Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

NOTM CPD Day 16 May 2025

On and Off-Road Driving Assessment

Dr. Tadhg Stapleton
Associate Professor in Occupational Therapy
Trinity College Dublin

Overview

Processes and issues in:

- **Off road Screening and Assessment**
- **On road testing**
- **Adopting a 'Driving Management Planning' approach**

Medical assessment for fitness to drive

Information leaflet published in 2022

Available on the NDLS Webpage https://www.ndls.ie/medical-fitness/health-and-driving-information-leaflets.html

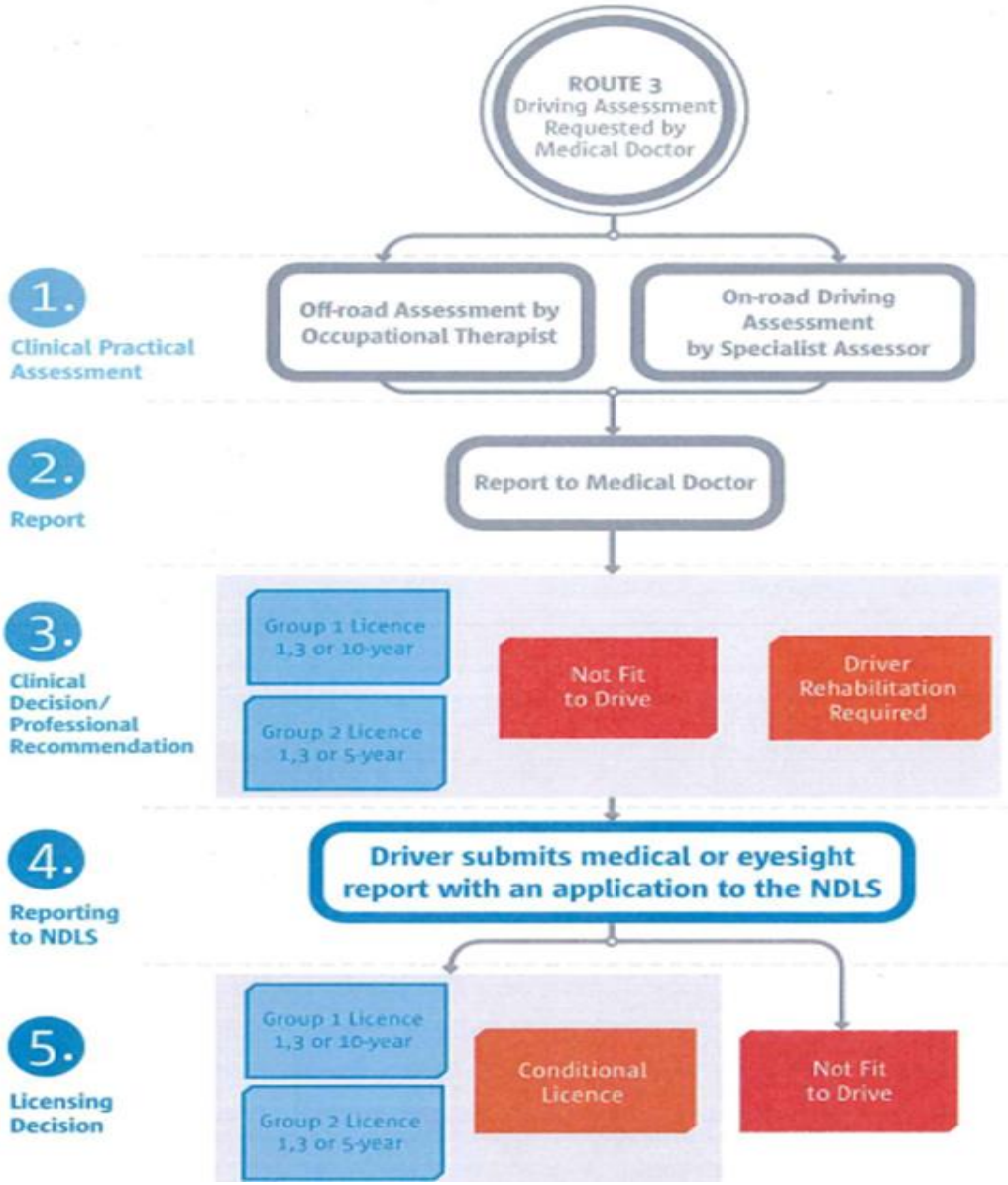
Outlines three pathways for assessing MFTD

Route 1 – Eyesight assessment

Route 2 – Medical assessment

Route 3 – On-road and off-road assessment

Route 3: On-road and off-road assessment



Dr. Tadhg Stapleton, Trinity College Dublin

Process of Assessment - International Practice

2 phased approach to driving assessment

Off-Road Element – Physician and Occupational Therapy

- **components of the 'off-road' element;**
  - Discuss Driving (ongoing basis)
  - **Screening** for fitness to drive (if identified to be 'at risk' proceed to assessment)
  - **Assessment** of Fitness to drive

On-Road Element – On Road Driver Assessor

On-Road Driving Assessment

Theoretical Model

MICHON MODEL

- Strategic

(pre drive decision making, route planning, need and purpose of the driving, personal factors/awareness - EXECUTIVE)

- Tactical

(decisions made during the driving task, managing and planning driving tasks ie overtaking, gap selection, negotiating complex intersections – COGNITIVE, PERCEPTUAL, EXECUTIVE, and PHYSICAL to operationalise)

- Operational

(person machine interaction, operating the controls of the vehicle, coordination between actions – PHYSICAL & SENSORIMOTOR)

