

# Title : Process approach in reducing Medication Errors

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# Introduction

The National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP) has defined medication errors (MEs) as, “Any preventable event that may cause or lead to inappropriate medication use or patient harm, while the medication is in the control of the health care professional, patient, or consumer.

Based on our medication errors analysis and subsequent discussion in our Drug and Therapeutic Committee, it was highlighted that our medication error rate was higher than the ISMP Benchmark. It was analysed that majority of the errors were due to:

wrong dose, decimal & numbering, therapeutic duplication, wrong frequency and dilution errors.

The contributing factors were Drug knowledge dissemination, Poor handwriting, Inexperienced staff, challenging patient populations, Lack of follow-up and monitoring, Medication calculations, and ineffective communication.

At the start of the project, our medication error rate was 2.60 % and we started with a goal of 30% reduction and move continuously towards the final aim of zero error.

Improving the safety of medication and reducing errors, we were able to develop safe medication practices across the hospital and reduce the chances of adverse events. This ultimately added to ideal and harmless patient care, contributing a lot towards patient safety.

With implementation of various interventions we were able to reduce errors from 2.60% in 2012 to 1.40 % in 2021

# Problem Definition

Medication errors have significant implications on patient safety.

Error detection discloses those errors and thus, **encourages a safe culture.**

At the initiation of the project in 2012 our medication error rate was 2.60 % much higher than the ISMP target of less than 2%. Hence we decided to reduce the same by at least 30% which when achieved was further increased to 50% (approximately) and further work towards achieving 0 medication error.

# Objective

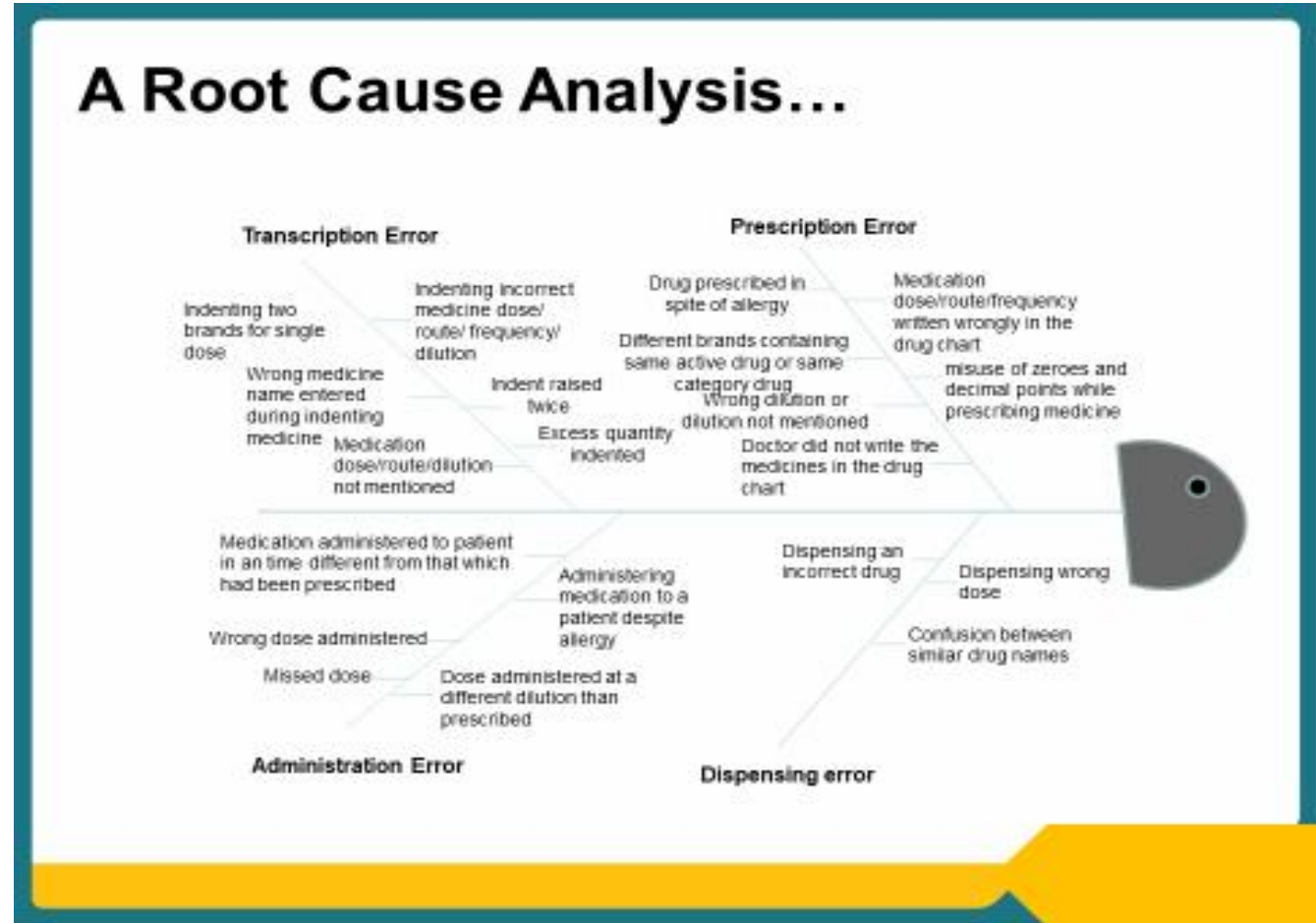
The objectives of this project were to identify and analyze the types of medication errors and undertake interventions to avoid such errors

To reduce the risk of patient harm by reducing medication errors and improving patient safety following goals were undertaken

- Identification of the most common errors related to medications.
- Reviewing critical points at which medication errors are most likely to occur.
- Outlining strategies to prevent medication errors from occurring.
- Summarizing inter-professional team strategies for decreasing medication errors.

# Concept Note

A dedicated team of experts from medical administration, quality cell, nursing and clinical pharmacology was formulated to study medication error trends and potential causative factors associated. Medication management process was mapped thoroughly followed by extensive brain storming on causative factors and depiction of **cause and effect diagram** to segregate the related causes. Potential solutions pertaining to causative factors were chalked down and discussed with respective process owners for effective implementation. Medication error trends before and during the implementation process were observed for impact analysis. Sustained efforts were put in place for effective measures while medication errors were tracked and analysed continuously.

