 19 15 16	3.89	2	0.143
6	Area of Working ICU CCU Emergency	 8 13 0	 40.0 65.0 0.0	 12 7 10	 60.0 35.0 100.0	 20 20 10	 20 20 10	11.62*	2	0.003

* Significant at 5 % level

Table no.1 shows association between selected demographic variables and practice of drug distribution .There is no significant association between variables like gender, marital status, and professional qualification and total experiences of the staff nurses. Significant association is found between age and area of working with the practice of drug distribution.

Association between age and practice level on emergency drug distribution system.

Chi-Square value obtained (8.27) denotes a significant association between age of the staff nurses and their level of practice.63.6 percent (23-25 years of age) are under unsatisfactory level of practice where as 87.5 percent (28-31 years of age) are under moderately satisfactory level of practice. Findings thus far suggest that as age increases responsibility of practices also increases.

Association between area of working and practice level on emergency drug distribution system:

Chi-Square value obtained (11.62) denotes a significant association between area of working of the staff nurses and their level of practice100.0 percent of the staff nurses (10) working in emergency departments are showing moderately satisfactory level of practice and 65 percent (13) staff nurses who are working in CCU departments show unsatisfactory level of practice.

CHAPTER 7: DISCUSSION

The present study was conducted with an objective to assess the practice of organized drug distribution system among nurses in Asian heart, Mumbai. In order to achieve the objectives of the study a descriptive observational approach was adopted and Convenience sampling technique was used to select the samples. The study was conducted over a period of 20 days. The data was collected from 50 subjects by using observational checklist. The instrument consists of two sections.

Section A: Demographic data

Section B: Checklist to assess the practice of staff nurses regarding drug distribution.

The objective was to assess the practice of nurses regarding organized drug distribution system.

The practice regarding drug distribution system was assessed and tabulated in table 2. It reveals that out of 50 subjects 21 (42%) had unsatisfactory level of practice and 29 (58%) of staff nurses had moderately satisfactory levels. The overall mean practice score percent was 51.3 with a standard deviation of 13.7. These findings show none of the subjects have highly satisfactory level of practice.

The objective was to find out the association between practice of nurses and selected variables and finally develop a standard protocol for drug distribution system.

The relationship of nurse's practice regarding drug distribution system and demographic variables are shown in table 1. There is no significant relationship found with any of the listed demographic variables like gender, marital status, professional qualification and total experience.

There was inferential significance found with the age, area of working and practice of the staff nurses regarding drug distribution.

The standard protocol is developed.

Demographic variables of the subjects.

In the present study it was found out that

- 22 (40percent) of the subjects were in the age group of 23-25 years, 20 (40percent) were of 26-28 years and 8(16 percent) of 29-31 years of age.
- 15 (30 percent) of the subjects were males and 35 (70 percent) were females.
- 39 (78 percent) of the subjects were single and 11(22 percent) were married.
- 39 (78 percent) of the subjects were diploma and 11 (22 percent) were graduates.
- 20 (40 percent) of the subjects were working in ICU, another 20 (40 percent) were in CCU and 10 (20 percent) were working in Emergency departments.

- 19 (38 percent) were having 1 year of experience, 15 (30 percent) were having 2-3 years of experience and 16 (32 percent) of the subjects were having 4+years of experience.

LIMITATIONS

- The sample size was less , if it will be more than the accuracy of the result can be increased.
- The time period was less i.e. is 3 weeks , if time period will be increased than the accuracy of the result can be increased.

CHAPTER 8: RECOMMENDATIONS

1. **Nursing Education:** The present study emphasizes on enhancement in the practice of staff nurses regarding organized drug distribution system. In order to achieve these nurse educators should come forward to provide more information and practice opportunities to the student nurses.