GDE5SOC (Goals for Driver Education in the Social Perspective)

- Social Environment
- Personal goals for life, skills for living
- Goals and context of driving
- Mastery of traffic situations
- Vehicle handling and manoeuvring

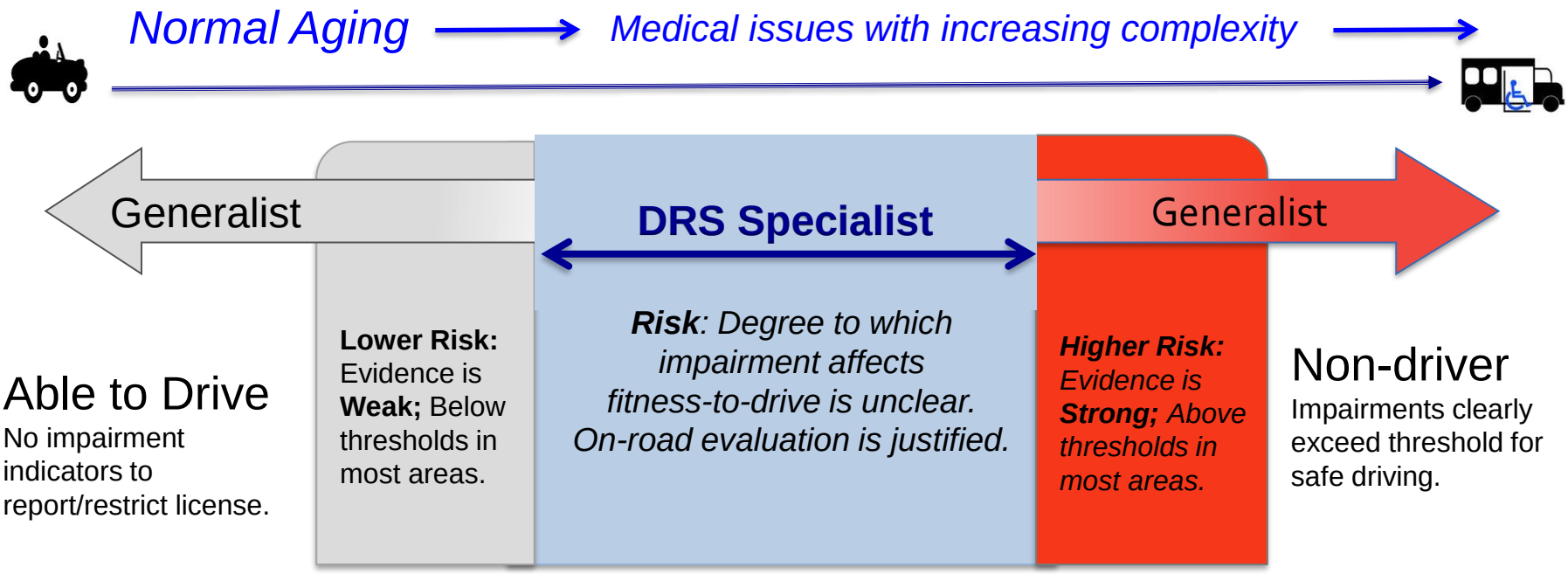
Keskinen E (2014) Education for older drivers in the future. International Association of Traffic and Safety Sciences, 38,14-21.

https://doi.org/10.1016/j.jatssr.2014.03.003

Off Road Elements

- **Screening**
- **Assessment**

Occupational Therapy Intervention: Evidence, Clinical Judgment, and Risk



Interventions for Generalists: Plan & Build Options for Mobility

Maximize Skills & Abilities
Self Awareness
Mobility preservation: Driving

Refer to specialized services
Develop transportation alternatives
Mobility preservation: Transition