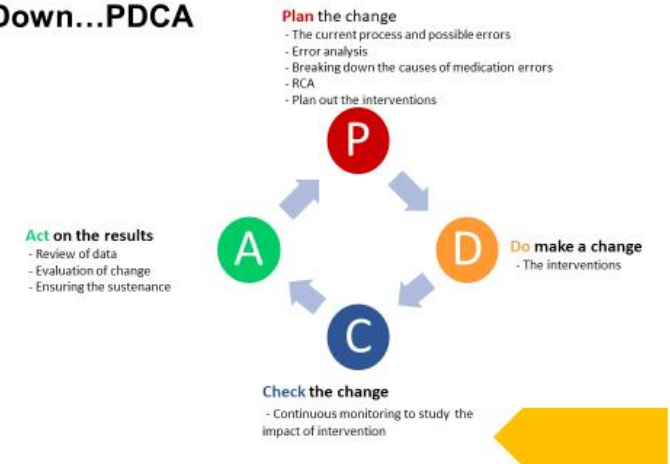


# Methodology

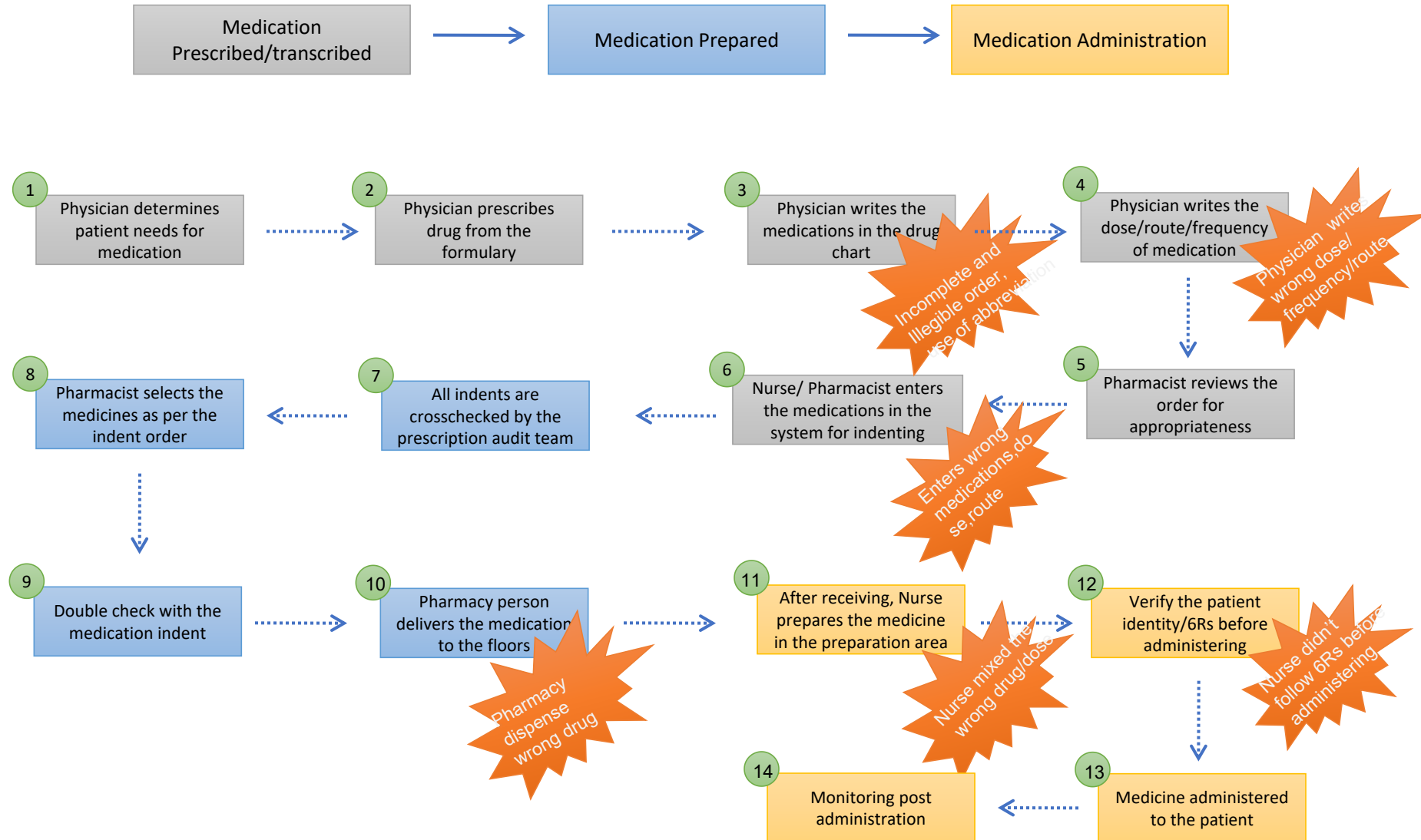
Based on the findings, following interventions were suggested and implemented as and when required; at the same time regular tracking of medication error was continued for assessment of improvement and to suggest further interventions.

- Mapping the medication process
- Weekly error reporting process
- Trend analysis for medication error
- Segregation of types of errors
- Strengthening Auditing process
- New indenting module
- Separation of look or sound alike drugs
- Tall Man lettering to identify LASA drugs
- Light verification methodology for cross checking the IV fluids
- Order rechecking process by pharmacist
- Disturbance-free-indenting and Collaborative Rounds process on weekly basis
- Staff re-orientation programs
- Intensified training and Regular ongoing sessions for medical staff and Nursing
- Strengthening the medication re-conciliation process
- Pocket sized drug formularies to all doctors
- Online access to drug formulary and drug information software
- Customized drug chart
- Staff engagement activities on medication safety

## Breaking it Down...PDCA



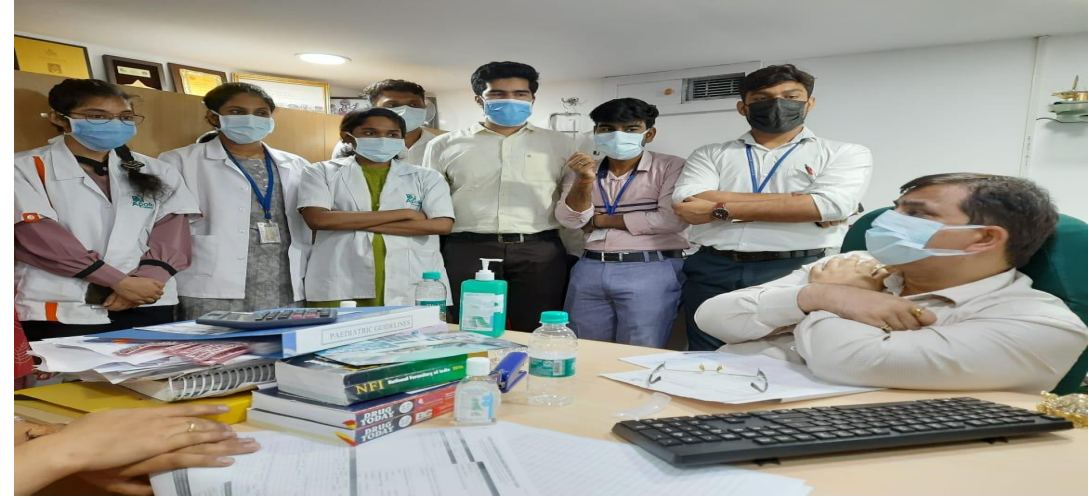
# The Medication Process... Possible Errors



# Awareness and Training



- On floor interactions
- Quiz / Poster Competitions
- Safety Campaigns
- Fun activities






# NO ERROR MONTH CALENDAR

A pre-printed calendar was given to all patient care areas and the in charge was told to mark the error free day with green and even a single error in day was marked as red. The unit were then awarded based on maximum no of green days.

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			



● GREEN = NO ERROR  
● RED = ERROR  
\*(PATIENT FALLS, MEDICATION ERROR, NSI)

Please highlight no error date with green & error date with red

# SIMULATION TRAINING

A fun filled exercise for all Healthcare Providers, wherein based on the Errors set-up, the employees need to correctly find out the errors and fill their responses in the online quiz



Indraprastha  
**Apollo**  
HOSPITALS

WE NEED YOU DETECTIVES!  
IN MAKING  
**NO ROOM FOR ERRORS!**  
LETS TRY OUR BEST TO SPOT ALL ERRORS WHICH MIGHT COME IN OUR WAY OF PROVIDING OUR PATIENTS WITH THE BEST OF CARE

✓ Staff engagement activities on medication safety

## #MedSafe Photo Contest

Medication Safety Month  
April 2021

Safety is best Medicine.  
So Keep your Medicines Safe!