2. **Nursing Practice:** Nurses are the key person of the health team, who play a major role in the health promotion and maintenance of the health status. The protocol developed in the present study will serve to improve the nurse's practice on drug distribution. In-service education and training programs can be organized to improve the practice levels of the staff nurses.
3. **Nursing Research:** The findings of the present study serve as the basis for the professionals for further research studies. The generalization of the study result can be made by replication of the study. The essence of research is to build a body of knowledge in nursing, as it is an evolving profession striving for perfection and standard.
4. The study can be replicated on a larger sample in a different setting.
5. Follow up study can be done to evaluate the effectiveness of protocol.
6. A similar study can be conducted on nursing students.
7. A similar study can be conducted to assess the knowledge and practice of nurses regarding drug distribution system

CHAPTER 9: CONCLUSION

The present study was undertaken to assess the practice of nurses regarding organized drug distribution system and to associate it with selected demographic variables.

Objectives of the study were:

1) To develop a standard operating protocol for drug distribution system for Asian Heart Hospital

2) To assess the level practice of nurses and hospital regarding organized drug distribution system

3) To recommend course of action for adoption to SOPs for identified gaps in practices.

Assumption:

- It is assumed that nurses lack efficiency in utilization of organized drug distribution system.

The following are the conclusions drawn from the study:

- 21 (42percent) of subjects had unsatisfactory level of practice and 29 (58percent) of staff nurses had moderately satisfactory levels. These findings show none of the subjects have highly satisfactory level of practice regarding organized drug distribution.
- The overall range of practice score was between 8-20, mean practices score percent was 51.3 with a standard deviation of 13.7.
- There is no significant relationship found with any of the listed demographic
- Variables like gender, marital status, professional qualification and total experience.
- There is significant association found between age, area of working and practice of the staff nurses regarding drug distribution.
- None of the subjects had satisfactory level of practice (>75 percent)

ANNEXURE

QUESTIONNAIRE

Section-A (Demographic Data)

1. Code Number :
2. Age (Years) :
3. Gender :
   A) Male :
   B) Female :

4. Marital Status :
   A) Single :
   B) Married :
   C) Widow :

5. Professional qualification :
   a) Diploma :
   b) Graduates :
6. Total experience (Years) :
7. Area of working (ward) : ICU/CCU/Emergency
8. In- service training undergone :

   a) Yes :
   b) No :

QUESTIONNAIRE

Section –B (Drug Distribution Checklist)

EMERGENCY DRUG DISTRIBUTION CHECKLIST

	YES / NO
1. Are emergency drug distributions available at emergency treatment areas?	☐ ☐
2. Are the emergency drug distributions conveniently located?	☐ ☐
3. Does the emergency drug distribution have a list of medications & I-V fluids?	☐ ☐
4. Does the emergency drug distribution have the stock list of equipments?	☐ ☐
5. Are the medications & I V fluids were labeled properly?	☐ ☐
6. Are the medications arranged according to their actions?	☐ ☐
7. Are the drawers of the drug distribution clearly labeled?	☐ ☐
8. Are the medications arranged in sequence and in order?	☐ ☐
9. Are the medications checked periodically & exchanged based on the expiry date?	☐ ☐
10. Are the sterile items checked for package integrity?	☐ ☐
11. Is the inventoried equipment checked monthly i.e. laryngoscope batteries working?	☐ ☐
12. Is the drug distribution periodically monitored by the ward in charge?	☐ ☐
13. Is inventoried equipment checked daily on each shift?	☐ ☐
14. Is the equipment inventory documentation updated, as per changes?	☐ ☐
15. Is the vital signs monitor checked and appropriately documented for performance on both battery and electrical current?	☐ ☐

16. Are the emergency drug distributions accessible to all wards/departments during emergency? ☐ ☐
17. Is there skilled nursing personal assigned to monitor drug distribution? ☐ ☐
18. Is there a special training certification record maintained in the credential file? ☐ ☐
19. Is the in charge paying careful attention to rearrange the drug distribution after each use? ☐ ☐
20. Is the oxygen cylinder secured to the drug distribution by a portable stand? ☐ ☐
21. Is the oxygen level of all oxygen cylinders checked on a weekly basis? ☐ ☐
22. Is the oxygen cylinder check and documented? ☐ ☐
23. Are the cylinders serviced on a regular basis? ☐ ☐
24. Is the drug distribution kept locked unless in use? ☐ ☐
25. Is experience learned from an emergency response discussed openly with other Staff? ☐ ☐
26. Are quality improvement processes implemented to promote the emergency response process? ☐ ☐
27. Is there sufficient space for storage of drugs ☐ ☐

ANNEXURE

EVALUATION CRITERIA CHECK LIST

Each correct response carries One mark, incorrect response carries Zero marks.

