

Chemotherapy Practical demonstration

Reasons for safety when administering chemotherapy



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No Child Should Die Of Cancer

PRACTICAL DEMONSTRATIONS



Definition of a HAZARDOUS DRUG

Hazardous drugs are capable of causing toxicity to personnel and others who come in contact with them. Drugs are classified as hazardous when they pose any one of the following characteristics.



Characteristics of Hazardous drugs

- **Teratogenicity** defects in fetal development or fetal malformation impairment
- **Fertility impairment** – studies show impairment and adverse reproductive outcomes in both men and women
- **Carcinogenicity**- ability to cause cancer
- **Genotoxicity**- cause change or mutation in genetic material



Risk of occupational exposure

Inhalation – of aerosols and drug particles i.e: cyclophosphamide dust from preparing chemo
Droplets of spill ,patient bodily fluids

Ingestion accidentally after dermal contact

Injection – Accidental needle stick

Absorption Mucosal/Dermal – Direct contact with contaminated surfaces, syringes and bags . Contaminated linen , bodily fluids

Drug Vaporization

Occasion of exposure

Preparation of drug

Spill management

Transportation of cytotoxic drugs

Administration of drugs

Handling bodily fluids

Disposal of hazardous waste



Acute Effects

Chronic cough

Itchy Skin

Sore throat

Headaches

Eye irritation

Rash

Dizziness

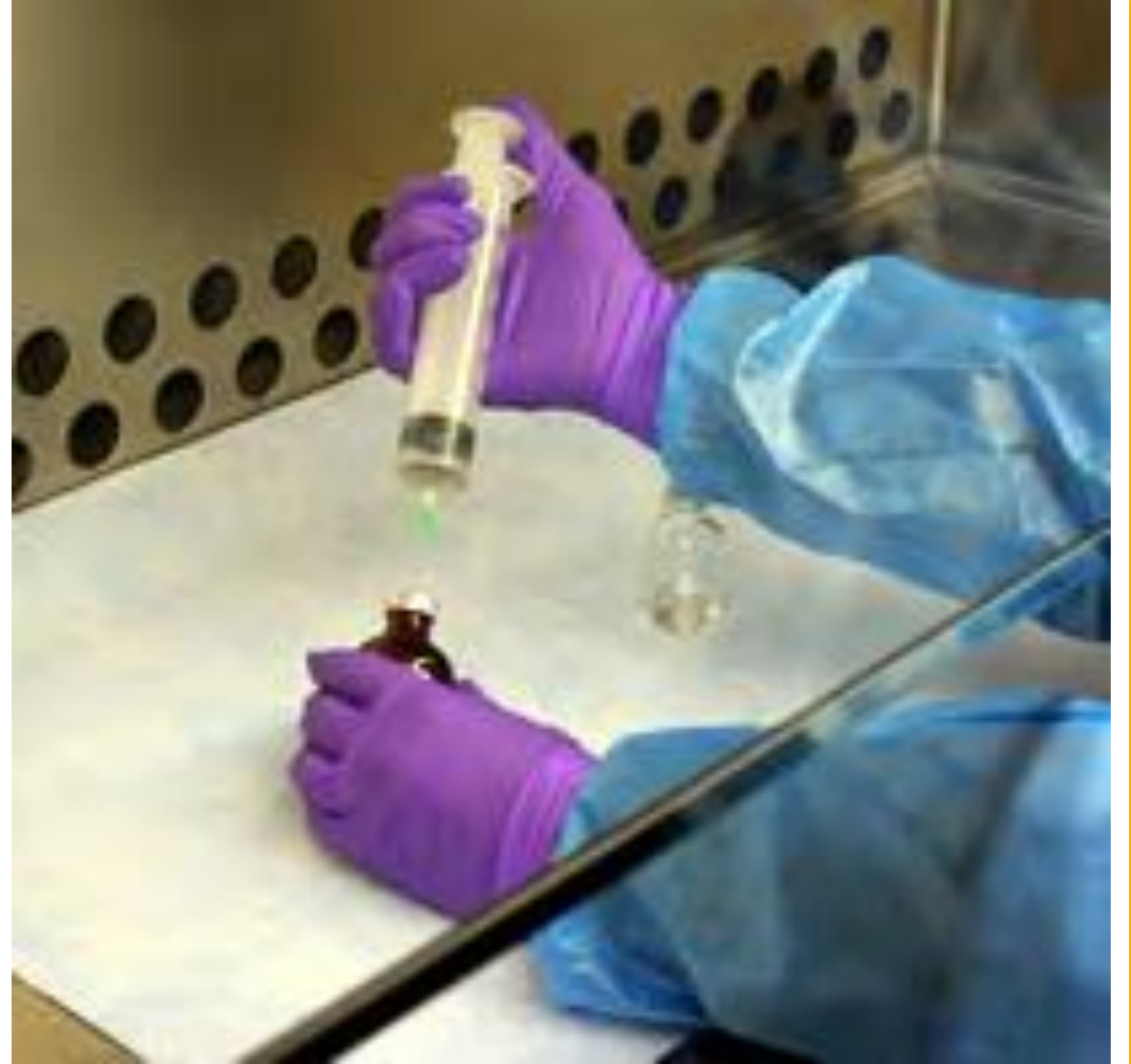
- “Working with hazardous drugs does not equal exposure. Improper handling or protection put all in the environment at risk”

