

**Assessment of Medication Safety and Risk of Falls Using National
Patient Safety Goals (NPSG) 3 and 9**

**Internship Training
at
Bhakra Beas Management Board Canal Hospital,
Nangal Town Ship**

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**Under the guidance of
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**Post Graduate Diploma in Hospital & Health Management
2012–14**


**Institute of Health Management Research
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TO WHOMSOEVER MAY CONCERN

This is to certify that Dr. Nipun Kanwar student of Post Graduate Diploma in Hospital and Health Management (PGDHM) from Institute of Health Management Research, Jaipur has undergone dissertation at B.B.M.B Hospital Nangal TownShip, Nangal from 3rd February 2014 to 30th April 2014.

The candidate has successfully carried out the study designated to her during dissertation and her approach to the study has been sincere, scientific and analytical.

The internship is in fulfilment of the course requirements.

I wish her all success in all her future endeavours.



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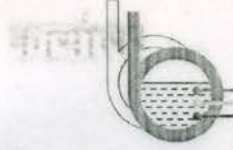
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राष्ट्र गौरव भाखडा व्यास प्रबंध बोर्ड

The certificate is awarded to Dr. Nipun Kanwar In recognition of having successfully completed her dissertation in the department of Quality and has successfully completed her project on 'assessment of National Patient Safety Goals(NPSG) 3 and 9 at B.B.M.B Hospital Nangal Township' .Date- 1st May 2014
Organization - B.B.M.B Hospital Nangal Township. She comes across as a committed, sincere and diligent person who has a strong drive and zeal for learning.
We wish her all the best for future endeavours

Dissertation duration : Feb 3rd 2014 to April 30th 2014

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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled 'Strengths of B.B.M.B Hospital Nangal Township to fulfil the requirements of National Patient Safety Goals (NPSG) 3 and 9' and submitted by Dr. Nipun Kanwar. Enrollment No. IIHMR/PGDHM/2012-14/17-1352 Under the supervision of Dr. Nutan .P. Jain for award of Postgraduate Diploma in Hospital and Health Management of the Institute carried out during the period from 3rd February 2014 to 30th April 2014 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

Nipun

Signature

Abstract

The National Patient Safety Goals (NPSG) was established to address specific areas of concern in regards to patient safety. The goals highlight problematic areas in health care and describe evidence and expert- based consensus to solutions to these problems. Fulfilling the requirements of the National Patient Safety Goals (NPSG) – (3 and 9) and working in a holistic manner for the same ensures proper patients' safety. The hospital should be oriented towards attaining and maintaining the National Patient Safety Goals. The study aims at improving the quality of the hospital in terms of patient safety. A hospital, not able to fulfil the requirements of the NPSG, would not only increase the harm potential to the patients but also bring n a bad name for the hospital. The study is conducted at a hundred bedded Government Hospital to assess the compliance of the hospital for NPSG 3 and 9. NPSG 3 takes in account the safety of using medications. NPSG 9 measures the risk of patient harm resulting from falls. On the basis of observation and checklists, the compliance percentage of the Male ward, Female ward, Emergency, Medical Store and Operation Theatre is calculated department wise and patient wise. The compliance percentage gives us a clear picture of the efforts required to match the hospital's performance to the standards. Recommendations suggested are a help for the same.

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Table of Contents

Topic No.	Title	Page No.
1	Introduction	18
1.1	Aim and Objectives	19
1.2	Rationale	19
2	Literature Review	21
3	Methodology	28
3.1	Study design and methods	28
3.2	Methods and tools of data collection	30
3.3	Data Analysis	38
3.4	Data Management	38
4	Results	39
4.1	Labelling of containers of medications and solutions	39
4.1.1	Female Ward	39
4.1.2	Male Ward	40
4.1.3	Operation Theatre	42
4.1.4	Medical Store	42
4.1.5	Emergency	45
4.2	Sound alike look alike drugs	47
4.2.1	Female Ward	47
4.2.2	Male Ward	47
4.2.3	Operation Theatre	48
4.2.4	Medical Store	48
4.2.5	Emergency	49
4.3	Drugs available at the hospital	49
4.3.1	Female Ward	49
4.3.2	Male Ward	50
4.3.3	Operation Theatre	51
4.3.4	Medical Store	51
4.3.5	Emergency	52
4.4	High alert medication	53
4.4.1	Female Ward	53
4.4.2	Male Ward	54
4.4.3	Operation Theatre	55
4.4.4	Medical Store	56
4.4.5	Emergency	57
4.5	High alert medication (Patient wise data collection)	58
4.6	Patient medication information and communication	59
4.7	Fall risk assessment	60
4.8	Observation	60
4.9	Footwear	61
4.10	Belts and brakes usage	61
4.11	Other parameters	62
5	Discussion	69
6	Conclusion and suggestions	70
7	Appendix	73

List of figures

Figure No	Title	Page #
Figure 1	Department wise compliance percentage of different departments for NPSG 3	65
Figure 2	Overall compliance percentage for all the departments for different parameters of NPSG 3	67
Figure 3	Compliance percentage of different departments for the indicator- labelling of containers of medications and solutions	73
Figure 4	Compliance percentage of different departments for the indicator- sound alike look alike drugs	73
Figure 5	Compliance percentage of different departments for indicator- drugs available at the hospital	73
Figure 6	Compliance percentage of different departments for indicator- High alert medications	74
Figure 7	Compliance percentage of hospital for all the indicators of NPSG 9	76

List of tables

Table No	Title	Page #
Table 1	Total number and categories of respondents under study	29
Table 2	Indicators, parameters and variables used for assessing medications safety	31
Table 3	Status of labelling of containers of medications and solutions for female ward	39
Table 4	Status of labelling of containers of medications and solutions for male ward	42
Table 5	Status of labelling of containers of medications and solutions for Operation theatre	42
Table 6	Status of labelling of containers of medications and solutions for medical store	43
Table 7	Status of labelling of containers of medications and solutions for emergency	45
Table 8	Status of sound alike look alike drugs for female ward	47
Table 9	Status of sound alike look alike drugs for male ward	47
Table 10	Status of sound alike look alike drugs for operation theatre	48
Table 11	Status of sound alike look alike drugs for medical store	48
Table 12	Status of sound alike look alike drugs for emergency	49
Table 13	Status of drugs available at the hospital for female ward	49
Table 14	Status of drugs available at the hospital for male ward	50
Table 15	Status of drugs available at the hospital for operation theatre	51
Table 16	Status of drugs available at the hospital for medical store	52
Table 17	Status of drugs available at the hospital for emergency	52
Table 18	Status of high alert medications for female ward	53
Table 19	Status of high alert medications for male ward	54
Table 20	Status of high alert medications for operation theatre	55
Table 21	Status of high alert medications for medical stores	56
Table 22	Status of high alert medications for emergency	57
Table 23	Status of high alert medications (patient wise data collection)	58
Table 24	Status of patient medication information and communication	59
Table 25	Status of observation	60
Table 26	Status of footwear	61
Table 27	Status of belts and brakes usage	61
Table 28	Status of other parameters	62
Table 29	Number of positives required for 100% compliance percentage for assessment of medication safety	63
Table 30	Number of positives required for 100% compliance percentage for assessment of risk of fall	63
Table 31	Department and patient wise and compliance percentage for NPSG 3	63
Table 32	Department wise data collection and patient wise data collection and calculated compliance percentage for NPSG 3	65
Table 33	Compliance percentage of the hospital for all indicators of NPSG 9	67

Table 34	Compliance percentage of the hospital for all indicators of NPSG 9	67
Table 35	Overall compliance percentage of hospital for NPSG 3	69
Table 36	Value of 'N', 'A', 'B' and compliance percentage for NPSG 3 for all departments	75
Table 37	Value of 'N', 'A', 'B' and compliance percentage for NPSG 9	77

List of symbols and abbreviations

NPSG 3- National Patient Safety Goal 3

NPSG 9- National Patient Safety Goal 9

B.B.M.B- Bhakra Beas Management Board

N- Total number of positives required for hundred percent compliance percentages

A-Total number of positives calculated

B- Total number of 'not-applicable' cases calculated

AIDS- Acquired immuno- deficiency syndrome

WHO- World Health Organisation

NPSA- National Patient Safety Agency

LASA Drugs- Look alike sound alike drugs

JCI- Joint Commission International

CDC- Centres for Disease Control and Prevention

IPD Patients- In- patient department patients

PMO- Principal Medical Officer

UHID No.- Unique Hospital Identification Number

ICTC- Integrated counselling and testing centre

HIV- Human immuno- deficiency virus

OPD- Out Patient Department

PCMS- Punjab Civil Medical Services

ISMP- Institute of safe medication practices

ID Number- Identity number

Indicator 1-Labelling of containers of medications and solutions

Indicator 2-Sound alike look alike drugs

Indicator 3-Drugs available at the hospital

Indicator 4-High alert medications

Indicator 5-High alert medications (patient wise data collection)

Indicator 6-Patient medication information and communication (patient wise data collection)

FW-Female Ward

MW-Male Ward

EM-Emergency Department

OT-Operation Theatre

MS-Medical Stores

DISSERTATION

1.Introduction

Even minute errors in medications management can lead to varied serious or even lethal consequences. Proper management of medications is very important. Medication errors are more likely to be associated with harm than other medications; they cause harm more commonly, the harm they produce is likely to be more serious, and they have the highest risk of causing injury even when used correctly. Any error in high alert medications management can lead to unnecessary increased cost for both hospital and the patients. Known safe practices can reduce the potential for harm. So monitoring the adherence to the guidelines and requirements of NPSG becomes a very important job.

Falls among hospital in patients are common. Majority of in-patients' fall result in injury and some result in serious injury. Falls in the hospital affect young as well as old patients. Injuries due to falls increases healthcare costs. Prevention of falls in the hospital setting is therefore an important patient safety and public health issue. Because patient falls in hospitals are a major risk factor for fractures and other injuries, reducing falls is an important first step toward injury prevention, and any reduction in patient falls has clinical significance. Falls can be prevented, thus, monitoring this parameter becomes important.

If the hospital is not able to fulfil the requirements of the National Patient Safety Goals (NPSG), it would not only increase the harm potential to the patients but also bring in a bad name for the hospital. It is necessary for a hospital to have the strength to abide to the guidelines of National Patient Safety Goals (NPSG).

Research question: Is the hospital able to fulfil the requirements of the National Patient Safety Goals (NPSG) – (3 and 9)?

1.1 Aim and Objectives of the study

The study aims at improving the quality of the hospital in terms of patient safety and to check how efficiently a hospital of government setup is able to fulfil the requirements and standards of NPSG 3 and 9.

The objectives of the study are:-

- 1) To review the National Patient Safety Goals 3 and 9
- 2) To compare the existing situation of patient safety in the hospital with National Patient Safety Goals (NPSG) 3 and 9 using checklists and observation.
- 3) To calculate the compliance percentage of different departments on the basis of standards of NPSG 3 and 9
- 4) To suggest ways of improvement (if required) to fulfil the requirement of the NPSG 3 and 9.

For the purpose of study, NPSG 3 and 9 have been taken into consideration.

1.2 Rationale

During the initial days of the dissertation, while having a round of the hospital, it was noted that there was no provision of separate storage of high alert medications and there were no lists of drugs available, list of sound alike look alike drugs and high alert medications displayed anywhere in the hospital. Also, while having round of the hospital, it was noted that there are no bed belts, no wheelchair belts and brakes and there were no hand holds in the washrooms and toilets. So, NPSG 3 and NPSG 9 were selected for assessment for the purpose of study.

NPSG 3- Improve the safety of using medications

Medication administration has become more complex as a result of the increasing number of medications available and new routes of administration. The complexity of both medication use and the medication management process, especially in the in-patient setting, create a significant risk for hospitalized patients. Despite the widespread recognition of the hazards that medication use poses to patients, there are no widely accepted or standardized methods to measure the safety of medication use. Medication error can increase the cost, prolong hospital stay and increase the risk of death almost two fold. In addition to the morbidity and mortality, medication errors also contribute to increased health care costs.

NPSG 9- Reduce the risk of patient harm resulting from falls

Fall prevention is of critical importance, especially in a hospital setting. Falls represent a considerable problem in hospitals. Being hospitalized increases a person's risk for falls. This is because hospitalized persons are often weak from their illness. They may also be dizzy, light-headed or unsteady from their illness, medications, or other treatments. The risk of falling increases with age. A fall may result in fractures, lacerations, or internal bleeding, leading to increased health care utilization. The most common injuries related to falls include head injuries, wrist fractures, spine fractures and hip fractures. Falls are associated with increased length of stay, higher rates of discharge to nursing homes, and greater health care utilization. Falls can also cause

injuries that are not visible that are not visible to others, for example some people who experience a fall become fearful and worried that they will fall again.

2. Literature Review

The National Patient Safety Goals (NPSGs) were established in 2002 (became effective January 1, 2003) to address specific areas of concern in regards to patient safety. The goals highlight problematic areas in health care and describe evidence and expert-based consensus to solutions to these problems. The goals generally focus on system-wide solutions, wherever possible.

Every year, the goals and associated recommendations are re-evaluated; some may continue while others will be replaced because of emerging new priorities. New goals and recommendations are announced in July and become effective on January 1 of the following year.

- 1) According to the Institute of Medicine's Preventing Medication Errors, the average hospitalized patient is subject to at least one medication error per day. This confirms previous research findings that the medication errors represent the most common patient safety error. Of these errors, about twenty percent are believed to result in harm.
- 2) Since patient safety was brought to light in 1990s, studies have shown a staggering number of patients harmed by preventable medical errors. Medical errors are one of the Nation's leading causes of death and injury. More people die from medical errors than from car accidents, breast cancer or AIDS.

