

## Updates on Evidence Based Practices



## The assessment of medical fitness to drive in Sri Lanka: current status, gaps and recommendations

Thilinie Inoka Jayasekara<sup>1\*</sup> & Sameera Anuruddha Gunawardena<sup>2</sup>

<sup>1\*</sup>National Transport Medical Institute, Sri Lanka; <sup>2</sup>Department of Forensic Medicine, Faculty of Medicine, University of Colombo, Sri Lanka

Correspondence: thilinie@gmail.com

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### Introduction

A safe driver is determined through many parameters such as the driver's medical status, ability to drive, knowledge of road rules and signs, perception, judgment, response time, discipline and attitudes (1-2). All these aspects need to be checked prior to issuing a license and monitored thereafter. In Sri Lanka, the first step for any applicant seeking a new driving license or a renewal is to obtain a medical certificate of fitness to drive (3). Assessment of road rules and driving competency is done subsequently.

Various medical conditions affect one's driving ability in varying degrees. Even with complete medical fitness to drive, a person may fail to obtain the license due to poor knowledge of road rules or incompetency in driving, whereas lack of medical fitness might not be an absolute contraindication to drive. When determining medical fitness to drive, due consideration should be given to the type of vehicle and the purpose of driving. Persons with certain medical disabilities could still be granted a conditional license with certain restrictions and with appropriate vehicle modifications to overcome the negative effects of the disability.

Until 2012, medical fitness to drive light vehicles (cars, vans used for commercial or non-commercial purposes), motor cycles and three wheelers was assessed by general practitioners. There was no central unit or location that catered to this need. As such,

guidelines on medical fitness were not formalized or well defined for all categories of vehicles. In 2012, this role was assigned to the National Transport Medical Institute (NTMI) which was initially established as the Medical Division of the Central Transport Board in 1958 (4). This paved the way for the development of national guidelines on assessing medical fitness to drive and has generated an island-wide database of driver applicants in Sri Lanka. Currently, there are 25 centres located in each district, which provide this service under the purview of the Ministry of Transport (4).

### Procedure for assessing medical fitness to drive in Sri Lanka

When assessing an individual for medical fitness to drive, first consideration is given to the applicant's age and identity which require documentary confirmation. Assessments at the NTMI are done mainly for three purposes.

- a. Application or renewal of driving license
- b. Court referrals – Drivers involved in accidents are referred for reassessment of medical fitness and their licenses are withheld until such certification
- c. Professional drivers referred by employers for certification of medical fitness

Applicants are then asked to sign a declaration of medical conditions. They are then screened through a

series of clinical examinations and investigations, which primarily assess their vision, musculoskeletal system, hearing, mental soundness and the presence or absence of certain long-term illnesses. Each of these aspects is further discussed below.

## Age

In Sri Lanka, a person should be 17 years or older to undergo the medical assessment and register for the written test on road rules. A minimum age of 18 years is needed to hold a license (3). Medical status is re-assessed at the time of renewal which, for light vehicle licenses, is every 8 years unless the license has been issued under a special category requiring more frequent renewals.

Application for heavy vehicle license can only be made by persons holding a light vehicle license. The medical assessment and written test can be done at 20 years of age. However, the person needs to be 21 years or more to obtain the license (3). Renewals and medical reassessments are done every 4 years unless specified under special categories (3).

In Sri Lanka, there is no maximum age bar to drive; neither is age considered as a criterion for frequent renewals. In many other countries, the frequency of renewal varies depending on the advancing age of the driver, the type of vehicle category and the quality of medical notification systems. While some studies show that the rate of collisions and potential for reckless driving is lower in older drivers (5-6), there is a higher incidence of medical disabilities, visual and cognitive impairments which may reduce fitness to drive in elderly populations (7-9). In Sri Lanka, the prevalence of any type of chronic illness among the elderly (more than 60 years) population is reported to be 55% (10). However, as there is no formally structured medical notification system, those who develop illnesses or disabilities may continue to engage in driving until they are reassessed at the subsequent renewal. This is a drawback in our system which endangers road safety. Therefore, it is prudent to increase the frequency of medical assessments with age at least in drivers of commercial vehicles such as buses, lorries, school vans, etc.

