

CANADIAN RAILWAY MEDICAL RULES HANDBOOK

(FOR POSITIONS CRITICAL TO SAFE RAILWAY OPERATIONS)



**Railway Association
of Canada**

MAY 2018

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Version 1.6 –April 2013

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Version 1.7 –September 2013

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Updates

Version 1.8 –February 2016

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Updates

Version 1.9 –May 2018

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Acknowledgements

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 Railway Association of Canada		Version: 1.9
	Title: INTRODUCTION	

Introduction

This handbook was designed to provide Canadian railway companies and medical service providers with the information necessary to implement the Railway Medical Rules for Positions Critical to Safe Railway Operations (Railway Medical Rules and Railway Rules Governing Safety Critical Positions).


The Safety Critical Positions Rules and the Railway Medical Rules were developed pursuant to Section 18(1) (b), Section 20(1) and Section 35 of the Railway Safety Act (RSA), as amended on June 1, 1999. This Act requires persons working in positions that are deemed critical to safe railway operations to undergo periodic medical examinations. These sections of the RSA are included in the Introduction for reference.

The Act requires that all persons employed in railway Safety Critical Positions must advise their medical professional of that fact prior to any examination.

The Act further requires medical examiners who believe that a person employed in a safety critical position has any condition that may reasonably pose a threat to railway safety must immediately notify both the patient and the railway company. Medical information provided to railway companies in accordance with this section of the Act is privileged and cannot be used in any legal or disciplinary proceedings except as otherwise provided.

The Safety Critical Position Rules and the Railway Medical Rules were developed by the Railway Association of Canada (RAC) and approved by the Minister of Transport on June 16, 2000. The Railway Medical Rules became effective on November 29, 2001 simultaneously with the revocation of General Order 0-9, Regulations Respecting the Examination of Vision and Hearing of Railway Employees, as amended by CTC 1985-3. Any questions regarding either the Act or the Rules should be addressed to the RAC or to the Department of Transport.

The RAC has a standing Medical Steering Committee and a Medical Advisory Group (MAG) that is composed of railway member Companies representatives with responsibilities in the functions of medical fitness for duty, occupational health and medical professionals who represent several member railways and other interested parties. This Committee and Group address questions and issues of a technical nature, and monitors medical conditions which may affect safe rail operations. From time to time, the RAC may recommend new or revised medical guidelines. Persons who have received a copy of this handbook may obtain updates from the RAC when they become available.

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The intent of these Rules is to provide for individual medical assessments by personal physicians for persons performing work in Safety Critical Positions in the railway industry.

Included in this handbook is background information on how and why the Rules were developed, a copy of section 35 of the Act, a copy of the Rules, guidelines for assessment of medical conditions required by the Rules, and contacts for additional information.

Section 18(1) of the Railway Safety Act reads as follows:

18(1) The Governor in Council may make regulations

(b) declaring positions in railway companies to be critical to safe railway operations.

Section 20 of the Railway Safety Act reads as follows:

20(1) A railway company shall file with the Minister for approval any rules in respect of any matter referred to in subsection 18(1) or (2.1) that it proposes to formulate or revise on its own initiative.


Section 35 of the Railway Safety Act reads as follows:

Medical examination

35(1) A person who holds a position that is declared by regulations made under paragraph 18(1)(b) or by any rule in force under section 19 or 20 to be a position critical to safe railway operations, referred to in this section as a 'designated position', shall undergo a medical examination organized by the railway company concerned, including audio-metric and optometric examination, at intervals determined by the regulations made under paragraph 18(1)(c)(iii) or by any rule in force under section 19 or 20.

Physician or optometrist to disclose potentially hazardous conditions

(2) If a physician or an optometrist believes, on reasonable grounds, that a patient is a person described in subsection (1), the physician or optometrist shall, if in their opinion the patient has a condition that is likely to pose a threat to safe railway operations,

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- (a) by notice sent without delay to a physician or optometrist specified by the railway company, inform the specified physician or optometrist of that opinion and the reasons for it, after the physician or optometrist has taken reasonable steps to first inform the patient, and
- (b) without delay send a copy of that notice to the patient,

and the patient is deemed to have consented to the disclosure required by paragraph (a)

Holder of designated position to inform physician or optometrist

- (3) A person who holds a designated position in a railway company shall, prior to any examination by a physician or optometrist, advise the physician or optometrist that the person is the holder of such a position.

Railway Company may act in interests of safe railway operations


- (4) A railway company may make such use of information provided pursuant to subsection (2) as it considers necessary in the interests of safe railway operations.

Proceedings not to lie against physician or optometrist

- (5) No legal, disciplinary or other proceedings lie against a physician or optometrist for anything done by that physician or optometrist in good faith in compliance with this section.

Information privileged

- (6) Information provided pursuant to subsection (2) is privileged and
 - (a) no person shall be required to disclose it or give evidence relating to it in any legal, disciplinary or other proceedings; and
 - (b) it is not admissible in any such proceedings, except
 - (i) as provided by subsection (4), or
 - (ii) where the patient consents.

 Railway Association of Canada	Section: 1	Version: 1.9
	Title: BACKGROUND AND HISTORY	

Section 1 - BACKGROUND AND HISTORY

1. Introduction

This section describes the background and history behind the development of the Railway Medical Rules and the Safety Critical Position Rules.

2. Legislative History


Medical requirements for certain railway positions were most recently contained in General Order O-9, Regulations Respecting the Examination of Vision and Hearing of Railway Employees, as amended by CTC 1985-3. This legislation contained standards for vision and hearing only. Medical requirements beyond these had been left up to the individual railways as a matter of company policy.

General Order O-9 had been in place since 1978. Minor revisions had been made to the order on several occasions, most recently as part of CTC 1985-3 (April 23, 1985). In 1998, CN and CPR also obtained exemptions from some of the requirements of the General Order to address Canadian Human Rights Commission (CHRC) issues relating to the difference in initial certification and recertification standards.

The move towards legislated medical standards beyond those for hearing and vision arose primarily from the Foisy Commission review of the 1986 Hinton train collision.

Recommendation 10 of the Commission stated "that the CTC review its regulations concerning medical fitness with a view to including standards with respect to matters of physical health in addition to vision and hearing acuity and that regulations establishing such standards be promulgated as soon as possible".

As a result of this recommendation, the RTC set out in 1987 to review the issue of expanded medical examinations. Draft regulations were developed by the RTC (Regulations Respecting the Medical Examination of Railway Employees) and included the requirement for a physical examination including "a review of the nervous, cardiovascular, respiratory, gastro-intestinal, genitourinary and musculoskeletal systems, a clinical history and special investigations if clinically indicated having regard for the examinee's age and work duties". The proposed regulation also included the specific need for chest x-rays, electrocardiogram tests, urinalysis and tuberculin tests. The draft regulation also required railway companies to file standards for medical fitness in each of the aforementioned areas.

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The need for expanded medical examinations was carried over into the Railway Safety Act when it was enacted in 1989. Section 35(1) of the RSA requires that railway employees in positions deemed critical to safe railway operations undergo annual medical examinations including audiometric and optometric assessment. Section 35(2) of the Act addressed another of the Foisy commission recommendations by requiring any physician or optometrist treating a person in a Safety Critical Position to report to the railway's Chief Medical Officer any medical condition that they believe could constitute a threat to safe railway operations. Section 35(3) of the Railway Safety Act requires that persons in Safety Critical Positions inform the physician or optometrist of their position.


Although included in the Railway Safety Act since its inception in 1989, these sections have never been fully enacted due to their reliance on regulation identifying a list of Safety Critical Positions. This regulation has been delayed several times due to various issues and concerns. Also hindering the enactment of this section of the Railway Safety Act was its initial specified requirement for an annual medical examination, a frequency deemed to be excessive by railway industry medical experts. Revisions to the Railway Safety Act, which came into force on June 1 1999, eliminated the annual requirement.

A new initiative aimed at drafting a new medical rule for Safety Critical Positions commenced in December 1996. The Railway Association of Canada's Safety and Operations Management General Committee authorized a formal Medical Steering Committee to oversee the development of Rules Identifying Safety Critical Positions and Rules Governing Medical Standards for SCPs.


The steering committee was comprised of railway industry multi-functional stakeholders including representatives from the Regulatory Affairs, Medical, Employee Relations, Labour Relations and Law departments of various RAC member railways. A Medical Working Group consisting of the Chief Medical Officers from CN, CPR and VIA Rail was also formed to work with medical specialists in the development of specific medical requirements and the guidelines required to support the medical rules. As part of this process field research was carried out in the railway environment.

The Steering Committee's mandate was to develop rules which would provide a contemporary list of Safety Critical Positions based on potential risk to public safety as well as modern and consistent medical requirements which address those diseases or disorders that have the potential to impact railway safety.

In accordance with the requirements of the Railway Safety Act, the steering committee consulted with railway labour organizations throughout the development process. In addition the CHRC and Transport Canada were kept up to date on the rules' progress.

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The Safety Critical Position Rules and the Railway Medical Rules were developed by the Railway Association of Canada (RAC) and approved by the Minister of Transport on June 16, 2000. The Railway Medical Rules became effective on November 29, 2001, simultaneously with the revocation of General Order 0-9, Regulations Respecting the Examination of Vision and Hearing of Railway Employees, as amended by CTC 1985-3. Any questions regarding either the Act or the Rules should be addressed to the RAC or to the Department of Transport.

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	Title: SAFETY CRITICAL POSITION RULES	
	Subsection 2.1 – Overview	

Section 2 – SAFETY CRITICAL POSITION RULES

2.1 - Overview

1. Background

Section 35(1) of the Railway Safety Act refers to the requirement for regulation or rule specifying positions deemed critical to safe railway operations. In 1997 the RAC Medical Steering Committee undertook to develop such a rule along with a related Medical rule for Safety Critical Positions.

The committee's goal was to develop a straightforward rule which would identify the occupational requirements deemed to be safety critical while allowing individual railways to determine the specific list of occupations that meet these requirements on their particular railway.

As required by the Railway Safety Act, consultation with railway labour organizations took place throughout the development process. In addition the Canadian Human Rights Commission and Transport Canada were kept up-to-date on the rule's development.


The Rule Governing Safety Critical Positions was developed by the Railway Association of Canada and approved by the Minister of Transport on June 16, 2000 (copy of approval notice can be found in section 2.3). It became effective on September 30, 2000.

2. Development Process

A vital part of the development of the Railway Rules Governing Safety Critical Positions was ensuring that an objective means was in place to identify those occupations deemed to be critical to safe railway operations.

It was important that the list of Safety Critical Positions include only those positions with the highest risk to public safety.

For this purpose, the Railway Association of Canada's Medical Rules Steering Committee developed a "risk matrix" which would allow an assessment of railway occupations based on five key risk components.

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These were:

- General risk component of occupation
- Public interface
- Frequency of risk activities
- Presence of safety back-up systems
- Degree of risk environment

Based on this assessment, it was determined that Safety Critical Positions should be comprised of running trades positions directly engaged in train or yard service and positions engaged in rail traffic control. In addition, other occupations would be considered as Safety Critical when performing any of these duties.


Due to variances in actual occupational titles, the list of specific SCP occupations was to be developed and filed with Transport Canada by individual railways. A typical list of occupations would include:

- Locomotive Engineer
- Conductor
- Brakeperson
- Yard Foreman
- Rail Traffic Controller
- Operators of Specialized Equipment operating as trains
- Trainmaster
- Superintendent

Railways must reassess their SCP occupational list at regular intervals and file updated lists as required.


3. Disclosure Requirements

In addition to being subject to the requirements of the Medical Rules, the Railway Safety Act contains another important obligation for persons employed in a Safety Critical Position. This is the requirement that persons in Safety Critical Positions must, prior to any examination by a physician or optometrist, advise the physician or optometrist that they occupy a Safety Critical Position under the Railway Safety Act. (Note this includes all examinations and not just fitness for duty assessments under the Medical Rules).

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	Subsection 2.1 – Overview	

Physicians and optometrists also have an obligation under the Railway Safety Act to report to the railway any condition in a person occupying a Safety Critical Position which they feel may pose a threat to safe railway operations. A copy of the report must also be provided to the employee.

Individual railways should ensure that they inform those employees in Safety Critical Positions of these requirements. Although information will be provided by the Railway Association of Canada to the medical community at large regarding their obligations under the Railway Safety Act, where possible, individual railways may also wish to provide such information to those physicians who will be dealing with employees in Safety Critical Positions.

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	Title: SAFETY CRITICAL POSITION RULES	
	Subsection 2.2 – Rules Governing Safety Critical Positions	

2.2 - Rules Governing Safety Critical Positions

1. Short Title

For ease of reference, this rule may be referred to as the “Safety Critical Position Rules”.

2. Scope

These rules have been developed pursuant to Section 20 of the *Railway Safety Act*.

3. Definitions

A “Safety Critical Position” is herein defined as:


- a) any railway position directly engaged in operation of trains in main track or yard service; and
- b) any railway position engaged in rail traffic control.

Any person performing any of the duties normally performed by a person holding a Safety Critical Position, as set out in section 3 above, is deemed to be holding a Safety Critical Position while performing those duties.

4. Records to be Kept by the Company

Each railway company shall:

- a) maintain a list of all occupational names or titles which are governed by this rule;
- b) maintain a list of the names of all employees qualified to serve in Safety Critical Positions; and
- c) make all such records related to this rule available to Transport Canada inspectors upon reasonable request.

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	Title: SAFETY CRITICAL POSITION RULES	
	Subsection 2.3 – Approval by Minister of Transport	

2.3 - Approval by Minister of Transport

Approval of Rule – Pursuant to Section 20 of the *Railway Safety Act*, Chapter R-4.2, [R.S., 1985, C. 32 (4th SUPP.)]

The Railway Association of Canada (RAC), on behalf of its constituent railway companies, has requested approval of the *Railway Rules Governing Safety Critical Positions* and *Railway Medical Rules for Positions Critical to Safe Railway Operations*.

Paragraph 19.(4)(a) of the *Railway Safety Act* gives the Minister the authority to approve Rules filed by a railway company, on their own initiative, under Section 20 of the *Act*, if he is of the opinion that the Rules are conducive to safe railway operations. Having regard to current railway practice, to the views of the railway companies and the views of the relevant associations and organizations and to other factors that I consider relevant, I am of the opinion that the Rules so filed are conducive to safe railway operations.

Pursuant to the *Railway Safety Act*, paragraph 19.(4)(a), I hereby approve the *Railway Rules Governing Safety Critical Positions* and *Railway Medical Rules for Positions Critical to Safe Railway Operations*, filed by the RAC on behalf of its constituent railway companies as set out in Appendices “B” and “C” attached hereto.

The *Railway Rules Governing Safety Critical Positions* shall apply to the railway companies listed in Appendix “A”. This Rule shall come into effect 90 days from the date of approval during which time railway companies must submit their list of safety critical positions to the Department.


The *Railway Medical Rules for Positions Critical to Safe Railway Operations* shall also apply to the railway companies listed in Appendix “A” and will come into effect once the remaining federally regulated companies become signatory to the new Rule and the subsequent revocation by the Governor in Council of General Order 0-9, *Regulations Respecting the Examination of Vision and Hearing of Railway Employees*, amended by CTC 1985-3 RAIL.

Signed by T. Burtch

Director General, Rail Safety
for Minister of Transport

June 16, 2000

Date

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	Title: RAILWAY MEDICAL RULES	
	Subsection 3.1 - Overview	

Section 3 – RAILWAY MEDICAL RULES

3.1 - Overview

1. Introduction

The Railway Medical Rules were developed over the course of 1998/99 by a Medical Steering Committee formed by the Railway Association of Canada. This committee was comprised of railway industry multi-functional stakeholders including representatives from the Regulatory Affairs, Medical, Employee Relations, Labour Relations and Law departments of various RAC member railways.


A Medical Working Group consisting of the Chief Medical Officers from CN, CPR and VIA Rail worked with medical specialists in the development of specific medical requirements and the guidelines required to support the medical rules. As part of this process field research was carried out in the railway environment.

The Steering Committee's goal was to develop a basic enabling rule which would be supported by recommended medical practices guidelines. This would allow medical assessments to remain current through updates to the guidelines without having to regularly modify the actual rule.

The Medical Rules allow medical assessments for Safety Critical Positions to be directed and managed by a railway's Chief Medical Officer. It requires that an employee must meet medical fitness for duty assessment requirements so as to work in a Safety Critical Position.


The Rules set an assessment frequency of 5 years to age 40 and 3 years beyond age 40 with the Chief Medical Officer having the ability to reduce the interval for specific situations.

Assessments are based on those diseases or disorders that have potential to impact railway safety including sudden impairment, impairment of judgement or alertness, impairment of senses or significant musculoskeletal impairment. The Rules provide the basis for assessments to be conducted by personal physicians at the discretion of individual railways.

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	Title: RAILWAY MEDICAL RULES	
	Subsection 3.1 – Overview	

As required by the Railway Safety Act, consultation with railway labour organizations took place throughout the development process. In addition, the Canadian Human Rights Commission and Transport Canada were kept up-to-date on the rule's development.

The Railway Medical Rules were developed by the Railway Association of Canada (RAC) and approved by the Minister of Transport on June 16, 2000. They became effective on November 29, 2001 simultaneously with the revocation of General Order 0-9, Regulations Respecting the Examination of Vision and Hearing of Railway Employees, as amended by CTC 1985-3. Any questions regarding either the Act or the Rules should be addressed to the RAC or to the Department of Transport.

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3.2 - Rules

1. Short Title


- 1.1 For ease of reference, these rules may be referred to as the "Railway Medical Rules".

2. Scope

- 2.1 These rules, which have been developed pursuant to Section 20 (1) (a) of the Railway Safety Act, define the Medical Fitness for Duty requirements for Safety Critical Positions within railway companies subject to the jurisdiction of the Department.
- 2.2 In the case of international train movements, a railway company may allow persons to perform limited service in Safety Critical Positions while using medical requirements stipulated by U.S. Federal Railroad Administration regulations.

3. Definitions

- 3.1 "Chief Medical Officer" means a physician licensed to practice medicine in Canada and who is employed or contracted by a railway company for the purpose of, among other things, directing and managing the area of Medical Fitness for Duty requirements and guidelines.
- 3.2 "Department" means the Department of Transport, Rail Safety Group.
- 3.3 "Medical Fitness for Duty" means that a determination was made by the Chief Medical Officer, subject to any restrictions or requirements imposed under Section 6 hereof, that a person has taken the medical assessments required by these rules, and that the person meets all of the Medical Fitness for Duty requirements provided herein.
- 3.4 "Safety Critical Position" has the same meaning as provided in the Railway Rules Governing Safety Critical Positions.
- 3.5 "Person" means a person in a Safety Critical Position.


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4. Frequency of medical assessments

- 4.1 Subject to sub-section 4.2, a person shall undergo a company organized Medical Fitness for Duty assessment:
- a) prior to commencement of employment in a Safety Critical Position;
 - b) upon promotion or transfer to a Safety Critical Position; and
 - c) every five years until the age of forty and every three years thereafter until retirement, or until that person is no longer employed in a Safety Critical Position.
- 4.2 Without varying the requirement of sub-section 4.1(c), no assessment shall be required under sub-section 4.1(b) if the person had previously occupied a Safety Critical Position which, in the opinion of the Chief Medical Officer, had similar mental and physical demands as the Safety Critical Position into which the person is entering.
- 4.3 The Chief Medical Officer may require additional assessments to those set out in Section 4.1 if:
- a) the person has or may have a medical condition that requires assessment or more frequent monitoring; or
 - b) the person is returning to work in a Safety Critical Position after a leave due to illness or injury.


5. Assessment for medical fitness for duty

- 5.1 The Medical Fitness for Duty for a person shall be assessed on an individual basis, taking into consideration medical conditions, both past and current, that could result in:
- a) sudden impairment;
 - b) impairment of cognitive function including alertness, judgement, insight, memory and concentration;
 - c) impairment of senses;
 - d) significant impairment of musculoskeletal function; or
 - e) other impairment that is likely to constitute a threat to safe railway operations.

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5.2 The medical conditions referred to in Section 5.1 shall include:

- a) diseases of the nervous system, including seizure disorders, narcolepsy, sleep apnea and other disturbances of consciousness, vestibular disorders, disorders of coordination and muscle control, head injury, post traumatic conditions and intracranial tumours;
- b) cardiovascular diseases, including high blood pressure, coronary artery disease, myocardial infarction, cerebrovascular disease, aortic aneurysm, congestive heart failure, cardiac arrhythmia, valvular heart disease and cardiomyopathy;
- c) metabolic diseases, including diabetes mellitus, thyroid disease, Cushing's Disease, Addison's Disease and pheochromocytoma;
- d) musculoskeletal disabilities, including amputation of a limb, arthritis, significant joint dysfunction, disease of the spine, obesity or other significant musculoskeletal conditions;
- e) respiratory diseases, including obstructive or restrictive conditions resulting in functional impairment;
- f) mental disorders, including the following types of mental disorders:
 - i) cognitive, including dementias, delirium and amnesia;
 - ii) psychotic, including schizophrenia;
 - iii) mood, including depression, manic, bipolar;
 - iv) anxiety, including panic attacks and phobias; and
 - v) personality, resulting in anti-social, erratic or aggressive behaviour;
- g) substance abuse, including abuse or dependence on alcohol, prescription medications, or illicit drugs;
- h) hearing impairment, including hearing acuity;
- i) visual impairment, including distant visual acuity, field of vision, colour vision; and
- j) any other organic, functional or structural disease, defect or limitation that is likely to constitute a threat to safe railway operations.


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6. Medical restrictions

- 6.1 If the Chief Medical Officer, in making an individual assessment of a person's Medical Fitness for Duty, is of the opinion that there exists a threat to safe railway operations, the Chief Medical Officer may:
- a) restrict a person from occupying a Safety Critical Position;
 - b) require the use of corrective devices or other medical aids; or
 - c) otherwise restrict a person's ability to work or perform certain tasks in a Safety Critical Position.
- 6.2 Upon completion of a Medical Fitness for Duty assessment, the Chief Medical Officer shall advise each person and the person's supervisor of that person's Medical Fitness for Duty and of any restrictions or requirements imposed pursuant to sub-section 6.1.

7. Records to be kept by the chief medical officer

- 7.1 The Chief Medical Officer of the railway company shall maintain records of all persons' medical assessments required hereunder and any restrictions required pursuant to sub-section 6.1.
- 7.2 The Chief Medical Officer shall maintain copies of all medical policies and guidelines used by a railway company for the examination or assessment of persons employed in Safety Critical Positions.
- 7.3 The Chief Medical Officer shall make records, policies, and guidelines related to these rules available to the Department upon reasonable request.

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3.3 - Approval by Minister of Transport

Approval of Rule – Pursuant to Section 20 of the *Railway Safety Act*, Chapter R-4.2, [R.S., 1985, C. 32 (4th SUPP.)]

The Railway Association of Canada (RAC), on behalf of its constituent railway companies, has requested approval of the *Railway Rules Governing Safety Critical Positions* and *Railway Medical Rules for Positions Critical to Safe Railway Operations*.

Paragraph 19.(4)(a) of the *Railway Safety Act* gives the Minister the authority to approve Rules filed by a railway company, on their own initiative, under Section 20 of the *Act*, if he is of the opinion that the Rules are conducive to safe railway operations. Having regard to current railway practice, to the views of the railway companies and the views of the relevant associations and organizations and to other factors that I consider relevant, I am of the opinion that the Rules so filed are conducive to safe railway operations.

Pursuant to the *Railway Safety Act*, paragraph 19.(4)(a), I hereby approve the *Railway Rules Governing Safety Critical Positions* and *Railway Medical Rules for Positions Critical to Safe Railway Operations*, filed by the RAC on behalf of its constituent railway companies as set out in Appendices “B” and “C” attached hereto.

The *Railway Rules Governing Safety Critical Positions* shall apply to the railway companies listed in Appendix “A”. This Rule shall come into effect 90 days from the date of approval during which time railway companies must submit their list of safety critical positions to the Department.


The *Railway Medical Rules for Positions Critical to Safe Railway Operations* shall also apply to the railway companies listed in Appendix “A” and will come into effect once the remaining federally regulated companies become signatory to the new Rule and the subsequent revocation by the Governor in Council of General Order 0-9, *Regulations Respecting the Examination of Vision and Hearing of Railway Employees*, amended by CTC 1985-3 RAIL.

Signed by T. Burtch

Director General, Rail Safety
for Minister of Transport

June 16, 2000


Date

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3.4 - Current List of Railways Signatory to the Rules (Appendix “A”)

Railways Rules Governing Safety Critical Positions and Railway Medical Rules for Positions Critical to Safe Railway Operations

Amtrak
 BNSF Railway Company
 Central Maine & Québec Railway Canada Inc.
 CN
 CP
 CSX Transportation Inc.
 Eastern Main Railway Company
 Essex Terminal Railway Company
 Exo
 Goderich-Exeter Railway Company Limited
 Go Transit
 Great Canadian Raitour Company Ltd.
 Hudson Bay Railway
 Kettle Falls International Railway, LLC
 Knob Lake and Timmins Railway
 Nipissing Central Railway Company
 Norfolk Southern Railway
 * Ottawa Valley Railway
 Québec North Shore and Labrador Railway Company Inc.
 * Southern Ontario Railway
 St. Lawrence & Atlantic Railroad (Québec) Inc.
 Sydney Coal Railway
 Toronto Terminals Railway Company Limited, The
 Tshiutin Rail Transportation Inc.
 Union Pacific Railroad Company
 VIA Rail Canada Inc.
 West Coast Express Limited
 White Pass & Yukon Railroad

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* **NOTE** *RailLink Canada Ltd. Power of Attorney covers two (2) railways: the Ottawa Valley Railway, and the Southern Ontario Railway.*

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Section 4 – RAILWAY MEDICAL GUIDELINES

4.1 – Overview

Medical Fitness for Duty Guidelines for the Employment of Individuals in Safety Critical Positions in the Canadian Railway Industry


Canadian railway employees working in a Safety Critical Position operate or control the movement of trains. Physical and mental fitness is mandatory. Impaired performance due to a medical condition could result in a significant incident affecting the health and safety of employees, the public, property or the environment.

Medical fitness for duty guidelines have been developed for a number of medical conditions that are both prevalent in the population and represent a significant potential risk to safe railway operations. These medical fitness for duty guidelines take into consideration the occupational requirements of Safety Critical Positions in the Canadian railway industry. They are a resource for a Railway's Chief Medical Officer and Health Services Department, Physicians, Nurses, Specialists and Medical Consultants and other treatment providers when considering the medical fitness for duty of an individual occupying a Safety Critical Position.

The medical fitness for duty of an individual with a medical condition not covered by these guidelines will be determined by the Railway's Chief Medical Officer and guided by the "medical fitness for duty considerations" listed in each guideline, accepted medical practice and by related industry medical standards. The requirement for medical monitoring and follow up reports and the frequency of their submission will be at the discretion of the Railway's Chief Medical Officer.

The term "Railway's Chief Medical Officer" is used throughout these medical fitness for duty guidelines. At the discretion of each Railway's Chief Medical Officer some of the roles and responsibilities of the Railway's Chief Medical Officer may be assigned to an alternate or a designate.

The Medical Advisory Group of the Railway Association of Canada, with input from Medical Consultants and with support provided by the Medical Steering Committee of the Railway Association of Canada, will review and update these medical fitness for duty guidelines as required.

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	Subsection 4.2 – Hearing	

4.2 - Hearing

Fitness for Duty Medical Guidelines for the Employment of Individuals with Impaired Hearing in Safety Critical Positions in the Canadian Railway Industry

1. Introduction

Canadian railway employees working in a Safety Critical Position (SCP) operate or control the movement of trains. Physical and mental fitness is mandatory. Impaired performance due to a medical condition could result in a significant incident affecting the health and safety of employees, the public, property or the environment.

Employees working in a SCP are required to have sufficient hearing to meet the demands of these positions. Individuals who are occupying these positions must, even in noisy environments, be able to receive direct verbal communication and communicate through telephone and radio systems. They must also be able to detect and recognize the type and source location of any sound signal, particularly warning sounds.


2. Fitness for Duty Criteria

An average hearing loss in either ear of less than 40 dB in the frequencies of 500, 1000 and 2000 Hz with or without hearing aids.

3. Assessment Requirements

3.1 Frequency of Assessment

- a) Assessment of hearing is done at pre-employment/pre-placement and at every periodic medical assessment.
- b) The Chief Medical Officer (CMO) of a railway company may determine different periodicity when there is medical evidence that more frequent assessment is required.

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3.2 Procedure of Assessment

- a) A screening audiogram¹ is required at pre-employment/pre-placement, at the first periodic medical assessment and at the first periodic medical assessment after age 40.
- b) The content of the hearing assessment is determined by each railway company.
- c) An individual with an average hearing loss of 40 dB or more at 500 Hz, 1,000 Hz and 2,000 Hz in both ears on a screening audiogram requires a confirmatory² audiogram. If the hearing loss is confirmed, a comprehensive medical assessment by an otolaryngologist (ENT) is required. The medical assessment must include, at minimum:
 - A comprehensive medical history
 - A physical examination
 - A medical report including a medical diagnosis and recommendations regarding the treatment, the use of hearing aids and the impact of the hearing disorder on their ability to occupy a safety critical position. This report must be sent to the CMO of the railway company for review.


4. Individual Assessment

The CMO may authorize an individual who does not meet the above criteria to occupy a SCP if the CMO has reasons to believe that the individual can perform his/her duties in a safe manner. In doing so, the CMO must take into consideration the following:

- the specific requirements of the SCP
- the opinion of an otolaryngologist who has assessed the individual and who is of the opinion that the hearing disorder is unlikely to interfere with safe performance of duties and,


¹ Hearing test using an audiometer calibrated in accordance with the requirements of the National Standard Institute (ANSI S3.6 – 1996).

² Audiogram performed by a certified audiologist in accordance with best practice. A confirmatory audiogram must be performed in an audiometric test booth in accordance with the background noise requirement of ANSI S3.1 – 1991.

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- any relevant ability, skill or experience of the individual.

The CMO may also require that a practical test be performed before allowing an individual to occupy a SCP.

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4.3 - Vision

Medical Guidelines for the Employment of Individuals with Impaired Vision in Safety Critical Positions in the Canadian Railway Industry

1. Introduction

Canadian railway employees working in a Safety Critical Position (SCP) operate or control the movement of trains. Physical and mental fitness is mandatory. Impaired performance due to a medical condition could result in a significant incident affecting the health and safety of employees, the public, property or the environment.

Employees working in a SCP are required to have sufficient vision to meet the demands of these positions. Working on, or around, moving equipment, identifying track and yard signals, and controlling rail traffic are duties where adequate visual acuity, colour perception, visual fields and extra-ocular muscle balance are mandatory.

Background information on visual requirements and fitness for duty issues is provided in Appendix I.


INDIVIDUALS WHO FAIL TO MEET THE CRITERIA FOR DISTANT OR NEAR VISION, VISUAL FIELDS OR EXTRA-OCULAR MUSCLE BALANCE ARE TO BE ASSESSED BY AN OPHTHALMOLOGIST OR AN OPTOMETRIST BEFORE THEY ARE DECLARED UNFIT TO OCCUPY A SCP.

2. Fitness for duty criteria

2.1 Visual Acuity

2.1.1 Distant Snellen acuity

- not less than 6/9 (20/30) in the better eye with or without correction
- not less than 6/15 (20/50) in the worse eye with or without correction

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2.1.2 Near acuity


Notation	Both Eyes Open (Corrected or Uncorrected)
Reduced Snellen (American)	20/30
Reduced Snellen (Metric)	6/9
Snellen (Metric)	40/60
M notation @ 40 cm	0.63 M
N notation @ 35 cm @ 40 cm	N5 N6
Jaeger notation @ 35 cm @ 40 cm	J2 J4

2.2 Visual fields

The minimum extent of the uninterrupted monocular visual field in each eye without correction should be:

Horizontal meridian: 120°
 Vertical meridian: 90°
 Oblique meridians: 90°

The monocular visual field must be continuous within these limits.


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2.3 Colour vision

2.3.1 Normal unaided* colour vision as determined by the Ishihara Colour Vision Test.

<i>Version of the Ishihara errors</i>	<i>Plates to be administered</i>	<i>Maximum number of allowable</i>
14 plate edition:	1 through 10 inclusively	2
16 plate edition:	1 through 11 inclusively	2
24 plate edition:	1 through 15 inclusively	3
36 plate edition:	1 through 21 inclusively	5

* *Unaided means that no visual aids other than clear spectacles, clear contact lenses, or contact lenses with light handling tints may be worn while performing the test. If there is any question as to the lightness of the tint, then clear spectacles or clear contact lenses should be worn while performing the test.*

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2.3.2 Failure of Ishihara Test

a) Railway Lantern Test (CNLAN)*

A specific colour Lantern Test (CNLAN) has been developed by the railway industry. The CNLAN is designed to determine an individual's ability to identify colours used in rail wayside signals. The intensity and size of the lights are equivalent to a viewing distance between 0.2 and 0.4 miles. The colours fall within the American Association of Railroads standards for wayside signals. The testing protocol for the CNLAN is described in Appendix IV.

