

BRANCH OUT

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Compounding Conundrums: Hazardous Drug Handling and Exposure

Based on a workshop at the CSHP Professional Practice Conference, February 2013 presented by Eric S. Kastango, MBA, RPh, FASHP Pharm D, BCPS, CDE.
Article prepared by: Lisa Bishop, BScPharm, Pharm D

Hazardous drug exposure in healthcare workers does happen. Although the majority of hazardous drugs are antineoplastic agents, we must also consider antiviral, immunosuppressive and some hormonal agents. Pharmacists and pharmacy technicians are at particularly high risk as they commonly handle these drugs. Since contact with hazardous drug residue most commonly occurs by absorption through the skin or mucous membranes, pharmacy personnel are often exposed when compounding and distributing these drugs, while nurses can be exposed when administering the medication and handling contaminated body fluids. It is important for all healthcare workers to be aware of these risks and work together to ensure all measures are taken to minimize exposure to these hazardous substances.

Employees should be informed of the potential risks that can occur if they are working with hazardous drugs. Studies have shown positive biomarkers and urine samples with occupational exposure to chemotherapy.¹ Adverse reproductive outcomes in exposed healthcare workers have been reported in several studies including increased risk of spontaneous abortion.^{2,3} Chemotherapy drug exposure has also been associated with chromosomal changes in oncology workers.⁴ Safe hazardous drug handling procedures can help minimize this risk, but exposure can still occur.

If appropriate measures are implemented, how does this exposure happen? The most obvious source of acute exposure occurs during an accidental spill or a needle stick injury. All employees who may come in contact with hazardous drugs should be educated on the proper procedure to follow in this event, including those receiving, compounding, transporting and administering the medications. Appropriate spill kits should be accessible and all staff should be educated on how to use them properly.

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In reality, most workers are unaware when they are exposed. The less obvious source of uptake occurs when work areas have surface contamination with drug residue. A 1999 study measured three antineoplastic drugs in six different hospital-based cancer treatment centers in Canada and the US. It was noted that 75% of the pharmacy surface wipe samples and 65% of the nursing samples were contaminated.⁵ With improved education around safe handling practices, one would anticipate that exposure to hazardous drug residue would decrease. In a study conducted 9 years later, workplace contamination with antineoplastic drugs in pharmacy and nursing areas continued to be a problem. Five drugs were measured in three US hospital-based cancer centers, with 75% of the surface wipe samples in pharmacy and 43% in nursing areas were contaminated.⁶ Despite promotion of awareness of hazardous drug exposure and extensive marketing of new devices for improved safety, it is concerning that there was no measureable improvement.

One might wonder where surface contamination occurs. Everywhere in the chemotherapy room can have drug residue, including the biological safety cabinets, IV bags, counter tops, storage bags, and waste containers, to name a few. So how do we reduce the amount of drug residue? The most obvious way is to use a biological safety cabinet or compounding aseptic containment isolator. However, neither of these tools can provide complete containment of hazardous drug residue. Using proper IV preparation techniques, such as negative pressure, is also important to help minimize drug exposure. The proper use of personal protective equipment is essential to protect the individual. However, transfer can occur when gloves get contaminated. When using gloves, don and remove gloves carefully, don't touch anything, and sanitize gloves with wipes and not spray. Gowns have also been shown to be contaminated with residue. Saving and reusing gowns may result in drug transfer.

Another important area where hazardous drug exposure can occur is in the receiving area. Cartons may arrive broken, resulting in drug residue on the outside of vials and on packaging. When packages are received they should be labeled appropriately and vials should be wrapped to account for unexpected spillage. Receiving staff should wear personal protective equipment when receiving hazardous drugs, and should be trained to handle broken packages and appropriately use spill kits. Some methods that receiving personnel can use to reduce transfer of residue throughout the pharmacy department include: using gloves when opening packages; using bags to transport packages; placing disposable liners on surfaces where hazardous drugs are laid; and wiping down all hazardous drug vials to remove any unexpected residue (spray the wiper and not the vial to prevent moving residue to other items or areas).

Hazardous drug exposure is a potential consequence for anyone who handles these medications. To ensure the safety of all employees, providing education and training to all staff is essential, including pharmacy, nursing, housekeeping and anyone else who may be at risk of exposure. Implementing safe handling practices can help ensure the safety of all healthcare workers.