Let everybody know how you ensure Medication Safety in your area.  
Make a photo collage showcasing Medication Safety Practices.  
Share it with us at [qualityactivitydelhi@gmail.com](mailto:qualityactivitydelhi@gmail.com).

## GLIMPSE OF MEDICATION SAFETY WEEK

**Day 1** - Education on Rational use of Antibiotics, Safe use of Antibiotics, Avoiding common mistakes, and Hand Hygiene. Quiz on Medication Safety particularly High Alert Drugs. Updated list of all High Alert Drugs were also given for display.

**Day 2** – Nurses training on Medication Safety, Medication Reconciliation, DVT Awareness, and Simulation exercise on auditing points for Pharmacists

**Day 3** - Pharmacist training on Appropriateness Review, Medication Reconciliation and Prescription Audit, Insulin Rainbow – to colour according to the Type of Insulin by the Pharmacy and Nursing Staff

**Day 4** - DVT training for Doctors, Find the error exercise for the Pharmacist

**Day 5** - Training of Doctors on DVT Prevention / Medication Safety Prevalence of DVT, Sign and Symptoms, Prevention Methodologies, Treatment Guidelines

Medication Safety: Doctor's Perspective – High Alert Drugs, Prescription Errors, Stoppage /Discontinuation/Change of Drugs orders, Medication Reconciliation, Appropriateness Review of Drugs

**Day 6** - Based on the prescription audit findings, HODs recommendations and Quiz results, the team identified the Medication Safety Champions - 2 Doctors, 2 Nurses and 2 Clinical Pharmacists, who were felicitated by the Senior Management Team. The winners were appreciated by the management and requested to become Champions for other healthcare providers.





### INSULIN CHART

Brand Name	Generic Name	Onset (min)	Peak (min)	Duration (hr)	Notes
<b>RAPID ACTING INSULIN ANALOGUES</b>					
Humalog, Novolog	Insulin Lispro	15-30	1-2	3-5	Usually 3 times a day subcutaneously (S/C) within 30 minutes before or just after, food
<b>SHORT ACTING SOLUBLE INSULINS</b>					
Humulin R, Novolin R	Insulin Regular	30-60	2-4	5-8	May be used in combination with insulin pumps
<b>INTERMEDIATE ACTING INSULIN</b>					
Lantus, Levemir	Insulin Glargine	1-2	4-6	24	Once or twice daily S/C
<b>LONG ACTING INSULIN</b>					
<b>BIPHASIC INSULIN ANALOGUES (contains a mixture of a rapid acting insulin analogue and an intermediate acting insulin)</b>					
<b>BIPHASIC INSULIN (contains a mixture of a short acting insulin analogue and an intermediate acting insulin)</b>					



## INFRASTRUCTURE AND SIGNAGES FOR MEDICATION SAFETY

Sound Alike storage and labelling





# SAFETY FOR HIGH ALERT DRUGS

labels for high alert drugs

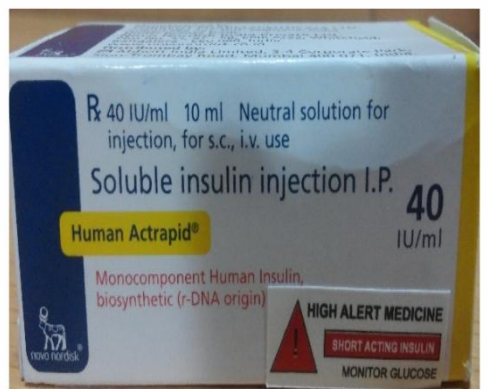
**HIGH ALERT MEDICINE**  
INTERMEDIATE ACTING  
MONITOR GLUCOSE

**HIGH ALERT MEDICINE**  
ULTRASHORT ACTING  
MONITOR GLUCOSE

**HIGH ALERT MEDICINE**  
PARALYSING AGENT  
Causes respiratory arrest  
For use in intubated patients

**HIGH ALERT MEDICINE**  
LONG ACTING INSULIN  
MONITOR GLUCOSE

**HIGH ALERT MEDICINE**  
SHORT ACTING INSULIN  
MONITOR GLUCOSE



Form # 3030

**High Alert Medications Monitoring Protocol:**

- Pre (Just before starting the medication): Once
- 15 minutes after starting medications: once
- On Completion: Once
- 4<sup>th</sup> Hourly

**Category of Medication Administered:**

- Chemotherapeutics
- All Narcotic Drugs
  - Painful Patches and Injections
  - Injection Pethidine
  - Morphine Injections and Tablets
  - Pentazocine Injection
- Concentrated Electrolytes
  - IV Potassium chloride (2mg/ml) or more concentrated
  - IV Potassium phosphate
  - IV Sodium chloride (more than 0.9%)
  - IV Magnesium sulphate (50% or more concentrated)
- Narrow Therapeutic Index drugs
  - IV Phenytoin
  - IV Aminophylline
  - IV Tacrolimus
  - IV Digoxin
  - Tab Lithium Carbonate
- Anesthetics - Inj. Halothane
- Anesthetic - Inj. Ketamine Hydrochloride

**NOTE:**

- For details of drug order & administration refer physician order sheet / Diabetic monitoring chart.
- Drug specific monitoring to be done for Insulin and Anticoagulants - refer avertal. For LASA- Follow routine patient monitoring and high alert medication policy on LASA.

Monitoring Protocol	Time	Temperature °C	Pulse rate/minute	Respiratory rate/minute	Blood Pressure mm of Hg	SpO2 %	Time	Observation: Drug specific (See Overleaf)	Sign of Staff with Check No.
Just before starting									
15 minutes after starting medications									
On completion (if before 4 hours)									
4 <sup>th</sup> Hourly									



Mandatory monitoring of patients after administration of High Alert Drugs

## PRE PREPARED LABELS FOR PRE-FILLED SYRINGES

For Intra Venous Use Only ( use within 12hours )

**EPHEDRINE 30mg / ml**

Date: \_\_\_/\_\_\_/\_\_\_, Time: \_\_\_\_\_

Prepared by \_\_\_\_\_

For Intra Venous Use Only ( use within 12hours )

**SUCCINYLCHOLINE 5MG/ML**

Date: \_\_\_/\_\_\_/\_\_\_, Time: \_\_\_\_\_

Prepared by \_\_\_\_\_

For Intra Venous Use Only ( use within 12hours )

**PROPOFOL 10mg / ml**

Date: \_\_\_/\_\_\_/\_\_\_, Time: \_\_\_\_\_

Prepared by \_\_\_\_\_

For Intra Venous Use Only ( use within 12hours )

**NEOSTIGMINE 0.5mg / ml**

Date: \_\_\_/\_\_\_/\_\_\_, Time: \_\_\_\_\_

Prepared by \_\_\_\_\_

For Intra Venous Use Only ( use within 12hours )

**FENTANYL 50MCG / ml**

Date: \_\_\_/\_\_\_/\_\_\_, Time: \_\_\_\_\_

Prepared by \_\_\_\_\_

For Intra Venous Use Only ( use within 12hours )

