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Title	Assessing fitness to drive after stroke: A survey investigating current practice among occupational therapists in Ireland
Authors	Stack, Aisling Helen;Duggan, Orla;Stapleton, Tadhg
Publication date	2018
Original Citation	Stack, A.H., Duggan, O. and Stapleton, T., 2018. Assessing fitness to drive after stroke: A survey investigating current practice among occupational therapists in Ireland. Irish Journal of Occupational Therapy, 46(2),(25pp). DOI:10.1108/IJOT-03-2018-0006
Type of publication	Article (peer-reviewed)
Link to publisher's version	https://www.emeraldinsight.com/doi/abs/10.1108/IJOT-03-2018-0006 - 10.1108/IJOT-03-2018-0006
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Download date	2026-11-02 06:07:22
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Article information:

To cite this document:
Aisling Helen Stack, Orla Duggan, Tadhg Stapleton, (2018) "Assessing fitness to drive after stroke: A survey investigating current practice among occupational therapists in Ireland", Irish Journal of Occupational Therapy, Vol. 46 Issue: 2, pp.106-129, https://doi.org/10.1108/IJOT-03-2018-0006
Permanent link to this document:
https://doi.org/10.1108/IJOT-03-2018-0006

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Received 7 March 2018
Revised 21 June 2018
29 August 2018
Accepted 29 August 2018

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Assessing fitness to drive after stroke

A survey investigating current practice among occupational therapists in Ireland

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Abstract

Purpose – The assessment of fitness to drive after stroke is an emerging area of occupational therapy practice in Ireland. Despite this, little is known about occupational therapists' evaluation practices, and there are no internationally agreed clinical guidelines to inform best practice. The purpose of this paper is to investigate occupational therapy evaluation practices for fitness to drive after stroke in Ireland.

Design/methodology/approach – This is a cross-sectional study design targeting occupational therapists working with people after stroke using an online survey. Summary and descriptive statistics were used to analyse the returned surveys

Findings – In total, 47 occupational therapists participated. Off-road driving assessment was completed by 68 per cent of respondents. Functional assessment and non-driving-specific assessments were most widely used and perceived to be the most useful in informing the off-road assessment. A total of 89 per cent referred clients for on-road assessments; however, some referred without first completing an off-road assessment. The therapists who completed formal post graduate education/training in driving assessment reported greater confidence and competence in their skills and ability to assess fitness to drive. A vast majority of participants agreed that clinical guidelines regarding best practice in this area would be beneficial.

Research limitations/implications – A majority of occupational therapists are assessing fitness to drive after stroke in Ireland with non-driving-specific assessments and functional observations; however, there are many gaps and wide variations between services. Education/training in evaluating fitness to drive after stroke is recommended. The development of clinical guidelines to inform practice would facilitate a consistent approach nationally.

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Irish Journal of Occupational Therapy
Vol. 46 No. 2, 2018
pp. 106-129
Emerald Publishing Limited
2398-8819
DOI 10.1108/IJOT-03-2018-0006

Originality/value – This is the first study completed in Ireland to investigate occupational therapy evaluation practices for fitness to drive after stroke.

Keywords Survey, Occupational therapy, Stroke, Driving

Paper type Research paper

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Introduction

Stroke is the third leading cause of death in Ireland and the leading cause of acquired disability and impairment, with over 7,000 people hospitalised post stroke each year (Irish Heart Foundation, 2015). Stroke has the potential to cause multiple impairments affecting cognition, perception, vision, visuo-spatial skills, hearing, sensorimotor skills and behaviour that may negatively impact on the person's ability to return to driving (Marshall *et al.*, 2007). Aside from the obvious physical and sensory deficits which can occur post stroke, it is often the higher level thinking skills such as awareness and insight, executive functions, judgment, problem solving and reasoning that can result in concern regarding returning to driving or driving cessation (Stapleton *et al.*, 2015; O'Dwyer and O' Neill, 2007). Research has highlighted varying levels of return to driving after stroke internationally. An Irish patient and carer survey found that 29 per cent of their sample of 139 people ceased driving after stroke (Irish Heart Foundation, 2008). Some US-based studies with slightly larger samples of stroke survivors reported a much higher rate of cessation of driving after stroke; results suggesting 70 per cent of their sample ceased driving (Aufman *et al.*, 2013; Fisk *et al.*, 1997).

Importance of driving

Driving is an important instrumental activity of daily living (IADL) (American Occupational Therapy Association, 2014), and for many people, driving may be considered as an "occupation enabler", providing the means by which people can maintain their social engagement and community interactions (Stav and McGuire, 2012). While stroke is not exclusive to older adults, the risk of stroke does increase with age, and studies have shown that driving is considered an important and meaningful IADL among older people (Dickerson *et al.*, 2012; Fricke and Unsworth, 2001). Studies have demonstrated that driving status post stroke has a strong influence on community integration, with poorer community integration noted among the post-stroke non-drivers (Griffen *et al.*, 2009). Those who do return to drive post stroke often report changes to their pre stroke driving patterns and behaviours, typically reduced driving frequency and exposure, as well as avoidance of driving or allowing others to drive instead (Fisk *et al.*, 1997; Finestone *et al.*, 2009). In addition to changes in transport and travel activities following stroke as reported by stroke survivors, research on long-term unmet needs after stroke has highlighted stroke survivors need for information and advice with regard to driving post stroke (McKevitt *et al.*, 2011). Therefore, driving after stroke is an important consideration that needs to be addressed within stroke rehabilitation programmes. The focus of these interventions should not just be with regard to assessing fitness to drive but also on providing information and advice about driving and transport options post stroke. Occupational therapy is perhaps a well-placed profession to take a lead role in addressing driving and transport issues across the continuum of care after stroke.

