

Revisions to the BC Guide for Physicians in Determining Fitness to Drive a Motor Vehicle

Thank you for taking the time to review the draft Musculoskeletal Conditions chapter.

Please provide any positive or negative feedback to:
Dr. John McCracken, OSMV at John.McCracken@gov.bc.ca

Feedback due by:
TUESDAY JUNE 17, 2008

The Office of the Superintendent of Motor Vehicles (OSMV), in partnership with the British Columbia Medical Association (BCMA) is revising the *BC Guide for Physicians in Determining Fitness to Drive a Motor Vehicle* (the Guide) in order to ensure that it reflects changes in the case law and the best evidence available regarding medical conditions and fitness to drive.

Once the Guide chapters have been revised, the OSMV will create 2 separate documents:

1. a Physicians Handbook for use by physicians, and
2. an OSMV Driver Fitness Assessment Manual for use by the OSMV

The Musculoskeletal Conditions chapter that you are reviewing will become the OSMV Driver Fitness Assessment Manual chapter. Once the OSMV Manual chapter is finalized, a **much briefer** chapter on Musculoskeletal Conditions will be created for the Physician's Handbook.

Methodology for revisions to the current Guide

This chapter has been drafted using the following process:

1. Dr. Bonnie Dobbs, University of Alberta provided updated research regarding the medical condition and driving.
2. The chapter was revised by OSMV based on Dr. Dobbs' research as well as a review of the Canadian Medical Association's (CMA) *Determining Fitness to Drive – A Guide for Physicians*, and the Canadian Council of Motor Transport Administrators (CCMTA) Medical Standards for Drivers.
3. The draft is now published on the BCMA web site for review by physicians and on drivesafe.com for review by stakeholders and the broader road safety community. Specifically identified subject matter experts will also review the draft chapter and provide feedback for revisions.
4. The chapter will be further revised and ultimately approved by the OSMV and the BCMA.

Background

The Office of the Superintendent of Motor Vehicles (OSMV), in partnership with the British Columbia Medical Association (BCMA) is revising the *BC Guide for Physicians in Determining Fitness to Drive a Motor Vehicle* (the Guide). The last major update to the Guide was completed in 1997. The current edition of the Guide is based on consensus opinion of practicing physicians including members of specialty sections within the BCMA. Since the 1997 edition, a number of significant changes have occurred which have created a need to undertake another major revision to the Guide.

Changes in the law

- Developing case law has established that government must consider fitness to drive on an individual basis. This means that, where possible, the OSMV must move away from the current diagnostic model for determining driver fitness to a primarily functional model for determining driver fitness. The functional model focuses on the individual's functional ability to drive, including the individual's ability to compensate for their condition, when determining ability to drive safely.

Strength of evidence

- The evidence for setting the standards in the current Guide is consensus opinion of subject-matter experts. While this type of evidence is valid, it is not as strong as evidence from epidemiological, experimental or descriptive studies. The OSMV is committed to revising the Guide so that, as much as current research allows for, the guidelines in the Guide are based on research studies. Nonetheless, expert opinion will remain a key component of establishing driver fitness standards.

Other jurisdictions

- Consistency with national and international standards is an important consideration for the OSMV. Commercial drivers, in particular, need to be able to drive in other jurisdictions; if the BC standards for driver fitness were to significantly depart from standards accepted in other jurisdictions, this may create a hardship for commercial drivers.

Musculoskeletal Conditions

1. OVERVIEW

Drivers operating motor vehicles of any class must be able to carry out many complex muscular movements swiftly, accurately and repeatedly in order to control a vehicle properly. Truck and bus drivers must also have good muscular strength and full range of motion in both their arms and legs in order to handle these heavier vehicles.

About musculoskeletal conditions

This chapter is concerned with diseases or injuries that have a persistent impact on the musculoskeletal system. Musculoskeletal refers to the system of muscles, tendons, ligaments, bones, joints cartilage and other connective tissues. The musculoskeletal system is responsible for body movement and stability. Examples of chronic musculoskeletal conditions that may have a persistent impact on driving are diseases of the joints, e.g. rheumatoid arthritis and osteoarthritis; disabilities of the spine, e.g. degenerative disc disease or permanent injuries; deformity, e.g. scoliosis; and loss of limb.