References

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ORAL CHEMOTHERAPY: WHAT'S THE REAL RISK?

Prepared by: Terri Lynn Greenham

As pharmacists, we are trained to use the utmost care when dealing with parenteral chemotherapeutic agents. There are several processes that we follow to minimize the risk of error as well as exposure. There's a growing trend, however, toward the use of oral chemotherapeutic agents and we must also be aware of the risks and safety issues associated with this therapy.

The ASHP definition of a hazardous drug includes any drug that exhibits one or more of the following characteristics in humans or animals: carcinogenicity, teratogenicity, reproductive toxicity, organ toxicity at low doses or genotoxicity. This definition encompasses not only parental medications but also exposure due to dermal absorption, inhalation and mouth contact with contaminated hands

Oral chemo agents are certainly hazardous substances and it is therefore important to be aware of some of the risks associated with hazardous drugs. There have been case reports of flu-like symptoms, headaches, skin-related and ocular effects. Controlled surveys have shown increases in sore throat, chronic cough, infections, dizziness, eye irritation and headaches in health care workers who prepare, manipulate or dispense hazardous drugs. Reproductive studies have even shown fetal abnormalities, fetal loss and fertility impairment in health care workers exposed to hazardous drugs.

Oral chemo agents are used for a number of reasons and are often a more desirable choice than parenteral agents. They are convenient for patients and offer more flexibility in timing and location of administration. They often have a longer half-life than parenteral agents and therefore provide more drug exposure. Oral agents have different toxicity profiles than parenteral agents, and are associated with less nausea and vomiting, bone marrow suppression, etc. Finally, administration of oral agents can free up resources in the hospital setting, for example, less clinic chair time.

Just as we do for parenteral chemotherapeutic agents, we need to develop and implement processes that minimize risk to staff and patients who may possibly be exposed to oral chemo agents. This means we need to take precautions in the ordering, preparing, dispensing, administration and disposal of oral chemo medications.

In ordering oral chemo agents, it's important to include all the necessary components just as is done for parental agents. These requirements include patient's name, current height and weight, BSA and/or AUC (when applicable), drug name, dose in mg/m^2 or mg/kg , dose to be given, route, frequency, and dates of treatment. The ordering process has been shown to pose the highest risk of error and so it is important to use precautions at this point and include all required information.

Oral chemo is often processed and prepared in a community pharmacy. It is important that the orders are checked by the pharmacist prior to preparation and that all staff, including pharmacy technicians are certified to handle chemotherapeutic agents. Personal protective equipment should always be worn as required, including double nitrile gloves.

ORAL CHEMOTHERAPY: WHAT'S THE REAL RISK? (CONT'D)

The dispensing of oral chemo agents is another step in the process where errors may occur. It is important that prescription labels contain all required information to minimize the chance of error. This includes patient's name and a unique identifier, drug name, amount of drug and route of administration, administration instructions and date. We must also consider abbreviations, font, font size and formatting that may make information more difficult for patients to understand.

Precautions must be taken during the administration of oral chemo agents to prevent exposure to staff, family, and visitors. Personal protective equipment should be worn, particularly double nitrile gloves. Also, oral chemo agents should only be manipulated (for example split or crushed), in a biological safety cabinet. Ideally, this should be done in a BSC specifically for non-sterile products. If this is not possible, it should be done at the beginning or end of the day and the BSC should be well cleaned afterwards.

Disposal is the final step of the process. Disposable items that come in contact with oral chemotherapy are considered contaminated and should be disposed of as cytotoxic waste. Any non-disposable materials should be thoroughly decontaminated before reuse.

With the ever increasing use of oral agents in cancer treatment, it's important that health care professionals including pharmacists are aware of the risks that these agents pose and be vigilant with the care we use when handling them. By implementing policies and processes to reduce safety risk and error during the ordering, preparation, dispensing, administration and disposal of these agents, we can contribute to an overall safer work environment for ourselves, other health care workers, as well as our patients.

AWARDS COMMITTEE

Awards

Winner of the CSHP SES 2013 Travel Grant

Congratulations to Barbara Thomas of Eastern Health!

Winner of the Clinical Clerkship Excellence Award

Congratulations to Aaron Siller!



Upcoming Awards

CSHP-NL Branch Leadership in Pharmacy Practice

This award will be given to a member of the CSHP-NL branch who, through their dedication to the practice of pharmacy, has contributed to advancing the profession and enhancing the level of care provided to patients.