Role of occupational therapy

The American Occupational Therapy Association (2014) have outlined that driving and community mobility are domains of concern for occupational therapy practice. There has been considerable research on assessing fitness to drive completed by occupational therapy

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researchers in recent years. Dickerson (2014) has emphasised that the "generalist" occupational therapist has an essential role to play in the continuum of assessment of fitness to drive. In addition, her research has highlighted the importance for all occupational therapists to view driving as an IADL and addressing driving should be part of routine occupational therapy practice (Dickerson *et al.*, 2011; Dickerson and Bédard, 2014a, 2014b). Indeed, others have stated that occupational therapists have an ethical obligation to address driving and community mobility (Hunt and Yarett Slater, 2012). Occupational therapists have the knowledge to understand how illness or injury impact on function, as well as the ability to analyse activity and understand the underlying component skills that facilitate execution of activity or occupations. There is a need for occupational therapists to apply these generalist skills to the complex task of driving just as they would for any other ADL or IADL task. In stroke rehabilitation, occupational therapists typically assess components such as cognition, perception, executive functions, as well as physical and sensory abilities. Occupational therapists have the skills to determine whether the level of deficit in any of these component areas may potentially exceed the threshold for safe driving. Equally, therapists have the skills to determine when a good recovery has occurred with little or no residual deficit, indicative of a person who could perhaps return to drive without the need for specialised on-road testing (Dickerson, 2014; Stapleton *et al.*, 2015). This contribution of occupational therapy in the clinical screening process after stroke to stratify the patients into those who are definitely unfit to drive, those who are fit to drive with no further assessment needed, and those who need to complete a more specialised on-road assessment within the Irish context of practice has been outlined previously (Stapleton *et al.*, 2015; Tan *et al.*, 2011). The distinction of occupational therapy levels of expertise in driving assessment has been highlighted by several occupational therapy researchers; from the generalist level of expertise possessed by all qualified occupational therapists, to the level of expertise facilitated by the completion of specialised post graduate education and training (Dickerson, 2014; Korner-Bitensky *et al.*, 2007; Unsworth, 2007). However, everyday occupational therapy practice may not always reflect the advancements made within the literature. This was highlighted in a study where only 34 per cent of Canadian occupational therapists identified driving as a problem post stroke when presented with a specifically designed case vignette that contained a reference to driving (Petzold *et al.*, 2010).

Guidelines

The National Clinical Guidelines and Recommendations for Stroke and Transient Ischaemic Attack (TIA) (Irish Heart Foundation, 2010) highlights the need to address driving among clients after stroke and TIA. The guidelines state that particular emphasis should be placed on the identification of any stroke-related impairment that may impact on the person's fitness to drive, particularly those that may result in a recommendation to cease driving. The Irish guidelines, in line with international research in the area (Korner-Bitensky *et al.*, 2005; Unsworth *et al.*, 2005), recommend that a comprehensive assessment of fitness to drive should comprise of a two phased approach consisting of a clinic-based assessment usually conducted by an occupational therapist and if required, an on-road test conducted by a suitably qualified on-road driving assessor. Assessment practices vary across jurisdictions. However, the literature identifies the role of occupational therapy in both the clinical off-road phase of testing and in the on-road phase of assessment (Unsworth, 2007). In the Irish context of practice, the occupational therapy contribution is mainly confined to the clinic-based off-road component of assessment. However, recent developments in individual services in Ireland have introduced the occupational therapy role within the on-road component of assessment similar to international practice.

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The Irish Medical Fitness to Drive Guidelines, "Sláinte agus Tiomáint: Medical Fitness to Drive Guidelines" (National Office for Traffic Medicine, 2017) provides general guidance on fitness to drive after stroke. The Irish guidelines mirror international guidelines from Australia and the UK (Austroads, 2017; Driver & Vehicle Licencing Agency, 2018) with driving not permitted for four weeks after stroke and return to driving permitted after this period pending satisfactory recovery of function. The Irish guidelines highlight areas of particular concern following stroke such as impairments of limb function, cognition, visual fields, visual neglect and inattention deficits that may negatively impact fitness to drive. However, the guidelines are not prescriptive on what or how exactly that determination and decision of fitness to drive is reached, or what should be assessed in a fitness to drive assessment after stroke. For the occupational therapy clinic-based off-road assessment of fitness to drive, there is no one gold standard approach.

Assessment tools

International research has highlighted various standardised assessment tools typically used by occupational therapists in the off-road component of assessing fitness to drive (Cammarata *et al.*, 2017; Dickerson, 2013; Unsworth *et al.*, 2005). A previous Irish study identified cognitive, executive and visual perceptual components as important to be included in an occupational therapy off-road assessment (Stapleton and Connolly, 2010). This study also highlighted assessment tools therapists considered useful to guide the occupational therapy off-road assessment for people after stroke (Stapleton and Connolly, 2010). However, the empirical research on assessing fitness to drive after stroke provides various combinations of test tools with varying levels of predictive ability with regard to determining fitness to drive (Barco *et al.*, 2014; Devos *et al.*, 2011). More recently, specific off-road driving assessment batteries are available such as the Occupational Therapy Driver Off-Road Assessment Battery (OT-DORA) (Unsworth *et al.*, 2011), the Rookwood Driving Battery (McKenna, 2009) and the stroke driver screening assessment (Nouri and Lincoln, 1992). However, to date, all assessment tools used in the published research typically have some margin of error and lacking some level of sensitivity and specificity in their predictive ability for return to driving. In addition to this, literature also cautions against the over reliance on scores on standardised off-road tests alone to predict driving ability. Research recommends the use of a combination of standardised assessments with careful observation of everyday functional performance to inform clinical decision making with regard to suitability to drive (Stapleton *et al.*, 2015; Dickerson and Bédard, 2014a).

