A Medication Safety Newsletter by the Pharmaceutical Services Division, Ministry of Health Malaysia

MEDICATION SAFETY NEWSLETTER

"Medication Safety Is Everyone's Responsibility"

This newsletter is for circulation to healthcare providers only

Vol 8 Issue 1 June 2016

From Cradle-to-Grave: Safe Handling of Chemotherapy Drugs

by **Izyan Diyana binti Ibrahim**, *Pharmacist, UKM Medical Centre*

Chemotherapy drug was first invented during the World War II in 1940s when it was discovered that people exposed to nitrogen mustard significantly developed decreased white blood cell counts. Further investigations by 2 pharmacologists from Yale School of Medicine led to the discovery of mustard agents use in treating lymphoma. Since then, the chemotherapy drug evolves through time with recent treatment modalities focusing on targeted therapy such as monoclonal antibody drugs that aimed to improve the activity and reduce side effects of conventional chemotherapy.

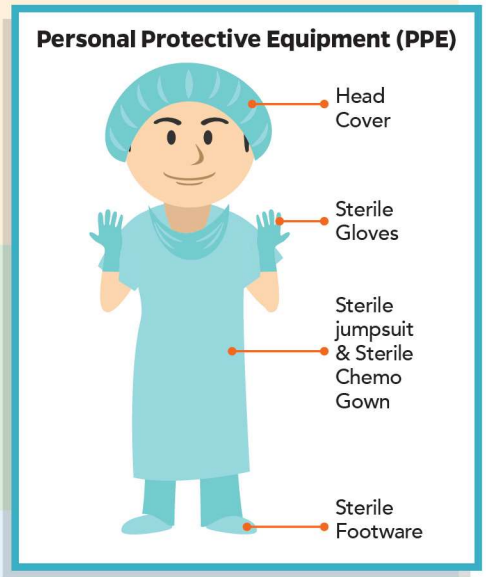
Several studies in the 1970s reported that chemotherapy drugs increased genotoxic effects in pharmacists and nurses exposed in the workplace (Falck et al. 1979; Anderson et al. 1982). More recent studies have become evident on the association of exposure to chemotherapy drugs and reproductive effects which included fetal loss, congenital malformations, low birth weight, infertility and congenital abnormalities. In view of this detrimental effect, safe handling of chemotherapy drugs should be incorporated in a cradle-to-grave manner; ie handled in a safe, conscientious and meticulous approach from the manufacturing site to the waste disposal area.

> *"Safe handling of chemotherapy drugs is crucial and mandatory not only among healthcare providers dealing directly with chemotherapy drugs on daily basis, but also amongst personnel handling its waste."*

Following are the recommendations for all personnel involved in storage, retrieval or inventory of chemotherapy drugs[3,4]:

Personnel

- ✓ All permanent personnel directly involved in the preparation of chemotherapy drugs shall be trained and qualified in aseptic technique.
- ✓ Trained in the use of Personal Protective Equipment (PPE) when preparing chemotherapy drugs.
- ✓ Trained in the management of spillage of chemotherapy drugs.
- ✓ Adhere to the guidelines/SOP and recommended precautions.



Premises & Equipment

- ✓ Premises and equipment shall be appropriately maintained and upgraded.
- ✓ Production, storage and quality control areas shall be accessible to authorized personnel only.
- ✓ Spill kits, running water and supplies for emergency treatments (e.g soap, eyewash, sterile saline for irrigation) must be readily available and accessible in the area.

Storage

- ✓ Storage bins must be wiped (not sprayed).
- ✓ Store chemotherapy drugs in closed containers with lids for storage and transport.
- ✓ Storage shelves should not be above eye level with fall guards, such as lipped edges or barriers and have a ledge to prevent potential slip and breakage.
- ✓ Warning labels should be applied to all chemotherapy drug containers, as well as shelves and bins where these containers are permanently stored.
- ✓ The bins must be appropriately sized to properly contain all stocks. Do not overfill the storage bins.

