Emergency Medical Services Guidance Note #10

Issue: Prevention of Musculoskeletal Disorders (MSDs)

PREAMBLE

Paramedics are exposed to musculoskeletal disorder (MSD) hazards when performing lifting, carrying, pushing, pulling and driving-related tasks during the course of their duties. Exposure to MSD hazards increase the risk of developing an MSD.

Musculoskeletal Disorder (MSD), also known as sprains and strains, refer to a broad range of injuries to the musculoskeletal system (e.g., muscles, tendons, nerves, ligaments, etc.) that can be caused or aggravated by various hazards or risk factors in the workplace.

Presently, MSDs are the number one type of lost-time work injury reported to the Workplace Safety and Insurance Board (WSIB) in Ontario, where the paramedic sector has traditionally reported more MSDs than any other work sector. Within the paramedic community, it is unlikely that exposures to MSD hazards in tasks such as lifting, carrying, pushing, pulling and driving can be completely eliminated; however, the use of preventative strategies to reduce exposure to MSD hazards when performing paramedic related tasks can help to reduce the risk of MSDs. The purpose of this Guidance Note is to establish a best practice approach to preventing MSDs in the unique and dynamic work environment of Ontario paramedics.
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OCCUPATIONAL HEALTH AND SAFETY PRECAUTIONS AND CONTROL MEASURES

MSD prevention can be achieved by eliminating or reducing exposure to MSD hazards.

Paramedic services should consider principles of effective MSD prevention including: a systems-based approach considering interactions between people and components of the work system, such as tasks, equipment, workspace, work organization, and the environment; a user-centred approach that accommodates a broad range of worker characteristics; worker participation and involvement; and, integration into the service’s existing occupational health and safety and/or quality management systems. A Plan-Do-Check-Act process can be applied, where services should routinely identify hazards, assess risks, implement appropriate controls, and follow-up.

Paramedic services should implement engineering and/or administrative based controls to limit exposure to MSD hazards when lifting, carrying, pushing, pulling and driving to reduce and prevent MSDs.

**Engineering controls** include modifications to the vehicle, equipment or processes that eliminate or reduce the exposure.

**Administrative controls** alter the way work is done, including policies, practices, operating procedures and training to reduce the exposure.

Prior to introducing controls to limit exposure to MSD hazards when lifting, carrying, pushing, pulling, and driving to reduce and prevent MSD, two best practices should be considered:

1) Engineering controls should be attempted before administrative controls when possible as adherence to administrative controls can be difficult in high stress situations, like those faced by paramedics.
2) To facilitate adoption of an intervention, paramedic services should:

a. demonstrate the ergonomic advantage to paramedic health and well-being, and/or to patient care that is afforded by the intervention;

b. involve paramedics in trialing and testing of equipment, and related decision making processes;

c. involve workplace Joint Health and Safety Committee or the Health and Safety Representative (as appropriate to the workplace) in the process; and

d. provide appropriate training.

Engineering and administrative control options that have been shown to reduce MSDs among paramedics, based on available peer-reviewed research, are listed below. Paramedic services should consider implementing appropriate engineering and/or administrative controls to limit exposure to MSD hazards when lifting, carrying, pushing, pulling, and driving to reduce and prevent MSDs.

**Engineering Controls:**

1) Powered stretchers (also referred to as a “cot, lift-assist” in the Provincial Equipment Standards for Ontario Ambulance Services v3.0) with load systems should be considered where appropriate to limit exposures to physically demanding stretcher handling activities including raising/lowering and loading/unloading. In the event that powered load systems are not feasible, powered stretchers should be considered where appropriate to limit exposures to stretcher raising and lowering activities.

   a. Powered stretchers are heavier than manual stretchers (also referred to as “cot, lift-in” in the Provincial Equipment Standards for Ontario Ambulance Services
v3.0) and do pose an increased risk when lifted, carried, or loaded/unloaded to/from manually the ambulance reinforcing the importance of powered load functionality.

