

Hepatic Encephalopathy and Driving

Hepatic Encephalopathy is a metabolic syndrome that occurs in liver disease characterized by cognitive, psychiatric and motor disturbances.

It is subdivided into Covert and Overt:

- Covert HE: requires psychometric testing to diagnose
- Overt HE: can be easily diagnosed without the use of psychometric tests

Overt HE will occur in up to 40% of those with cirrhosis.

- At the time of diagnosis of cirrhosis, the prevalence of Overt HE is 10%-14%
- 20%-80% of patients with cirrhosis suffer from Minimal /Covert HE
- Develops in 10%-50% in patients with trans jugular intrahepatic portosystemic shunt (TIPS)

Pathophysiology is multifactorial:

- Bacterial translocation, inflammation and increased vasoactive mediators
 - Facilitated by portosystemic shunting, peripheral vasodilation, hepatic dysfunction
 - Leading to increase levels of ammonia and glutamine, depletion of osmolytes, rise in circulating endotoxins and inflammatory cytokines, increase blood brain barrier permeability, and impaired mitochondrial function
 - Resulting in astrocyte swelling and dysfunction, that in turn leads to neuronal dysfunction

Precipitating factors:

- Infection
- GI bleeding
- Diuretic overdose
- Electrolyte disorder
- Constipation

Clinical Classification:

- Covert HE
 - Stage 0: Minimal HE. Impairment only measurable with psychometric tests
 - Stage 1: Slight mental slowing. Fine motor skills affected. Euphoria, irritability, shortened attention span and anxiety
- Overt HE
 - Stage 2: Increase fatigue, apathy and lethargy. Slight personality disorder and disorientation to time and place. Asterixis, ataxia and slurred speech
 - Stage 3: Somnolence, aggression, and marked disorientation. Rigors, clonus, asterixis
 - Stage 4: Coma, with possible increased intracranial pressure

If patient has overt HE they can't drive, and it should be reported Road Safety BC

Importance of covert HE:

- Decreased quality of life, decrease work performance and more driving accidents
 - 55% unfit to do manual labor

- 20% unfit to do cognitive work
- Higher incidence of vehicular collisions, speeding citations, road edge excursions and center crossings

During follow up visits, patients with cirrhosis should be asked about their work performance, driving habits and inter-personal relationships.

- Often relative first to notice impairment
- Often relatives are compensating for patient's impairment, delaying diagnosis of HE

Cover hepatic encephalopathy can be diagnosed with:

- Pencil and paper tests:
 - Psychometric HE score
 - Repeatable Battery for the Assessment of Neurological status
- Pencil and paper tests have limitations that over rely on fine motor skills
- Can use computerized psychometric tests
 - Inhibitory control test
 - **Encephalapp** – stroop test
 - Fastest and most convenient as can be done on android and iOS platforms, and faster than other tests

If patient has minimal hepatic encephalopathy or have recovered from a past episode of overt encephalopathy should report it to Road Safety BC. At least they should have a road test and functional driving evaluation. Depending on your overall assessment, sometimes they too should not be allowed to drive.

Treatment of hepatic encephalopathy:

- Identify and correct precipitating factor
- Treat constipation
- Avoid sedating agents
- Assess nutrition
 - Need 1.2-1.5g/kg/day of protein
 - Can supplement with branched chain amino acids
 - Avoid fasting states. Should have small meals throughout day, including late snack
 - Replace zinc if low
- Use lactulose to ion trap ammonia
 - Titrate dose to 2-3 loose BM per day
- Give Rifaximin
 - Broad spectrum, non-absorbable antibiotic, with anti C. diff activity
 - Reduces colonic bacterial content, thus reducing production of ammonia, endotoxins and other bacteria derived mediators of HE
- Liver transplant referral

The Hepatic Encephalopathy in Chronic Liver Disease: 2014 Practice Guideline by AASLD and EASL can be found by following this link. It has enhanced navigation so you can quickly find the topic you need.

https://www.aasld.org/sites/default/files/guideline_documents/141022_AASLD_Guideline_Encephalopathy_4UFd_2015.pdf

REPORT OF A CONDITION AFFECTING FITNESS AND ABILITY TO DRIVE

Please provide as much detail as possible. Fax this form and other supporting document(s) to **(250) 952-6888** OR mail to: ROADSAFETYBC, PO BOX 9254, STN PROV GOVT, VICTORIA, BC V8W 9J2. To ensure expediency, please send documents to RoadSafetyBC only once.

If you are a medical professional, you may call: **250-953-8612**, Monday to Friday 8:30am-4:30pm to speak directly with a Registered Nurse Case Manager.