Conclusion

Adherence to the gold standards of safe handling guidelines must be upheld at all times to reduce the risks of exposure to personnel who deal directly with chemotherapy drugs. In a nutshell : From preparation of the drug to disposal of waste; From cradle to the grave.

References

1. *Standards of Practice Safe Handling of Cytotoxics*, International Society of Oncology Pharmacy Practitioners (ISOPP), 2007.
2. *Safe Handling of Hazardous Chemotherapy Drugs in Limited-Resource Settings*, WHO 2013.
3. *USP (U.S Pharmacopeia) Pharmaceutical Compounding-sterile preparations (general test chapter 797)*. In: The United States Pharmacopeia 28 rev., and The National Formulary, 23rd ed Rockville, MD: United States Pharmacopoeial Convention; 2005:2471-77.
4. *Preventing Occupational Exposures to Antineoplastic and Other Hazardous Drugs in Health Care Settings*, National Institute for Occupational Safety (NIOSH) and Health Centers for Disease Control and Prevention (CDC), 2004.
5. American Society of Health-System Pharmacists. ASHP *guidelines on handling hazardous drugs*. Am J Health-Syst Pharm. 2006; 63:1172–73.
6. *Hazardous Drug Safe Handling Standards*, British Columbia Cancer Agency, Revised 2014.

EDITOR'S NOTE

Looking back when this Newsletter on Medication Safety was first published in 2008, five years' after the official launch of the Malaysian National Patient Safety Council, the Health Ministry was at early stages of getting its act together and advising all healthcare professionals, in particular those in the public and private hospitals to observe patient safety as a priority.

After 8 years of publication, a first readership survey was conducted seeking feedback information for benchmarking the Newsletter for improvement. We wish to thank the 556 respondents of mixed readership for making effort to share opinion which is invaluable for our purpose and will no doubt spur us on to do better. Indeed, overwhelming 90% found the publication informative and useful confirming that we are on the right track. However, our reach needs improvement as only 64% have seen the Newsletter. Read more on our survey results in this issue.

A simple innocuous act of placing a dot at the wrong place such as writing a cheque may be resolved easily but can have serious implication when involving pharmacotherapy which can be a matter of life and death. Medical doctor, the pharmacist and nurse should give full attention and not be distracted when discharging their respective duties to ensure a misplaced dot does not occur.

We have an interesting article on Safe Handling of Chemotherapy Drugs for those involved in this toxic class of medication whose usage is, unfortunately, on the increase corresponding with rising cancer cases. If you have interesting information or experience to share do write in as we want to be interactive with readers.

Do send us anything you have that can motivate and deepen the safety culture, you would have contributed in no small way to reduce misery and save lives of patients who throng by the thousands daily to our healthcare facilities.

Please send in your articles, reports, pictures etc. to us at **mers@moh.gov.my**

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MEDICATION ERROR REPORTING SYSTEM

Get the *POINT* right!

One of the causes of medication errors is the inappropriate placement of decimal point. Errors may occur when the decimal point is misplaced which can lead to misinterpretation of prescriptions. Thus, the importance of proper decimal placement should be emphasized.

Safe practice recommendation

1. Use a leading zero before a decimal, to reduce the possibility of misreading the dose as a whole number.

.5 mg ✗	0.5 mg ✓

2. Do not place a decimal point and a zero after a whole number. These "trailing zeros" may caused the decimal point to be overlooked and results in tenfold overdose error.

3.0 ml ✗	3 ml ✓

References
1. Institute for Safe Medication Practices. ISMP's List of Error-Prone Abbreviations, Symbols, and Dose Desingations, extracted from www,ismp.org.
2. American Society of Hospital Pharmacists. ASHP guidelines on preventing medication errors in hospitals. Am J Hosp Pharm. 1993; 50:305–14.

Strictly adhere to the SOP

A patient was diagnosed with acute lymphoblastic leukemia and was prescribed with Injection Cytarabine 55mg in 20ml. The pharmacist technician didn't prepare the worksheet before entering the clean room and wrongly reconstituted the drug as Injection Cytarabine 550mg in 20ml.