Given the wide variety of broad recommendations regarding assessment of fitness to drive after stroke, and the lack of definite guidance on what exactly occupational therapists should be including in their assessment of fitness to drive after stroke, this study was conducted to examine current occupational therapy practice in addressing driving issues and completing assessment of fitness to drive after stroke within the Irish context of practice.

Methods

Design

A cross-sectional study design was used via an online survey (www.surveymonkey.com, 2016). The survey explored occupational therapists' current practice with regard to driving assessment after stroke. The survey was specifically designed for the study but was informed by questionnaires used previously in a similar North American study (Korner-Bitensky *et al.*, 2006). See Appendix for details of the survey.

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Procedure

The survey was reviewed by all authors and piloted among five occupational therapists working with stroke patients from various practice settings to check for relevance and face validity. Amendments were made to the final survey based on feedback from the pilot. The final survey consisted of 44 questions subdivided into seven broad sections; respondent demographics, case load demographics, off-road assessment practices, on-road assessment practices, typical outcomes of assessment, guidelines and training needs.

Ethical approval

The ethical approval was sought and granted for the study from the Ethics Committee in University College Cork prior to commencement of data collection.

Recruitment

The study targeted occupational therapists working with stroke patients at any stage of the stroke rehabilitation trajectory. Notification of the survey and a link to the survey was emailed out to members of the Association of Occupational Therapists of Ireland (AOTI). AOTI members who were currently working with people after stroke were invited to participate in the survey. As not all therapists working with people after stroke are members of AOTI, snowball sampling was used where therapists were asked to forward the survey link to other occupational therapy colleagues working with stroke clients. Information on the study was also mailed out to members of the AOTI Neurology Advisory Group to specifically target therapists working with clients after stroke. Additionally, the first author contacted 35 stroke services listed in the National Audit of Stroke Care (Irish Heart Foundation, 2015) to alert them to the study. A follow-up reminder was mailed out via AOTI one week after the initial mail-out and the link to the survey remained active for a three-week period. The survey was completed anonymously with no identifying information sought. Consent to participate was assumed upon submission of the completed survey.

Data analysis

The completed surveys were manually collated from the online Survey Monkey account and raw data was coded and inputted onto a Microsoft Excel worksheet. Simple summary statistics were applied to the demographic data. Summary and simple descriptive statistics were used to analyse survey responses. Comparisons between subgroups were completed using chi square test.

Results

Online surveys were returned by 69 respondents; however, 22 questionnaires were incomplete and were not included. In total, 47 completed surveys were included in the analysis. See Table I for details of demographics of respondent's including grades, experience, clinical settings and geographical spread.

Off-road driving assessment

Almost all of the respondents (n = 46, 98 per cent) reported that they consistently ask about driving during their initial interview with stroke patients. However, not all therapists went on to complete a structured off-road assessment. In total, 32 respondents (68 per cent) reported that they do complete off-road driving assessment with their stroke patients, while the other 15 respondents did not complete any off-road driving assessments. The majority of off-road assessment need was identified by the occupational therapist themselves during

	n =	(%)
Clinician Grade		
Senior OT	36	77
Staff Grade OT	9	19
OT Manager	1	2
Clinical Specialist OT	1	2
Years experience		
0-5 years	7	15
6-10 years	19	40
11-15 years	5	11
Over 15 years	16	34
Clinical setting		
Acute Hospital	20	43
Rehabilitation Unit	15	32
Community/PCCC	14	30
Specialised Stroke Unit	7	15
Private/Day Hospital/ESD	4	8
Residential Care	2	4
County		
Dublin	14	30
Cork	8	17
Kildare	6	13
Galway	4	9
Limerick	4	9
Kerry	2	4
Kilkenny	2	4
Louth	2	4
Sligo	2	4
Meath	1	2
Monaghan	1	2
Roscommon	1	2

Table I.
Demographic data

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their initial assessment and interventions (*n* = 21, 66 per cent). Typical referral sources for off-road assessment were the consultant in stroke or geriatrics (*n* = 19, 59 per cent), with primary care and community-based therapists receiving referral from general practitioners (*n* = 13, 41 per cent). Other main sources of referral were other occupational therapy colleagues (*n* = 12, 38 per cent) and stroke specialist nurses (*n* = 4, 13 per cent), while a proportion of respondents indicated self or family referrals (*n* = 7, 22 per cent), and one respondent indicated having received referrals from an insurance company.

Factors influencing the therapist's decision to complete a driving assessment or not with their stroke patients are outlined in Tables II and III. The decision to complete a driving assessment was often triggered when the stroke symptoms were of a mild nature, particularly if the patient had deficits of functional sensorimotor ability, visual and visual perceptual, cognitive, awareness, judgement and impulsivity deficits. Other non-symptomatic issues, for example, family concerns, if the person was the main driver in the household, and age, also influenced the decision to assess driving after stroke. The decision not to assess driving was usually associated with more severe deficits after stroke or when the person was for discharge to a long-term care facility (see Table III). The domains that were assessed with the occupational therapy off-road assessment are outlined in Figure 1,

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Table II.
Factors relating to when therapists would address driving

Therapist typically would address driving when	*n* (%)
Family have expressed concerns regarding clients ability to drive	46 (98%)
Stroke severity is mild	45 (96%)
The client has a mild cognitive impairment post stroke	43 (92%)
The client has a mild upper or lower limb hemiplegia	42 (90%)
The client has a moderate to severe upper or lower limb hemiplegia	38 (81%)
Client is >70 years of age	37 (78%)
The client has a mild sensory deficit	37 (78%)
The client currently uses a walking frame for mobility	37 (80%)
The client was not the main driver in the household prior to stroke	36 (77%)
The client presents with apraxia	35 (74%)
The client uses wheeled mobility such as a self-propelling wheelchair or powered chair	35 (74%)
The client has a visual inattention	34 (73%)
The client demonstrates reduced insight, judgement and awareness	34 (72%)
The client has poor visual acuity	33 (70%)
The client demonstrates unsafe, unpredictable and/or impulsive behaviours	32 (68%)
The client has poor hearing	32 (68%)
The client has a mild expressive or receptive aphasia	32 (68%)
The client has a quadrantanopia visual field deficit	31 (66%)
The client has a moderate to severe sensory deficit	31 (66%)
The client has a hemianopia visual field deficit	28 (60%)
The client has a pre-existing medical condition that may impact their ability to drive	28 (60%)