**ATROPINE 0.65mg / ml**

Date: \_\_\_/\_\_\_/\_\_\_, Time: \_\_\_\_\_

Prepared by \_\_\_\_\_

# Medication Reconciliation

# ADR Reporting Format

**Drug Details**

**Whether to be continued in hospital**

DRUG	Dose	Route	Frequency	Source Last dose taken at	Whether to be continued in hospital
2 Amoxiclav 500mg oral	BD	oral	BD	yes	yes
2 Pantoloc 40mg oral	BD	oral	BD	yes	yes
2 Pantoloc 40mg oral	BD	oral	BD	yes	yes
2 Pantoloc 40mg oral	BD	oral	BD	yes	yes
2 Pantoloc 40mg oral	BD	oral	BD	yes	yes
2 Pantoloc 40mg oral	BD	oral	BD	yes	yes
2 Pantoloc 40mg oral	BD	oral	BD	yes	yes
2 Pantoloc 40mg oral	BD	oral	BD	yes	yes
2 Pantoloc 40mg oral	BD	oral	BD	yes	yes
2 Pantoloc 40mg oral	BD	oral	BD	yes	yes

Pertinent finding on secondary survey - Drowsy, Not oriented, eye opening

	Current Medications	Dose	Frequency	Route	To be continued in hospital	
5					Yes	No
1					Yes	No
2					Yes	No
3					Yes	No
4					Yes	No
5					Yes	No
6					Yes	No
7					Yes	No
8					Yes	No
9					Yes	No
10					Yes	No

### ADR REPORTING FORMAT

DATE: \_\_\_\_\_

NAME	AGE	GENDER	WEIGHT	HEIGHT	UHID NO.	WARD	CONSULTANT
TEMP	BLOOD PRESSURE	PULSE	PAST MEDICATION HISTORY	DOA & DOD	KNOWN ALLERGIES		

SUSPECTED DRUG(S)									
S. No.	T. Name	G. Name	Batch no.	Expiry Date	Dose	Route	Date Started	Date Stopped	Indication

TYPE OF REACTION:

<input type="checkbox"/> ATAXIA	<input type="checkbox"/> HALLUCINATIONS	<input type="checkbox"/> NEPHROTOXICITY	<input type="checkbox"/> SEDATION
<input type="checkbox"/> BLEEDING	<input type="checkbox"/> HEPATOTOXICITY	<input type="checkbox"/> NYCTROPENIA	<input type="checkbox"/> SEIZURES
<input type="checkbox"/> BRADYCARDIA	<input type="checkbox"/> HYPERGLYCEMIA	<input type="checkbox"/> NYSTAGMUS	<input type="checkbox"/> SHORTNESS OF BREATH
<input type="checkbox"/> CONSTIPATION	<input type="checkbox"/> HYPOTENSION	<input type="checkbox"/> PANCYTOPENIA	<input type="checkbox"/> TACHYCARDIA
<input type="checkbox"/> DIARRHOEA	<input type="checkbox"/> HYPOKALEMIA	<input type="checkbox"/> PRURITIS	<input type="checkbox"/> THROMBOCYTOPENIA
<input type="checkbox"/> DIZZINESS	<input type="checkbox"/> MENTAL STATUS CHANGE	<input type="checkbox"/> RASH	<input type="checkbox"/> URINARY RETENTION
<input type="checkbox"/> DYSTONIA	<input type="checkbox"/> MUCOSITIS	<input type="checkbox"/> RED MAN SYNDROME	<input type="checkbox"/> VOMITING
<input type="checkbox"/> EXTRAVASATION	<input type="checkbox"/> NAUSEA	<input type="checkbox"/> RESPIRATORY DEPRESSION	<input type="checkbox"/> OTHERS

Concomitant Medications	
S. No.	S. No.

### DIAGNOSIS

Description of the event: \_\_\_\_\_

ADR before the admission  
 ADR after the admission

Predictable  
 Not predictable

Date of onset: \_\_\_\_\_ Date received: \_\_\_\_\_

System involved: \_\_\_\_\_

Management of ADR:  Drug withdrawal  Dose altered  No change

Intensification Given:  Specific  Symptomatic  Nil

OUTCOME:  Recovered  Continuing  Hospitalized  No  No  No

Level: 1 2 3 4 5 6 Date of death: \_\_\_\_\_

Causality: (A) Naranjo scale:  Definite  Probable  Possible  Unlikely  Unlikely  Conditional / Unclassified

(B) WHO probable scale:  Definite  Probable  Possible  Unlikely  Unlikely  Conditional / Unclassified

Preventability:  Definitely preventable  Probably preventable  Not preventable

Predisposing factors:  Age  Gender  Genetic  Intercurrent diseases  Multiple drug therapy  Others

Risk factor present:  Renal dysfunction  Cardiac dysfunction  Hepatic dysfunction  Previous allergies  Smoking  Alcohol  Drug effect  Others

To assess the adverse drug reaction, please answer the following and give pertinent score.

Question	Yes	No	Do Not know	Score
1. Are there previous conclusive reports on this reaction?	1.5	0	0	
2. Did the adverse event appear after the suspected drug was administered?	1.2	-1	0	
3. Did the adverse reaction improve when the drug was discontinued or a specific antagonist was administered?	1.5	0	0	
4. Did the adverse reaction reappear when the drug was re-administered?	1.2	-1	0	
5. Are there alternative causes (other than the drug) that could on their own have caused the reaction?	-1	1.5	0	
6. Did the reaction reappear when a placebo was given?	-1	1.5	0	
7. Was the drug detected in the blood (or the fluid) in concentrations known to be toxic?	1.5	0	0	
8. Was the reaction more severe when the dose was increased or less severe when the dose was decreased?	1.5	0	0	
9. Did the patient have a similar reaction to the same or similar drugs in any previous exposure?	1.5	0	0	
10. Was the adverse event confirmed by any objective data?	1.5	0	0	

In every care setting, specially at the transition of care, Medication Reconciliation is being done to avoid Drug-Drug Interactions, Therapeutic duplications, etc from patient safety aspect.

**ADR REPORTING CARD**

S.No. \_\_\_\_\_

PATIENT DETAILS/LABEL (USING TWO IDENTIFIERS): \_\_\_\_\_

BRIEF DESCRIPTION OF ADR: \_\_\_\_\_

DATE & TIME OF ONSET: \_\_\_\_\_ REPORTED BY: \_\_\_\_\_

SUSPECTED DRUG/S: \_\_\_\_\_

# Educating and Empowering Patients

Everyone, including patients and health care professionals, has a role to play in ensuring medication safety. Special medication cards were given to patients to track and keep record of their medications. This will not only help them to take medications regularly on time but also help them educate on medication safety.

## WARFARIN / NICOUMALONE PATIENT INFORMATION

Warfarin / Nicoumalone stop clots from being made or getting bigger

**WHEN TO CALL YOUR DOCTOR\***

- Any unusual bleeding or bruising
- Severe unexplained pain
- Fever, vomiting, diarrhoea, infection

\*Call CMO @ 01126925858

**The right dose = the right INR**

Too high - may bleed

Too low - won't work

\*INR= International Normalised Ratio

Ask your doctor about all your medicines to avoid drug-drug interactions.

