



## History of Clinical Pharmacy Practice in Egypt (Part 2)

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### Editorial

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#### Pre-Clinical pharmacy Era

Before Sep-1997, Responsibilities of pharmacists working in Egyptian hospitals were mainly dispensing drugs to patients as prescribed by their physicians. And this also was the case at National Cancer Institute(NCI) – Egypt, In addition that for oncology patients, some cytotoxic drugs were prepared by nurses before intravenous administration to the patients.

But there were many problems in that Pre-Clinical Pharmacy Era:

- 1- A great waste in cytotoxic drugs due to wrong preparation and handling.
- 2- Lacking knowledge about the Cytotoxic drugs (e.g. put tablets and I.V. drugs in refrigerator of patients)
- 3- Those nurses who prepared these cytotoxic drugs are at risk especially nurses who were pregnant (e.g. miscarriage and deformity).

The pioneer of introducing clinical pharmacy practice in Egypt, who claimed the importance of clinical pharmacy, was a physician (Dr Sherif Abo-Elnaga) at (NCI) –Egypt. He knew that dispensing and preparation of cytotoxic drugs must be according to standards that were put for that.

The establishment of clinical pharmacy unit in NCI-Egypt had passed with three organized phases:

- 1- Training Phase.
- 2- Organization and Preparation Phase.
- 3- Operational Phase.

#### 1- Training phase:

Dr Abo-Elnaga established a team of clinical pharmacist, the first pharmacist joined the clinical pharmacy team, was pharmacist (Doris Eskandr).

Pharmacist Doris, with full support from Dr Abo-Elnaga, began reading about the standards of preparation of cytotoxic drugs and met nurses, at NCI, to educate them and learn them about the standards of drug preparation. She helped them to identify drugs that were expired and label these drugs. This was an important step as nurses till that time was officially responsible for preparation of drugs and there was no formal place for clinical pharmacy unit.

Dr Abo El-Naga started to find a place that would be suitable to make clinical pharmacy unit, this place was at the fifth floor in the pediatric department at the NCI, and this was the start.

Two other pharmacists joined the team. Also, Dr Abo-Elnaga obtained a fund to send his new clinical pharmacist team to get training in the clinical pharmacy unit at St. Jame's Hospital, Located in Dublin, Ireland, and the mentor was prof. Kamal sabra, the director of the clinical pharmacy unit at that time. Although the length of this training was short (7 days) but they could obtain the maximum benefit as they document all the required materials for preparation and got training in the mixing room while writing notes about filters, needles, supplies, volume of solutions used, Gloove Box and Laminar Air flow.



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#### The First Pediatric Oncology Clinical Pharmacy

For all previous mentioned problems, application of clinical pharmacy practice was mandatory especially clinical pharmacy began to be included in the curriculum of undergraduate in faculties of pharmacy with no clinical practice all over hospitals in Egypt.



They also knew the ideal process to dispense cytotoxic drugs and bought textbooks about I.V. mixing, drug stability and clinical pharmacy. The team returned back to Egypt, empowered with the knowledge they gained and believed that it was the time to introduce clinical pharmacy practice to optimize the administration of drugs for the sake of oncology patients.

## **2. Organization and Preparation phase:**

This was the next phase and lasted for 5 months during which they started to buy equipments required for preparation (Glove Box and horizontal laminar air flow). Buying equipments carried out by Dr Abo-Elnaga who tried to get fund from those who believed in his vision.

Also they started to search about supplies in the market, there was a problem that only solutions, used for preparation of intravenous drugs, that available in Egypt market were 250 ml and 500 ml of 0.9% saline and 5% glucose, these were considered a large volume to be used for preparation of drugs for pediatric patients. They started to call the company (Otsuka pharmaceutical group) and agreed with them that they would open a line in Egypt for the first time to produce a small volume solution (50ml and 100 ml of both 0.9% saline and 5% glucose).

They bought also refrigerators that differ from patients' refrigerators to store prepared drugs.

They started to design preparation orders for both antibiotic and chemotherapy drugs also they designed an Intrathecal order for Intrathecal drugs.

At the end of this phase, everything was ready to give service to patients and move to operational phase.

## **3. Operational Phase**

Although the good preparation and organization of the previous two phases that guaranteed the success of this phase, but the success of operational phase depended mainly on the acceptance of staff: both Physicians and Nurses.

For nurses, Introduction of clinical pharmacy was very important to remove the load of preparing drugs as a part of nurses' job and let them concentrate on their essential job of patient care. Ms Pat, Canadian pediatric oncology specialized nurse, came to Egypt and helped Dr sherif and his clinical pharmacy team to educate nurses to improve their practice by giving them lectures and practical training to standardize their practice.

For Physicians, the acceptance of clinical pharmacy wasn't easy at all, as the role of clinical pharmacy not only

preparation of cytotoxic drugs but also review dose calculation and drug interactions. Although there was a great support for Dr Abo El-Naga, but the challenge that faced clinical pharmacist was to give touchable change in patient treatment.

Opening the pharmacokinetic lab that was part of the clinical pharmacy unit supported the role of the clinical pharmacy as it helped the physician to make Therapeutic

Drug Monitoring (TDM) to drugs with narrow therapeutic index. After that, clinical pharmacy units were opened in both outpatient and inpatient Adult department as that in pediatric department.

Due to following the standard method of preparing cytotoxic drugs, clinical pharmacy unit achieved "savings" in drugs was about 21% of the dispensed intravenous drugs which returned back to the pharmacy drug store . This was a touchable contribution to that made the management know the importance of the clinical pharmacy.

The "standard preparation" helped drugs to reserve its potency by keeping drugs in refrigerators, and standard procedure of mixing drugs with IV solutions e.g Asparaginase that require special preparation and handling otherwise the enzyme will lose its potency.

Also introduction of standard protocols used in most of oncology pediatric hospitals e.g St Jude were facilitated by the presence of clinical pharmacy that eased the preparation and administration of cytotoxic drugs as prescribed and this helped to achieve the desired goal in treatment.

After the successful organization of clinical pharmacy at NCI, representative from other hospitals visited clinical pharmacy at NCI to transfer there experience e.g Alexandria University. Clinical pharmacy units began to be established in other hospitals e.g hospitals affiliated to Alexandria University, Nasr Institute, Damita Institute..etc.

Recently, Clinical pharmacy Department at Children's Cancer Hospital -Egypt 57357 was opened on 7<sup>th</sup> july 2007 is considered the largest specialized oncology clinical pharmacy in Egypt. According Job description, One Clinical pharmacist for each 10 patients in the inpatient. Also specialized clinical pharmacists in Intensive care Unit, in Bone marrow, in ambulatory care, and in Surgery.

The clinical part of the clinical pharmacy subject in the curriculum of the final year of undergraduate students in faculty of pharmacy, Cairo University takes place in the Clinical pharmacy of Children's Cancer Hospital Egypt-



57357. Also this department make training to students from different countries.

The start of clinical pharmacy practice was initiated in a small unit in the fifth floor of the inpatient of the pediatric department at NCI which proved the importance of clinical pharmacy not only in terms of financial benefits (savings) but also the great advancement in treatment of cancer.

#### **AUTHORS' CONTRIBUTIONS**

Authors contributed equally to all aspects of the study.

#### **PEER REVIEW**

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#### **CONFLICTS OF INTEREST**

The authors declare that they have no competing interests