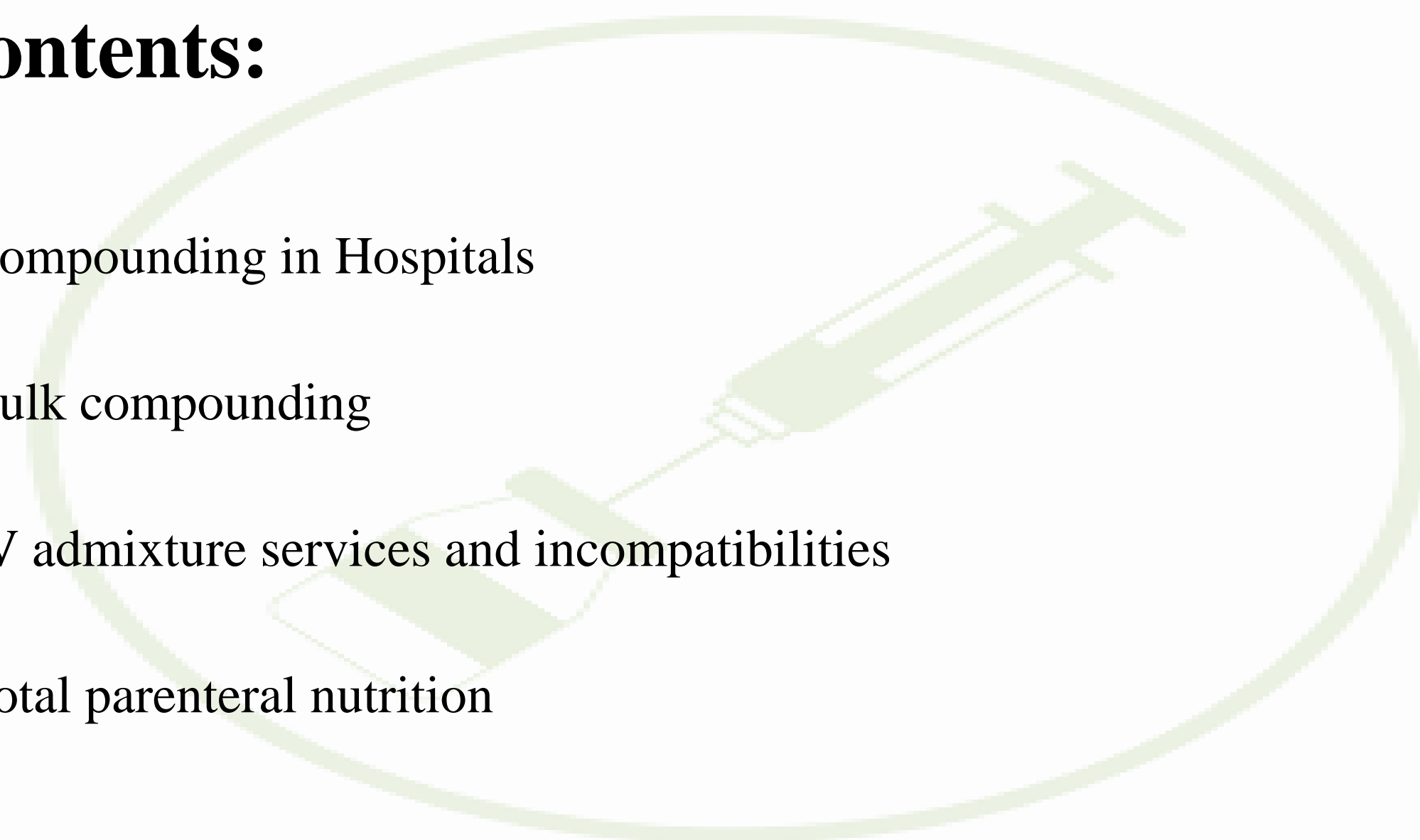


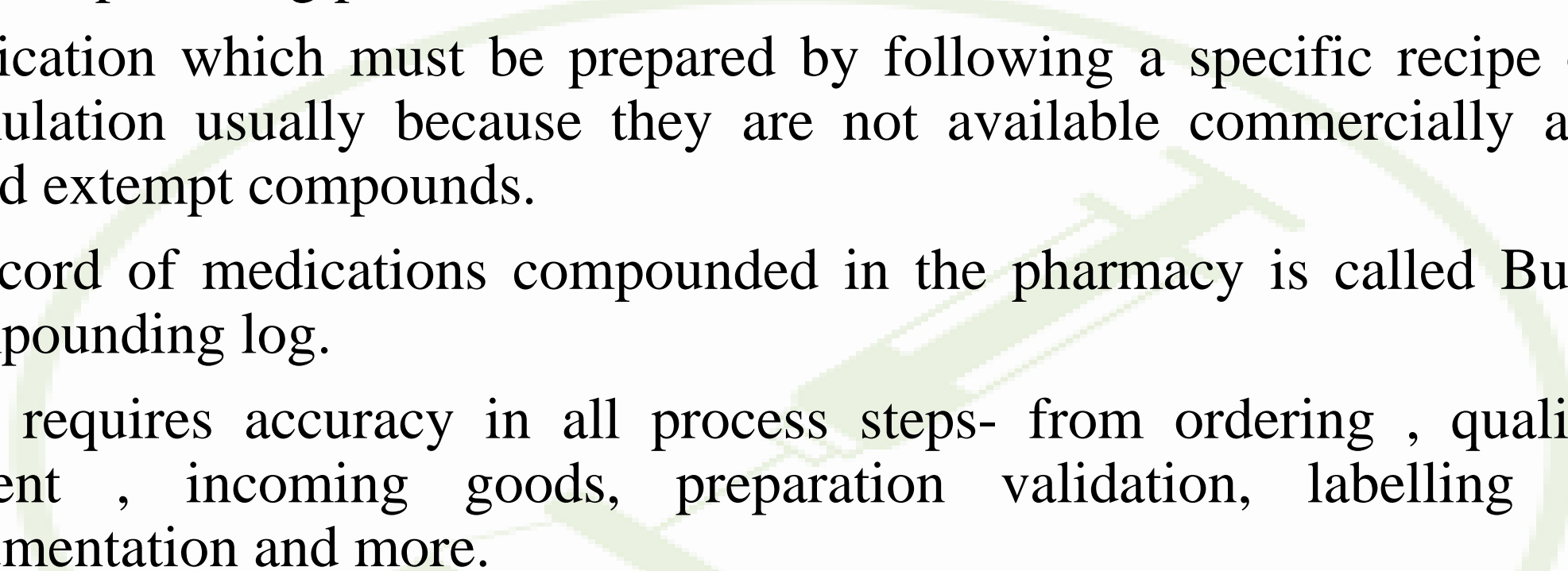


Compounding
in
Hospitals

Contents:

- Compounding in Hospitals
 - Bulk compounding
 - IV admixture services and incompatibilities
 - Total parenteral nutrition
- 

- Pharmaceutical compounding in hospital pharmacies requires precision and efficiency.
- The pharmacist is responsible for the safe preparation of medications.
- The final preparation must have the right dosage, the right quantity, the right dilution, the right container, and the right label.
- The process of making solution or suspension by adding water or other diluent to pre powder form of a drug in a drug bottle is called reconstitution.
- Different types of medications are necessary for different therapies and are often patient specific.
- In addition to mixing medications, the preparation of total parenteral nutrition solution is frequent procedure perform by hospital pharmacist.

- 
- The compounding process can either be manual or automated.
 - Medication which must be prepared by following a specific recipe or formulation usually because they are not available commercially are called exempt compounds.
 - A record of medications compounded in the pharmacy is called Bulk Compounding log.
 - This requires accuracy in all process steps- from ordering , quality content , incoming goods, preparation validation, labelling to documentation and more.