Safe practice recommendation

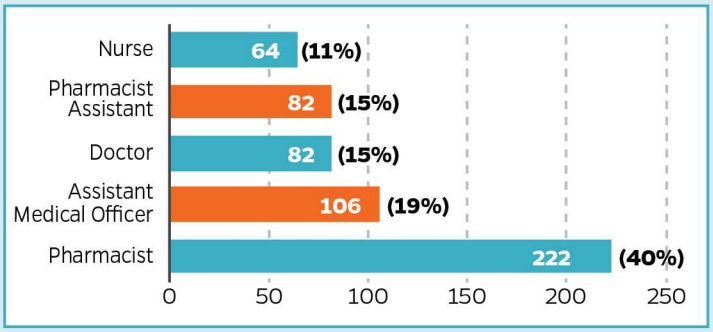
Cytotoxic drugs is classified as High Alert Medication by Institute For Safe Medication Practices (ISMP). According to the Guideline On Safe Use Of High Alert Medications Pharmaceutical Services Division, MOH stated that:

1. A counterchecking system should be established for all preparations involving High Alert Medications.
2. The calculations involving cytotoxic drugs shall be independently counter checked by another pharmacist.

Medication Safety Newsletter Evaluation Survey

A survey was conducted from 14 July 2015 to 11 August 2015 to assess the reader's opinion on the Medication Safety Newsletter (information included, language used, design, frequency) and how this newsletter can be improved. The survey was conducted using an online survey form.

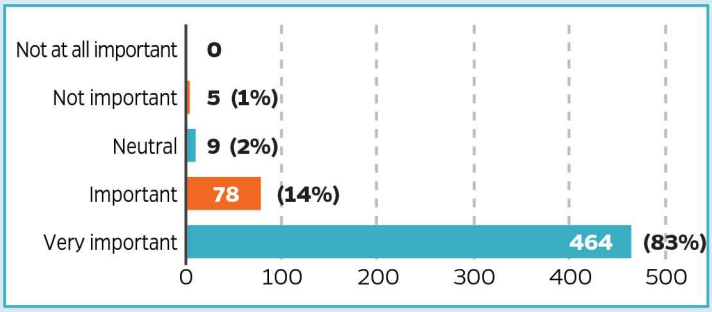
556 healthcare professionals answer the survey.



Perception about medication safety

Are you concerned about medication safety?

Do you think medication safety is important in your practice?



Where do you normally obtain information on medication safety?

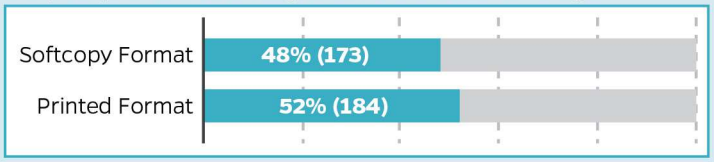
Source	Respondents
Internet Sites	444
Newsletters	**270**
Books	266
Journals	175
Conference/Workshop/Course/CME	32
Others	13
Magazines	3
Awareness programme	1

Do you think there is a need to have a newsletter regarding medication safety?

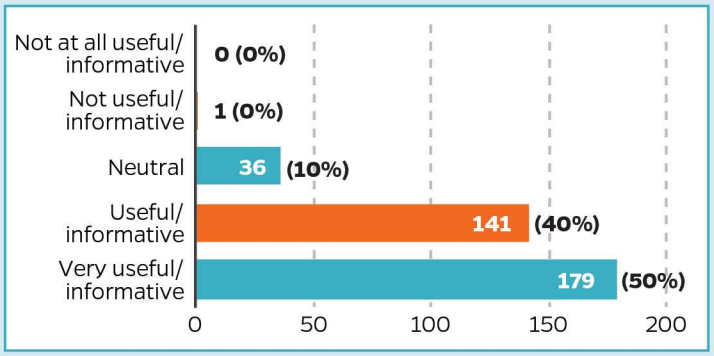
Something about the Medication Safety Newsletter

357 respondents (64%) have seen the Medication Safety Newsletter by the Pharmaceutical Services Division, Ministry of Health before. For the 36% answered "No", 126 respondents (63%) are from hospital while 73 respondents (37%) works in health clinic.

