Drug Management Program at Jordan University Hospital (JUH) 
A model in a Teaching Hospital

General hospitals’ duty is to provide diagnostic & curative services to patients, & JUH carries these responsibilities as a tertiary reference center besides its role as a teaching institution for undergraduate medical students. 15 programs of post-graduate medical & surgical specialties as well as training center for nurses, pharmacists, dentists, & various paramedical technicians. Research activities are integral part of its duties.

Drugs are essential part of patients care & appropriate use of medications in the hospital is a multi-disciplinary responsibility that involves physicians, pharmacists, nurses, administrators, support personnel & patients. The pharmacy Department under the direction of a qualified pharmacist is responsible for controlling distribution of drugs & promoting their appropriate & safe use.

In this paper we would like to focus on drugs management at JUH by discussing 3 major issues:

I- Planning & control.

II- Pharmacy Department organization & Drugs Categorization.

III- Drugs Procurement & administration (Dispensing) procedures in the hospital.

Other important issues include the control of narcotics to safeguard their proper use & detection of abuse, also adverse drug reaction monitoring & medication error management are discussed (Pharmacovigilence center).

I- Planning & control:

The multiplicity of drugs available & the complexities surrounding their safe & effective use make it necessary for hospitals to have an organized & sound program to maximize drug use rational.

The JUH pharmacy & therapeutic committee “P&T committee” carries the responsibility of developing policies, plans for medication selection & appropriate drug use & selection while the “Antibiotic committee” promotes the appropriate use & selection of antibiotics. The following scheme shows the categories of all Antibiotics used at JUH.

Slide (1).

Members of “P&T” committee include representatives from each of the Clinical departments & the chief pharmacist serves as the (coordinator), & the supply manager.

Functions of this committee include:

A) Planning & drug selection by:
   - Maintain & update the hospital formulary
   - Formulate an annual list of drug requirements
   - Approve standard word stock & Emergency drug list

B) Standardize prescribing policies & treatment guidelines to promote drug information & good prescribing practices.
C) Setting limits on out-patients dispensing quantities & monitor dispensing practices.

II- **Pharmacy Department Organization:**

Which demonstrates both the physical layout & personnel distribution of JUH pharmacy department.

*Slide (2).*

**Personnel:**

**A) Management:**

Includes the Head of Pharmacy Depart (Chief Pharmacist) & Pharmacies supervisor.

The chief pharmacist: who is responsible for drugs distribution throughout different outlets at medical departments & units, which requires wide knowledge & experience in drugs usage so as to advise on prescribing, administering & monitoring, as well as to be the supply manager who ensures drugs availability through procurement, storage, distribution, inventory control & quality assurance.

**Duties of the chief pharmacist:**

- Prepares an annual budget request for drugs purchases.
- Drugs distribution among all pharmacies & units.
- Monitoring of drugs prescribing & dispensing.
- Personnel management.
- Coordinator for the “P & T” committee & member of other committees like QA & Antibiotic Committees etc.

As JUH is a 550 beds hospital that provides 2ndry & 3try medical services & drug list of 1000 items which includes all therapeutic classes, hense the need for satellite pharmacies & specialized outpatient outlets with at least one pharmacist in charge in each of those 14 pharmacies that exist at different sites.

**B) Qualified pharmacists:**

Control drugs within each pharmacy & supervise pharmacy technicians. They provide some consulting services & drug information for the healthcare staff.

**C) Pharmacy technicians:**

They dispense drugs under supervision of a pharmacist in the outpatient & satellite pharmacies.

**JUH Pharmacies:**

- 7 Satellite Pharmacies
- Main operating suite Pharmacy.
- Emergency & on - Duty (24hours) Pharmacy.
- Narcotic Drugs pharmacy.
- Cytotoxic drugs preparation pharmacy.
- 3 specialized outpatient pharmacies.

The staffing include 18 pharmacists & 22 pharmacy technicians.

Recently, a national adverse drugs reaction centre, (Jordan pharmacovigilance center - JPC) which has started functioning 3 months ago as one of three centers in the kingdom, the 2nd being located at Jordan University of science & technology (JUST) & the third is at the Ministry of Health (MOH).

These centers were setup in collaboration with the WHO pharmacovigilence main center Upsala (Sweden). It has been established as part of pharmaceutical sector national reforming program.

In a large & teaching hospital as JUH, the advantages of satellite pharmacies are:

- shorten the turnaround time for individual drug orders especially in distribution systems that dispense drugs packaged for individual patients (UDS).
- They increase the pharmacists presence in the patient care area facilitating interaction with medical staff
- Reduce the need for ward stock and reduction in drug supply costs due to wastage.