Individuals who fail the Ishihara Colour Vision Test are required to undergo further assessment, which may include a CNLAN. CN and Canadian Pacific Railway (CPR) currently administer the CNLAN. Testing can be arranged through the Occupational Health Services Department of either CN or CPR.


b) Rail Traffic Control (RTC)* Practical Test

Rail traffic controllers who fail the Ishihara Colour Vision Test will be assessed using a practical test developed by each railway company.

** NOTE: Both the CNLAN and the RTC tests must be conducted unaided as defined in section 2.3.1.*

2.4 Extra-ocular muscle balance

Individuals who experience diplopia at different eye positions within a 30° radius of their habitual straight-ahead gaze or have a restriction of eye movements within 30° of straight-ahead cannot occupy a SCP.

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3. Monitoring requirements

3.1 Frequency

Assessment of distant and near acuity, visual fields, colour vision and ocular muscle balance is done every 5 years until the age of 40 and every 3 years thereafter as part of the periodic medical examination.

Assessment of colour vision at pre-employment/pre-placement is done using the Ishihara Colour Vision Test. Individuals with colour vision defects who pass the CNLAN or RTC colour vision test are to be retested at the time of every second periodic medical examination (i.e. every 6 years) only for individuals over age 40. Those who do not pass the CNLAN or RTC colour vision test on retesting are required to undergo further assessment including a practical test developed by each railway company.

The Chief Medical Officer (CMO) may determine different periodicity for those individuals who have symptoms or signs of visual disorders or who are at risk of developing such disorders.

3.2 Testing methods:


Distant and near acuity, visual fields, colour vision and extra-ocular muscle balance assessments may be done by a physician, an optometrist, a nurse or a trained technician duly authorized by the CMO in accordance with current testing protocols (as described in Appendix II).

4. Individual assessment

The CMO may authorize an individual who does not meet the criteria to occupy a SCP if the CMO has reasons to believe that the individual can perform their duties in a safe manner despite their visual disorder.

In doing so, the CMO will take into consideration the following:

- the specific requirements of the position;
- the opinion of an ophthalmologist or an optometrist who has examined the individual; and
- any relevant ability, skill or experience of the individual.

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The CMO may also require that a practical test be performed before allowing an individual to occupy a SCP.

5. Guidelines for some exceptional cases

5.1 Refractive surgery

5.1.1 LASIK¹, LASEK² and PRK³ procedures

Individuals who had LASIK, LASEK or PRK procedures cannot be considered fit to work in a SCP until they are documented to have:

- a visual acuity (corrected or uncorrected) that meets the standard by at least day 7 post-op
- developed no complications, and a report from an eye care specialist that considers them fit to return to work

Additional reports are required by at least one month and three months post-op verifying that the individual continues to meet the visual acuity requirements and no complications have developed.

5.1.2 RK⁴, CK⁵ and LTK⁶ procedures

Individuals who had RK, CK or LTK procedures cannot be considered fit to work in a SCP until they are documented to have:

- a visual acuity (corrected or uncorrected) that meets the standard by at least day 7 post-op*
- developed no complications, and
- a report from an eye care specialist that considers them fit to return to work

¹ Laser Assisted In-Situ Keratomileusis


² Laser Subepithelial Keratomileusis

³ Photorefractive Keratectomy

⁴ Radial Keratotomy

⁵ Conductive Keratoplasty

⁶ Laser Thermokeratoplasty

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Additional reports are required by at least one month, three months, and 6 months post-op verifying that the individual continues to meet the visual acuity requirements and no complications have developed.

**If the refractive surgery was RK, then the reports should contain the results from two measurements made at different times of day to verify that the diurnal variations are not significant. One assessment should be in the early morning and the other in the late afternoon.*

5.1.3 Implantable Contact Lenses (ICLs)

Individuals who had ICLs cannot be considered fit to work in a SCP until they are documented to have:

- a visual acuity (corrected or uncorrected) that meets the standard by at least day 7 post-op
- developed no complications, and
- a report from an eye care specialist that considers them fit to return to work.

Additional reports are required by at least one month and three months post-op verifying that the individual continues to meet the visual acuity requirements and no complications have developed.


5.2 Monocular Vision

For the present purposes, a monocular individual is a person who has lost the use of one eye or has a visual field in one eye that is less than 40 degrees in any direction. A monocular individual may be deemed as acceptable for a SCP provided that the following conditions are met:

5.2.1 A report by an eye care professional indicates that, with respect to the worse eye, the condition is stable and unlikely to affect the better eye;

5.2.2 With respect to the better eye:

- the vision is corrected to 6/9 or better;

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- the visual field is within acceptable limits. The minimal acceptable visual field limits are defined as:
 - horizontal meridian of 120°
 - vertical meridian of 90°
 - oblique meridians of 90°
 - a continuous visual field within the above limits.
- colour vision is adequate under binocular viewing conditions;
- the eye's adnexa are normal in all other respects.

5.2.3 The individual, following an adequate period of adaptation, has satisfactorily completed a practical test (*) conducted by a person designated by the CMO demonstrating his/her ability to perform his/her duties in a safe manner while maintaining an adequate look-out for other traffic and obstructions

(*) *A practical test or adaptation may not be necessary in all cases. Demonstrated ability to perform tasks similar to those in a SCP that were gained through past work experience may be sufficient.*

5.3 Substandard Vision in One Eye


These are individuals whose worse eye has a corrected central vision of less than 6/15 and a normal peripheral visual field in that eye. Individuals who have a scotoma within the central 10° visual field, but the remaining visual field is normal would also fall into this category. These individuals can be deemed fit for a SCP provided that the following conditions are met:

5.3.1 A report by an eye care professional indicates that with respect to the worse eye:

- the condition is stable and unlikely to affect the better eye;
- the visual field is normal outside the central 10°; and
- the eye's adnexa are normal in all other respects.

5.3.2 With respect to the better eye:

- the vision is corrected to 6/9 or better;
- the visual field is normal; and

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- the eye's adnexa are normal in all other respects.

5.3.3 With respect to binocular viewing conditions:


- colour vision is adequate; and
- diplopia is absent.

5.3.4 An accredited professional concludes that the visual defect is unlikely to interfere with safe performance of duties, and the CMO is satisfied that any relevant ability, skill or experience of the individual has been given due consideration. In certain cases, a practical test may be advised.

5.4 Glaucoma

Glaucoma is an ocular disease where the intraocular pressure is too high for the structures of the optic nerve head to withstand. Glaucoma damages the ganglion cell axons as they are leaving the eye resulting in a subsequent vision loss. The loss usually begins in the peripheral visual field and eventually progresses to include the entire visual field if the condition is not treated. Glaucoma can affect one eye or both eyes. In the case that both eyes are affected, the visual field loss is usually worse in one eye. Patients usually do not report symptoms until the later stages of the disease when their visual acuity is affected. The most common treatment is to use ophthalmic drops to lower the pressure in the eye. The primary concern for a person in a safety critical position is that any reduction in their visual field, visual acuity, or colour vision does not impair their job-related performance.

A report from the eye care professional is required within the first year of the diagnosis. This report must include corrected visual acuities, color vision and visual fields results. A second report is required one year later to document that the condition has remained stable. If the visual fields, visual acuity and colour vision have remained stable, then subsequent reports would only be required on an individual basis depending on any visual changes noted on the periodic medical assessments and/or as reported by the eye care professional. Monitoring for other cases will be determined on an individual basis in consultation with the treating eye care professional.

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Appendix I - Background Information on Vision

For decades, safety of railway operations has been a concern. This is acknowledged in the Railway Safety Act which has been enacted further to the National Transportation Act. The Railway Safety Act incorporated a prior General Order on the Railway Vision and Hearing Examination Regulations known as the General Order O-9.

Amended the last time in 1985, General Order O-9 has been revoked and is now replaced by the Railway Medical Rules. These rules allow health professionals to assess accurately and equitably the capacity of individuals with impaired vision to occupy a Safety Critical Position (SCP).

Visual Acuity


In general, the recommended standards are similar to those used for commercial drivers in Canada. Most Canadian provinces require a minimum distance acuity of 6/9 (20/30) corrected or uncorrected for the better eye and 6/15 (20/50) corrected or uncorrected for the worse eye. It is anticipated that the majority of individuals between the ages of 18 and 60 years old should be able to meet the proposed distance acuity standards.

A near vision standard is maintained to ensure that individuals over age 40 have the proper spectacle correction in order to read and carry out tasks within arm's length efficiently. It may also identify a small number of moderate hyperopic individuals under age 40 who may benefit from a correction in order to reduce eyestrain.

Refractive Surgery

The primary concern with refractive surgery procedures and individuals who occupy a SCP is that their vision may fluctuate so that they no longer meet the standard due to the regression of the refractive error, changes in the corneal transparency, or both. The main safety concern is whether the individual's acuity would decrease below the standard without them being aware of the change.

The degree of the fluctuation and the time required for vision to stabilize depend on many factors. These factors include the type of surgery, the amount of the surgical correction, and the individual's healing characteristics. In certain cases, individuals may require longer than 6 months for the vision to stabilize. Others, particularly those with small myopic refractive errors, may be fit to return to work by 7 days post-op, providing

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their visual acuity is stable. (Acuities are considered to be stable when the values are within ± 3 letters on separate visits) A review of the literature indicates that the majority


of patients who meet this criterion for stability at one week after laser surgery also meet the criteria at 6 months although there is a slight change in the mean refraction towards myopia between one and three months. The tendency to regress towards myopia is the reason for the reports verifying that the individual still meets the visual requirements.

Although some procedures offer the possibility of stable vision relatively quickly, there are other techniques which may require more time for stabilization and healing. This is the reason for requiring reports at more frequent intervals for those individuals who have had radial keratotomy (RK) conductive keratoplasty (CK) and laser thermal keratoplasty (LTK). RK has the additional complication that diurnal fluctuations of the refractive error and visual acuity are still possible long after surgery. For this reason, individuals who have had RK surgery will have to document that their vision still meets the required standard for different times of the day. The times for assessment would be early in the morning and late in the afternoon or early evening. For those individuals on shift work, the different times would be shortly after waking and after being awake for at least 8 hours. It may be necessary for these individuals to have separate pairs of spectacles for day and night in order to meet the visual acuity standards.

Implantable contact lenses (ICL's) are a relatively new option for individuals with moderate to high refractive errors. It is anticipated that these devices will become more common in correcting myopia and hyperopia in the upcoming years. The ICL's are implanted in either the anterior or the posterior chamber of the eye through small incisions. Visual recovery is usually within a day and most individuals have stable refraction and visual acuity after one week. However, because the device requires more evasive surgery, the risk of infection is higher and there is also the risk that the incisions could reopen if they haven't healed properly. Until more experience is obtained with the devices, the decision on when the individual can return to work should be made in consultation with the surgeon.

Visual Fields

Visual fields are usually assessed using the "confrontation" method which is user-friendly, practical and sufficient to detect quadrantanopias and hemianopias. These visual field losses are large enough to have a detrimental effect on individual's performance resulting in an unacceptable risk to the safety of the individual and others. The simplicity of the confrontation concept has led to a multitude of techniques for performing the test. Some techniques are better than others. The recommended procedure is "finger counting". The finger-counting procedure is primarily intended as a screening test. If a defect is found, then further testing will be necessary to diagnose

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the cause and quantify the functional impact of the field loss. The recommended test conditions are designed to quantify an absolute loss.

The size and contrast of the targets (which have approximately equal detectability) are designed to measure the maximum extent of the visual field. Each eye should be tested. Different testing conditions may be required for diagnostic purposes.

It is possible that a person with a visual field loss might be able to compensate by making additional eye and head movements. Nevertheless these individuals may not be suitable for certain SCP's. Operating equipment on the main track may not be a problem because the necessary scanning movements are mostly along the near horizontal meridian and at the instrument panel. However, someone working in a large yard or along multiple sections of track may be at greater risk because equipment could be moving on any of the closely-spaced sections of track; the loss of peripheral vision may impair his/her ability to detect moving objects in sufficient time. For these reasons, individuals with a visual field impairment should be considered on an individual basis with a practical evaluation if necessary.

Extra-ocular Muscle Balance


Screening for extra-ocular muscle disorders that could result in double vision is accomplished, in part, through the medical history. A history of double vision, strabismus, turned eye, eye exercises, or a lazy eye require further assessment. There are also a number of systemic conditions where there is an increased likelihood of diplopia. Examples of these conditions include Grave's disease (i.e. hyperthyroidism), diabetes, stroke, multiple sclerosis, and myasthenia gravis.

The visual acuity standard is the other part of the screening process. Failure to meet the acuity standard in the worse eye may be a result of a strabismus or long-standing ocular muscle problem, particularly in the younger individuals.

Individuals who have been identified as being at risk for developing diplopia either by their medical history or visual acuity should be assessed further by an eye care professional.

Colour Vision

Assessment of colour vision is particularly important in railway operations as colour signals are extensively used to control the movements of trains. The use of the Ishihara plate method remains the best screening tool as it is inexpensive, sensitive and specific. The recent development of an improved Lantern Test makes the confirmation process

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more accurate as it identifies those individuals who are at risk because of their colour identification deficiency.

Coloured spectacle or contact lenses worn before one or both eyes, or other devices purported to aid colour discrimination or correct colour vision deficiencies, are not permitted. It is safe to make the general statement that these devices are primarily designed so that the individual passes the Ishihara (or equivalent) test. On most practical tests, performance usually does not improve unless the practical test is very similar to the colour vision demands of the Ishihara. The reason for the discrepancy is that in aiding discrimination for certain specific colours, the filters usually worsen discrimination for other colours, resulting in no overall improvement in their general colour discrimination capabilities. For example, a red coloured lens which blocks green light from reaching the eye would allow a person to pass the Ishihara test because the orange numbers would appear brighter than the green background while wearing the red lens. However, when the person is required to identify signal lights while wearing the lens, the green light would appear to be as very dim yellow or white light if they are detected at all and the yellow light would appear as an orange or red light.

One question that is often raised concerns the frequency for retesting colour vision. The reason for the question is that for the vast majority of individuals with normal colour vision, their colour vision remains unchanged throughout their career. This reflects the general trend in the population that colour discrimination remains relatively stable until age 40. Even though colour discrimination begins to worsen at this age, the discrimination loss is along the blue-yellow axis and not the red-green axis so that one's ability to identify railway signals should not be impaired. Data from the CNLAN study support this hypothesis. Individuals over age 40 with normal colour vision did not do worse in identifying simulated wayside signal lights. In fact the general trend in the data was that the older subjects had fewer errors than the younger subjects.

Given that there is little risk of a healthy individual's red-green colour vision deteriorating during their career, individuals who pass the Ishihara test at their initial assessment are not required to redo the test UNLESS there is a change in their general health or the health of their visual system. Conditions that would warrant retesting and frequent monitoring of their colour vision include diabetes, demyelinating diseases, chorioretinal diseases, optic nerve disorders, or prescribed medications that are known to affect colour vision.

Although the age-related changes in colour vision are well established for individuals with normal colour vision, the age-related affects on the colour vision of individuals with congenital colour vision defects is not as certain. In these cases, the issue is whether the normal age-related changes affect their colour discrimination to a greater extent since their discrimination is already compromised. Results on the Ishihara test are

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inconclusive since the majority of the individuals with colour vision defects miss nearly all the plates on the test even when they are young adults so it is impossible to measure

any age-related changes with the Ishihara test. Because of this uncertainty, individuals with a colour vision defect who pass the CNLAN or the RTC colour vision test are to be retested at every second periodic medical examination after age 40 (every 6 years) regardless as to whether their visual or general health has changed.

Monocular Vision

There is little question that an individual's performance on a number of laboratory tests will be impaired when there is either a sufficient reduction in the visual acuity in one eye or the individual is monocular. However, these degradations in laboratory measures do not usually translate into appreciable losses in on-the-job performance. Performance in terms of driving either a truck or automobile has not been shown to be significantly affected when the driver is monocular. Although some studies have reported higher accident rates for drivers with impaired vision in one eye only, more recent studies have not been able to confirm these findings. In fact, one study reported that the accident rates were lower for monocular truck drivers. One possible explanation for the differences is that the older studies did not always control for age and driving experience. Despite the more recent performance data indicating that monocular drivers do not pose an increased risk, many agencies still remain reluctant to relax the visual field standard for commercial drivers to allow monocular drivers. It is important to remember that, although individuals with monocular visual fields losses may not be a safety risk, there is a general consensus in the data that individuals with an appreciable field loss in both eyes are a significant risk to safety.

Although monocular individuals may not pose an increased risk to safety on the roadways, driving a vehicle is not necessarily equivalent to performing duties in the rail industry. For this reason a more conservative approach is taken in assessing individuals who are monocular or have substandard vision in one eye to ensure that the vision defect will not pose an increased risk to safety. One of the primary safety concerns for the rail industry is the impact of the visual field loss on the person's ability to detect hazards. A person who has lost total vision in one eye has lost approximately 40 ° of his/her peripheral visual field on the same side of the body as the blind eye. This loss could be problematic in detecting objects coming from the side if the person has not developed coping strategies such as scanning eye movements, head turning, or both. The development of these strategies often requires time and this is one reason why Civil Aviation Authority typically uses an adaptation period of 6 months before they will re-license a pilot who has lost vision in one eye and restrict a monocular commercial pilot to a 2-person crew.


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Even with the additional eye and head movements, a person with only one eye (or a bilateral loss of upper or lower visual fields) may not be suitable for a SCP. Operating equipment on the main track may not be a problem because the necessary scanning movements are mostly along the near horizontal meridian and at the instrument panel. However, someone working in a large yard or along multiple sections of track may be at greater risk because equipment could be moving on any of the closely-spaced sections of track and the loss of peripheral vision may impair his/her ability to detect moving

objects in sufficient time. For these reasons, individuals with visual field impairment should be considered on an individual basis with a practical evaluation if necessary.

Visual Assessment Form

In order to assist the examining practitioner and the CMO, an example of a visual assessment form is provided in Appendix III. This form could serve as either the actual document or a template for developing an equivalent form.

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Appendix II - Visual Assessment Methods

1. Visual Acuity


1.1 Distant acuity

Distant acuity is assessed with the individual wearing his/her habitual distance visual correction (if any), using a Snellen chart or an equivalent.

When acuity charts printed on white surface are used, the light falling on the chart should be uniform and the amount should be greater than 250 lux. Most offices with overhead fluorescent light fixtures will meet this requirement. If the chart is placed at the end of a long hallway, then adequate illumination should be confirmed with a light meter. Long hallways tend to be dimmer than the work areas. Glare sources such as windows are to be away from the chart. The individual being assessed should not sit or stand directly below a light.

If a projected chart or computer screen is used, the room lights should be turned off prior to the assessment.

The individual is allowed only one mistake on a line in order to receive credit for that line. The proposed scoring criterion of allowing only one mistake on a line is explained by the fact that different charts are used in testing distant acuity. These charts vary in the number of letters per line and the types of letters in the line. All letters are not equally difficult to identify. These variations have an influence on the probability that the assessed individual would correctly identify the letters based on guessing and prior experience. For example, it would be easier to obtain 75% correct on a chart with 4 letters per line that are relatively easy to identify than it would be for a chart which had 6 letters per line and the letters vary in their difficulty. Because this factor is difficult to control when using multiple chart designs, there is a necessity to adopt a strict scoring criterion to minimize the interaction.

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1.2 Near acuity

Near vision is assessed with the individual wearing his/her habitual visual correction for reading (if any), using one of the following scales:

Reduced Snellen (American)	Reduced Snellen (Metric)
Snellen (Metric)	M Notation @ 40 cm
N Notation @ 35 cm or 40 cm	Jaeger Notation @ 35 cm or 40 cm

Examiners must use the appropriate test distance specified for the given scale. Testing is done with individuals wearing their current visual correction for reading. Normal office lighting is sufficient. There should be no shadows falling on the near acuity card.


An adequate screening test for near acuity is the recognition of text printed in regular Times New Roman Font at an 8 point letter size held at 40 cm. (Refer to Part 3-A of the Periodic Medical Report Form under Subsection 5.3).

2. Visual fields

Visual fields are assessed using the confrontation method. If a defect is found, then a more quantitative method should be used.

2.1 Recommended procedure (confrontation method)

- The individual is positioned 0.66 to 1.0 metre away from the examiner. The examiner should be positioned at approximately the same height as the individual. Individuals do not need to wear their corrective lenses but those with higher prescriptions may find the test easier to perform when wearing their habitual prescription. Normal office lighting is sufficient.
- The individual is instructed to occlude his/her left eye using the palm of his/her hand. The examiner occludes or closes his/her right eye.
- The individual is instructed to fixate the examiner's open eye with his/her open eye. The examiner informs the individual that he/she will be holding his/her hand in different locations to test the individual's side vision. The individual is to report how many fingers are held up. The examiner informs the individual that he/she will be holding up 1, 2, or 4 fingers. (3 fingers are difficult to distinguish from 2 or 4.) The

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- examiner reminds the individual to maintain fixation on the open eye and not to glance at the hand.
- The examiner holds his/her hand about halfway between him/herself and the individual. The examiner starts with his/her hand in one of the four quadrants approximately 50 degrees from the common line of sight. The hand should be placed in the middle sector of the quadrant. (Other areas of the quadrant can also be tested.) The examiner holds up 1, 2, or 4 fingers and asks the individual to tell how many fingers are present. Fingers should be kept in a plane parallel to the individual's facial plane and rotated so that the fingertips are directed toward the individual's line of sight.
- The examiner repeats this procedure for the other 3 quadrants.
- The examiner may have to switch hands to test the other half of the visual field.
- If the individual responds incorrectly, the examiner moves his/her fingers closer to the individual's line of sight until the number of fingers is identified correctly. The examiner compares the difference in position between when he/she was first able to identify the number of fingers correctly and the position of his/her hand when the individual identified the number of fingers correctly.
- The procedure is repeated for the other eye.

2.2 Quantification of field loss.

In order to assess the functional extent of field loss, any of the following test methods could be used. Other test conditions may be necessary for diagnostic purposes.

LIST OF EQUIVALENT TEST METHODS

- 3 mm white target at 33 cm viewing distance (black or grey background).
- Goldmann Perimeter: Target III 3/e.
- Humphrey Perimeter: Size III at 15 decibels.
- Octopus 1-2-3 Perimeter: Size III at 10 decibels.
- Dicon Perimeter: 10 decibel target.

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3. Colour vision

Colour vision is screened using the Ishihara Colour Vision Test. This test is designed to be used under natural daylight. If natural daylight is unavailable, "natural daylight" fluorescent lamps may be used. In practice, normal "cool white" fluorescent lamps are sufficient for the vast majority of individuals. A few individuals with very mild defects may pass using this light source. Although they do pass, they usually make more errors than an individual with normal colour vision. This means that, if an individual makes the maximum number of allowable errors when cool white fluorescent lamps are used, this individual should be re-tested using natural daylight or light source that is rated as comparable a suitable substitute for natural daylight.

Incandescent bulbs, halogen or warm white fluorescent lamps should not be used to illuminate the Ishihara test.


When scoring the test, the individual has to read the complete number correctly in order for the response to be counted as correct. Missing one digit of a two-digit number is an error.

4. Extra-ocular muscle balance

The medical history can be used to identify individuals who are at risk of developing double vision while at work. These risk factors include a past history of double vision, strabismus, turned eye, lazy eye, eye training exercises, or extra-ocular muscle surgery. There are also a number of systemic conditions that are associated with an increased risk of diplopia. Examples include Grave's disease (i.e. hyperthyroidism), diabetes, stroke, multiple sclerosis, and myasthenia gravis. Individuals who have any of these risk factors should be assessed further by an optometrist or ophthalmologist to determine the likelihood of developing double vision.


Failure to meet the acuity standard in the worse eye may be a result of a strabismus or long-standing ocular muscle problem, particularly in the younger individuals. Individuals who fail to meet the worse eye acuity should also be referred to determine the cause of the reduced visual acuity and whether diplopia is likely.

Diplopia within 30 degrees of fixations can be tested by the Broad H test. The Broad H test is common screening procedure to test the integrity of cranial nerves III, IV, and VI. The examiner asks the individual to follow his pen (or similar object) without moving their head as the examiner traces out an "H" pattern in front of the individual. The examiner starts with the pen directly in front of the individual and moves it slowly to the right approximately 30 degrees straight along a horizontal line. From this

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location, the examiner then moves the pen up 30 degrees, back down to the horizontal line and then down another 30 degrees in the inferior gaze. The pen is returned back to the horizontal line and then moved back through the straight ahead position to a point 30 degrees to the left of straight ahead. The upper left and lower left gaze positions are then tested by moving the pen up and down 30 degrees.

The examiner looks at the individual's eyes to make sure that they are both fixating on the target and asks the individual to report whether the pen appears double in any position. A report of diplopia or a misalignment of the eyes in any position would warrant further assessment by an eye care professional.

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Appendix III - Vision Reporting Form Example

Employee Information (Employee to complete all areas)		Employee No.	Male Female
Last Name	First Name		☐ ☐
Initial		Date of Birth:	
Position	Department	Work Location	Telephone: (Home) (Office)
Supervisor's Name	Employee's Signature		

Information to the Examining Eye Care Specialist

Canadian railway employees working in a Safety Critical Position (SCP) operate or control the movement of trains. Physical or mental fitness is mandatory. Impaired performance due to a medical condition could result in a significant incident affecting the health and safety of employees, the public, property or the environment.

Railway employees working in a SCP are required to have periodic screening assessments. This employee failed to meet the visual screening standard established for the Canadian railway industry by Government Legislation in the area(s) checked below. Your assessment of these areas is required. The established standard for each area is described.

SECTION A


Visual Acuity

Standards:

Corrected or uncorrected distance visual acuity not less than 6/9 (20/30) in the better eye.

Corrected or uncorrected visual acuity not less than 6/15 (20/50) in the worst eye.

Corrected or uncorrected near visual acuity of 6/9 (20/30) with both eyes open.

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	Distance Vision		Near Vision	
	Uncorrected	Best Corrected	Uncorrected	Best Corrected
Right Eye				
Left Eye				
Both Eyes				
Test Method				

1. If new glasses or contact lenses are required to meet the vision standards, have they been prescribed?

- Yes. Anticipated date of dispensing _____
- No. Explain: _____


2. Even though the acuity standards are met with an updated prescription, are there other conditions contributing to the reduction in visual acuity other than uncorrected refractive errors?

- Yes. Indicate diagnosis and management.

- No

3. If the best corrected visual acuities do not meet the required standard, indicate your diagnosis and management of this patient's condition.

4. If the better eye does meet the acuity requirement, but the worse eye does not meet the acuity requirement, then we require an extra-ocular muscle assessment as outlined in Section B and visual field assessment of each eye as outlined below in Section C.

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SECTION B


Extra-Ocular Muscle Balance

Standard: No diplopia at different eye positions within a 30 degree radius of their straight-ahead gaze or a restriction of eye movements within 30 degrees of straight-ahead.

- a. Is diplopia present within a 30 degree radius of straight-ahead gaze under daytime or night time viewing conditions?
 Yes No

- b. Are there any restrictions of eye movements within 30 degrees of straight-ahead?
 Yes No

If “Yes” to either question, please indicate your diagnosis and management of the extra-ocular muscle or binocular vision problem.

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SECTION C

Visual Fields/Peripheral Vision


1. Does this employee meet the following limits of uninterrupted monocular visual field for each eye tested separately without correction?

Standard	Right Eye		Left Eye	
	Yes	No	Yes	No
Horizontal meridian: 120° Continuous				
Vertical meridian: 90° Continuous				
Oblique meridians: 90° Continuous in both the 135° and 45° meridians				

2. If “No” is answered to any of the above limits, please attach the results and indicate your diagnosis and management of the visual field problem.

3. Indicate test method used:

- 5 mm white target at 33 cm viewing distance (black or grey background)
- Goldmann: Target III 3/e
- Humphrey: Size III at 15 decibels
- Octopus 1-2-3 Size III at 10 decibels
- Dicon Perimeter: 10 decibel target
- Equivalent Condition (Specify) _____

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EYE CARE SPECIALIST STATEMENT, INFORMATION AND REPORTING GUIDELINES:

An answer to the following is required:

Are there other visual conditions or disorders that could affect this employee's performance in a Safety Critical Position in the Canadian railway industry?

Yes. Indicate diagnosis and management.

No

This report will be used to make an assessment on this employee's fitness for duty and constitutes a third party service. In completing this report, please be thorough and write legibly. If you have any questions regarding any component of this report, call the toll-free number listed below.

I certify that the information documented in this report is, to the best of my knowledge, correct.

Date of examination: _____

Signature: _____


- Optometrist
 Ophthalmologist

Name (Print): _____ Telephone: () _____

Address: _____ Fax: () _____

City/Province: _____ Postal Code: _____

Report and Invoice may be sent to:

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Appendix IV - CNLAN - Lantern Colour Vision Test

Introduction

The Lantern Colour Vision test is designed to determine one's ability to identify colours used in rail wayside signals. The intensity and size of the lights are equivalent to a viewing distance between 0.2 and 0.4 mile (0.3 to 0.64 km). The colours fall within the American Association of Railroads standards for wayside signals.

Test Description

The test should be conducted under normal office illumination. Normal room illumination assumes a windowless office. If there are windows, then any drapes or blinds should be closed to avoid glare from the sunlight. If you cannot block the sunlight, then you will have to use a different room for testing.


There are three parts to the Lantern: the lantern itself, the control unit and a remote control unit. There is a slot on the back of the lantern for carrying the control unit. The unit should be placed in the slot with the top facing away from the lantern and the connectors facing up. The remote control is attached to the control unit.

A computer cable connects the control unit to the lantern. On the left front of the lantern, is a connector for the control unit. (Just above the plug for the power cord). The control unit also has an RS232 connection so that a computer can control the lantern if desired.

Test Set-up

Place the lantern 4.6 metres from the applicant. Remove the control unit from the back. If necessary, connect the control unit to the lantern using the computer cable. The control unit can be placed anywhere convenient. We recommend placing it so that you view both the applicant and the lantern. The power switch is on the right side of the lantern. This switch controls power for both the lantern and control unit. As the power comes on, the control unit will set the lantern to the first example set. The colour of the lights will be listed on the control unit display.

Pressing the arrow buttons on the control panel changes the test lights. The arrow pointing to the left displays the previous set of lights and the arrow pointing to the right

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advances to the next set of lights. The lights will be extinguished between presentations by pressing the button labelled with the “X”. This button turns off the lantern’s light, but the control unit remains on. To turn the lantern on, press one of the arrow buttons.

The test lights can also be changed by the remote control. The asterisk on the remote control presents the previous set of lights and the pound button (#) advances to the next set of lights. The number buttons can be used to move to a specific set of test lights. To present a specific set, you must always press two buttons. For example, to display set 5, you must press 0 and 5.

Aim the remote control at the dark rectangular window on the control unit. If the control unit received information from the remote, a little red light will flash. A light on the remote will also flash if the information was transmitted. Pressing 0 twice will turn off the tests lights.

We recommend that you turn off the lantern test lights, if not the entire lantern, between tests. The reason is that there is a thermostat which will turn off the light if the lantern gets too hot. It takes about 45 minutes before it cools down enough to use.


Testing Procedure

Before starting the test, make sure that the individual meets the current distance visual acuity standards.

The individual’s normal clear spectacle lenses or clear contact lenses can be worn while performing the test. However, coloured spectacle lenses or coloured contact lenses worn before one or both eyes or other devices purported to aid colour discrimination or correct colour vision deficiencies are not permitted. Contact lenses, which are tinted with a light blue handling tint, are permitted. Light handling tints have essentially no effect on the test results. However, if there is any question as to how light the tint is, then testing must be done with either clear spectacle lenses or clear contacts lenses.

The candidate should be seated comfortably at a distance of 4.6 metres (15 feet) from the lantern and have a straight-on view of the front of the lantern. The room lights should be turned on, but the drapes or blinds should be closed to block out the sunlight. Avoid positioning the patient directly underneath an overhead light to minimize glare from the lights.

Set the lantern to the first presentation, Example 1, if necessary. This is one of the two examples.

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Inform the candidate that:

- “This is a test to determine your ability to identify rail signal light colours.”
- “There will always be three lights presented. The colours of the lights will be any combination of red, green and yellow. Only the names of red, green and yellow should be used to identify the lights.”
- “Identify the colour of the lights starting at the top, followed the middle, and then the bottom.”
- “This set of test lights (EXAMPLE 1) has an example of each of the three colors. The top one is green, the middle one is yellow and bottom is red.”

Advance to the next presentation, EXAMPLE 2 and state.

- “This is another example of the colours. The top is red, the middle is yellow and the bottom is green.”
- “Are there any questions or would you like to see the examples again”.

After answering any questions or showing the examples again, advance to the third set of lights. This is the first test set. Record the responses on the score sheet by circling the correct answer or writing in the incorrect response.

Allow approximately 5 seconds for a response. If the candidate takes longer than 5 seconds to respond, extinguish the lights, by pushing the “X” button or entering 00 on the remote. In order to avoid confusion in recording, do not advance to the next set until the candidate has responded.