Do you prefer receiving this newsletter through:



Do you find the newsletter useful and informative?



Conclusion

The results are generally positive, most of the readers found that the newsletter is useful and informative. The editorial members are listening to your ideas and will continue to improve the newsletter. Thank you for those who responsed to the survey.

The Special Award for Best Practices in Medication Safety was carried out during the Pharmacy Innovation and Creativity Convention 2015.

Congratulations to the winners:

1st Prize : Hospital Raja Perempuan Zainab II, Kota Bahru
2nd Prize : Hospital Melaka
3rd Prize : Hospital Queen Elizabeth I, Kota Kinabalu

Recaps:
Most of the hospitals have taken various measures/initiatives to ensure medication safety in their facilities. However, these measures should be practiced in all the units and wards.

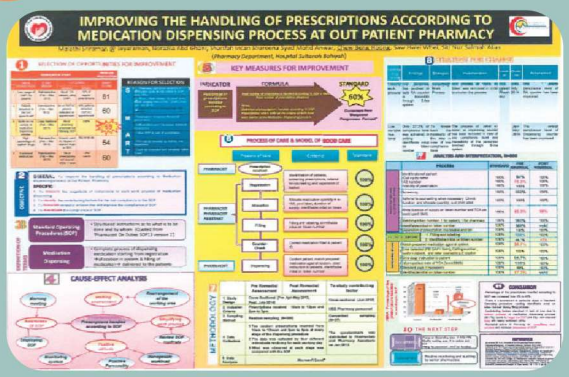
Below are some of the safety measures/initiatives which have been carried out:-

Event Picture Highlights

1 Standard HAM/LASA Medication List/Album

2 Cautionary Labels

3 Innovation Project



4 Medication Safety Corner

5 Promotional Kit

Managing Chemotherapy Waste

by **Siti Fatimah Azura Binti Mat Zin**, *Pharmacist, Kuala Lumpur Hospital*

Chemotherapy waste includes chemotherapy drugs, their containers (vials, bottles, other packaging) and item contaminated with chemotherapy drugs, such as IV bags and tubing, syringes, gowns, gloves, sheets and pads. Wastes can be hazardous wastes because of their characteristics (ignitability, corrosivity, reactivity and toxicity) or because they are specifically listed as hazardous waste.

There are 2 types of chemotherapy waste, trace and bulk chemotherapy waste.

How to dispose them?

- ✓ Containers used for disposal of cytotoxic waste shall be properly labelled, sealed, covered and handled by trained personnel only
- ✓ All cytotoxic waste bins and bags shall be labelled with the words **"CYTOTOXIC WASTE"**

TRACE CHEMOTHERAPY WASTE

2 categories:

- Items contaminated with residual amounts of chemotherapy drugs, such as empty drug bottles, drug dispensing devices or IV bags and tubing.
- Gloves, gowns, masks, goggles and other disposable items used when administering chemotherapy drugs if chemotherapy drugs have not spilled, leaked or dripped on them.

BULK CHEMOTHERAPY WASTE

- Any waste contaminated with more than residual amounts of chemotherapy drugs.
- Examples:
  - i. Drug dispensing devices or IV bags that are not completely empty
  - ii. Gloves, gowns or other materials that have chemotherapy drugs spilled on them
  - iii. Spill cleanup materials

COLOR CODING GUIDE

PURPLE

CYTOTOXIC

EXAMPLE OF WASTE

- Unopened medicine vials
- Tablets in containers
- Gloves, gowns, aprons, wipes contaminated with cytotoxic and/or cytostatic medicines
- Blister packs
- Patches

YELLOW

CLINICAL/HIGHLY INFECTIOUS

EXAMPLE OF WASTE

- Couch roll
- Wipes
- Gloves
- Dressings
- Bandages
- Aprons
- Disposable garments etc contaminated with infectious body fluids

Safety Tips

1. DO NOT mix chemotherapeutic drugs with chemotherapy waste!
2. Wear safety glasses and protective gloves when handling chemotherapy waste.
3. Do not press down on bags of items in chemotherapy waste bins.
4. Keep the bin closed at all times except when disposing of chemotherapy waste in bin.
5. Visually inspect the outer surface of the bin for no damage that could lead to a spill.