- 3) The World Health Organization (WHO) estimates that one out of every ten patients worldwide is impacted by these errors. Medication administration errors account for 34% of all medication errors and identified as one of the important reasons for patients' morbidity and mortality.
- 4) In 2007, National Patient Safety Agency (NPSA) statistics shows that 59.3% of medication errors occur during the administration stage. The rate of falls ranges from 1.7 to 25 falls per 1000 patient days. Falls are the leading cause of injury in people, especially aged 65 and older. The risk of falling increases with age. It shows that close to one- third of falls can be prevented. A number of practices have been shown to reduce the occurrence of falls, but these practices are not used systematically in all hospitals. Fractures occur in only 1-3 % of hospital falls, mostly in patients who have osteoporosis but such fractures, especially those of the hip and pelvis, carry considerable morbidity and mortality.

National Patient Safety Goals(NPSG) are as follows:

Goal 1- Improve the accuracy of patient identification.

Patient errors occur in virtually all aspects of diagnosis and treatment. The goal identifies the individual as the person for whom the service or treatment is intended and also to match the service or treatment to that individual. This confirms the correct patient, procedure and site.

Goal 2- Improve the effectiveness of communication among caregivers.

Verification of complete order or test result is important. Ineffective communication is the most frequently cited category of root causes of sentinel events. Effective communication, which is timely, accurate, complete, unambiguous, and understood by

the recipient, reduces error and results in improved patient safety. Accurate information about a patient's care, treatment and services, current condition and any recent or anticipated changes should be exchanged within the hospital's staff in order to meet patient safety goals.

Goal 3- Improve the safety of using medications.

Medication- related errors consistently rank at the top of all medical errors, which account for thousands of preventable deaths annually. Medicines have proven to be very beneficial for treating illness and preventing disease. This success has resulted in a dramatic increase in medication use in recent times. This increase in use and expansion of the pharmaceutical industry has also brought with it an increase in hazards, error and adverse events associated with medication use. There has been a massive increase in the number and variety of medications available. This increases the likelihood of drug interactions, side-effects and mistakes in administration. The process of delivering medications to patients is often shared by a number of health- care professionals. When medications are part of the patient treatment plan, appropriate management is critical to ensuring patient safety. High-alert medications are those medications involved in a high percentage of errors and/or sentinel events, medications that carry a higher risk for adverse outcomes, as well as look-alike, sound-alike medications. Drug concentrations used by the organisation should be standardized and limited. When medications are part of the patient treatment plan, appropriate management is critical for ensuring patient safety. The development of standardized systems has been shown to decrease errors and improve outcomes. Identification and annually reviewing the list of look-alike/ sound alike drugs (according to tables of LASA drugs given by JCI) used by the organisation

should be done and actions should be taken to prevent errors involving the interchange of these drugs.

Goal 4- Eliminate wrong-site, wrong- patient, wrong-procedure surgery

Wrong site, wrong person, wrong procedure surgery can be prevented if appropriate processes are in place. The intent is to establish and implement processes to always identify the correct site, correct person and correct procedure. This goal is not applicable any longer.

Goal 5- Improve the safety of using infusion pumps. This goal is not applicable any longer.

Goal 6- Improve the safety of clinical alarm systems

Clinical alarm systems are intended to alert caregivers of potential patient problems, but if they are not properly managed, they can compromise patient safety. In some situations, individual alarm signals are difficult to detect. Also, many patient care areas have numerous alarm signals and the resulting noise and displayed information tends to desensitize staff and cause them to miss or ignore alarm signals or even disable them. It is important for a hospital to understand its own situation and to develop a systematic, co-ordinated approach to clinical alarm system management. This NPSG focuses on managing clinical alarm systems that have the most direct relationship to patient safety.

Goal 7- Reduce the risk of health-care associated infections.

Patients continue to acquire health care associated infections at an alarming rate. Prevention and control strategies must be tailored to the specific needs of each hospital based on its risk assessment. Organisation needs to be in compliance with current Centres for Disease Control and Prevention (CDC) hand hygiene guidelines. This would

reduce the transmission of infectious agents by staff to patients, thereby decreasing the incidence of healthcare associated infections.

Goal 8- Accurately and completely reconcile medications across the continuum of care

Comparing the patient's current medications with those ordered for the patient while under the care of the organisation is done. Patients are most at risk during transitions in care across settings, services, providers, or levels of care. The development, reconciliation and communication of an accurate medication list throughout the continuum of care is essential in the reduction of transition- related adverse drug events. The complete list of medications should be provided to the patient on discharge from the organisation. This goal is not applicable any longer.

Goal 9- Reduce the risk of patient harm resulting from falls

There has been an increase in falls in the inpatients over the last five years. Falls account for a significant portion of injuries in hospitalized patients. In the context of the population it serves, the services it provides, and its facilities, the organization should evaluate its patients' risk for falls and take action to reduce the risk of falling and to reduce the risk of injury should a fall occur. The evaluation could include fall history, medications and alcohol consumption review, gait and balance screening, walking aids, assistive technologies and protective devices assessment and environmental assessments. Falls increase the length of hospital stay and not only have a physical impact on the patient that of discomfort, injury, increased morbidity or even death, but have an economic impact on the healthcare system. Falls also result in psychological implications for the patient with a decrease in self confidence and a fear of further falls. This contributes to a significant reduction in quality of life. This goal is applicable for

home care and nursing care centres since 2014. For the purpose of the study, the NPSG before the amendment of January 1, 2014 would be taken into consideration.

Goal 10- Reduce the risk of influenza and pneumococcal disease in institutionalized older adults.

Development and implementation of protocol for administration and documentation of flu vaccine should be done. Influenza and pneumonia combined represent the fifth leading cause of death in the elderly. Appropriate protocols are developed to determine whether or not to administer the flu vaccine to a resident. Protocols are developed to identify cases of influenza and to manage an outbreak. This goal is not applicable any longer.

Goal 11 – Reduce the risk of surgical fires

When surgical fires occur, they often result in serious injury and sometimes even death. The unique circumstances in the surgical environment (oxygen-rich atmosphere, flammable materials, and ignition sources), requires response and prevention strategies to be specific to the settings. Heat sources need to be controlled, fuel needs to be managed and guidelines need to be established to minimize oxygen concentration under drapes. Use of flammable materials and solutions should be avoided. This goal is not applicable any longer.

Goal 12- Implementation of applicable National Patient Safety Goals and associated requirements by components and practitioner sites

Provider organisations are required to promote implementation of these goals by their provider components and practitioners. This goal is not applicable any longer.

Goal 13- Encourage patients' active involvement in their own care as a patient safety strategy.

Communication with patients and families about all aspects of their care, treatment or services is an important characteristic of culture of safety. When residents know what to expect, they are more aware of possible errors and choices. Patients can be an important source of information about potential adverse events and hazardous conditions. The organisation should encourage patients and their families to report concerns about safety. This goal is not applicable any longer.

Goal 14- Prevent health care associated pressure ulcers.

Each patient's risk for developing a pressure ulcer should be assessed and actions to address the identified risks should be taken. Pressure ulcers continue to be problematic in all health care settings. Most pressure ulcers can be prevented and deterioration at Stage I can be halted. The use of clinical practice guidelines can effectively identify patients and define early intervention for prevention of pressure ulcers. This goal is applicable for nursing care centres only since 2014.

Goal 15- Identify safety risks inherent in its patient population.

Probabilistic risk assessment has been used to assess the designs of high hazard systems such as chemical engineering plants and space initiatives. Probabilistic risk assessment looks at events that contributed to adverse outcomes based on previous sentinel events and other data.

The organization identifies patients at risk of suicide. This applies to psychiatric hospitals and patients being treated for emotional or behavioural diseases in general hospitals. Suicide of a patient while in a staffed, round-the-clock care setting is a frequently reported type of sentinel event. Identification of individuals at risk for suicide

while under the care of or following discharge from a health care organisation is an important step in protecting these at-risk individuals.

These National Patient Safety Goals are given by the Joint Commission for ensuring patient safety in the health care organisations.

3. Methodology

3.1 Study design and methods:

Type of study: It is an observational study.

Location of study: The study is carried out at Bhakra Beas Management Board Canal Hospital, a hundred bedded hospital located at Nangal Township.

Study Respondents: IPD Patients (who access the services at the hospital) and staff of the hospital

Sample size: The effective duration for data collection is one month and interviewing and observing on an average eight (four + four for each goal) patients and staff members in a day is done. So, one hundred and twenty IPD patients for each goal are taken as sample. Therefore, a total of two hundred and forty patients are interviewed. A total of two hundred and forty patients' attendants (one for each patient) and a total of thirty three staff members (eighteen nurses, four doctors, six ward boys, one chief pharmacist, one Principal Medical Officer, two clerks of the record room and one pharmacist) are also interviewed. Patients to be studied are randomly (as per the availability, after completion of interview with a patient, another interview is started) selected from the wards of the hospital.

The following table shows the total number and categories of respondents interviewed and observed for the purpose of study and their distribution according to the different departments.

Table 1: Total number and categories of respondents under the study

Departments	Respondents									
	Patients	Patient Attendants	PMO	Chief Pharmacist	Doctors	Pharmacist	Nurses	Ward Boys	Clerks	Total
Female Ward	129	129	0	0	1	0	8	2	0	269
Male Ward	111	111	0	0	1	0	7	4	0	234
Emergency	0	0	0	0	1	1	1	0	0	3
Operation Theatre	0	0	0	0	1	0	2	0	0	3
Medical Store	0	0	0	1	0	0	0	0	0	1
Record Room	0	0	0	0	0	0	0	0	2	2
Administration	0	0	1	0	0	0	0	0	0	1
Total	240	240	1	1	4	1	18	6	2	513

3.2 Data collected: UHID No., date, patient name, diagnosis, and treatment provided, compliance with the standards and requirements of NPSG 3 and 9.

3.3 Methods and Tools of data collection:

- Interviews with the patients (who are observed under the study) and the staff of the hospital (nursing in-charge)
- Observation
- Checklists for NPSG 3 and NPSG 9.

For the purpose of the study and data collection, female ward, male ward, emergency department, operation theatre and medical store were visited everyday for thirty one days. For the purpose of analysis of NPSG 3, parameter of labelling of containers of medications and solutions, the medications and solutions stored at the above mentioned five departments were observed and the findings were noted down in the checklists, for parameter of sound alike look alike drugs , drugs available at the hospital and of high alert medications, the place of storage of drugs and records were observed for the list of drugs, for a separate storage for high alert medications were observed and findings were noted. For the purpose of patient wise data collection, bed side of the patients is checked for storage of high alert medications, patient files were checked for dilution and infusion rate of the high alert medications. Patient files are checked for prescription of the drugs, discharge slip is checked for instructions, dilution and infusion rate of the drugs and the medical schedule provided to the patient.

For the purpose of analysis of NPSG 9, parameter of fall risk assessment, patient files are checked for the diagnosis and investigations done, for the parameter of observation,

patients and staff is observed to find how efficient is the staff with observation of the patients, for the parameter of footwear, footwear, if provided to the patients, is observed for size, cleanliness, comfort and safety, for parameter of belts and brakes usage, the bed and wheelchair belts and brakes are observed and findings are noted in the checklists, for other parameters, call bells, furniture, flooring, night lamp, washrooms are observed for standards of safety.

For the purpose of study, indicators for NPSG 3 and 9 were established. Every indicator consists of various parameters which further have various variables in it.

The following table shows the indicators, parameters and variables for NPSG 3 and 9

Table 2: The indicators, parameters and variables used for assessing the medication safety and risk of falls.

