

## National Intravenous (IV) Therapy Program at MOH in Saudi Arabia

**Yousef Ahmed Alomi\***

*Past General Manager of General Administration of Pharmaceutical Care Head, National Clinical pharmacy and pharmacy practice Head, Pharmacy R & D Administration Ministry of Health, Saudi Arabia.*

**\*Corresponding Author:** Yousef Ahmed Alomi, Past General Manager of General Administration of Pharmaceutical Care Head, National Clinical pharmacy and pharmacy practice Head, Pharmacy R & D Administration Ministry of Health, Saudi Arabia.

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In 1995-1992, during author study at the college of pharmacy at King Saud University, the last year of studying required practice training at the hospital pharmacy. The author spent his training at King Faisal Specialist Hospital and Research Center (KFSH&RC); he trained in the early 1990s at deferent section including Intravenous Admixture department which established in mid-1970s [1]. In the early 1980s along IV admixture (IVA) services at King Khalid University Hospital (KKUH) headed the 1st clinical pharmacist Pharm D holder in the kingdom. Then others hospital stated those services National Guard and Military Medical cities in the early 1990s [1].

In 1998-2002, the author assigned as director of pharmaceutical care department at the biggest hospital at Ministry of health in Riyadh, Saudi Arabia. It was King Saud Medical Complex the old name of current name King Saud Medical City. It is 1500 beds capacity with three different hospitals, general hospital, maternity and obstetrics hospitals, and pediatrics hospitals. This hospital pharmacy consisted of two outpatient pharmacies adults and pediatrics, two inpatient pharmacies adults and pediatrics, very pharmacy extemporaneous preparations lab, drug information center, without Intravenous Admixture except small IV room for Neonatal TPN. In 2000, the first IVA established at MOH hospital in Riyadh region based on American Society of Health-System Pharmacist standard. They started preparation of some antibiotics only for an instant; Aminoglycoside, Vancomycin, Cefazoline, Cefuroxime, and Ceftazidime for surgical including Intensive care unit. The IVA services are expanded in 2004 with quality and quantity in the type of medications and wards. The 3rd expansion in IVA was in 2008-2012 they include chemotherapy preparations for adults and pediatrics and automated compounding of TPN for adults and pediatrics.

In years of 2006-20014; the number of hospitals and beds increases along an incremental with the population in Saudi Arabia. The hospitals with different bed capacity; 50, 100, 150, 200, 300, 400, and 500 beds hospitals [2-3]. Each hospital had special design including hospital pharmacy all over 21 geographical regions. In 2010; Ministry of health released new strategic planning 2010-2020. It updated all hospital departments design including the pharmacy [4-5]. General Administration of Pharmaceutical care (GAPC) established strategic planning of pharmaceutical care; it included improvement and expanding of pharmacy sections [6]. The author and his colleagues released the new hospital pharmacy guidance; it consisted of pharmacy types of equipment required, pharmacy furniture, the design of pharmacies based on bed capacities as explored in figure 1 [7]. Central committee of IV therapy established in 2013 at GAPC, they reviewed all old services of twenty-four hospital IV admixture services at MOH. They established and additional current a new 28 all IV admixture services at MOH. Moreover, the committee planned to expand IV admixture services with 2016-2018 additional 90 hospitals at around Kingdom of Saudi Arabia. Those new projects establish based on 797 guidelines, International Standard Organization (ISO) 5 to ISO 7 clean room standards, and American Society of health system Pharmacist (ASHP) [8-9] IV admixture guidelines. With a new automatic alarming system of pressure and humidity measurement, follow-up screens, and new methods of culturing air environment for any pathogen as an example of figure 2. Also, the committee released several publications [10].



Figure 1



Figure 2

- ✓ Adults Parenteral Dilution Manual
- ✓ Pediatrics Parenteral Dilution Manual
- ✓ Neonatal Parenteral Dilution Manual
- ✓ Home Adults Parenteral Dilution Manual
- ✓ Home Pediatrics Parenteral Dilution Manual
- ✓ Standard adults concentration IV Drip chart
- ✓ Standard concentration Pediatrics IV Drip chart

In 2012, Al sultan MS and his colleagues published at local pharmaceutical journal described hospital practice of dispensing and administration in Riyadh region. He mentioned 60.7% of chosen sample had IV admixture services while 21% of them required the nurses prepare IV medications at the words. The study did not discuss detail about IV admixture services, and the majority of the sample non-MOH hospitals. The author is not familiar with any study discussed detail about IV services in Saudi Arabia or Gulf countries. Also, it is very hard to find any literature described IV admixture services in the Middle East countries [11].

In 2014, GAPC requested from 21 regions by an official memory to formulate IV therapy committee at each region and IV therapy committee at each hospital with IV therapy team. The regional committee organized all IVA services in the level area; the hospital committees establish the program at the hospital level. The IV therapy team makes a daily round all patients taking IV medication; check the IV preparation, appropriate for patients, IV medication canula situation, IV therapy allergies, IV medication administration techniques. Our plan to cover the following issues related to IV therapy and publishes them in the coming issues of the journal.

- ✓ IV therapy Pharmacist intervention
- ✓ IV therapy Medication errors
- ✓ IV therapy adverse drug reaction
- ✓ IV therapy Drug-related problems
- ✓ Cost avoidance of IV therapy
- ✓ National survey of IV therapy
- ✓ IV therapy of pain management program
- ✓ IV therapy of Anticoagulation program
- ✓ IV therapy of neurology pharmacy program
- ✓ IV therapy of pharmacy home care program
- ✓ IV therapy of nephrology pharmacy program
- ✓ IV therapy of cardiology pharmacy program
- ✓ IV therapy of pediatrics pharmacy program
- ✓ IV therapy of Ramadan pharmaceutical care program
- ✓ IV therapy of mass gathering pharmaceutical care program

IV therapy program is an essential tool to prevent medication errors, and drug-related problem in an era of pharmacy practice. It helps all health care professional to provide appropriate IV therapy care during diseases management without any mistakes; it helps of preventing drug resistance bugs and applies hospital infection control standards, and continuous improvement of the pharmaceutical care services, meet patients needs, with raise patient satisfaction of pharmaceutical care in Saudi Arabia

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