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1. Allwood M, Stanley A and Wright P (2002), The Cytotoxics Handbook, 4th Edition,Oxford.
2. William C. Blackman Jr (2004), Basic Harzadous Waste Management, 3rd Edition.
3. Initial: The Expert in Healthcare Waste Management (n.d.) Colour Coding Code. Retrieved from http://www.initial.co.uk/waste-legislation/colour-coding-guide/
4. Medical University of South Carolina (n.d.) Chemotherapy Waste Bin Fact Sheet. Retrieved from http://academicdepartments.musc.edu/vpfa/operations/Risk%20Management/occpsafety/formsandfactsheets/Chemotherapy%20Waste%20Guide.pdf
5. Manual For Sterile Preparations, First Edition, August 2010, Pharmaceutical Services Division, Ministry of Health Malaysia.

IS LINDANE LOTION safe

(Gamma Benzene Hexachloride)

FOR THE TREATMENT OF SCABIES AND HEAD LICE?

An 11 months old boy was given lindane lotion 1% and prednisolone 2.5mg twice daily by private GP for scabies. He developed status epilepticus 4 hours after applying the lotion. Subsequently fit aborted after Rectal Diazepam was administered.

WARNING

- Lindane is approved for topical treatment of pediculosis and scabies in patients "who have either failed to respond to adequate doses, or are intolerant of, other approved therapies."
- It is NOT to be used as first line agent.

According to the Malaysia Pediatric Protocols 3rd Ed, choice of treatment in Pediatric are:

- Permethrin 5% Lotion (2 months onward)
- Crotamiton 10% Cream (Eurax)
- Benzyl Benzoate 12.5% (EBB) (7-12 years old)

This case highlights the need to educate healthcare providers and patients about the potential risk of Lindane and how to minimize them. Ensure proper counseling have been given to the patient whenever the drug was dispensed.

PRECAUTION

Lindane is a lipophilic drug following topical application, it can be absorbed through the skin and has the potential for CNS toxicity especially in infant and children. Seizures and deaths have been reported following repeated or prolonged application of Lindane, but also in rare cases following a single application used according to directions.

Increased Risk in Younger and/or Smaller Patients and the Elderly

In Pediatric Use: Pediatric Patients have a higher surface to volume ratio and may be at risk of greater systemic exposure when Lindane lotion is applied. Infants and children may be at even higher risk due to immaturity of organ systems such skin and liver. Lindane should also be used with caution in the elderly, individuals with other skin conditions (eg. atopic dermatitis, psoriasis) and in those weighing less than 50kg as they may be at risk of serious neurotoxicity.

MEDICATION SAFETY EVENT

Sultan Abdul Halim Hospital (HSAH) in collaboration with the Kedah State Pharmaceutical Services Division, MOH had organized a Medication Safety Awareness Week & Know Your Medicines Programme from 27 July 2015 to 3 August 2015. With the theme **"Medication Safety Is A Mission, Not An Intermission"**, the organizing committee members hope that all the healthcare providers can do their best to improve medication safety.

Besides talks on medication safety and exhibition, the Best Ward Competition in managing High Alert Medications (HAMs) and Look Alike Sound Alike (LASA) Medications was also carried out from 28 July 2015 till 4 August 2015.

Medication Safety Seminar 2015 was organized by the Pharmaceutical Services Division, Ministry of Health at Premiere Hotel Klang on 1 & 2 September 2015. Theme for the seminar is **"Preventing Harm, Improving Care"**. It involved 80 pharmacists from all the states. Activities involved group activities: Allergy Card puzzle, Pairing for LASA + Tall Man Lettering, presentation of the topic given and talks by invited speakers.