(Martha Polovich, 2008)



Hierarchy of control

- Engineering control
- Workplace control
- Standard operative procedures
- Appropriate work practice
- PPE available
- Biological safety cabinet where available
- Closed system devices where available



Solutions to alleviate risk

Storage of HD – in a Ventilated room

Minimizing opening the door to the storage area

PPE to be worn when unpacking boxes of chemo, touching vials

When mixing chemo

When giving chemo

When cleaning spill

When cleaning body fluids

Reconstitute drugs by qualified personnel only in a safe regulated area



Personal Protective Equipment



Gloves . Nitrile gloves ideally

Double gloves when giving chemo

Change at least every 30 mins

Change before and after mixing chemo

Change before and after each patient always

Shoe and hair cover (never barefoot or avoid sandals)

Goggles

Gown : change everyday preferably an impervious fabric

Mask



Accidental exposure



- Eyes – flush affected eye for at least 15 mins – report.
If contact lenses used – remove throw in biomedical waste



- Skin – remove contaminated clothing and wash affected area first with water and soap for 10 mins (non disposal clothing should be double washed.



- Needle stick – Immediately wash puncture wound with soap and water 15 minutes. Let it bleed freely and clean with alcohol



Accidental Exposure cont-:



- Inhalation – move away from affected area seek emergency treatment if required



- Ingestion – Flush mouth with copious amounts of water and seek emergency treatment

Make sure to document any event of exposure as per institution policy



Administration -: Chemotherapy

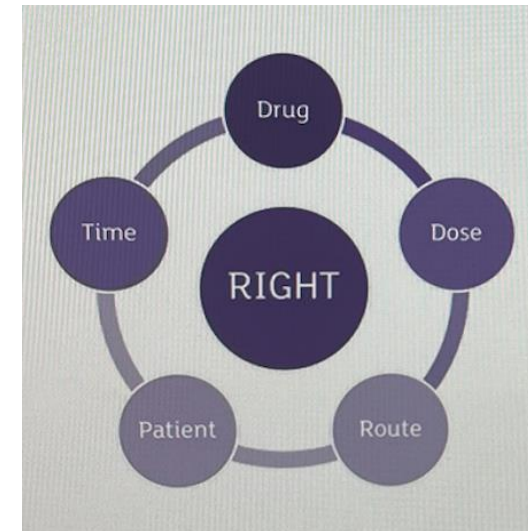
A drug is prescribed

- Is this in your scope of practice?

