MEDICATION MANAGEMENT AND SAFETY

GROUP 6

R SUJITHA
USHA JOSEPH
SARITHA S MOHAN
SURYA K
LATHA K
PARI RAJAVELU

Faculty
Dr. Lallu Joseph
Dr. Anuradha Pichumani
Dr. Saravana Kumar
Dr. Nirmal Federick
Dr. Babu N
Ms. Sudha S

Reviewed by:
Dr. Lallu Joseph
Secretary General
CAHO

SECTIONS

- PHARMACY MANAGEMENT
  - Procurement, storage, dispensing of:
    Regular, High-risk, Emergency & Narcotic drugs, Short expiry, Implantable prosthesis
- MEDICATION ADMINISTRATION

  Safe prescription, preparation, administration of
  - Regular drugs, self administered drugs, infusions and radioactive drugs
- CHEMOTHERAPY
- ADVERSE DRUG EVENTS
  - Medication errors, ADR.
- MEDICATION MANAGEMENT
  - Pharmaco-therapeutic committee, statutory licences, documents, policies and SOPs

PHARMACY MANAGEMENT

- PROCUREMENT
- INVENTORY MANAGEMENT
- STORAGE
- DISPENSING OF: REGULAR HIGH-RISK, EMERGENCY & NARCOTIC DRUGS

CPQIH (Basic)

15,16,17/12/2018

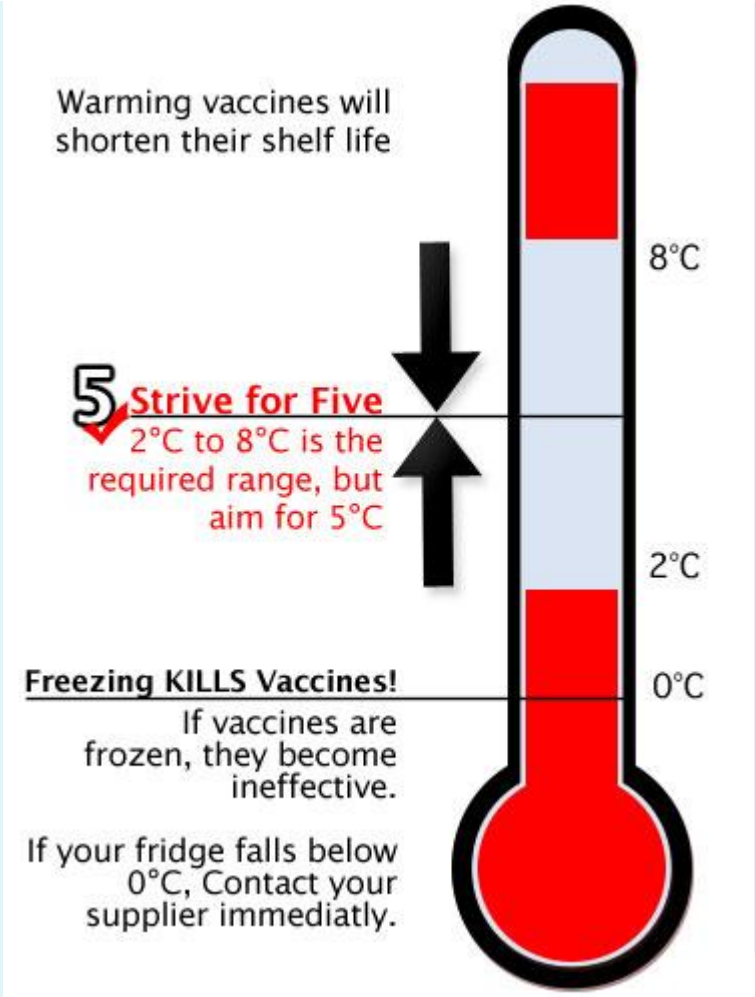
SAFE PROCUREMENT

Vendors can be selected based on the following certificates

- GMP certificate
- FDA approval (for implantable prosthesis)
- Whole sale drug license (Form 20B and 21B)
- Approval from DCGI (Drugs control general of India)/ State Drugs controller
- Vendor selection checklist

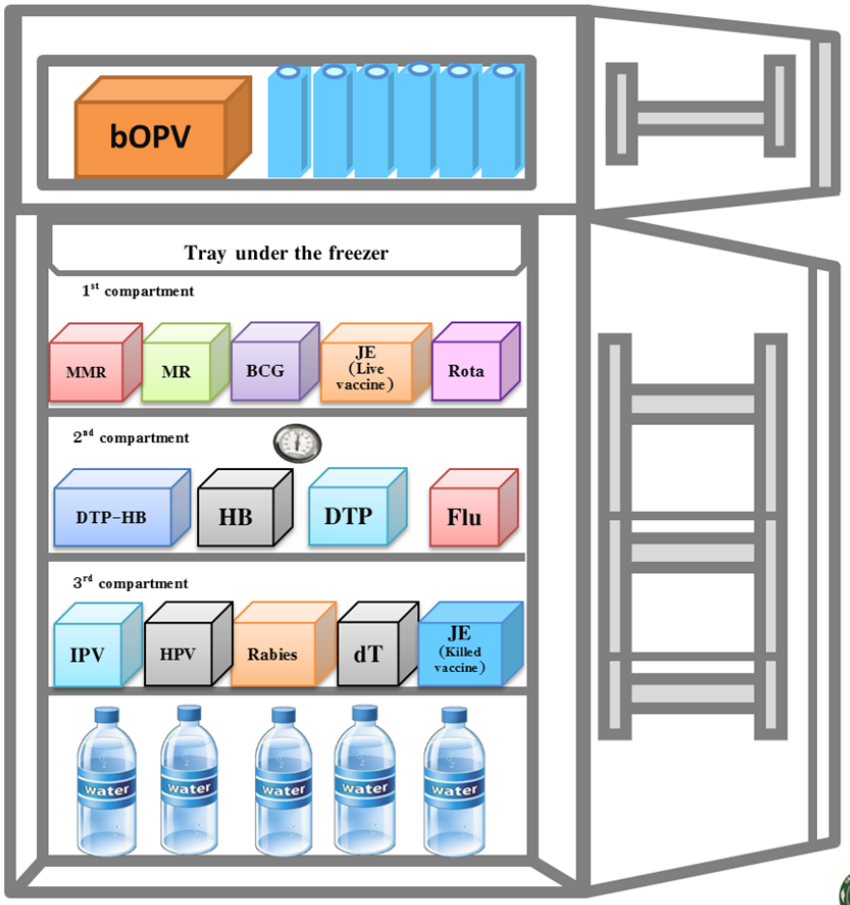
SAFE STORAGE

- Stored as per manufacture's recommendation
- Room temperature – 16^{0}C to 24^{0}C
- Refrigerator Temperature – 2^{0}C to 8^{0}C (12 hourly monitoring documentation)