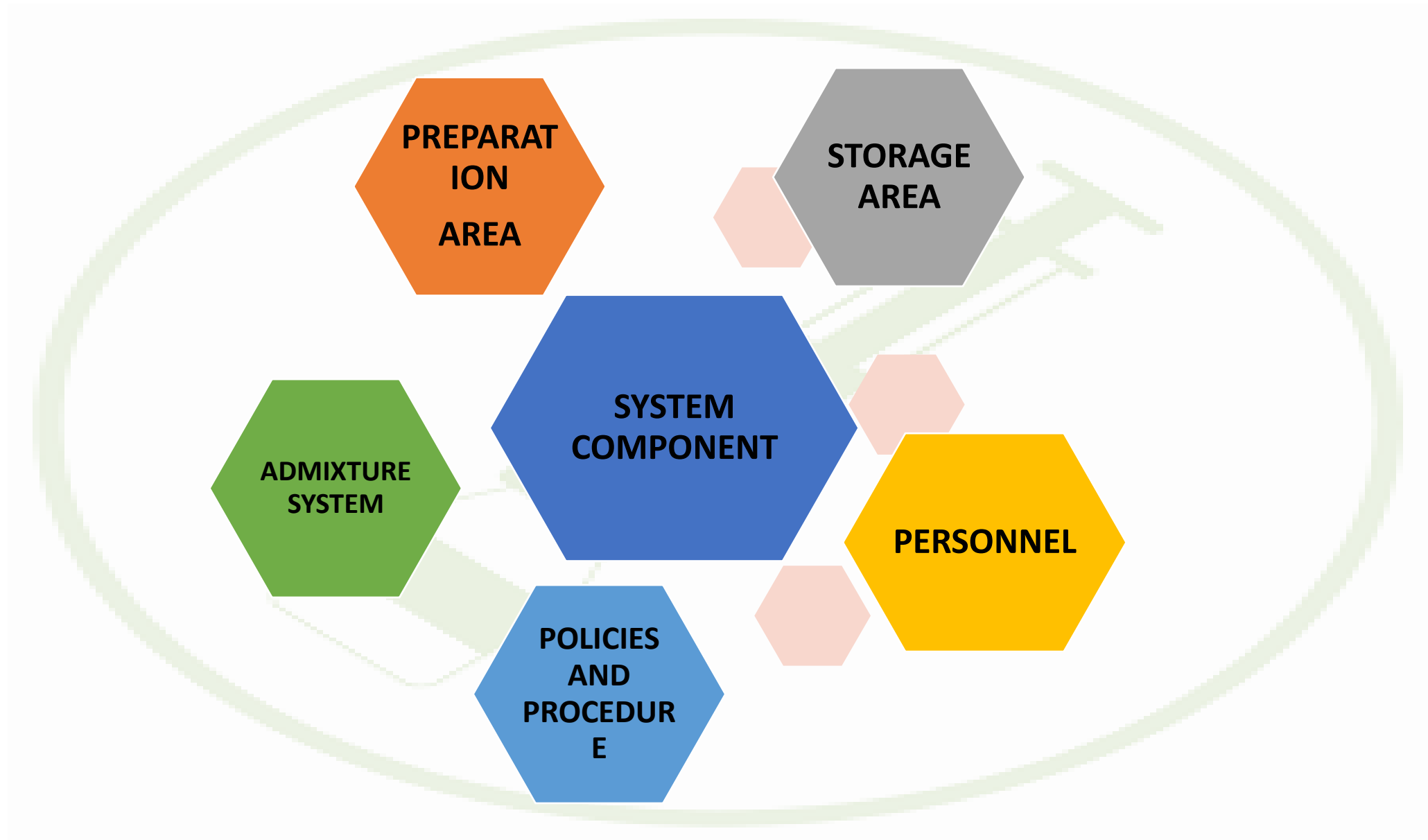
IV ADMIXTURE SERVICES AND INCOMPATIBILITIES

- Admixture system refers to sterile IV solution that are prepared by using one or more medications or electrolytes and will be administered via the parenteral route.
- It requires the measured addition of medication to a 50 ml or large bag or bottle of IV fluid.
- The drug added to an IV solution is called as additives.
- The preparation of pharmaceutical product that requires the measured additive for medication to a 50 ml or larger bag or bottle of IV fluid is called IV ADMIXTURE.