Total Score	- 27
Unsatisfactory	- < 50%
Moderately satisfactory	- 51-75%
Satisfactory	- >75%

PROTOCOL

This protocol is a recommended guideline to be used where applicable to establish policy and procedure for drug distribution.

DEFINITION

Drug distribution

A drug distribution - is a special cart (with drawers) containing emergency drugs and equipment needed for cardiac-pulmonary resuscitation. It provides an easier access to the emergency drugs and equipment.

PURPOSE

To have the drug distribution and Defibrillator constantly ready for use in case of life threatening condition such as cardiopulmonary arrest. To establish standard practice, which is required to maintain and utilize the drug distribution and the defibrillator. The Drug distribution policy will assist nursing staff to:

- Describe the role of nursing staff in maintaining drug distribution medication and equipment.
- Establish a uniform method of documentation and inspection of emergency medication and equipment.
- Establish a procedure of topping-up (re supplying) drug distribution.
- Establish the quantity of medication and equipment required as well as the location of these items in the drug distribution.
- Describe the exact location of the drug distribution.

RESPONSIBILITY:

a. All nurses should be familiar with the contents and locations of all medication and equipment in the drug distribution

b. Drug distributions should be available in all clinical areas stocked with medication and equipment needed for immediate emergency interventions. All supplies in the drug distribution should be maintained and topped-up on an ongoing basis. In addition, periodic inspection will assure that there are not outdated drugs and/or supplies in the cart

c. A staff nurse should be responsible for checking the drug distribution including all external contents e.g. oxygen cylinder levels, defibrillator, and document on drug distribution checklist.

d. Drug distribution should be kept locked unless in use. If opened and/or used, the cart should be checked and topped-up (as per institutional policy).

e. The defibrillator shall be checked and appropriately documented for performance on both battery and electrical current once every 24 hours (according to user manual). The defibrillator will remain plugged into an electrical outlet at all times, except during battery testing. The Biomedical Department should be contacted immediately when a defibrillator problem is detected.

f. Sterile items should be checked for package integrity and expiry date. Items with expiry dates within a month should be replaced.

g. Laryngoscopes should be checked prior to placement on the cart.

h. Oxygen cylinders (2) should be replaced when the tank has < 500 psi. . Full tanks are obtained from General Stores on an exchange basis. Keep one always full.

i. Pharmacy should check all emergency carts for proper medication storage, stock level,

and unit inspection log as determined by Pharmacy policy (as per institutional policy).

j. The drug distribution checklists and test load strips should be maintained for each drug distribution for 12 months (after use).

k. Drawers of drug distributions should be clearly labeled to identify contents in general categories e.g. medication, cardiac/chest procedures, circulation, breathing, and airway.

l. The Drug distribution should be kept always in sight and in reachable place.