VACCINE STORAGE

GUIDANCE FOR STORAGE OF REFRIGERATED VACCINES



Vaccine	Temperature
bOPV	-15°C to - 25°C
BCG	+2°C to +8°C (Live vaccines should be stored in refrigerator compartment. Do NOT store them in tray under the freezer)
JE (Live vaccine)	
MR	
MMR	
Rota	
HB	+2°C to +8°C (Store freeze sensitive vaccines in the refrigerator compartment between +2°C to +8°C. Do NOT store them in the freezer or in the first compartment)
DTP	
DTP-HB,	
JE (Killed vaccine)	
dT	
HPV	
IPV	
Flu	
Rabies	

Notes: 1. Store diluent between +2°C to +8°C, no diluent in the freezer.
2. No vaccine in the refrigerator doors..

Expanded Program on Immunization (EPI Section), Bureau of General Communicable Diseases, Ministry of Public Health, Thailand

Vaccines should be stored according to National/ International guidelines

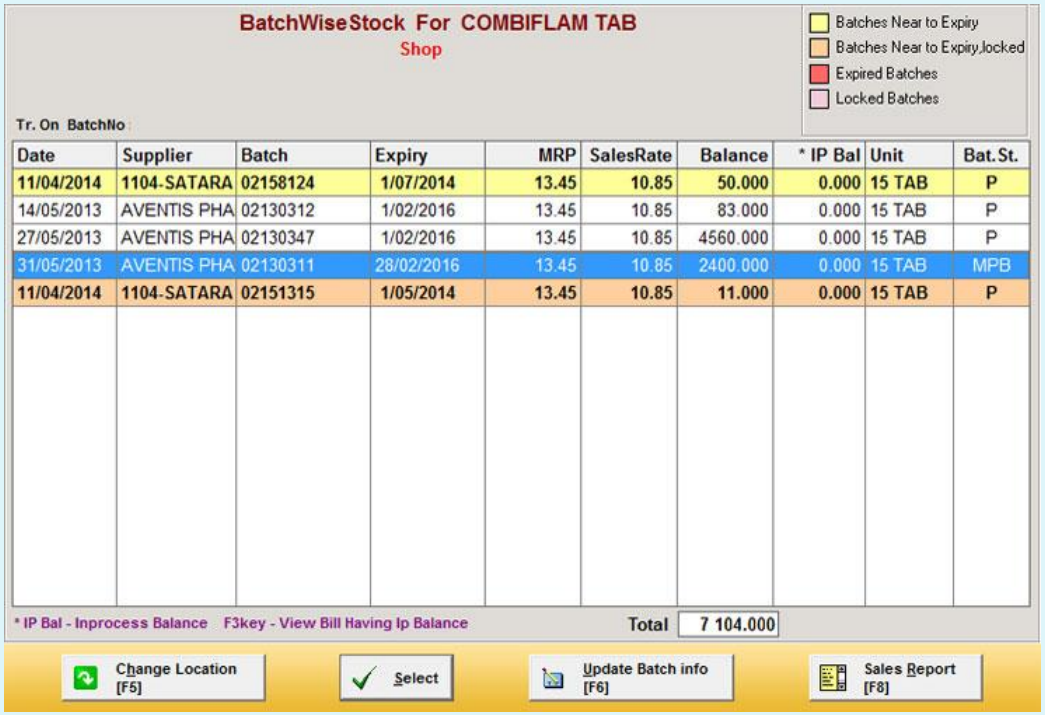
- Theft Free
  - CCTV
  - Restricted entry
  - Narcotics- restricted access

- Free of pest and rodents
- Alphabetical order
- FIFO

- The High risk Medicines, Look Alike and Sound Alike can be color coded as per organizations policy
- The Look Alike and Sound Alike medicines are to be stored physically separate.
- High Risk medicines are stored separately.
- The list of LASA and High risk medicines are to be defined and displayed in the pharmacy.

Near expiry (notification alarms)

- According to the organization's policy (usually 3 months before the expiry) not stored in the hospital
- The Near expiry medicines are collected from all levels of storages from the hospital.
- The near expiry medicines can be returned to Vendor (if a hospital does have a MOU stating the returns)
- *The Expired medicines are to be discarded as per National Standards and guidelines.*



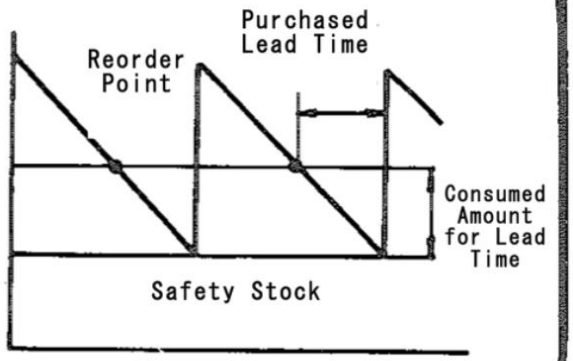
RE- ORDER LEVEL:

- Reorder level (or reorder point) is the inventory level at which a company would place a new order or start a new manufacturing run.
- **FORMULA:**