If the candidate uses a colour name other than red, green or yellow, remind her/him that only red, green and yellow responses are allowed. The exception to this rule is that amber can be used to identify yellow lights.

A passing performance at the 4.6 metre distance is no more than one error, and that error cannot be identifying a red light as green or a green light as red.

If the person fails at the 4.6 metre viewing distance then repeat the test at progressively shorter viewing distances listed in Table 1 until they either pass the lantern or fail at all distances. Make sure that you start at a different number on each trial, but do not present the two Examples as part of the test series. A perfect score is required at each of the shorter distances in order to pass the lantern.



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TABLE 1

Test Distance	Pass/Fail Criterion	Equivalent Viewing Distance
4.6 metres (15 feet)	One error is allowed providing that the error is not a red response for a green test light or a green response for a red test light.	320 to 640 m (350 to 700 yds)
2.3 metres (7 feet 6 inches)	Any error is a failure	160 to 320 m (175 to 350 yds)
1.15 metres (3 feet 9 inches)	Any error is a failure	80 to 160 m (90 to 175 yds)
0.575 metres (1 foot 11 inches)	Any error is a failure	40 to 80 m (45 to 85 yds)

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4.4 – Epileptic Seizures

Medical Guidelines for the Employment of Individuals with Epileptic Seizures in Safety Critical Positions in the Canadian Railway Industry

1. Introduction

Canadian railway employees who work in a Safety Critical Position (SCP) operate or control the movement of trains. Physical and mental fitness is mandatory. Impaired performance due to a medical condition could result in a significant incident affecting the health and safety of employees, the public, property or the environment. Sudden impairment of their alertness, judgement, or sensory or motor function can pose a serious safety threat.

Although the overall prognosis for seizure control is excellent, with about 70% of patients having a 5-year remission of seizures, epilepsy is a condition that can cause sudden and unpredictable impairments of the functions noted above. Each person with epilepsy has different disabilities. Complete evaluation of each case is therefore needed to assess the risk of seizure recurrence and the risk to safety caused by a seizure. The notion of "significant risk" cannot be precisely defined. A risk-free environment is unattainable and undoubtedly some employees with no history of epilepsy will have their first and unpreventable seizure on the job.


Background information on epilepsy and other epileptic seizures is provided in Appendix I.

2. Basic considerations

Employment of individuals with epilepsy or other epileptic seizures in a SCP shall be guided by the following considerations:

2.1 Medical history and findings

- nature of seizure disorder
- results of investigations
- adherence to treatment protocols
- results of treatment

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2.2 Treatment

- antiepileptic drugs (AEDs)
- surgery
- medication withdrawal

2.3 Nature of the job


3. Definitions

In this document, the following definitions are used in accordance with a 1997 report of the International League Against Epilepsy:¹

- **Epileptic seizure** is defined as a clinical manifestation presumed to result from an abnormal and excessive discharge of a set of neurons in the brain. The clinical manifestation consists of sudden and transitory abnormal phenomena that may include alteration of consciousness, motor, sensory, autonomic, or psychic events perceived by the patient or an observer.
- **Epilepsy** is a disorder of the brain characterized by an enduring (but not necessarily permanent, as in some childhood epilepsies) predisposition to generate epileptic seizures and by neurobiological, cognitive, psychological and social consequences of this condition. The definition of epilepsy requires the occurrence of at least one epileptic seizure.² Often, seizure recurrence is required to diagnose epilepsy. However, investigation may show that there is good reason to believe that another seizure is likely to occur, such as the finding of epileptiform activity in the EEG. Many authorities will diagnose epilepsy in such cases.
- **Single (isolated) seizure** is defined as one or more epileptic seizure(s) occurring within a 24-hour period, without later recurrence.

¹ Epilepsia, 38 (5): 614-618, 1997

² Epilepsia, 46 (4): 470-472, 2005


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- **Unprovoked seizures** are defined as seizures that occur likely in relation to antecedent conditions that have affected the central nervous system (CNS) substantially increasing the risk for epileptic seizures. These conditions include non-progressive (static) lesions such as sequelae of infections, cerebral trauma, or cerebrovascular disease, and progressive CNS disorders.
- **Acute symptomatic seizures** are defined as seizures occurring in close temporal association with an acute systemic, metabolic, or toxic insult or in association with an acute CNS insult (such as infection, stroke, cranial trauma, intracerebral haemorrhage, or acute alcohol or drug intoxication or withdrawal). Such seizures are often isolated epileptic events associated with acute conditions, but may also be recurrent seizures or even status epilepticus when the acute conditions recur. (e.g., in alcohol withdrawal seizures).
- **Simple partial seizures** are seizures with evidence of a clinical partial onset, in which alertness and ability to interact appropriately with the environment are maintained.
- **Complex partial seizures** are seizures of partial onset in which altered consciousness, amnesia, or confusion during or after a seizure is reported.
- **Auras** are a type of subtle simple partial seizure that may herald the onset of a clinically evident attack.

4. Medical Fitness for Duty Criteria

4.1 Single (isolated) or unprovoked seizures before a diagnosis is made

- Remove from any safety critical activity
- Get neurological assessment including EEG with awake and sleep recordings and appropriate imaging
- If no epilepsy diagnosis following medical assessment, resume safety critical activity if seizure-free for 12 months
- If epilepsy diagnosis following medical assessment: see 4.2.1.

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4.2 Epilepsy:

4.2.1 Epilepsy diagnosis

- 5 years seizure-free with or without medication
- No epileptiform activity in an EEG performed within 6 months before returning to work.
- After returning to work, no overtime and no rotating shifts resulting in sleep deprivation or the likelihood of disturbed sleep patterns.

4.2.2 After surgery to treat intractable epileptic seizures

- 5 years seizure-free on medication or 3 years seizure-free off medication
- No epileptiform activity in an EEG performed within 6 months before returning to work

4.2.3 With epileptic seizures occurring in relation to sleep only


- Absence of post-ictal impairment during wakefulness
- Treatment with AEDs
- 5 years seizure-free with or without medication

4.2.4 With strictly simple partial seizures (including auras)

- No significant impairment of cognitive, sensory, or motor function.
- Treatment with AEDs
- Stable clinical pattern for 3 years

4.2.5 Antiepileptic drugs withdrawal

- Remove from any safety critical activity from the beginning of the withdrawal
- Return to work no less than 6 months seizure-free after complete withdrawal
- No epileptiform activity in an EEG performed a minimum of 6 months after complete withdrawal
- If seizures recur, return to work no less than 6 months seizure-free after resuming the previous effective medication

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Medication change (new medication)

- Remove from any safety critical activity
- Return to work no less than 6 months after equilibration of the new medication at therapeutic doses, or drug levels, if available
- No seizure recurrence under the new medication
- The new medication is well tolerated
- No epileptiform activity in an EEG obtained on therapeutic doses of the new medication
- If seizures recur, return to work no less than 6 months seizure-free after resuming and equilibration of the effective medication.

4.3 In the case of epileptic seizures other than epilepsy

4.3.1 Acute symptomatic seizures

- 12 months seizure-free
- Seizure trigger clearly identified, eliminated, or unlikely to recur
- No epileptiform activity in an EEG performed within 6 months before returning to work


4.4 Other criteria of temporary exclusion from a SCP of individuals with epilepsy

- Non compliance with treatment
- Inadequate blood AED levels unless specifically addressed in the neurologist's report.
- Side effects from AEDs that could significantly impair job performance

4.5 Criteria of permanent exclusion

- Unprovoked seizures owing to progressive CNS disorders.
- Repeated non-compliance with treatment, including cases of recurring acute symptomatic seizures due to identifiable causes such as alcohol withdrawal or non-medical drug use.

(See Appendix II for Medical Fitness for duty Criteria)


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5. Monitoring requirements before and after returning to work in a SCP

- Within 3 months before returning to work:
 - Review by a neurologist with submission of a written report.
- After returning to work:
 - Annual review by a neurologist with submission of a written report. The duration of the monitoring is to be assessed on a case-by-case basis at the discretion of the treating neurologist.

6. Individual assessment

Individuals with epilepsy or other epileptic seizures must be assessed with regard to their suitability for a particular position. The nature of the duties and responsibilities associated with their specific Safety Critical Position must be closely evaluated before any final determination of their fitness for duty. In a specific case, the CMO may determine different fitness for duty criteria if, after consultation with a neurologist, there is medical evidence that the present fitness for duty criteria should not be applied.

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Appendix I - Background Information on Epileptic Seizures

It is internationally admitted that the seizure-free interval is the main concern in assessing risks of recurrence in individuals with epileptic seizures.

The risk posed by seizure recurrence for individuals in a safety critical position in the Canadian railway industry has not been studied but it should not be greater than for professional motor vehicle drivers in Canada.

In the case of epilepsy, the Canadian Medical Association recommends a seizure-free interval of 5 years for commercial driving.³

The participants at a 1996 workshop representing all members of the European Union declared that people with epilepsy would be fit when the risk of a seizure recurrence in the next year was not greater than 2%. A driving ban of 5-10 years was considered acceptable for a seizure-free subject off medication and with no epileptiform abnormality. In the case of an individual with a single isolated seizure without any known cause, a normal neurological examination and a normal EEG and, on no medication, a seizure-free period of 2-5 years was considered acceptable.


The European studies of Chadwick and van Donselaar on professional drivers⁴ also showed that a 5-year seizure-free period was necessary to obtain a low risk for seizure recurrence (2% or less). This requirement was maintained in the April 3, 2005 report from the Second European Working Group on Epilepsy and Driving.⁵

In this last report, it is also suggested that for provoked seizures, the recurrence risk is not known. In some situations, like seizures provoked by medication or some metabolic diseases that might be cured and will not recur, driving ability might be considered sooner. In others, like sleep deprivation or alcohol, an individual assessment is necessary. Certain brain diseases, like serious cerebral trauma and bacterial or viral brain infections, give a high chance of developing epilepsy. In these situations, a prophylactic ban is to be considered on a case-by-case basis.


³ Determining Medical Fitness to Operate Motor Vehicles, CMA Driver's Guide, 7th Edition

⁴ Epilepsy and Driving, a European View, Arthur E.H. Sonnen, June 1997 p. 85-99

⁵ Epilepsy and Driving in Europe : A Report of The Second European Working Group on Epilepsy and Driving, April 3, 2005


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In these medical guidelines, given the progressive liberalization of international regulations over the past 50 years on epileptic seizures and working activities, the requirements for the seizure-free interval of some types of epileptic seizures have been reduced accordingly.

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Appendix II - Medical Fitness For Duty Criteria

Diagnosis	Criteria
1. Single (isolated) or unprovoked seizures before a diagnosis is made.	<ul style="list-style-type: none"> • Remove from any safety critical activity • Get neurological assessment including EEG with awake and sleep recordings and appropriate imaging. • If no epilepsy diagnosis following medical assessment: resume safety critical activity if seizure-free for 12 months. • If epilepsy diagnosis following medical assessment: see 4.2.1.
2. a) Epilepsy diagnosis	<ul style="list-style-type: none"> • 5 years seizure-free with or without medication. • No epileptiform activity in an EEG performed within 6 months before returning to work. • After returning to work: no overtime and no rotating shifts resulting in sleep deprivation or the likelihood of disturbed sleep patterns.
b) After surgery to treat intractable epileptic seizure	<ul style="list-style-type: none"> • 5 years seizure-free on medication or 3 years seizure-free off medication. • No epileptiform activity in an EEG performed within 6 months before returning to work.
c) With epileptic seizures occurring in relation to sleep only	<ul style="list-style-type: none"> • Absence of post-ictal impairment during wakefulness. • Treatment with AEDs. • 5 years seizure-free with or without medication
d) With strictly simple partial seizures (including auras)	<ul style="list-style-type: none"> • No significant impairment of cognitive, sensory or motor function. • Treatment with AEDs. • Stable clinical pattern for 3 years.

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e) AED's withdrawal:


- Remove from any safety critical activity from the beginning of the withdrawal
- Return to work no less than 6 months seizure-free after complete withdrawal.
- No epileptiform activity in an EEG performed a minimum of 6 months after complete withdrawal.
- If seizures recur, return to work no less than 6 months seizure-free after resuming the previous effective medication.

f) Medication change (new medication):

- Remove from any safety critical activity.
- Return to work no less than 6 months seizure-free after resuming and equilibration of the effective medication.
- No seizure recurrence under the new medication.
- The new medication is well tolerated.
- No epileptiform activity in an EEG obtained on therapeutic doses of the new medication.
- If seizures recur, return to work no less than 6 months seizure-free after resuming and equilibration of the effective medication.

3. Acute symptomatic seizures:

- 12 months seizure-free.
- Seizure trigger clearly identified, eliminated or unlikely to recur.
- No epileptiform activity in an EEG performed within 6 months before returning to work.

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Appendix III - Neurologist Medical Report Form for Individuals with Epileptic Seizures

PART 1 – EMPLOYEE INFORMATION (TO BE COMPLETED BY EMPLOYEE)

Employee Number (if applicable): _____

Name: _____ Date of Birth: _____

Address: _____

Telephone: Home () _____

Postal Code: _____ Work () _____

Supervisor name: _____

Employee’s Declaration and Consent for the Release of Medical Information

I, the undersigned, acknowledge that I occupy a Safety Critical Position.

I declare that the information that I have provided or will be providing to the examining neurologist is truthful and complete. I understand that if I knowingly have provided false information I might be subject to action by the railway company up to and including dismissal.

I consent for the examining neurologist to release to the Office of the Chief Medical Officer of the railway company any information concerning my neurological status, past or current. I also consent for representatives from the Office of the Chief Medical Officer to discuss any details of this assessment. I understand that this information will be reviewed for the purpose of making a fitness to work determination. This consent is valid for six months from the date of signature.

Witness**Signature of Candidate/Employee****Date**

PART 2 - PHYSICIAN STATEMENT, INFORMATION AND REPORTING GUIDELINES

This individual is suffering from epilepsy or from another seizure disorder. This report will be used to make an assessment of his fitness to work and constitutes a third party service. In completing this report, please be thorough and write legibly. If you have any questions regarding any component of this form, call the toll free number listed below for assistance.

Applicant’s/Employee’s Name _____ I certify that the information which I have documented in this report is, to the best of my knowledge, correct.

Date of examination on which this report is based _____

Physician’s Name (Print): _____

Address: _____

City/Province: _____ Postal Code: _____


Physician’s Signature
 Family Physician/General Practitioner
 Certified Specialist in _____

Telephone: () _____
 Fax: () _____

The contents of this report are the property of the Railway Company.
Reports may be sent by regular mail or courier to:

FOR ASSISTANCE REGARDING ANY COMPONENT OF THIS REPORT, CALL TOLL FREE 1-xxx-xxx-xxxx



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PART 3 – TO BE COMPLETED BY THE NEUROLOGIST

A: Diagnosis

How long has the examined individual been your patient? _____

Date of first seizure: Y: _____ M: _____ D: _____

Date of last seizure: Y: _____ M: _____ D: _____

Describe prodrome, pre-ictal and post-ictal symptomatology and duration: _____

Diagnosis (According to the International Classification): _____

Describe all precipitating factors: _____

Aside from seizures, does the examined individual's health condition include other neurological symptoms or signs?
 Yes: _____ No: _____
 If yes, please provide details: _____

Is there any other medical condition that could impact the safety of the railway operations: Yes: _____ No: _____
 If yes, please provide details: _____

B: Treatment


Current treatment: _____

Does the examined individual adhere to his/her treatment? Yes: _____ No: _____

Is the examined individual free from side effects from treatment? Yes: _____ No: _____
 If no, please provide details: _____

Has the examined individual been adequately educated on his/her condition? Yes: _____ No: _____
 If no, what will be your recommendation to the individual? _____

Did the examined individual ever have surgery for his condition? Yes: _____ No: _____
 If yes, please give date and describe procedure: _____

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C: Neurological Examination

Is the examined individual currently free from abnormal neurological findings?	Yes: _____	No: _____
If no, please provide details: _____ _____ _____		

D: Additional reports


<p><u>IMPORTANT</u></p> <p>1 -The results of an EEG performed during the past 6 months must be attached to this medical report. (This is <u>not</u> required as part of the monitoring after return to work).</p> <p>2 - Please, attach copies of all Antiepileptic Drugs blood levels performed during the last year.</p>
--

E: Fitness to work

<p>The Chief Medical Officer would appreciate your professional opinion on the examined individual's fitness to work in a position that is critical to the safety of the public, other employees and himself/herself.</p> <p>Comments:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>In order to assess the examined individual's capacity for occupying a Safety Critical Position in the Canadian Railway Industry, would you recommend that the individual be medically assessed by a physician appointed by the railway company? Yes: _____ No: _____</p>
--

F: Physician's identification

Name: _____ Date of examination: Y: _____ M: _____ D: _____
Address (in full): Street: _____
City: _____ Province: _____ Postal Code: _____
Telephone: _____ FAX: _____
_____ Signature
Date: Y: _____ M: _____ D: _____

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4.5 - Mental Disorders

Medical Fitness for Duty Guidelines for the Employment of Individuals with Mental Disorders in Safety Critical Positions in the Canadian Railway Industry


1. Introduction

Canadian railway employees working in a Safety Critical Position operate or control the movement of trains. Physical and mental fitness is mandatory. Impaired performance due to a medical condition could result in a significant incident affecting the health and safety of employees, the public, property or the environment.

These medical fitness for duty guidelines provide an overview of various mental disorders utilizing the terminology contained in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) of the American Psychiatric Association. Diagnostic criteria for specific mental disorders are included in the DSM-5. In addition to diagnostic criteria, the DSM-5 also provides valuable information under the following sub-headings:

- Diagnostic Features
- Associated Features Supporting Diagnosis
- Prevalence
- Development and Course
- Risk and Prognostic Factors
- Culture-Related Diagnostic Issues
- Gender-Related Diagnostic Issues
- Suicide Risk
- Functional Consequences
- Differential Diagnosis
- Co-morbidity

If an individual has a mental disorder not covered by these guidelines, medical fitness for duty will be determined by the Railway's Chief Medical Officer and guided, in part, by the considerations listed in section 2.

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2. Medical Fitness for Duty Considerations

The following should be taken into consideration when assessing the medical fitness for duty of an individual occupying a Safety Critical Position:


- The presence of a mental disorder as defined in the DSM-5.
- The length, course and severity of the mental disorder.
- The length, course and severity of any previous mental disorder.
- The degree of current behavioral dysfunction or mood dysfunction.
- The degree of impairment of alertness, attention, cognitive function, concentration, insight, judgement and memory related to the mental disorder or to medications used to treat the mental disorder.
- The individual's compliance with treatment recommendations.
- The likelihood of recurrence or relapse of the mental disorder or a related mental disorder.
- The potential for acute or gradual functional impairment.
- The predictability and reliability of the individual.
- Co-morbidity that could precipitate a recurrence of a mental disorder.

3. Definition(s)

- **In remission** refers to an absence of significant signs or symptoms associated with a particular mental disorder. Any signs or symptoms, if present, do not affect the individual's ability to perform their duties in a safe and predictable manner.

4. Medical Fitness for Duty Guidelines for Specific Mental Disorders

The following medical fitness for duty guidelines include a description, medical fitness for duty and assessment considerations and medical monitoring guidelines for specific mental disorders. For ease of reference, the DSM-5 chapter headings and sub-headings are used. The previous version of these medical fitness for duty guidelines was based on the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) of the American Psychiatric Association, the predecessor of the DSM-5. Thus,

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it should be taken into consideration that individuals presenting with a mental disorder may have been previously diagnosed using DSM-IV criteria.

4.1 Neurodevelopmental Disorders

4.1.1 Attention-Deficit/Hyperactivity Disorder

Description


Attention-deficit/hyperactivity disorder presents in childhood and may persist into the adult years. In the absence of new organic damage, it does not present de novo in the adult. Criteria include inattention characterized by impatience, careless mistakes, difficulty sustaining attention, not seeming to listen when spoken to directly, not following through on instructions or tasks, difficulty organizing tasks, avoidance or reluctance to engage in tasks that require sustained mental effort, a tendency to lose or misplace things necessary for the task, and a tendency to be easily distracted by extraneous stimuli and finally forgetfulness.

In adulthood other symptoms may also be seen including fidgeting and restlessness, a tendency to be constantly in motion, expresses difficulty sitting still, excessive talking and blurting out of answers, interrupting or completing other people's statements, a tendency not to wait for their turn at an activity and a tendency to interrupt speech or activity of others.

Medical Fitness for Duty

Individuals with a diagnosis of attention-deficit/hyperactivity disorder may be considered medically fit for duty in a Safety Critical Position if the following conditions are met:

- a) The individual's attention-deficit/hyperactivity disorder is in remission. Any signs or symptoms, if present, do not affect the individual's ability to perform their duties in a safe and predictable manner.

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Medical Fitness for Duty Assessment

As part of their medical fitness for duty assessment individuals with a current or previous diagnosis of attention-deficit/hyperactivity disorder should be assessed by a Physician and at the discretion of the Railway’s Chief Medical Officer, by a Psychiatrist. This assessment should include an evaluation of the individual’s alertness, attention, concentration, insight, judgement, memory, mood and psychomotor function as well as adverse effects of medication. A written report which is to include an opinion on the individual’s fitness for work in a Safety Critical Position and any functional limitations and/or work restrictions should be submitted to the Railway’s Chief Medical Officer.

Medical Fitness for Duty Monitoring


The requirement for medical fitness for duty monitoring, follow up reports and the frequency of their submission will be at the discretion of the Railway’s Chief Medical Officer.

4.2 Schizophrenia Spectrum and Other Psychotic Disorders

4.2.1 Delusional Disorder

Description

A delusion is a false belief that the individual holds onto. In delusional disorder, the individual’s thinking and interactions with people are appropriate except where distorted by the delusion. There may also be evidence for hallucinations, sensations either on the skin or of voices that also are not reality based. The delusions can be of many types. In the *erotomanic type* the individual believes that another person is in love with them, and acts accordingly. In the *grandiose type* they believe that they have some great (but unrecognized) talent or insight. In the *persecutory type* the individual believes that he or she is being conspired against, cheated, spied on, followed, or in other ways maliciously interfered with. Other types exist also. The disorder is significant in that the power of the delusion can make the individual act in ways that are inappropriate and unpredictable. The disorder most frequently comes on in midlife and is then chronic, tending to continue throughout the individual’s lifetime.

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Medical Fitness for Duty

In general, individuals with a current or previous diagnosis of delusional disorder cannot work in a Safety Critical Position due to concerns over predictability. In extraordinary circumstances individuals with a diagnosis of delusional disorder may be considered fit to work in a Safety Critical Position if the following conditions are met:


- a) The individual's delusional disorder has been in remission for a continuous period of three years. Any signs or symptoms, if present, do not affect the individual's ability to perform their duties in a safe and predictable manner. The Railway's Chief Medical Officer may extend this three year period if there is supporting medical evidence that a longer period is indicated.
- b) The individual has been observed performing Non-Safety Critical Position duties in an acceptable manner for a continuous period of at least one year.

Medical Fitness for Duty Assessment

As part of their medical fitness for duty assessment individuals with a diagnosis of delusional disorder should be assessed by a Psychiatrist. This assessment should include an evaluation of the individual's alertness, attention, concentration, insight, judgement, memory, mood and psychomotor function as well as adverse effects of medication. A written report which is to include an opinion on the individual's fitness to work in a Safety Critical Position and any functional limitations and/or work restrictions should be submitted to the Railway's Chief Medical Officer.

Medical Fitness for Duty Monitoring

The requirement for medical fitness for duty monitoring and follow up reports and the frequency of their submission will be at the discretion of the Railway's Chief Medical Officer.

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4.2.2 Brief Psychotic Disorder

Description

In brief psychotic disorder, a number of symptoms and signs must be present including delusions, hallucinations, disorganized speech and grossly disorganized behaviour. The episode must last at least one day but less than one month and the individual must be seen to have returned to their premorbid level of functioning for the definition of Brief Psychotic Disorder to apply. The disorder should not be caused by some major trauma in the individual's life such as a motor vehicle accident or earthquake, which could temporarily destabilize/disorganize any normal person.


Medical Fitness for Duty

Individuals with a diagnosis of brief psychotic disorder may be considered medically fit for duty in a Safety Critical Position if the following conditions are met:

- a) The individual's brief psychotic disorder has been in remission for a continuous period of six months. Any signs or symptoms, if present, do not affect the individual's ability to perform their duties in a safe and predictable manner. The Railway's Chief Medical Officer may extend this six month period if there is supporting medical evidence that a longer period is indicated.

Medical Fitness for Duty Assessment

As part of their medical fitness for duty assessment individuals with a diagnosis of brief psychotic disorder should be assessed by a Psychiatrist. This assessment should include an evaluation of the individual's alertness, attention, concentration, insight, judgement, memory, mood and psychomotor function as well as adverse effects of medication. A written report that is to include an opinion on the individual's fitness to work in a Safety Critical Position and any

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functional limitations and/or work restrictions should be submitted to the Railway’s Chief Medical Officer.

Medical Fitness for Duty Monitoring

The requirement for medical fitness for duty monitoring and follow up reports and the frequency of their submission will be at the discretion of the Railway’s Chief Medical Officer.

4.3 Bipolar and Related Disorders

4.3.1 Bipolar I Disorder


Description

The defining characteristic of bipolar I disorder is an episode of mania. Mania is characterized by an abnormally elevated, expansive and/or irritable mood and more than usual energy lasting at least one week and present almost all the time during that week. This period must also be characterized by excessive energy, diminished need for sleep, erratic or disinhibited behaviour, low frustration tolerance combined with lack of insight and judgement. The individual experiences racing thoughts, easy distractibility and an increase in disinhibited but goal directed activity (for instance increased sexual activity, or spending large amounts of money). The mood disturbance must cause marked impairment in the individual’s social and occupational functioning and may require hospitalization. Typically, bipolar I disorder includes major depressive episodes as well as episodes of mania. Psychotic symptoms (delusions, hallucinations) may be present in the context of either depression or mania.

Medical Fitness for Duty

Individuals with a diagnosis of bipolar I disorder may be considered medically fit for duty in a Safety Critical Position if the following conditions are met:

- a) The individual’s bipolar I disorder has been in remission for a continuous period of one year during which the individual has been maintained on a stable dose of medication. Any signs or symptoms, if present, do not affect

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the individual's ability to perform their duties in a safe and predictable manner. The Railway's Chief Medical Officer may extend this one year period if there is supporting medical evidence that a longer period is indicated.


- b) If it is recommended that an individual with bipolar I disorder discontinue their medication, they cannot work in a Safety Critical Position until it has been documented that the individual's bipolar I disorder has remained in remission for a continuous period of one year from the time of discontinuation. The Railway's Chief Medical Officer may extend this one year period if there is supporting medical evidence that a longer period is indicated.

Medical Fitness for Duty Assessment

As part of their medical fitness for duty assessment individuals with a diagnosis of bipolar I disorder should be assessed by a Psychiatrist. This assessment should include an evaluation of the individual's alertness, attention, concentration, insight, judgement, memory, mood and psychomotor function as well as adverse effects of medication. A written report that is to include an opinion on the individual's fitness to work in a Safety Critical Position and any functional limitations and/or work restrictions should be submitted to the Railway's Chief Medical Officer.

Medical Fitness for Duty Monitoring

The requirement for medical fitness for duty monitoring and follow up reports and the frequency of their submission will be at the discretion of the Railway's Chief Medical Officer. Medical fitness for duty monitoring should include, at a minimum, semi-annual checks of blood levels of medications when appropriate.

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4.3.2 Bipolar II Disorder


Description

Bipolar II disorder is characterized by a history of both a major depressive episode and at least one hypomanic episode. Symptoms of hypomania are similar to those of mania but generally less severe and do not cause a marked impairment in functioning or include psychotic features. The individual will appear more energetic and talkative than usual, more distractible, and may show poor judgement, pursuing activities that have painful consequences (e.g. engaging in unrestrained buying, sexual indiscretions or foolish business investments). The episode must be clearly different from the individual's pre-morbid norm. There must be a history of at least one major depressive episode. Such an episode is characterized by a depressed mood most of the day nearly every day for two weeks or more as well as the following: diminished interest or pleasure, distortion of appetite with weight loss or weight gain, insomnia or hypersomnia most days, psychomotor agitation or retardation most days, fatigue or loss of energy most days, diminished ability to think or concentrate characterized by indecision and feelings of worthlessness as well as thoughts of death, sometimes of suicide.

Medical Fitness for Duty

Individuals with a diagnosis of bipolar II disorder may be considered medically fit for duty in a Safety Critical Position if the following conditions are met:

- a) The individual's bipolar II disorder has been in remission for a continuous period of one year during which the individual has been maintained on a stable dose of medication. Any signs or symptoms, if present, do not affect the individual's ability to perform their duties in a safe and predictable manner. The Railway's Chief Medical Officer may extend this one year period if there is supporting medical evidence that a longer period is indicated.
- b) If it is recommended that an individual with bipolar II disorder discontinue their medication, they cannot work in a Safety Critical Position until it has been documented that the individual's bipolar II disorder has remained in

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remission for a continuous period of one year from the time of discontinuation. The Railway’s Chief Medical Officer may extend this one year period if there is supporting medical evidence that a longer period is indicated.

Medical Fitness for Duty Assessment

As part of their medical fitness for duty assessment individuals with a diagnosis of bipolar II disorder should be assessed by a Psychiatrist. This assessment should include an evaluation of the individual’s alertness, attention, concentration, insight, judgement, memory, mood and psychomotor function as well as adverse effects of medication. A written report that is to include an opinion on the individual’s fitness to work in a Safety Critical Position and any functional limitations and/or work restrictions should be submitted to the Railway’s Chief Medical Officer.

Medical Fitness for Duty Monitoring

The requirement for medical fitness for duty monitoring and follow up reports and the frequency of their submission will be at the discretion of the Railway’s Chief Medical Officer. Medical fitness for duty monitoring should include, at a minimum, semi-annual checks of blood levels of medications when appropriate.


4.4 Depressive Disorders

4.4.1 Major Depressive Disorder

Description

Major depressive disorder is characterized by an episode of depressed mood or loss of interest or pleasure lasting for more than two weeks and representing a significant change from the individual’s previous level of function. At least one of the symptoms is either depressed mood or loss of interest or pleasure.

Accompanying features include changes in sleep, particularly early morning wakening, and appetite, weight, agitation or slowing in movements, pervasive fatigue, negative thoughts and thoughts of death or suicide. The more problematic symptoms include social withdrawal, lack of motivation, low

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frustration tolerance, easy fatigability, poor concentration and sleep disorder. Insight and judgement are impaired because of distortions of self-perception. Major depressive disorder may present as a single episode in isolation or may be recurrent. Markers of particular severity include psychotic symptoms and high anxiety. Major depressive disorder should be differentiated from any type of grief reaction such as might occur after the loss of a loved one.


Medical Fitness for Duty

Individuals with a diagnosis of major depressive disorder may be considered medically fit for duty in a Safety Critical Position if the following conditions are met:

- a) The individual's major depressive disorder has been in remission for a continuous period of three months. Any signs or symptoms, if present, do not affect the individual's ability to perform their duties in a safe and predictable manner. The intensity, duration and response to treatment of an episode of major depressive disorder or recurrent episodes of major depressive disorder should be taken into consideration. The Railway's Chief Medical Officer may extend this three month period if there is supporting medical evidence that a longer period is indicated.

Medical Fitness for Duty Assessment

As part of their fitness for duty assessment individuals with a diagnosis of major depressive disorder should be assessed by a Physician and at the discretion of the Railway's Chief Medical Officer, by a Psychiatrist. This assessment should include an evaluation of the individual's alertness, attention, concentration, insight, judgement, memory, mood and psychomotor function as well as adverse effects of medication. A written report which is to include an opinion on the individual's fitness to work in a Safety Critical Position and any functional limitations and/or work restrictions should be submitted to the Railway's Chief Medical Officer.

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Medical Fitness for Duty Monitoring

The requirement for medical fitness for duty monitoring and follow up reports and the frequency of their submission will be at the discretion of the Railway’s Chief Medical Officer.

4.4.2 Persistent Depressive Disorder (Dysthymia)

Description

The DSM-5 has consolidated chronic major depressive disorder and dysthymic disorder, both of which are listed as separate disorders in the DSM-IV, into persistent depressive disorder (dysthymia). In adults, the essential feature of persistent depressive disorder is a depressed mood that is present more days than not, for a period of at least two years. Persistent depressive disorder can range in severity and the impact on function can vary widely, from the significant impairment seen in major depressive disorder, to almost normal function as may be seen in mild dysthymia.


Medical Fitness for Duty

Individuals with a diagnosis of persistent depressive disorder may be considered medically fit for duty in a Safety Critical Position if the following conditions are met:

- a) The individual’s persistent depressive disorder (dysthymia) is in remission. Any signs or symptoms, if present, do not affect the individual’s ability to perform their duties in a safe and predictable manner.

Medical Fitness for Duty Assessment

As part of their medical fitness for duty assessment individuals with a diagnosis of persistent depressive disorder should be assessed by a Physician and at the discretion of the Railway’s Chief Medical Officer, by a Psychiatrist. This assessment should include an evaluation of the individual’s alertness, attention, concentration, insight, judgement, memory, mood and psychomotor function as well as adverse effects of medication. A written report which is to include an

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opinion on the individual's fitness to work in a Safety Critical Position and any functional limitations and/or work restrictions should be submitted to the Railway's Chief Medical Officer.