Check the 5 RIGHTS:

- Patient Name, ID
- Right medicine and concentration
(ie: Doxorubicin 25mg/m²
Concentration 0.1 – 2mg max)
- Right dose according to BSA=1m² and protocol
- Right route how it is given (ie: IV over 1hr)
- Right time to give
- Do you know the drug and the side effects?
- Is it a vesicant ?
- Are antiemetics required and prescribed prior?
- **If unsure of any aspect of the administration - contact the doctor**

$$m^2 = \sqrt{\frac{\text{Height (cm)} \times \text{Weight (kg)}}{3600}}$$



Intravenous Push Chemo

- Clean preparation area or trolley with alcohol solution to take to bedside
- Add equipment saline syringes, prescribed drugs
- Alcohol prep
- Biohazard container and waste bag
- Put on PPE



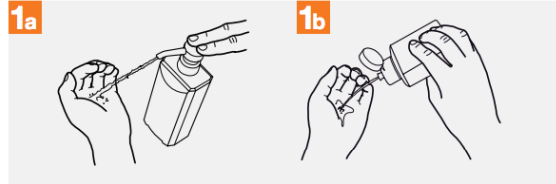
Gather Your Supplies



How to perform adequate hand hygiene

RUB HANDS FOR HAND HYGIENE! WASH HANDS WHEN VISIBLY SOILED

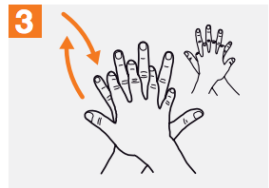
⌚ Duration of the entire procedure: 20-30 seconds



Apply a palmful of the product in a cupped hand, covering all surfaces;



Rub hands palm to palm;



Right palm over left dorsum with interlaced fingers and vice versa;



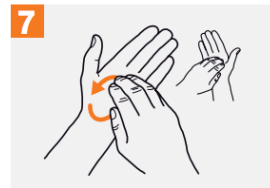
Palm to palm with fingers interlaced;



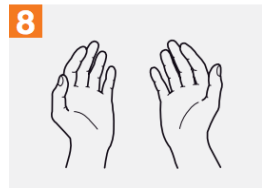
Backs of fingers to opposing palms with fingers interlocked;



Rotational rubbing of left thumb clasped in right palm and vice versa;