2) Lateral transfer devices, such as slider boards, *should* be used where appropriate to reduce forceful efforts required to transfer patients to or from the stretcher. A single rod design coupled with a bridgeboard has been shown as the most beneficial lateral transfer device particularly as compared to a sheet drag.

   a. When considering lateral transfer devices, prioritize designs that provide the greatest reduction of friction between the patient and the stretcher, and those that are practical to use, and easy to grasp, store and clean.

3) Stair-chairs (also referred to as “lifting chair” in the Provincial Equipment Standards for Ontario Ambulance Services v3.0) with adjustable handles *should* be used where appropriate to limit exposures to lifting when navigating stairs. Consistent with the principles noted above, adjustable designs are recommended that accommodates a broad range of worker characteristics. Powered stair-chair designs may further limit exposures.

4) The mass of medical bags *should* be reduced where possible while maintaining minimum equipment requirements described in the Provincial Equipment Standards for Ontario Ambulance Services v3.0.

5) Layout of the patient care compartment *should* be addressed to reduce reaching. Frequently used medical supplies *should* be stored within arm’s reach from the attending paramedic where possible, where all storage spaces *should* be clearly labelled.
6) Sitting in an ambulance while the vehicle is idling or in motion increases paramedics to whole-body vibration. Ambulance type, seat type, among other vehicle-design related factors can affect whole-body vibration exposures. Whole-body vibration exposures should be assessed according to standards (ISO 2631-1 and/or EU Directive 2002/44/EC). Where whole-body vibration exposures exceed threshold limit values controls should be considered that reduce the intensity and/or duration of exposures. Engineering controls that consider seat type, seat suspension and/or cabin suspension can reduce intensity and duration. Administrative controls that consider the duration of exposure (i.e., deployment models) can reduce the duration of whole-body vibration exposure.

Administrative Controls:

1) Where possible, lifts should be performed by a minimum of two persons to reduce the possibility of injury to the paramedic. Performing a two-person lift distributes the load reducing the exposure dose to any one individual. Paramedic services should have a clear policy to indicate when a call for additional lift assistance should be made.

2) Paramedics should consider alternating roles between calls when and where appropriate to reduce exposures. Consciously alternating roles such as the leader or follower in stair navigation can help to equalize exposures between paramedics.

   a. This strategy will tend to equalize exposures, increasing exposure to one paramedic, while decreasing exposure to the other. This may not be effective if the physical capacities of the paramedics are vastly different from each other.
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3) Consistently engaging in an exercise training program can help paramedics to maintain strength and cardiovascular capability. Paramedic services may consider opportunities to facilitate paramedics in engaging in exercise training, such as access to kinesiologists and/or exercise facilities. While this control will not reduce exposure to hazards, it may improve the capacity to better tolerate exposures.

4) Avoid manually lifting or carrying any stretcher by using alternate equipment (e.g., stair chair, scoop, board, etc.) to support interim patient conveyance between the scene and the stretcher when obstructions (e.g., stairs, porch steps) are present.

5) Paramedic services may consider workplace programs targeting general health and well-being. While this control will not reduce exposure to hazards, it may improve the capacity to better tolerate exposures.

SOME RELEVANT OCCUPATIONAL HEALTH AND SAFETY ACT REQUIREMENTS

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

- Ensure that the equipment, materials and protective devices provided by the employer are maintained in good condition – OHSA clause 25(1)(b).
- Acquaint a worker or person in authority over a worker with any hazard in the work – OHSA clause 25(2)(d)
- Provide information, instruction and supervision to a worker to protect the health or safety of the worker – OHSA clause 25(2)(a)
- Take every reasonable precaution reasonable in the circumstances for the protection of a worker – OHSA clause 25(2)(h)
REFERENCES AND RESOURCE INFORMATION

Canadian Standards Association (CSA) Z1004-12, Workplace Ergonomics – A Management and Implementation Standard


Ministry of Health and Long Term Care, Provincial Equipment Standards for Ontario Ambulance Services


Armstrong, D., Ferron, R., Taylor, C., McLeod, B., Fletcher, S., MacPhee, R., & Fischer, S. (submitted). Implementing powered stretcher and load systems was a cost effective intervention to reduce the incidence rates of stretcher related injuries in a paramedic service.


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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.