CSHP– NL Branch Alfred G. Dawe Distinguished Service Award

This award will be given to a member of the CSHP-NL branch who has shown significant and extensive contribution to the activities of CSHP, particularly at the branch level.

SUMMER EDUCATIONAL SESSIONS 2014 ST. JOHNS, NL

Each summer, in partnership with a provincial branch, CSHP hosts the Annual General Meeting and Summer Educational Sessions (SES). In 2014, we are excited that SES will be held at the Delta Hotel in St. John's, NL. Your host committee consists of:

Tiffany Lee (co-chair)

Justin Peddle (co-chair)

Jaclyn Aucoin

Amy Conway

Erin Davis

Sarah Fennell

Jason Kielly

Sarah Strong

Meghan Wall

Elizabeth Woodford

UPCOMING EVENTS

- **Summer Educational Sessions 2013**
August 10-13, 2013
Calgary, AB
- **CSHP-NL Branch Annual General Meeting 2013**
5:30 pm-7:00 pm Friday September 21st, 2013
Greenwood Inn and Suites
Corner Brook, NL
- **CE Day**
Saturday October 19th, 2013



Member profile: Justin Peddle

Question

Response

What is your name ?

Justin Peddle

Where do you work?

School of Pharmacy, Memorial University

I also do regular community relief at Costco Pharmacy.

Tell us about your family – wife, children, pets etc?

My wife (Lindsey) and I have married since 2007. We have two dogs: Simon is a four-year old Jack Russell mix and Olive is a one-year old beagle mix.

Where did you go to pharmacy school & when did you graduate?

2012—Doctor of Pharmacy: School of Pharmacy and Pharmaceutical Sciences, University of Colorado Denver

2010—Graduate Diploma in Clinical Epidemiology: Faculty of Medicine, Memorial University

2006—Bachelor of Science in Pharmacy: School of Pharmacy: Memorial University

Why did you decide to become a pharmacist?

I was always interested in a career in health care. Like many high school students, I thought that medicine was the best choice for me. I didn't understand enough about pharmacy. A friend of mine was applying and through her experience, I learned more about it, and realized that pharmacy offered great career opportunities.

Why did you choose hospital pharmacy and what do you like most about being a pharmacist?

When I switched to hospital pharmacy in 2007, I did so because I was very much interested in working in a clinical and interdisciplinary setting. I have since moved on to academia (which I love), but I still often miss my time as a hospital pharmacist!

What changes have you seen in pharmacy since you started your career?

Pharmacy practice is always changing. There are many upcoming opportunities for an expanded scope of pharmacy practice. In 2012, I completed the Dalhousie Immunization and Injection Administration Training Program and I definitely look forward to updating and using that training here in the province of NL, when that time comes. Since I became a pharmacist, the role of the pharmacy technician has expanded as well. This is great, as it allows both the pharmacist and the technician to reach their full potential.

Member profile: Justin Peddle

What tips do you have in helping others develop their role as a pharmacist?

I encourage pharmacists here in NL to share their experiences with each other. We have many experienced clinical pharmacists here in the province, who have a lot of great advice to offer. I also recommend that pharmacists be very open to any and all learning opportunities, whether they be live CE sessions, online programs,

Do you have a clinical practice site, and if so, what is your role?

I currently work in the Drug Information Centre at the School of Pharmacy. Though my true passion has always been Mental Health and Addictions, during my time as a hospital pharmacist, I initially specialized in Infectious Diseases and Home IV. I went on from that to specialize in Critical Care, which was an amazing in-

What does your daily practice involve?

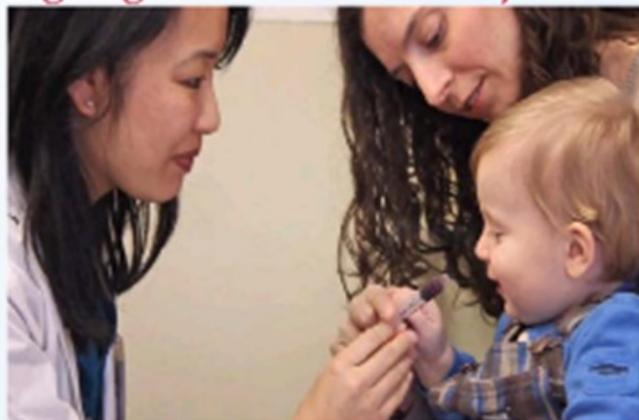
I spend about half of my time in drug information, where I address drug-related requests from all over the province. The other half of my time is spent instructing in the Pharmacy Skills program. I also teach in Therapeutics and I'm on the Bariatric Surgery Cohort study team, where I lead the arm of research which looks at medication use after laparoscopic sleeve gastrectomy.