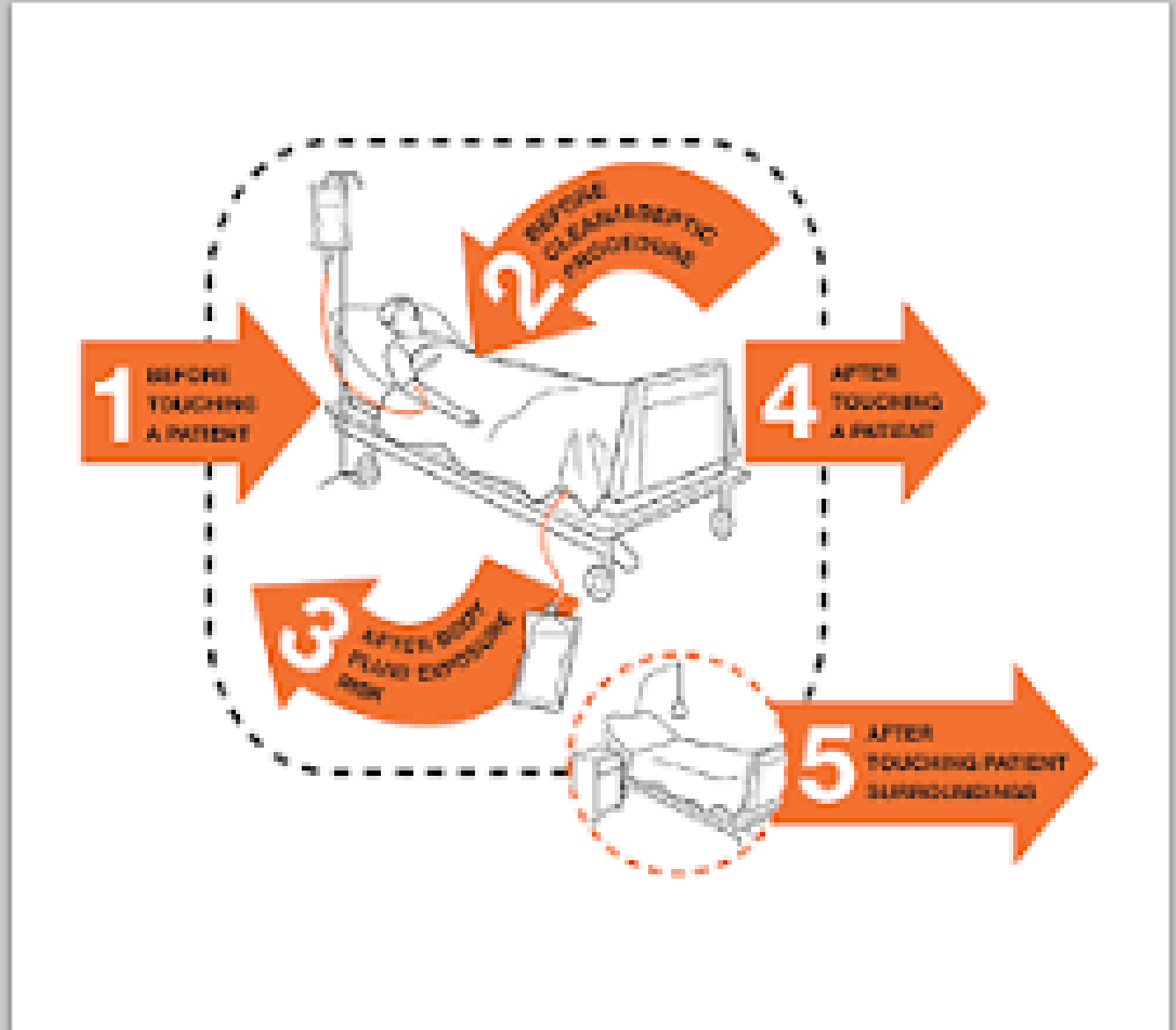


Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



Once dry, your hands are safe.

5 moments of critical hand hygiene



At bedside/ treatment area

- Identify patient and recheck 5 rights
- Wash hands and put on PPE
- Open syringes and needles
- Draw up Saline flush
- Ensure Alcohol wipe to wipe skin or IV Bung prior to IV insertion
- Place impermeable drop sheet under the area to soak up any spill or leakage





Established IV

Check site is safe

Looks clean and dry, no inflammation

Check blood return using saline first.

Ensure no pain on infusing saline .

Slow push the drug checking every 1 – 2 ml that there is still blood return ensuring patency of the vein.

Check site as giving drug for redness, flaring swelling, leaking or pain

Any sign of Extravasation

Signs of swelling

Redness or flaring of the skin,

Pain or burning.

Leaking around the site

Immediately withdraw fluid back into the syringe

Remove the IV

Apply Ice



Oral administration

- **5 Rights**
- Know the drug and side effects and what to watch for
- Use PPE if handling / crushing/ dissolving in liquid
- Use disposable medicine cups and syringes where possible
- Or Wash in hot soapy water and autoclave
- Dispose of gloves, PPE and disposable cups/syringes in Biohazard bags .



General side effects

GI effects - Nausea and Vomiting

- Anti emetics works best to prevent chemotherapy associated N+V
- Need to give before chemo and then regularly as ordered for 2 – 3 days depending on the chemo and protocol
- There are many different types. (if it doesn't work try another type)
- Often need combinations of a few.
- Ondansetron, metoclopramide, dexamethasone, lorazepam, largactil aprepritant

Diarrhoea

- monitor input and output – keep fluid balance- replace losses IV if severe

Hair Loss

- Can take about 3 weeks to occur

Specific side effects

- **Vincristine** – constipation , nerve pain , foot drop,
- **Cisplatin/carboplatin** – hearing loss (high frequency usually with high dose)
- **Cytarabine** – fever, conjunctivitis, eye irritation at high doses
- **Cyclophosphamide/Ifosphamide** – hemorrhagic cystitis
- **Etoposide** –hypotension /allergy
- **Methotrexate** – severe mucositis



On completion

Dispose of waste

Remove IV (if not required to remain insitu)