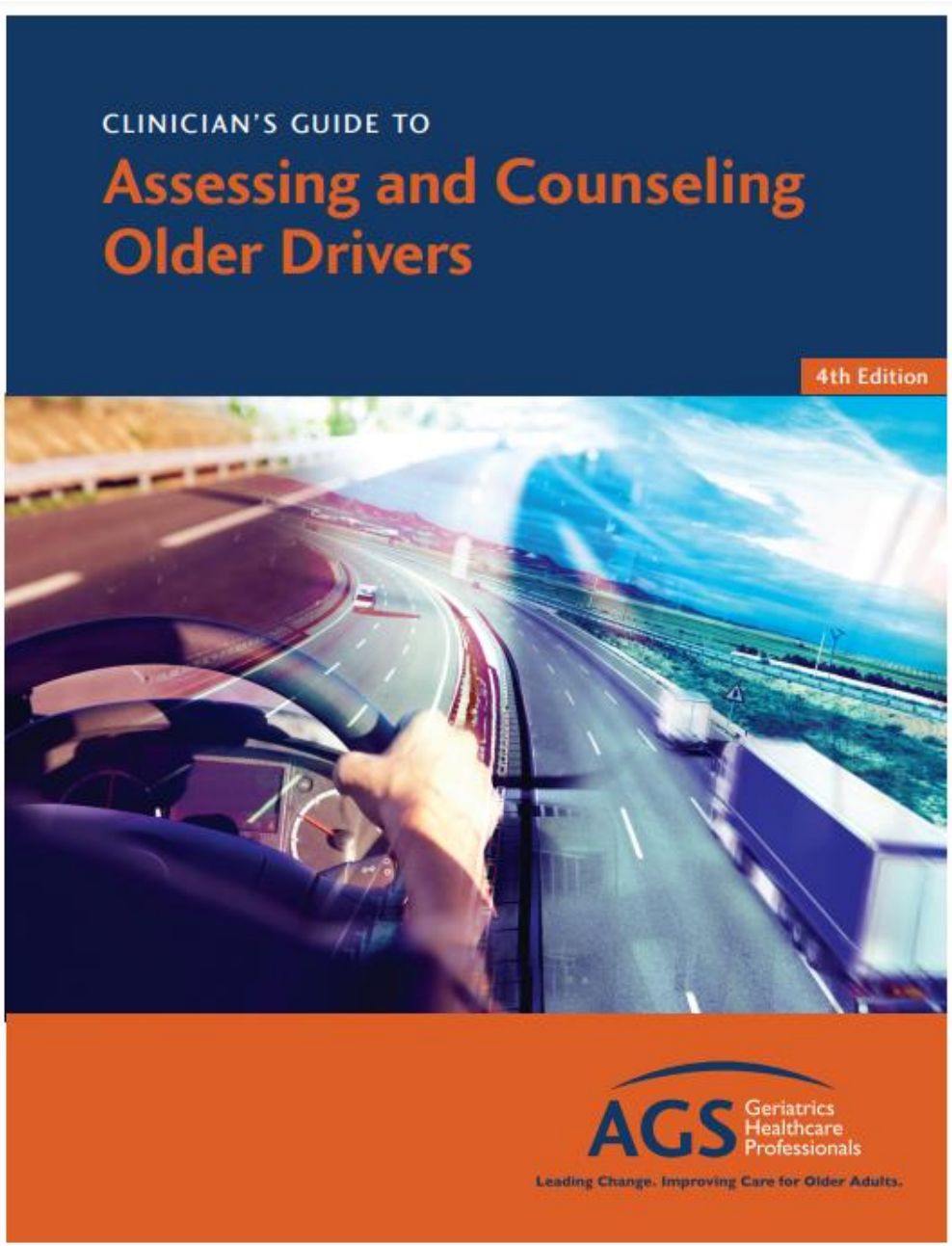
Promote Driving Retirement,
Mobility preservation: Implement supportive transportation

Dickerson A. (2014). Driving with dementia: Evaluation, referral, and resources. Occupational Therapy in Health Care. 28(1), 62-76. Used with permission.

Dickerson & Schold Davis, 2013

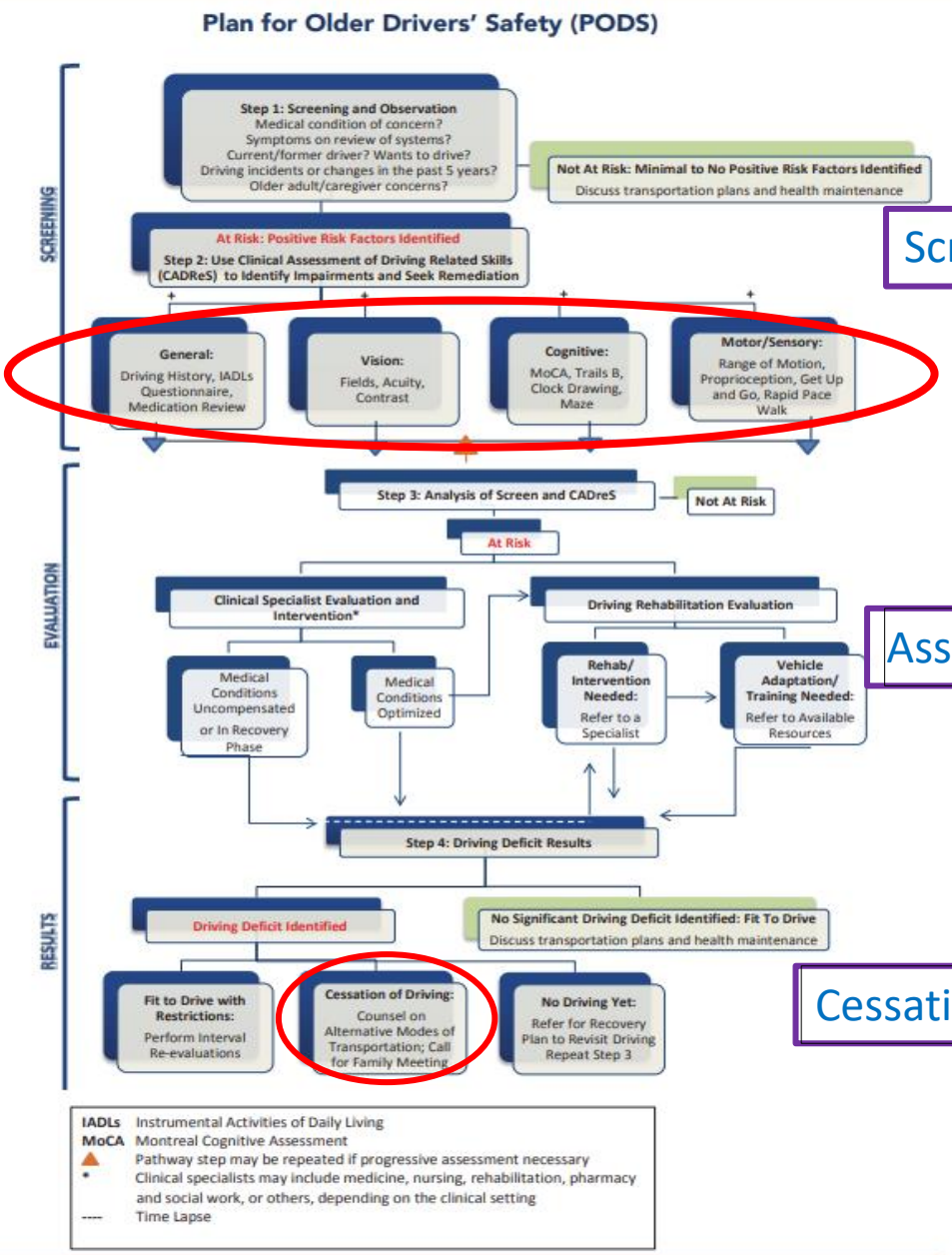
Pomidor A, ed. Clinician's Guide to Assessing and Counseling Older Drivers, 4th Edition. New York: The American Geriatrics Society; 2019