Some musculoskeletal conditions, or procedures to treat the conditions, may result in a temporary impairment of the functions necessary for driving. For example, fractures, temporary braces and casts, hip and knee replacement, and various orthopedic surgeries. For the purposes of this manual, these are considered transient conditions and are not dealt with in this chapter. See Part 2, Chapter X for more information about transient conditions.

Prevalence and incidence

Statistics on the prevalence and incidence of musculoskeletal conditions in general are difficult to obtain because of the broadness of the category and the diversity of conditions within the category. Research suggests that musculoskeletal conditions are a leading cause of pain and physical disability. In Canada, the Ontario Health Survey (1994) found that musculoskeletal conditions are responsible for 54% of all long-term disability, 40% of all chronic conditions, and 24% of all restricted activity days. A study in the United States found that the leading causes of disability included back or spine problems, stiffness or deformity of limbs and arthritis.

Arthritis is an umbrella term referring to a group of more than 100 medical conditions. Two of the most common forms of arthritis are osteoarthritis (OA) and rheumatoid arthritis (RA). It is estimated that 9.6% of males and 18.0% of females 60 years of age and older worldwide have symptomatic OA.

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RA also has a worldwide distribution with an estimated prevalence of 1 to 2%. Both the incident and prevalence of RA increase with age and both are two to three times greater in women than in men.

Musculoskeletal conditions and co-morbidities

No co-morbidities specifically associated with musculoskeletal conditions have been identified. However, osteoarthritis is one of the commonest co-morbidities in the elderly population.

Musculoskeletal conditions and adverse driving outcomes

There are few studies that have specifically examined the relationship between musculoskeletal disabilities and impaired driving performance. As well, it is difficult to draw specific conclusions from this research because of differences in study design, outcome measures and the conditions studied, as well as limited measurement of the degree of impairment of the subjects.

Nonetheless, one broad conclusion that can be drawn is that many musculoskeletal conditions do appear to affect driving performance, often to a significant degree. In those studies that examined crash outcomes, the majority report elevated risk for crashes for those with musculoskeletal impairments. Two studies in particular (one a meta-analysis) identified that drivers with a musculoskeletal condition had crash rates that were 70% higher than those without musculoskeletal conditions.

Another important consideration for individuals with musculoskeletal conditions who are treated with non-steroidal anti-inflammatory drugs (NSAIDs) and/or narcotics is the effect of these drugs on driving performance. The effect of the use of NSAIDs and narcotics is discussed in Chapter X, Drugs.

2. EFFECT ON FUNCTIONAL ABILITY TO DRIVE

Chronic musculoskeletal condition	Potential driving impairment	Primary Functional Ability Affected
Loss of limb	Persistent	Motor
diseases of the joints, disabilities of the spine and deformity	Persistent	Motor

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Musculoskeletal conditions may cause a persistent impairment of motor functions necessary for driving. The specific impact on functional ability varies by condition and type of impairment. Functional abilities that may be affected include muscular strength, range of motion, flexion and extension of upper and lower extremities, joint mobility, and trunk and neck mobility.

Osteoarthritis has a considerable effect on functional ability, with the extent of the disability associated with the location and severity of the disease. For example, the risk for disability (defined as needing help walking or climbing stairs) attributable to OA of the knee is as great as that attributable to cardiovascular disease, and is greater than that due to any other medical condition in the aged population.

Functional disability is the major consequence of rheumatoid arthritis. Individuals with RA often experience a substantial loss of mobility due to pain and joint destruction. In the few studies that have examined the relationship between RA and driving performance 25% - 50% of individuals with RA reported difficulties with aspects of the driving tasks such as steering, cornering, reversing, head turns, and shoulder checks.