Table III.
Factors relating to when therapists would not address driving

Therapist typically would not address driving when	*n* (%)
Discharge destination is long-term care	40 (85%)
The client reports that they will not return to driving	30 (64%)
Stroke severity is moderate to severe	25 (53%)
The client has a moderate to severe cognitive impairment post stroke	22 (47%)
The client has a hemianopia visual field deficit	18 (38%)

with assessment of cognition, perception and vision consistently included in off-road assessment practices.

The standardised assessments typically used by the respondents when completing off-road assessment are listed in Table IV in the order of frequency of use. Not all respondents who reported using the individual tests provided their ratings of usefulness of these tests in informing the outcomes or recommendations arising following the off-road assessment (see Table IV). The most frequently used tests during the off-road assessment were cancellation tests used by all respondents (n = 32, 100 per cent), with 97 per cent of the respondents finding these tests useful in informing the outcome of the off-road assessment. The use of functional assessment to inform the off-road driving assessment were reported by 94 per cent of respondents (n = 30), with 90 per cent reporting this form of assessment as useful in informing the outcome of the off-road assessment.

Of the 32 respondents who completed off-road assessment, 26 (81 per cent) completed a formal report of their off-road assessment findings. These formal occupational therapy off-road reports were typically forwarded to the general practitioner (n = 24, 92 per cent), 19 (73 per cent) placed a copy in the occupational therapy notes, and 13 (50 per cent) placed a

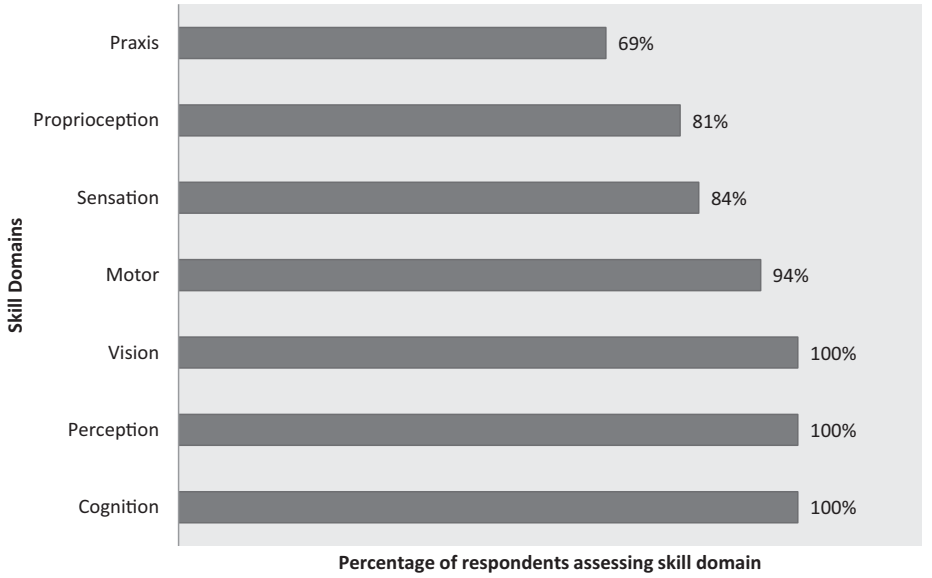


Figure 1. Proportion of respondents assessing skill domains

copy of the report in the patient's medical file. A copy of the occupational therapy off-road report was forwarded with the referral for an on-road assessment in the majority of cases (n = 20, 77 per cent). However, six respondents (19 per cent) did not indicate if they completed a formal report of their off-road assessment.

On-road driving assessment

While 32 respondents reported that they do complete formal off-road assessment, 42 respondents reported that they refer stroke patients for on-road assessment, indicating that 10 respondents make referral for on-road without first completing an off-road assessment. Of the 32 respondents who did complete off-road assessment, the majority (n = 23, 64 per cent) reported that there was a formal communication pathway in place between the referring therapist and the on-road driving assessor, but 13 (36 per cent) reported no formal communication pathway.

Of the 42 respondents who referred for on-road assessment, the majority (n = 31, 74 per cent) reported that they did not sit in on the on-road assessment. Eleven respondents (26 per cent) sat in on the on-road assessment, but this was rare with over half of these (n = 7, 64 per cent) sitting in on less than 25 per cent of on-road assessments, only two respondents reported sitting in on over 75 per cent of the on-road assessments. Therapists were more likely to sit in on the on-road assessment when the patient had significant cognitive or physical impairment. The respondents felt that the occupational therapist's knowledge of the client would be beneficial during the execution of the on-road assessment, and as the therapists would be known to the patient, their presence may help reduce anxiety associated with the on-road test. All the respondents reported that the outcome following on-road assessment matched their expectation of outcome based on their impression following the off-road assessment.

