



## CYTOTOXIC DRUGS- IT'S MANAGEMENT

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## KEYWORDS :

"Safe handling and preparation of cytotoxic drugs using gloves, protective cuffs, special gowning, mouth mask and glasses in a special vertical air laminar flow box do not give enhanced mutagenic activity in urine of personnel"

The handling, preparation, administration and disposal of cytotoxic drugs may result in an occupational hazard. Handlers must be aware of the health risk possibilities. The proper implementation of care, full handling and precaution reduces the health risk of caregivers, care receivers, and environment.

Some institutional guideline must be followed during handling of cytotoxic drugs. All medical, nursing, pharmacy personnel must be familiar with these guidelines. No person must be involved in the handling, transport, preparation, administration or disposal of waste of any cytotoxic substance without appropriate training.

**Administration of cytotoxic drug:-**

Nursing and medical personnel must be careful of specific control measure and safe work practice guideline recommended to administer cytotoxic drug to the patient.

One RN administered the chemo therapy drug.  
2 Rns must check all '10 Rights' of drug administration.  
One fellow must counter sign the cytotoxic medicine order.  
The responsible pharmacist must sign that, and then order has been processed by oncology pharmacy.

**Preparation area:-**

Preparation area of chemotherapeutic drugs must be in a separate room, with properly equipped with laminar flow hood, good artificial light sources. The preparation room must be used by one in one time.

**Personal protective equipments:-**

- The following PPE is recommended during the preparation, administration and where there is an assessed exposure risk of cytotoxic agents.
- Gown - Long sleeved gown of impermeable material, closed front and elastic cuff. Must be disposable, if not then able to be processed through a laundry facility with proper care.
- Cap - Must cover forehead
- Mask - Surgical mask
- Protective eyewear - Scratch proof goggles with side shields.
- Gloves - PVC, surgical latex or purpose manufactured gloves. Gloves should be long enough to cover wrist cuffs of the gown. Operators not wearing special purpose gloves, should be double gloved.
- Safety closed footwear.

**Administration procedure:-**

Sound skill and knowledge about that drug should be ensured by the care giver.

Ensure the patient and family cooperation and encourage them to alert staff of any problems.

Maintain close supervision of the patient.

**I. Intravenous cytotoxic agents administration:**

Where central venous access is available utilize that to administer intravenous cytotoxic agents.

Where a central venous access is unavailable, choose veins of normal circulatory dynamics and reasonable diameter, to limit high level concentration and possibility of extravasations.

Careful observation for extravasations incident and manage it promptly.

**Extravasation:-**

The inappropriate or accidental leakage of intravenous drugs from the vein into the surrounding healthy tissue.

There are some vesicant cytotoxic drug that causes blistering and other tissue injury that may be severe and can lead to tissue necrosis. (vesicant drugs- Doxorubicin, Mitomycin, Docetaxal, Vincristin etc. Irritants drugs - Carboplatin, Ifosfamide, 5-FU, methotrexet etc)

Patients with chronic conditions causing arterial insufficiency, compromised venous or lymph drainage, patients on medications like corticosteroids, anticoagulants, and elderly, children are more prone to develop extravasations.

**I. Oral cytotoxic drug administration:**

Oral drugs must be handled with care and avoid direct skin contact, and avoid exposure of powdered agent into the air. Avoid crushing and breaking of tablets where appropriate.

**II. Subcutaneous and intramuscular cytotoxic drug administration :**

Proper observation must be done after administration of the drug. Any irritation, any skin changes any kind of local changes must be observed carefully. Patient is encouraged to cooperate to alert the responsible caregiver about any kind of problem if he/she feels.

**III. Intrathecal cytotoxic agent administration :**

Intrathecal chemotherapy is used to treat cancers that have entered into the cerebrospinal fluid. Chemotherapy given intravenously and orally is typically not able to cross into the CSF.

Three common IT drugs are Methotrexate, Cytosine arabinoside, and Corticosteroids.

Intrathecal cytotoxic agents must be handled and administered very carefully. Intrathecal cytotoxic drugs must be stored separately from other cytotoxic agents.

**Patient care :**

Cytotoxic agents are primarily eliminated from the patient by renal and hepatic excretion. All body substance may be contaminated with either the unchanged agent metabolites.

Protective measures - The following protective measures must be used when handling patient's vomits, excreta, blood, and fluids drained from body cavities which are contaminated with cytotoxic agents.

- i. Personal protective equipment.
- ii. Patient waste (urine, stool, vomits and content of colostomy and urostomy bag) may be disposed in the normal sewerage system.
- iii. Disposable diapers, colostomy, urostomy bags must be disposed in cytotoxic waste container.
- iv. Wash hands properly immediately after handling cytotoxic exposure.

v.Protective measures are required for 72 hours following cytotoxic agent administration.

#### Personal contamination:

Exposure to cytotoxic agents may occur through skin contact, skin absorption, inhalation of aerosols, needle stick injury, and accidental ingestion. Personal contamination may result from drug preparation, administration, handling of patient waste, transport and waste disposal or spillage of cytotoxic drug or contaminated content.

In case of personal contamination occurs with any above events;

- I. Immediately remove gloves or gown and any contaminated clothing and dispose of in cytotoxic waste container.
- II. Package and launder clothing that is not overtly contaminated.

#### • Skin exposure:

- Remove contaminated clothing.
- Wash the effected skin and flush thoroughly with running water.

#### Eye exposure:

- Wash the eye immediately with clean water by continuous irrigation for a period of 10 to 15 minutes.

#### Needle stick injury:

- Wash thoroughly as for skin exposure.
- Refer to the institutional policy and procedure manual as recommended.
- Do not administer antiseptic or anesthetic drops or ointments.
- Report the incident to the supervisor responsible for area at that time.
- Report for medical review.
- Complete an incident report.

#### Spill Management:-

A cytotoxic spill requires immediate attention and must be effectively controlled so as not promote further contamination. Areas where preparation and administration are done must have cytotoxic agent spill kit.

Two types of spill are there.

- Minor spills – cytotoxic spills less than 50 mls .
- Major spills - cytotoxic spills more than 50 mls.

#### Management of spills during agent administration, patient care and transport:

- Isolate the area and put the warning signs.
- Staff contaminated by the agent should refer to personal contamination management. Another responsible staff should be allocated for managing the spill.
- Access the nearest spill kit.
- Put the PPE contained in spill kit.
- Cover the spill using absorbent pad contained in spill kit.
- Use spill towel to wash the area with alkaline solution, rinse the area thoroughly with water and dry the area fully.
- Discard all waste into cytotoxic waste bag.
- Remove all shoe coverings and outer utility and discard into cytotoxic bag.
- Place that entire bag in to the another cytotoxic waste bag.
- Wash hands properly.
- Record an incident report.

#### Waste Management:-

Cytotoxic waste include any waste which is contaminated with cytotoxic agents.

Following steps must be concerned during disposal of waste.

- Disposable equipment contaminated with cytotoxic agents should be disposed in assigned cytotoxic waste bucket.
- Unused portions of cytotoxic agents should be disposed in cytotoxic waste bag.
- Cytotoxic contaminated sharps should be disposed in cytotoxic sharp waste container.
- No disposable equipment should be washed in hot soapy water.
- All cytotoxic waste containers should be sealed prior to collection by domestic services with proper cytotoxic label.
- Personnel who engaged in the routine handling , transport of cytotoxic waste should wear industrial work wear, industrial

gloves and safety boots.

- Cytotoxic waste should be segregated from other waste streams.
- At present incineration is the only acceptable method for treatment of cytotoxic waste.

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