3. ASSESSMENT APPROACH

Condition	Assessment approach	Assessment Tools
Musculoskeletal conditions: <ul style="list-style-type: none">● loss of limb● diseases of the joints● disabilities of the spine● deformity	Functional assessment	ICBC Road test OT assessment Driver rehabilitation specialist assessment

Assessment guidelines/procedures: [This section is under development. It will include decision-making procedures and support for OSMV and it is subject to further work and review. This section does not need to be approved by the BCMA it is a 'place marker' for the OSMV and once developed, will be approved by the OSMV.]

All drivers with a loss of limb will be sent for a road test to determine fitness to drive.

For other chronic musculoskeletal conditions, if a doctor indicates loss of range of motion or weakness on DMER, send for a road test.

Note: Need to integrate the ICBC requirements for commercial vehicles. For example, class 1, 2,3 drivers may not use hand controls; class 4 drivers may be allowed hand controls on a case-by-case basis. Should we cross-reference the ICBC guidelines?

4. COMPENSATION AND RESTRICTIONS

Compensation

Individuals with musculoskeletal conditions may be able to compensate for functional impairment through strategies and/or vehicle modifications.

Strategies

For loss of limb, the use of a prosthetic device when driving.

Strategies that do not require vehicle modifications may include, for example, rotating the upper body in order to check side view mirrors if the driver's neck lacks sufficient mobility.

The effectiveness of individual strategies may be determined through a road test.

Vehicle modifications

Individuals with musculoskeletal conditions may be able to compensate for a functional impairment by driving a vehicle that has been modified to address their impairment. Compensatory vehicle modifications can include modifications to driving controls (e.g. hand controlled throttle and brake) or the use of additional mirrors.

An occupational therapist, driver rehabilitation specialist, driver examiner or other medical professional may recommend specific compensatory vehicle modifications based on an individual functional assessment.

Examples of vehicle modifications

Musculoskeletal condition	Modification
Some degree of loss of movement of the head and neck	Left and right outside mirrors
Missing lower limb	Hand controls
Amputation or deformity of either arm	Power assisted steering Mechanical devices to permit all hand controls to be operated by the normal hand

There is little empirical research that considers the relationship between vehicle modifications and adverse driving outcomes. The effectiveness of individual vehicle modifications may be determined through a road test.

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Drivers Licence Restrictions

Depending on the musculoskeletal condition, the following restrictions may be applied to the driver's licence.

25	Fitted prosthesis/leg brace required
26	Specified vehicle modifications required
28	Restricted to automatic transmission
51	[specify type of restriction]

5. FITNESS TO DRIVE GUIDELINES

The following are general guidelines for determining fitness to drive. The specific circumstances of individual drivers should be taken into account when applying these guidelines.

Loss of limb
All licence classes
<p>Individuals with a loss of limb of the upper or lower extremities may drive if</p> <ul style="list-style-type: none"> • a road test indicates that they are able to compensate for any loss of functional ability required for their class of licence held • their licence is restricted so that they only permitted to drive vehicles that have the modifications and devices required to compensate for their functional impairment, and • OSMV determines they are fit to drive.

Chronic musculoskeletal conditions, e.g. diseases of the joints, disabilities of the spine and deformity
All licence classes
<p>Individuals with chronic musculoskeletal conditions may drive if</p> <ul style="list-style-type: none"> • they retain sufficient movement and strength to perform the functions necessary for driving for their class of licence held • pain associated with the condition, or the drugs used to treat the condition, does not adversely affect their ability to drive safely • where required, a road test or other functional assessment indicates that they are able to compensate for any loss of functional ability required for driving

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- where permitted, they only drive with any vehicle modifications and devices required to compensate for their functional impairment, and
- OSMV determines they are fit to drive.

6. REASSESSMENT INTERVAL

The reassessment interval for musculoskeletal conditions will be determined on an individual basis at the discretion of the OSMV and with the advice of the treating physician.

In general:

- drivers with a prosthetic device who have passed a road test do not require any reassessment
- if the musculoskeletal condition is not progressive, no reassessment is required
- if the musculoskeletal condition is progressive, a reassessment is required.