  Reorder Level = Lead Time in Days × Daily Average Usage

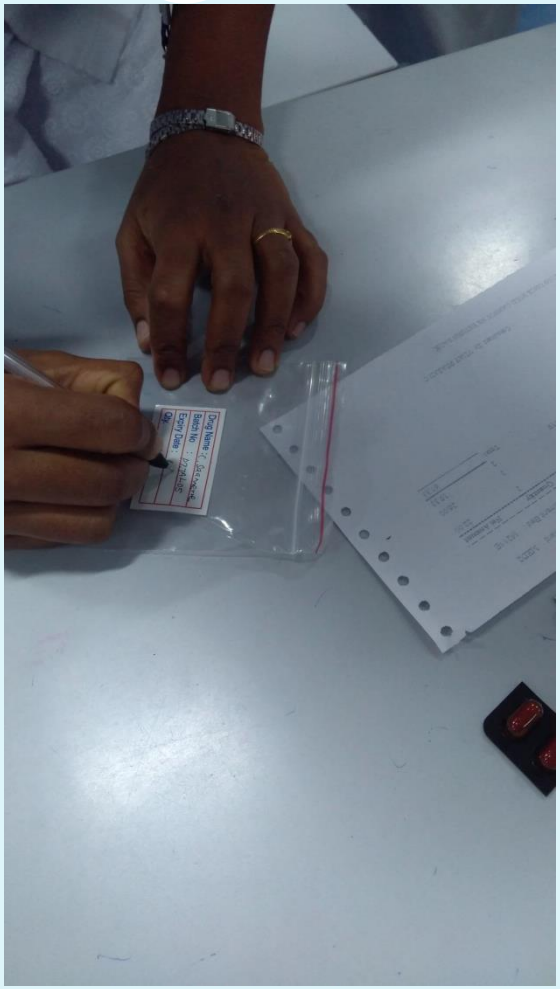
  - Lead time is the time it takes the supplier or the manufacturing process to provide the ordered units.
  - Daily average usage is the number of units used each day.

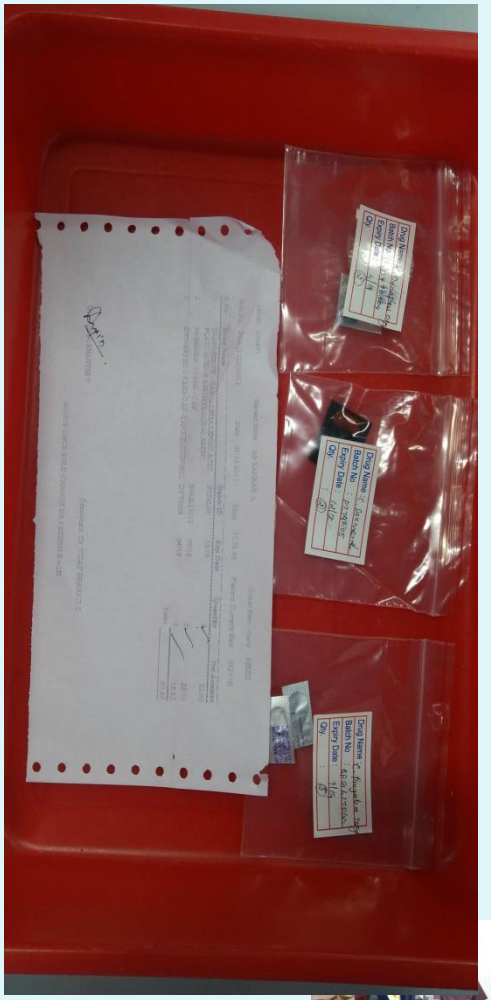
Reorder Point = Consumed Amount per day x Purchased Lead Time + Safety Stock Quantity



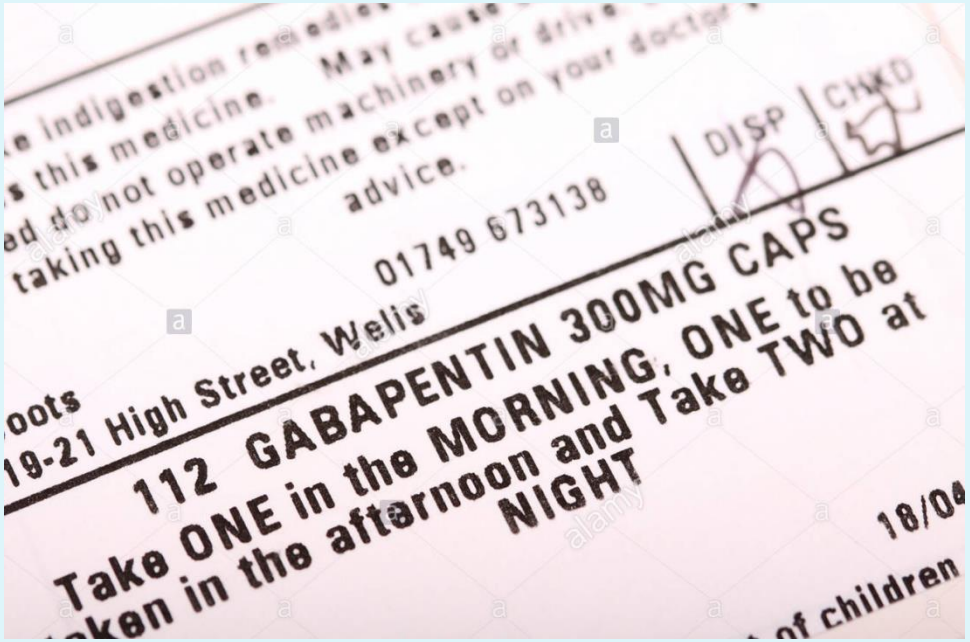
SAFE DISPENSING

- Right medication as per prescription and expiry check – Before dispensing
- Cut strips – Batch Number, Expiry date





- Dosage, Time, Before/ after food to be written and verbally explained during dispensing.



HIGH RISK & EMERGENCY MEDICATIONS

- Double level check prior to the dispensing and administration (same nurse/ pharmacist or two nurses/ pharmacist)
- The double level checking should be done for narcotics, High risk medicines and LASA medicines.

MEDICATION ADMINISTRATION

- SAFE PRESCRIPTION
- PREPARATION
- ADMINISTRATION OF REGULAR DRUGS
- SELF ADMINISTERED DRUGS
- INFUSIONS
- RADIOACTIVE DRUGS.
- CHEMOTHERAPY

CPQIH (Basic)

15,16,17/12/2018

SAFE PRESCRIPTION

- Standard OP prescription format
- Uniform locations in IP case sheet
- Block Letters
- Legible hand writing – strength, frequency, dose and route
- Dated, Timed and signed with Name
- Approved abbreviations and symbols to be used
- No acronyms
- Generic names
- Prescription Audit