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Assessment	Number of respondents out of 32	I find this assessment very useful	I find this assessment moderately useful	I do not find this assessment useful at all
Cancellation test	32 (100%)	22 (69%)	6 (19%)	1 (3%)
Functional assessment	30 (94%)	25 (83%)	2 (7%)	1 (3%)
Visual acuity screen	30 (94%)	12 (40%)	9 (30%)	1 (3%)
Montreal cognitive assessment (MoCA)	30 (94%)	12 (40%)	9 (30%)	1 (3%)
Clock drawing test	29 (91%)	17 (59%)	6 (21%)	4 (14%)
Visual fields screen	29 (91%)	15 (52%)	9 (31%)	0
Functional range of motion	29 (91%)	14 (48%)	10 (34%)	4 (14%)
Trail making test A	29 (91%)	13 (45%)	8 (28%)	2 (7%)
Muscle strength	29 (91%)	9 (31%)	13 (45%)	3 (10%)
Trail making test B	27 (84%)	13 (48%)	5 (19%)	2 (7%)
Sensory testing	27 (84%)	8 (30%)	13 (48%)	3 (11%)
Addenbrookes cognitive examination-III	26 (81%)	10 (38%)	10 (38%)	1 (4%)
Test of everyday attention	25 (78%)	10 (40%)	4 (16%)	1 (4%)
Behavioural assessment of the dysexecutive syndrome	25 (78%)	10 (40%)	8 (32%)	1 (4%)
Rivermead behavioural memory test	25 (78%)	9 (36%)	9 (36%)	4 (16%)
Rivermead perceptual assessment battery	25 (78%)	8 (32%)	5 (20%)	4 (16%)
Mini mental state examination	25 (78%)	4 (16%)	7 (28%)	9 (36%)
Brain injury visual assessment battery for adults	23 (72%)	6 (26%)	0	1 (4%)
Assessment of motor and process skills	23 (72%)	5 (22%)	2 (9%)	2 (9%)
Motor free visual assessment test	23 (72%)	3 (13%)	5 (22%)	3 (13%)
OT driver off-road assessment battery	22 (69%)	10 (45%)	1 (5%)	2 (9%)
Stroke driver screen assessment	22 (69%)	2 (9%)	2 (9%)	2 (9%)
Rookwood driving battery	21 (66%)	3 (14%)	3 (14%)	0

Table IV. Assessments used and perceived usefulness

Education and training

With regard to their own levels of confidence and perceived competence to assess driving ability among people with stroke, the majority of respondents rated their confidence as moderate to high (n = 31, 67 per cent), while one-third rated their confidence as low (n = 15, 33 per cent). Self-perceived competence to assess driving varied from low or no competence reported by 17 (37 per cent) respondents, while 29 (63 per cent) rated their competence as moderate to very competent. Chi squared tests showed that respondents who had received formal training or attended education sessions on assessment of driving post stroke were significantly more likely to report higher levels of confidence (p = 0.001) and competence (p = 0.002) compared to respondents who had not received any formal training or attended any education sessions.

Guidelines

In total, 94 per cent of respondents (n = 44) were aware of the "Sláinte agus Tiomáint: Medical Fitness to Drive" Guidelines, with 38 (83 per cent) respondents consistently applying the guidelines in their practice. The majority of the respondents who were aware of the guidelines rated them as either useful or very useful (n = 28, 63 per cent). However, the vast majority of respondents (n = 44, 94 per cent) agreed that a more structured and

standardised nationally agreed pathway would be beneficial to guide the assessment of fitness to drive post stroke.

Discussion

The purpose of this study was to investigate current evaluation practices among occupational therapists regarding fitness to drive after stroke in the Irish context. The findings represent practice among 47 occupational therapists with considerable experience in stroke rehabilitation; the majority practicing at senior level and with more than five years of clinical experience. A range of practice areas spanning hospital and community-based settings was achieved in the survey. While recruitment methods were used to try and ensure good geographical spread in the responses, a majority were from three regional areas. The findings perhaps suggesting that this area of practice is better developed in some geographical areas compared to others. Also, this may highlight inequalities in service provision for clients with stroke depending on which part of the country they reside in.

An encouraging finding was the high proportion of therapists who reported consistently addressing driving within their initial occupational therapy interview. This finding is reflective of international research highlighting the contribution of occupational therapists in addressing driving issues (Dickerson, 2014; Korner-Bitensky *et al.*, 2007; Unsworth, 2007). It is also consistent with the AOTA occupational therapy practice framework highlighting driving and community mobility as a domain of practice for occupational therapists (American Occupational Therapy Association, 2014). However, the findings show that a smaller number of therapists reported continuing on to complete an occupational therapy off-road assessment, which may be of concern.

The findings provide insight into the factors that influence the therapist's decision to assess driving or not following stroke. It appears that therapists are more likely to assess driving ability after stroke when the client presents with deficits of a mild nature with less functional impact. Whereas when the deficits are moderate to severe, it seems less likely that driving would be formally assessed or indicated. Visual field deficits such as hemianopia and quadrantanopia were included as factors that would likely trigger a driving assessment consistent with the medical guidelines on fitness to drive and EU directives on visual requirements for driving (National Office for Traffic Medicine, 2017). Therapists reported that driving assessment was indicated when clients post stroke presented with deficits in the areas of cognition, visual perception, executive functions, behaviour (awareness, impulsivity, etc.), as well as physical and sensory deficits impacting on everyday function. These factors that influence the decision to assess fitness to drive correspond to the recommendations of component skills that should be assessed when evaluating fitness to drive after stroke as well as in other medical conditions (National Office for Traffic Medicine, 2017; Stapleton and Connolly, 2010).

One of the most influential factors underpinning the decision to assess fitness to drive in the current study was when concerns were raised by family members. This involvement of the proxy in the process of evaluating fitness to driving has been highlighted in previous research (Classen and Alvarez, 2016; Stapleton *et al.*, 2012). It is important to consider if therapists' decision to commence formal driving assessment is triggered solely by family concerns or if the decision to complete driving assessment was made independent of the concerns raised by the family. Therapists should continue to proactively take a leading role in assessing fitness to drive as appropriate in their everyday practice and should not address this issue as a reactive response only when concerns are raised by others.