Same time Every time  
Take your tablets On Time

**Ask Your Doctor**  
As per Doctor's instructions

**WHAT TO AVOID EATING**

Foods high in Vitamin K Content

Spinach & other green leafy vegetables  
Cabbage  
Cauliflower  
Broccoli  
Lettuce  
Kiwi  
Radish greens  
Organ Meats  
Soya bean oil & Canola Oil  
Excess of Cranberry juice, Green tea or Alcohol

\* Follow your dietician's recommendations.

Take your Warfarin / Nicoumalone at \_\_\_\_\_ Other information/recommendations: \_\_\_\_\_

Have regular blood test starting \_\_\_\_\_

Call your doctor for your INR results on the day of your blood test

Take the recommended dose until your next blood test

## Medication card

Patient name: .....

Emergency contact no. ....

Doctor name: .....

Allergies: .....

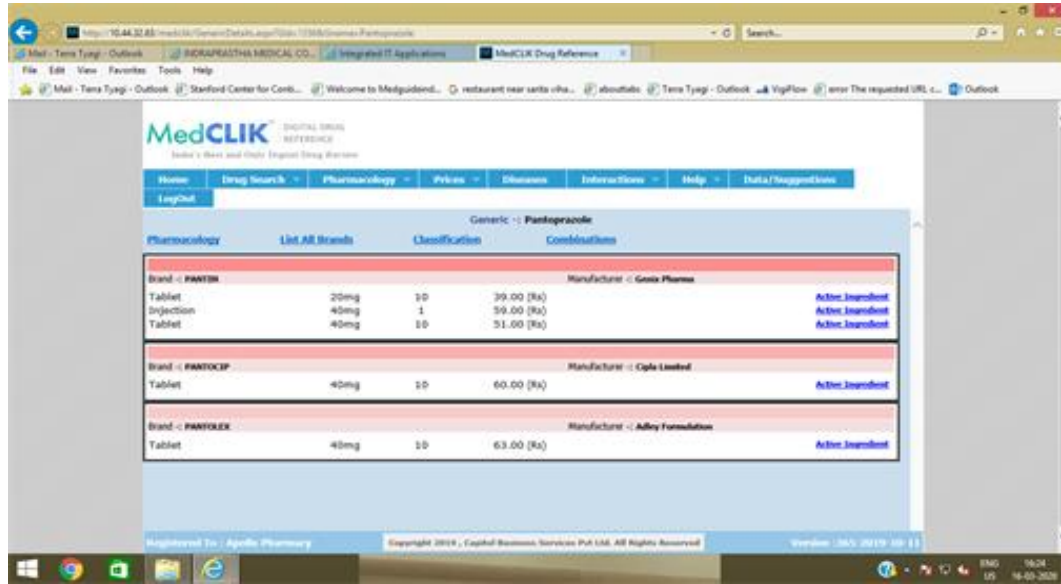
Medication name	Dose	Frequency	Taken for

## Medication Safety Tips

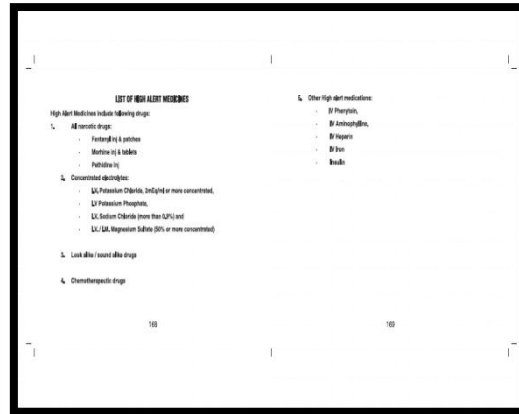
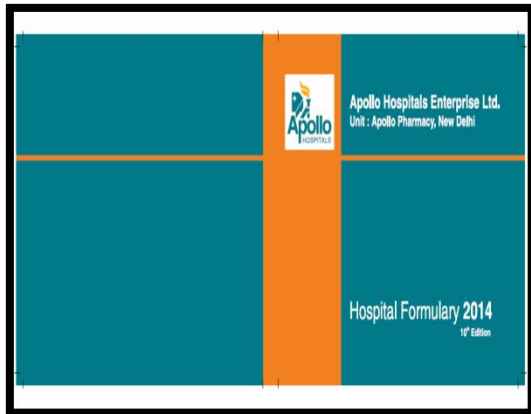
1. Always understand the use of your medicines from the doctor/pharmacist.
2. Keep a list of all your medications handy.
3. Inform your food/drug allergy to your doctor.
4. Ask about changes in colour/shape of your regular drugs.
5. Please inform your doctor about the herbal/over the counter drug you may be taking.
6. Always understand whether to take the drug before /after food from your doctor/pharmacist.
7. Always take your medicines with water preferably in an upright position.
8. Store your medicines away from direct sunlight and children.
9. Please speak to your doctor/pharmacist in case you feel anything not going right.
10. Please do not take medicines on your own, always follow a fresh medical advice.

# DIGITAL DRUG REFERENCE ON LAN

✓ Online access to drug formulary and drug information software



✓ Pocket sized drug formularies to all doctors





# Cold Chain Adherence



**APOLLO PHARMACY**  
 Department: Central Pharmacy Store 1816

INSPECTION CHECK LIST FOR HANDLING OF COLD CHAIN PRODUCT AT THE TIME OF RECEIPT

Received From: *Lucky Pharmaceuticals (I) LTD*

S.No	Checks	Observations
01	Date of receipt	
02	Invoice No challan no:	<i>13-7-2022</i>
03	Is product transferred into cold room for verification purpose	<i>AT-22-1809</i>
04	Does the product contains any validated cold chain pack	Yes or No <input checked="" type="checkbox"/>
05	Use calibrated temperature QIN and verify the product temperature. Or In case of the consignment having any data logger record the display temperature and share the data logger back to Manufacturer	Temperature: <i>3.22</i>
06	Presence of heat indicator on product (In case of color change report to Manufacturer)	Yes or No or NA <input checked="" type="checkbox"/>
07	Physical Condition of Goods (Internal or external of the pack) (If Not Satisfactory kept under HOLD and inform to the Manufacturer)	Satisfactory/Not Satisfactory <input checked="" type="checkbox"/>
08	If the pack is tampered, HOLD the consignment and do the investigation and inform to the Manufacturer	Yes or No <input checked="" type="checkbox"/>
09	In case of refrigerators fill the following details a) Cold box opening time: b) Time of product transfer into the refrigerator. TOR (Time out of refrigerator) (1-6): Allowable Time Out of Refrigeration (TOR) 10 Min.Max	<i>3:45 P</i> <i>3:48 P</i>

Consignment physically verified by (Sign and Date): *[Signature]* *13-7-2022*

Note: In case of any abnormalities observed during verification, the consignment shall be kept under hold for further investigation.