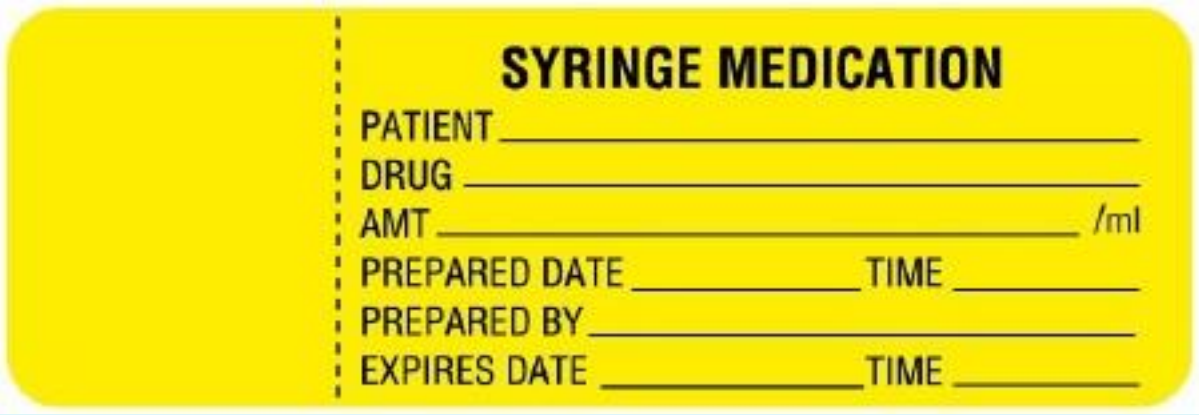
Patient name JOHN SMITH DOB 05/04/51 CHI 0504511234

AS REQUIRED THERAPY

Medicine/Form: DIHYDROCODEINE TABS	Date	9/1/11	9/1/11						
Dose: 30mg	Time	06:00	14:00						
Maximum Dose in 24hrs: 240mg	Dose	30mg	30mg						
Frequency & Indication: EVERY 4-6 HOURS FOR PAIN	Initials	SP	SP						
Route: ORAL	Date								
Standard/Verbal order: ADMH DOCTOR	Time								
Start Date: 8/1/11	Dose								
Pharmacy & Additional Instructions	Initials								

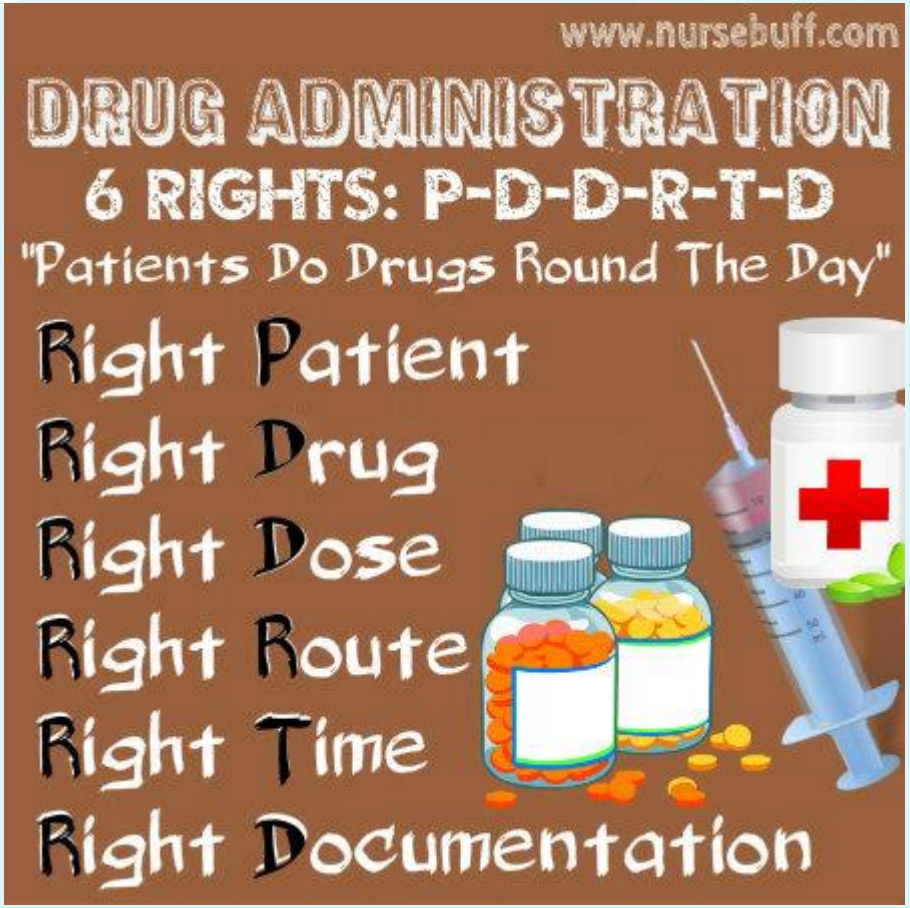
SAFE DRUG PREPARATION

- The prepared drugs should contain labeled with the following
  - Drug name
  - Dilution
  - Dose/ infusion rate
  - Route
  - Preparation time
  - expiry
- The second drug should not be prepared before labeling the first drug
- Any unlabeled infusions/ fluids are to be discarded.



SAFE ADMINISTRATION

- RIGHTS
  - Patient
  - Medication
  - Dose
  - Route
  - Time (30 mins before/ after the specified time)
  - Documentation
- Expiry is checked
- Self Administration Policy



SELF MEDICATION & ADMINISTRATION

- Hospital should have self medication policy
- Documentation of self administration should be done
  - Name of the drug
  - Dosage
  - Route
  - Time
  - Mentioning – self administered by patient

SAFE INFUSIONS

- The safe infusions practice should capture the following
  - Start time
  - Rate of infusion
  - End time
  - Name and strength of medicine.

DRUG INFUSION VIA SYRINGE
DISCONTINUE IF CLOUDINESS OR PRECIPITATE OCCURS

PATIENTS NAME			REG. NO.	WARD
ROUTE		Total amount added	Infusion rate per hour (Please state millilitres or millimetres)	
DRUG APPROVED NAME(S)				
Diluent:		Total Volume to:	Type of pump:	
Prepared Changed by:	Checked by:	Date:	Duration	Time started

DRUG ADDED TO INFUSION FLUID

DRUG	ADDED BY
QUANTITY	CHECKED BY
DATE	TIME

RETURN TO PHARMACY IF UNUSED 12 HOURS AFTER ADDITION OF DRUGS

NARCOTIC DRUGS

- The narcotics medicines are stored with limited access (double lock, finger print lock etc)
- The narcotics register should contain the following
  - Name of the patient
  - UHID number
  - Narcotics prescribed
  - Prescribed by
  - Administered by
  - Quantity administered.
  - Quantity discarded
  - Discarded by
  - Witnessed by
  - No of empty vials returned.
- The remaining narcotics medicines are discarded in running tap water with witness.