Non-stroke-related issues such as age was an influential factor in the decision to assess fitness to drive particularly if the person was over 70. While this factor demonstrates

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awareness of age-related current legislation around licence duration and renewal for people over the age of 70, caution needs to be exercised to ensure that decisions regarding fitness to drive for stroke survivors are based on functional capacity to drive regardless of age. It is equally important to assess fitness to drive among younger stroke clients who are of working age, as re-engagement in important occupations may be dependent on being able to return to drive after stroke across all age groups.

The findings within the study indicate that component skills such as cognition, perception, vision and motor were consistently assessed as part of the off-road driving assessment. However, it is worrying that other skills such as sensation, proprioception and praxis were not consistently assessed, despite the negative impact a deficit in any of these skills could potentially have on ability to drive.

There was a wide variety of assessment tools used by occupational therapists when conducting their occupational therapy off-road driving assessment. The vast majority of assessment tools reportedly used are non-driving-specific assessments. The therapists chose these assessments to specifically target skill component areas considered important for the execution of the driving task. This finding is consistent with findings from other international research (Cammarata *et al.*, 2017; Dickerson, 2013; Korner-Bitensky *et al.*, 2006). Some of the non-driving-specific assessments such as the trail making test B, various cancellation tests, Montreal Cognitive Assessment and Assessment of Motor and Process Skills (AMPS) have been shown to have elements of predictive ability with regard to the outcome of an on-road driving assessment. However, this evidence is only emerging and the predictive ability of any test varies across the research studies published. It is evident that respondents are using tests that are readily available to them in their clinical practice settings and tests that they would use as part of their typical clinical interventions with clients post stroke. It is interesting to see that some driving-specific assessments such as the OT-DORA, stroke driver screening assessment and the Rookwood driving battery are being used by therapists in their clinic-based assessment; however, they are among the less frequently used measures.

The therapists in the current study highlight the importance and perceived usefulness of function-based assessment. The evaluation of the person's ability to perform everyday functional tasks informed their clinical assessment of fitness to drive after stroke. This function-based assessment is supported in previous research. The standardised function-based AMPS assessment has been shown to be an effective predictor of driving ability among older drivers (Dickerson *et al.*, 2011). Standardised table top assessments will inform the process but should not be used in isolation or exclusively to inform the fitness to drive decision (Stapleton *et al.*, 2015; Dickerson *et al.*, 2014). A combination of a battery of standardised assessments as well as functional observation-based assessments is considered best practice to inform decision making regarding fitness to drive.

Although not specifically asked in the survey, the findings suggest that a proportion of therapists appear to refer clients post stroke for on-road assessment without first completing an occupational therapy off-road assessment. This practice would be contrary to the research and literature that recommend a two phase process of assessing fitness to drive consisting of an off-road assessment followed by an on-road assessment if indicated (Korner-Bitensky *et al.*, 2005; Unsworth *et al.*, 2005). While it cannot be substantiated in the current study, the practice of referring directly for an on-road assessment without first completing an occupational therapy off-road assessment could be considered an abdication of responsibility on the part of the therapist, not to mention the added stress and financial implication for the client to have to undergo an on-road assessment.

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The therapists who engaged in formal training and education in assessing driving post stroke feel more confident and competent in their skills and abilities to assess fitness to drive. This corresponds to findings by Meuser *et al.* (2010) who found that allied health professionals and physicians had significantly improved confidence, clinical practice and adherence to practice guidelines after formal training on assessing driving. This demonstrates that training should be encouraged, continued and facilitated by services to improve the skills of therapists in relation to evaluating fitness to drive post stroke. Formal training in driving should be part of professional development plans and competencies for therapists working with clients post stroke.

There are some limitations identified within the study. The overall sample size of 47 participants is small and there were 22 incomplete surveys, which is a significant number. The therapists who are less active in the process of driving evaluations and have reduced confidence in this area of practice may have been less likely to commence and/or complete the survey. However, in saying this, it is likely that only one clinician per service would have completed the survey. Therefore, it can be assumed that the data collected were from 47 different occupational therapy stroke services which is a significant number. Responses were clustered to three main geographical areas and therefore may not be reflective of national practice. When asked about factors that influence decisions on whether or not to assess driving, therapists may have interpreted this question differently. For example, for clients with moderate to severe stroke, some therapists may interpret this as clients who require a passive hoist transfer and full nursing care. Another therapist may interpret a moderate to severe stroke as someone with a non-functional left upper limb. Further research should focus on more specific client cases which would eliminate any interpretation into the severity of the stroke symptoms. However, useful information was gathered through this research and will aid in the development of clinical guidelines in the assessment of fitness to drive post stroke. Further qualitative research into the rationale of when therapists would or would not assess driving is recommended.

Conclusion

Although the findings demonstrate variance in how fitness to drive after stroke is being addressed in Ireland, the results do show that current practice is in line with and supported by the published research. The majority of occupational therapists are actively engaging in the assessment of fitness to drive after stroke and are not shying away from this role. This is encouraging to see. However, there are still gaps within practice. Occupational therapists are choosing non-driving-specific assessments are that readily available to them, to assess the different skill components that may affect client's ability to drive. In addition, therapists place significant importance to the value of functional assessment in determining fitness to drive post stroke and are not relying solely on the results of standardised assessments. There is a lot of variation in assessment practices across the different geographical regions. Also, the study highlighted evidence of poor practice by some therapists that are not in line with driving guidelines available to them; such as therapists referring for on-road driving assessments without completing an off-road clinical evaluation first. This could be attributed to no nationally or internationally agreed guidelines to inform best practice. Clinical guidelines would encourage participation and engagement by therapists in the process of driving assessment after stroke in Ireland, create a consistent approach across the country and improve therapists' confidence in their ability to assess this complex IADL. Finally, clinicians are encouraged to engage in training and education

sessions to improve their sense of confidence but also competence in their ability to assess fitness to drive after stroke.