Accessed 8th Feb 2023 at - https://www.safemobilityfl.com/pdfs/CliniciansGuide/CliniciansGuideOlderDriversComplete4thEdition.pdf



Plan for Older Driver's Safety (PODS). In: Pomidor A, ed. Clinician's Guide to Assessing and Counseling Older Drivers, 4th Edition. New York: The American Geriatrics Society; 2019

Screening:
General – Driving Hx, IADL's, Medication review.
Vision - Visual Fields, Visual acuity, contrast sensitivity.
Cognition - MoCA, Trails B, Clock Drawing, Maze test.
Motor/Sensory - RoM, Proprioception. Get Up & Go, Rapid Pace Walk test



Scott H, Baker A, Unsworth C. (2024). Development of a driving clinical decision pathway for non-driver trained occupational therapists. *British Journal of Occupational Therapy*. (ahead of print)
https://doi.org/10.1177/03080226241261185

Scott H, Baker A, Unsworth C. (2023). Driving clinical decision pathway for non-driver trained occupational therapists when assisting people with return to driving. Federation University, Australia. ISBN:978-0-646-8852-8-5

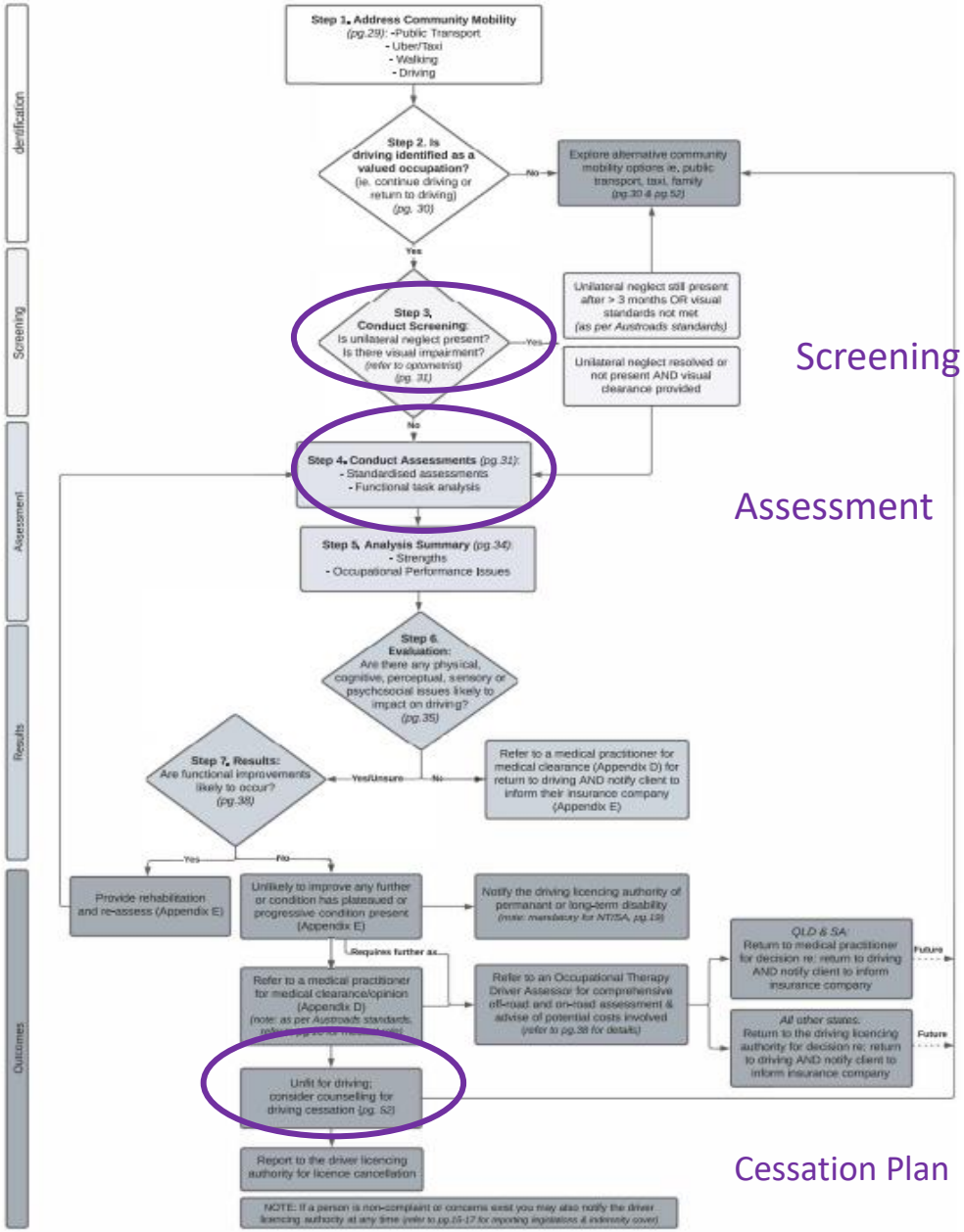


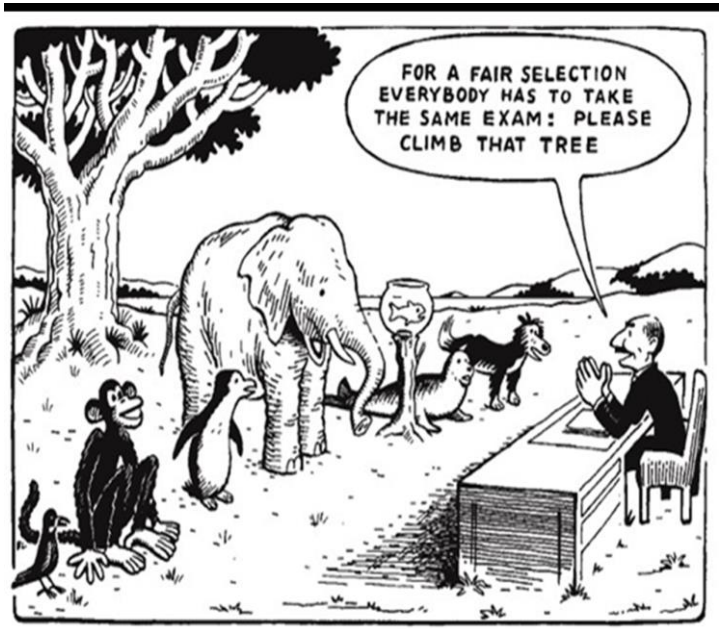
Figure 1. Driving Flowchart.

Tests used in off-road fitness to drive assessment

Rookwood Driving Battery
OT DORA
Stroke Driver Screening Assessment
Trail Making Test A & B
Cancellation tests (Bells test, Star cancellation test etc)
MoCA
Physical & Sensory assessment

(UFOV, Dynavision, Rey-Osterrreith Complex Figure Design)

Clinical Judgement – informed by a combination of Standardised test tools AND Assessment of Function is used to inform the off-road assessment outcome



Preliminary Outcomes of a Retrospective Evaluation of OT Driving Assessments in NGH

Áine Coe, Clinical Specialist Occupational Therapist, NGH

Dr Tadhg Stapleton, Associate Professor, Discipline of Occupational Therapy, TCD

Grúpa Ospidéal Bhaile Átha Cliath Lár Tire FSS
Dublin Midlands Hospital Group HSE
Páirtnéir Acadúil Coláiste na Tríonóide Baile Átha Cliath
Academic Partner Trinity College Dublin

Naas General Hospital

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

On Road Process

- **Pre-determined or standardised route recommended**
- **Duration – 40 to 60 minutes**

  Adequate duration to allow exposure to a variety of driving scenarios

  Adequate duration to allow driving assessor form an opinion on fitness to drive