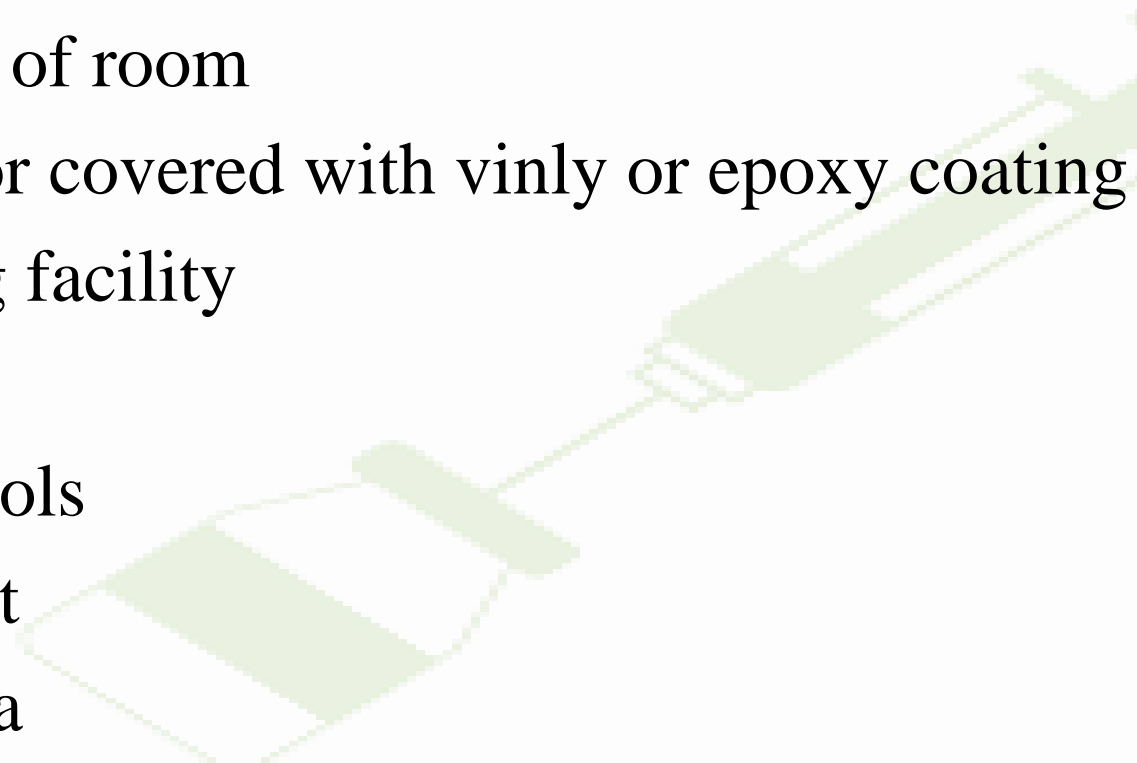
RESPONSIBILITIES OF PHARMACIST:

1. **CONTAMINATION:** The pharmacist must maintain a clean area out of the direct flow of traffic with a vertical or horizontal air flow to traffic with a vertical or horizontal laminar air flow to prepare IV admixture
2. **COMPATIBILITY:** A pharmacist should be able to deal with problems of physical, chemical and therapeutic incompatibilities. And to design suitable alternatives when these problem arise.
3. **STABILITY:**
 - i. Drug stability information must be readily accessible to the pharmacist in order to determine optimum conditions for drug storage prior and their preparation
 - ii. The stability of a drug at ideal storage conditions will help to establish a reasonable expiration date for the product.
 - iii. Product sterility, overall integrity also inspected

COMPONENTS OF ADMIXTURE SYSTEM



PREPARATION AREA

- Ideally a separate room in pharmacy
 - Requirements of room
 - Washable floor covered with vinyl or epoxy coating
 - Hand washing facility
 - Refrigerator
 - Preparation tools
 - Adequate light
 - Restricted area
 - Adequate counter space
- 

POLICIES AND PROCEDURE

- Guidelines for preparing parenteral products should be outlines the pharmacy's policy and procedure manual.
- Detailed information regarding preparation labeling, storage and expiration dating of parenteral products should be readily available in the pharmacy.
- These policy help to provide quality control for the parenteral products.
- **STABILITY:** Stability is affected by place ,environmental condition ,diluent used other drugs.
- **Aseptic technique :** It refers to the ability of personnel who prepare these IV solutions to handle these products in the clean environment of a laminar or vertical air flow hood without introducing viable microorganism in the product.

- **QUALITY ASSURANCE:**

- ✓ Systems to check aseptic environment and the pharmacist access to both patient profile and final product must be ensured to provide more stringent quality control over parenteral therapy.