RADIOACTIVE DRUGS

- Proper usage of PPE
- Administered by trained staffs
- Written documentation of radioactive medication
  - Receipt
  - Identification
  - Labeling
  - Storage
  - Control
  - Distribution
  - disposal
- Discarding as per AERB guidelines
- Proper signage
- Details of delay tanks
- Environmental Radiation exposure test

CHEMOTHERAPY DRUGS

- Storage
  - It is regulated that there be adequate ventilation in the area, negative pressure and preferably vented to the outside.
  - Establish a dedicated negative-pressure storage area for cytotoxic drugs that minimizes the risk of contamination.

CHEMOTHERAPY DRUGS

PREPARATION OF CHEMOTHERAPY DRUGS

- The preparation and administration of drugs are done by trained staff
- all mixing, and preparation of administration sets with a cytotoxic drug be performed in one centralized area in a specially designated *class II type B biological safety cabinet that* :
  - is exhausted through a HEPA filter to the outside atmosphere in a manner that prevents recirculation into any inside area
  - has exhaust and ventilation systems that remain in operation for a sufficient period of time to ensure that no contaminants escape from the biological safety cabinet into the workplace
  - is equipped with a continuous monitoring device to permit confirmation of adequate airflow and cabinet performance.

CHEMOTHERAPY DRUGS

- PPE WHILE PREPARATION OF DRUGS
  - Workers wear PPE, a cap, surgical/procedure mask, shoe covers, a protective gown and two (2) pairs of gloves to make sterile preparations of cytotoxic drugs in preparation cabinets.

CHEMOTHERAPY DRUGS

- All the prepared medicines are to be labeled with drug name, prepared dare, time and expired date.
- The personal protective equipments are to be worn during administration also.
- Cytotoxic drug spillage kits are to be available in receiving, storage, preparation and also in administration area.

CHEMOTHERAPY DRUGS

- DISPOSAL OF CYTOTOXIC DRUGS

	Consists of	Disposal
Human Anatomical Waste	Human tissues, organs, body parts	Incineration/deep burial
Animal Waste	Animal tissues, animals used in research, waste from veterinary hospitals, colleges, and animal houses	Incineration/deep burial
Microbiology & Biotechnology Waste	Wastes from laboratory cultures, stocks or specimens of micro organisms, live or attenuated vaccines, toxins, dishes and devices used for transfer of cultures	Incineration
Waste sharps	Needles, syringes, scalpels, blades, glass, etc.	Auto claving/shredding
Discarded Medicines and Cytotoxic drugs	Outdated, contaminated and discarded medicines	Incineration and secured landfills

ADVERSE DRUG EVENTS

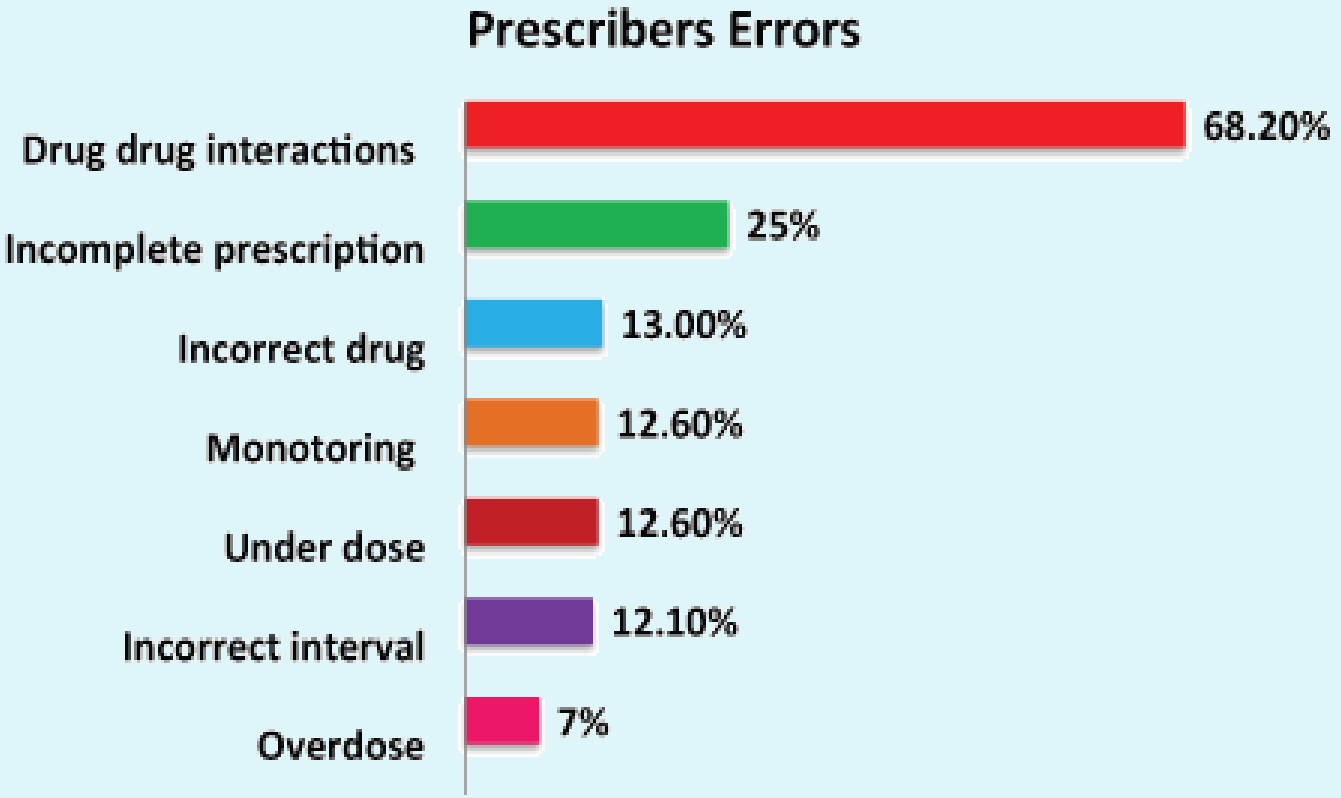
MEDICATION ERRORS, ADR

CPQIH (Basic)