Indicator	Parameter	Variables
Labelling of containers of medications and solutions	Product Name	Trade name printed
		Company's logo printed
	Batch Number	Batch number and expiry date positioned together
		At end panel
		Legible
		Ink used
		Use within 'xx' days(for topical)
	Expiry date of solution/ medication	Printed
		Date of manufacture printed
		First-in ,first-out method used
		Expiry, manufacture date, batch number together
		No embossing
	Storage Instructions	Temperature printed
		Moisture printed
		Refrigeration printed
		'This side up' printed
		'Protect from sunlight' printed
	Strength	Warning printed
		Strength printed
	Name of active ingredient	Trade name contains strength
	Dose form	Dose form printed
		Dosage instructions printed

	Bar code	Bar code printed
		Manufacturer's licence number printed
		Name and address of manufacturer printed
	Quantity	
	Diluents used	
Sound alike look alike drugs	List prepared	
	List sent to departments	Legible size and font
		List of all drugs available
	List pasted	List pasted
		Pasted at the storage place
Drugs available at the hospital	Printed list available	List printed and sent to departments
		Contains names of all available drugs
		Strength printed
		Number of units required printed
	Communication to staff	Annual meetings
		Weekly meetings
	List pasted	List pasted
		Pasted at the drug storage
	Legible font size and style	
High alert medications	In lock	In lock
	List displayed	List displayed
	Record book	Record book present
		Patient's name documented
		Patient's ID documented

		Diagnosis documented
		Date of transaction documented
		Name of prescribing doctor documented
		Legible handwriting
	Awareness	Staff is aware what is high alert medication
		Staff knows about the available high alert medication
		Staff is aware of importance of high alert medication
High alert medication (patient wise data collection)	Record book	Name documented
		ID documented
		Diagnosis documented
		Date of transaction documented
		Undersigned
		Signature is legible
	Not stored on patient's bedside	
	Dilution rate	Dilution rate in patient files documented
		Legible handwriting
		Undersigned
		Signature is legible
	Infusion rate	Infusion rate in patient files documented
		Legible handwriting
		Undersigned
		Signature is legible
Patient medication information and communication	Instructions in patient file	Medication prescribed
		Dilution rate
		Infusion rate
		Investigations

		Patient allergy
		Predisposing diseases
		Legible handwriting
	Instruction at time of discharge	Instructions given
		Dose and schedule instructed
		Language understood by patient
	Dilution rate documentation	Dilution rate documented
		Legible handwriting
		Undersigned
		Signature legible
	Infusion rate documentation	Dilution rate documented
		Legible handwriting
		Undersigned
		Signature legible
	Medication schedule	Given to patient
		Legible handwriting
		Language understood by patient
		Undersigned
		Signature legible
Fall risk assessment	Mental status	
	History of falls	
	Vision status	
	Gait and balance	
	Medication prescribed	
	Predisposing diseases	

Observation	Observation	Direct vision
		Glass window
	Attendant at night	
	Assisted during washroom visit	
	Shifting of patients under observation	
Footwear	Footwear provided	Provided
		On the day of admission
	Appropriate size	Appropriate size
		Not allergic
	Clean	Clean
		Replaced if not satisfactory
	Sole of footwear	Non- slip
		Not worn-out
	Elastic at hind end	Elastic present
		Not uncomfortable
	Trailing laces	
Belts and brakes usage	Bed belts present	
	Used	
	Used correctly	
	Bed brakes present	
	Used	
	Wheelchair belts present	
	Used	
	Used correctly	
	Wheelchair brakes present	
	Used	

Other parameter	Call bells present	
	Working	
	Mopping done	
	Mopping supervised for quality	
	Furniture	
	Hanging tubes/cables	
	Damaged floor	
	Night lamp present	
	Working condition	
	Hand holds	

After the data collection is complete, thirty one days for the department wise data collection and one hundred and twenty patients for each goal (total of two hundred and forty patients) is done, compliance percentage for each indicator is calculated.

3.4 Data analysis:

The compliance percentage is calculated in the following manner:

For each goal's each indicator, a hundred percent compliance percentage, total number of positives required is calculated. Let the total number of positives required for hundred percent compliance percentage of the indicator be 'N',

Let the total number of positives required for hundred percent compliance percentage of each variable of each parameter be 'n'

Then total number of positives documented in the checklists is calculated for each goal's each indicator. Let the total number of positives calculated be 'A',

Then total number of 'not-applicable' cases is calculated for each goal's each indicator.

Let the total number of 'not-applicable' cases be 'B',

$$\text{Compliance percentage} = A / (N - B) * 100$$

Compliance percentage can be calculated for every department separately, for every indicator of each goal and for all departments depending on different indicators.

3.5 Data Management:

The data is collected for the purpose of study only and no harm to any life or property was caused during the data collection. The data is collected with responsibility and taking care of the interests of the respondents ensuring quality of the same. The data is

collected and findings are documented in hard copy of checklists. After data analysis, report is made in soft and hard copy which is with the researcher, the institution (IIHMR, Jaipur) and the organisation (B.B.M.B Canal Hospital, Nangal)

4. Results

After calculating compliance percentage of all the departments on an overall basis and at variable levels, assessment of medication safety and risk from falls is done by comparing the compliance percentages of all the departments under study.

Assessment of medication safety

4.1 Labelling of containers of medications and solutions

4.1.1 Female Ward

The table shows that in majority of cases, the moisture of the medication and solutions is not printed. On none of the container, 'this side up' is printed. In majority of cases, the bar code is not printed.

Table 3: Status of labelling of containers of medications and solutions by different parameters for female ward (n=31)

Parameters	Variables	Observations		
		Present (%)	Not present (%)	Not Applicable (%)
Product Name	Trade name printed	31(100)	0	0
	Company's logo printed	30(96.7)	1(3.2)	0
Batch Number	Batch number and expiry date positioned together	31(100)	0	0
	At end panel	31(100)	0	0
	Legible	31(100)	0	0
	Ink used	31(100)	0	0
	Use within 'xx' days(for topical)	7(87.5)	1(12.5)	23(74.1)
Expiry date of solution/ medication	Printed	31(100)	0	0
	Date of manufacture printed	31(100)	0	0
	First-in ,first-out method used	31(100)	0	0
	Expiry, manufacture date, batch number together	31(100)	0	0
	No embossing	31(100)	0	0
Storage Instructions	Temperature printed	10(33.3)	20(66.)	1(3.2)

	Moisture printed	3(9.6)	28(90.3)	0
	Refrigeration printed	7(58.3)	5(41.6)	19(61.2)
	‘This side up’ printed	0	7(22.5)	24(77.4)
	‘Protect from sunlight’ printed	20(83.3)	4(16)	7(22.5)
	Warning printed	31(100)	0	0
Strength	Strength printed	31(100)	0	0
	Trade name contains strength	15(48.3)	16(51.6)	0
Name of active ingredient		31(100)	0	0
Dose form	Dose form printed	31(100)	0	0
	Dosage instructions printed	20(64.5)	11(35.4)	0
Bar code	Bar code printed	3(9.6)	28(90.3)	0
	Manufacturer’s licence number printed	30(96.7)	1(3.2)	0
	Name and address of manufacturer printed	31(100)	0	0
Quantity		25(92.5)	2(7.4)	4(12.9)
Diluents used		26(100)	0	5(16.1)

4.1.2 Male Ward

The table shows that in majority of cases, the moisture of the medication and solutions is not printed. On none of the container, ‘this side up’ is printed. In majority of cases, the bar code is not printed

Table 4: Status of labelling of containers of medications and solutions by different parameters for male ward (n=31).

Parameters	Variables	Observations		
		Present (%)	Not present (%)	Not Applicable (%)
Product Name	Trade name printed	31(100)	0	0
	Company’s logo printed	31(100)	0	0
Batch Number	Batch number and expiry date positioned together	30(100)	0	1(3.2)

	At end panel	30(100)	0	1(3.2)
	Legible	28(93.3)	2(6.6)	1(3.2)
	Ink used	30(100)	0	1(3.2)
	Use within 'xx' days(for topical)	5(71.4)	2(28.5)	24(77.4)
Expiry date of solution/ medication	Printed	30(100)	0	1(3.2)
	Date of manufacture printed	30(100)	0	1(3.2)
	First-in ,first-out method used	29(96.6)	1(3.3)	1(3.2)
	Expiry, manufacture date, batch number together	30(100)	0	1(3.2)
	No embossing	30(100)	0	1(3.2)
Storage Instructions	Temperature printed	10(33.3)	20(66.6)	1(3.2)
	Moisture printed	2(6.4)	29(93.5)	0
	Refrigeration printed	5(55.5)	4(44.4)	22(70.9)
	'This side up' printed	0	9(29)	22(70.9)
	'Protect from sunlight' printed	15(78.9)	4(21)	12(38.7)
	Warning printed	30(100)	0	1(3.2)
Strength	Strength printed	31(100)	0	0
	Trade name contains strength	9(29)	22(70.9)	0
Name of active ingredient		31(100)	0	0
Dose form	Dose form printed	31(100)	0	0
	Dosage instructions printed	11(35.4)	20(64.5)	0
Bar code	Bar code printed	5(16.1)	26(83.8)	0
	Manufacturer's licence number printed	31(100)	0	0
	Name and address of manufacturer printed	31(100)	0	0
Quantity		25(100)	0	6(19.3)
Diluents used		27(100)	0	4(12.9)

4.1.3 Operation Theatre

The table shows that in majority of cases, the moisture of the medication and solutions is not printed. Refrigeration is not written on majority of the containers. In majority of cases, the bar code is not printed.

Table 5: Status of labelling of containers of medications and solutions by different parameters for operation theatre (n=31)

Parameters	Variables	Observations		
		Present (%)	Not present (%)	Not Applicable (%)
Product Name	Trade name printed	31(100)	0	0
	Company's logo printed	31(100)	0	0
Batch Number	Batch number and expiry date positioned together	31(100)	0	0
	At end panel	31(100)	0	0
	Legible	27(87)	4(12.9)	0
	Ink used	31(100)	0	0
	Use within 'xx' days(for topical)	4(57.1)	3(42.8)	24(77.4)
Expiry date of solution/ medication	Printed	30(96.7)	1(3.2)	0
	Date of manufacture printed	31(100)	0	0
	First-in ,first-out method used	29(93.5)	2(6.4)	0
	Expiry, manufacture date, batch number together	30(96.7)	1	0
	No embossing	31(100)	0	0
	Temperature printed	0	0	31(100)
Storage Instructions	Moisture printed	2(6.45)	29(93.5)	0
	Refrigeration printed	1(3.2)	30(96.7)	0
	'This side up' printed	3(60)	2(40)	26(83.8)
	'Protect from sunlight' printed	0	16(51.6)	15(48.3)
	Warning printed	12(66.6)	6(33.3)	13(41.9)
		29(96.6)	1(3.3)	1(3.2)
Strength	Strength printed	30(96.7)	1(3.2)	0
	Trade name contains strength	15(48.3)	16(51.6)	0
Name of active ingredient		31(100)	0	0

Dose form	Dose form printed	29(96.6)	1(3.3)	1(3.2)
	Dosage instructions printed	14(46.6)	16(53.3)	1(3.2)
Bar code	Bar code printed	3(9.6)	28(90.3)	0
	Manufacturer's licence number printed	29(93.5)	2(6.4)	0
	Name and address of manufacturer printed	31(100)	0	0
Quantity		24(96)	1(4)	6(19.3)
Diluents used		27(96.4)	1(3.5)	3(9.6)

4.1.4 Medical Store

The table shows that in majority of cases, the moisture of the medication and solutions is not printed. Refrigeration is not written on majority of the containers. In no case, there is 'protect from sunlight' and 'bar code' written. In majority of cases, the bar code is not printed.

Table 6: Status of labelling of containers of medications and solutions by different parameters for medical stores (n=31)

Parameters	Variables	Observations		
		Present (%)	Not present (%)	Not Applicable (%)
Product Name	Trade name printed	31(100)	0	0
	Company's logo printed	31(100)	0	0
Batch Number	Batch number and expiry date positioned together	31(100)	0	0
	At end panel	31(100)	0	0
	Legible	31(100)	0	0
	Ink used	31(100)	0	0
	Use within 'xx' days(for topical)	1(50)	1(50)	29(93.5)
Expiry date of solution/ medication	Printed	31(100)	0	0
	Date of manufacture printed	31(100)	0	0
	First-in ,first-out method used	31(100)	0	0
	Expiry, manufacture date, batch number together	31(100)	0	0
	No embossing	31(100)	0	0
	Temperature printed	0	0	31(100)
Storage Instructions	Moisture printed	5(16.12)	26(83.8)	0

	Refrigeration printed	4(12.9)	27(87)	0
	‘This side up’ printed	3(50)	3(50)	25(80.6)
	‘Protect from sunlight’ printed	0	23(74.1)	8(25.8)
	Warning printed	9(64.2)	5(35.7)	17(54.8)
		30(96.7)	1(3.2)	0
Strength	Strength printed	31(100)	0	0
	Trade name contains strength	16(51.6)	15(48.3)	0
Name of active ingredient		31(100)	0	0
Dose form	Dose form printed	30(96.7)	1(3.2)	0
	Dosage instructions printed	8(25.8)	23(74.1)	0
Bar code	Bar code printed	0	31(100)	0
	Manufacturer’s licence number printed	31(100)	0	0
	Name and address of manufacturer printed	31(100)	0	0
Quantity		21(100)	0	10(32.2)
Diluents used		19(95)	1(5)	11(35.4)

4.1.5 Emergency

The table shows that in majority of cases, the moisture of the medication and solutions is not printed. Refrigeration is not written on majority of the containers. In no case, there is ‘protect from sunlight’ and ‘bar code’ written. In majority of cases, the bar code is not printed.

Table 7: Status of labelling of containers of medications and solutions by different parameters for emergency (n=31)

Parameters	Variables	Observations		
		Present (%)	Not present (%)	Not Applicable (%)
Product Name	Trade name printed	31(100)	0	0

	Company's logo printed	31(100)	0	0
Batch Number	Batch number and expiry date positioned together	31(100)	0	0
	At end panel	31(100)	0	0
	Legible	30(96.7)	1(3.2)	0
	Ink used	31(100)	0	0
	Use within 'xx' days(for topical)	14(93.3)	1(6.6)	16(51.6)
Expiry date of solution/ medication	Printed	31(100)	0	0
	Date of manufacture printed	31(100)	0	0
	First-in ,first-out method used	31(100)	0	0
	Expiry, manufacture date, batch number together	31(100)	0	0
	No embossing	31(100)	0	0
	Temperature printed	0	0	31(100)
Storage Instructions	Moisture printed	8(27.5)	21(72.4)	2(6.4)
	Refrigeration printed	1(3.3)	29(96.6)	1(3.2)
	'This side up' printed	7(58.3)	5(41.6)	19(61.2)
	'Protect from sunlight' printed	0	8(25.8)	23(74.1)
	Warning printed	10(83.3)	2(16.6)	19(61.2)
		28(96.5)	1(3.4)	2(6.4)
Strength	Strength printed	30(96.7)	1(3.2)	0

	Trade name contains strength	15(48.3)	16(51.6)	0
Name of active ingredient		30(96.7)	1(3.2)	0
Dose form	Dose form printed	31(100)	0	0
	Dosage instructions printed	17(54.8)	14(45.1)	0
Bar code	Bar code printed	3(9.67)	28(90.3)	0
	Manufacturer's licence number printed	31(100)	0	0
	Name and address of manufacturer printed	31(100)	0	0
Quantity		30(96.7)	0	1(3.2)
Diluents used		27(100)	0	4(12.9)

4.2 Sound alike look alike drugs

4.2.1 Female Ward

The table shows that in majority of cases the pasting of the list of drugs is not done.