- ✓ Routine inspection of all laminar air flow hoods must be performed

- IV Profiling: Review preparation against patient current profile

- **LABELING:**

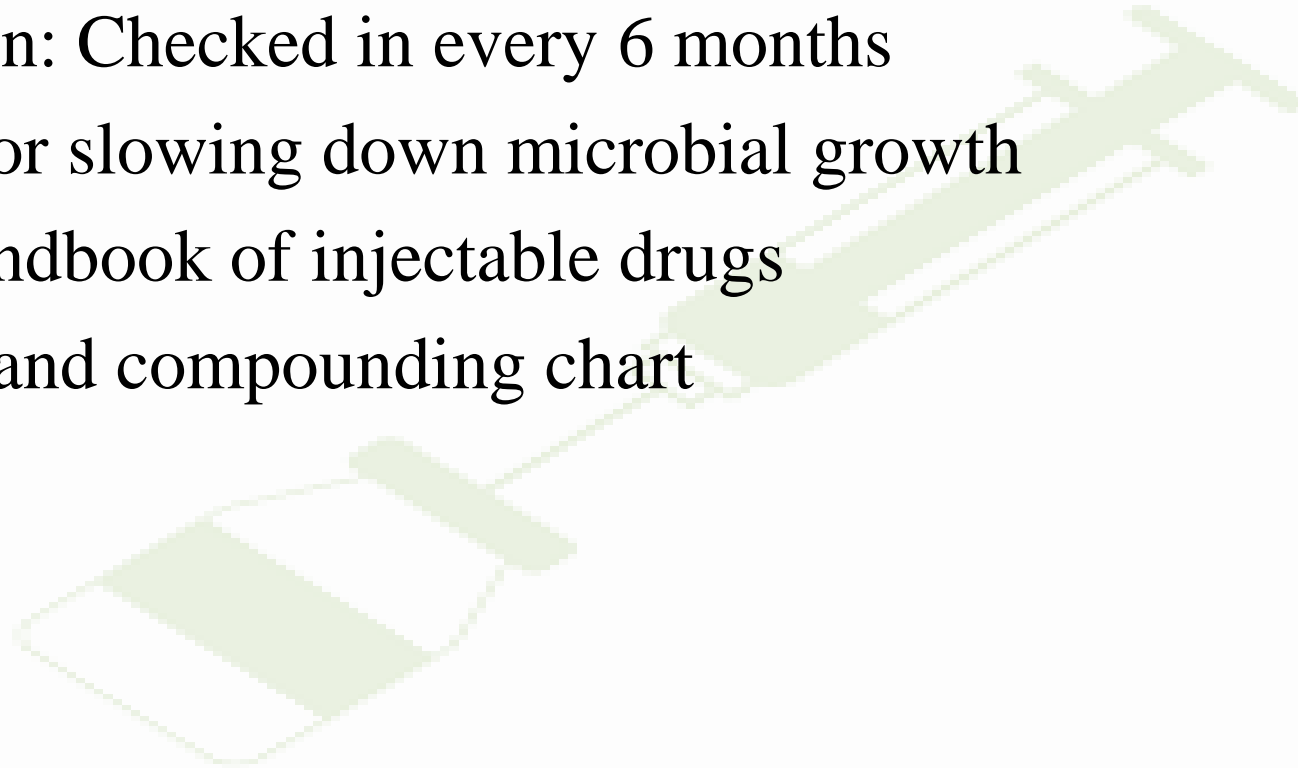
- Labelling should reflect the information provided in the prescription.

Should include:

Patient name, ID no. ,room number	Prescribed flow rate
Appropriate final total volume of admixture	Date and time of preparation
Name and amount or drug added	Date and time of scheduled administration Expiration date

IV ROOM REQUIREMENT

- Laminar air flow
- HEPA Filtration: Checked in every 6 months
- Refrigerator: for slowing down microbial growth
- Reference : handbook of injectable drugs
- Compatibility and compounding chart



INCOMPATIBILITIES IN PARENTERAL ADMIXTURES

- A safe admixtures is one that is free from microorganism , free from particulate matter , undecomposed and clinically compatible.
- Intravenous admixture incompatibilities are the undesirable reactions that can occur when two or more drugs are administered through single IV line or given in a single solution.
- Incompatibility may be detected by changes in the physical and chemical state .
- TYPES:
- **PHYICAL INCOMPARTIBILITIES:**
- **CHEMICAL INCOMPATIBILITIES**
- **THERAPEUTIC INCOMPATIBILITIES**
- **DRUG –IV CONTAINER INCOMPATIBILITIES**

- **PHYSICAL INCOMPATIBILITIES:**

- The incompatibilities that is mainly on solubility changes and container interactions.

- Examples: insolubility, sorption, gas formation, change of p.H of solution

- **CHEMICAL INCOMPATIBILITIES:**

- Results from the molecular changes or rearrangement and leads to chemical decomposition.

- Chemical incompatibility may occur due to , chemical interaction, prescriber fault, damaged labelling

- **THERAPEUTIC INCOMPATIBILITIES:**

- Result of antagonist pharmacological effects of several drugs in one patient .

- Example : heparin with antibiotics

- The incompatibilism arises when we prescribe togther diazepam and caffein.

- **CAUSE OF THERAPEUTIC INCOMPATIBILITIES:**

- Error in dosage or wrong dose/ dosage
- Contraindicated drugs
- Synergistics and antagonistic drugs
- Using the wrong dosage form
- The drug has contraindications

- **DRUG –IV CONTAINER INCOMPATIBILITIES:**

- Incompatibilities that arise from the chemical reaction of the drug and the intravenous container.