## Declaration of medical conditions

Medical conditions such as diabetes, hypertension,

ischaemic heart disease, psychiatric diseases, epilepsy and certain progressive eye diseases are supposed to be declared by the applicant during the medical test. This declaration has much importance in identifying medically unfit drivers especially in the absence of a formal medical notification system. The screening process at the time of application is not sensitive enough to detect these illnesses especially if they are reasonably well controlled.

Many state legislations in Canada, Australia and USA expect medical practitioners to notify the relevant authorities if any of their patients have a physical or mental condition that would be deemed unfit for driving (11-12). In most situations, the medical practitioner concerned will first persuade the driver to declare the relevant illnesses personally. If unsuccessful, the medical practitioner may breach the confidentiality and notify the authorities considering the greater benefit to the society (13). Some countries impose large penalties on persons who withhold or hide such information deliberately (14). There is a timely need for Sri Lanka to adopt such a procedure of formal medical notification and impose penalties on those who intentionally hide grave illnesses that could bring about disastrous consequences during driving. Although many ethical and legal issues have been identified in mandatory notification by medical practitioners (15-17), its benefits to the society cannot be ignored, at least when considering drivers engaged in commercial and passenger transport. There is at least one reported case of a doctor litigated for failing to notify epilepsy in a driver (18).

## Vision

This is perhaps the single most important sensory input in driving. Visual problems have been the commonest medical condition identified during the medical examinations at the NTMI (35,851 cases from 746,844 examinations in 2015) (19). The degree of vision needed to drive is a much-debated topic and may depend on multiple factors including the type of vehicle, purpose of driving, quality of roads, road signals available, adequate street lighting and speed limits (20). In Sri Lanka, the aspects that are considered under vision are visual acuity, visual fields, presence of eye conditions such as squints, nystagmus, diplopia and progressive eye diseases. Colour vision is no longer a requirement for driving in Sri Lanka (21). The degree of visual acuity required to obtain a license depends on;

- a. whether a person has binocular vision or monocular vision
- b. the degree of visual acuity in each eye
- c. the type of vehicle license required
- d. the purposes of driving (whether commercial or non-commercial /personal)

When indicated, visual fields will be checked along with an eye surgeon's opinion on the adequacy of vision. The College of Eye Surgeons along with NTMI has made clear visual standards for drivers so that decisions on fitness to drive regarding vision would be uniform and objective and these have been made available online (21).

It should be emphasized that heavy and commercial vehicle licenses require higher visual standards (20). Conditional driving licenses are issued in certain visual disabilities, such as where the driver must drive with spectacles or in monocular vision where only a specially modified vehicle can be driven. Some of these conditions are specifically mentioned in the license so that traffic police officers could identify such drivers. However, as there is no provision to display the restriction on commercial driving in Sri Lanka, the police are unable to detect such drivers illegally engaging in commercial and passenger transportation.

### **Muscular skeletal system**

Proper functioning of the musculoskeletal system is another important determinant of medical fitness in driving (22). It is difficult to develop guidelines for each and every deformity and/or disability as the degree and complexity of musculoskeletal impairment would vary from person to person (23). Therefore, each case is considered individually either by a single doctor or if necessary by a panel of doctors. Certain minimum requirements have been adopted in Sri Lanka with the involvement of orthopaedic surgeons, NTMI and the Department of Motor Traffic. The main criteria that are assessed include basic functionality of the limbs, hand grip strength, muscle tone and range of joint movements. The final decision on medical fitness in relation to musculoskeletal disorders will also depend on the type, aetiology, duration, and the extent of the disability.

Some countries seek the combined expertise of medical professionals, occupational therapists and automobile technical officers to assess the ability to drive in persons with musculoskeletal deformities especially when it is necessary to match the abilities of the person with the type of vehicle (24).

### **Hearing**

Hearing is important to identify faults in the engine, noise of certain alarms, warnings and to communicate with the passengers (2). Although a clear link between hearing loss and driving ability has not been identified, there is evidence to suggest that drivers with hearing loss have reduced attention as well as reduced performance in secondary tasks such as observing road signs (25-27). In Sri Lanka, there are specific guidelines for issuing medicals for persons with hearing impairment (28). Usually an audiometry is done with and without a hearing aid and an ear nose and throat (ENT) specialist's opinion is sought. A hearing level of 40 Db or better is essential for heavy and commercial passenger transport vehicle drivers. For non-commercial light vehicle drivers with hearing impairment, a conditional license may be issued upon recommendation of an ENT specialist.