Table 8: Status of sound alike look alike drugs by different parameters for female ward (n=31)

Parameter	Variables	Observation		
		Present (%)	Not present (%)	Not Applicable (%)
List prepared		13(72.2)	18(58)	0
List sent to departments	Legible size and font	13(100)	0	18(58)
	List of all drugs available	13(100)	0	18(58)
List pasted	List pasted	13(100)	0	18(58)
	Pasted at the storage place	5(38.4)	8(61.5)	18(58)

4.2.2 Male Ward

The table shows that out of 31, 25 cases are not applicable.

Table 9: Status of sound alike look alike drugs by different parameters in male ward (n=31)

Parameter	Variables	Observation		
		Present (%)	Not present (%)	Not Applicable (%)
List prepared		6(19.35)	25(80.6)	0
List sent to departments	Legible size and font	6(100)	0	25(80.6)
	List of all drugs available	6(100)	0	25(80.6)
List pasted	List pasted	6(100)	0	25(80.6)
	Pasted at the storage place	6(100)	0	25(0.6)

4.2.3 Operation Theatre

The table shows that out of 31 observations, 18 are not applicable.

Table 10: Status of sound alike look alike drugs by different parameters for operation theatre (n=31)

Parameter	Variables	Observation		
		Present (%)	Not present (%)	Not Applicable (%)
List prepared		13(41.9)	18(5)	0
List sent to departments	Legible size and font	13(100)	0	18(58)
	List of all drugs available	13(100)	0	18(58)
List pasted	List pasted	13(100)	0	18(58)
	Pasted at the storage place	13(100)	0	18(58)

4.2.4 Medical Store

The table shows that out of 31 cases, 25 are not applicable.

Table 11: Status of sound alike look alike drugs by different parameters in medical store (n=31)

Parameter	Variables	Observation		
		Present (%)	Not present (%)	Not Applicable (%)
List prepared		0	25(80.6)	6(19.3)
List sent to departments	Legible size and font	6(100)	0	25(80.6)
	List of all drugs available	6(100)	0	25(80.6)
List pasted	List pasted	6(100)	0	25(80.6)
	Pasted at the storage place	6(100)	0	25(80.6)

4.2.5 Emergency

The table shows that 58% of cases are not applicable.

Table 12: Status of sound alike look alike drugs by different parameters at emergency (n=31)

Parameter	Variables	Observation		
		Present (%)	Not present (%)	Not Applicable (%)
List prepared		13(41.9)	18(58)	0
List sent to departments	Legible size and font	13(100)	0	18(58)
	List of all drugs available	13(100)	0	18(58)
List pasted	List pasted	13(100)	0	18(58)
	Pasted at the storage place	13(100)	0	18(58)

4.3 Drugs available at the hospital

4.3.1 Female Ward

The table shows that in majority of cases the printing and sending and pasting of the list of drugs to the departments is not done.

Table 13: Status of drugs available at the hospital by different parameters in female ward (n=31)

Parameters	Variables	Observations		
		Present (%)	Not present (%)	Not Applicable (%)
Printed list available	List printed and sent to departments	5(16.2)	26(83.8)	0
	Contains names of all available drugs	5(100)	0	26(83.8)
	Strength printed	5(100)	0	26(83.8)
	Number of units required printed	5(100)	0	26(83.8)
Communication to staff	Annual meetings	31(100)	0	0
	Weekly meetings	10(32.2)	21(67.7)	0
List pasted	List pasted	3(9.6)	28(90.3)	0
	Pasted at the drug storage	3(100)	0	28(90.3)
Legible font size and style		3(100)	0	28(90.3)

4.3.2 Male Ward

The table shows that in majority of cases the weekly meetings of chief pharmacist and the staff is not conducted.

Table 14: Status of drugs available at the hospital by different parameters in male ward (n=31)

Parameters	Variables	Observations		
		Present (%)	Not present (%)	Not Applicable (%)
Printed list available	List printed and sent to departments	0	31(100)	0
Communication to staff	Annual meetings	31(100)	0	0
	Weekly meetings	10(32.2)	21(67.7)	0
List pasted	List pasted	16(51.6)	15(48.3)	0
	Pasted at the drug storage	16(100)	0	15(48.3)
Legible font size and style		16(100)	0	15(48.3)

4.3.3 Operation Theatre

The table shows that in majority of cases the printing of the list of drugs is not done, weekly meetings are not conducted in majority of cases

Table 15: Status of drugs available at the hospital by different parameters for operation theatre (n=31)

Parameters	Variables	Observations		
		Present (%)	Not present (%)	Not Applicable (%)
Printed list available	List printed and sent to departments	12(38.7)	19(61.2)	0
	Contains names of all available drugs	12(100)	0	19(61.2)
	Strength printed	12(100)	0	19(61.2)
	Number of units required printed	12(100)	0	19(61.2)
Communication to staff	Annual meetings	31(100)	0	0
	Weekly meetings	10(32.2)	21(67.7)	0
List pasted	List pasted	12(100)	0	19(61.2)
	Pasted at the drug storage	12(100)	0	19(61.2)
Legible font size and style		12(100)	0	19(61.2)

4.3.4 Medical Store

The table shows that in all of the cases a printed list is present but it is not pasted.

Table 16: Status of drugs available at the hospital by different parameters in medical store (n=31)

Parameters	Variables	Observations		
		Present (%)	Not present (%)	Not Applicable (%)
Printed list available	List printed and sent to departments	31(100)	0	0
	Contains names of all available drugs	31(100)	0	0
	Strength printed	31(100)	0	0
	Number of units required printed	31(100)	0	0

Communication to staff	Annual meetings	31(100)	0	0
	Weekly meetings	31(100)	0	0
List pasted	List pasted	0	31(100)	0
	Pasted at the drug storage	19(100)	0	12(38.7)
Legible font size and style		19(100)	0	12(38.7)

4.3.5 Emergency

The table shows that in majority of cases the printing and sending the list of drugs to the departments is not done, weekly meetings are not conducted in majority of case. In majority of cases, weekly meetings are not conducted.

Table 17: Status of drugs available at the hospital by different parameters for emergency (n=31)

Parameters	Variables	Observations		
		Present (%)	Not present (%)	Not Applicable (%)
Printed list available	List printed and sent to departments	19(61.2)	12(38.7)	0
	Contains names of all available drugs	19(61.2)	0	12(38.7)
	Strength printed	19(100)	0	12(38.7)
	Number of units required printed	19(100)	0	12(38.7)
Communication to staff	Annual meetings	31(100)	0	0
	Weekly meetings	10(32.2)	21(67.7)	0
List pasted	List pasted	19(100)	0	12(38.7)
	Pasted at the drug storage	19(100)	0	12(38.7)
Legible font size and style		19(100)	0	12(38.7)

4.4 High alert medications (Department wise data collection)

4.4.1 Female Ward

The table shows that in none of the cases, the high alert medications are kept in lock, the list is not displayed. In majority of cases, the name of prescribing doctor is not

documented. In majority of cases, the staff is not aware of the high alert medications and their importance.

Table 18: Status of high alert medications by different parameters in female wards (n=31)

Parameter	Variable	Observation		
		Present (%)	Not present (%)	Not Applicable (%)
In lock	In lock	0	31(100)	0
List displayed	List displayed	0	31(100)	0
Record book	Record book present	31(100)	0	0
	Patient's name documented	31(100)	0	0
	Patient's ID documented	31(100)	0	0
	Diagnosis documented	31(100)	0	0
	Date of transaction documented	31(100)	0	0
	Name of prescribing doctor documented	2(6.4)	29(93.5)	0
	Legible handwriting	20(64.5)	11(35.4)	0
Awareness	Staff is aware what is high alert medication	9(29)	22(70.9)	0
	Staff knows about the available high alert medication	9(100)	0	22(70.9)
	Staff is aware of importance of high alert medication	0	9(100)	22(70.9)

4.4.2 Male Ward

The table shows that in none of the cases, the high alert medications are kept in lock, the list is not displayed. In majority of cases, the name of prescribing doctor is not documented. In majority of cases, the staff is not aware of the high alert medications and their importance.

Table 19: Status of high alert medications by different parameters at male ward (n=31)

Parameter	Variable	Observation		
		Present (%)	Not present (%)	Not Applicable (%)
In lock	In lock	0	31(100)	0
List displayed	List displayed	0	31(100)	0
Record book	Record book present	31(100)	0	0
	Patient's name documented	31(100)	0	0
	Patient's ID documented	31(100)	0	0
	Diagnosis documented	31(100)	0	0
	Date of transaction documented	31(100)	0	0

Awareness	Name of prescribing doctor documented	3(10.7)	28(90.3)	0
	Legible handwriting	18(58)	13(41.9)	0
	Staff is aware what is high alert medication	9(2.9)	22(70.9)	0
	Staff knows about the available high alert medication	9(100)	0	22(70.9)
	Staff is aware of importance of high alert medication	0	9(100)	22(70.9)

4.4.3 Operation Theatre

The table shows that in none of the cases, the high alert medications are kept in lock, the list is not displayed. In majority of cases, the name of prescribing doctor is not documented. In majority of cases, the staff is not aware of the high alert medications and their importance.

Table 20: Status of high alert medications by different parameters in operation theatre (n=31)

Parameter	Variable	Observation		
		Present (%)	Not present (%)	Not Applicable (%)
In lock	In lock	0	31(100)	0
List displayed	List displayed	0	31(100)	0
Record book	Record book present	31(100)	0	0
	Patient's name documented	31(100)	0	0
	Patient's ID documented	31(100)	0	0
	Diagnosis documented	31(100)	0	0
	Date of transaction documented	31(100)	0	0
	Name of prescribing doctor documented	5(16)	26(83.8)	0
	Legible handwriting	25(80)	6(19.3)	0
Awareness	Staff is aware what is high alert medication	9(29)	22(70.9)	0
	Staff knows about the available high alert medication	9(100)	0	22(70.9)
	Staff is aware of importance of high alert medication	0	9(100)	22(70.9)

4.4.4 Medical Stores

The table shows that in none of the cases, the high alert medications are kept in lock, the list is not displayed. In majority of cases, the name of prescribing doctor is not documented. In majority of cases, the staff is not aware of the high alert medications and their importance.

Table 21: Status of high alert medications by different parameters at medical store (n=31)

Parameter	Variable	Observation		
		Present (%)	Not present (%)	Not Applicable (%)
In lock	In lock	0	31(100)	0
List displayed	List displayed	0	31(100)	0
Record book	Record book present	31(100)	0	0
	Patient's name documented	31(100)	0	0
	Patient's ID documented	31(100)	0	0
	Diagnosis documented	31(100)	0	0
	Date of transaction documented	31(100)	0	0
Awareness	Name of prescribing doctor documented	9(29)	22(70.9)	0
	Legible handwriting	9(100)	0	22(70.9)
	Staff is aware what is high alert medication	0	9(100)	22(70.9)
	Staff knows about the available high alert medication			
	Staff is aware of importance of high alert medication			

4.4.5 Emergency

The table shows that in none of the cases, the high alert medications are kept in lock, the list is not displayed. In majority of cases, the name of prescribing doctor is not documented. In majority of cases, the staff is not aware of the high alert medications and their importance.

Table 22: Status of high alert medications by different parameters for emergency (n=31)

Parameter	Variable	Observation		
		Present (%)	Not present (%)	Not Applicable (%)
In lock	In lock	0	31(100)	0

List displayed	List displayed	0	31(100)	0
Record book	Record book present	31(100)	0	0
	Patient's name documented	31(100)	0	0
	Patient's ID documented	31(100)	0	0
	Diagnosis documented	31(100)	0	0
	Date of transaction documented	31(100)	0	0
	Name of prescribing doctor documented	2(6.4)	29(93.5)	0
	Legible handwriting	22(70.9)	9(29)	0
Awareness	Staff is aware what is high alert medication	9(29)	22(70.9)	0
	Staff knows about the available high alert medication	9(100)	0	22(70.9)
	Staff is aware of importance of high alert medication	0	9(100)	22(70.9)

4.5 High alert medications (Patient wise data collection)

(n=120)

The table shows that in majority of cases, the prescription is not undersigned and the handwriting is not legible.

Table 23: Status of high alert medications (patient wise data collection) by different parameters (n=120)

Parameter	Variables	Observations		
		Present (%)	Not present (%)	Not Applicable (%)
Record book	Name documented	58(100)	0	62(51.6)
	ID documented	58(100)	0	62(51.6)
	Diagnosis documented	56(96.5)	2	62(51.6)
	Date of transaction documented	57(98.2)	1(1.7)	62(51.6)
	Undersigned	1(1.7)	57(98.2)	62(51.6)
	Signature is legible	51(87.9)	7(12)	62(51.6)
Not stored on patient's bedside		111(92.5)	9(7.5)	0
Dilution rate	Dilution rate in patient files documented	29(50)	29(50)	62(51.6)
	Legible handwriting	19(67.8)	9(32.1)	92(76.6)

Infusion rate	Undersigned	29(100)	0	91(75.8)
	Signature is legible	11(37.9)	18(62)	91(75.8)
	Infusion rate in patient files documented	15(25.8)	43(74.1)	62(51.6)
	Legible handwriting	10(66.6)	5(33.3)	105(87.5)
	Undersigned	15(100)	0	105(87.5)
	Signature is legible	5(33.3)	10	105(87.5)

4.6 Patient medication information and communication

In majority of cases, the infusion rate and dilution rate is not documented and the signature is not legible.