15,16,17/12/2018

MEDICATION ERROR

- Prescribing errors



MEDICATION ERROR

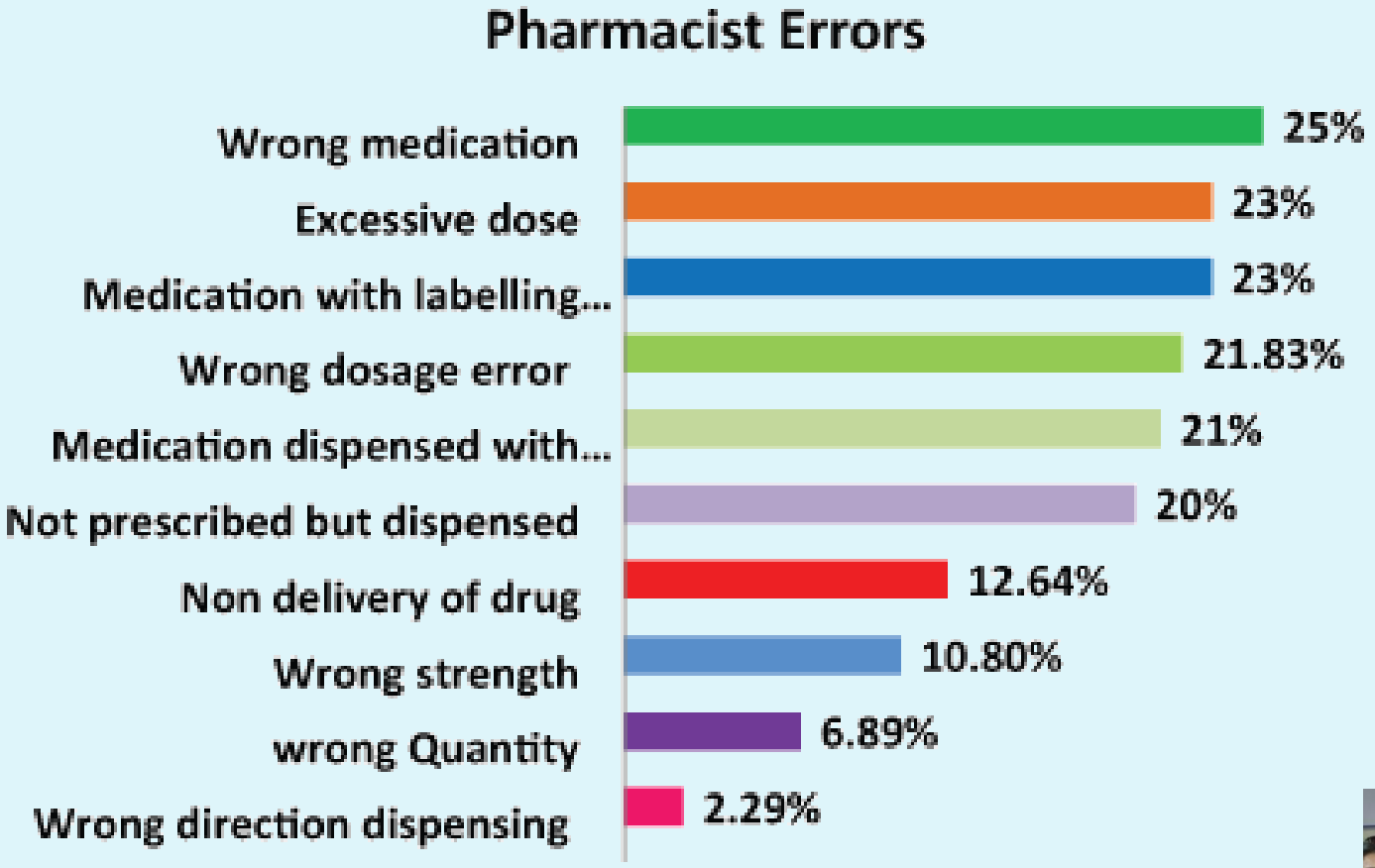
- Transcription errors

Table

Common Dispensing Errors	
Prescriber's Intention	**Misinterpretation**
AD, AS, AU (right ear, left ear, each ear)	OD, OS, OU (right eye, left eye, each eye)
qod (every other day)	qd (daily) or qid (4 times a day)
U or u (units)	Zero, causing a 10-fold increase in dose (eg, 4U to 40)
Trailing zero (1.0 mg)	1.0 mg mistaken as 10 mg
Naked decimal point (.5 mg)	.5 mg mistaken as 5 mg
Drug name and dose run together (Inderal40)	Mistaken as Inderal 140
Large doses without properly placed commas	100000 units mistaken as 10,000 units
AZT (zidovudine)	Mistaken as azathioprine or aztreonam