Medical Fitness for Duty Monitoring

The requirement for medical fitness for duty monitoring and follow up reports and the frequency of their submission will be at the discretion of the Railway's Chief Medical Officer.

4.5 Anxiety Disorders

4.5.1 Specific Phobia


Description

A specific phobia is characterized by persistent anxiety or fear elicited in response to a specific stimulus. The fear or anxiety is disproportionate to the actual danger and is long lasting. The fear or the avoidance of the phobic stimulus cause significant distress or functional impairment. The phobic object is actively avoided or endured with intense fear that is out of proportion to the actual danger posed. An individual with a specific phobia may be medically fit for duty, provided their phobic stimulus is not associated with their Safety Critical Position.

Medical Fitness for Duty

Individuals with a diagnosis of a specific phobia may be considered medically fit for duty in a Safety Critical Position if the following conditions are met:

- a) The individual's specific phobia is in remission. Any signs or symptoms, if present, do not affect the individual's ability to perform their duties in a safe and predictable manner.
- b) The phobic object or situation is not associated with, related to, or encountered in their Safety Critical Position.

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Medical Fitness for Duty Assessment

As part of their medical fitness for duty assessment individuals with a specific phobia should be assessed by a Physician and at the discretion of the Railway’s Chief Medical Officer, by a Psychiatrist. This assessment should include an evaluation of the individual’s alertness, attention, concentration, insight, judgement, memory, mood and psychomotor function as well as adverse effects of medication. A written report that is to include an opinion on the individual’s fitness to work in a Safety Critical Position and any functional limitations and/or work restrictions should be submitted to the Railway’s Chief Medical Officer.


Medical Fitness for Duty Monitoring

The requirement for medical fitness for duty monitoring and follow up reports and the frequency of their submission will be at the discretion of the Railway’s Chief Medical Officer.

4.5.2 Panic Disorder

Description

Panic disorder is characterized by the sudden, unexpected onset of overwhelming anxiety with intense fear or extreme discomfort, associated with strong physical evidence of adrenergic output including features such as rapid heartbeat, pounding heart, sweating, trembling, shortness of breath, feelings of choking, chest pain, nausea or abdominal distress, dizziness, feelings of unreality or being detached from oneself, feeling fear of imminent catastrophe or doom, chills or hot flashes. The individual may also fear that they are losing control or “going crazy” or dying. The attacks are brief, usually lasting only a few minutes, but are incapacitating. The frequency can be highly variable from once every few months to many times per day. They are often accompanied by worry about experiencing further attacks or the consequences of attacks, with maladaptive behavioural changes occurring in an attempt to cope with these fears. For instance, the individual may go to great lengths to avoid the situation or place where they experienced an attack.

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Panic attacks may occur as a feature of a number of other mental disorders, including generalized anxiety disorder, major depressive disorder, substance use disorder, posttraumatic stress disorder, etc. In this context, they can be considered as a marker of increased severity of the primary disorder.

Medical Fitness for Duty

Individuals with a diagnosis of panic disorder may be considered medically fit for duty in a Safety Critical Position if the following conditions are met:


- a) The individual's panic disorder has been in remission for a continuous period of six months. Any signs or symptoms, if present, do not affect the individual's ability to perform their duties in a safe and predictable manner. The Railway's Chief Medical Officer may extend this six month period if there is supporting medical evidence that a longer period is indicated.

Medical Fitness for Duty Assessment

As part of their medical fitness for duty assessment individuals with a diagnosis of panic disorder should be assessed by a Psychiatrist. This assessment should include an evaluation of the individual's alertness, attention, concentration, insight, judgement, memory, mood and psychomotor function as well as adverse effects of medication. A written report that is to include an opinion on the individual's fitness to work in a Safety Critical Position and any functional limitations and/or work restrictions should be submitted to the Railway's Chief Medical Officer.

Medical Fitness for Duty Monitoring

The requirement for medical fitness for duty monitoring and follow up reports and the frequency of their submission will be at the discretion of the Railway's Chief Medical Officer.

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4.5.3 Generalized Anxiety Disorder

Description

This disorder is characterized by excessive anxiety and worry occurring on most days for at least six months and relating to a number of events or activities. The worry is difficult to control and is accompanied by at least three additional features that may include feeling restless or on edge, having difficulty concentrating, experiencing easy fatigue, irritability, muscle tension or insomnia.


Medical Fitness for Duty

Individuals with a diagnosis of generalized anxiety disorder may be considered medically fit for duty in a Safety Critical Position if the following conditions are met:

- a) The individual's generalized anxiety disorder has been in remission for a continuous period of three months. Any signs or symptoms, if present, do not affect the individual's ability to perform their duties in a safe and predictable manner. The Railway's Chief Medical Officer may extend this three month period if there is supporting medical evidence that a longer period is indicated.

Medical Fitness for Duty Assessment

As part of their medical fitness for duty assessment individuals with a diagnosis of generalized anxiety disorder should be assessed by a Physician and at the discretion of the Railway's Chief Medical Officer, by a Psychiatrist. This assessment should include an evaluation of the individual's alertness, attention, concentration, insight, judgement, memory, mood and psychomotor function as well as adverse effects of medication. A written report that is to include an opinion on the individual's fitness to work in a Safety Critical Position and any functional limitations and/or work restrictions should be submitted to the Railway's Chief Medical Officer.

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Medical Fitness for Duty Monitoring

The requirement for medical fitness for duty monitoring and follow up reports and the frequency of their submission will be at the discretion of the Railway’s Chief Medical Officer.

4.6 Obsessive-Compulsive and Related Disorders

4.6.1 Obsessive-Compulsive Disorder


Description

Obsessive-compulsive disorder is characterized by the presence of obsessions and/or compulsions. Obsessions are experienced as intrusive and unwanted thoughts, images or urges that are typically anxiety provoking and distressing. They are suppressed or neutralized either by another obsessional thought or by compulsive action. Compulsions are repetitive actions or thoughts that the individual feels compelled to perform in response to an obsession or according to ritualistic rules that the individual has created. Compulsions may include ordinary behaviors taken to extremes such as handwashing, ordering, checking, counting or repeating words aloud or silently. The compulsions are either excessive or an unrealistic response to the anxiety or fear. To satisfy the diagnosis, the obsessions and compulsions must be time consuming (taking up more than one hour per day) and result in marked distress or functional impairment. Such symptoms must be differentiated from excessive worrying about real life problems.

Medical Fitness for Duty

Individuals with a diagnosis of obsessive-compulsive disorder may be considered medically fit for duty in a Safety Critical Position if the following conditions are met:

- a) The individual’s obsessive-compulsive disorder has been in remission for a continuous period of three months. Any signs or symptoms, if present, do not affect the individual’s ability to perform their duties in a safe and predictable manner. The Railway’s Chief Medical Officer may extend this

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three month period if there is supporting medical evidence that a longer period is indicated.

Medical Fitness for Duty Assessment

As part of their medical fitness for duty assessment individuals with a diagnosis of obsessive-compulsive disorder should be assessed by a Physician and at the discretion of the Railway’s Chief Medical Officer, by a Psychiatrist. This assessment should include an evaluation of the individual’s alertness, attention, concentration, insight, judgement, memory, mood and psychomotor function as well as adverse effects of medication. A written report which is to include an opinion on the individual’s fitness to work in a Safety Critical Position and any functional limitations and/or work restrictions should be submitted to the Railway’s Chief Medical Officer.

Medical Fitness for Duty Monitoring

The requirement for medical fitness for duty monitoring and follow up reports and the frequency of their submission will be at the discretion of the Railway’s Chief Medical Officer.


4.7 Trauma- or Stressor-Related Disorders

4.7.1 Posttraumatic Stress Disorder

Description

Posttraumatic stress disorder is the expression of a response to trauma where there is actual or threatened death, serious injury or sexual violence. The individual need not have directly experienced such an event but may have witnessed it or learned of the traumatic event experienced by somebody with whom they have an emotional bond. It also occurs in people who have experienced repeated or extreme exposure to aversive details of traumatic events.

The diagnosis of posttraumatic stress disorder cannot be made unless the disturbance lasts for more than one month. The symptom presentation includes

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features from each of the following categories: intrusion phenomena, avoidance of reminders of the trauma, negative changes in thinking and mood and changes in arousal and reactivity. Panic attacks are a common feature of this disorder and are a marker of severity. The intrusions are commonly distressing memories of the event. The individual may experience a dissociative reaction (flashback) in which they feel or act as if the event was recurring. They may also experience intense or prolonged psychological distress at exposure to cues that symbolize or resemble an aspect of the traumatic event (e.g. driving past the scene of a previously witnessed violent accident). The individual will go to considerable lengths to avoid stimuli associated with the traumatic event, whether thoughts, feeling, people, places or objects.

Negative alterations in cognition may be evidenced by difficulties remembering important aspects of the event (traumatic amnesia) or persistent inappropriate negative beliefs about themselves, others or the world (e.g., I am bad, or, I cannot trust anyone). Also likely to be present are persistent self-blame and guilt about the event and a persistent negative emotional state consisting of fear, horror, anger, guilt or shame. The individual may withdraw from their usual activities and feel detached or estranged from others. Arousal patterns are also altered. These individuals tend to be more irritable with angry outbursts. They could be reckless or self-destructive, they experience hypervigilance, watching all around for signs of danger and they have an exaggerated startle response. They have difficulty concentrating and their sleep is disturbed with difficulty either falling or staying asleep. They experience nightmares. Thus, the condition is an important one that pervasively degrades attention, judgement and predictability of response. The diagnosis of posttraumatic stress disorder cannot be made unless the disturbance lasts for more than one month.

Medical Fitness for Duty

Individuals with a diagnosis of posttraumatic stress disorder may be considered medically fit for duty in a Safety Critical Position if the following conditions are met:

- a) The individual's posttraumatic stress disorder has been in remission for a continuous period of three months. Any signs or symptoms, if present, do

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not affect the individual's ability to perform their duties in a safe and predictable manner. The Railway's Chief Medical Officer may extend this three month period if there is supporting medical evidence that a longer period is indicated.

Medical Fitness for Duty Assessment

As part of their medical fitness for duty assessment individuals with a diagnosis of posttraumatic stress disorder should be assessed by a Psychiatrist. This assessment should include an evaluation of the individual's alertness, attention, concentration, insight, judgement, memory, mood and psychomotor function as well as adverse effects of medication. A written report that is to include an opinion on the individual's fitness to work in a Safety Critical Position and any functional limitations and/or work restrictions should be submitted to the Railway's Chief Medical Officer.

Medical Fitness for Duty Monitoring

The requirement for medical fitness for duty monitoring and follow up reports and the frequency of their submission will be at the discretion of the Railway's Chief Medical Officer.


4.7.2 Acute Stress Disorder

Description

An acute stress disorder is very similar to a posttraumatic stress disorder, sharing the same class of precipitants and the same reaction patterns. The difference is that an acute stress disorder is brief, lasting at least three days but it does not persist for more than a month after exposure to one or more traumatic events.

Medical Fitness for Duty

Individuals with a diagnosis of acute stress disorder may be considered medically fit for duty in a Safety Critical Position if the following conditions are met:

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- a) The individual's acute stress disorder has been in remission for a continuous period of one month. Any signs or symptoms, if present, do not affect the individual's ability to perform their duties in a safe and predictable manner. The Railway's Chief Medical Officer may extend this one month period if there is supporting medical evidence that a longer period is indicated.

Medical Fitness for Duty Assessment

As part of their medical fitness for duty assessment individuals with a diagnosis of acute stress disorder should be assessed by a Physician and at the discretion of the Railway's Chief Medical Officer, by a Psychiatrist. This assessment should include an evaluation of the individual's alertness, attention, concentration, insight, judgement, memory, mood and psychomotor function as well as adverse effects of medication. A written report which is to include an opinion on the individual's fitness to work in a Safety Critical Position and any functional limitations and/or work restrictions should be submitted to the Railway's Chief Medical Officer.


Medical Fitness for Duty Monitoring

The requirement for medical fitness for duty monitoring and follow up reports and the frequency of their submission will be at the discretion of the Railway's Chief Medical Officer.

4.7.3 Adjustment Disorders

Description

An adjustment disorder is a severe emotional or behavioural response to a stressor. The symptoms are clinically significant, being categorized by either distress out of proportion to the intensity of the stressor or causing significant impairment in functioning. The onset of symptoms is within three months of the stressor and the disorder does not persist for more than six months beyond the termination of the stressor. Symptoms may include depressed mood, anxiety or a mixture of the two. Sometimes the individual's behaviour is disturbed.

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Medical Fitness for Duty

Individuals with a diagnosis of adjustment disorder may be considered medically fit for duty in a Safety Critical Position if the following conditions are met:


- a) The individual's adjustment disorder has been in remission for a continuous period of one month. Any signs or symptoms, if present, do not affect the individual's ability to perform their duties in a safe and predictable manner. The Railway's Chief Medical Officer may extend this one month period if there is supporting medical evidence that a longer period is indicated.

Medical Fitness for Duty Assessment

As part of their medical fitness for duty assessment individuals with a diagnosis of adjustment disorder should be assessed by a Physician and at the discretion of the Railway's Chief Medical Officer, by a Psychiatrist. This assessment should include an evaluation of the individual's alertness, attention, concentration, insight, judgement, memory, mood and psychomotor function as well as any adverse effects of medication. A written report which is to include an opinion on the individual's fitness to work in a Safety Critical Position and any functional limitations and/or work restrictions should be submitted to the Railway's Chief Medical Officer.

Medical Fitness for Duty Monitoring

The requirement for medical fitness for duty monitoring and follow up reports and the frequency of their submission will be at the discretion of the Railway's Chief Medical Officer.

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4.8 Substance Related and Addictive Disorders

4.8.1 Substance Use Disorders

Refer to the Railway Medical Guidelines for Substance Use Disorders.

4.9 Personality Disorders

Description

These disorders are characterized by pervasive and persistent maladaptive patterns of behaviour that are deeply ingrained. They are disorders of trait rather than state. The maladaptive traits can be behavioural, emotional, cognitive, perceptual or psychodynamic. They may be internal, mental, or expressed as patterns of behaviour. They cause difficulty by diminishing an individual's ability to react flexibly and adaptively in social or occupational situations. The problems must be manifested in at least two of the following areas:


- Cognition (ways of perceiving and interpreting the self and others).
- Affectivity (the range intensity and appropriateness of emotional response).
- Interpersonal functioning.
- Impulse control.

The pattern must be inflexible and pervasive across a broad range of personal and social situations. Personality disorders usually become known because of conflict with others. Personality disorders exhibit a very large range of symptoms from mild to severe.

In the majority of cases, individuals with a diagnosis of personality disorder are considered responsible for their own behaviour and can be expected to perform or behave in an acceptable manner at work.

Medical Fitness for Duty

Individuals with a diagnosis of personality disorder may be considered medically fit for duty in a Safety Critical Position if the following conditions are met:

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- a) The individual's personality disorder is in remission. Any signs or symptoms, if present, do not affect the individual's ability to perform their duties in a safe and predictable manner.

Medical Fitness for Duty Assessment

As part of their medical fitness for duty assessment individuals with a diagnosis of personality disorder should be assessed by a Psychiatrist. This assessment should include an evaluation of the individual's alertness, attention, concentration, insight, judgement, memory, mood and psychomotor function as well as adverse effects of medication. A written report, which is to include an opinion on the individual's fitness to work in a Safety Critical Position and any functional limitations and/or work restrictions should be submitted to the Railway's Chief Medical Officer.


Medical Fitness for Duty Monitoring

The requirement for medical monitoring and follow up reports and the frequency of their submission will be at the discretion of the Railway's Chief Medical Officer.

5. Contraindications to Employment in a Safety Critical Position

Any medical condition that can result in acute or chronic functional impairment constitutes a contraindication to employment in a Safety Critical Position. The following mental disorders are considered contraindications:

- 5.1 Schizophrenia Spectrum and Other Psychotic Disorders other than brief psychotic disorder and delusional disorder
- 5.2 Personality disorder severe enough to have repeatedly manifested itself by overt acts.
- 5.3 Neurodevelopmental disorders resulting in subnormal intelligence.
- 5.4 Organic (physical) brain damage with resulting impairment.
- 5.5 Treatment resistant depressive disorders.

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4.6 - Cardiovascular Disorders

Medical Guidelines for the Employment of Individuals with Cardiovascular Disorders in Safety Critical Positions in the Canadian Railway Industry

1. Introduction

Canadian railway employees who work in a Safety Critical Position (SCP) operate or control the movement of trains. Physical and mental fitness is mandatory. Impaired performance due to a medical condition could result in a significant incident affecting the health and safety of employees, the public, property or the environment.

Cardiovascular disorders (CVD) can cause gradual or sudden impairment. Due to the nature of their work, the latter is of particular importance for employees working in a SCP. Special attention should be paid to individuals whose medical condition puts them at risk of syncope, of significant physical incapacitation, or of sudden cardiac death.


Medical guidelines have been developed in order to evaluate and monitor the fitness for duty of individuals with cardiovascular disorders employed in a SCP in the Canadian railway industry.

CVD are common in North America. Accordingly, there are numerous physicians who have an interest in the diagnosis and treatment of these illnesses. In this document, the term specialist refers to a cardiologist or an internist.

When available, references are provided in Appendix I - Bibliography

2. Basic Considerations

The employment of individuals with a CVD in a SCP shall be guided by their medical history and physical examination, the results of functional testing, the nature of treatment, and their job description.


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3. Risk Threshold

As the leading cause of death, cardiovascular diseases also underlie the greatest medical risk of sudden incapacitation in the Canadian workforce including railway workers. Such incapacitation can be due to a fatal or nonfatal cardiovascular event. While the goal may be to eliminate such a risk completely, this is not feasible. Nevertheless through screening and preventative measures, such a risk can be reduced to acceptable levels.

The notion of an acceptable level of risk is inherent in all safety reliant systems, whether an untoward event is due to human error, mechanical failure or illness. The goal then should be to reduce risk to an acceptable level or threshold. There is no absolute threshold of risk and different levels of acceptable risk may apply to various components of a safety reliant system e.g., mechanical failure or human error. Ultimately any risk threshold is arbitrary and depends on what is feasible as well as what is tolerated by providers, consumers, the general public, etc. A consensus exists for an acceptable level of risk of sudden incapacitation due to a medical condition in the airline industry. Applying calculations and reasoning related in part to an acceptable and feasible risk threshold due to mechanical failure, an acceptable risk threshold for sudden incapacitation, either fatal or nonfatal, due to a medical condition, is considered to be 2% per year. Much of the literature on aviation risk refers to a 1% risk threshold. This was developed based on the risk of a fatality. However, most cardiac conditions that bear a risk of a fatal event can also result in a nonfatal incapacitating event. This is estimated to be equal to the risk of a fatal event, i.e. an additional 1%, hence the overall 2% risk threshold. With certain assumptions, this threshold of medical risk is estimated to imply an overall accident risk of one in one million.

Although developed initially for cardiovascular causes, the concept and use of a risk threshold has been applied, at least in the airline industry, to other medical conditions as well. Similar analyses have proposed the same acceptable risk of new cardiac incapacitation for commercial drivers, after taking into consideration the specific circumstances of exposure, possibility of collateral injury etc. Interestingly the 1% risk of sudden death considered acceptable for commercial drivers results in an overall risk of 1 in 20,000 of an accident that could result in death or injury to others. Considering a risk of 0.00005 acceptable, then the acceptable annual risk of sudden incapacitation from a cardiovascular cause in a private automobile driver becomes 22%, given the lesser amount of time (than a commercial driver) spent behind the wheel, lesser potential impact from an accident etc.

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A 2% threshold of medical risk in aviation envisions a maximal acceptable risk resulting in a catastrophic event (one in a million) with a solo operator and no backup. In fact, this level of acceptable medical risk rarely results in an accident, in large part because of co-operators i.e. co-pilots in the case of commercial airlines, and back-up safety measures including incapacitation training and routines. Therefore the risk is less than one in a million. When appropriate safety measures are in place, an accident risk of one in a million allows a cardiovascular risk of between 2 and 5%. For such pilots this means a restriction on their flying to include a safety pilot i.e., an incapacitation-trained co-pilot.


It could be argued that the acceptable level of risk of an accident in the railway industry is closer to that involving commercial driving than flying a plane. The Guidelines described below apply the same medical risk threshold of 2% per year for a Safety Critical Position (SCP), where the risk of a sudden cardiac death is 1% per year and the risk of an incapacitating nonfatal event for the same condition is assumed to be an additional 1% per year.

This document addresses medical risk only. Overall risk of an accident involves additional factors including risk exposure, i.e. the time spent performing a task. While this affects the overall risk of an accident, the exposure time whether minutes, hours or days does not alter the medical risk threshold, which remains 2%. While management may be concerned about the overall risk of an accident, factors other than the medical risk are operational considerations. If an untoward cardiovascular event bears consequences only for the individual employee such a risk may be considered differently than one that has the potential for a public disaster. For the former a higher threshold of medical risk may be considered acceptable.

4. Ischemic Heart Disease

4.1 Risk Factors

The following are major modifiable risk factors for ischemic heart disease. While many of them may have impressively large relative risks, their absolute risk, particularly for sudden incapacitation, is low. Concern about these risk factors is greater in individuals with known ischemic heart disease where the absolute risk is greater. The presence of major modifiable risk factors should be a concern in any individual and preventive measures are strongly advised.

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a) Smoking:

Smokers should be advised and assisted to participate in a smoking cessation program. Anyone who continues to smoke following an acute myocardial infarction is at increased risk within a year of a recurrent infarction (7-fold increase) or death (3-fold increase). Following an ST elevation myocardial infarction, continued smoking doubles the one year mortality risk. Such an individual should quit or be making an attempt to quit to maintain fitness to work in a SCP.

b) Increased serum cholesterol levels:

All SCP workers are encouraged to be aware of their lipid levels and to maintain normal levels. Target levels depend on the level of risk as outlined in the 2006 Canadian Working Group Guidelines (Table 1). All currently approved medications for lipid lowering are compatible with work in a SCP.

Table 1. Guidelines for the Diagnosis and Treatment of Dyslipidemia and Prevention of Cardiovascular Disease (McPherson R, Frohlich J, Genest J. Canadian Journal of Cardiology 2006; 22(11):913-927.

Risk Categories		
<i>Risk Level</i>	<i>10 y CAD Risk</i>	<i>Recommendations</i>
High ¹	≥ 20%	Treatment Targets 1 Target: LDL-C < 2.0 mmol/L 2 Target: TC/HDL-C < 4.0
Moderate	10-19%	Treat When: TC/HDL-C ≥ 5.0 or LDL-C ≥ 3.5 mmol/L
Low	< 10%	Treat When: TC/HDL-C ≥ 6.0 or LDL-C ≥ 5.0 mmol/L

¹ High risk includes CAD, PAD, CVD and most patients with diabetes. Younger (<40 y) individuals with recent onset diabetes, a normal lipid profile and no other risk factors for CVD are at lower short term risk for CVD and may not require immediate lipid-lowering therapy.



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Table 2 - 10–Year Absolute Risk of CVD Event (Framingham Calculation)

RISK FACTOR	MEN	WOMEN	SCORE															
Age (years)																		
<34	-1	-9	}	—														
35-39	0	-4																
40-44	1	0																
45-49	2	3																
50-54	3	6																
55-59	4	7																
60-64	5	8																
65-69	6	8																
70-74	7	8																
Total cholesterol (mmol/L)																		
<4.14	-3	-2	}	—														
4.15-5.17	0	0																
5.18-6.21	1	1																
6.22-7.24	2	2																
>7.25	3	3																
HDL cholesterol (mmol/L)																		
<0.90	2	5	}	—														
0.91-1.16	1	2																
1.17-1.29	0	1																
1.30-1.55	0	0																
>1.56	-2	-3																
Systolic blood pressure (mmHg)																		
<120	0	-3	}	—														
120-129	0	0																
130-139	1	1																
140-159	2	2																
>1.60	3	3																
Smoker																		
No	0	0	}	—														
Yes	2	2																
Total Risk Points _____																		
Risk Points		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Chd	Men	3	4	5	7	8	10	13	16	20	25	31	37	45	53			
Risk	Women	2	3	3	4	4	5	6	7	8	10	11	13	15	18	20	24	>27

- in individuals who have not had a prior CVD event.

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c) High Blood Pressure:


The approach to the diagnosis of hypertension follows that of the Canadian Hypertension Education Program (CHEP) Recommendations Working Group. The CHEP guidelines are revised annually so the comments below need to be updated regularly. As of 2006, in individuals with accurately measured blood pressure levels between 140 and 179 mmHg systolic and/or 90 and 109 mmHg diastolic, up to 3 more visits over 6 months are required to diagnose hypertension. Ambulatory or self/home measurements are acceptable alternatives. However, in the presence of target organ damage, including coronary artery disease, LVH, LV systolic dysfunction, stroke, aortic and peripheral arterial disease, hypertensive nephropathy (creatinine clearance < 1 mL/s) or retinopathy or asymptomatic atherosclerosis, a diagnosis of hypertension can be made at the second visit. Likewise the presence of diabetes or chronic renal disease validates a diagnosis being made at the second visit. The search for target organ damage can begin as early as the second visit. For patients with readings of 160-179 mmHg systolic and 100-109 mmHg diastolic, the diagnosis can be expedited and made at the third visit.

For diagnosed hypertension with a systolic/diastolic blood pressure of $\geq 140/90$ mmHg in the majority of patients or $\geq 130/80$ mmHg in all patients with diabetes or chronic kidney disease, pharmacologic treatment should be initiated. In low risk patients with stage 1 hypertension (140-159/90-99 mmHg) lifestyle modification can be the sole therapy. Patients with known atherosclerotic disease should be treated pharmacologically even if the blood pressure is normal. The goal of blood pressure control is less than 140/90 mmHg in most individuals and to less than 130/80 mmHg in those with diabetes or renal dysfunction. On any visit, a blood pressure level of 180 mmHg or more systolic or 110 mmHg or more diastolic precludes working in a SCP.

Reference: <http://hypertension.ca/chep/en/Recommendations.asp>

4.2 Multiple Risk Factors

Coronary atherosclerosis is a multifactorial disease, the risk of early onset increasing with the number of risk factors present. Therefore the assessment of risk must weigh appropriately the contribution of the various factors present. The cumulative risk conferred by the presence of more than one risk factor, even at levels only moderately above normal, can exceed that conferred by the presence of one

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elevated major risk factor alone. The presence of only moderately elevated levels of risk when any risk factor is assessed alone should not lead to a false sense of security on the part of the physician or the individual.

Total risk can be assessed on the basis of risk points for age, total and HDL cholesterol, systolic blood pressure and smoking status in the absence of existing coronary heart disease or diabetes (Table 2).

If the 10 year risk score is 20% or greater (9 risk points for men and 15 risk points for women, Table 2) or if diabetes or left ventricular hypertrophy are present, then a cardiovascular assessment should be carried out. The choice of diagnostic tests such as a treadmill exercise test or a radionuclide exercise scan will depend on the risk factor profile. If abnormalities are found, resulting in an average annual mortality risk of 1% or more, assuming an additional 1% risk of an incapacitating nonfatal event, then the individual may be considered unfit. Even if the response to exercise testing is normal, appropriate therapy to modify risk factors should be initiated.

4.3 Metabolic Syndrome

The metabolic syndrome is an increasingly prevalent condition associated with a higher risk of coronary heart disease, stroke, and diabetes even after controlling for other commonly recognized CVD risk factors. It is estimated that 20 to 25% of the adult population can be classified as having the metabolic syndrome, with 44% in the 60-69 year age group. Several diagnostic criteria have been published. Two are presented in Table 3. This syndrome confers a two-fold increased risk of dying from a heart attack or stroke, a threefold increased risk of a heart attack or stroke and a fivefold increased risk of developing Type 2 diabetes. There is debate as to whether central obesity is an essential part of the diagnosis. The International Diabetes Federation requires it in addition to any two of hypertension, elevated fasting blood glucose, hypertriglyceridemia or low HDL-C. Central obesity is best assessed by measuring the waist circumference. Thresholds vary according to ethnicity (Table 4). Preventive measures include appropriate lifestyle changes with a focus on diet and physical activity along with cardiac medications as needed.


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Table 3 - Definition of Metabolic Syndrome


Risk Factor	Canadian Guidelines (modified from ATP III)	IDF Consensus (published in 2005)
Obesity	WC>102 cm (40 in) for men WC>88 cm (35 in) for women	WC> 94 cm (38 in) for men WC> 80 cm (32 in) for women & ethnic specific Must be present plus any 2 of the following factors:
BP	≥130/85 mmHg	≥130/85 mmHg
FPG	6.2-7.0 mmol/L	≥ 5.6 mmol/L
Triglycerides	≥1.7 mmol/L	≥ 1.7 mmol/L
HDL-C	<1.0 mmol/L for men <1.3 mmol/L for women	<1.03 mmol/L for men <1.29 mmol/L for women

Under Canadian Guidelines, an individual must exhibit any 3 of the risk factors to be diagnosed with the metabolic syndrome.

Table 4 - IDF Consensus: Ethnic Values for Waist Circumference

Country/Ethnic group	Waist circumference
Europeids (USA, the ATP III values (102 cm for male, 88 cm for female))	Male ≥ 94 cm Female ≥ 80 cm
South Asians Based on a Chinese, Malay and Asian- Indian population	Male ≥ 90 cm Female ≥ 80 cm
Chinese	Male ≥ 90 cm Female ≥ 80 cm
Japanese	Male ≥ 85 cm Female ≥ 90 cm
Ethnic South and Central Americans	Use South Asian recommendations until more specific data are available
Sub-Saharan Africans	Use European recommendations until more specific data are available
Eastern Mediterranean and Middle East (Arab) populations	Use European recommendations until more specific data are available

4.4 Screening


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Screening to identify cardiovascular disease before sudden incapacitation is a problematic and controversial undertaking. On the one hand, the employee may feel harassed and unfairly burdened by the inconvenience of screening tests; the employer may question the enormous expense involved. On the other hand, an accident involving sudden incapacitation that is suggestive of or attributed to a cardiovascular cause raises questions as to why more rigorous screening is not being carried out, especially if injury to the public occurs. It is beyond the scope of these guidelines to present the results of analyses that indicate the costs and problems of widespread routine screening. Nevertheless, a rational policy toward screening can be adopted to provide optimal, though never total, prevention of cardiac incapacitation.

The current routine medical examination is intended to ensure that only medically safe individuals work in a SCP. This is a shared responsibility with the onus on the employee to report any symptoms and on the physician to conduct a careful and thorough examination.

A resting electrocardiogram may show no abnormalities even in the presence of severe coronary artery disease; in fact, this may be true in as many as 50% of people with coronary artery disease. Since the prevalence of ischemic heart disease increases with age, the utility of routine electrocardiography improves after age 50 and with the presence of major risk factors for ischemic heart disease.

Compared with a resting electrocardiogram, one obtained during a treadmill exercise test increases the likelihood of detection of coronary artery disease. Widespread introduction of routine exercise testing is not advisable because of concerns about inaccuracies in the interpretation of test results as well as adverse economic and psychosocial consequences. The predictive value of a test result, i.e. whether a test result is truly positive or truly negative is influenced by the clinical characteristics of the person undergoing such testing. Routine screening of all applicants by a treadmill exercise test will yield false positive results more often than true-positive results. On the other hand, the number of true-positive results is increased significantly if such testing is applied only to those who are more likely to have coronary artery disease, such as those with symptoms of angina, those for whom major risk factors are present and those in older age groups. Such a targeted approach will avoid imposing a major burden on all employees and will encourage adoption and maintenance of a heart healthy lifestyle.

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4.5 Acute Ischemic Syndromes

b) Chest Pain

Chest pain, whether typical or atypical for coronary ischemia, whether stable or unstable precludes working in a SCP insofar as it indicates an elevated probability of significant coronary artery disease and an increased risk of an incapacitating cardiac event.

Allowing work in a SCP can be considered if diagnostic testing demonstrates that the chest pain is not due to myocardial ischemia and symptoms are not incapacitating. The initial assessment including a review of the symptom history must be made without the effect of anti-ischemic medications that could possibly mask coronary insufficiency. If coronary angiography reveals normal coronary arteries, coronary vasospasm should be excluded. While the presence of recurring, stable symptoms of chest pain in the absence of ischemia e.g. whether from cardiac causes such as pericarditis, vasospasm or non-cardiac causes such as fibromyalgia, need not merit an unfit determination, such symptoms must not be incapacitating in any way.


c) Following an Acute Ischemic Syndrome

An acute ischemic syndrome (ST-elevation/non ST elevation myocardial infarction, unstable angina) precludes work in a SCP.