**Cold Chain drugs transport bag acts as an identifier and reminder of the cold chain integrity**



**24 x7 monitoring / thrice a day temperature recording during storage to ensure integrity.**



**Indraprastha Apollo**

PATIENT NAME: *DEEPIKHA*  
 PATIENT TYPE: *CHRONIC - INDIAN OIL CORPORATION*  
 PATIENT LOCATION: *DRYDARE BEDS*

SNO	ITEM NAME	SUBSTITUTE	IND QTY	ISS QTY	BATCH	MSP	EXP DATE	TOT VAL	OSDAY	REMARKS
1	ACECOLD PLUS TAB		14	3	SPM211 5.83	30-Nov-23	77.42			OS MED
2	BECSUASER CAPS		7	2	STOR008 2.28	31-Mar-25	15.96			OS MED
3	CALCICROL GRANULES		2	2	JKAZ225 56.40	31-Dec-23	112.80			OS MED
4	CONCOR 2.5MG TAB	BISLOC 2.5M G TAB	7	7	ST-2182 6.50	30-Nov-23	45.50			OS MED
5	COQ SUPPORT TAB		7	7	U217002 59.90	1-Nov-22	419.30			OS MED
6	CTD 6.25MG TAB 15'S		7	7	EKA0210 6.24	30-Sep-23	43.68			OS MED
7	GRAFEEL PFS 300MCG INJ		2	2	NS1-1540-300 35.00	31-Aug-24	70.00			OS MED
8	LOOZ 150 ML SYP	LOOZ-200ML SOLUTION	1	1	L302206 231.00	2-Feb-24	231.00			OS MED
9	ONDEM MD 4 TAB		14	14	2144302 5.26	30-Sep-23	73.64			OS MED
10	ROZUCOR ASP TAB		7	7	OBKSH0 8.96	30-Sep-23	62.72			OS MED

Temp: *3.52*

MOHD NAZEM APM1318  
 HARU MOHAN APM1336

PRESCRIBED BY:- Soumya Soman PAT APPROVED BY:- KAMIL ISSUED BY:- AMIT SHARMA (Issuer)

ADDRESS: Minus 1, IMCL, Sarita Vihar, South Delhi, Delhi, India

**While dispensing the medication the medication is wrapped in cold chain blue bag and temperature is recorded on patient bill.**



**Spill Proof, Biodegradable bags for safe transportation of chemotherapy Drugs along with Disposal alert**

# Pro Active Risk Management through FMEA project on Chemotherapy Admixture

Process	Sub processes	Failure modes	Potential Causes	Scoring							Decision Tree Analysis	Action Type (Control, Accept, Eliminate)	Actions or Rationale for stopping	Outcome Measure	Person Responsible	Management Concurrence	Status
				Severity	Probability	Hazard Score	Single point weakness?	Existing control Measure?	Detectability	Proceed							
Doctor's prescription	Identification of Patient using 2 identifiers	Two patient identifiers not checked	Training issue/ inattentiveness / multiple distraction	Catastrophic	Uncommon	8	N	Y	Y	N	NA	Patient name and UHID number is used to identify all admitted patients. All staff are trained to identify the patient correctly.					
		Bed no used as identifier	Training issue	Moderate	Uncommon	4	N	Y	Y	N	NA	As per the hospital policy, bed number is not used to identify any patients. All staff are trained to identify the patient by name and UHID number.					
	Allergy checked	Allergy not documented	Training issue / Staff inattention	Catastrophic	uncommon	8	N	Y	Y	N	NA	At the time of initial assessment (during admission) patient allergy is identified and documented in the patient record. If the patient has any allergy, a red coloured band is put on the patient hand, and allergies are written on the band.					
		Prescription of drugs as per patient clinical condition based on BSA	Patient height / weight no documented in the prescription	Weighing scale not available / Training issue	Major	Uncommon	6	N	Y	Y	N	NA	Patient height and weight is recorded at the time of initial assesment by the doctor and nurse. Patient weight is updated at regular intervals during the stay in the hospital and the same is documented in the patient record.				
	BSA not documented in the prescription		Training issue / Staff inattention	Major	Occasional	9	N	Y	Y	N	NA	BSA (Body Surface Area) is written in the chemotherapy form by the doctor. Regular training sessions are conducted for the doctors for compliance.					
	Complete medication order, drug name, dose, route, dilution details, duration of infusion with sign and date	Incomplete medication order ( drug name, dose, route, dilution details, duration of infusion not written)	Training issue / Staff inattention	Catastrophic	Remote	4	N	Y	Y	N	NA	At the time of joining, all doctors are given orientaion to the hospital policy on writing complete medication order. Regular training sessions are conducted for doctors on reemphasizing the complete medication order. Chemo mixing is done only after receiving the complete order.					
		Prescription not signed by the doctor	Staff inattention	Moderate	Frequent	8	Y	Y	Y	N	NA	All medication orders and signed, dated and timed by the doctor. Regular training sessions for the doctors and random checks are conducted for compliance.					
		Illegible medication order	Training issue	Moderate	Frequent	8	N	N	Y	Y	Control	A legibility analysis to be done for the Medical Oncologists. A session on prescription writing to be taken for the doctors with special emphasis on legible prescription writing.	Improvement of legibility of prescriptions	Dr Sanjeev Sharma	Yes		
		Abbreviations used for medication order	Lack of adherence to hospital protocol	Major	Frequent	12	N	Y	Y	Y	NA	Regular education to staff on the harmful effects of using abbreviations and symbols. 'Do not use Abbreviations' and 'Do not use Symbols' lists are posted on in patient records and hospital intranet site.					
	Chemotherapy form filled with dilution details with two patient identification, cycle of chemotherapy, height, weight, BSA, drug dilution detail, route and duration of infusion	Chemotherapy form not filled	Inattention / Training issue	Major	Remote	3	N	Y	Y	N	NA	Chemotherapy form is filled by the doctor with all relevant information required for chemo mixing. Chemo mixing is done only after the complete chemotherapy form is received in cytotoxic admixture unit.					
		Incomplete chemotherapy form	Inattention / Training issue	Major	Occasional	9	N	N	Y	Y	Control	Communication from DMS shall go to all Medical Oncologists for completeness of chemotherapy form. During departmental review, the non compliances to be discussed with the doctors. The same shall be checked during random audits.	Improved compliance to completeness of chemotherapy form.	Dr N Subramani	Yes		
		Wrong dilution details are written in chemotherapy form	Inattention / Lack of knowledge	Moderate	Remote	2	N	Y	Y	N	NA	Pharmacists verify the all the dilutions agains the manufacturer's instruction before mixing the drug. List of all chemotherapy drugs with dilution details as per manufacturer's instruction is made available in the cytotoxic admixture unit.					

# INCIDENT REPORTING

EVENT / OCCURRENCE (select of any one option atleast is mandatory)

- Anaesthesia Related
- Any Other
- Behavioural Incidents
- Blood Transfusion
- Clinical Incidents
- Communication Related
- Complaints Related
- Criminal Incidents
- Diagnosis & Treatment Related
- **Drugs / IV / Blood Related**
- Documentation Related
- Employee Complaints
- Environmental
- Equipment & Devices Related
- IPSPG Related
- Follow Up Treatment
- Infection Control Related
- Laboratory
- Labour/Delivery/Newborn Related Incidents
- Medical/Doctor Related
- **Medication**
- Near Miss
- Nursing Related
- Patient Complaint
- Radiology & Imaging
- Sentinel Event
- Staff Complaint
- **Staff Related**
- Injury / harm while working
- Miscellaneous



## MEDICATION STANDARDIZATION

MMU Module II -  
On ground Compliance Apr 22



Integrated IT Applications Apollo Lighthouse  
Apollo Incident Report System(AIRS)

Take an Incident Report?

Apollo Incident Report System (AIRS) – online incident reporting application which supports the accurate recording, management and resolution of incidents including all adverse events, Near Misses and Sentinel events within our facility.

