Emergency Medical Services Guidance Note #4

Issue: EMS Worker Exposure to Hazardous Drugs

PREAMBLE

Hazardous drugs (HDs) are drugs known or suspected to cause adverse health effects as a result from exposures in the workplace. HDs include those used for cancer chemotherapy, antiviral drugs, hormones, some bioengineered drugs and other miscellaneous drugs. The majority of HDs belong to the category of antineoplastic drugs. These medications are cytotoxic in nature and therefore play a key role in chemotherapy. There is a rapidly growing trend towards out-of-hospital therapies that incorporate HDs into the treatment plan. EMS workers (paramedics) are increasingly seeing these medications and therefore have related potential exposure issues.

Advances in medication formulations as well as technology are making it possible for more and more patients to be treated outside of the hospital setting. Some patients are treated with mobile delivery systems that are compact, low tech and very efficient for injectable drug delivery and some patients are treated via the oral route. Paramedics may encounter patients that are currently receiving these medications in virtually any call scenario or environmental location and may not immediately be aware of the potential hazard. There is no prescribed ‘badging’ or demarcation for patients and therefore paramedics must utilize other means to assess for this emerging hazard.

BACKGROUND

HDs have been classified by the National Institute for Occupational Safety and Health (NIOSH). There are six characteristics exhibited in humans or animals as follows:

CHARACTERISTIC	DESCRIPTION
Carcinogenic	Applies to any substance that can cause cancer.
Teratogenic	Applies to any substance/agent capable of producing embryonic malformation.
Genotoxic	Applies to any substance with the ability to damage the genetic material (DNA) and cause mutations.
Reproductive Toxicity	Applies to substances affecting fertility (e.g. miscarriages, late fetal death or infertility).
Organ Toxicity at Low Doses	Applies to substances with toxic effects on an organ or health at low dose (e.g. liver damage, local necrosis of exposed tissue, etc.).
Similar Drugs	Applies to substances whose structure and toxicity are similar to those of a drug declared hazardous based on one of the above criteria.

OCCUPATIONAL HEALTH AND SAFETY PRECAUTIONS AND CONTROL MEASURES

Employers should identify the hazards associated with HDs and assess the risk posed to workers from these hazards. Accordingly, employers should complete an objective risk assessment that assesses the nature and the level of risk to which workers may be exposed and develop policies, programs and training accordingly.

The following exposure control program elements should be in place at all times, where HDs may be encountered. Since some of the usual controls an employer might utilize to protect the worker are not available to EMS employers (such as substitution or elimination), more emphasis should be placed on training and education.

As a result of the increasing prevalence of HD delivery systems in the community, there are a rising number of occasions where EMS workers have the potential for an exposure. Multiple routes of entry are possible, including absorption, ingestion and inhalation, depending on the formulary and delivery apparatus being utilized.

The following controls would be considered best practices (with the exception of the regulatory requirement to use safety engineered needles as noted below) to protect EMS workers from the hazards of exposure to HDs:

Engineering Controls:

- To reduce airborne HD concentration levels, ventilate the area by opening the doors and/or windows of the home, office, apartment or vehicle. Once in the ambulance, ensure that the ventilation exhaust system is set on high as a minimum measure.
- Keep the patient covered if possible, reducing their contact with items outside of the patient environment.
- If advanced airway is in place then a 'Closed Circuit' system should be available for suctioning.
- Paramedics are to use safety engineered needles (SENs) and needleless systems (in accordance with Ontario Regulation 474/07 Needle Safety) and Canadian Standards Association (CSA) approved puncture and fluid resistant containers that are clearly marked for HDs (for needles, syringes, vials and delivery equipment).

Administrative Controls:

- Management policies and procedures for personal protective equipment (PPE) usage, donning and doffing procedures, respiratory protection, good hygiene practices (including hand hygiene), isolation and securing of medications in the ambulance.
- Information, instruction and training programs aimed at educating the worker specifically in ways to protect themselves when dealing with patients receiving antineoplastic treatments (safe handling of these patients and associated drug delivery apparatus recognition, the risks associated with exposure, appropriate equipment, hand hygiene, use of PPE, environmental cleaning, uniform / linen disposition and exposure reporting).
- Procedures for safe handling and disposal of cytotoxic body fluids or waste products (emesis, urine, feces, etc.).
- Procedures for post-call inclusion into the Hazardous Address Flagging Agreement with Central Ambulance Communications Centre (CACC), if in place.
- Procedures for accident/incident reporting and investigation with resulting mitigation strategies against future incidents.

- Post accidental exposure and follow-up protocols.
- Occupational hygiene evaluation / environmental cleaning monitoring programs focussed on ensuring proper terminal cleaning practices (after each patient encounter) are taught and employed.
- Regular review of the above materials with the Joint Health and Safety Committee or Health and Safety Representative and workers.