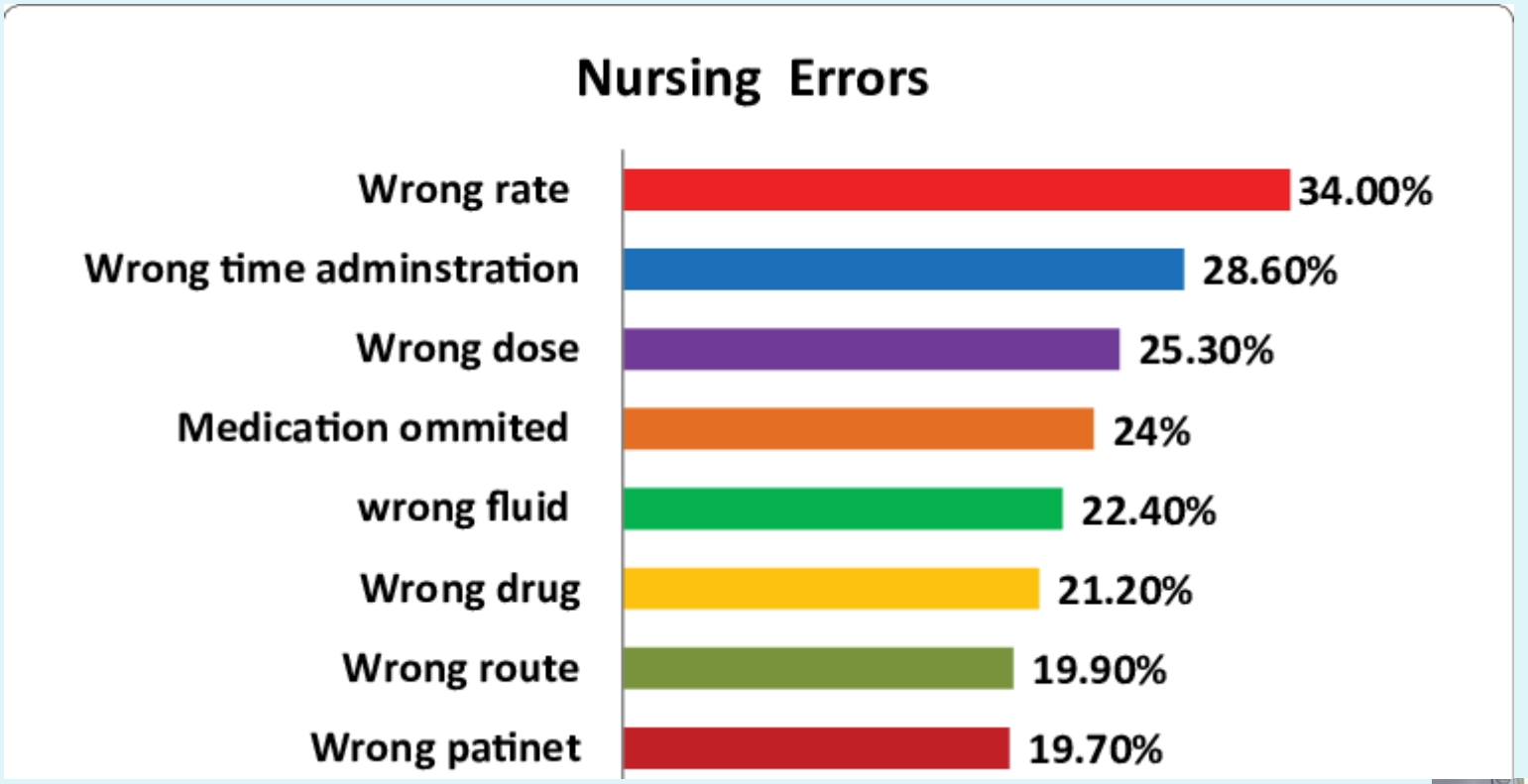
MEDICATION ERROR

- Dispensing errors



MEDICATION ERROR

- Administration errors

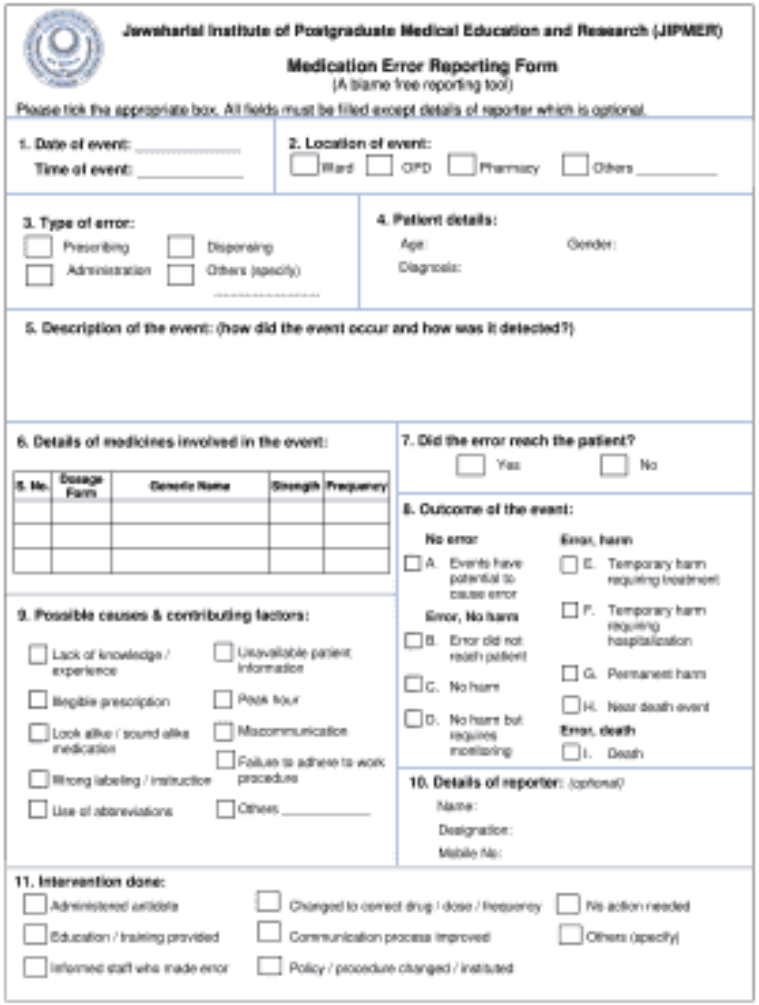


MEDICATION ERROR

- These errors are documented and reported in Medication error reporting form.
- The Medication error reporting form consists of
  - Drugs involved
  - Outcome of the error (harm/no harm)
  - Potential causes of error (illegible prescription, lack of knowledge, LASA)
  - Intervention done (administered antidote, changed to correct drug/dose, provided education)

(the errors percentage pictures in previous slides are taken from medication errors)

MEDICATION ERROR



Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER)

Medication Error Reporting Form

(A blame free reporting tool)

Please tick the appropriate box. All fields must be filled except details of reporter which is optional.

1. Date of event: .....
   Time of event: .....

2. Location of event:
   ☐ Ward ☐ OPD ☐ Pharmacy ☐ Others .....

3. Type of error:
   ☐ Prescribing ☐ Dispensing
   ☐ Administration ☐ Others (specify) .....

4. Patient details:
   Age: Gender:
   Diagnosis:

5. Description of the event: (how did the event occur and how was it detected?)

6. Details of medicines involved in the event:

S. No.	Dosage Form	Generic Name	Strength	Frequency

7. Did the error reach the patient?
   ☐ Yes ☐ No

8. Outcome of the event:

No error
- ☐ A. Events have potential to cause error

Error, No harm
- ☐ B. Error did not reach patient
- ☐ C. No harm
- ☐ D. No harm but requires monitoring

Error, harm
- ☐ E. Temporary harm requiring treatment
- ☐ F. Temporary harm requiring hospitalization
- ☐ G. Permanent harm
- ☐ H. Near death event

Error, death
- ☐ I. Death

9. Possible causes & contributing factors:
   ☐ Lack of knowledge / experience
   ☐ Illegible prescription
   ☐ Look alike / sound alike medication
   ☐ Wrong labeling / instruction
   ☐ Use of abbreviations
   ☐ Unavailable patient information
   ☐ Peak hour
   ☐ Miscommunication
   ☐ Failure to adhere to work procedure
   ☐ Others .....