**Important Definitions**

**Adverse event** An unexpected, undesirable, or potentially dangerous occurrence in a health care organization.

**Near miss** Any process variation that did not affect an outcome but for which a recurrence carries a significant chance of a serious adverse outcome. Such a "near miss" falls within the scope of an adverse event.

**Sentinel event** is defined as a patient safety event (not primarily related to the natural course of the patient's illness or underlying condition) that results in a patient and results in any of the following:

- Death
- Permanent harm
- Severe temporary harm
  - Severe temporary harm is defined as critical, potentially life-threatening harm lasting for a limited time with no permanent residual but requires transfer to a higher level of care/waiting for a prolonged period of time, transfer to a higher level of care for a life-threatening condition, or additional major surgery, procedure, or treatment to resolve the condition. An event is also considered sentinel if it is one of the following:
- Suicide of any patient receiving care, treatment, and services in a staffed around-the-clock care setting or within 72 hours of discharge, including from the hospital's emergency department (ED)
- Unanticipated death of a full-term infant
- Discharge of an infant to the wrong family
- Abandonment of any patient receiving care, treatment, and services
- Any allegation (that is, unauthorized departure) of a patient from a staffed around-the-clock care setting (including the ED), leading to death, permanent harm, or severe temporary harm to the patient
- Hemolytic transfusion reactions involving administration of blood or blood products having major blood group incompatibility
- Stage, assist

Only secure content is displayed. What's the risk? Show all content

Emergency Physician Informed:  Yes  No  NA

What went wrong? \*

Immediate Action Taken \*

What should have happened? \*

Any other relevant and associated information

Unique Code  
23944  
Repeat the Code

Submit Cancel

Mention the incident details here

Mention the action which was taken immediately after the incident took place

Mention the correct protocol which should have been followed to prevent such incident from taking place

Enter the same code as mentioned in the box for e.g. 23944 and then submit the incident



### Three modules

#### MMU Plan

Unit has developed the MMU plan as per the template shared

#### Drug Formulary

The formulary is reviewed at annually based on safety and effectiveness of use information

#### Antibiotic Stewardship Program

Unit has a list of restricted antibiotics

The restricted antibiotics list is reviewed and updated in regular intervals as in the policy

The effectiveness of the antibiotic stewardship program is monitored

The Antibiotic Stewardship Program effectiveness monitoring data is reviewed by DTC

Patient education is done on antibiotic use and effect

#### Selection & Procurement/ Supply Chain

There is a list of medications inventory

Drug recall drill is done

#### Process Monitoring(MMU Tracer / checklist)

Monthly Ward / ICU monthly check is done by Pharmacy and checklist is completed

#### Emergency Medications

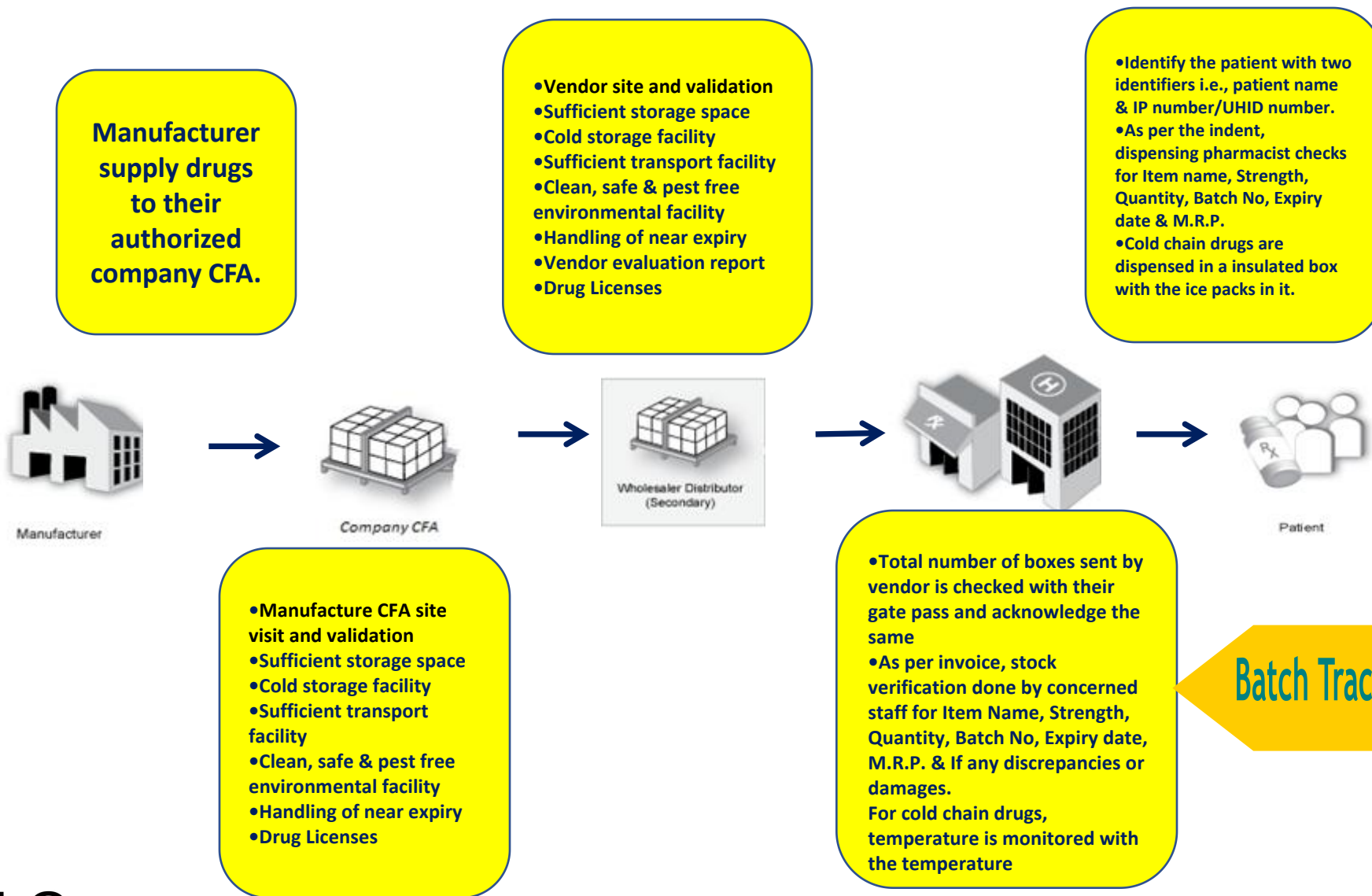
#### High alert medication

#### Medication storage

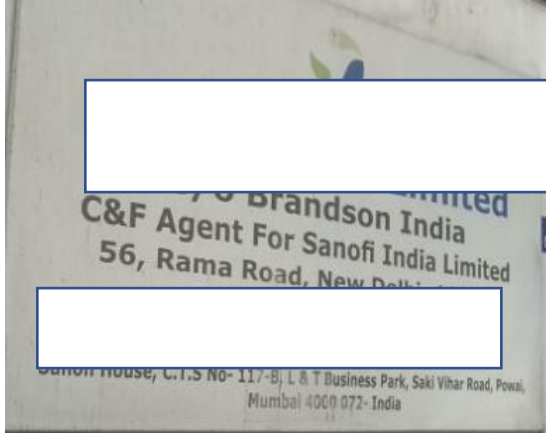
#### Ordering and Transcribing, Preparing and Dispensing