What are your interests outside of pharmacy?

Both Lindsey and I love to cook. We spend a lot of time watching Food Network shows and researching new recipes. I'm actually enrolled in an online culinary course: Top Chef University. I am also very involved in my church, where I serve as a Sunday School Teacher, Director of Drama Productions, Music Ministries Liaison, and as a member of the Board of Deacons.

CSHP 2015

Targeting Excellence in Pharmacy Practice



CSHP 2015 National Progress Update Hospital Pharmacy in Canada Report 2011/12

- The HPC Report contains the results of an online survey that gathered information on hospital pharmacy activities in 2011/2012 from 176 facilities and 70,179 beds (www.lillyhospitalsurvey.ca)
- Third survey of progress with the CSHP 2015 objectives
- *One-third of objectives have been reached or are within 30% of the target*
- View the [National summary](#) of data with a breakdown of geographic areas (eg. BC, Prairies, Ontario, Quebec and Atlantic Canada)
- View a specific [geographic dashboard](#) and see how your pharmacy department measures up against your neighbours with respect to your CSHP 2015 progress!

Questions or feedback to: cbornstein@cshp.ca

ARE WE ON TARGET?

JULY 2013 Issue No. 17

CSHP 2015 Branch Competition SUCCESS STORIES!

ONTARIO BRANCH WINNING ENTRIES

Improving Rates of Appropriate Venous Thromboembolism Prophylaxis in a Community Hospital

Danette Beechinor and Allan Mills,
Trillium Health Partners

Safe Swallowing of Oral Liquid Medications in Patients with Dysphagia - A Patient Quality and Safety Initiative

Aarthi Iyer and Darien Heathcote,
Trillium Health Partners

ALBERTA BRANCH e-POSTER SUCCESS STORY WINNER

To be announced next month!

BC SUCCESS STORY COMPETITION

([click for details](#)) Deadline October 15, 2013

Visit the [CSHP 2015 webpage](#) for numerous success stories entries from across Canada

Stay Connected with 2015!

cshp2015blog.com



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[#CSPH2015](#)

- Have your say on our CSHP 2015 blog, on the CSHP 2015 e-Forum, or follow CSHP 2015 on twitter
- Visit the [CSHP 2015 webpage](#) for past webinars, virtual posters, the tool kits and SO much more!



Canadian Society of Hospital Pharmacists
Soci t  canadienne des pharmaciens d'hopitaux

CSHP 2015 SUCCESS STORY COMPETITION

WOULD YOU LIKE TO WIN \$200??

Do you participate in Med Rec?
Are you involved with patients who are on complex/high risk medication regimens?
Do you attend team rounds?
Do you review medication orders for appropriateness?
Or are you currently involved in an initiative that will improve patient safety?

If you answered yes to any of these questions, CONGRATULATIONS, you are meeting a CSHP 2015 goal or objective. So tell us about it!!

CSHP-NL wants to hear from you! Enter our CSHP 2015 Success Story Competition and tell us how you are meeting one or more of the CSHP 2015 goals and objectives. You could win \$200 to go towards CSHP membership, conferences, publications, etc.

It's easy to enter. All you need to do is submit a written account of your success story, which can be as little as 1 paragraph to a maximum of 1000 words. Please see the attachments for more information.

Deadline to enter is October 4th, 2013.

CSHP-NL looks forward to hearing how hospital pharmacists in our province are improving patient care and safety.

If you would like further information, please contact the CSHP-NL Branch Champion, Sarah Fennell, at sarah.fennell@mun.ca.

IT'S MEMBERSHIP RENEWAL TIME!

When can I renew?

The membership year runs from July 1st to June 30th, so there is no time like the present to renew your membership and support CSHP.

How do I renew my membership?

You may now renew your 2013/14 membership two ways: online renewal at MY.CSHP.ca or by printing the form and mailing/faxing/emailing to CSHP national office. http://www.cshp.ca/membership/IndivMem_e.asp

Why should I renew my CSHP membership?