PATIENT INFORMATION		CLINICIAN INFORMATION	
Name:		Name: Stamp or sticker	
Address:		Phone #:	
City:	Postal Code:	Provide a secure and confidential fax number if you wish to obtain confirmation this report has been received: Fax #:	
DOB: (YYYY/MM/DD)	Drivers Licence # (if known): 	Professional Qualifications: Family Physician Specialist Physician Psychologist Nurse Practitioner Optometrist Other _____ How long has patient been under your care? _____ (months/yrs.)	
<p>IN MY OPINION THIS PATIENT HAS A MEDICAL CONDITION THAT PUTS THE PUBLIC OR THEMSELVES AT RISK WHEN THEY DRIVE (See: BC Medical Guidelines for Driving) (If undetermined, provide narrative information below and complete other areas as appropriate)</p> <p>THIS PATIENT CONTINUES TO DRIVE AFTER BEING WARNED OF THE DANGER (if known)</p> <p>The RoadSafetyBC assessment and action depends on the description of the medical impairment, please provide as much detail as possible: i.e.: dates, prognosis, compliance, and if the condition is likely to improve. Attach any relevant documents.</p> <p>Impairments: Cognitive Vision/Sensory Motor Risk of Sudden Incapacitation Other</p> <p>Cognitive Impairment: Screening scores (i.e.: MMSE _____ MOCA _____ Trails B _____ OTHER _____)</p> <p>Severity of cognitive decline: (scale on back) Mild Moderate Severe</p> <p>Details of medical condition or functional impairment impacting driving including, if relevant, level of insight and judgement:</p> <p>_____</p> <p>_____</p> <p>_____</p>			
<p>Optional Recommendations:</p> <p style="text-align: center;">RECOMMEND <u>CANCELLATION</u> OF DRIVER'S LICENCE</p> <p style="text-align: center;">OR</p> <p style="text-align: center;">RECOMMEND FURTHER <u>MEDICAL</u> ASSESSMENT (i.e.: Drivers Medical, vision testing, specialist). Please specify below.</p> <p style="text-align: center;">RECOMMEND DRIVING ASSESSMENT (i.e.: ICBC on-road assessment or Functional Driving Evaluation)</p>			
<p>Further Recommendations:</p> <p>_____</p> <p>_____</p> <p>_____</p>			
Date: _____		Signature: _____	

Please Provide Details of Medical Condition

It is the role of RoadSafetyBC to make driver licensing decisions; the role of the medical practitioner is to report clinical findings that raise concerns regarding their patient's fitness to drive.

Completing this form to the fullest extent possible will assist RoadSafetyBC in making a timely licensing decision. In order to meet the requirements of administrative fairness when deciding whether to urgently cancel a driver's licence, RoadSafetyBC must have sufficient information.

Please provide as much detail of your concern as possible (i.e. diagnosis, level of severity, associated symptoms, acute/chronic, if the condition is likely to improve, prognosis, treatment compliance, tests/assessments, specialist reports, reports from family, other).

If information provided is not sufficient for a decision, RoadSafetyBC may need to request additional details and a licensing decision may be delayed.

Cognitive Impairment Scale (the information below is provided as an aid – please refer to the [Global Deterioration Scale](#) for more information)

Some memory impairment but dementia not definitively diagnosed: forgets names and location of objects; may have trouble finding words; may have difficulty travelling to new locations; may have difficulty handling problems at work.

Mild Dementia: has difficulty with complex tasks or instrumental activities of daily living (e.g. finances, shopping, planning dinner, cooking, taking medication, telephoning, etc.).

Moderate Dementia: has difficulty with basic activities of daily living (eg. eating, dressing, hygiene, etc.); needs help choosing and putting on clothing; requires prompting and assistance with bathing.

Severe Dementia: decreased ability to use toilet or is incontinent; vocabulary limited; loses ability to walk and sit; unable to smile.

Other Assessment Links: MMSE ([MiniMentalStateExamination](#)) [MoCA-Test](#) [Trails A & B](#)

*Note: Moderate or severe dementia is a significant indicator that it is not safe for a person to drive, and may lead to cancellation of the driver's licence. At any time, drivers have the right to provide further information that would support a reconsideration of the licensing decision.

Duty to Report

Section 230 of the BC Motor Vehicle Act (below) outlines when clinicians must report concerns of a patient driving to RoadSafetyBC. It is important to note that clinicians may also report when they have concerns about a patient that do not meet the requirements as outlined.

- (1) This section applies to every legally qualified and registered psychologist, optometrist, medical practitioner or nurse practitioner who has a patient 16 years of age or older who:
 - (a) in the opinion of the psychologist, optometrist, medical practitioner or nurse practitioner has a medical condition that makes it dangerous to the patient or to the public for the patient to drive a motor vehicle, and
 - (b) continues to drive a motor vehicle after being warned of the danger by the psychologist, optometrist, medical practitioner or nurse practitioner.
- (2) Every psychologist, optometrist, medical practitioner, or nurse practitioner referred to in subsection (1) must report to the Superintendent the name, address, and medical condition of a patient referred to in subsection (1).
- (3) No action for damages lies or may be brought against a psychologist, an optometrist, a medical practitioner or a nurse practitioner for making a report under this section, unless the psychologist, optometrist, medical practitioner, or nurse practitioner made the report falsely and maliciously.

The personal information on this form is collected under the authority of the *BC Motor Vehicle Act* (RSBC 1996, c.318, s.29) and the *BC Freedom of Information and Protection of Privacy Act* (RSBC 1996 c.165, s.26(b), & s.27(1)(c)). The information provided on this form will be used to assist in the determination of the fitness of the above-named driver to safely drive a motor vehicle. If you have any questions about the collection, use, or disclosure of the information collected on this form, contact RoadSafetyBC toll-free at 1-855-387-7747.