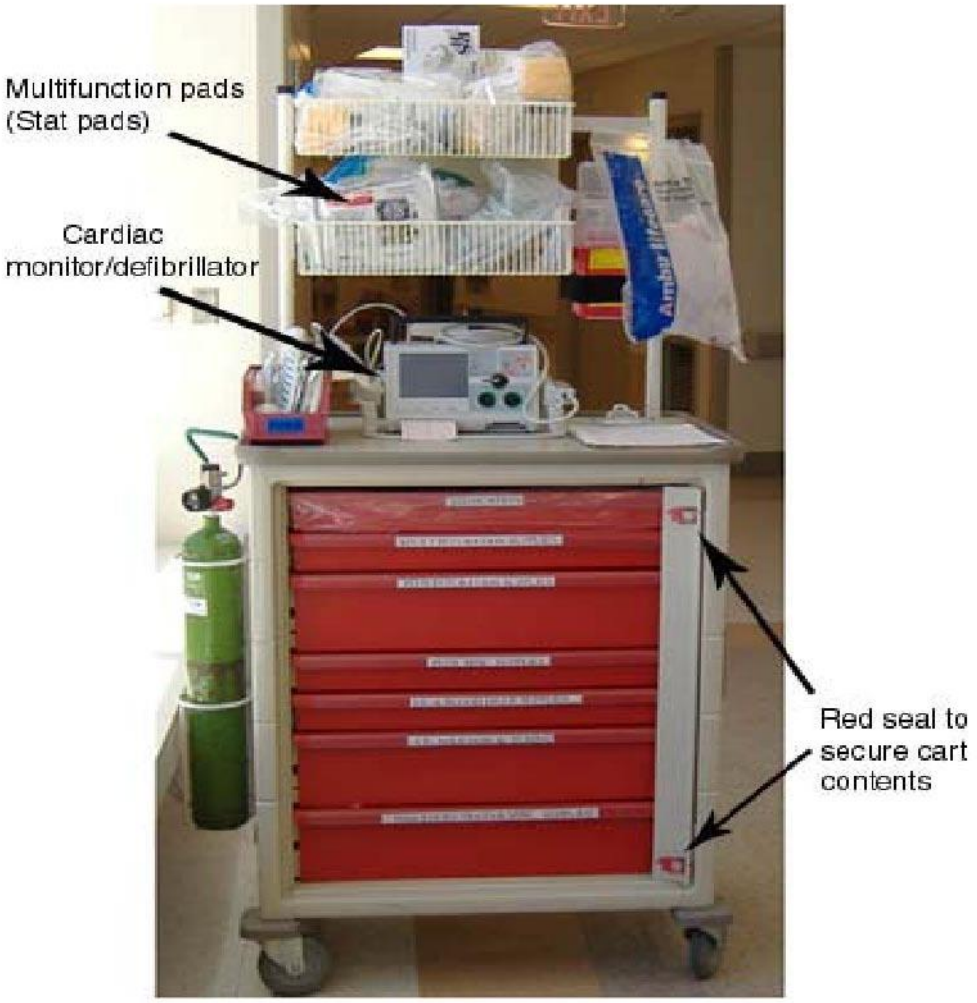
m. The list of medication and equipment to be maintained in the drug distribution should be determined by the Cardiopulmonary Resuscitation (CPR) Committee (as per institutional policy).

n. The Unit Staff should be responsible for weekly inspection, maintenance and replacement of drugs in the drug distribution (as per institutional policy).

o. The staff nurse should be knowledgeable of the drug distribution contents and location to prevent any delay during cardiac arrest.

p. The staff nurse should be responsible for cleaning the carts, inspecting and replacing emergency drugs as well as checking the defibrillator, cardiac monitor, autoclaved items, and oxygen tank.

DRUG DISTRIBUTION



Drug distribution Drawer

Equipment (external)

Sl.No.	Particulars		Qty
1.	Defibrillator with E.C.G leads	:	1
2.	Electrode Jelly / Pads	:	1
3.	Resuscitation Bag (Mask Valve Bag Set) with different sizes	:	1
4.	Pulse oxy meter	:	1
5.	Resuscitation Record sheet	:	1
6.	Resuscitation board	:	1
7.	I.V. Stand	:	1
8.	Clock timer	:	1
9.	Sphygmomanometer	:	1
10.	Oxygen cylinder on the side of trolley for O2 Administration	:	1
11.	O2 Cylinder Key	:	2