Table 24: Status of patient medication information and communication by different parameters (n=120)

Parameter	Variables	Observation		
		Present (%)	Not present (%)	Not Applicable (%)
Instructions in patient file	Medication prescribed	120(100)	0	0
	Dilution rate	54(45)	66(55)	0
	Infusion rate	29(24.1)	91(75.8)	0
	Investigations	109(91.5)	10(8.4)	1(0.8)
	Patient allergy	57(48.3)	61(51.6)	2(1.6)
	Predisposing diseases	87(73.1)	32(27.1)	1(0.8)
	Legible handwriting	78(65)	42(35)	0
Instruction at time of discharge	Instructions given	113(94.1)	7(5.8)	0
	Dose and schedule instructed	113(100)	0	7(5.8)
	Language understood by patient	113(100)	0	7(5.8)
Dilution documentation rate	Dilution rate documented	27(55.1)	22(44.8)	71(59.1)
	Legible handwriting	18(69.2)	8(30.7)	94(78.3)
	Undersigned	25(100)	0	95(79.1)
	Signature legible	12(46.1)	14(53.8)	94(78.3)
Infusion documentation rate	Dilution rate documented	14(28.5)	35(71.4)	71(59.1)
	Legible handwriting	10(71.4)	4(28.5)	106(88.3)
	Undersigned	14(100)	0	106(88.3)
	Signature legible	6(42.8)	8(57.1)	106(88.3)
Medication schedule	Given to patient	120(100)	0	0
	Legible handwriting	93(77.5)	27(22.5)	0
	Language understood by patient	31(25.8)	89(74.1)	0
	Undersigned	120(100)	0	0
	Signature legible	55(45.8)	65(54.1)	0

For assessment of fall risk

4.7 Fall risk assessment

The table shows that in majority of cases, the vision status is not noted

Table 25: Status of fall risk assessment by different parameters (n=120)

Parameter	Observation		
	Present (%)	Not present (%)	Not Applicable (%)
Mental status	55(45.8)	65(54.1)	0
History of falls	52(43.3)	68(56.6)	0
Vision status	47(39.1)	73(60.8)	0
Gait and balance	79(65.8)	41(34.1)	0
Medication prescribed	118(98.3)	2(1.6)	0
Predisposing diseases	102(85)	18(15)	0

4.8 Observation

The table shows that in 100% cases, there are attendants with the patients and shifting of the patients is done under observation.

Table 26: Status of observation by different parameters (n=120)

Parameter	Variables	Observation		
		Present (%)	Not present (%)	Not Applicable (%)
Observation	Direct vision	84(70)	36(30)	0
	Glass window	84(70)	36(30)	0
Attendant at night		120(100)	0	0
Assisted during washroom visit		93(83.7)	18(16.2)	9(7.5)
Shifting of patients under observation		120(100)	0	0

4.9 Footwear

The table shows that in majority of cases the footwear is provided.

Table 27: Status of footwear by different parameters (n=120)

Parameter	Variables	Observation		
		Present (%)	Not present (%)	Not Applicable (%)
Footwear provided	Provided	18(15)	102(85)	0
	On the day of admission	18(100)	0	102(85)
Appropriate size	Appropriate size	8(44.4)	10(55.5)	102(85)
	Not allergic	18(100)	0	102(85)
Clean	Clean	13(72.2)	5(27.7)	102(85)
	Replaced if not satisfactory	0	0	120(100)
Sole of footwear	Non- slip	11(61.1)	7(38.8)	102(85)
	Not worn-out	15(83.3)	3(16.6)	102(85)
Elastic at hind end	Elastic present	0	18(15)	102(85)
	Not uncomfortable	0	0	120(100)
Trailing laces		0	0	120(100)

4.10 Belts and brakes usage

The table shows that in no case, bed belts are present. In majority of cases the wheelchair belts and brakes are not present

Table 28: Status of belts and brakes usage by different parameters (n=120)

Parameter	Observation		
	Present (%)	Not present (%)	Not Applicable (%)
Bed belts present	0	120(100)	0
Used	0	0	120(100)
Used correctly	0	0	120(100)
Bed brakes present	120(100)	0	0
Used	120(100)	0	0
Wheelchair belts present	46(38.3)	74(61.6)	0
Used	46(100)	0	74(61.6)
Used correctly	46(100)	0	74(61.6)
Wheelchair brakes present	46(38.3)	74(61.6)	0
Used	46(100)	0	74(61.6)

4.11 Other Parameters

The table shows that the furniture is not stable in majority of cases.

Table 29: Status of other parameters by different parameters (n=120)

Parameter	Observation		
	Present (%)	Not present (%)	Not Applicable (%)
Call bells present	0	120(100)	0
Working	0	0	120(100)
Mopping done	76(63.3)	44(36.6)	0
Mopping supervised for quality	0	79(65.8)	41(34.1)
Furniture	35(29.1)	85(70.8)	0
Hanging tubes/cables	115(95.)	5(4.1)	0
Damaged floor	120(100)	0	0
Night lamp present	120(100)	0	0
Working condition	120(100)	0	0
Hand holds	0	120(100)	0

5.1 For assessment of medication safety

Table 30: Number of positives required for hundred percent compliance percentage on overall basis for the indicator (N)

Indicator	'N'(number of positives required for hundred percent compliance percentage)
Labelling of containers of medications and solutions	899
Sound alike look alike drugs	155
Drugs available at the hospital	279
High alert medications	465
High alert medications(patient wise)	1800
Patient medication information and communication	2760

5.2 For NPSG 9

Table 31: Number of positives required for hundred percent compliance percentage on overall basis for the indicators (N)

Indicator	'N' (number of positives required for hundred percent compliance percentage)
Fall risk assessment	720
Observation	600
Footwear	1320
Belts and brakes usage	1200
Other parameters	1200

5.3 For assessment of medication safety

Table 32: Department wise data collection and patient wise data collection and calculated compliance percentage for NPSG 3

Department wise data collection	
INDICATOR	COMPLIANCE PERCENTAGE
Labelling of containers of medications and solutions	84.3%
Sound alike look alike drugs	68.8%
Drugs available at the hospital	76.1%
High alert medications	56.7%
Patient wise data collection	
INDICATOR	COMPLIANCE PERCENTAGE
High alert medications	73.8%
Patient medication information and communication	70.6%

Table 32 shows the department wise data collection (the data collection done for thirty one days, for female ward, male ward, emergency, operation theatre and medical store) and patient wise data collection (the data collection done for one hundred and twenty patients for each goal) and the calculated compliance percentage on the basis of department wise and patient wise data collection for NPSG 3

For labelling of containers of medications and solutions, compliance percentage is 84.3%, though within this indicator, non-compliance is essentially seen for the storage instructions, bar code and strength of the medication and solution. It is noted that the

quantity of the medication and solutions is not updated in fifteen percent of cases on an average.

For sound alike look alike drugs, absolute non- compliance was observed for twenty days on an average for all the departments. After some efforts and help from the administration, 68.8 % compliance percentage was attained on an average by the end of the data collection month.

For drugs available at the hospital, absolute non- compliance was observed for the parameter of list of drugs available for eighteen days and for twenty one days for the parameter of weekly regular meetings of the chief pharmacist and the staff on an average for all the departments. After working for attaining the standards, 76.1% compliance percentage was attained on an average by the end of the data collection month.

For high alert medications, an absolute non- compliance is seen in the separate storage for high alert medications and display of list of high alert medications despite the efforts made. An average 56.7% compliance percentage is attained due to the record book maintenance and staff's awareness about the high alert medications after about twenty days on an average of the data collection for all the departments under study.

For high alert medications for patient wise data collection, a compliance percentage of 73.8% is observed for this indicator, non-compliance is seen for the parameter of prescribing doctor's name documentation in records and documentation of dilution and infusion rate in the patient's file.

For patient medication information and communication, a compliance percentage of 70.6% is seen for this indicator, the non-compliance essentially being for the parameter

of documentation of dilution and infusion rate in patient's file and discharge slip and for the language, handwriting and undersigning of medication schedule for the patient.

Figure 1: Department wise compliance percentage of all parameters of NPSG 3

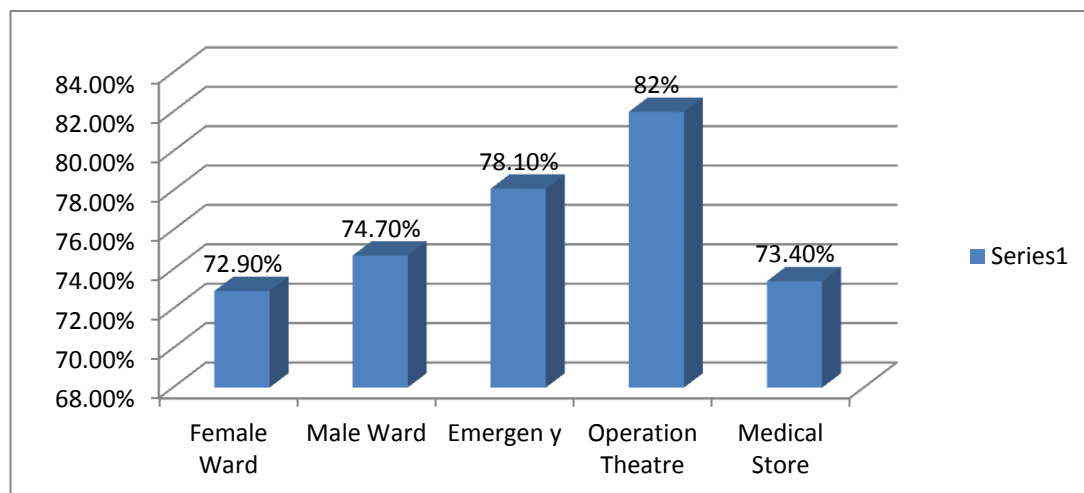


Figure 1, shows the department wise compliance percentage of different departments for NPSG 3, operation theatre is the best performer (82%) and female ward being the worst (72.9%).

Table 33: Department wise and patient wise compliance percentage for all indicators of NPSG 3

Indicator	Department	Compliance percentage
Labelling of containers of medications and solutions	Female Ward	83.6%
	Male Ward	81.8%
	Emergency	84.1%
	Operation Theatre	92.2%
	Medical Store	79.6%
Sound alike look alike drugs	Female Ward	68.6%
	Male Ward	54.5%
	Emergency	78.3%
	Operation Theatre	78.3%
	Medical Store	54.5%
Drugs available at the hospital	Female Ward	47.9%
	Male Ward	78.8%
	Emergency	83.8%
	Operation Theatre	75.7%

	Medical Store	85.7%
High alert medications	Female Ward	59.4%
	Male Ward	59.1%
	Emergency	60.0%
	Operation Theatre	61.8%
	Medical Store	16.2%
High alert medications(patient wise)	Number of patients observed -120	73.8%
Patient medication information and communication(patient wise)		70.6%

Figure 2: Overall compliance percentage for all the departments for different parameters of NPSG 3

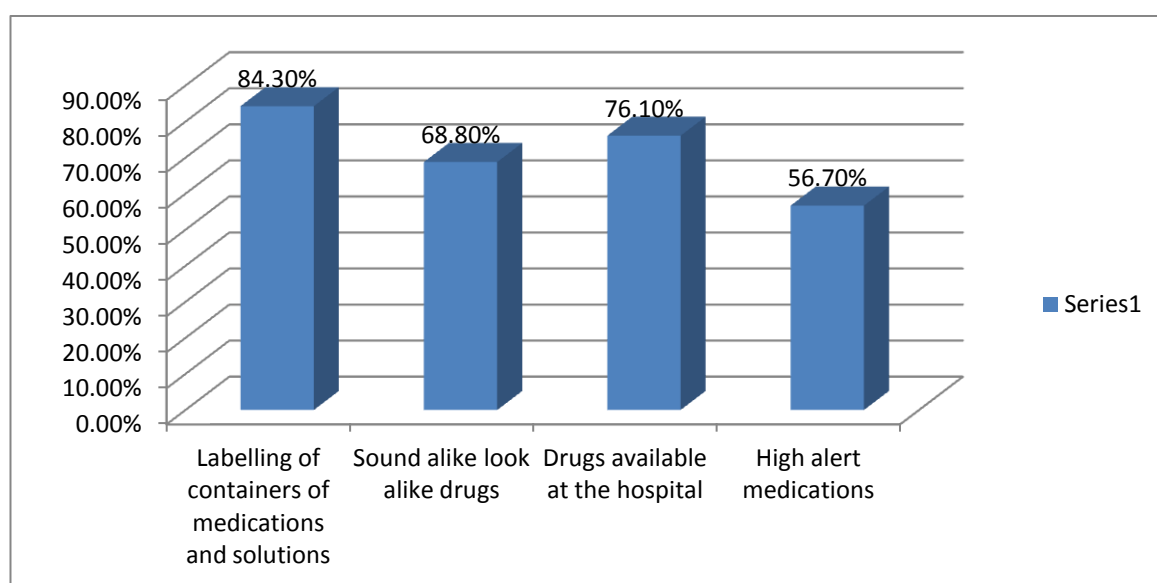


Figure 2, shows overall compliance percentage for all the departments for different parameters of NPSG 3, the best performance (84.3%) is seen for the indicator of labelling of containers of medications and solutions and the worst performance(56.7%) is seen for the indicator of high alert medications.