References

American Occupational Therapy Association (2014), "Occupational therapy practice framework: domain and process, third edition", *American Journal of Occupational Therapy*, Vol. 68 No. Supplement_1, pp. 1-48.

Aufman, E.L., Bland, M.D., Barco, P.P., Carr, D.B. and Lang, C.E. (2013), "Predictors of return to driving after stroke", *American Journal of Physical Medicine and Rehabilitation*, Vol. 92 No. 7, pp. 627-634, doi: 10.1097/PHM.0b013e318282bc0d.

Austroads (2017), *Assessing Fitness to Drive for Commercial and Private Vehicle Drivers*, Austroads Ltd, Sydney.

Barco, P.P., Wallendorf, M.J., Snellgrove, C.A., Ott, B.R. and Carr, D.B. (2014), "Predicting road test performance in drivers with stroke", *American Journal of Occupational Therapy*, Vol. 68 No. 2, pp. 221-229, doi: 10.5014/ajot.2014.008938.

Cammarata, M., Mueller, A.S., Harris, J. and Vrkljan, B. (2017), "The role of the occupational therapist in driver rehabilitation after stroke", *Physical and Occupational Therapy in Geriatrics*, Vol. 35 No. 1, pp. 20-33, doi: 10.1080/02703181.2016.1277443.

Classen, S. and Alvarez, L. (2016), "Caregivers' impressions predicting fitness to drive in persons with Parkinson's", *Occupational Therapy Journal of Research: Occupation, Participation and Health*, Vol. 36 No. 1, pp. 5-13.

Devos, H., Akinwuntan, A.E., Nieuwboer, A., Truijen, S., Tant, M. and DeWeerdt, W. (2011), "Screening for fitness to drive after stroke: a systematic review and Meta-analysis", *Neurology*, Vol. 76 No. 8, pp. 747-756.

Dickerson, A., Brown Meuel, D., Ridenour, C.D. and Cooper, K. (2014), "Assessment tools predicting fitness to drive in older adults: a systematic review", *American Journal of Occupational Therapy*, Vol. 68 No. 6, pp. 670-680.

Dickerson, A.E. (2013), "Driving assessment tools used by driver rehabilitation specialists: survey of use and implications for practice", *American Journal of Occupational Therapy*, Vol. 67 No. 5, pp. 564-573, doi: 10.5014/ajot.2013.007823.

Dickerson, A.E. and Bédard, M. (2014a), "Decision tool for clients with medical issues: a framework for identifying driving risk and potential to return to driving", *Occupational Therapy in Health Care*, Vol. 28 No. 2, pp. 194-202.

Dickerson, A.E. and Bédard, M. (2014b), "Driving and dementia: evaluation, referral, and resources", *Occupational Therapy in Health Care*, Vol. 28 No. 1, pp. 62-76.

Dickerson, A.E., Reistetter, T., Davis, E.S. and Monahan, M. (2011), "Evaluating driving as a valued instrumental activity of daily living", *American Journal of Occupational Therapy*, Vol. 65 No. 1, pp. 64-75.

Dickerson, A.E., Reistetter, T. and Gaudy, J. (2012), "The perception of the meaningfulness and performance of instrumental activities of daily living from the perspective of medically at risk older adults and their caregiver", *Journal of Applied Gerontology*, Vol. 32 No. 6, pp. 749-764.

Driver & Vehicle Licencing Agency (DVLA) (2018), "Assessing fitness to drive: a guide for medical professionals", Driver & Vehicle Licencing Agency, Swansea.

Finestone, H.M., Marshall, S.C., Rozenberg, D., Moussa, R.C., Hunt, L. and Greene-Finestone, L.S. (2009), "Differences between post stroke drivers and non-drivers", *American Journal of Physical Medicine and Rehabilitation*, Vol. 88 No. 11, pp. 904-923.

Fisk, G.D., Owsley, C. and Pulley, L.V. (1997), "Driving after stroke: driving exposure, advice, and evaluations", *Archives of Physical Medicine and Rehabilitation*, Vol. 78 No. 12, pp. 1338-1345.

Downloaded by University College Cork At 03:31 30 May 2019 (PT)

Fricke, J. and Unsworth, C. (2001), "Time use and importance of instrumental activities of daily living", *Australian Occupational Therapy Journal*, Vol. 48 No. 3, pp. 118-131.

Griffen, J.A., Rapport, L.J., Coleman Byer, R. and Scott, C.A. (2009), "Driving status and community integration after stroke", *Topics in Stroke Rehabilitation*, Vol. 16 No. 3, pp. 212-221.

Hunt, L.A. and Yarett Slater, D. (2012), "Occupational therapy's ethical obligation to address diving and community mobility", in Mc Guire. M.J. and Schold Davis, E. (Eds), *Driving and Community Mobility; Occupational Therapy Strategies across the Lifespan*, AOTA Press, Bethesda MA.

Irish Heart Foundation (2008), "National audit of stroke care in Ireland", available at: www.stroke.ie/media/pub/strokeie/strokeaudit.pdf

Irish Heart Foundation (2010), "National clinical guidelines and recommendations for the care of people with stroke and transient Ischaemic attack", available at: www.irishheart.ie/iopen24/stroke-council-t-13_396_398.html

Irish Heart Foundation (2015), "National audit of stroke care", available at: www.stroke.ie/media/pub/strokereports/ihf_hse_national_stroke_audit_2015web_version.pdf

Korner-Bitensky, N., Toal-Sullivan, D. and von Zweck, C. (2007), "Driving and older adults: a focus on assessment by occupational therapists", *Occupational Therapy Now*, Vol. 9 No. 5, pp. 10-12.