Return to Work

Return to work may be considered 3 months after an ST elevation myocardial infarction (a decision at 3 months must be based on required assessments completed no sooner than 1 month after discharge from hospital) provided the following criteria are met:

- A clinically and electrically negative exercise test to a minimum effort of 8.5 METS using the Bruce protocol or equivalent places the individual at low (<2%) risk of a significant cardiovascular event over the following 12 months. Medications need not be stopped for the test.
- If a perfusion exercise test is used, a reversible defect may be acceptable if 10 METS are achieved and the area of hypoperfusion is described as small or insignificant. There should be no large fixed deficit.

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- The left ventricular ejection fraction as a measure of left ventricular function using resting echocardiography or gated radionuclide scintigraphy is 50% or better at rest (45% if SPECT² is used). If a stress echocardiography is undertaken as part of an exercise protocol, it does not show a decrease of more than 5% with satisfactory exertion (i.e. 85% predicted maximum heart rate or > 8 METS). If ventricular ejection fraction is between 40% and 50%, a 24-hour Holter monitoring should be considered as part of an individual assessment. Holter monitor should reveal no more than 3 ventricular ectopic beats per hour, with no runs of 3 or more ventricular beats in a row and no R wave and not T wave ventricular premature beats. An ejection fraction of less than 40% will usually preclude an individual from working in a SCP.
- Major modifiable risk factors (see below) for recurrence of infarction must be controlled, and the individual is a non-smoker or is participating in a smoking cessation program.

These criteria apply regardless whether the individual was treated with a thrombolytic drug, percutaneous coronary intervention (PCI) or bypass surgery. If no new wall motion abnormalities were diagnosed with a non-ST elevation infarction, return to work following PCI can be considered as early as 14 days following the procedure and 30 days after discharge from hospital if no PCI was undertaken.

Follow-up

A follow-up assessment by a physician, a year after the infarction and then annually, should include a thorough history, physical examination, rest and exercise electrocardiography and a review of modifiable risk factors. If there is no clinical deterioration after 2 years, the treadmill exercise test can be done every 2 years until 50 years of age and subsequently the possible need for yearly testing should be assessed.

² Single proton emission computerized tomography.

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d) Following revascularization in the absence of infarction

Return to Work

An individual who has been treated for coronary artery disease (without recent infarction i.e. <30 days) by revascularization including PCI, directional atherectomy etc., can be considered for employment in a SCP after an interval of 2 weeks, provided the same criteria are met as for a non-ST elevation myocardial infarction without new wall motion abnormalities. Following bypass surgery, the waiting period is 3 months.

Follow-up

Same as for Acute Ischemic Syndrome.

5. Non-Ischemic Heart Disease

5.1 Heart Murmur

All diastolic murmurs are pathological hence require a workup. A soft i.e. grade 1/6 systolic murmur without symptoms is acceptable. Anything else will require an assessment to include an echocardiography.


5.2 Valvular Heart Disease

The significance of valvular heart disease depends primarily on the hemodynamic consequences, functional status and in some cases, the etiology. In the majority of cases, surgical correction will not reduce the risk of sudden incapacitation to acceptable levels; in some cases it may even increase the risk.

a) Aortic Valve

Stenosis: Moderate or severe stenosis is unacceptable for work in a SCP. Individuals with asymptomatic mild stenosis of the aortic valve can be considered fit if the following conditions are met:

- The velocity flow across the valve is less than 4 m/sec (i.e. mild stenosis).
- The cross-sectional valve area is not less than 1.2 cm².

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- Holter monitoring reveals no significant dysrhythmia such as atrial fibrillation or sustained ventricular tachycardia.
- A satisfactory treadmill exercise test, achieving at least 8.5 METS using the Bruce protocol indicates no ischemia, hypotensive blood pressure response, significant arrhythmia or disabling symptoms.

Regurgitation: Pure isolated regurgitation is uncommon; therefore, assessment of someone with aortic regurgitation will likely include consideration of any associated disorders. Individuals with asymptomatic mild regurgitation of the aortic valve can be considered fit if the following conditions are met:


- The pulse pressure is less than 70 mmHg and the diastolic pressure is greater than 65 mmHg.
- The left ventricular end-diastolic internal diameter is less than 57 mm as measured by echocardiography.
- A satisfactory treadmill exercise test, achieving at least 8.5 METS using the Bruce protocol indicates no ischemia, significant arrhythmia or disabling symptoms.

Follow-up: Because of the increased risk of endocarditis with aortic valve disease, prophylaxis with antibiotics must be strictly followed. Follow-up should include an assessment every year or longer at the discretion of the Chief Medical Officer with echocardiography to monitor any progression.

b) Mitral Valve

Stenosis: In view of its progressive nature and its propensity for thromboembolic complications, mitral stenosis is incompatible with work in a SCP in most cases. Only very mild mitral stenosis with a cross sectional mitral valve area > 2.0 cm² and stable normal sinus rhythm may be considered fit.

Regurgitation: The cause of mitral regurgitation can alter the prognosis; therefore, an assessment of this condition should include information about the likely underlying cause, in addition to an estimate of the severity of the lesion. Mild and asymptomatic mitral regurgitation may be acceptable if the following conditions are met:

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- Mitral stenosis is absent.
- The diameter of the left atrium is less than 4.5 cm.
- Atrial dysrhythmia such as fibrillation or other supraventricular tachycardia is absent, as determined by Holter monitoring
- There is no history of embolism.
- A satisfactory treadmill exercise test, achieving at least 8.5 METS using the Bruce protocol indicates no ischemia, significant arrhythmia or disabling symptoms.


Prolapse: Mitral valve prolapse has a wide spectrum of severity. Most cases are mild and detectable either by the presence of a mid-systolic click and/or a soft murmur. The diagnosis is established by echocardiography. The individual may be considered fit if the following conditions are met:

- There is no history of embolism or transient cerebral ischemia.
- There is no relevant family history of sudden death.
- The left ventricular end diastolic dimension does not exceed 60 mm.
- If the left atrial size is increased, i.e. > 4.0 cm or if there is redundancy of the mitral valve leaflets, then a treadmill exercise test to screen for exercise-induced arrhythmia, and 24 hour Holter-monitoring will be required, as these findings can be markers of increased risk.

Follow-up: Annual follow-up for mitral valve stenosis and/or regurgitation should include, in addition to a thorough history and physical examination, echocardiography and 24 hour Holter monitoring done every year, or longer at the discretion of the CMO. The follow-up for mitral valve prolapse will be determined on a case-by-case basis depending on the degree of prolapse and any associated findings.

c) Valve Surgery

Valve replacement: Valve replacement involves either a bioprosthesis or a mechanical valve. In general, mechanical valves are more durable and

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are preferred for younger individuals. However, these valves are more prone to thromboembolism thus requiring long-term anticoagulation. Therefore, there is a need to consider two risks, one for thromboembolism and the other for bleeding as a consequence of anticoagulation. These risks are cumulative and must be less than 2% per year for a SCP.


Each case needs to be assessed individually, taking into consideration not only the technical aspects of valve function, left ventricular function and state of the coronary arteries, but also the overall exercise tolerance of the individual, the medications they are taking, age, other co-morbidities etc.

If bypass surgery was carried out at the same time as valve replacement, post-bypass criteria must be met as well.

Follow-up: The initial follow-up, no sooner than 3 months following uncomplicated surgery, must include an echocardiogram. The valve must be well-seated and with no major leaks either perivalvular or transvalvular. The transvalvular pressure gradient should be appropriate for the type of implanted valve. Ventricular function must be satisfactory, i.e. $\geq 50\%$. If ventricular ejection fraction is between 40 and 50%, 24-hour Holter monitoring should be considered as part of an individual assessment. The individual should be able to exercise to at least 8.5 METS with no evidence of ischemia or provokable malignant arrhythmias. Patients on full anticoagulation must demonstrate stable INRs at target for at least a month. Yearly follow-up, to include echocardiogram and a review of INR level if on anticoagulation, is required for all cases of valvular replacement for the first 3 years. Thereafter, if stable, follow-up every two years, to include an echocardiogram and INR level if on anticoagulation, should suffice.

Valve repair: Valve repair does not require anticoagulation and if successful, typically restores normal function. However, some repairs involve partial correction of a problem such as implantation of an annular ring to reduce the degree of regurgitation. Such cases are unlikely to be considered fit for a SCP as these valvular problems are typically associated with additional co-morbidities.

Follow-up: Follow-up, to include echocardiogram, should be done at years 1, 3 and 5 post repair.

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5.3 Inflammatory Heart Disease


Individuals with active pericarditis and/or myocarditis are considered unfit to work in a SCP. Fitness may be considered after satisfactory recovery with no adverse sequelae.

5.4 Cardiomyopathy

Obstructive hypertrophic cardiomyopathy poses a significant risk for sudden incapacitation and generally renders an individual unfit regardless of whether there has been surgical treatment. Those with minor asymmetric hypertrophy can be considered individually based on the degree of outflow obstruction and the nature of any arrhythmias.

Non-hypertrophic cardiomyopathies, dilated or congestive, in their active phase are incompatible with work in a SCP. Likewise symptomatic congestive heart failure even with normal quantification of left ventricular function is incompatible with work in a SCP. Cardiac catheterization is usually required to rule out ischemia as the etiology of the cardiomyopathy. Return to work in a SCP may be considered after recovery if the following conditions are met:

- Symptoms are absent.
- A satisfactory exercise tolerance test achieving 8.5 METS using the Bruce protocol indicates no ischemia, significant arrhythmia or disabling symptoms.
- Left ventricular function as determined by echocardiography is satisfactory, i.e. EF \geq 50%. An ejection fraction between 40% and 50% may be acceptable provided 24 hour Holter monitoring reveals no more than 3 ventricular ectopic beats per hour in the absence of antiarrhythmic medication, with no more than 3 consecutive beats and a cycle length of not less than 500 msec. Non-sustained ventricular tachycardia in someone with an ischemic cardiomyopathy is not acceptable.
- The risk of thromboembolism and (if applicable) the risk of hemorrhage secondary to anticoagulation is below the acceptable risk threshold.

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5.5 Heart Transplant

Due to the cumulative high rate of morbidity including vascular complications and the increasing mortality rate over time, cardiac transplantation disqualifies an individual from work in a SCP.

6. Congenital Heart Disease

6.1 Atrial Septal Defect

Anyone with a patent foramen ovale or a small sinus venosus or secundum defect (pulmonary/ systemic flow ratio less than 2:1 and normal right heart pressures) as determined by echocardiography or cardiac catheterization and without recurrent atrial arrhythmias may be considered fit. Those with partial atrioventricular canal defects (primum type atrial septal defects) cannot have more than mild mitral regurgitation, and they must meet the same requirements for flow ratios and atrial arrhythmias.


Individuals who have undergone a transcatheter correction or a surgical correction of a larger defect may be fit for a SCP if 3 months after the procedure they meet the same requirements, provided there has not been a significant event associated with their defect. A post-operative follow up echocardiographic evaluation is required to determine the extent of any residual leakage and shunting.

6.2 Ventricular Septal Defect

Fitness to work in a SCP will depend on the size of the ventricular septal defect as indicated by the hemodynamic consequences. In the absence of surgical correction, the following conditions have to be met:

- The heart size is normal.
- The pulmonary/systemic flow ratio is less than 2:1, as determined by echocardiography or cardiac catheterization.
- The pressures in the right heart are normal.

In the case of a surgically corrected ventricular septal defect, the same conditions have to be met as for no surgical intervention, and in addition:

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- No dysrhythmias or high-grade conduction disturbances are detected by Holter monitoring.
- A satisfactory treadmill exercise test, achieving at least 8.5 METS using the Bruce protocol indicates no ischemia, hypotensive blood pressure response, significant arrhythmia or disabling symptoms.

6.3 Coarctation of Aorta


Individuals with surgically corrected coarctation of the aorta should be considered on a case-by-case basis. The age at the time of the surgical correction will be a major determinant in the decision about their medical status since the risk of sudden death and incapacitation due to cerebrovascular accidents is markedly increased in those who undergo surgery after the age of 12 years. In all cases the blood pressure at rest and in response to exercise must be normal as determined by a treadmill exercise test.

6.4 Pulmonary Stenosis

The major determinant of risk with this condition is the severity of the stenosis. Those with mild pulmonary stenosis and a normal cardiac output can be considered fit for a SCP provided the following criteria are met:

- The peak systolic pressure gradient across the pulmonary valve is less than 50 mmHg, and the peak systolic right ventricular pressure is less than 75 mmHg, as determined by echocardiography or cardiac catheterization.
- Incapacitating symptoms e.g. chest pain, dyspnea or dizziness are absent.
- A satisfactory treadmill exercise test, achieving at least 8.5 METS using the Bruce protocol indicates no ischemia, hypotensive blood pressure response, significant arrhythmia or disabling symptoms.

Those with pulmonary stenosis corrected by surgery or balloon valvuloplasty will be considered fit for a SCP if there is no dysrhythmia and if the hemodynamic parameters are not worse than those described above.

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6.5 Tetralogy of Fallot

The unoperated condition with cyanosis is incompatible with a SCP. Individuals who undergo repair of Tetralogy of Fallot can be considered fit if the following conditions are met:

- Normal arterial oxygen saturation.
- Normal heart size.
- Right ventricular systolic pressure less than 75 mmHg and peak RV/PA gradient less than 50 mmHg.
- Residual interventricular shunt not more than 1.5:1.
- No dysrhythmias or high-grade conduction disturbances by Holter monitoring.
- A satisfactory treadmill exercise test, achieving at least 8.5 METS using the Bruce protocol indicates no ischemia, hypotensive blood pressure response, significant arrhythmia or disabling symptoms.


6.6 Transposition of Great Arteries

The unoperated condition is incompatible with work in a SCP with the sole exception of congenitally corrected transposition without any other associated cardiac abnormalities.

Individuals with atrial switch corrective procedures for transposition of the great arteries are unlikely to be considered fit because of the increasing propensity to atrial arrhythmias with passing years, even with technically excellent surgery. Those who have had arterial switch operations will need to be considered individually when this cohort begins to reach adulthood.

7. Dysrhythmias

Anyone with a dysrhythmia should be evaluated with two questions in mind: what is the nature of the disability produced by a given arrhythmia i.e., how incapacitating is the dysrhythmia when it occurs and what is the underlying condition of the heart i.e., is structural heart disease present? Both questions must be answered satisfactorily before a decision can be made about fitness to work in a SCP.

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7.1 Supraventricular Dysrhythmias

Supraventricular tachydysrhythmias may accompany self-limited illnesses e.g., pneumonia or treatable conditions e.g. hyperthyroidism. In such cases, the need to declare an individual unfit to work in a SCP will be only temporary.


Those in whom treatment with an antiarrhythmic agent is successful need not be restricted from working in a SCP. Successful use of ablation therapy should be confirmed with repeat electrophysiologic study 3 months later in those individuals whose arrhythmia was previously incapacitating. Those who undergo AV nodal ablation of the slow pathway are more likely to be considered fit because of the lower risk of development of heart block.

7.2 Sinus Node Dysfunction

Isolated sinus node dysfunction including sinus bradycardia may occur in healthy people, particularly those involved in vigorous exercise programs. Such a finding (a consequence of high vagal tone) need not necessarily be considered an abnormality. Provided the dysfunction does not interfere with mental function, the individual need not be restricted from working in a SCP. Where there is concern e.g. extreme bradycardia, a thorough symptom history should be followed by Holter monitoring and a treadmill exercise test. Even in a healthy person, no R-R interval should exceed 4 sec during sleep or 3 sec while awake.

7.3 Atrial Fibrillation

There are 3 major concerns with atrial fibrillation. The first is the risk of incapacitation associated with a hemodynamic effect from the arrhythmia itself. The second is the risk of embolism and the third is the risk of bleeding as a consequence of anticoagulation. Since risk is additive, the aggregate risk must remain below the acceptable risk threshold. Therefore it is possible to consider someone fit depending on their condition and the effect of treatment. The lowest risk is seen in those below 65 years of age who have intermittent or chronic, lone atrial fibrillation, i.e. no identifiable cause of the arrhythmia and no underlying structural heart disease. Annual follow-up in such cases should include 24 hr Holter monitoring. Individuals with atrial fibrillation who have 2 or more of the 5 major risk factors, including age > 65 years, structural heart disease, diabetes, high blood pressure and previous thromboembolism are considered to be above the threshold level of risk even when fully anticoagulated. Thus, older patients with structural heart disease generally have a cumulative risk of embolism and bleeding secondary to anticoagulation that exceeds the limit for medical fitness in a SCP. Except for those with lone atrial

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fibrillation for whom prophylaxis with ASA suffices, all other individuals will require full anticoagulation.

7.4 Pre-Excitation Syndromes

Not all cases of Wolff-Parkinson-White (the most common type of pre-excitation) are associated with incapacitating dysrhythmias. The risk of incapacitating symptoms in people who have never had a tachycardia is low but is not known with any precision. Anyone with only an electrocardiographic indication, whether chronic or intermittent, and no history of palpitations may be fit if their response to a treadmill exercise test is normal in all respects, particularly if evidence of pre-excitation is lost at accelerated heart rates. Such individuals are unlikely to conduct at a dangerously high rate if in atrial fibrillation. Electrophysiologic studies are not required in such cases.

7.5 Ventricular Dysrhythmias


The main concern with ventricular dysrhythmias is the underlying condition of the myocardium. If the myocardium is normal, ventricular ectopy should be judged on the basis of the disability produced and, to a lesser extent, on the presence or absence of complex forms. Although the complexity of premature ventricular beats is poorly correlated with risk in the presence of normal myocardial tissue, the appearance of multiform or repetitive forms of ventricular ectopy i.e., couplets, runs, should indicate the need for a thorough cardiac examination since these and other high grade forms of ectopy are more commonly seen in association with structural heart disease. If the ventricular ectopic beats have a LBBB pattern particularly with a vertical axis, right ventricular dysplasia should be ruled out by either invasive (ventriculography) or non-invasive (echo, MRI or radionuclide scintigraphy) tests.

The presence of more than 1 PVC on a resting 12-lead electrocardiogram warrants 24 hour Holter monitoring.

Exercise-induced ventricular tachycardia can occur in healthy people. These events are usually self-terminating. Such cases can be considered fit unless there are recurrent episodes. Individuals with sustained tachycardias (lasting more than 30 seconds) are unfit.

7.6 Conduction Disorders

First-and-second-degree (type 1) atrioventricular conduction delay can be seen during rest (particularly sleep) in healthy people with a structurally normal heart, who engage in vigorous exercise. High grade atrioventricular block should be investigated

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to rule out heart disease and to determine the risk of progression to complete heart block. Likewise first and second-degree block with structural heart disease should be investigated to determine the risk of progression to complete heart block.

7.7 Bundle Branch Block

Left bundle branch block and right bundle branch block of recent onset, indicate the need for a cardiovascular assessment by a specialist to rule out heart disease, especially ischemic heart disease. Isolated right bundle branch block and left hemiblocks that are longstanding are generally benign.

7.8 Cardiac Pacemakers


A pacemaker is designed to prevent the heartbeat from being too slow. When the heartbeat drops below 60 beats/min (or 50 beats per minute if hysteresis is programmed) most pacemakers are programmed to initiate an electrical impulse. The reliability of pacemakers is very high with failure rates being well below 1% per year. Furthermore in most cases, the heart maintains its own beats. The risk of bilateral failure is rare. Pacemaker failure can result from electromagnetic interference, battery depletion or lead displacement.

Each case needs to be considered individually and not before 1 month after successful implantation. Follow up once or twice yearly requires a pacemaker clinic report including an indication of the underlying rhythm and escape rate.

Some individuals are dependent on their pacemaker for all or most of their heartbeats. A pacemaker failure in such cases would have disastrous results. Any individual who is pacemaker dependent is unfit for work in a SCP.

7.9 Implanted Cardiac Defibrillators

It is highly improbable that an individual with an implanted cardiac defibrillator can be considered fit for a SCP. However individual cases can be considered provided there is no structural heart disease and the risk of an arrhythmia requiring discharge of the defibrillator is below the risk threshold. Typically an individual may need to wait through a trial period of at least 3 years. During this time defibrillator function and cardiac response must be carefully monitored to ensure that any dysrhythmias are properly identified, promptly corrected and that any such episodes are not incapacitating.

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8. Vascular Disorders

8.1 Aneurysm

Untreated aneurysms, even if asymptomatic are unlikely to be compatible with employment in a SCP unless it can be demonstrated that the risk of rupture is less than 2% per year. The presence of an aneurysm e.g. in the abdomen of a middle-aged or older individual raises concerns about the presence of co-existing conditions, particularly coronary artery disease. Prosthetic graft replacement of diseased aortic aneurysms with no other evidence of risk can be considered on an individual basis.

8.2 Asymptomatic Carotid Bruit


Since the presence of a carotid bruit may indicate severe stenosis, it should lead to a carotid Doppler examination. Likewise a cardiovascular assessment is required to rule out significant coronary artery disease. Significant carotid stenosis (>75%) even asymptomatic is associated with a >33% risk of coronary events over 4 years and therefore exceeds the acceptable risk threshold. Any stenosis that has been associated with a stroke will also result in an unfit assessment. Individuals with carotid stenosis less than 75% and with no evidence of significant coronary disease may be considered fit, provided they adhere to appropriate medical therapy and modifiable risk factors are under control.

8.3 Arterial Thrombosis

Those who have sustained an isolated, arterial thrombosis will be considered on an individual basis. Of particular concern are thromboses related to coagulopathies or other chronic predisposing conditions.

8.4 Venous Thrombosis

An isolated episode of deep venous thrombosis need not preclude working in a SCP provided there are no chronic predisposing conditions, Since the risk of recurrence decreases with time, a minimum of 3 months should elapse before returning to work. Those with recurring episodes or with known predisposing factors will be considered on an individual basis only after 12 months have elapsed since the last episode and their risk of recurrence is lowered by satisfactory anticoagulation. Such cases require demonstration of therapeutic INR levels over a recent 1-month period.


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8.5 Pulmonary Embolism

Anyone with an isolated episode of pulmonary embolism, without predisposing conditions for recurrence can be considered fit to work in a SCP after an interval of 3 months, provided there is no disabling, residual pulmonary hypertension, right ventricular function is normal and the risk of venous thrombosis and the risk of pulmonary embolism is decreased by appropriate treatment to an acceptable level.

9. Syncope

A single episode of typical vasovagal syncope is compatible with work in a SCP, provided there was a prodrome that allowed the individual to safely avoid danger and it did not occur while in a sitting position. If the cause was diagnosed and treated, e.g. with a pacemaker, return to work can occur after 1 month has elapsed following the treatment. All other cardiac causes including unexplained syncope must await 12 months of observation with no recurrence before returning to work.

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4.7 - Diabetes

Medical Guidelines for the Employment of Individuals with Diabetes in Safety Critical Positions in the Canadian Railway Industry

1. Introduction


Canadian railway employees who work in a Safety Critical Position (SCP) operate or control the movement of trains. Physical and mental fitness is mandatory. Impaired performance due to a medical condition could result in a significant incident affecting the health and safety of employees, the public, property or the environment.

Diabetes, if not well controlled, can cause sudden or gradual impairment of alertness, judgement, the senses or motor function. Hypoglycemic episodes and hypoglycemia unawareness are of particular concern. A severe hypoglycemic episode is defined as one which results in an impairment of alertness, judgement, the senses and/or motor function, a loss of consciousness or one requiring outside assistance.

Medical guidelines have been developed in order to evaluate and monitor the fitness for duty of individuals with diabetes employed in a SCP in the Canadian railway industry. These guidelines incorporate the Canadian Diabetes Association 2008 Clinical Practice Guidelines. In addition, it is expected that the Canadian Diabetes Association 2008 Clinical Practice Guidelines will serve as the basis of treatment of all individuals with diabetes in the Canadian railway industry.

Individuals with diabetes working in a SCP must be monitored closely. They must report any changes in the treatment of their diabetes to the Chief Medical Officer (CMO) of their railway company. This includes changes in the type and dose of their medication and a change in the number of insulin injections. They must also report any severe hypoglycemic episode. All employees with diabetes will be assessed individually with respect to their suitability for a particular SCP.

Fitness for duty issues related to diabetes are provided in Appendix I.

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2. Basic considerations

The employment of an individual with diabetes in a SCP shall be guided by three considerations:

- 2.1 The diabetes history (e.g., type of diabetes, presence of complications, adherence to treatment protocols, reaction to treatment).
- 2.2 The method of treatment of the diabetes (e.g., diet, oral anti-hyperglycemic agents and insulin).
- 2.3 The nature of the job.


3. Fitness for duty criteria

Individuals with diabetes will be eligible to work in a SCP provided they meet the following criteria:

- 3.1 All severe hypoglycemic episodes, as defined in the introduction, occurring in the past 12 months, have been investigated by the treating physician.
- 3.2 Not experiencing hypoglycemia unawareness.
- 3.3 Must be in a stable state. An unstable state is defined as an A1C equal or greater than 200% of the upper limit of the normal laboratory range.

In addition, for those individuals treated with insulin, an unstable state also includes:

- a) more than 10% of blood glucose self-monitoring values below 4 mmol/L. To provide evidence of this, the individual must comply with all monitoring requirements applicable to employees with diabetes; and
 - b) a recent change in the number of insulin injections and/or a change in the type of insulin. The unstable state will be considered to last at least one month after such a change. The individual will need to be assessed at monthly intervals and cannot return to work in a SCP until a stable state has been reached.
- 3.4 Perform adequate blood glucose self-monitoring as specified in these guidelines.

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- 3.5 Demonstrate a knowledge of managing diabetes, particularly insulin adjustment and understand how to avoid and treat hypoglycemic events.
- 3.6 Be free of diabetic complications which might impair ability to work safely, including significant vascular or neurological complications, and significant visual impairment.
- 3.7 An individual who is commencing insulin must attain a stable state (as defined in Section 3.3), for a period of at least 1 month before being considered fit to work in a SCP.

The individual must also meet all of the above fitness for duty criteria. To provide evidence of this, the individual must comply with all monitoring requirements applicable to individuals with diabetes treated with diet and insulin.


4. Monitoring requirements

Each of the following three categories of individuals with diabetes requires specific medical monitoring:

- 4.1 Individuals treated with diet alone, or with diet and oral anti-hyperglycemic agents except insulin secretagogues (sulfonylureas and meglitinides).
- 4.2 Individuals treated with diet and insulin secretagogues (sulfonylureas and meglitinides).
- 4.3 Individuals treated with diet and insulin.

5. Essential monitoring requirements for individuals treated with diet alone, or with diet and oral anti-hyperglycemic agents except insulin secretagogues (sulfonylureas and meglitinides)

- 5.1 Attendance at a diabetes education centre since the onset of disease or within the six months prior to commencing work in a SCP.
- 5.2 Medical assessment by their treating physician as part of the periodic medical assessment.
- 5.3 The individual shall report immediately to the CMO the initiation of any insulin secretagogue or insulin therapy (as this may increase the risk of an

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unstable state), and any severe hypoglycemic episode as defined in the introduction.

5.4 The individual must meet the fitness for duty criteria of Section 3.

6. Essential monitoring requirements for individuals treated with diet and insulin secretagogues (sulfonylureas and meglitinides)

6.1 Attendance at a diabetes education centre since the onset of disease or within the six months prior to commencing work in a SCP.


6.2 Medical assessment by their treating physician one year after the initiation of the insulin secretagogue and, at least, every third year thereafter if there is no evidence of severe hypoglycemic episode during the first year. This assessment shall include:

- The completed medical report for employees with diabetes working in a SCP (Appendix II);
- A review of A1C level(s) performed during the last year;
- A review (with report) of a resting ECG performed during the last year; and
- The treating physician’s opinion regarding the individual’s fitness for duty in a SCP.

The CMO of a railway company may determine a different frequency of the medical assessment if there is medical evidence indicating that more frequent assessment is required.

6.3 The individual shall report immediately to the CMO any significant modification in oral anti-hyperglycemic agent regimen (including initiation/change in monotherapy, or initiation of/or change in combination therapy), initiation of insulin therapy, and any severe hypoglycemic episode as defined in the introduction. Consideration should be given to utilizing antihyperglycemic drugs that have a low risk of hypoglycemia such as metformin and/or thiazolidinediones (TZD) (rosiglitazone, pioglitazone). Recommendations for the treating physician on the use of oral hypoglycemic medications are included at Appendix I.

6.4 The individual must meet the fitness for duty criteria of section 3.


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7. Essential monitoring requirements for individuals treated with diet and insulin

- 7.1 Attendance at a diabetes education centre since the onset of disease or within six months prior to commencing work in a SCP.
- 7.2 Blood glucose monitoring as follows:
 - a) Using a memory meter that can be down-loaded for further review;
 - b) Glucose readings performed at least 8 times per week. The measurements must cover the whole day, by including measurements before and after each meal, and at bedtime. At least half the measurements should be done during a working shift;
 - c) The individual must maintain a record of down-loaded glucose meter logs from the previous three months; and
 - d) Glucose values must be maintained above 4 mmol/L.
- 7.3 Annual medical assessment by their treating physician/specialist as described under Section 6.2.
- 7.4 Annual review and comment by the treating physician of the previous 3 months down-loaded glucose meter logs.
- 7.5 The individual shall report immediately to the CMO any change in the number of insulin injections per day (including initiation), any change in the type of insulin, and any severe hypoglycemic episode as defined in the introduction. Any individual commencing insulin must meet the fitness for duty criteria of Section 3.7.
- 7.6 The individual must meet the fitness for duty criteria of Section 3.


8. Hypoglycemia Prevention Strategy

As a condition of employment in a SCP, each individual will be required to take every possible measure to avoid hypoglycemia. Individuals at risk of hypoglycemia (e.g. using insulin secretagogue or insulin) must carry a source of rapidly absorbable glucose at all times. Hypoglycemia prevention strategies, including oral hypoglycemic medication recommendations, are discussed in Appendix I. These strategies must be tailored to the individual with the guidance of the treating physician.

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9. Individual Assessment

Individuals with diabetes must be assessed with regard to their suitability for particular position. The nature of the duties and responsibilities associated with their specific SCP must be closely evaluated before any final determination of their fitness for duty.

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Appendix I - Fitness For Duty Issues Related To Diabetes

DOES THE PERSON WITH DIABETES PRESENT AN INCREASED SAFETY RISK AS AN EMPLOYEE?

The major concern for the person with diabetes and the employer is hypoglycemia with the associated decrease in mental and physical functioning. In terms of general health, the modern aggressive approach to prevention, detection and treatment of vascular complications has considerably reduced the impact of diabetes on the affected individual.

It has become a valid argument that the person with diabetes who follows a program of regular exercise, a proper diet, correct use of medications and regular physician reviews, can be considered at less risk than the employee who may smoke, be overweight, not exercise and not receive regular assessment for the vascular risk factors such as hypertension, hyperlipidemia or even diabetes.


EMPLOYMENT OF THE WORKER WITH DIABETES IN A SAFETY CRITICAL POSITION

A Safety Critical Position in the Canadian railway industry is one with the highest potential impact on public safety. They include those employees who operate trains or heavy on-track equipment operated as a train as well as those who control the routing of trains. As such, the occupational requirements do vary, ranging from physical work to the monitoring of a computer terminal or dispatching console.

The key concern for the worker with diabetes in a Safety Critical Position is related to maintaining a stable blood glucose. This is particularly important during times of increased exercise, when blood glucose may fall, and when there may be a delay in access to food.

People with diabetes are most at risk in the following circumstances:

- a) insulin users;
- b) users of secretagogues (sulfonylureas and meglitinides);
- c) hypoglycemia unawareness; and
- d) previous history of serious vascular concerns, e.g. coronary artery disease, retinopathy.

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Each Safety Critical Position will have specific demands related to the job description. In addition, different collective agreements exist as to specific hours of work, time off and recall schedules. Generally, the running trades employee is entitled to a minimum of six hours off after completing a shift and may claim up to twenty-four hours delay before commencing the next shift.

Hypoglycemia – Prevention Strategies


Hypoglycemia is one of the most important concerns for individuals working in a Safety Critical Position. It is well recognized that some of the sulfonylureas (insulin stimulating drugs) are the most potent of the oral therapies in promoting hypoglycemia. Other drugs are available for the management of Type 2 diabetes that lessen the risk of hypoglycemia: metformin, TZD's; DPP IV inhibitors and the insulin secretagogues (meglitinides). These drugs are well-described in the CDA guidelines and briefly reviewed in Appendix I.

At the discretion of the treating physician, the following recommendations regarding treatment of Type 2 diabetes could be implemented. An expanded version of these recommendations is found in the Canadian Diabetes Association 2008 Clinical Practice Guidelines:


- a) When commencing oral drug therapies for the first time, the drugs of choice would be metformin.
- b) If metformin cannot be used or tolerated, the guidelines provide a range of second line drugs. Drugs that are less likely to induce hypoglycemia include the TZD's; acarbose, sitagliptin and the insulin-stimulating drugs repaglinide and gliclazide.
- c) Drug combinations can be chosen that will provide less risk of hypoglycemia from the above drugs.
- d) If insulin is required, the rapid-acting analogues and the extended-action analogues can provide excellent flexible glucose control with reduced hypoglycemia

Other hypoglycemic prevention strategies include any of the following:

- a) The blood glucose must be kept at a level high enough that hypoglycemia does not occur but not so high as to lead to an increased incidence rate of vascular complications.