5.4 For assessment of risk of fall

Table 34: Compliance percentage of the hospital for all the indicators of NPSG 9

INDICATOR	Number of patients observed	COMPLIANCE PERCENTAGE
Fall risk assessment	120	62.9%
Observation		84.7%
Footwear		41.0%
Belts and brakes usage		63.6%

Other parameters		56.0%
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Table 34 shows the compliance percentage of the hospital for NPSG 9, for fall risk assessment the compliance percentage is 62.9%. The parameter of history of falls and vision status is not usually noted by the staff, in fact other parameters (mental status, gait and balance, medications prescribed and predisposing diseases) are also not observed and noted for the purpose of fall risk assessment but for either pre-surgical assessment or usual history taking. A lot has to be done for attaining compliance in this particular indicator.

Observation, shows a compliance percentage of 84.7%, non-compliance essentially being for the parameter of direct observation of the patients by the staff as, the patients who are residing in the private rooms of the hospital, they are not directly observed by the staff round the clock as the nursing station/ nurses room is between the wards having glass windows overlooking all the beds of the wards of the hospital.

Footwear, shows a compliance percentage of 41.0%, owing to the fact that the footwear is not usually provided to the patients, even in the cases they are provided, they are either not clean, of appropriate size or does not possess an elastic at the hind end of the footwear. To improve the compliance percentage of this indicator, a lot of efforts and co-operation from the administration and higher authorities as, the provision of footwear to all the in-patients requires an approval from the higher authorities.

Belts and brakes usage shows a compliance percentage of 63.6%, owing to the fact that there is no provision of bed belts, in many cases, there are no wheelchair belts and wheelchair brakes. To improve the compliance percentage, efforts, co-operation and approval is required from the administration and the higher governing authorities as this would require new beds and wheelchairs for the hospital with belts and brakes.

Other parameters, a compliance percentage of 56.0% is seen for this indicator , owing to the absence of call bells, furniture not being stable if being leaned on and washroom having no hand holds and hand rails. For improving the compliance percentage almost all the parameters of this indicator(call bells, mopping under supervision, supervisor ensuring quality, stable furniture, absence of hanging tubes or cables, hand holds/ hand rails in washrooms and toilets) need to be worked on.

Table 35: Overall compliance percentage of the hospital for NPSG 3

Department wise overall compliance percentage of the hospital	76.3%
Patient wise overall compliance percentage of the hospital	71.4%

Table 35, shows the overall compliance percentage of the hospital for NPSG 3, a compliance percentage of 76.3% is seen for the department wise data collection and a 71.4% compliance percentage is seen for the patient wise data collection. Efforts by the administration and the staff can improve the compliance percentage further.

Overall compliance percentage of the hospital for NPSG 9 is 63.1%

Table 35, shows the overall compliance percentage of the hospital for NPSG 9, a combined effort by the staff of the hospital, the administration and the governing higher authorities can improve this compliance percentage of 63.1% for this indicator.

5.Discussion

For implementing something in a hospital of government set-up, the main hindrance is from the staff of the hospital and the permission from the governing heads. The staff is used to be working in a fixed manner and they do not want to accept and understand the change required or suggested. Secondly, it takes time to get the permission granted from the governing body. There are certain protocols which the staff follows here, but they do not know about the standards and the requirements

for fulfilling the NPSG. Reputation of the Government hospitals is such that they do not and cannot fulfil the requirements and standards of national and international norms. There is a scope of improvement especially for NPSG 9. The staff of the hospital is not fully aware of the NPSG. In fact, the standards in accordance to the NPSG, which they follow, they are not aware of the fact that they are a part of NPSG. But, unknowingly they are following and maintaining some of the standards.

6. Conclusion and suggestions

For medication safety assessment, the overall department wise compliance is 76.3 %. Best performance is seen in the parameter of labelling of containers of medications and solutions and the least performance is seen for the parameter of high alert medications. The chief pharmacist of the hospital is not aware of the meaning and importance of high alert medications.

Out of all the five departments, best performance is seen in the department of Operation Theatre. The worst performance is seen in the female ward.

For NPSG 9, the overall compliance percentage is 63%. Best performance is seen for the parameter of observation and the worst performance is seen for the parameter of footwear.

To achieve overall compliance on all the set standards, following are suggestions for the hospital:

- 1) The meaning and importance of high alert medications is to be understood by the staff. High alert medications are to be kept in a lock, list of high alert medications is to be displayed and the staff has to be educated about the high alert medications.

- 2) At the time of discharge, a medication schedule in the language which the patient understands is suggested to be given.
- 3) Footwear is to be provided to every patient. It is suggested to be of appropriate size, clean and with an elastic at the hind end.
- 4) Wheelchairs need to have belts and brakes and they are to be tied correctly.
- 5) Call bells need to be put for every patient.
- 6) Furniture needs to be made stable and be able to take the weight of the patient if he/ she lean on it.
- 7) Hand rails and hand holds need to be put in the washrooms and toilets of the hospital.

In brief the hospital is required to organize an orientation programme for the staff. A committee may be made to monitor the programme. Weekly review meetings need to be conducted for smooth working of the organised orientation programme. Motivation of the staff needs to be done.

7.Appendix

Figure 3 Compliance percentage of different departments for the indicator labelling of containers of medications and solutions

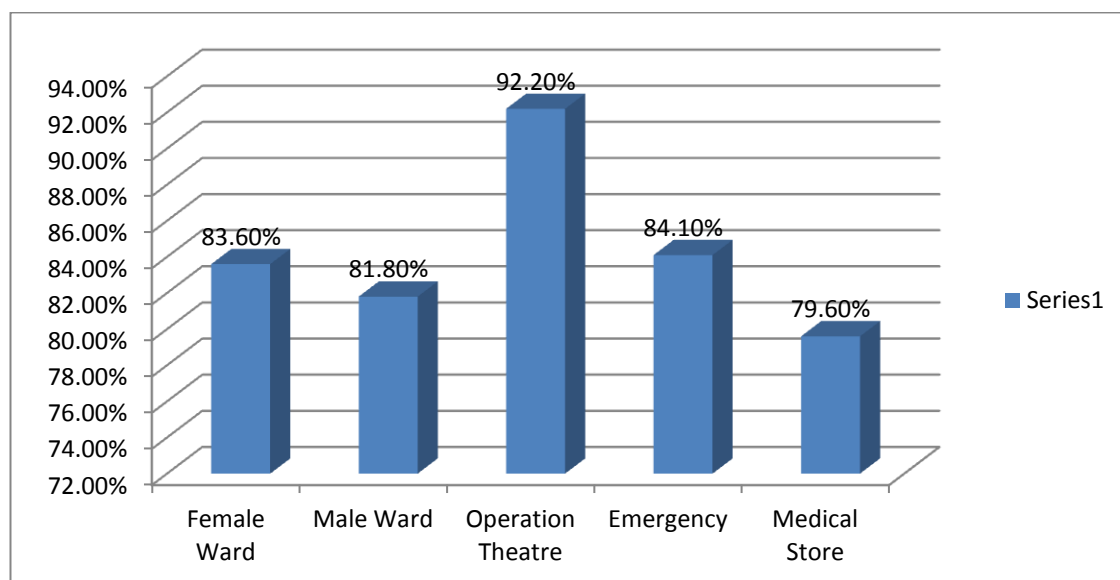


Figure 3 shows the department wise compliance percentage on the basis of the indicator --labelling of containers of medications and solutions.

Figure 4 Compliance percentage of different departments for the indicator- sound alike look alike drugs

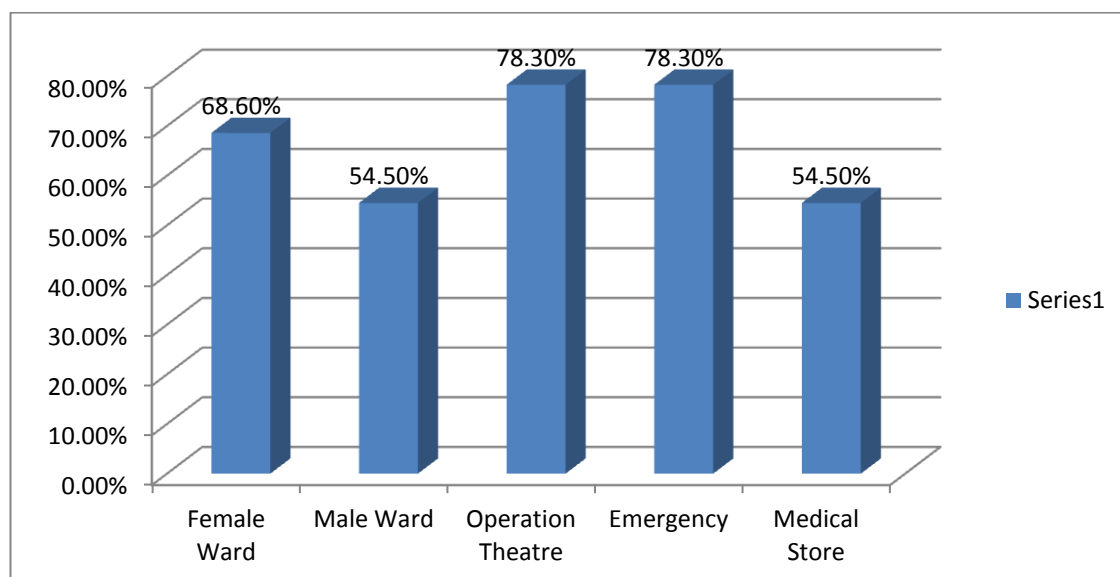


Figure 4 shows the department wise compliance percentage on the basis of the indicator –sound alike look alike drugs.

Figure 5 Compliance percentage of different departments for the indicator- drugs available at the hospital

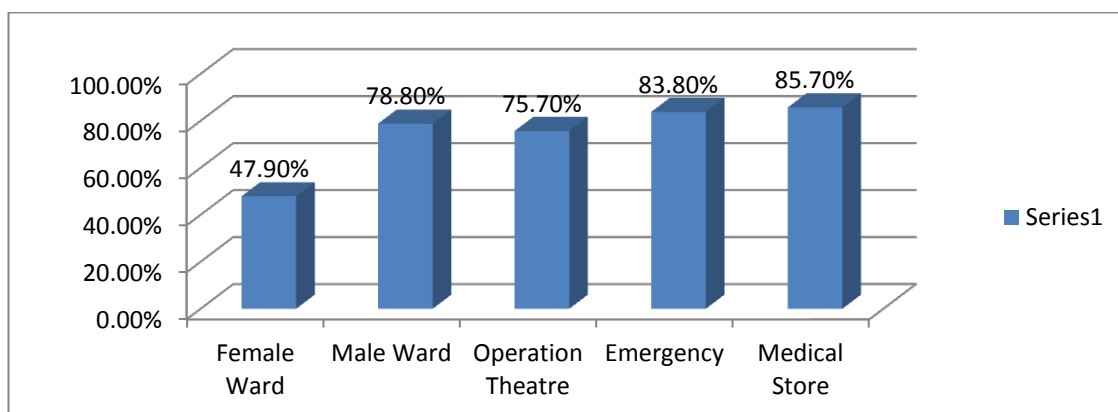


Figure 5 shows the department wise compliance percentage on the basis of the indicator –drugs available at the hospital.

Figure 6 Compliance percentage of different departments for the indicator- high alert medications

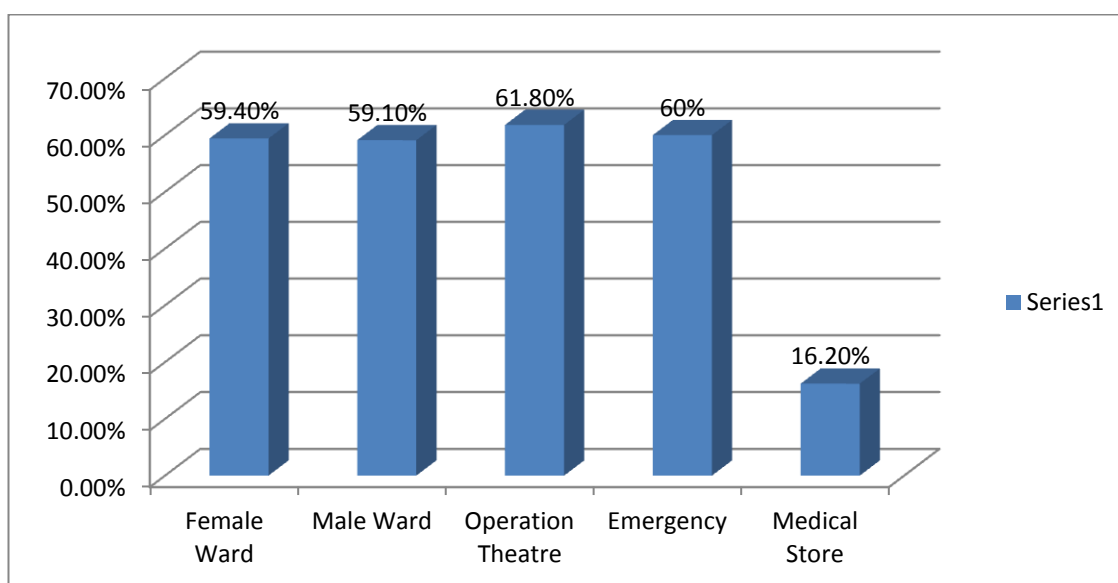


Figure 6 shows the department wise compliance percentage on the basis of the indicator –high alert medications.