- **On Road testing is good for Tactical and Operational levels of Driving , but need careful planning and conduct to ensure Strategic level skills are incorporated**

On Road test route design?

CIECA The International Commission for Driver Testing. (2021), Annex 1: Guidelines forming the 'Ideal' Driver Assessment, available at: https://www.cieca.eu/node/959
Korner-Bitensky, N., Gélinas, I., Man-Son-Hing, M., and Marshall, S. (2005), "Recommendations of the Canadian Consensus Conference on driving evaluation in older drivers", *Physical & Occupational Therapy in Geriatrics,* Vol. 23 No. 2-3, pp. 123-144. DOI: 10.1080/J148v23n02_08
Justiss, M.D., Mann, W.C., Stav, W., and Velozo, C. (2006), "Development of a Behind-the- Wheel Driving Performance Assessment for Older Adults", *Topics in Geriatric Rehabilitation*, Vol. 22 No. 2, pp. 121-128. DOI: 10.1097/00013614-200604000-00004
Di Stefano, M., and Macdonald, W. (2012), "Design of occupational therapy on-road test routes and related validity issues", *Australian Occupational Therapy Journal*, Vol. 59 No. 1, pp. 37-46. DOI: 10.1111/j.1440-1630.2011.00990.

Critical components to be included in the design of an on-road driving test route (road layout, variety [and complexity] of intersection – controlled/uncontrolled, intersection negotiating, in traffic manoeuvring etc.)

Critical behaviours that should be included during an on-road test (lane maintenance, gap maintenance, speed maintenance, awareness of and interactions with other road users)

Consider Compulsory and Desirable features to be included in an on-road test route

Exposure levels? – repeated exposure for the essential manoeuvres (or is once enough?)

Developing an on-road driver test route and associated rating scale

Stapleton T., Jetter K., Commins S. (2023). Recommendations on developing an on-road fitness-to-drive route and test that incorporates an assessment for higher cognitive functioning. *Irish Journal of Occupational Therapy*, 51/2, 60–72.
[DOI 10.1108/IJOT-09-2022-0033]

Test route designed using Naas as the location

Reviewed consensus statement on essential components and behaviours that should be included in an on-road assessment

Applied the recommendation into the development of a proposed on-road driving test route