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- b) The individual must have extensive knowledge regarding management of his/her own diabetes and understand the concerns of both hypoglycemia and hyperglycemia.
- c) The individual will need to establish a routine that will include regular meals and snacks. This does not preclude shift work or irregular hours.
- d) The individual must undertake regular self-glucose monitoring using a memory-equipped meter which will be done prior to meals and before reporting for duty.
- e) The individual must know how to adjust medications, particularly the use of sulfonylureas, meglitinides and insulin in accordance with meal routine and activities.

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Appendix II - Medical Report for Individuals with Diabetes

EMPLOYEE INFORMATION (To be completed by employee)	
Name: _____	Employee Number: _____
Address: _____	
City: _____	Postal Code: _____
Tel. No. (Home): _____	Telephone No. (Work): _____
Job Title: _____	Supervisor Name: _____
Job Location: _____	
EMPLOYEE CERTIFICATE OF INFORMATION AND RELEASE FOR PHYSICIAN TO REPORT MEDICAL INFORMATION	
<p>I, the undersigned, acknowledge that the position which I hold is of a safety critical nature and that it is incumbent on me to report any medical condition that may constitute a threat to safe railway operations. I declare that the information that I have provided or will be providing to the treating physician is truthful and complete. I will report any serious new hypoglycemic episode to my physician and to the Chief Medical Officer. A significant hypoglycemic episode is defined as one which results in an impairment of alertness, judgment, senses and/or motor function, a loss of consciousness or which requires outside assistance. If I change positions, I will take a complete copy of my medical file related to diabetes with me for any further medical examination. I hereby authorize any physicians, hospital, medical clinic or other medical service provider to release to the office of the Chief Medical Officer any information concerning any medical condition that may be related to my diabetes that may constitute a threat to safe railway operations. I understand that this information will be reviewed for the purpose of making a fitness for duty determination.</p>	
Signature of Employee: _____	Date: _____
INSTRUCTIONS TO PHYSICIAN:	
<p>Physicians assessing individuals occupying a Safety Critical Position declared by Canadian Federal Regulations are responsible under the Railway Safety Act to notify the railway Chief Medical Officer if an employee has a medical condition that could be a threat to safe railway operations. This individual is a Railway employee that has been diagnosed with diabetes. You are asked to complete this form.</p>	



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MEDICATIONS

NOTE: An individual who is commencing insulin will be considered unfit for duty in a Safety Critical Position for a period of at least one (1) month. The physician **MUST** report immediately to the Chief Medical Officer the initiation of any insulin therapy.

Please include the name, start dose and current dose of each hypoglycemic oral medication

Name	Start Dose	Current Dose
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

For Insulin users, specify type(s) of insulin and schedule of injections

Type(s) of insulin	Schedule of injections
_____	_____
_____	_____
_____	_____
_____	_____

Any change in the number of injections in the last 6 months? Yes: ___ No: ___

List all other current medications:

_____	_____
_____	_____
_____	_____
_____	_____

HYPOGLYCEMIA

Is the employee familiar with the symptoms of hypoglycemia? Yes No
What type of sugar does the individual have available while at work?

_____ Was the individual carrying that type of sugar at the time of your examination? Yes No

If the individual has had hypoglycemic episode(s) then:

- Does the individual recognize the symptoms at the time of an episode (warning signs)? Yes No
- Can the individual explain the cause of the episode? Yes No
- Is the individual capable of treating it quickly? Yes No

Have there been episodes in the past 12 months:

- a) that have required hospitalization? Yes No
- b) that have required an emergency visit? Yes No
- c) that came on suddenly? (without warning signs) Yes No
- d) that reduced concentration or readiness at work? Yes No
- e) that have required someone else's assistance? Yes No



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f) that caused a loss of consciousness? Yes No

If you answered yes to any of questions (a) to (f), please describe the episodes, dates, causes and any of the other characteristics or circumstances:

Average number of minor hypoglycemic episodes (recognized and treated by the patient) per month:

Average number of blood sugar level tests done per day and schedule:

For individuals treated with insulin:

Is individual using a memory meter that can be downloaded for further review: Yes No

If so, using the last three month period, are more than 10% of the results below 4 mmol/l? Yes No

MEDICAL HISTORY/PHYSICAL EXAMINATION

Has your patient had any surgical or laser procedures performed in either eye in the last year? Yes No

If 'Yes', please describe:

WEIGHT: _____

HEIGHT: _____

BLOOD PRESSURE ¹ : Lying down: _____/_____
Upright: _____/_____

Is there a history, symptoms or signs of:

- a) ophthalmic disease? Yes No
- b) cardiovascular disease? Yes No
- c) neurological impairment? Yes No
- d) renal disease? Yes No
- e) other? (specify) Yes No

Comments:

¹ CDA Guidelines BP goals: ≤130/80 mmHg



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MEDICAL REPORTS

The following reports must be appended to this report:

- Interpreted report of a recent resting ECG
- Report of an A1C¹ and done during the last 3 months

CONCLUSION

IMPORTANT: Canadian railway employees who work in a Safety Critical Position operate or control the movement of trains. Physical and mental fitness is mandatory. Impaired performance due to a medical condition could result in a significant incident affecting the health and safety of employees, the public, property or the environment. Your opinion on this individual's fitness to work in a Safety Critical Position would be appreciated.

In your professional opinion, is the examined individual medically fit for duty in a Safety Critical Position? Yes
No

Comments: _____

Name of Physician: (Print)

- Family Physician
- Specialist (Specify: _____)

Address:

Telephone:

Fax:


Date of Examination:

Postal Code:

Signature:

Date:

¹ CDA Guidelines goals: A1C ≤ 7.0%

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4.8 - Substance Use Disorders

Medical Guidelines for the Employment of Individuals with Substance Use Disorders in Safety Critical Positions in the Canadian Railway Industry

1. Introduction

Canadian railway employees who work in a Safety Critical Position (SCP) operate or control the movement of trains. Physical and mental fitness is mandatory. Impaired performance due to a medical condition could result in a significant incident affecting the health and safety of employees, the public, property or the environment. Impairment of their alertness, judgment or sensory or motor function can pose a serious safety threat.

Over ten (10) % of workers will experience a substance use disorder.¹² Workers with alcohol or other drug problems are significantly more likely to have a time loss injury or a fatal workplace injury¹³. Employees with substance dependence*, because of denial or other psychological defence mechanisms, often are unaware of the magnitude of their problem, so are unwilling or unable to seek help.

Background information on substance use disorders is provided in Appendix I. Terms initially identified with an asterisk (*) are in the Definitions section of these guidelines.


2. Scope

For the purpose of these guidelines, substance use disorders include substance abuse* and substance dependence. Both are medical conditions for which diagnostic criteria are those of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)¹⁴. The guidelines are to be used by physicians in the assessment of fitness for duty of employees in a SCP.

¹² http://www.workplace.samhsa.gov/wpworkit/pdf/workplace_substance_abuse_statistics_fs.pdf 2007

¹³ Ramchand E, Pomeroy A, Arkes J, The Effects of Substance Use on Workplace Injuries, RAND Centre for Health and Safety in the Workplace. http://www.ilo.org/safework/info/publications/WCMS_108415/lang--en/index.htm 2009

¹⁴ American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision, 2000

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3. Basic considerations

Employment of individuals in a SCP who may have a substance use disorder will be guided by the following considerations:

- 3.1 Medical history and physical examination.
- 3.2 Results of additional investigations as may be required (e.g. biological testing).
- 3.3 Assessment performed by the treating physician and/or by an Addiction Medicine Physician*.
- 3.4 Medical diagnosis of a substance use disorder (e.g. substance abuse or substance dependence).
- 3.5 Presence of medical and/or psychiatric comorbidity.
- 3.6 Absence of necessary coping skills.
- 3.7 Response to treatment.
- 3.8 Establishment of a medically monitored Relapse Prevention Agreement*.
- 3.9 Ongoing compliance with a medically monitored Relapse Prevention Agreement.

4. Definitions


The terms used in these guidelines are initially identified with an asterisk (*) in the text.

Addiction Medicine Physician: A physician with formal accreditation (certificant¹⁵ or diplomate status¹⁶) or peer recognition as having expertise in diagnosis and treatment of substance use disorders.

Addiction Treatment Program: Inpatient or outpatient treatment program providing intensive therapy using psychoeducation, motivational enhancement, cognitive/behavioural therapy, skills training, physical activities, mutual support group introduction and family therapy.

¹⁵ American Society of Addiction Medicine: www.asam.org Canadian Society of Addiction Medicine: www.csam.org

¹⁶ American Board of Addiction Medicine: www.abam.net

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Medical Monitoring Process: Process consisting of:

- Regularly scheduled in person and/or telephonic interviews to provide support, to detect signs and symptoms of impending relapse and to verify compliance with all components of the Relapse Prevention Agreement, and
- Medical investigations including biological testing (e.g. breath, hair and body fluid testing), and
- Mutual Support Program participation - Alcoholics Anonymous, Narcotics Anonymous, Al-Anon, Women for Sobriety, Secular Organization for Sobriety, Rational Recovery and Smart Recovery - offering group support meetings, structured recovery activities, educational materials and relapse prevention techniques for people recovering from addictive disorders and for their families. Participation should require attendance at a minimum of 3 in person (face to face) such meetings per week. (NOTE: online support groups, although helpful, do not qualify as mutual support program participation nor do they count towards the number of meetings required as specified in the Relapse Prevention Agreement).

Relapse Prevention Agreement: Formal document listing all necessary behaviours expected of the individual with a diagnosis of substance use disorder including reporting of all incidents of non-compliance to the railway Chief Medical Officer (CMO).

In the case of substance abuse, the agreement must include at a minimum:

- Total abstinence from all substances for the duration of the Relapse Prevention Agreement.
- All components of the Medical Monitoring Process.
- Duration of agreement.
- Reporting arrangements to railway CMO/Occupational Health Services.
- Acknowledgement of consequences for non-compliance.

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In the case of substance dependence, the agreement must include at minimum:

- Total abstinence from all substances as long as individual holds safety critical position.
- All components of the Medical Monitoring Process.
- Duration of agreement.
- Reporting arrangements to railway CMO/Occupational Health Services.
- Acknowledgement of consequences for non-compliance
- Arrangements for ongoing communication, especially with respect to compliance with medical or psychiatric professionals providing treatment for coexisting medical or psychiatric disorders.

Substance: Any mood-altering drug (with the exception of nicotine and caffeine) with which the drug user may meet criteria for substance use disorders (abuse or dependence). Categories of substances include alcohol, stimulants (e.g. cocaine, amphetamines, methylphenidate), cannabinoids, hallucinogens, solvents, opioids (e.g. codeine, morphine, heroin, methadone, oxycocet, hydromorphone, methadone, oxycodone, pentazocine, meperidine, buprenorphine, tramadol), sedative/hypnotics (e.g. benzodiazepines {e.g. diazepam, lorazepam, alprazolam, clonazepam, triazolam, chlordiazepoxide, flurazepam, oxazepam}, zopiclone, barbiturates).

Substance Abuse: (DSM-IV-TR):

- a) A maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by one (or more) of the following, occurring within a 12-month period:
 - Recurrent substance use resulting in a failure to fulfill major role obligation at work, or home.
 - Recurrent substance use in situations in which it is physically hazardous.
 - Recurrent substance related legal problems.
 - Continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance.
- b) The symptoms have never met the criteria for substance dependence for this class of substance.

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Substance Dependence: (DSM-IV-TR):

A maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by three (or more) of the following, occurring at any time in the same 12-month period:

- Tolerance, as defined by either the following:
 - A need for markedly increased amounts of the substance to achieve intoxication or desired effect.
 - Markedly diminished effect with continued use of the same amount of the substance.
- Withdrawal, as manifested by either of the following:
 - The characteristic withdrawal syndrome for the substance.
 - The same (or closely related) substance is taken to relieve or avoid withdrawal symptoms.
- The substance is often taken in larger amounts or over a longer period than was intended.
- There is persistent desire or unsuccessful efforts to cut down or control substance use.
- A great deal of time is spent in activities necessary to obtain the substance, use the substance or recover from its effects.
- Important social, occupational or recreational activities are given up or reduced because of substance use.
- The substance use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance.

5. Fitness for duty

5.1 Substance Abuse

Individuals with substance abuse cannot be considered fit for duty in a SCP until:

- They are documented to have been abstinent from all substances for one month. This period may be adjusted at the discretion of the railway CMO.

- A written report is provided to the CMO by a physician with recommendation that they be considered fit for duty in a SCP.
- They sign and demonstrate compliance with a Relapse Prevention Agreement.

The CMO may require that a medical assessment, including a written report, be performed by an Addiction Medicine Physician with recommendation that they be considered fit for duty.

5.2 Substance Dependence

Individuals with substance dependence cannot be considered fit for duty in a SCP until:


- They are documented to have been abstinent from all substances for three months. This period may be adjusted at the discretion of the CMO.
- A written report is provided to the CMO by a physician with recommendation that they be considered fit for duty in a SCP.
- They sign and demonstrate compliance with a Relapse Prevention Agreement.
- They have completed an initial intensive Addiction Treatment Program* that is acceptable to the CMO.

The CMO may require that a medical assessment, including a written report, be performed by an Addiction Medicine Physician with recommendation that they be considered fit for duty.

- 5.3 Individuals whose substance use has been detected at work (e.g. odour, intoxication, withdrawal symptoms, observed consumption) cannot be considered fit to work in a SCP until an assessment as directed by the CMO determines if their condition meets the criteria for substance abuse or substance dependence.

If, following this assessment, it is determined that an individual:

- Meets the diagnostic criteria for substance abuse or substance dependence, then Section 5.1 or 5.2 applies.

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- Does not meet the diagnostic criteria for substance abuse or substance dependence, this individual may be considered fit to work at the discretion of the CMO.

6. Exclusions from SCP

6.1 Permanent

Substance dependent individuals with organic central nervous system damage due to chronic substance use (e.g. Korsakoff's psychosis, Wernicke's encephalopathy, cerebellar dysfunction, cocaine-induced cognitive impairment).

In severe, later stage substance dependence, after an individual has participated in several intensive treatment programs and medical monitoring yet continues to experience relapses, then that individual may, after consultation between an Addiction Medicine Physician and the CMO, be designated permanently excluded from a SCP.

6.2 Temporary


- Opioid dependent individuals currently receiving opioid agonist therapy (methadone, buprenorphine).
- Individuals using medically-authorized marijuana or any prescribed cannabinoids.
- Individuals not meeting the fitness for duty criteria as per section 5.
- Individuals with a prior diagnosis of substance dependence who are on long-term opioids (refer to Subsection 4.10 - Therapeutic Opioids).

7. Assessment, Medical Monitoring, Relapse Prevention

7.1 Individuals who may have substance abuse or substance dependence must undergo a comprehensive diagnostic assessment.

7.2 Individuals who meet the criteria for substance abuse must:

- Agree to participate in a Medical Monitoring Process*.
- Sign and demonstrate compliance with all components of a Relapse Prevention Agreement for a period of at least two (2) years of stable abstinent remission

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with possible extension by the CMO if there is medical evidence indicating that further monitoring is required.

- Demonstrate total abstinence from all substances for the duration of the Relapse Prevention Agreement, documented through monitoring.
- Consent to a letter (See Appendix II) from the CMO to their treating physician, with a copy of the Relapse Prevention Agreement, advising the physician about the requirements for abstinence and the need for reporting to the CMO in the event of prescribing potentially addictive drugs.

7.3 Individuals who meet the criteria for substance dependence must:


- Complete an Addiction Treatment Program acceptable to the CMO.
- Agree to participate in a Medical Monitoring Process.
- Sign and demonstrate compliance with all components of a Relapse Prevention Agreement for a period of at least two (2) years of stable abstinent remission with possible extension by the CMO if there is medical evidence indicating that further monitoring is required.
- Demonstrate total abstinence from all substances as long as they remain employed in a safety critical position.
- Consent to a letter from the CMO to their treating physician, with a copy of the Relapse Prevention Agreement, advising the physician about the requirements for abstinence and the need for reporting to the CMO in the event of prescribing potentially addictive drugs.
- Establish community supports (e.g. Mutual Support Program participation*, sponsor, home group, counsellor, exercise plan) as specified in the Relapse Prevention Agreement.

7.4 Individuals with substance dependence in stable abstinent remission will require an annual report to the CMO from their treating physician verifying the individual's ongoing abstinent remission for 5 years following successful completion of the Relapse Prevention Agreement (see Appendix III). Subsequent medical reports from the treating physician may be required at the discretion of the CMO.

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8. Individual Assessment

Individuals with substance use disorders must be assessed with regard to their suitability for a particular position. The nature of the duties and responsibilities associated with their specific SCP must be closely evaluated before any final determination of their fitness for duty.

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Appendix I - Background Information on Substance Use Disorders

General Nature of Substance Use Disorders

People with substance use disorders represent a significant risk to themselves and others especially when they work in safety critical positions. Physicians may play a vital and proven role in screening and referral of these patients for comprehensive rehabilitation and return to work¹⁷. Failure to detect or to refer for treatment, and to communicate with the railway CMO, results in a missed opportunity to intervene on a potentially fatal, chronic disease¹⁸. It also can result in liability.

In the event that a possible substance use disorder is detected when a physician is treating an individual who works in a railway SCP, the physician, under the Railway Safety Act must, if the individual might pose a risk to safety, report this finding to the railway CMO¹⁹.

There are telltale “red flags” or clinical indicators that the patient might have a substance use disorder.

Red Flags

The following lists of co-morbid factors, behaviours and clinical signs include many of the common indicators of possible substance use disorder:

Co-morbid Factors

- Presence of psychiatric disorders (e.g. anxiety and mood disorders)
- Family and psychosocial dysfunction
- Heavy smoking

¹⁷ Haggerty, J. Early detection and counselling of problem drinking, the Canadian Guide to clinical preventive health care. The Canadian Task Force on Periodic Health Exam, 1995.

¹⁸ Dawe S, Mattick RP, Review of Diagnostic Screening Instruments for alcohol and Other Drug Use, Australian Government Publishing Service, (2001) [www.health.gov.au/pubhlth/publicat/document/diagrev, pdf](http://www.health.gov.au/pubhlth/publicat/document/diagrev.pdf)

¹⁹ Canadian Medical Association, Interface, Physicians must now report unfit railway workers, Vol.2, No 9, Sept. 4, 2001

Behaviours


- Changing doctors, multiple doctors, multiple pharmacies
- Early requests for psychoactive prescription refills
- Missed or late for appointments
- Abusive telephone calls, office staff concerns
- More than two jobs with different employers in the past 5 years
- Patient preference for short-acting opioid over sustained-release opioid
- Patient frequently requesting notes for workplace absences
- Patient requesting authorization for “medical marijuana”
- Patient requesting repeat prescriptions for opioids or benzodiazepines in usually acute, self-limiting conditions

Signs

- Advanced dental/periodontal disease
- Alcohol or drug related injuries (motor vehicle accident, fight, recreational activity)
- Erratic, volatile emotions
- Failure to respond to medical management of hypertension, depression or type 2 diabetes
- Jaundice
- Recurrent injuries, recurrent illnesses requiring time loss, repetitive short term/long term disability insurance claims
- Odour of alcohol/marijuana during patient office visit
- Pancreatitis
- Seizure
- Tremor
- Unexplained weight loss/gain

Investigations

- Elevated MCV, GGT, AST, ALT, uric acid

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Screening for Substance Related Problems

1. Has alcohol or another drug ever caused any problems in your life?
2. When you use alcohol or other drugs do you sometimes use more than you intended?
3. C. A.G.E.²⁰ questions (modified for other drugs):
 - C:** Have you ever decided you should **cut down** on your drinking/use of other drugs?
 - A:** Have you felt annoyed or **angry** at someone when they commented on or criticized your drinking or use of other drugs?
 - G:** Have you felt bad or **guilty** about your drinking or use of other drugs?
 - E:** Have you used alcohol or other drugs shortly after getting up as an **eye-opener** or to make you feel better?

Further Evaluation


Once screening (CAGE, AUDIT²¹, DAST²²,) or telltale warning flags noted during medical history, physical exam, and investigation have identified an individual with increased likelihood of a substance use disorder, it is imperative to determine whether the individual meets the diagnostic criteria for either substance abuse or substance dependence²³. If dependence is present, then an Addiction Treatment Program must be completed and abstinence from all substances must be part of the medically monitored Relapse Prevention Agreement. In the event that, after performing the assessment, the Addiction Medicine Physician is uncertain of the diagnosis (e.g. If there is clinical suspicion of dependence but only the criteria for abuse have been met) it is up to the discretion of the Addiction Medicine Physician in consultation with the railway CMO to determine the intensity and duration of treatment required. With individuals working in a SCP, if there is doubt with respect to the diagnosis, it is appropriate to err on the side of safety.

²⁰ Ewing JA, Detecting alcoholism; the CAGE questionnaire. JAMA 1984;1905-1907

²¹ Saunders JB, Aasland OG, Babor TF, et al: Development of the Alcohol Use Disorders Identification Test (AUDIT): Who Collaborative Project. Addiction 88:791-804, 1993

²² Skinner HA, The Drug Abuse Screening Test, Addiction Research Foundation (Renamed Center on Addiction and Mental Health) Toronto, 1982

²³ American Psychiatric Association, Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Washington DC: American Psychiatric Press (1994)

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Essential Components of Assessment by Addiction Medicine Physician

- Signed, informed consent, including permission to communicate all findings to railway CMO
- Medical history and review of medical documentation
- Psychosocial history
- Addiction diagnostic evaluation
- Pain evaluation
- Mental status exam
- Review of systems
- Physical exam
- Lab work (including at least: MCV, GGT, urine, breath and/or blood toxicology)
- Collateral interviews (or review of collateral documents – medical, vocational, legal)
- Self-administered screening and diagnostic questionnaires
- Diagnostic formulation as per DSM-IV-TR
- Coping skills evaluation
- Initial treatment recommendations
- Current recommendations on fitness for work
- Estimate of probable duration of disability
- Prognosis

Inpatient v. Outpatient Treatment of Substance Use Disorders

There is good evidence supporting the efficacy of outpatient treatment for substance dependence²⁴. There is significant safety risk associated with relapse in individuals in a SCP. Inpatient treatment may result in improvement in outcomes with decreased risk for relapse. With a paucity of available intensive outpatient treatment programs in many parts of Canada, inpatient treatment should be the rule in treating individuals in a SCP.

²⁴ Moos MR, Finney JW, Ouimette PC, et al. A comparative evaluation of substance abuse treatment: Treatment orientation, amount of care and 1-year outcomes. *Alcoholism: Clinical & Experimental Research* 23:529-536, 1999

Medically Supervised Detoxification

Brief treatment using longer-acting sedative-hypnotic or opioid drugs will sometimes be necessary. There is good evidence that using a clinical scale such as the CIWA-A²⁵ to match the intensity of pharmacological therapy with severity of withdrawal symptoms, will minimize both the duration of withdrawal and severity of adverse events. Medically supervised detoxification provides the opportunity to assure safety from complications such as seizures while motivating the patient to proceed with treatment for their addictive disorder. Detoxification should not be considered sufficient treatment to prepare a substance dependent person for sustained abstinence. Without further treatment, following a course of inpatient or outpatient detoxification, relapse and continued progression of substance dependence is to be expected.

Medications

Adjunctive Medications for Addiction Treatment

Although the most important components of the treatment of substance use disorders has been shown to be contingency management²⁶ of treatment consisting of education, motivational enhancement techniques, cognitive behavioural therapies and participation in Mutual Support Programs there is good evidence to support the use of adjunctive medications in selected cases. Just as bupropion (Zyban®) combined with psychotherapy almost doubles success rates in smoking cessation²⁷, naltrexone (Revia®) when combined with counselling decreases rates of relapse early in abstinence in severely alcohol dependent individuals²⁸. Although the evidence is less robust for disulfiram²⁹ (Antabuse®), this drug has also shown usefulness during early abstinence for individuals with alcoholism, especially if they must unavoidably be in a high risk situation. As yet there is no particular pharmacological therapy that has shown efficacy in the treatment of cocaine dependence.

²⁵ Sullivan JT, Sykora K, Schneiderman J, Naranjo CA, and Sellers EM. Assessment of alcohol withdrawal: The revised Clinical Institute Withdrawal Assessment for Alcohol scale (CIWA-AR). *Br L Addict* 84:1353-1357, 1989

²⁶ Pendergrast M, Podus D, Finney J, et al. Contingency Management for treatment of substance use disorders: a meta-analysis. *Addiction* 2006, 101:1546-1560

²⁷ Hurt RD, Wolter TD, Rigotti N et al, A Comparison of Sustained Release Bupropion and placebo for smoking cessation, *New England Journal of Medicine* 337:1195-1202, 1997

²⁸ Volpicelli J, O'Brien C, Alterman A, et al. Naltrexone in the Treatment of Alcohol Dependence. *Archives of General Psychiatry* 49:867-880, 1992

²⁹ Brewer C, Meyers RJ, Johnsen J, Does Disulfiram Help to Prevent Relapse in Alcohol Abuse? *CNS Drugs* 14:329-341, 2000

For intravenous opioid dependent individuals, good evidence supports opioid agonist therapy using methadone³⁰ combined with psychosocial support and counselling. Because there is insufficient evidence to provide assurance that substance dependent individuals working in a SCP can safely perform their duties on opioid agonist maintenance therapy, individuals with opioid dependence will not be permitted to resume SCP until they have been successfully tapered from methadone maintenance and have completed outpatient or inpatient intensive treatment and entered into a Monitored Relapse Prevention Agreement demonstrating a period of successful abstinence.

Using anticonvulsant medication such as Dilantin® to prevent recurrence of alcohol related seizures has been proven ineffective³¹.

Antidepressants

About 30% of abstinent substance dependent individuals will also suffer depression³². Because of the dysphoria/dysthymia commonly seen in addicted individuals, the diagnosis is difficult to make during active addiction and early abstinence. Sometimes individuals' depression is so severe that pharmacological treatment simply cannot wait until they have progressed beyond early abstinence. Antidepressants, if indicated, are appropriate for the treatment of depression in carefully selected abstinent recovering substance dependent individuals. Studies comparing cognitive behavioural therapy (CBT) to antidepressants and placebo in the treatment of depression have shown that CBT results in comparable outcomes to antidepressants.³³

³⁰ Ball JC & Ross A, The Effectiveness of Methadone Maintenance Treatment, New York, Springer-Verlag, 283, 1991

³¹ ASAM Clinical Practice Guideline, Phenytoin and Withdrawal, www.asam.org/publ/dilantin.htm (1997)

³² 2001 National Household Survey on Drug Abuse (NHSDA), US Department of Health, www.samhsa.gov/oas/nhsda/vol1/highlights.htm

³³ DeRubeis RJ, Gelfand LA, Tang TZ, Simons AD, Medications versus Cognitive Behavior Therapy for Severely Depressed Outpatients: Mega-Analysis of Four Randomized Comparisons, Am J Psychiatry 156:1007-1013, July 1999

Hypnotics

Sleep disturbances are ubiquitous in substance dependent individuals. Use of benzodiazepines and zopiclone should be avoided and their use would render the individual temporarily unfit to work in a SCP. If a thorough sleep hygiene program is ineffective in restoring sleep, a course of a low dose of a sedating antidepressant such as amitriptyline or Trazadone®, will usually suffice. During the course of successful abstinent recovery, most patients find their quality of sleep improves spontaneously.

Analgesics


Acute and chronic pain or elective surgery can present a crisis or trigger for relapse in individuals during abstinent recovery. This risk may be minimized by preparation, increasing the intensity of relapse prevention activities, providing support and avoiding prn doses of opioids. If opioid analgesics must be used because of severe pain, they should be prescribed in adequate amounts, using a frequent, fixed-dose schedule (e.g. Tylenol #3, 2 tabs. every 3 hours while awake) with a “sunset clause” – (e.g. discontinue on the 4th post-op day). Monitoring personnel and CMO must be informed and a decision reached as to fitness to continue safety critical duties while on opioid medication³⁴.

By far the majority of individuals suffering from chronic pain and chronic pain syndromes are best managed using non-opioid treatments, including cognitive-behavioural therapy, physical therapy and non-addictive medications such as NSAIDs and antidepressant drugs. Individuals working in safety critical positions taking mood altering and/or potentially addictive medications pose a special risk. All individuals in a SCP must inform and receive clearance from both the prescribing physician and the CMO if they are to be prescribed opioids or benzodiazepines. Individuals in a SCP with a history of substance dependence with chronic pain conditions must be managed with special care and vigilance. Specialists in both Pain Medicine and Addiction Medicine must be consulted and involved in treatment planning and management of these employees and a therapeutic behavioural contract must be in place, listing all expectations of the individual/patient.

Medical Marijuana

The presence of Δ -9-THC in the body and brain of an individual, even if prescribed by a medical practitioner (e.g. Marinol®, Sativex®), renders that individual unfit to work in a SCP. Use of a prescribed synthetic cannabinoid (e.g. nabilone {Cesamet®}) would also render an individual unfit to work in a SCP.

³⁴ Railway Association of Canada, Railway Medical Guidelines, Subsection 4.10-Therapeutic Opioids, pp176-193

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Other Medications

Symptoms of dysphoria, dysthymia and anxiety are seen in many substance dependent individuals during some stage of the disease and early in the course of abstinence. Physical activity, good nutrition, rest, reassurance and simple counselling are preferable to pharmacological intervention. Since, by definition, substance dependent individuals have lost their ability to consistently control the ingestion of mood-altering drugs, prescribing potentially addictive medication to an individual with a history of addiction is hazardous. Benzodiazepines should generally be avoided. If a condition occurs that cannot be treated using a safer type of drug, then the railway CMO should be notified, and the benzodiazepine should be given using a fixed dose, rather than prn schedule for a brief and clearly predetermined period of time, much like one would prescribe a steroid.

Use of any Substances while in Recovery from Substance Dependence

All addictive drugs (stimulants, cannabinoids, alcohol, opioids, sedative/hypnotics) cause the dopaminergic components of the mesolimbic system (nucleus accumbens, prefrontal cortex, ventral tegmental area) to release dopamine resulting in a sensation of pleasure³⁵. When an addicted person's drug of choice becomes no longer available, they will often learn that other substances will serve the same function. For that reason, persons dependent upon alcohol or any other substance must, as part of their recovery, maintain abstinence from all other substances or categories of addictive drugs.

Alcohol is a particularly dangerous drug for people recovering from other substance dependencies. In addition to activating the mesolimbic pathways affected by the other addictive drugs, alcohol also, as a depressant, inhibits the parts of the cerebral cortex necessary for behavioural inhibition or the type of cautious judgment that results in avoidance of risky behaviour. The consumption of even a small amount of alcohol results in elevation of mood and a phenomenon called priming, mediated through the brain's endogenous opioid system, resulting in craving and the desire to continue ingesting the drug, in susceptible individuals. At the same time the part of the cortex most sensitive to depression by alcohol is mildly inhibited or suppressed, resulting in reduced vigilance, self-consciousness and a reduction in the normal anxiety one would experience over engaging in risk-taking behaviour. For this reason moderate alcohol consumption is a common cause of relapse in persons previously addicted to other drugs.

³⁵ Vaccarino F, Rotzinger S, Neuroscience of Psychoactive Substance Use and Dependence (summary) World Health Organization, 2004 http://www.who.int/substance_abuse/publications/en/Neuroscience.pdf

Biological Testing

Employers whose employees perform functions that have the potential to endanger others have a responsibility to ensure that employees with medical conditions that could cause impairment adhere to relapse prevention programs. Because of the nature of addiction, relapse might be denied and concealed by the relapsing substance dependent employee. For this reason a Medical Monitoring Process must be established so that non-compliance by the recovering substance dependent worker, indicating increased risk of relapse, is reported to the employer. Biological testing (e.g. breath, hair and body fluid testing) is an important component of the Medical Monitoring Process. Certain drugs, such as cocaine, are only detectable for very brief periods in the urine, reducing the likelihood of detection during monitoring, even using a truly random testing schedule. Physicians who perform parts of the Medical Monitoring Process may exercise clinical judgment with respect to the interview, examination and laboratory investigations, based upon the individual and the clinical picture they provide. If a physician involved in the Medical Monitoring Process suspects alcohol use in an abstinent cocaine dependent person, one way to help verify that the person has not consumed significant amounts of alcohol in the last several weeks is to perform serum GGT and or MCV. A urine test has been recently developed to detect a metabolite of ethanol called Ethyl Gluconuride (EtG). When testing for this alcohol biomarker, the specimen donor must have been warned in advance about the sensitivity of this test. Not only will it detect metabolites of ethanol consumed up to 4 days prior to sample collection, it will record a positive result if the donor has been exposed to alcohol in hand sanitizers, after-shave lotion and mouthwash. Fortunately the results from immunoassay and confirmatory testing are quantified, so that accurate interpretation of the likelihood of inadvertent environmental exposure may be determined by an experienced Medical Review Officer.

