

## Chemotherapy: Safety Strategies for Nurses

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**Abstract:** Nurses are the main key persons in chemotherapy administration. It is the responsibility of nurses to safe guard patients, in order to prevent medication error and safety protection of the nurses and the patients. Nurses who administer chemotherapy drugs should be aware about the safety guidelines of preparation, administration, transportation and disposal. This article outlines the comprehensive review of safe chemotherapy drug preparation, administration, disposal and prevention of contamination by body fluids<sup>[1]</sup>.

**Keywords:** Chemotherapy, Cytotoxic drugs, guidelines, hazardous waste, Chemotherapy drug administration.

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### I. Introduction

Oncology nurses practice in a variety of settings including acute care hospitals, ambulatory care clinics, private oncologists' offices, radiation therapy facilities, home healthcare agencies, and community agencies. It is important for an oncology nurse to know the specific guidelines for administration of chemotherapy drugs. Only those personnel specifically trained in chemotherapy techniques should be involved in preparation and administration if antineoplastic agents.

Chemotherapy agents are carcinogenic, mutagenic and teratogenic. Exposure to those chemotherapeutic agents can occur by inhalation, absorption or digestion. Safe handling guidelines should be followed while handling chemotherapeutic agents<sup>[2]</sup>.

### II. Safety while drug preparation:

- Perform hand hygiene and don gloves, gown and face protection.
- Change gown immediately if contaminated with a hazardous medication, after each handling activity.
- Wear two pairs of disposable, powder free gloves that are chemotherapy tested.
- Wear inner gloves under the gown cuff and outer gloves over the gown cuff.
- Change gloves after each handling activity.
- Remove outer gloves first, turning the inside out to avoid contamination.
- Remove inner gloves at last after disposal of the other PPE.
- Face shield and combination mask should be worn.
- Perform all the drug preparation in a primary biological safety cabinet with a HEPA filtering device.
- Use safety techniques when opening ampules.
- Use closed system transfer devices while reconstituting drugs.
- Do not overfill syringes.
- Prime tubing in the biological safety cabinet with a compatible solution.
- Oral compounds crushing, breaking or mixing with food or fluids should be done in the biological safety cabinet.
- Use respirator if the drug is coated with powder, which is inhalable.
- Protect the work area with a plastic backed absorbent pad.
- Label all medication and medication containers.
- Wipe down the outside of the bag, tubing or syringe with moist gauze.
- Place hazardous medications in clear, sealable bag.
- Label the bag hazardous drug before removing it from the biological safety cabinet.
- Place the prepared drug in a closed transport receptacle for delivery to the administration site.
- Ensure that a spill kit is available during transport.
- Remove PPE before leaving preparation area.
- Secure hazardous medications immediately in a locked and labeled storage area.

- Eating, drinking, food storage and cosmetic application is prohibited where cytotoxic agents are prepared or used.
- When compounding chemotherapy, appropriate gloves are changed every hour or immediately if they are contaminated, torn, or punctured<sup>[3, 5]</sup>.

### III. Safety During Administration of Chemotherapy Drug:

- Perform hand hygiene and wear protective equipment.
- Explain to the patient that drugs are harmful to normal cells and so protective measures has to be followed.
- Two personnel approved to administer the drug should verify the patient using two identifiers.
- Verify the drug name, dose, volume, rate and route of administration.
- Ensure patient consent.
- Check integrity of vascular access drive.
- Inspect the drug for any leakage.
- Place an absorbent pad under the IV tubing.
- Begin IV infusion but do not draw blood while infusing hazardous drug.
- Flush tubing with nonhazardous medication before disconnecting it.
- Do not crush oral medication, send to pharmacy if meds needs to split or crushed<sup>[4, 5]</sup>.

### IV. Safe disposal

- Discard non sharp cytotoxic waste products in a leakproof, puncture proof sealable plastic bag.
- Label it as cytotoxic waste.
- Use leak-proof, puncture container labelled cytotoxic waste for needles and sharp.
- Keep containers in all areas wherever the hazardous drugs are prepared and administered.
- Dispose the containers with cytotoxic waste by incineration at 183 deg F (1000 deg C)<sup>[4, 5, 6]</sup>

### V. Prevention of Contamination by Body Fluids:

Chemotherapy precautions regarding blood and body fluids are implemented during and for 48 hours post administration.

- Wear latex or nitrile gloves and disposable non permeable fabric when handling body fluids.
- Empty waste products into toilet by pouring close to the water to avoid splashing.
- Close the lid of closet and flush.
- Wear gloves and gown when handling linen soiled with body fluids.
- Place the linen in isolation linen bag for separate laundry.
- Use latex gloves and gown when handling body fluids, particularly urine. A face shield is worn if splashing possible.
- Discard disposable items contaminated with body fluids of patients who have received hazardous drugs in the previous 48 hours in the appropriate puncture proof hazardous waste container. These items include diapers, urinals, bedpans, measuring devices, foley catheters, and drainage bags<sup>[5, 6, 7]</sup>.

### VI. Conclusion

Following the safety measures while handling chemotherapy drugs prevents the possibility of accidental contact with cytotoxic agents within the medication circuit thus prevents medication error and hazards effects of the chemotherapy drug on health care workers.

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