Table 1 Driving features of the Naas route alongside assessment requirements

On-road route features	Korner-Bitensky *et al.* (2005)	Justiss *et al.* (2006)	Naas route
General advantages			
Easily accessible			✓
Circuit contains hospital			✓
Circuit used for learner drivers			✓
Contains mix of urban, rural, suburb and motorway driving			✓
Over 40 min in length		✓	✓
Conditions			
4-way intersection	✓	✓	✓
Two-way stop	✓	✓	
Left turn	✓		✓
Right turn	✓	✓	✓
Traffic lights	✓	✓	✓
Stop sign	✓	✓	✓
Merge that requires speed increase	✓		✓
Roadway requiring lane position	✓	✓	✓
Lane change	✓	✓	✓
Road with varying speed	✓	✓	✓
Merging at high speed	✓		✓
Yield to oncoming traffic	✓		✓
Requires reversing	✓		
Behaviours			
Appropriate speed maintenance	✓	✓	✓
Maintaining lane position	✓	✓	✓
Stopping at red light	✓		✓
Merging at appropriate speed	✓	✓	✓
Appropriate lane position during turns	✓	✓	✓
Slowing to hazards	✓	✓	✓
Yielding where appropriate	✓	✓	✓
Maintaining appropriate distance	✓	✓	✓
Not spending excessive time at intersections	✓		✓
Signalling	✓	✓	✓
Scanning traffic environment		✓	✓
Maintaining driving while completing cognitive task	✓		✓

Source: Authors' own work

A proposed 7 Step process to designing an on-road test route

Stapleton T., Jetter K., Commins S. (2023). Recommendations on developing an on-road fitness-to-drive route and test that incorporates an assessment for higher cognitive functioning. *Irish Journal of Occupational Therapy*, 51/2, 60–72.
[DOI 10.1108/IJOT-09-2022-0033]

Step 1 – Choose location **(? Start at hospital location, location must have access to a mix of driving options/conditions, look at pre-existing routes for NDLS driving test, ADI routes etc)**

Step 2 – Choose route **(circular route, check distance, time to drive, features that must be included, opportunity to observe driver behaviours)**

Step 3 – Drive the route yourself several times **(to check against the recommended criteria for on road test routes)**

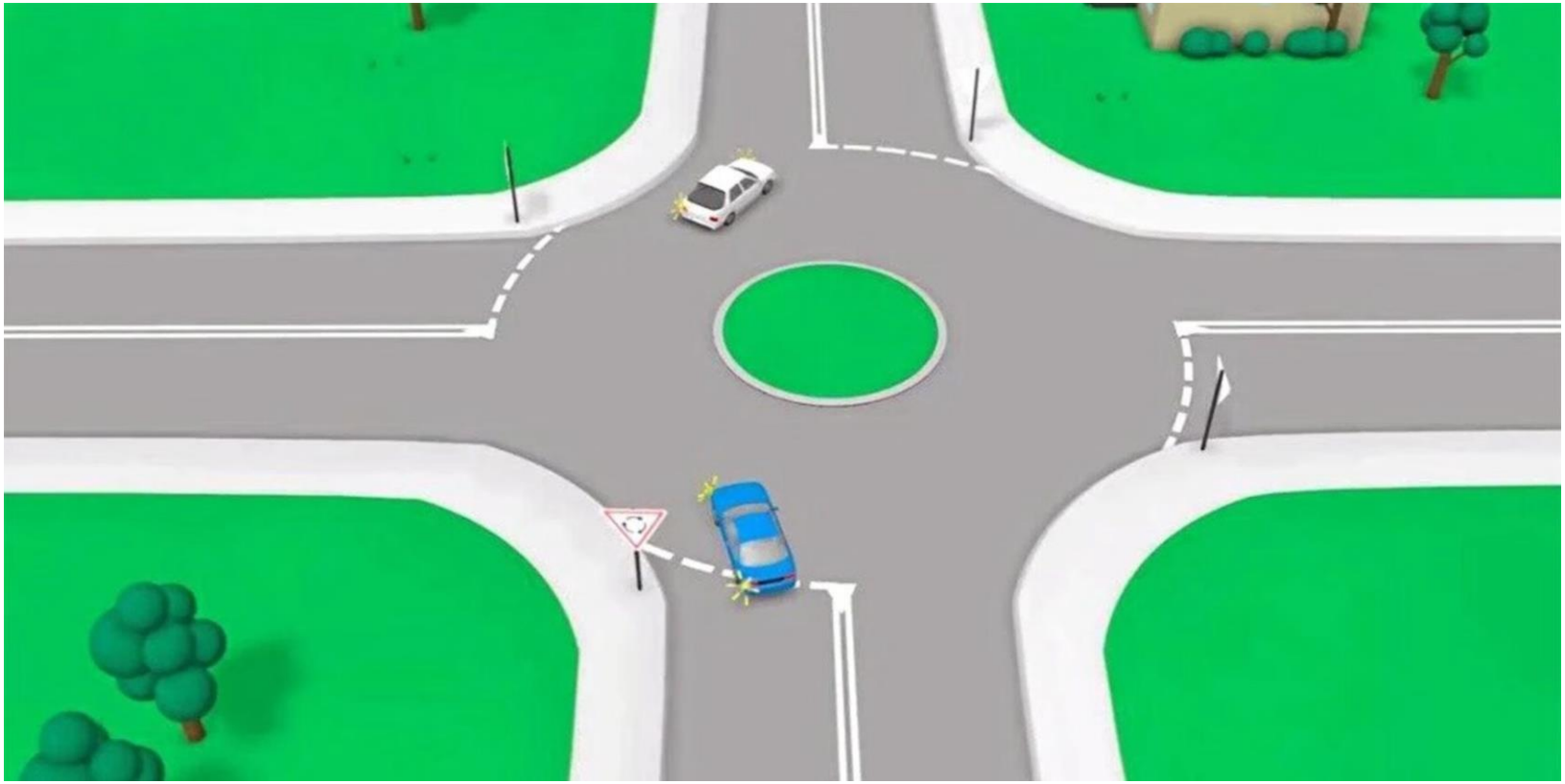
Step 4 – Develop set of instructions **(instructions that are specific to the route, need a 'just-right' level of instruction, not too instructive/procedural, need to allow for problem solving and planning [strategic level])**