Drug distribution Drawer Emergency Medications

SN	Item	Stock
01	Adenosine 6mg/2mlvial	
02	Amiodarone 150mg/3ml ampule	
03	Epinephrine 1mg/Ml1:1000	
04	Epinephrine 1 Mg/10ml 1:10000 (Minijet syringe)	
05	Magnesium Sulfate 1 Gm/2ml vial 50%	
06	Naloxone O.4mg/Ml 1ml Ampule	
07	Nitroglycerin (Tridil) 50mg/10ml vial	
08	Nitroprusside 50mgVial	
09	Norepinephrine 4mg/4ml ampule	
10	Vasopressin 20U/Ml 1mlvial	
11	Verapamil (Isoptin) 5mg/2ml vial	
12	Sodium Chloride 0.9% 10ml Flush	
13	Dobutamine250mg	
14	Dopamine200mg/5ml	
15	Atropine 1mg/10ml (Minijetsyringe)\	
16	Atopine0.6mg/l	
17	Calcium Chloride10%	
18	Calcium Gluconate10%	
19	Dextrose5%	
20	Lidocaine 100mg/5ml (Minijet syringe)	
21	Lidocaine 2%(vial)	
22	Sodium Bicarbonate 8.4%	
23	Isoprenaline (Isopril) 2mg/2ml	
24	Distilled Water vial	

NOTE

It is recommended to have more than single dose patient as per Advanced Cardiac Life Support (ACLS) policy. Aspirin, Nitroglycerine tablet and Morphine (if there is a narcotic lock) could be added.

Special medications (Aminophilline, Hydrocortisone, Inderal, Digoxine, Dilitizem, Lasix) could be added in critical specialized units preferably in CCU and Accident & Emergency

Drug distribution Drawer Breathing and Airway Equipment

SN	Item	Stock
1.	Oxygen Face Mask (High Flow): Different sizes	
2.	Oropharangeal Set: Different sizes	
3.	Laryngoscope Airway: Different sizes	
4.	Nasopharangeal Airway: Different sizes	
5.	Laryngeal Mask	
6.	Lubricant (preferably Lidocaine gel)	
7.	2 C Cell Batteries	
8.	1 Laryngoscope Light Bulb	
9.	Mouth Gag	
10.	Adhesive Tape or pre-made ET Tube Holder	
11.	Oral Yankauer suction catheter	
12.	Straight Connector	
13.	ET Tube: 2 each size	
14.	Disposable Gloves	
15.	Megills Forceps	
16.	Scissor	
17.	Intubation Stylet: Different sizes	
18.	Tracheotomy set	

Drug distribution Drawer Circulation IV Supplies

SN	Item	Stock
1.	Cannula: 2 each of different sizes	
2.	3-Way Y Stopcocks	
3.	Blood Tubes	
4.	Needles: Different sizes	
5.	Alcohol Swabs	
6.	Betadine swaps (if available)	
7.	Adhesive Plaster	
8.	I.V Set	
9.	Syringes: Different sizes	
10.	Disposable Raser	
11.	Micro-dropper	

Drug distribution Drawer Intra-Venous Solutions

SN	Item	Stock
1.	Lactated Ringers 500ml	
2.	Normal Saline 0.9% 500ml (2 bottles)	
3.	Dextrose 5 % Dextrose 10%	
4.	Dextrose 25%	
5.	Soda bicarbonate	

Drug distribution Drawer Cardiac and Chest Procedures

SN	Item	Stock
1.	EKG Electrodes	
2.	Sterile gloves, 2 pairs each size - small, medium, and large	
3.	2 Masks with face shields or masks and eye protection	
4.	Scalpels with blades	
5.	Dressings Gauze	
6.	Sharp Box	
7.	ECG paper roll and Jelly	

Note :

Some Drug distribution has limited number of drawers. However, it could be arranged as per the number of drawers available and partition could be improvised.
However, the Drug distribution should be maintained neat and tidy

REFERENCES

1. Mann H J. Pharmacy technology of the ICU: today and tomorrow. Cric CareClin.2000

2. Hospital And Clinical Pharmacy by A.V.Yadav, B.V.Yadav, Nirali Prakashan, Budhwar Peth, Jogeshwari mandir lane, Pune-411002

3. Defibrillator/Monitor/pacemakers. Health devices 2005 Jun;181-218

4. Drug distribution medical emergency kit (online) (cited 2006 April 14); Available from url:http//www. Miami-med.com/emergency kits.htm

5. Effective drug distribution utilization (online)1998 August(cited 2006 july 5).; Available from url:http://www.pubmed.gov.

6. 15. A study of patient care involving a unit dose system. Final report: University of Iowa; 1966. U.S.P.H.S. Grant # HM-00328-01.