Personal Protective Equipment:

- Disposable gowns made of non-permeable materials should be utilized. More porous options are more comfortable but do not provide an integral barrier to compressed moisture wicking (i.e. fore and aft lift of incontinent patient).
- N-95 respirator or higher as soon as it is apparent that a hazard is present.
- Face and eye protection (e.g. when splash, spray or aerosols of HDs or waste products are possible).
- Gloves to be worn over cuffs of gown should be 0.18 to 0.23 mm in thickness or two pairs of good quality, powder-free disposable nitrile or neoprene gloves should be used.

These controls should be augmented with focussed training and educational components that incorporate Point of Care Strategies such as:

- Hand hygiene practices incorporating the elements of Routine Practices and Additional Precautions.
- Performing a point of care risk assessment prior to commencing patient contact; this should form part of the scene safety assessment on every call.
- All paramedics should be instructed to adopt an early HD query into their point of care assessment. Questions like: “Have you had chemotherapy in the past week?”, “Is it running now?”, “Are you wearing a pump?” should be utilized to identify the hazard as soon as possible and prior to actual patient contact.
    - If the answer is positive, the paramedic should assess the risks of exposure. Is there potential for direct contact with the HD or with body fluids or waste products (emesis, urine, feces, blood, etc.)?
    - If there is an exposure risk then the paramedic should have a PPE response protocol to follow.

- All paramedics should be familiar with the common delivery apparatus utilized in their region and be trained to recognize when the integrity of the unit is questionable.

SOME RELEVANT OCCUPATIONAL HEALTH AND SAFETY ACT REQUIREMENTS

Employers are required by the *Occupational Health and Safety Act* (OHSA) to:

- Take every precaution reasonable in the circumstances for the protection of a worker – OHSA clause 25 (2)(h).
- Provide information, instruction and supervision to a worker to protect the health or safety of the worker – OHSA clause 25 (2)(a).
- Acquaint a worker or a person in authority over a worker with any hazard in the workplace and in the handling, storage, use, disposal and transport of any article, device, equipment or a biological, chemical or physical agent – OHSA clause 25 (2)(d).
- Equipment and protective devices provided by the employer are maintained in good condition – OHSA clause 25 (1)(b).

Ontario Regulation 474/07 (Needle Safety) made under the OHSA

Regulation 833 Control of Exposure to Biological or Chemical Agents made under the OHSA.

REFERENCES AND RESOURCE MATERIALS

Safe Handling of Hazardous Drugs in Healthcare, *Public Services Health & Safety Association, 2013*
http://www.pshsa.ca/wp-content/uploads/2013/11/PSHSA-Whitepaper-Safe-Handling-of-Hazardous-Drugs-in-Healthcare.pdf

NIOSH List of Antineoplastic and Other Hazardous Drugs in Healthcare Settings 2014, *National Institute for Occupational Safety and Health, 2014*
http://www.cdc.gov/niosh/docs/2014-138/pdfs/2014-138.pdf

Evidence-Based Series #16-3 Safe Handling of Cytotoxics, *Cancer Care Ontario, 2013*
https://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=293471

Prevention Guide - Safe Handling of Hazardous Drugs, Association paritaire pour la santé et la sécurité du travail du secteur affaires sociales/ Institut de recherche Robert-Sauvé en santé et en sécurité du travail (*ASSTSAS/IRSST), 2007*
http://www.irsst.qc.ca/media/documents/pubirsst/cg-002.pdf

Routine Practices and Additional Precautions In All Health Care Settings, 3rd edition, *Provincial Infectious Diseases Advisory Committee, 2012*
http://www.publichealthontario.ca/en/eRepository/RPAP_All_HealthCare_Settings_Eng2012.pdf

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This document should be shared with the workplace Joint Health and Safety Committee or Health and Safety Representative, incorporated into the workplace occupational health and safety policy and program where appropriate, and posted on the Public Services Health & Safety Association website and the websites of other interested stakeholders.

This Guidance Note has been prepared to assist the workplace parties in understanding their obligations under the Occupational Health and Safety Act (OHSA) and the regulations. It is not intended to replace the OHSA or the regulations and reference should always be made to the official version of the legislation.

It is the responsibility of the workplace parties to ensure compliance with the legislation. This Guidance Note does not constitute legal advice. If you require assistance with respect to the interpretation of the legislation and its potential application in specific circumstances, please contact your legal counsel.

While this Guidance Note will also be available to Ministry of Labour inspectors, they will apply and enforce the OHSA and its regulations based on the facts as they may find them in the workplace. This Guidance Note does not affect their enforcement discretion in any way.