Post -Treatment Re-evaluation and Relapse Prevention Agreement

Prior to returning substance dependent individuals to work in a SCP after completion of an Addiction Treatment Program, individuals in early full remission from substance dependence must be re-evaluated to determine if they are fit to resume safety critical duties. It is important during this examination to identify and address serious comorbidity that could result in increased risk of relapse or persisting safety risks at work. A partial list of these conditions would include:

- Chronic pain syndromes
- Cerebellar dysfunction: ataxia, incoordination
- Cognitive impairment
- Diabetes
- Psychiatric illness (e.g. mood and anxiety disorders)

- History of seizures
- Other serious medical conditions

During the re-evaluation, the physician must determine abstinence, stage of recovery, level of motivation, persisting defence mechanisms, stability of the home situation, Mutual Support Program involvement, involvement with a counsellor, coping skills, relapse risk and ensure the recovering person has established a Medical Monitoring Process. The components of the medically monitored Relapse Prevention Agreement are determined, based on problems identified during the assessment by the Addiction Medicine Physician and/or treating physician and during the Addiction Treatment Program. It is essential that the individual be documented to have three months abstinence from all Substances and compliance with the Relapse Prevention Agreement prior to returning to safety critical work.

Disability Duration

It is generally accepted amongst Addiction Medicine professionals that the workplace consequences of substance dependence tend to occur later during the progression of alcohol and other substance dependencies than consequences affecting family, finances, emotions and other areas of the patient's life. The very fact that the workplace has become aware of a possible substance related problem must raise the clinician's index of suspicion of later stage illness. Sometimes even the most thorough assessment by an Addiction Medicine Physician will fail to reveal adequate diagnostic criteria to make the diagnosis of dependence, resulting in an erroneous diagnosis of substance abuse. By insisting upon a period of documented, monitored abstinence, the clinician will be more assured that the employee has sufficient stability to allow for the return to a safety critical position. In the event of a missed diagnosis of dependence, the individual's return to use of the same or another addictive, mood-altering drug during this period will allow the Addiction Medicine Physician to change the diagnosis and treatment plan.

Since relapse is most likely during the earlier stages of abstinent recovery³⁶, it is preferable to have the individual safely monitored and away from active safety critical duties during this time of highest risk.

Contingency Management

Contingency management³⁷ is a term used to describe a remarkably effective type of

³⁶ Douaihy A, Daley D, Marlatt A, Spotts C, Relapse Prevention: Clinical Models and Intervention Strategies, in Principles of Addiction Medicine 4th Edition, American Society of Addiction Medicine, 883-898

³⁷ Pendergrast M, Podus D, Finney J, et al. Contingency Management for treatment of substance use disorders: a meta-analysis. Addiction 2006, 101:1546-1560

treatment and relapse prevention for people with substance dependence. This motivational technique, sometimes called “the carrot and the stick” is based upon the effectiveness of operant conditioning in changing human behaviours and maintaining the behavioural change. When a person experiences reward for certain behaviours and consequence for other behaviours, they are more likely to perform activities resulting in rewards and less likely to do things that result in negative consequences. Indeed, part of the problem with chronic addiction is that the substance dependent person perceives, often mistakenly, that the anticipated benefits of substance use (pleasure, relief, escape) exceed the likely consequences of the behaviour. With contingency management a behavioural contract is created (in this case a Relapse Prevention Agreement) listing expected behaviours (compliance) that will result in benefits or rewards (disability insurance, avoidance of workplace discipline, continued employment) and the expected consequences that will result from non-adherence to the Relapse Prevention Agreement. When medically monitored Relapse Prevention Agreements are established and maintained over a prolonged period of time, long-lasting behavioural change, and sustained abstinent remission, is a very likely outcome. Physicians with a diagnosis of substance dependence are perhaps the most widely studied group of substance dependent personnel managed using medically monitored contingency behavioural contracting³⁸. A great deal of evidence has accumulated showing that mandatory medical monitoring of physicians following treatment of substance dependence results in remarkably (over 80%) rates of long-term, stable abstinent remission³⁹. The duration of mandatory medical monitoring resulting in such high rates of recovery varies, but is often extended for 10 years or even indefinitely in cases with a high risk of relapse (e.g. multiple prior relapses, serious psychiatric co-morbidity).

The Medical Monitoring Process

Medical Monitoring is arguably the most important component in the treatment of individuals with substance use disorders. Like many other chronic illnesses, addictions are marked by early lapses or relapses⁴⁰, from which the recovering individual will learn valuable information and strengthen their recovery. Although relapse is much more likely during the first year of abstinent remission, people with a history of substance dependence remain at increased risk

³⁸ Earley P, Physician Health Programs and Addiction among Physicians, in Principles of Addiction Medicine pp 531-547, Lippincott Williams & Wilkins 2009

³⁹ McLellan AT, Skipper GS, Campbell M et al. Five year outcomes in a cohort study of physicians treated for substance use disorders in the United States. British Medical Journal 2008;337:1154-1156

⁴⁰ Scott CK, Foss MA, Dennis ML. Pathways in the relapse-treatment-recovery cycle over 3 years. J. Subst. Abuse Treatment 2005; 28:S63-S72

of relapse to active substance dependence for many years⁴¹. Patients with a history of substance dependence who engage in ongoing relapse prevention activities over a longer duration achieve greater rates of sustained rates of remission than those who participate in treatment for a shorter period of time.⁴²

Personnel providing components of Medical Monitoring Process interact with the individual being monitored by means of in person interviews, very frequently early in recovery and less frequently with prolonged abstinent stability. The risk of further relapse is greatly reduced after a period of two years of stable, uninterrupted abstinent recovery.

During either in person or telephonic interviews, monitoring personnel observe for signs and symptoms of impending relapse and review all elements of the Relapse Prevention Agreement. Warning symptoms of possible relapse could include irritability, emotional volatility, evasiveness, a change in attitude from grateful to negative, critical, or overconfident. During these interviews support, feedback and reassurance are provided especially during periods of discomfort, common in early recovery. Personnel who undertake to offer services as part of the Medical Monitoring Process will report on a regular time schedule to the railway CMO. In the event of gross non-compliance or serious relapse, they must report immediately.

For individuals occupying a SCP with substance dependence the usual duration of mandatory medical monitoring will be for no less than two years of uninterrupted, stable abstinence.

The duration of monitoring should be longer than two years of uninterrupted abstinence in cases of:

- Multiple previous treatments/relapses.
- Psychiatric co-morbidity.
- Certain types of medical co-morbidity (e.g. seizure disorder, unstable diabetes, chronic pain).
- Polysubstance dependence

In cases of continued increased risk of relapse, based upon clinical judgment of the Addiction Medicine Physician and that of the CMO, monitoring might be required for as long as the entire duration of the worker's employment in a SCP.

When the individual with substance dependence completes the term of the Relapse Prevention Agreement in stable sustained abstinence less formal medical monitoring will be a

⁴¹ American Psychiatric Association, Substance Dependence: Disease Definition, Epidemiology and Natural History, http://www.psych.org/clin_res/pg_substance_2.cfm#

⁴² Doualhy A, Daley D, Marlatt G, Spotts C, Relapse Prevention: Clinical Models and Intervention Strategies, in Principles of Addiction Medicine pp 883-898, Lippincott Williams & Wilkins 2009

continued requirement. Annual reports to the CMO from the treating physician (Appendix III) will be required verifying ongoing abstinent remission for a period of five years after successful completion of the term of formal medical monitoring. The requirement for annual reports from the treating physician may be extended beyond 5 years based upon the clinical discretion of the CMO.

Medical Monitor Qualifications

Personnel who provide Medical Monitoring should be experienced in managing individuals with substance dependence. Addictions counsellors with recognized certification, certified EFAP counsellors, and health professionals (MD's, RN's) may provide various components of the Medical Monitoring Process. By signing the Relapse Prevention Agreement, the personnel participating in the Medical Monitoring Process, under supervision of the railway CMO, assume significant responsibilities with potential liability.

The Family

Addictions have been termed family diseases.⁴³ With time, the family system of the substance dependent individual often becomes dysfunctional as it adapts in order to continue to function in spite of the disruptive behaviours of substance dependent family member. Unfortunately, many of the behaviours of family members in an addicted family system serve to enable or perpetuate the addictive behaviour. Once the family system has been altered by addiction, it will often need some form of therapy such as education, mutual support group (Al-Anon, Nar-Anon), or help from a psychotherapist knowledgeable about addictions. If the substance dependent individual is returned to a family unprepared for the attitudinal and behavioural changes of the recovering family member, there will be needless emotional tension and increased likelihood of relapse or marital failure⁴⁴.


Relapse

Especially during early recovery when the risk of relapse is greatest, more vigilance is needed by both the recovering individual and those providing relapse prevention support. Although all incidents of non-compliance must be reported to the CMO, not all episodes of substance use will

necessarily result in maximum consequences. When a self-reported brief lapse occurs and the individual demonstrates an attitude consistent with recovery, the response of the CMO in

⁴³ Anon, How Al-Anon Works for Families and Friends of Alcoholics, Al-Anon Family Group Headquarters Inc. New York, 1995

⁴⁴ Liepman M, Parran T, Karkas K, Lagos-Saez. Family Involvement in Addiction, Treatment and Recovery, in Reis et al eds. Principles of Addiction Medicine, 4th Ed. (2009) Lippincott, Williams, Wilkins pp 857-868

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consultation with the Addiction Medicine Physician will be more flexible, depending upon individual circumstances.

Role of Employee and Family Assistance Program(s) (EFAP)

Canadian railway companies have either externally provided or internal, peer-led employee and family assistance programs. EFAP counsellors provide confidential brief problem assessment, referral and supportive counselling to employees and family members experiencing a variety of emotional or stress-related problems, including addictions. The EFAP counsellor is in an ideal position to identify substance use disorders at an earlier stage as individuals with a substance use disorder will often seek counselling, not realizing the underlying cause of their emotional and interpersonal problems. They can also provide a vital source of support during the early months and years of recovery. Often the EFAP counsellor will be able to engage the family to help solve the problems commonly seen in the first year or two of abstinent recovery.

Harm Reduction and Controlled Drinking

The concept of “harm reduction” refers to the approach of offering health services to the substance dependent individuals in an attempt to engage them in health-risk reduction without insisting upon abstinence as a condition of continued treatment. Physicians are expected to attempt to reduce harm to their patients in every patient interaction. In the case of individuals in a SCP, the necessary components for effective, evidence-based physician interventions are in place. The most effective, safest approach with these individuals is to insist upon abstinence-based treatment modalities. Although a very small proportion of substance dependent individuals, including some alcoholics, can learn to control their ingestion of drug, there is no reliable way to predict which dependent individuals belong to that small minority. Because of the high level of risk to these individuals as well as to fellow employees and the public, any alcohol or other drug use by a recovering substance dependent safety critical individual is unacceptable.

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Appendix II - Letter to Doctors/Dentists Example

Date

Dear Dr. _____

Subject: Your patient, _____

Your patient, _____, is recovering from a substance use disorder and also holds a safety critical position (SCP) at (name of the railway company). According to the Railway Medical Guidelines for fitness to perform safety critical duties, SCP employees with a history of a substance use disorder must comply with a Relapse Prevention Agreement and maintain abstinence from the use of substances as specified in the agreement. The specific Relapse Prevention Agreement for your patient is enclosed.

Although the necessity for relapse prevention monitoring occurs because of safety concerns, it is important to remember that contingency behavioural management using monitored relapse prevention agreements such as the one signed by your patient results in superior rates of long-term abstinence recovery for people with a substance use disorder.

Because of the risk of relapse and the safety risks associated with an active substance use disorder we ask that you refrain from prescribing addictive medications (opioids, barbiturates, benzodiazepines, zopiclone, psychostimulants) to this individual unless you are unable to find any alternatives. In the event that you feel there is no alternative, please contact _____

We appreciate the care you continue to provide to your patient/our employee and anticipate your cooperation in this matter.

Yours truly,



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Appendix III – Medical Report for Individuals with Substance Use Disorder

EMPLOYEE INFORMATION (To be completed by employee)

Name: _____ Employee Number: _____
 Address: _____
 City: _____ Postal Code: _____
 Tel. No. (Home): _____ Telephone No. (Work): _____
 Job Title: _____ Supervisor Name: _____
 Job Location: _____

EMPLOYEE CERTIFICATE OF INFORMATION AND RELEASE FOR PHYSICIAN TO REPORT MEDICAL INFORMATION

I, the undersigned, acknowledge that the position which I hold is of a safety critical nature and that it is incumbent on me to report any medical condition that may constitute a threat to safe railway operations. I declare that the information that I have provided or will be providing to the treating physician is truthful and complete. I hereby authorize any physicians, hospital, medical clinic or other medical service provider to release to the office of the Chief Medical Officer any information concerning any medical condition that may be related to my substance use disorder that may constitute a threat to safe railway operations. I understand that this information will be reviewed for the purpose of making a fitness for duty determination.

Signature of Employee: _____ Date: _____

INSTRUCTIONS TO PHYSICIAN:

Physicians assessing individuals occupying a Safety Critical Position declared by Canadian Federal Regulations are responsible under the Railway Safety Act to notify the railway Chief Medical Officer if an employee has a medical condition that could be a threat to safe railway operations. This individual is a Railway employee that has been diagnosed with a substance use disorder. You are asked to complete this form.

MEDICAL REPORT (TO BE COMPLETED BY TREATING PHYSICIAN)

DIAGNOSIS (DSM-IV-TR):

A) _____ B) _____

 C) _____ D) _____

Based on **ALL** available medical information, does your patient continue to be abstinent from alcohol and prohibited substances i.e. illegal and addictive medications such as opioids, barbiturates, benzodiazepines, zopiclone, and psychostimulants? YES NO. If NO please comment: _____

CURRENT MEDICATIONS:

Name: _____ Dosage: _____ Date Commenced: _____
 Name: _____ Dosage: _____ Date Commenced: _____
 Name: _____ Dosage: _____ Date Commenced: _____



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Name: _____ Dosage: _____ Date Commenced: _____
Name: _____ Dosage: _____ Date Commenced: _____
Others: _____

Is your patient compliant with treatment recommendations such as regularly attending face-to-face support group meetings (e.g. AA, NA) and/or counselling? YES NO. If NO please comment: _____

In evaluating your patient's current status with respect to substance dependence, have you used randomly scheduled biological testing (e.g., breath, blood, oral and/or urine tests)? YES NO. If NO please comment: _____

IMPORTANT: Canadian railway employees who work in a Safety Critical Position operate or control the movement of trains. Physical and mental fitness is mandatory. Impaired performance due to a medical condition could result in a significant incident affecting the health and safety of employees, the public, property or the environment. Your opinion on this individual's fitness to work in a Safety Critical Position would be appreciated.

In your professional opinion, is the examined individual medically fit for duty in a Safety Critical Position? YES NO. If NO please comment: _____

Any problems with alertness, attention, insight, judgment, orientation, mood and psychomotor function MUST be reported.

Comments: _____

Name of Physician: (Print) Family Physician
 Specialist (Specify: _____)

Address: Telephone: Fax:

Date of Examination:

Postal Code: Signature:

Date:

4.9 - Severe Sleep Apnea

Medical Guidelines for the Employment of Individuals with Severe Sleep Apnea in Safety Critical Positions in the Canadian Railway Industry

1. Introduction

Canadian Railway employees who work in a Safety Critical Position (SCP) operate or control the movement of trains. Physical and mental fitness is mandatory. Impaired performance due to a medical condition could result in a significant incident affecting the health and safety of employees, the public, property, or the environment. Competent execution of duties by employees in an SCP requires complete wakeful vigilance and a high level of alertness. Such vigilance and alertness are promoted by sleep of adequate duration, continuity, and quality. Notwithstanding the Railway industry initiatives regarding scheduling of work to minimize effects of sleep deprivation (1), medical disorders can also interfere with sleep and can lead to impairment of wakeful neurocognitive performance.

Obstructive sleep apnea is one such a medical disorder. This is a common disorder (2) caused by a partial or complete obstruction of airflow through the pharynx during sleep. (3) Sleep apnea is characterized by recurrent apneas and hypopneas that disrupt and fragment sleep and, consequently, can impair wakeful neuropsychological performance. Sleep apnea is associated with increased risk of motor vehicular accidents (4-9), which may result from a lapse of consciousness, from a slow or inappropriate reaction, or from impaired judgment. Sleep apnea is particularly common amongst commercial truck drivers (10, 11) and may also have a high prevalence amongst railway employees.

The U.S. National Transportation and Safety Board (NTSB) investigated a 2008 railway collision in Newton, Massachusetts and found that the operator of the striking train was at high risk of having undiagnosed sleep apnea. The NTSB issued a subsequent safety recommendation in July 2009 to all US rail transit systems to ensure that they screen all drivers for OSA and have a program to evaluate and treat identified workers. However, there were no specific recommendations as to the method for screening and ongoing assessment for OSA in these workers.

Several clinical parameters suggest the presence of sleep apnea (12). These are: a history of frequent snoring, choking, gasping and/or witnessed apneas, hypertension, obesity and a large neck circumference. While a complaint of sleepiness often prompts an assessment for sleep disorders in routine clinical practice, it is well established that this symptom alone does not accurately predict the presence or absence of sleep apnea (13).

Importantly, the degree of sleepiness also does not predict neurocognitive dysfunction (14, 15). Moreover, recent studies from the transportation industry demonstrate that workers in SCP with documented OSA usually deny classic symptoms of the disorder, including sleepiness (16, 17).

Thus, the traditional approach to detecting sleep apnea based on symptoms and anthropomorphic measures is probably not useful in screening for OSA outside of a sleep clinic. Unfortunately, few studies have addressed screening of the non-clinical population. Most studies have been done in the pre-operative setting, and a recent metaanalysis failed to identify one screening tool over the others (18). In one well designed prospective study of commercial drivers screened for severe OSA (AHI>30), Pack et al. reported that the screening tools alone without oximetry were inadequate for excluding OSA in this specific population. Initial symptoms and signs were helpful only in reducing the number of oximetry tests and polysomnograms required (19). Consensus Criteria from the Joint Task Force, published in 2006(20), have been found to be efficacious in practice (16); however, a recent factor analysis revealed that only the objective criteria from that tool were predictive of OSA (21).

It is well recognized that obstructive sleep apnea increases the risk of motor vehicle collisions (MVC) independent of reported sleepiness (22). For a railway worker in a SCP, the large potential impact of an accident on the individual, the public, and the industry necessitates that the worker be held to a higher medical standard than the general public (20). The following guidelines for OSA screening, diagnosis and treatment in the railway industry have been developed based on the known relationship between MVC and OSA, the reported inadequacy of traditional subjective screening techniques alone in commercial drivers, and the unacceptably high potential for damage and loss of life when accidents occur in this industry. This document has incorporated the recommendations the Canadian Thoracic Society (CTS) Guidelines: Diagnosis and treatment of sleep disordered breathing in adults (23), including updates in 2008 and 2011 (24).

The severity of sleep apnea is scored by counting the number of respiratory disturbances (apneas or hypopneas) that occur per hour. This is referred to as the respiratory disturbance index (RDI) or apnea – hypopnea index (AHI) which are considered equivalent. For the purpose of these guidelines the term RDI will be used. An RDI of less than 5 is considered normal; RDI of 5–14 is commonly referred to as mild sleep apnea; RDI of 15–30 is moderate sleep apnea; and RDI greater than 30 is usually referred to as severe sleep apnea (13). While the risk of accidents amongst individuals with sleep apnea (25) is known to be higher in those drivers having higher RDI, it is still not possible to predict future accidents based on RDI alone. While we have focussed our specific treatment guidelines on patients with the most severe OSA (RDI>30), we encourage thorough clinical assessment for all patients with symptoms or risk factors for OSA.

2. Scope

These guidelines aim to establish a practical process whereby all individuals in an SCP can be screened for sleep apnea and subsequently diagnosed and managed appropriately. They can then be used by physicians in assessing fitness for duty of individuals in an SCP who have been identified as having severe sleep apnea.

3. Basic Considerations

The employment of individuals having sleep apnea or suspected of having sleep apnea shall be guided by the following considerations:

3.1 Their medical history and physical examination including:

- History of frequent reported snoring
- History of frequent reported choking or gasping during sleep and/or witnessed apneas
- Systemic hypertension or history of hypertension
- Large neck circumference

These findings can be combined to determine the probability of sleep apnea by calculating the adjusted neck circumference (ANC) using a validated clinical prediction rule. The ANC is recommended for use in this population because it is easy to use, is not dependent on subjective symptoms, and no other screening tool has been proven to be superior for use in this population of workers in SCP (18).

3.2 The results of objective testing with either (24):

- Portable monitor (NOT oximetry)
- Polysomnogram

The 2011 CTS guidelines state that “patients working in safety-critical occupations should be investigated within four weeks of the referral to a diagnostic sleep facility.”

3.3 The response to treatment as indicated by:

- Effectiveness of treatment
- Compliance to treatment

3.4 Their specific job description.

4. Definitions

For the purpose of these guidelines, the following definitions have been used.



- **Adjusted Neck Circumference (ANC)** is a clinical prediction rule that combines four known clinical features that predict obstructive sleep apnea as follows:
ANC = NC (neck circumference, in cm) + 4 (if history of hypertension, HT) + 3 (if history of frequent reported snoring) + 3 (if history of frequent reported choking, gasping and/or witnessed apneas). “Frequent” means that the behaviour or event occurs on most nights.

ANC = NC	+4	+ 3	+ 3
(in cm)	(if HT present)	(if Sn present)	(if C/G-WA present)

The adjusted neck circumference predicts the probability of sleep apnea as follows:

- < 44: low probability
- 44-48: intermediate probability
- > 48: high probability.

- **Apnea** is cessation of breathing for 10 seconds or more.
- **Apnea-Hypopnea Index (AHI)** is the number of apneas and hypopneas per hour of sleep as determined by polysomnographic monitoring.
- **Continuous Positive Airway Pressure (CPAP)** is standard therapy for sleep apnea. A CPAP device pressurizes room air and delivers it via a patient interface (nasal mask, oral appliance or full face mask) to open the pharynx.
- **Daytime somnolence** is a functional state of excessive sleepiness, which may increase the likelihood of falling asleep, impair alertness and degrade the speed and appropriateness of reactions to external stimuli and events.
- **Oral Appliances** are a broad class of devices used to protrude the mandible and/or the tongue to treat sleep apnea.
- **Hypopnea** is generally considered a 50% reduction in breathing movements or airflow followed by a desaturation or arousal. However, definitions vary by laboratory and physician (26).
- **Polysomnogram (PSG)** is a sleep test performed in a laboratory under technician monitoring wherein sleep is recorded and staged by use of electroencephalogram (brain waves), electro-oculogram (eye movements), and

electromyograms (muscle activity). As well, breathing is recorded by airflow at the nose and by movements of the rib cage and abdomen. Oxygen saturation, body position and snoring sounds are also recorded. The data are scored by a sleep technician and interpreted by a sleep physician.

- **Portable monitor (PM)** is a device that can be applied by an individual in the home to diagnose obstructive sleep apnea with excellent accuracy compared to PSG and equivalent clinical outcomes. (25)
- **Respiratory Disturbance Index (RDI)** is the number of respiratory disturbances (apneas and hypopneas) occurring per hour of monitoring. This index can be determined by a portable monitor.
- **Severe sleep apnea** is a condition where the respiratory disturbance index or apnea-hypopnea index is greater than 30 hr.⁻¹.
- **Sleep apnea** is a clinical disorder wherein breathing is repeatedly interrupted during sleep. Sleep apnea is classified into three degrees of severity: mild: RDI 5-14 hr.⁻¹, moderate: RDI 15-30 hr.⁻¹, severe: RDI > 30 hr.⁻¹.
- **Sleep physician**, for the purposes of these guidelines, is a physician with formal certification in sleep medicine by the American Board of Sleep Medicine or peer recognition as an expert in the diagnosis and management of sleep apnea.


5. Fitness for Duty

Individuals with severe sleep apnea (RDI > 30) cannot be considered fit to work in an SCP until written confirmation and appropriate data have been provided to the Chief Medical Officer (CMO) by the treating physician (primary care physician or sleep physician) indicating that effective treatment, as described in Section 7.2, has been achieved and that the individual is compliant with therapy.

6. Screening & Diagnostic Testing

6.1 Screening

Many clinical prediction rules have been designed for sleep apnea screening. The ANC is one such clinical prediction rule that combines four known clinical factors predictive of obstructive sleep apnea. (13).

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Individuals in an SCP with a score greater than 48 will require diagnostic testing. Individuals with scores of 43-48 may be offered diagnostic testing as directed by their physician.

6.2. Diagnostic testing

Portable Monitor: Over the past 10 years the Level III portable monitor has evolved to a point where it is a clinically valid tool for recording respiratory airflow, effort and arterial oxygen saturation and to calculate an RDI. The diagnostic accuracy and the clinical outcomes are equivalent to PSG in select populations (28). They are particularly useful in patients with a high pre-test probability of sleep apnea (such as ANC>48) without significant co-morbidities such as heart failure, neuromuscular disease and stroke. The portable monitor is optimally used when integrated into a comprehensive program of patient evaluation (i.e. including a clinical prediction rule) and treatment with an auto-titrating CPAP device (thus avoiding polysomnography, and its cost (29). The unattended monitor has a higher failure rate (no technician present at time of testing), and identity of the subject cannot be confirmed objectively.

The CTS/ CSS statement on portable monitors recommends the use of Level 3 studies over oximetry alone, due to the significant limitations of the latter for distinguishing between different types of sleep disordered breathing (29).


Polysomnography: The diagnostic standard for sleep apnea is the polysomnogram. During a polysomnogram examination, sixteen channels of data are recorded under technician surveillance. The data are analyzed by a technician and interpreted by a sleep physician. The polysomnogram has the advantage of recording variables related to sleep as well as breathing. Sleep is partitioned into stages to provide an overall picture of sleep architecture

A respiratory disturbance during sleep is defined by a clear reduction in airflow or tidal volume, accompanied by a decrease in oxygen saturation or an arousal (an interval of wakefulness lasting at least three seconds). While a single definition of

apnea is generally accepted (no airflow for 10 seconds or longer), the exact methods for recording airflow and the criteria for defining a hypopnea remain controversial (26).

6.3 Determining the severity of sleep apnea

The results of diagnostic testing provide the basis for the diagnosis of sleep apnea and for the estimation of its severity. The RDI, derived from polysomnogram or

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portable monitor study, is standard for this purpose. Severe sleep apnea has been defined as RDI > 30 due to the associated effects on cardiovascular health.

7. Assessment, Treatment and Monitoring


7.1 Assessment: (see flow chart, Appendix II)

- 7.1.1 If there is a prior diagnosis of sleep apnea the individual will be evaluated for severe sleep apnea either from previous testing results (if relevant as per CMO) or as described in 7.1.3.
- 7.1.2 If the ANC is greater than 48 cm, indicating a high probability of sleep apnea, the individual will be evaluated as described in 7.1.3. If the ANC is 43-48, the individual may be offered diagnostic testing as directed by their physician.
- 7.1.3 Severe sleep apnea can be diagnosed by a portable monitor or a polysomnogram.
- 7.1.4 If the RDI is greater than 30 hr.⁻¹, the individual will be considered unfit to occupy an SCP until adequately treated (see below).

7.2 Treatment:

Individuals in an SCP found to have severe sleep apnea (RDI > 30 hr.⁻¹) must receive and adhere to therapy proven to be effective in eliminating sleep apnea (30, 31). CPAP therapy is standard treatment for OSA. Oral appliance therapy is not recommended as first line therapy due to poor efficacy (30-50%) (32) and the inability to monitor compliance. It is however a possibly second line therapy, as are behavioural modifications. Treatment effectiveness is demonstrated by:

- an RDI of less than 15 hr.⁻¹ by a portable monitor, polysomnogram or CPAP download on therapy; and
- for those individuals on CPAP therapy, adequate compliance is defined by at least two continuous weeks of compliance monitoring demonstrating average CPAP usage (all days) of at least 5 hours per night, (an uninterrupted sleep session in a twenty-four hour period) (33).
- If the above criteria are not met, then assessment by a qualified sleep practitioner is recommended to confirm the diagnosis of OSA and to rule out important co-morbidities such as complex sleep apnea syndrome, central sleep apnea or other sleep disorders such as narcolepsy.

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7.3 Monitoring:

Monitoring will be performed on individuals after returning to work in an SCP as follows:

- The individual's primary care physician must provide yearly written confirmation to the CMO of compliance monitoring demonstrating average CPAP usage (all days) of at least 5 hours per night, (an uninterrupted sleep session in a twenty-four hour period). CPAP machine data is easily downloadable for this purpose.

8. **Individual Assessment**

Individuals with severe sleep apnea must be assessed with regard to their suitability for a particular position. The nature of the duties and responsibilities associated with their specific Safety Critical Position must be closely evaluated before any final determination of their fitness for duty.


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Appendix I - References

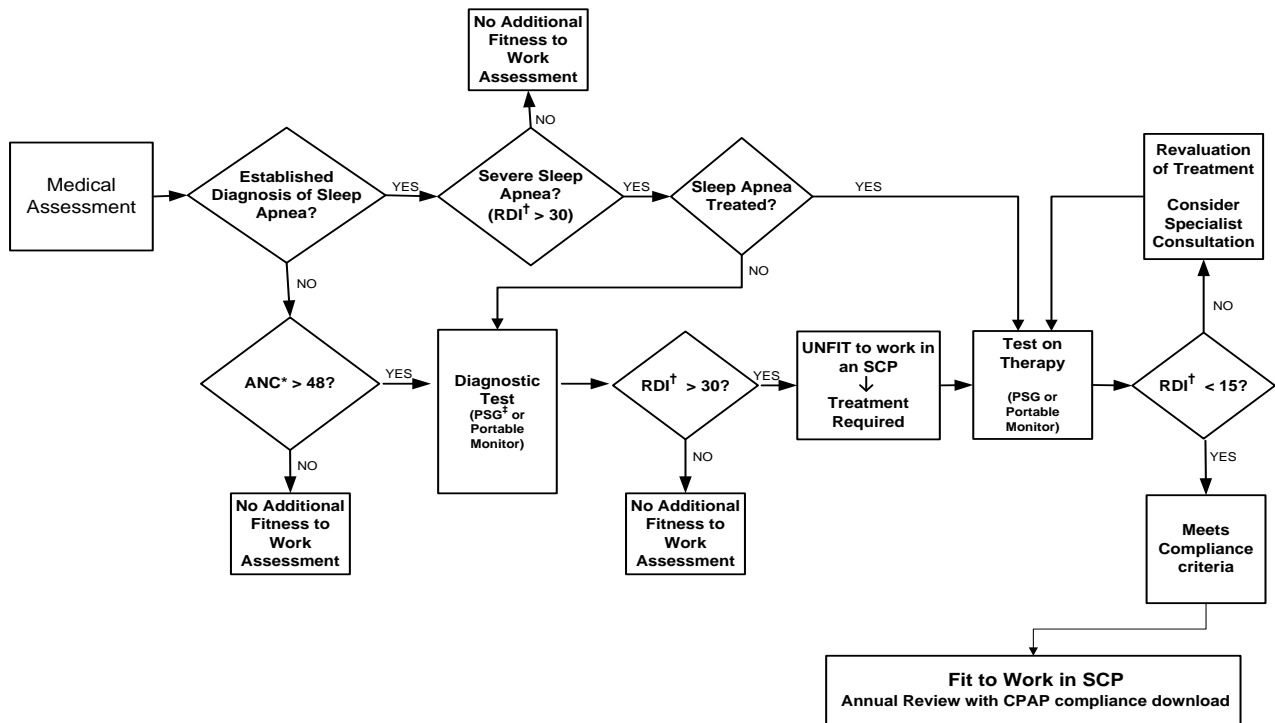
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**Appendix II:
Sleep Apnea Evaluation and Management Strategy for Individuals in a Safety
Critical Position**



* **ANC - Adjusted Neck Circumference**
= neck circ (in cms) + 4 (if hypertension) + 3 (if reports of frequent snoring) + 3 (if reports of frequent choking/gasping/apneas at night)

† **RDI - Respiratory Disturbance Index** (number of respiratory disturbances per hour)

‡ **PSG - Polysomnography**

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4.10 – Therapeutic Opioids

Medical Guidelines for the Employment of Individuals Under Treatment with Therapeutic Opioids in Safety Critical Positions in the Canadian Railway Industry

1. Introduction

Railway employees who work in a Safety Critical Position (SCP) operate or control the movement of trains. Physical and mental fitness are mandatory. Impaired performance due to a medical condition could result in a significant incident affecting the health and safety of employees, the public, property or the environment. Sudden impairment of their cognitive, sensory or motor functions can pose a serious threat to the safety of the railway operations. Therapeutic opioid use may affect these functions.


It had been postulated that opioid tolerant individuals using long-acting opioid(s) could develop normalization of their cognitive, sensory and motor functions. A 2009 guideline statement of the American Pain Society/American Academy of Pain Medicine on driving and work safety stated that:

“In the absence of signs or symptoms of impairment, there is no evidence that a patient maintained on stable doses of chronic opioid therapy (COT) should be restricted from driving”.