Table 36 Value of 'N' (total number of positives required for hundred percent compliance percentage), 'A' (total number of positives calculated), 'B' (total number of 'not-applicable' cases calculated) and compliance percentage for all the indicators of NPSG 3 for all the departments

Indicator	'N'	'A'					'B'					Compliance Percentage (Approximately)				
		FW	M W	EM	OT	MS	FW	M W	EM	OT	MS	FW	M W	E M	OT	MS
Indicator 1	899	658	631	664	717	613	112	128	110	122	129	84%	82 %	84 %	92%	80%
Indicator 2	155	57	30	65	65	30	72	100	65	72	30	69%	54 %	78 %	78%	54%
Indicator 3	279	69	153	171	125	186	135	85	75	114	62	48%	79 %	84 %	76%	86%
Indicator 4	465	195	194	197	203	18	137	137	137	137	354	59%	59 %	60 %	62%	16%
Indicator 5	1800	533					1078					74%				
Indicator 6	2760	1412					761					71%				

*Indicator 1-Labelling of containers of medications and solutions

*Indicator 2-Sound alike look alike drugs

*indicator 3-Drugs available at the hospital

*Indicator 4-High alert medications

*Indicator 5-High alert medications (patient wise data collection)

*Indicator 6-Patient medication information and communication(patient wise data collection)

*N- Total number of positives required for hundred percent compliance percentage

*A- Total number of positives calculated

*B- Total number of 'not-applicable' cases calculated

*FW-Female Ward

*MW-Male Ward

*EM-Emergency Department

*OT-Operation Theatre

*MS-Medical Stores

Table 36 shows the value of N (total number of positives required for hundred percent compliance percentage), A (total number of positives calculated), B (total number of 'not-applicable' cases) and compliance percentage for all the indicators of NPSG3 for all the departments under study.

Figure 7 Compliance percentage of the hospital for all the indicators of NPSG 9

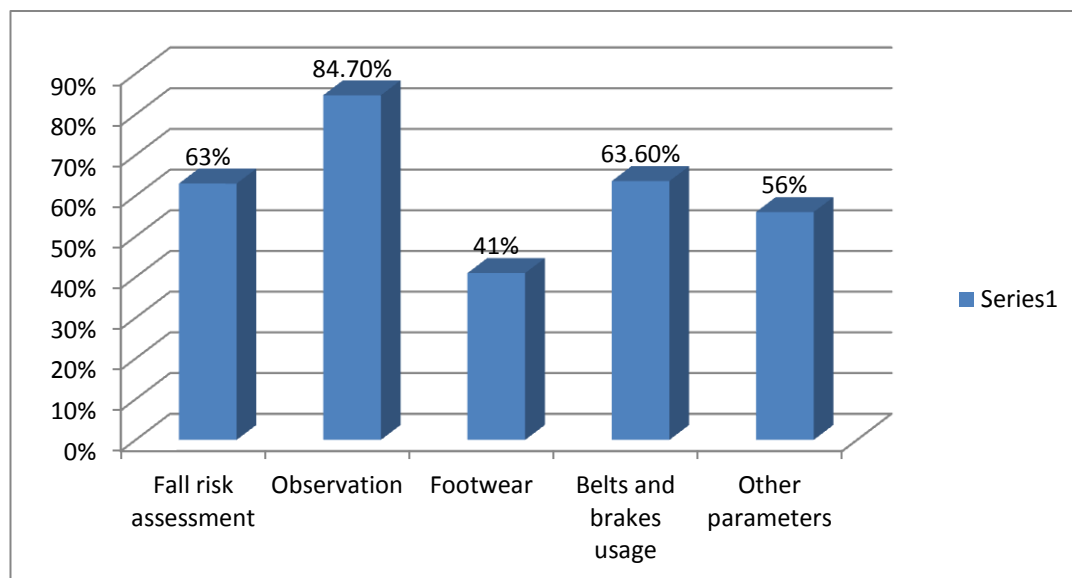


Figure 7 shows the compliance percentage of the hospital on the basis of all the indicators of NPSG 9

Table 37 Value of 'N' (total number of positives required for hundred percent compliance percentage), 'A' (total number of positives calculated), 'B' (total number of 'not-applicable' cases calculated) and compliance percentage of the hospital for all the indicators of NPSG 9

Indicator	'N'	'A'	'B'	Compliance Percentage
Fall risk assessment	720	453	0	62.9%
Observation	600	501	9	85.7%
Footwear	1320	101	1074	41.0%
Belts and brakes usage	1200	470	462	63.6%
Other parameters	1200	582	161	56.0%

Table 37 shows the value of N (total number of positives required for hundred percent compliance percentage), A (total number of positives calculated), B (total number of 'not-applicable' cases) and compliance percentage of the hospital for all the indicators of NPSG 9.

NPSG 3 Standards

Labelling of containers of medications and solutions

In every department, the medications are stored in cardboard containers in which they come to the hospital from the pharmaceutical company. The following information is printed on the cardboard containers.

1) Product name

- (i) Product's trade name and salt's name is printed on the container legible in a different font style and font size as compared to the other text on the container.
- (ii) The manufacturing pharmaceutical company's name and logo is legible and printed on the corner of the container.

2) Batch number

- (i) The batch number and expiry date are positioned together
- (ii) It is situated on the end or side panel of the package.
- (iii) The batch number is legible.
- (iv) Ink is used for printing
- (v) For eye preparations and other topical, the words "after opening use within [xx] days" is on the label.

3) Expiry date of the solution/ medication

- (i) Expiry date is printed on the container
- (ii) Date of manufacture is printed on the container.

- (iii) 'First in first out' method is practised.
- (iv) Expiry date, manufacture date and batch number are printed together.
- (v) Embossing is not done.
- (vi) If expiry date is not printed, manufacture date and 'best before 6 months/ 3 months from the date of manufacture of after opening the seal' is printed on the container.

4) Storage instructions

- (i) Storage temperature is printed on container below the product's name.
- (ii) Moisture required is printed on the container below the product's name.
- (iii) Refrigeration (if required) and the temperature of refrigeration is printed on the container.
- (iv) 'This side up' is printed on the containers of solutions.
- (v) 'Protect from sunlight' is printed on the container (if it is needed for the medication).
- (vi) Any warning or potential allergic reaction is printed on the container in bigger font as compared to rest of the text, (in a red coloured text box).

5) Strength

- (i) Strength of the medication is printed just below the product's name (for example- cefuroxime-500mg). It is the amount of drug in the dosage form or a unit of the dosage form.

- (ii) The trade name contains the strength (for example, for the above mentioned drug, trade name is zocef 500)

6) Name of the active ingredient(s)

Name of the active ingredient is the salt's name and is printed on the container below the product's name.

7) Dose form

- (i) Dose form (written as- 2 drops a day/ 2 tablets a day/ 2 capsules a day with meals) is printed on the container.
- (ii) Dosage instructions are printed on the container.

8) Barcode

- (i) Barcode is printed on the container.
- (ii) Manufacturer's licence number is printed on the container.
- (iii) Address and name of the manufacturer pharmaceutical company is printed on the container.

9) Quantity (Number of units- For example. 100 capsules, 100 mL). In a container which is received by the hospital by the manufacturing pharmaceutical company, the number of units / quantity is printed on the corner of the container.

10) Diluents used (diluents used to make the solution. For example- water, lactose).

The diluents used, is printed on the container under the heading of 'contents'.

Sound alike look alike drugs:

- 1) List of sound alike/look alike drugs--A list of sound alike/ look alike drugs is prepared by the chief pharmacist and is updated every month. List of sound alike/ look alike drugs are prepared on the basis of the drugs available at the hospital and the list of sound alike/ look alike drugs prepared and given by 'Institute of safe medication practices'-ISMP.
- 2) List of sound alike/ look alike drugs sent to all departments
 - (i) List of sound alike/ look alike drugs is printed with a legible style and size of the font.
 - (ii) List contains all the drugs available at the hospital which are sound alike/ look alike.
- 3) Pasting the list of sound alike/ look alike drugs in the departments
 - (i) The list of sound alike/ look alike drugs prepared by the chief pharmacist, is sent to the departments and it is pasted in the department.
 - (ii) The list is pasted above the containers of medication and solutions at the place of storage of medications in the department and is updated every month.

Drugs available at the hospital:

- 1) Printed list of drugs available with the departments
 - (i) A list of drugs is prepared by the chief pharmacist, printed and sent to all the departments every year in February/ march when the hospital formulary is updated.
 - (ii) The list contains the names of all the available drugs in the hospital.
 - (iii) The list contains the strength of each medication or solution.
 - (iv) The list contains number of units required.

2) Communication to the staff

- (i) Chief pharmacist discusses the hospital formulary sanctioned by the government during annual meeting with the hospital staff every year in last week of march.
- (ii) Chief pharmacist conducts a weekly meeting with the staff of the hospital and discusses the usage of medications and solutions during the week.

3) Printed list of available drugs is pasted in the department

- (i) The list of available drugs in the hospital is pasted in the department.
- (ii) List of available drugs is pasted in the department at the place of storage of medication and solutions and updated every year.

4) The list of the available drugs at the hospital is pasted at the place of storage in the department. The font style and size is legible.

High alert medications:

1) High alert medications in lock.

- (i) High alert medications are either in a separate locker or in a cupboard with a lock.
- (ii) The key to the locker or cupboard is with the head staff nurse.

2) List of drugs is displayed

- (i) List of high alert medication is displayed in the department at the place of storage of high alert medication in the form of a printed list.
- (ii) The available stored high alert drugs are highlighted with a fluorescent permanent marker, and are updated every month.
- (iii) The font style and size is legible.

3) Record book

- (i) Record book is present and maintained in the department.
- (ii) Record book has patient's name documented.
- (iii) Record book has patient's ID number documented.
- (iv) Record book has the diagnosis of the patient documented.
- (v) Record book has date of transaction of high alert medication documented.
- (vi) Record book has the name of prescribing doctor documented.
- (vii) Documentation is done in legible handwriting with a pen.

It is a record to note and make sure that the high alert medications are taken from the storage area by the hospital staff only. It is called a replacement book as in corporate hospitals, the high alert medications are replaced in the storage place by the patients- (the drug is used for the patient and the attendants are told to buy the drug and give to the hospital) But in a government hospital, this is not practiced so we would replace the word 'replacement' with 'record' book.

4) Staff knows about high alert medications

- (i) Staff knows what is high alert medications.
- (ii) Staff knows which high alert medications are available at the department.
- (iii) Staff knows the importance of keeping the high alert medications in lock.

High alert medications(patient wise data collection):

1) Record book

- (i) Patient's name is documented in the record book.
- (ii) Patient's ID number is documented in the record book.
- (iii) Diagnosis of the patient is documented in the record book.

- (iv) Date of transaction of high alert medication documented in the record book.
 - (v) Name of prescribing doctor is documented in the record book.
 - (vi) Documentation is done in legible handwriting with a pen.
- 2) High alert medications are not stored in the patient's bedside.
- 3) Documentation of dilution rate
- (i) Dilution rate of medication is documented in the medical chart/ medical file of the patient.
 - (ii) Documentation is in legible handwriting and with a pen.
 - (iii) The prescription of the drug is undersigned by the prescribing doctor/ administering nurse.
 - (iv) The signature of the doctor / nurse is legible and with initials of the doctor/ nurse.
- 4) Documentation of infusion rate
- (i) Infusion rate of medication is documented in the medical chart/ medical file of the patient.
 - (ii) Documentation is in legible handwriting and with a pen.
 - (iii) The prescription of the drug is undersigned by the prescribing doctor/ administering nurse.
 - (iv) The signature of the doctor / nurse is legible and with initials of the doctor/ nurse.

Patient medication information and communication:

- 1) Instructions in patient's file
- (i) Medication prescribed is written in the patient's file.

- (ii) Dilution rate is documented in the patient's file.
- (iii) Infusion rate is documented in the patient's file.
- (iv) Investigations to be done is documented in the patient's file.
- (v) Patient's allergy history is documented in the patient's file.
- (vi) Predisposing disease is documented in the patient's file.
- (vii) Instructions are written with pen in legible handwriting in the patient's file.

2) Instructions at the time of discharge

- (i) Instructions are given by the staff nurse to the patients at the time of discharge.
- (ii) Dose and schedule of medication is instructed to the patient.
- (iii) Instructions are given in the language the patient and attendants can understand.

3) Documentation of dilution rate

- (i) Dilution rate of medication is documented in the medical chart/ medical file of the patient.
- (ii) Documentation is in legible handwriting and with a pen.
- (iii) The prescription of the drug is undersigned by the prescribing doctor/ administering nurse.
- (iv) The signature of the doctor / nurse is legible and with initials of the doctor/ nurse.

4) Documentation of infusion rate

- (i) Infusion rate of medication is documented in the medical chart/ medical file of the patient.
- (ii) Documentation is in legible handwriting and with a pen.

- (iii) The prescription of the drug is undersigned by the prescribing doctor/ administering nurse.
- (iv) The signature of the doctor / nurse is legible and with initials of the doctor/ nurse.