**JUH inpatient drug management**

In general there are **Three** basic types of drug distribution systems, 2 of them are applied in JUH i.e number 1 & 2 as follows:

1) Bulk ward stock.
2) Unit dose system.
3) Individual drug order system.

**1- Bulk ward stock:**

The pharmacy function as a warehouse & dispenses bulk containers on requisition without reviewing individual patient drug orders. It is minimized for certain situations:

- In emergency departments, & operating rooms.
- Emergency trolleys in the hospital floors.
- In outpatient clinics where certain drugs are needed during certain medical procedures (eg. kidney haemodialysis, ophthalmic clinic,...etc.).

In this case each floor pharmacy monitor & control drug theft & waste by using ward inspection record, i.e chick list.

*Slide (3).*
2- **Unit dose system**

- It is the preferred system from a patient care perspective with the **lowest** possibility for **error** by daily monitoring carried by the pharmacist.
- Twenty four hours supply is provided in drawers for each patient by using medication cabinets.
- Reduce wastage & easier detection of leakage.
- Drugs returned to the pharmacy can be put back in stock.
- This system conform easily with the satellite pharmacies.

3- **Individual drugs order system will not be discussed in this paper as it is not applied in JUH.**

**III. Drugs procurement & Administration procedures in JUH.**

A - The chief pharmacist prepares an annual budget request for drugs, A designed technical committee reviews & approves all purchases by following approved criteria for selection of drugs, these include:

- Proven efficacy & safety.
- Evidence of performance in JUH.
- Adequate quality including bioavailability & stability.
- Favorable cost - benefit ratio in terms of the total treatment cost.
- Preference for drugs that are well known, with good pharmacokinetics properties & possibilities for local manufacturer.

**B- Drug use process :-**

This process could be divided into **four** components :-

* **Prescribing** : the physician has the responsibility for Prescribing & ordering as part of the treatment plan.

  The P&T committee establish some protocols & procedures with specific guidelines.

  e.g  * AB guidelines.

  * Quantity chronic diseases prescription.

* **Preparation & dispensing**.

  The registered pharmacist & pharmacy technicians prepare & dispense medications under the direction of the chief pharmacist, following **Policies & procedures** approved by the P&T committee & the **Administration**.
**Medication administration:**

It is the responsibility of the nursing staff, under the supervision of the chief nursing officer. In some cases, physicians administer drugs much as anesthetic drugs.

* **Monitoring** the effect of drugs on the patient.

This function is the responsibility of the physicians, nurses, and the floor pharmacists in JUH. JPC will gather data collected from the health care personnel for analysis and finally report it to MOH for decision taking and Upsala Center for feedback information.

**C) Patient Medication sheet (profile) & Medication Treatment Record (PMS & MTR):**

Each sheet contains information on the patient’s current and recent drug therapy and other information like age, sex, height, weight, etc.

This profile works best in conjunction with unit-dose distribution systems in JUH. It allows the pharmacist to review all the medications that a patient is taking prior to dispensing the first dose and with each new drug order. Problems such as duplicate drug therapy, drug-drug interaction, inappropriate length of therapy, inappropriate dosing can be detected and avoided or corrected.

Recently, computerized pharmacy inventory systems have been applied in JUH. It displays the patient’s medication profile on the screen.

MTR helps the nurse schedule treatments for each patient and provides a permanent record of the medications administered, auditing and comparing quantities of drugs dispensed from and returned to the pharmacy.

**D) Ward & Departments inspection:**

Pharmacy department in JUH undertake monthly inspection of drug storage areas throughout the hospital to:

* Ensure appropriate levels of properly stored drugs.
* Monitor expiration date.
* Remove unnecessary stock.

& monthly reporting to the chief pharmacist for proper action of avoiding or correcting drug wastage.

**Dangerous & controlled Drugs.** These drugs are under the control of the law No. 11/1988, they require greater attention than other drugs. Procedures specific to their procurement, reception, storage, dispensing, & wastage. They are securely double locked within a well-constructed storage area and under the control of licensed pharmacist, in-charge of these drugs. Physicians prescribing these drugs should be licensed for that, also nurses handling them should be well defined.

In conclusion, JUH pharmacies achieved appropriate commitment to the drugs dispensing regulations, so as to optimize the use of available drugs within the aspect of economizing the utilization of the available resources to satisfy the greater number of patients.