Step 5 – Use a standardised on-road assessment tool **(search for evidence based non-route specific on-road assessment tools such as TRIP)**

Step 6 – Test the route with pilot participants **(drivers without any known concerns about their driving ability, gather their feedback on the route, on your instructions etc)**

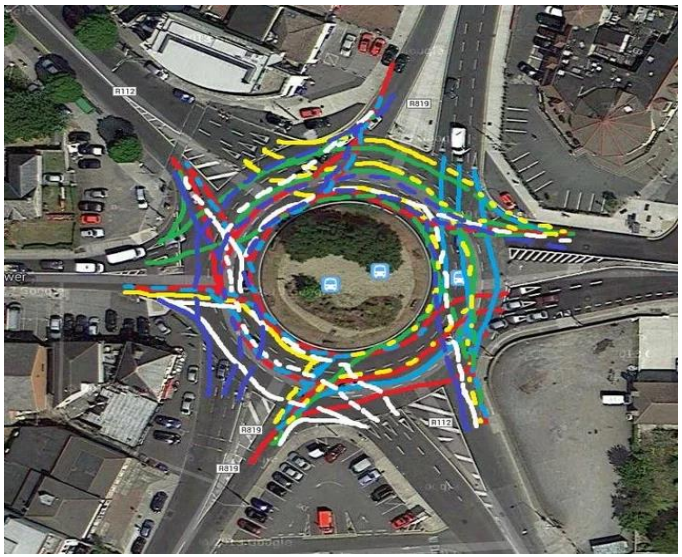
Step 7 – Proceed to use the route for testing

There are roundabouts….



And there are roundabouts!!!....

- What is the hardest roundabout in Ireland?
- The Walkinstown Roundabout is famed by drivers all around Dublin for being one of the worst roundabouts in the county. Notorious for its tough driving atmosphere, it's dreaded by both experienced and learner drivers due to its fast movement and access to six busy South Dublin roads.
- The terror of learner drivers, it is the busiest roundabout in Ireland. With six exits, joining it is a case of foot down and hope for the best.1 Apr 2024



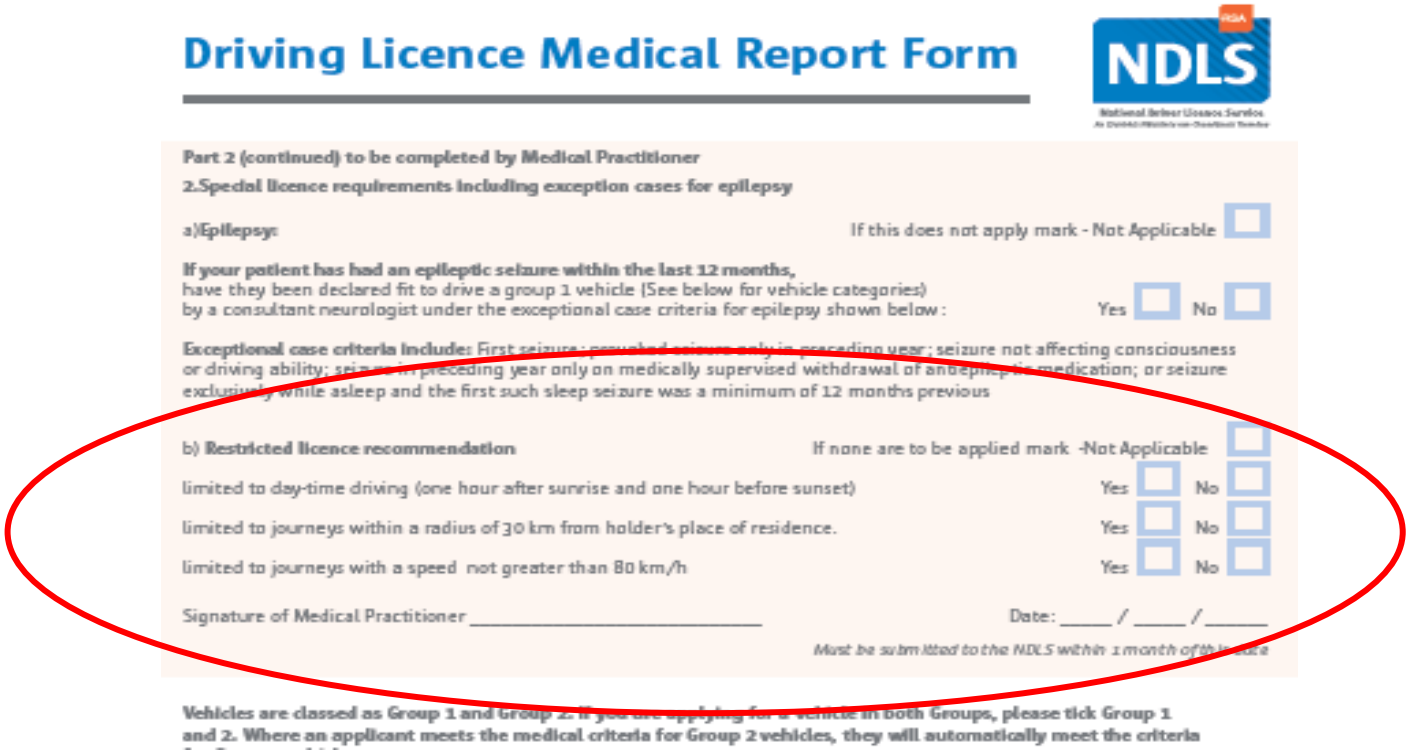
And there are roundabouts……

Consider the additional demands at the Tactical Level of Driving skill in this complex intersection?