5) Medication schedule

- (i) Medication schedule is written with a pen on the discharge slip of the patient and handed over to the patient/ attendant.
- (ii) Medication schedule is written in a legible handwriting.
- (iii) Medication schedule is written in a language the patient and the attendant can understand.
- (iv) Medication schedule is undersigned by the prescribing doctor.
- (v) The signature of the prescribing doctor is legible and with initials of the doctor.

Checklist for NPSG 3 Department wise

Labelling of containers of medication and solutions

Sr. No. & Date 	1. Date-
Parameters 	
1. Product Name	Trade name printed
	Company's logo printed
2. Batch Number	Batch number and expiry date positioned together
	At end panel
	Legible
	Ink used
	Use within 'xx' days (for topical)
3. Expiry date of solution/ medication	Printed
	Date of manufacture printed
	First-in ,first-out method used
	Expiry, manufacture date,

	batch number together
	No embossing
	Temperature printed
4. Storage Instructions	Moisture printed
	Refrigeration printed
	‘This side up’ printed
	‘Protect from sunlight’ printed
	Warning printed
5. Strength	Strength printed
	Trade name contains strength
6. Name of active ingredients	
7. Dose Form	Dose form printed
	Dosage instructions printed
8. Barcode	Bar code printed
	Manufacturer’s licence number printed
	Name and address of manufacturer printed
9. Quantity	
10. Diluents used	

Sound alike and look alike drugs

SOUND ALIKE AND LOOK ALIKE DRUGS			
Sr. No. & Date	A list of sound alike/look like drugs is prepared (by the chief pharmacist)	If the chief pharmacist prepares a list of sound alike/look alike drugs, it is printed and sent to all the departments.	Sound alike/Look alike drugs printed list sent to all the departments are pasted at the place of storage of drugs in the department
1.		Legible size and font	List pasted
		List of all drugs available	Pasted at the storage place

Drugs available at the hospital

Name of Department:

	DRUGS AVAILABLE AT THE HOSPITAL			
Sr. No. & Date	A printed list of the list of drugs available at the hospital is available with the departments	Staff is communicated about the available drugs at the hospital (by the chief pharmacist) and the usage of medications and solutions in annual and weekly regular meetings with the staff of the hospital	Printed list of available drugs is pasted at the place of storage of drugs in the department	If a printed list of available drugs is pasted at the place of storage of drugs in the department, the font is legible and in a language understood by the staff
1. Date:	List printed and sent to departments	Annual meetings	List pasted	
	Contains names of all available drugs			
	Strength printed	Weekly meetings	Pasted at the drug storage	
	Number of units required printed			

High alert medications

Name of Department:

	HIGH ALERT MEDICATIONS			
Sr. No. & Date	High alert medications are in lock	List of drugs is displayed	Record book	Staff knows about the high alert medications
1. Date:	Drugs in lock	List displayed	Name	Knows what high alert medications are
			ID	Available drugs
		Available drugs highlighted	Diagnosis	
			Date of transaction	
	Key with head nurse	Legible font size and style	Doctor's name	Importance
			Legible hand	

Checklist for NPSG 3 Patient Wise

High alert medications

	HIGH ALERT MEDICATIONS (Patient wise)			
Sr. No. Patient Name & Patient ID	High alert medication used for the patient is entered in the record book	High alert medications are not stored in bedside of the patient	Dilution rate is mentioned in medical chart of the patient	Infusion rate is mentioned in medical chart of the patient
1. Patient name:	Name		Dilution documented	Infusion documented
Patient ID:	ID		Legible	Legible
	Diagnosis		Undersigned	Undersigned
	Date of transaction			
	Doctor's name			
	Legible hand		Legible signature	Legible signature

Patient medication information and communication

Sr. No. Patient name & Patient ID	Instructions are written on the inpatient's patient file (during the stay in the hospital)	Instructions (do's and don'ts) are instructed to the patient on the time of discharge	Dilution rate is written on the inpatient's patient file	Infusion rate is written on the inpatient's patient file	Medication schedule is given to the patient on the time of discharge
1. Patient name: Patient ID:	Medication	Given by nurses	Documented	Documented	Given to patient
	Dilution		Legible	Legible	Legible
	Infusion				
	Investigations	Dose explained	Undersigned	Undersigned	Local language
	Allergy				
	Predisposing diseases	Instructions in local language	Legible	Legible	Undersigned
	Legible				Legible

NPSG 9 Standards

Fall risk assessment:

- 1) Mental status- Mental status of the patient is observed and checked by the doctor in-charge. Alert and oriented patients have least fall risk potential as compared to disoriented patients or patients with intermittent confusion.
- 2) History of falls- History of falls in past 3 months is taken. Patients who had no falls in past 3 months have least fall risk potential as compared to patients who fell 1-2 times or 3 or more times in past 3 months.
- 3) Vision status- Vision status of the patient is checked and noted by the patient. Patients with adequate vision (with or without glasses) have the least fall risk potential as compared to patients with poor (with or without glasses) or patients who are legally blind.
- 4) Gait and balance- Gait and balance of the patient is checked and noted by the doctor. Patients having normal/ safe gait and balance have the least fall risk potential as compared to the following-
 - Balance problem while standing
 - Balance problem while walking
 - Decreased muscular co-ordination
 - Change in gait pattern when walking through doorway
 - Jerking or unstable when making turns
 - Requires assistance (person/ furniture/ walls or devices)
- 5) Medication prescribed- Taking certain medications can increase the fall risk potential for the patient. Those medications are-
 - Anaesthetics
 - Antihistamines

- Cathartics
- Diuretics
- Anti-hypertensive
- Anti-seizure
- Benzodiazepines
- Hypo-glycemic
- Psychotropic
- Sedative hypnotics

Past medication history of the patient is taken. Patients taking none of the above mentioned medications currently or within past 7 days have least fall risk potential as compared to the patients taking 1-2 or 3-4 of the above mentioned medications currently or within past 7 days.

6) Predisposing diseases- Medical history of the patient is noted by the doctor.

Certain predisposing diseases can increase the fall risk potential. Those predisposing diseases are-

- Hypertension
- Vertigo
- Cardio vascular atherosclerosis
- Parkinson's disease
- Loss of limb (s)
- Seizures
- Arthritis
- Osteoporosis
- Fractures

The patients with none of the above mentioned predisposing diseases present have the least fall risk potential as compared to patients with 1-2 or 3 or more of the above mentioned predisposing diseases.

Observation:

1) Observation

- (i) Patients are observed by the nursing staff in direct vision.
 - (ii) Glass window is between the ward and the nurses' room. Round the clock direct observation ensures reduced fall risk of the patients.
- 2) Attendant--- At night, having an attendant with the patient reduces the fall risk potential of the patient.
- 3) Assisted during visit to the washroom--- Patients when visit the washroom, there are chances of the patients slipping or falling, so, the patients with high potential of fall risk are assisted by attendant or nursing staff during a visit to the washroom.
- 4) Shifting of patients--- When the patients are shifted from the ward to the operation theatre or vice versa, it is done under direct observation of the nursing staff. This aids in reducing the flaws and fall risk potential.

Footwear:

- 1) Footwear is provided--- When a patient is admitted to the hospital, he/ she might or might not have footwear of his own. It is the responsibility of the hospital to provide the same to the patient. Walking bare foot can cause infections, accidents and falls.
- (i) Footwear is provided to the patient.
 - (ii) Footwear is issued to the patient on the day of admission.

2) Appropriate size of the footwear

- (i) Footwear provided to the patient is of appropriate size for the patient.
- (ii) The patient is not allergic to the fabric and texture of the footwear.

3) Clean footwear

- (i) The footwear provided to the patient is clean.
- (ii) In case the patient or the attendant is not satisfied with the type/ texture/ cleanliness of the footwear, it is replaced.

4) Sole of the footwear

- (i) Sole of the footwear is of non-slip type.
- (ii) Sole of the footwear is not worn out.

5) Elastic at the hind end

- (i) The footwear if is a pair of slippers, has elastic at the hind end. This gives a better fit to the footwear.
- (ii) The elastic is not uncomfortable for the patient.

6) Trailing laces--- The footwear if is a pair of shoes, do not have trailing laces. They increase the potential of fall risk for the patient.

Belts and brakes usage:

1),2) & 3) Bed belts--- Presence of bed belts is important for the safety of patients from falls. Absence of bed rails/ bed belts, are a major cause of patient falls from the beds. Presence of bed belts is of no use if they are not used. Bed belts if not in use, might trail from the bed and cause the patient to fall while getting down or up the bed. Tying the bed belts incorrectly is again of no use for the patients' safety from fall. Reducing the fall risk potential for the patient involves presence, tying and tying the bed belts correctly.

4) & 5) Bed brakes--- Presence of bed brakes facilitates the bed to be used as stretcher to carry the patients and to make the bed stationary whenever required. If the beds do not have bed brakes, it cannot be used as stationary beds. Having bed brakes and not using them is a potential fall risk hazard. If the bed brakes are not used if the bed is used as a stationary bed, it can cause falls and serious injuries to the patient.

6), 7) & 8) Wheelchair belts--- Presence of wheelchair belts is important for the safety of patients from falls. Absence of wheelchair belts are a major cause of patient falls from the wheelchairs. Presence of wheelchair belts is of no use if they are not used during transporting patient. Wheelchair belts if not in use, might trail and cause an accident due to twining in the wheels. Tying the wheelchair belts incorrectly is again of no use for the patients' safety from fall. Reducing the fall risk potential for the patient involves presence, tying and tying the wheelchair belts correctly.

9) & 10) Wheelchair brakes--- Presence of wheelchair brakes facilitates the wheelchair to be stationary whenever not in motion. If the wheelchairs do not have brakes, the wheelchair can't be made stationary at a point which can cause a falls and accidents. Having wheelchair brakes and not using them is a potential fall risk hazard. Presence and the use of wheelchair brakes can reduce the potential of fall risk for the patient.

Other parameters:

1)& 2) Call bells—Call bells are alarm bell systems with the switch on the patient's bed side and the speaker at the nurses' counter/ room. Through a computer system, it is ensured that when a patient presses the bell's button, an alarm is turned on which the nurses can hear at their counter/ room with a light flashing on the screen to know which patient pressed the button. Presence of call bells for every patient can help and reduce accidents. It helps the nursing staff to understand and quickly act towards the patient's requirement. For this mechanism to be helpful, call bell in a working condition is necessary.

3)&4) Mopping of the floor--- Mopping of the floor of the patient's room ensures cleanliness and infection control. It is done in the direct supervision of the nursing staff or the housekeeping in-charge/ supervisor. The supervisor ensures that the floor is clean and dry when the patient walks on the floor. Wet floor can cause falls and serious injuries for the patient as well as for the staff of the hospital.

5) Furniture--- Patient might at any point of time, lean on the furniture of the room to get up or walk or save himself/herself from falling. In such circumstances if the furniture is not stable, the patient can fall and it can cause serious injuries. Furniture kept in the patient's room is stable when leaned on.

6) Hanging tubes/ cables--- Hanging tubes/ cables are potential risk for patient fall. Supervisor ensures that there are no hanging tubes, cables or wires.

7) Damaged flooring--- Damaged flooring can cause the patient to slip or trip and fall down. Damaged flooring is repaired as soon as it is observed or reported.

8) & 9) Night lamp--- During night hours, if patient gets up to visit washroom, due to dark and patients' eyes not acclimatized to the dark, can budge into, slip or trip and fall down. Presence of night lamp is a deterrent to such a circumstance to develop. Presence of a night lamp is of no use if it is not in working condition. Presence of and working night lamp reduces the fall risk during the night hours.

10) Hand hold/ hand rails in washrooms--- Inpatients are weak and washrooms have a potential risk of fall. Sudden hypotension after micturition is very common in inpatients. Presence of hand holds and hand rails is a measure to reduce the fall risk in the washrooms.

8.5 Checklist for NPSG 9

Fall risk assessment

Sr. No. Patient name & Patient ID	1.Patient name:
Parameters ↓	ID:
1.Mental status noted	
2.History of falls noted (past 3 months)	
3.Vision status noted	
4.Gait and balance is noted	
5.Medications prescribed are noted	
6.Predisposing diseases are noted	

OBSERVATION

Sr. No. Patient name& ID	Patient observed round the clock	Patient has one attendant at night	Patient assisted during visit to the washroom	Patient are shifted under observation
1.Patient ID: Name:	Round the clock Glass window			

FOOTWEAR

Sr. No. Patient name& ID	Footwear provided	Footwear is of appropriate size	Footwear is clean	Sole of the footwear not worn out (non-slip sole)	Has an elastic at the hind end	Footwear has no trailing laces
1.Patient ID: Name:	Provided	Appropriate size	Clean	Non-slip	Hind elastic	
	Same day	Not allergic	Replaced if not satisfied	Not worn out	Not uncomfortable	

BELTS AND BRAKES USAGE

Sr. No. Patient name & ID	Bed belts present	Bed belts tied	Bed belts tied correctly	Bed brakes present	Bed brakes used	Wheelchairs present	Wheelchairs tied	Wheelchairs tied correctly	Wheelchairs present	Wheelchairs brakes used
1.Patient ID: Name:										

OTHER PARAMETERS

Sr. No. Patient name & ID	Call bells present	Call bells in working condition	Mopping under supervision	Supervisor ensures quality	Furniture stable	No hanging tubes or cables	No damage to flooring in patient's room	Night lamp present	Night lamp working condition	Wash room has hand holds/hand rails
1.Patient ID: Name:										

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