مؤسسة مستشفى سرطان الأطفال-مصر Children's Cancer Hospital Foundation - Egypt 57357	**Policy Name**: **I.V. Admixture workflow and I.V. Order Processing**

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1.0 Change of policy

1.1 No changes

2.0 Purpose

2.1 This policy and procedure were established to demonstrate processes involving entry, preparation and checking of an IV Mix Order to ensure Safe Medication ordering process

3.0 Policy

3.1 Policy statement:

3.1.1 All orders of IV admixtures are reviewed, prepared and products are checked by the main pharmacy. All required precautions and regulations for sterile preparation will be applied to ensure product effectiveness, sterility and stability.

3.2 Scope:

3.2.1 This policy and procedure apply on all pharmacists

3.3 Responsibilities

3.3.1 Pharmacist.
3.3.2 Pharmacy assistants.
3.3.3 House Keeping.

4.0 Definitions /abbreviations:

4.1 CCHE: Children Cancer Hospital – 57357 Egypt
4.2 CPID: Continuous Performance Improvement Department
4.3 MMU: Medication Management & Use
4.4 MMS: Medication Management & Safety
4.5 IV Mix Order: Medication orders requiring sterile compounding.
4.6 CAIs: Cabinet Isolators

4.7 **Batch:** All orders active during certain period of time
4.8 **MISK:** Medical Informatics saving kids.
4.9 **COP:** chemotherapy protocol for CLL (cyclophosphamide, vincristine sulfate, prednisone)

5.0 Procedure:

5.1 Pharmacy is responsible for the IV admixture orders processing.
5.2 Special area in the pharmacy is designed and maintained to meet conditions necessary for sterile preparation and safety of compounding personnel.
5.3 Personnel working in IV shall follow the standard steps and precautions to ensure the sterility and accuracy of the parenteral product.

5.4 IV Mix Personnel Getting Ready are (Housekeeping, Pharmacy assistant Compounding Personnel).

5.4.1 Garbing procedures including shoe cover, hand sanitizing, overhead, facemask, hand washing, donning gown, hand hygiene and wearing sterile gloves respectively.
5.4.2 Further precautions for hazardous preparation are taken by personnel assigned for hazards preparation including N95 mask.

5.5 IV Mix Room (Buffer Area) Getting Ready

5.5.1 **Housekeeping:**

5.1.1.1 Carry out Cleaning, disinfection procedures for working benches, ceilings, walls and storage areas.
5.1.1.2 Carry out trash from sterile area to transient trash room in color coded bags according to trash type.
5.1.1.3 Refill spill kits if needed.

5.5.2 **Pharmacy Assistant:**

5.5.2.1 Provides supplies and Diluents bottles covering the Day needs.
5.5.2.2 Disinfect diluents bottles for pharmacists needs.
5.5.2.3 Handle all pharmacist needs during working in CAIs.
5.5.2.4 Transfer prepared medications from CAIs to checking room.
5.5.2.5 Withdraw expected discharge patients from batch.

5.5.3 **IV personnel:**

5.5.3.1 Cabinets decontamination, starting up and recorded cabinets logs.
5.5.3.2 Signing labels.
5.5.3.3 Receiving and signing stock of medications needed for preparation.
5.5.3.4 Prepare sterile medications.
5.5.3.5 New orders prioritization.
5.5.3.6 Reuse returned medication.
5.5.3.7 Appropriate storage of unused remained vials and returns with labels and BUD.
5.5.3.8 Return saving medications.

5.6 Drug groups' distribution (Preparation schedule):

5.6.1 Each personnel assigned for one group of Drugs.
5.6.2 Compounding personals prepare Supportive medications, parental nutrition, chemotherapy and other hazards drugs.

5.7 Equipment specialization:
5.7.1 Five isolators are specialized for compounding chemotherapy preparations, Six for supportive sterile compounding procedures and one isolator for parental nutrition.
5.7.2 Diana system which the world's first user-controlled automated sterile compounding system for the accurate, safe, and efficient preparation.
5.7.3 Shakers.

5.8 Delivery of Dispensed Units:
5.8.1 Batch Dispense Report is printed by IV secretary to be dispensed from IV sub store (528).
5.8.2 Review quantities and prepare required amount and unpackaged it.
5.8.3 IV secretary receives the units, and transfers the items to IV room through Pass-through window.
5.8.4 Precautions for Hazardous handling should be followed.

5.9 Supportive batch Entry and Processing:
5.9.1 Daily Batch Preparation Orders (Regular/ Ongoing) non chemo preparation orders.

5.9.2 **In the Early morning, Each IV personnel get:**
5.9.2.1 Morning batch report for number of doses and orders for each group arranged alphabetically according to drug name, to account for his/her day requirements of diluents bottles and drug units.
5.9.2.2 Morning batch labels are inserted in plastic bag, each bag containing all labels for all orders of one drug.

5.9.3 IV secretary is responsible for the delivery of both previous items through pass-through window.
5.9.4 IV personnel match labels against report to check any illogical data with IV prep/check pharmacist.
5.9.5 Checked labels are stuck by IV personnel on corresponding diluents bottles, bottles are grouped into small numbers then each group of bottles are sprayed/wiped with 70% Ethyl alcohol then aseptically entered into the isolator.
5.9.6 IV mix personnel prepare the batch doses using aseptic technique, then aseptically transfers the prepared doses to the checking area through the pass-through window where doses are checked and any error is reported to the IV personnel to fix it.
5.9.7 Each single syringe or bottle used, should be labeled separately with drug name, concentration, diluent, & and its volume.