Standardised or Local Route?

Local route assessment may be appropriate for some driver – if the person is going to restrict their driving to their local area only.

If a person is going to drive unrestricted then a standardised route is needed to ensure exposure to a larger variety of driving conditions



Driving Licence Medical Report Form

NDLS

Part 2 (continued) to be completed by Medical Practitioner

2.Special licence requirements including exception cases for epilepsy

a)Epilepsy: If this does not apply mark - Not Applicable ☐

If your patient has had an epileptic seizure within the last 12 months,
have they been declared fit to drive a group 1 vehicle (See below for vehicle categories)
by a consultant neurologist under the exceptional case criteria for epilepsy shown below: Yes ☐ No ☐

Exceptional case criteria include: First seizure; provoked seizure only in preceding year; seizure not affecting consciousness or driving ability; seizure in preceding year only on medically supervised withdrawal of antiepileptic medication; or seizure exclusively while asleep and the first such sleep seizure was a minimum of 12 months previous

b) Restricted licence recommendation If none are to be applied mark -Not Applicable ☐

limited to day-time driving (one hour after sunrise and one hour before sunset) Yes ☐ No ☐

limited to journeys within a radius of 30 km from holder's place of residence. Yes ☐ No ☐

limited to journeys with a speed not greater than 80 km/h Yes ☐ No ☐

Signature of Medical Practitioner _____ Date: _____ / _____ / _____

Must be submitted to the NDLS within 1 month of this date

Vehicles are classed as Group 1 and Group 2. If you are applying for a vehicle in both Groups, please tick Group 1 and 2. Where an applicant meets the medical criteria for Group 2 vehicles, they will automatically meet the criteria

Adopting a ‘Driving Management Planning’ approach

Preparation for Driving cessation/retirement?

- 90% older adults travel most frequently by car. 72% to 76% drove themselves, if not driving were passengers in car drive by spouse or other family member/friend. Less than 10% (8.5%) used public transport. A reduction in driving noted in the 65-69 age group (Donoghue et al 2019., Gormley & O'Neill 2019) (Irish research TILDA data)

- 82.1% of older adults relied on driving as their primary mode of transport. The majority (range 60% - 93%) reported never using other forms of public transport or using private taxi regardless of weather conditions. (Unsworth et al 2021. cross sectional survey across 7 countries incl. Ireland)

- Older adults outliving their driving years – drivers at age 70-74 have driving expectancy of approx. 11 years. Men will have 6 years of alternative transport dependency, women will have 10 years of alternative transport dependency (approximations) (Foley et al 2002)

- **Need to focus on assisting older drivers plan for alternative transportation use**

- *Donoghue OA, McGarrigle CA, Kenny RA (2019). Who's in the driver seat? Impact on social participation and psychosocial wellbeing in adults aged 50 and over. Transportation Research Part F. 64, 522-531. DOI: 10.1016/j.trf.2019.06.010*
- *Foley DJ, Heimovitz HK, Guralnik JM, Brock DB (2002). Driving life expectancy of persons aged 70 years and older in the United States. American Journal of Public Health, 92, 8, 1284-1289.*
- *Gormley, M., & O'Neill, D. (2019). Driving as a Travel Option for Older Adults: Findings From the Irish Longitudinal Study on Aging [Original Research]. Front Psychol, 10. https://doi.org/10.3389/fpsyg.2019.01329*
- *Unsworth C, Dickerson A, Gelinas I, Harries P, Margot-Cattin I, Mazer B, Stapleton T, Swanepoel L, Timmer A, Van Niekerk L, Vrkljan B (2021). Linking people and activities through community mobility: an international comparison of the mobility patterns of older drivers and non-drivers. Ageing and Society DOI: 10.1017/S0144686X20001968*

Preparation for Driving Cessation/retirement

Dickerson AE, Stapleton T, Bloss J, Gélinas I, Harries P, Choi M, Margot-Cattin I, Mazer B, Patomella AH, Swanepoel L, Van Niekerk L, Unsworth CA, Vrkljan B. A Systematic Review of Effective Interventions and Strategies to Support the Transition of Older Adults From Driving to Driving Retirement/Cessation, *Innovation in Aging*, Volume 8, Issue 6, 2024, igae054, https://doi.org/10.1093/geroni/igae054

Reluctance/Avoidance **(among physicians, healthcare professionals, & family to talk about driving).**

Multiple Stakeholder Involvement **(tripartite group – the driver, the family, the healthcare professional).**

Take a Proactive Approach **(avoid abrupt, reactive decision to cease driving. Healthcare professionals should initiate the conversation about driving (well in advance of any concerns / advanced planning), 'start early – repeat often').**

Refocus the Process **(shift away from predominant focus on establishing fitness to drive, forward planning/phased approach to driving management: maintenance of driving ⇨ restrictions ⇨ driving cessation.**

Collaborative Approach (enable ownership) **(collaborative partnership between HCP and driver (family), education based approach, encourage planning ahead 'what if you couldn't drive in the future?', encourage self-appraisal & development of self awareness of signs indicating driving may need to cease, enable some 'ownership' of the decision.**

Engage in Alternative Transportation Planning **(preparation for the impact of driving cessation on lifestyle, proactive planning for transport transition, provide information on alternative transport options, community supports etc,**

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Thank You