Disposal of sharps in Biohazard IV container

Other syringes masks gloves in Biohazard bags

Wash hands

Once full these containers should be incinerated

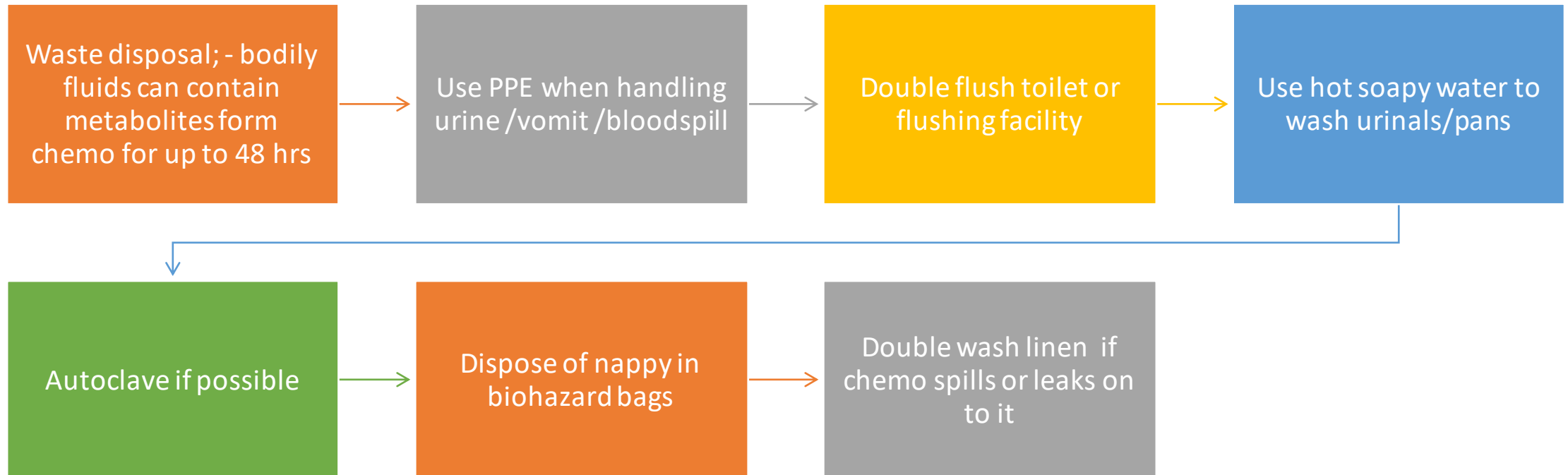


Decontamination of work area

- Wipe over Trolley/ bench
- Bleach = 0.5 % Hypochlorite (98% effective)
- Alcohol 70% (80 % effective)
- Wait one hour after cleaning



Other considerations when caring for patients post chemotherapy



Cytotoxic Spill kit

Keep in main chemotherapy storage/ mixing/ administration room.

- Two pairs of gloves (non-powdered)
- Non-permeable gown, shoe covers
- N95 respirator mask and goggles if available
- Absorbent plastic backed sheets
- Disposable towels
- Two thick plastic bags
- Scoop for collecting glass fragments
- Sign saying "Caution: hazardous spill"
- A resistant container



Cytotoxic spill management

Body and body fluids within 48 hrs
Oral chemo especially if liquid
IV or other medication that has leaked



<D:\Sample video\Two week IC\Day 2\Cytotoxic Drugs - Managing Cytotoxic Spills.flv>



Essential components of medical surveillance

Maintain record of all workers who are exposed to HD

Have all HD handlers complete a questionnaire annually

Conduct periodic observation of drug preparation and administration practices

Document spills, spill cleanup activities and accidental exposure

Share the results

In case of an incident

History

- A thorough history is best and most effective
- Questionnaire for medical and occupational history
- Work history estimating drug handling history –weather wear PPE use of bsc

Physical examination

- Least helpful source of surveillance
- Base line exam useful for documentation of any preexisting findings
- Periodic exam should focus on skin and mucous membrane ,Look for rash ,irritation
- target organ/system –hepatomegaly, splenomegaly
- Target Systems –hematopoietic, hepatic, renal and urinary

Laboratory studies

- Complete blood count
- Altered liver function test
- Reticulocyte count
- Urine microscopy or dipstick for blood

Biological monitoring

- Value of performing is limited-because may be exposed to multiple agents
- Is the measurement of a specific agent or its metabolite in body fluid of exposed worker
- Difficult to choose which agent to monitor
- Not possible to perform on all employees for many agents regularly
- Not included in routine medical surveillance



Staff education and training

- Staff initial education
- Periodic education and training



Patient and family education

- Post chemotherapy handling of body fluids
- Linen handling



QUESTIONS ?