5.10 Chemotherapy batch Entry and Processing:
5.10.1 This type of orders is reviewed by the round pharmacist via Cerner report, batch labels of the orders' items are entered through the pass-through window.

5.10.2 Orders entered is prepared using aseptic technique inside isolators.
5.10.3 The order components are transferred to check area signed by the personnel who prepared the doses where doses and labels are checked, any error is reported to the IV personnel
to fix it.
5.10.4 Precautions for hazardous compounding and handling are followed when dealing with chemotherapy.

5.11 New IV admixture order:

5.11.1 **Routine order:**

5.11.1.1 The IV Prep pharmacists assign the correct product and revise all items of medication order which entered by physician and verified by round pharmacist to ensure correct product, dose, minimum dilution, frequency, route of administration, duration and compatible diluent.
5.11.1.2 Pharmacist writes down the number of doses required to cover doses until next batch and print labels.
5.11.1.3 The IV Prep pharmacists document any interventions on MISK.
5.11.1.4 Labels are delivered to IV Mix room through the pass-through window to prepare the doses.
5.11.1.5 IV personnel prepare within 2 hours from ordering.

5.11.2 **STAT and Now orders:**

5.11.2.1 IV prep personnel enter the labels of the STAT doses with yellow label to mark then as Urgent Medication.
5.11.2.2 Personnel prepare the doses, sign the labels and give the priority to Stat ones.
5.11.2.3 The stat dose should be prepared within 30 minutes from product assign of the order.
5.11.2.4 Prepared Stat is transferred to IV check room to be checked, packaged and scanned then transferred to patient location immediately.

5.12 Chemotherapy regimen order:

5.12.1 The round pharmacist clinically reviews patients' orders and documentation.
5.12.2 IV prep pharmacist verifies chemotherapy to meet protocols requirements (dose, duration, diluent, route, frequency and infusion rate) and ensure complete order elements are active and printed.
5.12.3 Labels entered to IV mixing room in order to be prepared inside negative pressure isolators.
5.12.4 Chemotherapy orders clinically reviewed before 6 PM is prepared in same day.
5.12.5 Chemotherapy orders clinically reviewed from 6 PM to 11 PM is prepared during night shift to be ready for delivery to floor before 8 AM next day.
5.12.6 Chemotherapy orders recorded on access after 11 PM is prepared next day morning to be ready for delivery before 11 AM next day.
5.12.7 COP orders is prepared as urgent orders within 1 hour at any time.

5.13 Product Checking:

5.13.1 Every drug prepared in the IV Mix Room is transferred to IV check to be checked by the IV check pharmacist.

5.13.2 Pharmacists and Pharmacy assistants in checking area should wear gloves while checking or packaging of prepared medications.

5.14 A checklist is used by checking pharmacist with the following items:

5.14.1 Incorrect minimum dilution.
5.14.2 Wet needle.
5.14.3 Leakage.
5.14.4 Air bubbles.
5.14.5 Wrong dose.
5.14.6 Wrong volume.
5.14.7 Wrong labeling.
5.14.8 Checking numbers of doses
5.14.9 Physical appearance.
5.14.10 rubber/ particulate matter
5.14.11 wrong medication.
5.14.12 Follow up STAT medications.

5.15 Packaging:

5.15.1 Pharmacy assistant responsible for packaging sterile products perform hand scrubbing and wear gloves.
5.15.2 Drug doses packaged in zip-lock plastic bags then closed.
5.15.3 Light sensitive hazard drugs are packaged in red bags and non-light sensitive hazards are marked with red label.
5.15.4 High alert medications are labeled with high alert medication labels.
5.15.5 Teratogenic drug is labeled with teratogenic labels.
5.15.6 Light sensitive, non-hazard drugs are packaged in green bags
5.15.7 Intrathecal in packaged in yellow bags.
5.15.8 Complete day chemotherapy doses are packaged in one bag.
5.15.9 For all Medications: Every dose checked and recorded with scanner; Report from Cerner has been printed with every batch to detect missed unprepared medications.
5.15.10 Then the drug put on drawers to be transferred to Inward pharmacy.

5.16 End of Shift:

5.16.1 Removal of unused supplies from CAIs and returned to shelves. If the hood was used in compounding hazards, swab supplies surface with 70% Isopropyl/Ethyl alcohols before removal.
5.16.2 Removal of waste bags.
5.16.3 Turn off CAI.

5.16.4 Disinfection of CAI. (Water then 70% Isopropyl/Ethyl alcohol).
5.16.5 Degrading and hand wash.

5.17 Handover:

5.17.1 Any pending orders are handed to next shift IV personnel with the status and reason of pending.
5.17.2 All medications scanned and checked deliver to ward. All medications scanned prior to administration and any failure to be scanned should be report to medication safety officer and IT officer via incident reports in order to solve these errors.
5.17.3 Daily batch Record is handed to IV room supervisor showing which drugs are delivered to floor.

6.0 References:

6.1 N/A

7.0 Appendices:

7.1 Related Forms:

7.1.1 N/A

7.2 Related Policy(S):

7.2.1 Medication Management Program

7.3 Related Standards:

7.3.1 JCI standards 7th edition – MMU Chapter. (MMU.4)
7.3.2 GAHAR Standards name. MMS .11 , 12 , 13 , 14 & 15

7.4 Attachments

7.4.1 N/A