#### Monitoring

# Checking Supply from the Source: Robustness Intact



# Vendor Site Visit



CFA address



Storage Check-  
Quarantine



Cold Chain Packaging Guide



Cold Chain Temperature Check

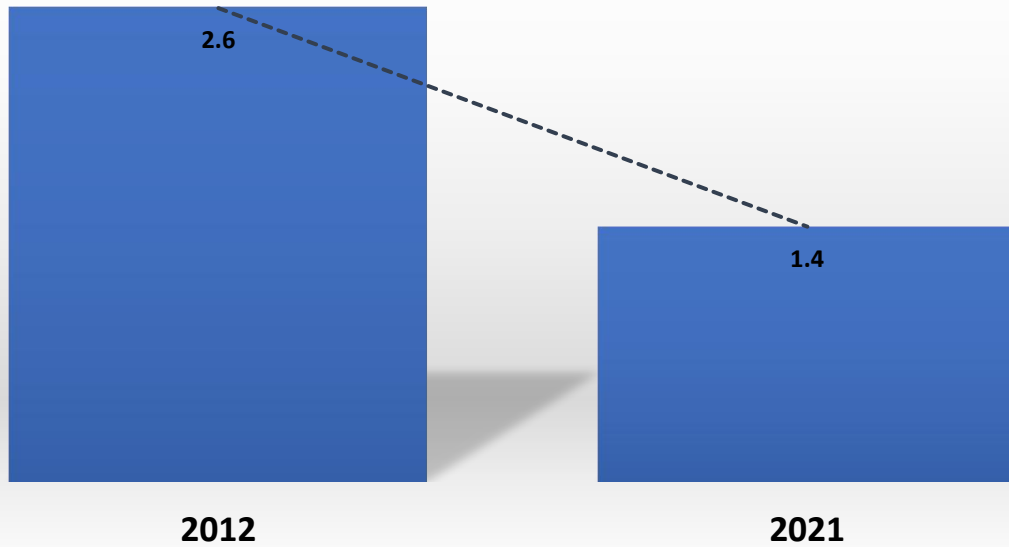


Power back up



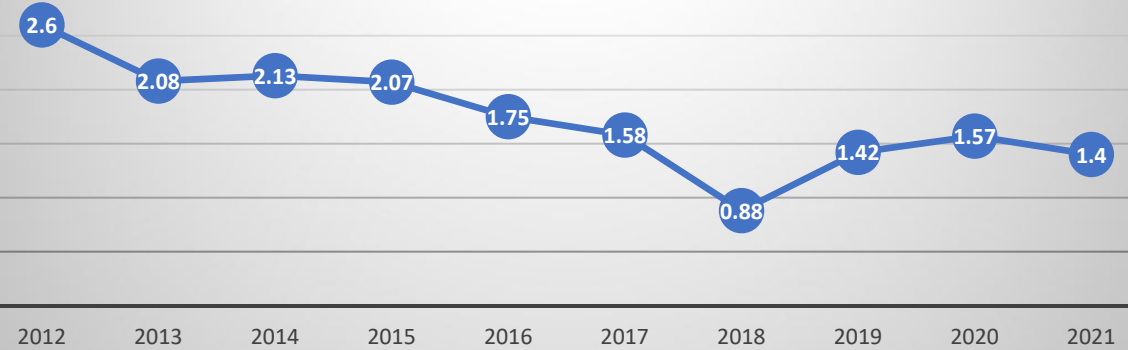
Fire Safety

# Tangible Results



**46% reduction in medication error**

Medication error rate-2012-2021



# Intangible Results

- Cost reduction of resources wasted in overcoming the damage due to errors.
- Reducing the length of stay improved the patient satisfaction
- Reduction in stress level, burn out in employees
- Promoted organizational goal of continuous quality improvement
- Increased compliance to the accreditation standards

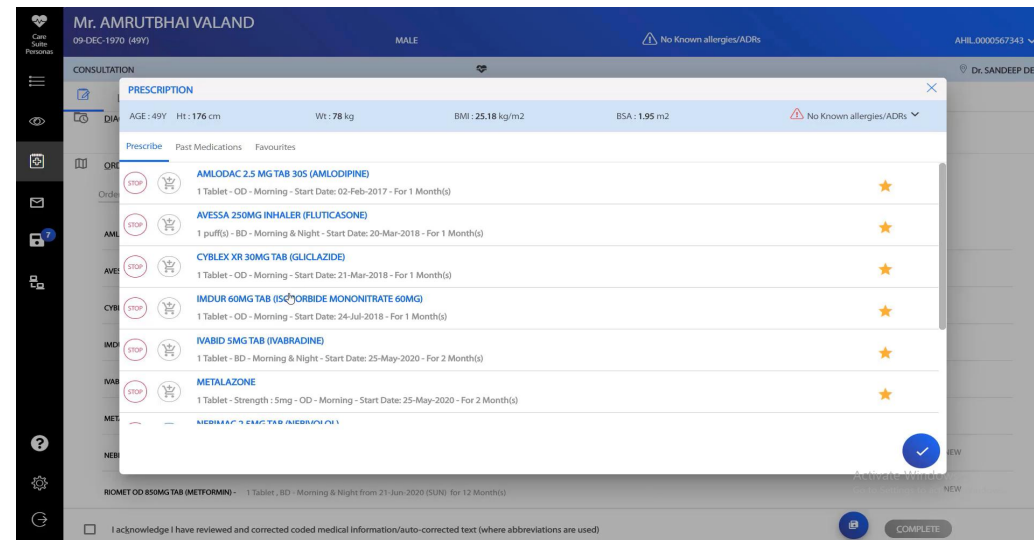
# Way forward

## Future plans, if any:

Some of the strategies that have been proposed and tested to minimize risks include:

- In future with **CPOE tall man lettering for prescription** in CPOE shall enable to alert staff about LASA drug- Computerized alerts can be introduced into dispensing software to alert the user to potential LASA medication pairs and to intercept LASA errors.
- Real time **Safety Alert** for LASA drugs at the time of prescription, transcription, dispensing, administration and monitoring for alertness will be a leap forward in further preventing LASA medication errors.
- **Bar-code-assisted** medication administration will take us to further reducing LASA medication errors.
- Creating common database of all LASA medications in Apollo ecosystem will help in strengthening it to next level.
- The joint use of the brand name and the generic name (in brackets) in prescriptions and drug labeling- CURRENTLY ON LASA medication label brand name and generic name along with indication is mentioned, but prescription currently doesn't have all these details- Implementation of CPOE will enable to do so.

## COMPUTERIZED PHYSICIAN ORDER ENTRY



## MEDICATION SAFETY AUTOMATION





# Conclusion

This project provided us deep insight into our processes and gave us the platform to fill the gaps and strengthen our system and processes continuously.

Improving the safety of medication and reducing errors, we were able to develop safe medication practices across the hospital and reduce the chances of adverse events. This ultimately added to ideal and harmless patient care, contributing a lot towards patient safety.

By the way of successful integration of all interventions and regular assessments, medication error rate has been brought down significantly. However, target shall be 'zero'; as it's an ongoing journey where continuous vigil and enforcement remains the key to minimize the unintentional but significant harm.

# Acknowledgment

The team:

- Leadership
- Clinical pharmacologist and his team
- Medical services
- Nursing team
- Quality team
- **CAHO for providing the platform to showcase the practices we do.**

## Any Questions