Subsequently, the American College of Occupational and Environmental Medicine (ACOEM) conducted a thorough literature review on the subject and commented that the aforementioned 2009 Guideline statement did not provide references for original epidemiological studies. The results of the ACOEM literature review were published with Practice Guidelines in the Journal of Occupational and Environmental Medicine in July 2014 (Volume 56, Number 7)¹.

The following are excerpts from the ACOEM Practice Guidelines:

¹ Hegmann K, Weiss M, Bowden M, Branco F, DuBrueler K, Els C, Mandel S, McKinney DW, Miguel R, Mueller KL, Nadig RJ, Schaffer MI, Studt L, Talmage J, Travis RL, Winters T, Thiese MS, Harris JS. (2014) Opioids and Safety-sensitive Work: The ACOEM Practice Guidelines. JOEM 56:e46-53.

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“Both weak and strong opioids have been consistently associated with increased risks of motor vehicle crashes (MVC) in all large epidemiological studies of working age adults sufficiently powered to detect motor vehicle crash risk with the risk estimates ranging from 29% to more than 800% increased risk...”

“... the ACOEM Evidence-based Practice Opioids Panel recommends preclusion of opioid use in safety-sensitive jobs.”

Accordingly, and in contrast to the previous version of the Railway Association of Canada Railway Medical Guidelines for the Employment of Individuals Under Treatment with Therapeutic Opioids in Safety Critical Positions in the Canadian Railway Industry the current body of evidence does not support the safe use of opioids by individuals working in an SCP.

2. Scope

These Railway Medical Guidelines pertain only to individuals working in an SCP who have a medical condition that requires the use of an opioid.

3. Definitions

For the purpose of these Railway Medical Guidelines, the following definitions are applicable:


3.1 Opioid(s):

3.1.1 *Opioids* refer to both the naturally occurring opiates (i.e. medications / substances derived from opium, i.e. morphine, codeine, and heroin) as well as a large number of synthetic congeners, all of which mostly have morphine-like activity at receptors in the brain². Synthetic opioids include compounds like tramadol, oxycodone, hydromorphone, fentanyl, meperidine, methadone, as well as buprenorphine, which is a partial agonist at the receptor.

3.1.2 Different opioids vary in half-life³ and are commercially available in a variety of immediate-release and slow-release formulations. This results in a wide variability in their duration of action.

² Ries R, Fiellin DA, Miller SC, Saitz R. (Eds) Principles of Addiction Medicine 5th Edition, 2014.

³ The amount of time for the concentration to drop to half of its initial value.

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3.1.3 The metabolism of opioids is impacted by a number of factors, which includes a variety of enzyme systems. The rate of metabolism and the risk of drug interactions with opioids are determined largely by which enzyme systems metabolize the opioid⁴. Medical conditions, degree of tolerance to opioids, medication use, alcohol use patterns, and individual differences in metabolism may result in a significant lack of predictability in opioid-related impairment, and hence occupational capacity and risk.

3.2 **Occasional Use of an Opioid:** Single administration of an opioid on an “as needed” basis.


3.1 **Continuous Use of an Opioid:** Regular, typically daily, opioid use.

4. Medical Fitness for Duty

4.1 Occasional Use

- a) The occasional use of shorter-acting or immediate-release opioids in therapeutic doses may result in cognitive and performance impairment and occupational risk that is usually sufficiently mitigated 8 hours after the time of their last use.
- b) The use of slow-release opioids, truly long-acting opioids (e.g. methadone and others), or high dose opioid use may result in impairment beyond 8 hours. In some cases, cognitive and performance impairment may persist even beyond 24 hours after the time of their last use.
- c) Cognitive and performance deficits may persist beyond the period of time that an individual experiences therapeutic or adverse effects from the use of an opioid. Determination of whether an individual is experiencing adverse effects 8 hours after their last use of an opioid may not be sufficiently sensitive to rule out ongoing cognitive or performance impairment.
- d) An individual that has used an opioid cannot be relied upon to accurately determine the degree of their opioid-related cognitive or performance impairment and may underestimate the degree of their impairment.

⁴ Smith HS. Opioid Metabolism. Mayo Clin Proc. 2009;84:613–624.


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- e) Non-medically trained co-workers or supervisors cannot be relied upon to accurately determine the degree of an individual's opioid-related cognitive or performance impairment.
- f) Opioid-related cognitive and performance impairment may occur even in individuals who have become tolerant to the use of opioid(s).
- g) Guidelines for return to work in an SCP after the use of an opioid:
 - i. In general, an individual under occasional treatment with a shorter-acting or immediate-release opioid cannot work in an SCP for a minimum period of 8 hours after the time of their last use. This period may be longer depending on the duration of action of the opioid, the dosage of the opioid, the use of other medications, and a variety of other factors.
 - ii. An individual under occasional treatment with a long-acting opioid or a sustained-release opioid cannot work in an SCP for a minimum period of 24 hours after the time of their last use.
 - iii. The use of transdermal patches may result in longer duration of impairment, especially as the skin may act as a reservoir.
 After removal of the patch, serum fentanyl concentrations decline gradually, falling about 50% in approximately 17 hours⁵ (i.e. range: 13 to 22 hours). The drug should clear within 4-5 half-lives, i.e. 68 to 85 hours (2.8-3.5 days). An individual under treatment with fentanyl transdermal patch cannot work in an SCP for a minimum period of 4 days (96 hours) after the removal of the last skin patch.
 - iv. The determination of the presence of cognitive or performance impairment should be conducted on an individualized basis.

4.2 Continuous Use

An individual under continuous treatment with any opioid cannot work in an SCP.

⁵ Duragesic Product Monograph, Health Canada <http://webprod5.hc-sc.gc.ca/dpd-bdpp/info.do?code=76148&lang=eng> (revised: November 17, 2015).

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Section 5 - RAILWAY MEDICAL REPORT FORMS

5.1 - Overview

The Railway Medical Rules specify that medical assessments shall be done on persons prior to their commencement of employment in a Safety Critical Position, upon promotion or transfer to a Safety Critical Position and every five years until the age of forty, and every three years thereafter until retirement, or until that person is no longer employed in a Safety Critical Position. In support of this requirement for medical assessments, the Railway Association of Canada (RAC) Medical Advisory Group has developed medical report forms.

The medical report forms in this section have been prepared to assist railway companies in having a consistent and standardized approach to assessing fitness for duty for a Safety Critical Position. An Employment Medical Report form has been included at Section 5.2 that can be used for those persons being considered for a Safety Critical Position, either initial employment or upon promotion or transfer to a Safety Critical Position. Section 5.3 contains a Periodic Medical Report form that can be used for the periodic medical assessments done by a Physician for persons performing work in Safety Critical Positions.

Similar to the approach used for the Railway Medical Guidelines, the RAC Medical Advisory Group will review and update these report forms as needed to ensure they reflect accepted medical practices in Canada. Additional medical report forms may be developed as required.



5.2 - Employment Medical Report Form

PART 1 – CANDIDATE/EMPLOYEE INFORMATION (TO BE COMPLETED BY CANDIDATE/EMPLOYEE)

Position applied for: _____ Male Female
Employee Number (if applicable): _____
Name: _____ Date of Birth: _____
Address: _____
Postal Code: _____ Telephone: Home () _____
Work () _____

Candidate's/Employee's Declaration and Consent for the Release of Medical Information

I, the undersigned, acknowledge that I may occupy a Safety Critical Position and I will report any medical condition, past or current, that may constitute a threat to safe railway operations.

I declare that the information that I have provided or will be providing to the examining physician is truthful and complete. I understand that if I knowingly have provided false information or have not declared a medical condition, past or current, I will be subject to action by the Railway Company up to and including dismissal.

I consent for any physician, hospital, medical clinic or other medical service provider to release to the Office of the Chief Medical Officer of the Railway Company any information concerning any medical condition, past or current, that may constitute a threat to safe railway operations. I also consent for representatives from the Office of the Chief Medical Officer to discuss any details of this assessment with my physician. I understand that this information will be reviewed for the purpose of making a fitness to work determination. This consent is valid for six months from the date of signature.

Witness Signature of Candidate/Employee Date

PART 2 - PHYSICIAN STATEMENT, INFORMATION AND REPORTING GUIDELINES

This report will be used to make an assessment on an applicant's/employee's fitness to work and constitutes a third party service. In completing this report, please be thorough and write legibly. If you have any questions regarding any component of this form, call the toll free number listed below for assistance.

Applicant's/Employee's Name _____ I certify that the information which I have documented in this report is, to the best of my knowledge, correct.
Date of examination on which this report is based _____
Physician's Name (Print): _____ Physician's Signature
Address: _____ Family Physician/General Practitioner
City/Province: _____ Postal Code: _____ Certified Specialist in _____
Telephone: () _____
Fax : () _____

The contents of this report are the property of the Railway Company. Reports may be sent by regular mail or courier to:

FOR ASSISTANCE REGARDING ANY COMPONENT OF THIS REPORT, CALL TOLL FREE 1-xxx-xxx-xxxx





PART 3 – HEALTH QUESTIONNAIRE

(TO BE COMPLETED BY APPLICANT/EMPLOYEE)

A: Current Activities

Do you presently have difficulty or are unable to do any of the following activities?

	Yes	No		Yes	No
Carrying, pushing or pulling up to 50 lb. (22kg)	<input type="checkbox"/>	<input type="checkbox"/>	Bending forward to floor level	<input type="checkbox"/>	<input type="checkbox"/>
Lifting up to 80 lb. (35kg)	<input type="checkbox"/>	<input type="checkbox"/>	Kneeling or crawling	<input type="checkbox"/>	<input type="checkbox"/>
Looking directly overhead	<input type="checkbox"/>	<input type="checkbox"/>	Climbing ladders	<input type="checkbox"/>	<input type="checkbox"/>
Neck rotation (e.g. shoulder checking while driving)	<input type="checkbox"/>	<input type="checkbox"/>	Climbing stairs	<input type="checkbox"/>	<input type="checkbox"/>
Reaching overhead with either arm	<input type="checkbox"/>	<input type="checkbox"/>	Activities requiring steady balance	<input type="checkbox"/>	<input type="checkbox"/>
Firm gripping or twisting using either hand	<input type="checkbox"/>	<input type="checkbox"/>	Working at heights (15 feet)	<input type="checkbox"/>	<input type="checkbox"/>
Fine movement or feeling with the fingers	<input type="checkbox"/>	<input type="checkbox"/>	Working night shifts/rotating/on-call	<input type="checkbox"/>	<input type="checkbox"/>
Prolonged standing or walking	<input type="checkbox"/>	<input type="checkbox"/>	Wearing personal safety equipment	<input type="checkbox"/>	<input type="checkbox"/>
Walking on uneven or sloped ground	<input type="checkbox"/>	<input type="checkbox"/>	Working in hot weather	<input type="checkbox"/>	<input type="checkbox"/>
Walking fast on level ground	<input type="checkbox"/>	<input type="checkbox"/>	Working in cold weather	<input type="checkbox"/>	<input type="checkbox"/>
In the last year, what has been your usual (weekly) sport, exercise, or outdoor activities?			Do you wear a brace or a splint for any activities? If yes, please describe:	<input type="checkbox"/>	<input type="checkbox"/>
<hr/>			<hr/>		
In the last year, have you held a job that involves heavy physical work? If yes, please describe: _____	<input type="checkbox"/>	<input type="checkbox"/>	Have you ever had a claim for, or received benefits from, disability or workers' compensation for an absence of three weeks or more? If yes, please describe: _____	<input type="checkbox"/>	<input type="checkbox"/>
<hr/>			<hr/>		
<hr/>			<hr/>		

B: Current Health Problems

<i>In the last year, have you had</i>					
	Yes	No	Sleep Apnea	Yes	No
Loss of consciousness or awareness?	<input type="checkbox"/>	<input type="checkbox"/>	Have you ever been diagnosed with sleep apnea?	<input type="checkbox"/>	<input type="checkbox"/>
Loss of vision?	<input type="checkbox"/>	<input type="checkbox"/>			
Double vision?	<input type="checkbox"/>	<input type="checkbox"/>	Have you had high blood pressure (hypertension)?	<input type="checkbox"/>	<input type="checkbox"/>
Balance disorder?	<input type="checkbox"/>	<input type="checkbox"/>	Have you been told you snore most nights ?	<input type="checkbox"/>	<input type="checkbox"/>
Medical care for injuries to your muscles, bones or joints?	<input type="checkbox"/>	<input type="checkbox"/>	Have you been told you choke, gasp, or stop breathing most nights while sleeping?	<input type="checkbox"/>	<input type="checkbox"/>
Kidney stones?	<input type="checkbox"/>	<input type="checkbox"/>	(most nights = 5 to 7 nights a week)		
Any permanent disability?	<input type="checkbox"/>	<input type="checkbox"/>			



B: Current Health Problems (cont'd)

Drug and Medication Use	Yes	No	Medical Care	Yes	No
Do you currently smoke tobacco? If yes, how many packs per day? _____	<input type="checkbox"/>	<input type="checkbox"/>	Do you have current health problem(s) that may:		
Have you used marijuana or hashish in the last year? If yes, date last used _____	<input type="checkbox"/>	<input type="checkbox"/>	1. Require medical care or monitoring?	<input type="checkbox"/>	<input type="checkbox"/>
Have you ever used cocaine, crack, LSD, PCP, heroin, methamphetamine or other illegal drugs? If yes, date last used: _____	<input type="checkbox"/>	<input type="checkbox"/>	2. Require urgent attention while at work?	<input type="checkbox"/>	<input type="checkbox"/>
Have you ever been in a treatment program for alcohol or drug addiction? If yes, dates in program: _____	<input type="checkbox"/>	<input type="checkbox"/>	3. Affect your ability to regularly attend work?	<input type="checkbox"/>	<input type="checkbox"/>
Has the use of alcohol or other drugs ever caused any problems in your life? (e.g. driving convictions, police encounters, injury to you or others, etc) If yes, please describe: _____ _____ _____	<input type="checkbox"/>	<input type="checkbox"/>	If yes to any 'Medical Care' questions, please describe: _____ _____ _____ _____ _____ _____		
List all prescribed or over-the-counter medications you have used in the last 12 months: _____ _____ _____					

C: Past Health Problems

Have you ever had?	Yes	No	Nervous System Problems	Yes	No
Heart Problems			Nervous System Problems		
Chest pain? (e.g. angina)	<input type="checkbox"/>	<input type="checkbox"/>	Skull fractures or brain injury? (e.g. concussion)	<input type="checkbox"/>	<input type="checkbox"/>
Heart attack? (myocardial infarction)	<input type="checkbox"/>	<input type="checkbox"/>	Epilepsy, seizures or convulsions?	<input type="checkbox"/>	<input type="checkbox"/>
Abnormal heartbeat or palpitations?	<input type="checkbox"/>	<input type="checkbox"/>	Stroke?	<input type="checkbox"/>	<input type="checkbox"/>
Abnormal heart tests? (e.g. ECG, exercise test)	<input type="checkbox"/>	<input type="checkbox"/>	Narcolepsy or other sleep disorders?	<input type="checkbox"/>	<input type="checkbox"/>
Heart murmurs? (as an adult)	<input type="checkbox"/>	<input type="checkbox"/>	Problems with nerves in your arms, legs or spine?	<input type="checkbox"/>	<input type="checkbox"/>
Other heart diseases?	<input type="checkbox"/>	<input type="checkbox"/>	Movement or coordination disorders?	<input type="checkbox"/>	<input type="checkbox"/>
Diseases of the blood vessels or circulation?	<input type="checkbox"/>	<input type="checkbox"/>	Other diseases of the brain or nervous system?	<input type="checkbox"/>	<input type="checkbox"/>
			Headaches requiring prescription medication?	<input type="checkbox"/>	<input type="checkbox"/>



C: Past Health Problems (cont'd)

<i>Have you ever had?</i>					
	Yes	No		Yes	No
Breathing Problems			Vision and Hearing Problems		
Asthma (as an adult)?	<input type="checkbox"/>	<input type="checkbox"/>	Cataracts?	<input type="checkbox"/>	<input type="checkbox"/>
Tuberculosis?	<input type="checkbox"/>	<input type="checkbox"/>	Glaucoma?	<input type="checkbox"/>	<input type="checkbox"/>
Abnormal lung/ breathing test(s)?	<input type="checkbox"/>	<input type="checkbox"/>	Loss of vision in either eye?	<input type="checkbox"/>	<input type="checkbox"/>
Other lung diseases? (e.g., emphysema, chronic bronchitis, other lung infections)	<input type="checkbox"/>	<input type="checkbox"/>	Weak or 'lazy' eye?	<input type="checkbox"/>	<input type="checkbox"/>
			Loss of hearing in either ear?	<input type="checkbox"/>	<input type="checkbox"/>
Other Medical Problems	Yes	No	Other eye or ear disorders?	<input type="checkbox"/>	<input type="checkbox"/>
Kidney disease?	<input type="checkbox"/>	<input type="checkbox"/>			
Hepatitis or jaundice (as an adult)?	<input type="checkbox"/>	<input type="checkbox"/>	Mental Health Problems	Yes	No
Other digestive diseases?	<input type="checkbox"/>	<input type="checkbox"/>	Anxiety disorders?	<input type="checkbox"/>	<input type="checkbox"/>
Problems with muscles in your arms, legs or spine?	<input type="checkbox"/>	<input type="checkbox"/>	Panic or phobic disorders?	<input type="checkbox"/>	<input type="checkbox"/>
Diseases of your joints or bones? (e.g. arthritis)	<input type="checkbox"/>	<input type="checkbox"/>	Post-traumatic stress disorder?	<input type="checkbox"/>	<input type="checkbox"/>
Fibromyalgia or chronic fatigue syndrome?	<input type="checkbox"/>	<input type="checkbox"/>	Obsessive-compulsive disorder?	<input type="checkbox"/>	<input type="checkbox"/>
Cancer of any type?	<input type="checkbox"/>	<input type="checkbox"/>	Depression?	<input type="checkbox"/>	<input type="checkbox"/>
Severe allergic reactions? (e.g. foods, insect stings)	<input type="checkbox"/>	<input type="checkbox"/>	Manic depression (bipolar) disorder?	<input type="checkbox"/>	<input type="checkbox"/>
Diabetes or high blood sugar?	<input type="checkbox"/>	<input type="checkbox"/>	Psychosis, delusions or schizophrenia?	<input type="checkbox"/>	<input type="checkbox"/>
Low blood sugar (hypoglycemia)?	<input type="checkbox"/>	<input type="checkbox"/>	Personality disorder?	<input type="checkbox"/>	<input type="checkbox"/>
Severe frostbite to the hands or feet?	<input type="checkbox"/>	<input type="checkbox"/>	Attention-deficit / hyperactivity disorder?	<input type="checkbox"/>	<input type="checkbox"/>
Reading or learning disorders?	<input type="checkbox"/>	<input type="checkbox"/>	A mental health problem that required care in hospital? If yes, when and why?	<input type="checkbox"/>	<input type="checkbox"/>
Any surgery? If yes, when and why?	<input type="checkbox"/>	<input type="checkbox"/>			
			Other mental health disorder(s)? If yes, please specify:	<input type="checkbox"/>	<input type="checkbox"/>

PART 4 – PHYSICIAN COMMENTS (PLEASE PROVIDE COMMENTS FOR ALL 'YES' ANSWERS IN PART 3)



PART 5 – PHYSICAL EXAMINATION (TO BE COMPLETED BY PHYSICIAN)

A: General

Height		Weight		BP	Heart rate	Neck circumference (cm)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Normal	Abnormal	Item	Specific finding	Yes	No	Additional comments
<input type="checkbox"/>	<input type="checkbox"/>	Pupils	Cataracts	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	Ocular movements	Diplopia or strabismus	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	Ears				
<input type="checkbox"/>	<input type="checkbox"/>	Nose	Perforated septum	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	Mouth & teeth				
<input type="checkbox"/>	<input type="checkbox"/>	Speech				
<input type="checkbox"/>	<input type="checkbox"/>	Neck	Neck masses or nodes	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	Chest expansion				
<input type="checkbox"/>	<input type="checkbox"/>	Breath sounds				
<input type="checkbox"/>	<input type="checkbox"/>	Heart sounds	Murmurs	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	Major arteries	Bruits	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	Peripheral circulation				
<input type="checkbox"/>	<input type="checkbox"/>	Abdomen	Masses	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>		Hernia (men only)	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	Liver	Signs of liver disease	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	Gait				
<input type="checkbox"/>	<input type="checkbox"/>	Balance				
<input type="checkbox"/>	<input type="checkbox"/>	Eye-hand coordination	Tremor	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	Skin	Hand dermatitis	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>		Injection track marks	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	Cognition				
<input type="checkbox"/>	<input type="checkbox"/>	Mood				
<input type="checkbox"/>	<input type="checkbox"/>	Behaviour				

B: Musculoskeletal

Please assess problems noted in the 'Current Activities' section and note any reduced ROM, weakness, deformity, or joint instability

Normal	Item	Abnormal	Additional Comments
<input type="checkbox"/>	Cervical spine	<input type="checkbox"/>	
<input type="checkbox"/>	Thoracic spine	<input type="checkbox"/>	
<input type="checkbox"/>	Lumbosacral spine	<input type="checkbox"/>	
<input type="checkbox"/>	Shoulders	<input type="checkbox"/>	
<input type="checkbox"/>	Elbows	<input type="checkbox"/>	
<input type="checkbox"/>	Wrists & hands	<input type="checkbox"/>	
<input type="checkbox"/>	Hips	<input type="checkbox"/>	
<input type="checkbox"/>	Knees	<input type="checkbox"/>	
<input type="checkbox"/>	Ankles & feet	<input type="checkbox"/>	

Are there any findings on your examination that require further assessment
If yes, what advice have you given to the candidate? Yes No



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Subsection 5.2 – Employment Medical Report Form

PART 6 – PHYSICIAN’S FITNESS TO WORK OPINION (TO BE COMPLETED BY PHYSICIAN)

Based on the information provided by the candidate/employee and on his physical examination, he/she is considered: (check one category)

Fit to work in the position applied for without restrictions

Fit to work in the position applied for with the following restrictions:

List all restrictions:

Temporarily unfit. Further medical information/evaluation is required

Please
explain:


Unfit to work in the position applied for

Please
explain:

Examining physician’s name (print)

Examining physician’s signature

Date:

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5.3 - Periodic Medical Report Form

PART 1 – Information for the physician

Canadian Railway employees working in Safety Critical Positions operate or control the movement of trains. Impaired performance due to a medical condition could result in a significant incident affecting the health and safety of employees, the public, property or the environment.

It is federally mandated by the Railway Safety Act that individuals in Safety Critical Positions undergo periodic medical assessments. This report is to be used to record the results of this medical assessment. The Office of the Chief Medical Officer will review the contents of this report, which in conjunction with supplementary information, will be used to determine this employee’s ongoing fitness to work in a Safety Critical Position.

In completing this form, please be aware that the safety of the employee, their co-workers and the general public is at stake. Special attention should be devoted to medical conditions that may result in sudden mental or physical impairment or any condition that may potentially interfere with an employee’s ability to perform their duties in a safe manner. In the case of chronic conditions, be aware that impairment may occur gradually. Under the Railway Safety Act, physicians have an obligation to notify the Office of the Chief Medical Officer if an individual occupying a Safety Critical Position has a medical condition that in their opinion is likely to pose a threat to safe railway operations.

See next page for information on payment for completing this form. Please write or print legibly.

PART 2 – Employee Information and Consent (to be completed by the employee)

Name:	Employee number:
Address:	Date of birth:
	Telephone numbers – Home: Work:
Postal Code:	Supervisor:

Employee’s Consent for the Release of Medical Information to the Railway Company


I, the undersigned, acknowledge that I occupy a Safety Critical Position and I will report any medical condition that may constitute a threat to safe railway operations. I declare that the information that I have provided or will be providing to the physician completing this report is truthful and complete. I consent for the physician performing this periodic medical assessment to release to, and discuss information contained in this report with, the Office of the Chief Medical Officer. I also consent for representatives from the Office of the Chief Medical Officer to discuss any details of this assessment with my physician. I understand that this information will be reviewed for the purpose of making a fitness to work determination. This consent is valid for six months from the date of signature.

Current Position

Signature of Employee

Date

PLEASE WRITE LEGIBLY
FOR ASSISTANCE REGARDING ANY COMPONENT OF THIS REPORT, CALL 1-XXX-XXX-XXXX

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PART 3 – Medical Assessment (to be completed by the physician)

For any “Yes” response, please elaborate in the space provided and enclose any relevant documentation. Particular attention should be made to any medical condition that may result in sudden impairment.

PLEASE NOTE: Shaded areas are physical examination sections to be completed.

A – VISION – Please complete all sections

History or evidence of:	Yes	No
(a) Reduced distance vision	<input type="checkbox"/>	<input type="checkbox"/>
(b) Reduced near vision	<input type="checkbox"/>	<input type="checkbox"/>
(c) Reduced field of vision	<input type="checkbox"/>	<input type="checkbox"/>
(d) Double vision	<input type="checkbox"/>	<input type="checkbox"/>
(e) Strabismus	<input type="checkbox"/>	<input type="checkbox"/>
(f) Impaired depth perception	<input type="checkbox"/>	<input type="checkbox"/>
(g) Deficient colour vision	<input type="checkbox"/>	<input type="checkbox"/>
(h) Disease(s) of the eye (cataracts, glaucoma, retinal disorders, trauma, etc)	<input type="checkbox"/>	<input type="checkbox"/>

If “Yes” to any of the above, please elaborate: _____

Please include the results of Snellen visual acuities:

Distance vision – with visual correction (if any)

Right eye _____/_____
 Left eye _____/_____

Near vision – with visual correction (if any) **Yes** **No**

At 40 cm., can this individual identify correctly all 5 letters in one of the series below? (Randomly select one of the six series of letters. If > one error, repeat using a second series of letters).

asxro vzonc saenr
 rzvnu enuor aszxn

Indicate number of errors (if any) _____

Visual Fields (by confrontation method)

	Normal	Abnormal
Right eye	<input type="checkbox"/>	<input type="checkbox"/>
Left eye	<input type="checkbox"/>	<input type="checkbox"/>

B – HEARING

History or evidence of:	Yes	No
(a) Significant hearing loss? (enclose audiogram if available)	<input type="checkbox"/>	<input type="checkbox"/>
(b) Other disease(s) of the ear (acoustic neuroma, otosclerosis, tinnitus, etc.)	<input type="checkbox"/>	<input type="checkbox"/>

If “Yes”, please elaborate: _____

C – CENTRAL NERVOUS SYSTEM DISORDERS

History or evidence of:	Yes	No
(a) Seizure disorder or syncopal episode (s)?	<input type="checkbox"/>	<input type="checkbox"/>
(b) Other disease(s) of the nervous system? (e.g. disorders of coordination or muscle control, head injury, intracranial tumours, post-traumatic conditions, vestibular disorders etc.)	<input type="checkbox"/>	<input type="checkbox"/>

If “Yes” to any of the above, please elaborate: _____

D – CARDIOVASCULAR DISORDERS

Blood pressure _____ / _____ **Pulse** _____
(If > 140/90 please repeat)


Height _____ **Weight** _____

History or evidence of:	Yes	No
(a) Coronary artery disease	<input type="checkbox"/>	<input type="checkbox"/>
(b) Myocardial infarction(s) Indicate date(s) _____	<input type="checkbox"/>	<input type="checkbox"/>
(c) Cerebrovascular disease (aneurysm / stroke/TIAs, etc)	<input type="checkbox"/>	<input type="checkbox"/>
(d) Hypertension	<input type="checkbox"/>	<input type="checkbox"/>
(e) Aortic aneurysm	<input type="checkbox"/>	<input type="checkbox"/>
(f) Congestive heart failure	<input type="checkbox"/>	<input type="checkbox"/>
(g) Cardiac dysrhythmia	<input type="checkbox"/>	<input type="checkbox"/>
(h) Valvular heart disease	<input type="checkbox"/>	<input type="checkbox"/>
(i) Cardiomyopathy	<input type="checkbox"/>	<input type="checkbox"/>
(j) Heart transplant	<input type="checkbox"/>	<input type="checkbox"/>
(k) Any other cardiovascular disease not listed above	<input type="checkbox"/>	<input type="checkbox"/>

If “Yes” to any of the above, address the following 3 areas:

- (1) Please elaborate _____

- (2) Indicate Canadian Cardiovascular Society Functional Class (circle)
 I - no limitations, II - mid, III - moderate, IV - severe
- (3) Enclose relevant specialists report and the results of diagnostic test (ECG, echocardiogram, stress test, etc...) if available

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PART 3 – Medical Assessment (to be completed by the physician) (cont'd)

E - ENDOCRINE DISORDERS **Yes** **No**

History or evidence of symptomatic metabolic disease? (e.g., diabetes, hypothyroidism, Cushing’s Disease, Addison’s Disease, pheochromocytoma, etc.)

If “Yes”, please elaborate: _____

If there is a history of diabetes, please complete the following:

State onset of diabetes (approx. date): _____

Type of control:

Diet only Oral Medication Insulin

Current medication(s) and dose: _____

Has this individual had a hypoglycemic episode(s) within the last 12 months?

If “Yes” please indicate date(s) of last hypoglycemic episode(s): _____

History or evidence of hypoglycemic unawareness?

If “Yes”, please elaborate: _____

F - RESPIRATORY DISORDERS **Yes** **No**

History or evidence of respiratory disease? (e.g., asthma, COPD, bronchitis, sarcoidosis, etc.)

Does this individual smoke? (indicate packs, years)

If “Yes”, please elaborate: _____

G - GASTROINTESTINAL/GENITOURINARY DISORDERS **Yes** **No**

History or evidence of significant gastrointestinal or genitourinary condition(s)?

If “Yes”, please elaborate: _____

H - MUSCULOSKELETAL DISORDERS **Yes** **No**

History or evidence of significant musculoskeletal condition? (e.g., amputation of a limb, arthritis, significant major joint dysfunction, disease of the spine, etc.)

If “Yes”, please elaborate: _____

I - SUBSTANCE USE DISORDERS **Yes** **No**

History or evidence of abuse or dependence on alcohol, illegal drugs, medications, or other substances?

Has the use of alcohol or other drugs (substances) ever caused any problems for this person?

If “Yes”, please elaborate: _____

J - MEDICATIONS

List all current medications including any over-the-counter and prescription medication(s):


Medication	Dose
_____	_____
_____	_____

K - PSYCHIATRIC/MENTAL DISORDERS

History or evidence of: **Yes** **No**

- (a) Anxiety disorder(s)? (e.g., generalized anxiety, panic attack, phobias, etc.)
- (b) Cognitive disorder(s)? (e.g., dementia, delirium, amnesia, etc.)
- (c) Mood disorder(s)? (e.g., depression, manic, bipolar, etc.)
- (d) Personality disorder(s) manifesting in anti-social, erratic or aggressive behaviour?
- (e) Psychiatric/mental disorder(s) due to a general medical condition?
- (f) Psychotic disorder(s)? (e.g., schizophrenia, delusional, unspecified, etc.)
- (g) Any other psychiatric/mental disorder(s) not listed above?

If “Yes” to any of the above, please elaborate: _____

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Enclose relevant specialists reports if available.

L - SLEEP DISORDERS Yes No

History of established diagnosis of sleep apnea?

If “No”, please complete the following obstructive sleep apnea screening assessment:

Please measure neck circumference in centimeters _____

History of hypertension?

History of frequent* reported snoring?

History of frequent* reported choking, gasping or witnessed apneas?

*occurs on most nights (5/7 to 7/7)


History or evidence of other sleep disorder(s)?

If “Yes”, please elaborate: _____

Part 4 – Physician summary

1. In your medical opinion, does this individual have a medical condition that is likely to pose a threat to safe railway operations? Yes No
2. Do you think that there is a need for further assessment in regards to your patient’s fitness to work? Yes No
3. Would you like to discuss this report with the Railway Company Physician? Yes No
4. How long has this individual been your patient? _____

COMMENTS:

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PART 5 - Physician Statement and Contact Information

This report will be used to make an assessment on an employee’s fitness to work and constitutes a third party service. In completing this form, please be thorough and write legibly. If you have any questions regarding any component of this form, call the number listed below for assistance.

Employee’s Name _____

Date of medical visit on which this report is based _____

I certify that the information contained in this report is, to the best of my knowledge, correct.

Physician’s Signature

Date

Physician’s Name: _____

Telephone: () _____

Address: _____

Fax: () _____

Postal Code: _____

Family Physician/General Practitioner
 or Certified Specialist in _____

Part 6 - Information Regarding Payment

The Railway Company agrees to pay to the physician a fee of \$XX.XX. This fee is used as a guide. It is appreciated that in some circumstances a greater fee may be appropriate commensurate with the physician’s time and the detail of the information provided. In such circumstances, a fee in accordance with the current provincial guidelines for uninsured services would be appropriate. No additional invoice is necessary. Please provide in the space below the person to whom the cheque should be made payable, and the address. **Reports may be sent by regular mail or courier to:**

INSERT ADDRESS OF RAILWAY COMPANY HERE

Person to whom the cheque should be made payable and the mailing address:

**PLEASE WRITE LEGIBLY
FOR ASSISTANCE REGARDING ANY COMPONENT OF THIS REPORT,
CALL 1 - XXX - XXX - XXXX**