10. Details of reporter: (optional)
    Name:
    Designation:
    Mobile No:

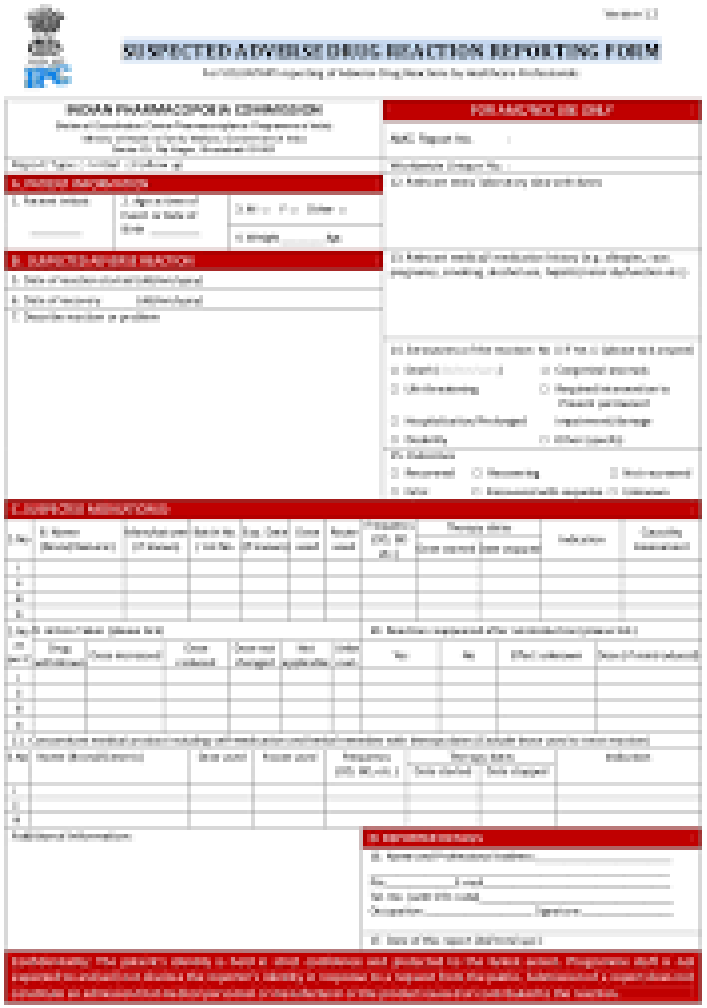
11. Intervention done:
    ☐ Administered antidote
    ☐ Education / training provided
    ☐ Informed staff who made error
    ☐ Changed to correct drug / dose / frequency
    ☐ Communication process improved
    ☐ Policy / procedure changed / instituted
    ☐ No action needed
    ☐ Others (specify)

http://jipmer.edu.in/sites/default/files/Medication-error-reporting-form.pdf

ADVERSE DRUG REACTION

- All the medications are monitored after administration
- Any reaction developed, Stop the medication
- Report to Treating doctor, clinical pharmacist
- Adverse drug reaction form is documented.
  - Date of reaction
  - Date of recovery
  - Problem/ reaction
  - Drugs involved
  - Reaction abated after drug stopped
  - Reactions reappeared after reintroduction
  - Relevant tests/ laboratory data with dates
  - Other relevant history
  - Seriousness of reaction
  - Outcomes

ADR REPORTING


SUSPECTED ADVERSE DRUG REACTION REPORTING FORM

http://www.cdsco.nic.in/writereaddata/ADR%20form%20PvPI.pdf

MEDICATION MANAGEMENT

PHARMACO-THERAPEUTIC COMMITTEE, STATUTORY LICENCES, DOCUMENTS, POLICIES AND SOPS

CPQIH (Basic)

15,16,17/12/2018

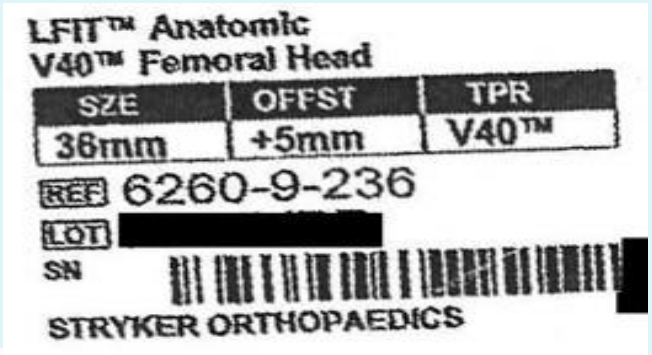
PHARMACO THERAPEUTIC COMMITTEE

- Approves formulary
- Defines LASA
- Defines High Risk medicines
- Medication error report Audits- CAPA
- ADR- CAPA
- Dilution errors – Review and CAPA
- Approval of new drug requisition from consultants
- Approval of Implantable prosthesis.
- Regulates the procurement process
- Approves vendors based on the checklist and criteria.
- Drug interactions review
- Duplications review
- Indicators review
- Radiation safety
- Facility rounds and internal audits

IMPLANT MANAGEMENT

- The selection of implants should be based on national and international guidelines. Certified with GMP, FDA, etc.,
- Selection of implants are done by consultants in pharmaco therapeutic committee
- The Implants are to be purchased by pharmacy purchase requests.
- Patients and family to be educated about precautions to be taken

- The Implant sticker such as manufacturer, type, size, batch number and serial number/ any other important details should be documented in the following areas.
  - Theatre log book/ implant register.
  - Surgery notes
  - Discharge summary



- If the stickers are not available, the details can be printed documented in the areas to be documented.

STATUTORY LICENSING

- Pharmacy licenses
- Narcotics License
- Pharmacist license
- AERB registration and approvals
- RSO certification
- FSSI

DOCUMENTATION

- List of approved vendors
- Purchase orders
- Implant policy
- Implant register
- Temperature monitoring
- Fridge list
- LASA list
- Near expiry list

- Emergency drug list
- High risk medication list
- Crash cart checklist
- OP prescription
- IP drug chart
- Narcotic drug register
- ADR reporting form
- Incident reporting form
- Training records

POLICIES & SOP

- Purchase, storage, environment, prescription and dispensing
- Implants
- Identification & storage of LASA
- Expired drugs
- Emergency drugs
- Prescriptions, medication orders, verbal orders for regular drugs, high risk drugs and emergency drugs
- expired drugs
- Narcotic drugs
- ADE
- Radioactive drugs
- Medication administration SOP

Thank you