CSHP membership has its share of perks. As a member of a national pharmacists association you are supporting the development and progression of your profession in Canada. You are also a member of the Newfoundland and Labrador Branch, which actively pursues educational and professional goals within the province.

What are PSNs?

You can connect virtually with your colleagues through our Pharmacy Specialty Networks (PSNs). This is a free membership benefit for all CSHP members, where you can communicate and network with specialty groups via an electronic email list. Some of the PSNs include cardiology, critical care, geriatrics, infectious diseases, pediatrics, primary care and psychiatry, to name a few. For more information go to:

http://www.cshp.ca/cshpNetwork/psn/index_e.asp

Can I attend CE Day?

You will receive complimentary registration to the NL Branch CE day that is held in the fall of every year. We are tentatively planning for 4-5 CEs, pending accreditation. Save the date for Oct 19th!

When will a national meeting be held in NL?

The NL Branch will be hosting the national Summer Educational Session (SES) August 2014. It is an honor for our Branch to host this very important national meeting and the host committee is working hard to ensure that this event is a success. As a CSHP member, you will receive significantly reduced fees to attend the conference. This is a great avenue to obtain CEs, as well as network with colleagues from across the country.

How do I get more information?

For more information about CSHP and membership, please refer to the CSHP national website at http://www.cshp.ca/membership/index_e.asp

If you have any other questions or comments, please forward them to the NL Membership Committee:

Lisa Bishop at ldbishop@mun.ca

Rebecca Tobin at rebecca_mulcahy@yahoo.com

Tiffany Fahey at tfahey@mun.ca

Sarah Strong at e24sks@mun.ca

Michael Bernard (student representative) at mdb404@mun.ca

Thanks to all of our members!

We wish to thank all members who renewed their memberships and welcome all new members to our Branch. CSHP values every member of the society and looks forward to your continued support in the upcoming year.

THANK-YOU TO OUR SPONSORS!

Platinum Sponsors (≥ \$2500):

- Pharmacists' Association of Newfoundland and Labrador
- Pharmaceutical Partners of Canada

Gold Sponsors (\$ 2000-2499):

- Mylan

Silver Sponsors (\$1000-1999):

- Sanofi

Bronze Sponsors (< \$1000):

- Lifescan
- Association of Allied Health Professionals

We would love to learn more about each other and all the good things we're doing. Please take a few moments to complete the following profile about yourself and submit it to any member of the executive or by mail to CSHP Newfoundland and Labrador Branch, c/o PANL, 85 Thorburn Road, St. John's, NL, A1B 3M2. An electronic copy is available by emailing ewoodford@mun.ca.

We'd like to publish these profiles in the upcoming editions of the Branch Out. Keep a look out for these profiles to learn a bit more about what your colleagues are doing.

Question

Response

What is your name (include maiden name)?

Where do you work?

Tell us about your family – wife, children, pets etc?

Where did you go to pharmacy school & when did you graduate?

Why did you decide to become a pharmacist?

Why did you choose hospital pharmacy and what do you like most about being a pharmacist?

What changes have you seen in pharmacy since you started your career?

What tips do you have in helping others develop their role as a pharmacist?

Do you have a clinical practice site, and if so, what is your role?

What does your daily practice involve?

What are your interests outside of pharmacy?

NL Branch Executive

- Jason Kielly – President
- Tiffany Lee– President-Elect
- Justin Peddle– National Delegate
- Angie Payne – Treasurer
- Sarah Fennell – Secretary
- Lisa Bishop – Senior Advisor
- Erin Davis– Advocacy Representative
- Michael Bernard—Student Representative

PEOPLE

Congratulations to Tiffany Lee on the birth of her baby girl Grace Ellen Lee!

Congratulations to Dr. Leslie Phillips on receiving the School of Pharmacy Teaching Excellence Award!

Congratulations to Andrea Woodland who received her Masters of Science in Medicine degree!

Don't forget to send in any updates on members such as awards, births, etc!

Send to:
ewoodford@mun.ca

**NEWSLETTER OF THE
NEWFOUNDLAND AND LABRADOR
BRANCH CSHP**

c/o PANL
85 Thorburn Road
St. John's, NL
Email: admin@cshp-nl.com



Newsletter Committee

Brittany Churchill
Justin Peddle
Elizabeth Woodford (Chair)

We're on the web!
www.cshp-nl.com

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