Studies show that elderly persons with moderate to severe hearing impairment show significantly poor driving performance in the presence of visual and auditory distracters (29). This is quite applicable to Sri Lanka where the roads are frequently crowded and noisy. An area of concern among younger drivers is high levels of noise during occupational and recreational activities as there is evidence that high levels of noise exposure even with minimal hearing loss, reduces concentration and vigilance while driving (30).

In some countries, additional modifications are done for passenger transport vehicles driven by drivers with hearing impairment, such as the use of two side mirrors or an inward facing rear view mirror on the dashboard to communicate with passengers (31). Newer smart phone technology has also enabled hearing impaired drivers to engage in passenger transportation through the use of mobile applications (32).

### **Psychiatric illnesses**

The initial self-declaration asks applicants to state if there is any known psychiatric illness. However, the

nature and severity of the illness is not specified. There is no clear guideline on what type of illnesses should be looked for and what assessments are required. Most lay persons do not relate the term 'psychiatric illnesses' with non-psychotic disorders such as substance abuse, depression, conduct or stress disorders which are commoner and also linked with drunk driving (33). Such conditions are rarely declared by the applicant and are extremely hard to detect from a single medical examination. If any suspicion of a psychiatric illness comes up during the clinical examination, the person will be referred to a psychiatrist for advice and conditional licenses could be given, depending on the type of illness, the duration, degree of control and use of medication (34). Once again, the importance of proper notification systems needs to be highlighted.

### Other long-term illnesses

Chronic illnesses such as hypertension, ischaemic heart disease, valvular heart disease and neurological problems are screened for during the medical assessment. Diabetic status is checked by a random or a fasting capillary blood test, which is supposed to be less than 200mg/dl or 140mg/dl respectively to obtain fitness. These values are currently being reviewed for further modification. Blood pressure of 170/100mmHg or less is regarded as the cut off value. Extra tests such as electrocardiogram, 2d-echocar-8diogram and exercise ECG will be performed if any cardiovascular abnormalities are suspected. Applicants will be referred for specialized opinion for certain illnesses such as epilepsy, stroke and sleep apnoea. Many of these conditions can cause sudden unexpected loss of voluntary control while driving but are usually undetectable through a single medical examination. Insulin dependent diabetes can impair driving either through hypoglycaemia (35-36) or hyperglycaemia (37-39) but will not be detectable from the above tests in its controlled state. Here again, the grave importance of medical notification systems and honest self-declarations should be re-emphasized.

### Multiple disabilities

Even though each system is checked separately, it is the summative fitness of the applicant that is finally considered. The interplay of all disabilities could make a person medically unfit even though separate assessments of each individual component may seem

satisfactory. When medical problems involve multiple systems, they should be considered as a whole and ideally by a multidisciplinary medical panel.

### Conclusions

Medical fitness to drive is one of the most important aspects of issuing a license. Medical tests should be conducted by doctors who are thorough with those guidelines in specialized institutions with facilities to verify the identification, previous medical history and other medical parameters. Driver applicants should be screened without any personal bias and decisions should be made in a manner that upholds the applicant's rights while protecting their lives as well as the public. There is a timely need to strengthen medical assessments of drivers by developing a formal notification process and improving access to medical records. Except for vision, Sri Lanka still lacks formal guidelines in many medical specialties related to driving ability and it is important for these specialist bodies to address this issue at a national level. The area of transport medicine has forged ahead in many countries and less restrictive solutions are being developed to uphold the right to drive of medically disabled individuals while ensuring road safety.

In certain countries, even after a license is granted, further monitoring of the license holder is done through real time testing where the driver's ability to drive in various life circumstances and stressors on the road is recorded and assessed over a period of time (20). This is made possible through a stringent process of documentation, record keeping and reporting. Such protocols require the coordinated efforts of traffic police, licensing authorities, state administrative services and governing bodies.

NTMI, as the only institution catering to the above needs in Sri Lanka has achieved a lot so far to uplift and streamline the medical assessment process. Facilities to electronically verify identification and maintain a database of medical records have been established. The institution is still working tirelessly along with different specialist bodies to improve standards and guidelines for screening driver license applicants in the country. All these efforts are to provide a better-quality service and to fulfil the mission of the NTMI Sri Lanka which is 'to have a safe driver behind every wheel'.

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