Korner-Bitensky, N., Gelinas, I., Man-Son-Hing, M. and Marshall, S. (2005), "Recommendations of the Canadian conference on driving evaluation in older drivers", *Physical and Occupational Therapy in Geriatrics*, Vol. 23 Nos 2/3, pp. 123-144.

Korner-Bitensky, N., Bitensky, J., Sofer, S., Man-Son-Hing, M. and Gelinas, I. (2006), "Driving evaluation practices of clinicians working in the United States and Canada", *The American Journal of Occupational Therapy*, Vol. 60 No. 4, pp. 428-434.

McKenna, P. (2009), *Rookwood Driving Battery*, *PsychCorp Pearson*, London.

McKevitt, C., Fudge, N., Redfern, J., Sheldenkar, A., Crichton, S., Rudd, A.R., Forster, A., Young, J., Nazareth, I., Silver, L.E., Rothwell, P.M. and Wolfe, C.D.A. (2011), "Self-reported long-term needs after stroke", *Stroke*, Vol. 42 No. 5, pp. 1398-1403.

Marshall, S.C., Molnar, F., Man-Son-Hing, M., Blair, R., Brosseau, L., Finestone, H.M., Lamothe, C., Korner-Bitensky, N. and Wilson, K.G. (2007), "Predictors of driving ability following stroke: a systematic review", *Topics in Stroke Rehabilitation*, Vol. 14 No. 1, pp. 94-114.

Meuser, T.M., Carr, D.B., Irmiter, C., Schwartzberg, J.G. and Ulfarsson, G.F. (2010), "The American medical association older driver curriculum for health professionals: changes in trainee confidence, attitudes and practice behavior", *Gerontology and Geriatrics Education*, Vol. 31 No. 4, pp. 290-309.

National Office for Traffic Medicine (2017), "Sláinte agus tiomáint: medical fitness to drive guidelines", *Royal College of Physicians of Ireland (RCPI)/Road Safety Authority (RSA)*, 6th Ed., available at: www.rsa.ie/Documents/Licensed%20Drivers/Sla%CC%81inte%20Agus%20Tioma%CC%81int%202017%20i.pdf (accessed 21 December 2017).

Nouri, F.M. and Lincoln, N. (1992), *Stroke Driver Screening Assessment: Instruction Booklet*, Nottingham Rehab Limited, Nottingham.

O'Dwyer, C. and O' Neill, D. (2007), "Driving after stroke", *Geriatric Medicine*, Vol. 9 No. 3, pp. 112-113.

Petzold, A., Korner-Bitensky, N., Rochette, A., Teasell, R., Marshall, S. and Perrier, M.J. (2010), "Driving post stroke: problem identification, assessment use and interventions offered by Canadian occupational therapists", *Topics in Stroke Rehabilitation*, Vol. 17 No. 5, pp. 371-379.

Stapleton, T. and Connolly, D. (2010), "Occupational therapy practice in predriving assessment post stroke in the Irish context: findings from a nominal group technique meeting", *Topics in Stroke Rehabilitation*, Vol. 17 No. 1, pp. 58-68.

Stapleton, T., Connolly, D. and O' Neill, D. (2012), "Exploring the relationship between self-awareness of driving efficacy and that of a proxy when determining fitness to drive after stroke", *Australian Occupational Therapy Journal*, Vol. 59 No. 1, pp. 63-70.

Downloaded by University College Cork At 03:31 30 May 2019 (PT)

Stapleton, T., Connolly, D. and O' Neill, D. (2015), "Factors influencing the clinical stratification of suitability to drive after stroke: a qualitative study", *Occupational Therapy in Health Care*, Vol. 29 No. 3, pp. 253-271.

Stav, W.B. and McGuire, M.J. (2012), "Introduction to community mobility and driving", in McGuire, M. J. and Schold Davis, E, (Eds), *Driving and Community Mobility. Occupational Therapy Strategies across the Lifespan*, AOTA Press, Bethesda MD.

Tan, K.M., O'Driscoll, A. and O'Neill, D. (2011), "Factors affecting return to driving post-stroke", *Irish Journal of Medical Science*, Vol. 180 No. 1, pp. 41-45, doi: 10.1007/s11845-010-0528-9.

Unsworth, C.A. (2007), "Development and current status of occupational therapy driver assessment and rehabilitation in Victoria", *Australian Occupational Therapy Journal*, Vol. 54 No. 2, pp. 153-156.

Unsworth, C.A., Lovell, R., Terrington, N.S. and Thomas, S.A. (2005), "Review of tests contributing to the occupational therapy off-road driver assessment", *Australian Occupational Therapy Journal*, Vol. 52 No. 1, pp. 57-74.

Unsworth, C.A., Pallant, J.F., Russell, K. and Odell, M. (2011), *The Occupational Therapy Driver off-Road Assessment Battery (OT-DORA Battery)*, AOTA Press, Bethesda MD.

Further reading

Heikkila, V.M. and Kallanranta, T. (2005), "Evaluation of the driving ability in disabled persons: a practitioner's view", *Disability and Rehabilitation*, Vol. 27 No. 17, pp. 1029-1036.

Keskinen, S. (2014), "Education for older drivers in the future", *International Association of Traffic and Safety Sciences Research*, Vol. 38 No. 1, pp. 14-21.

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Appendix. Survey

Returning to Driving post Stroke: A national survey investigating Occupational Therapists evaluation practices in Ireland

This study aims to gain an understanding of Occupational Therapist's evaluation practices nationally regarding returning to driving post stroke. Thank you for participating in this survey. By completing the survey, we assume consent to use the information for research purposes including publication. All data gathered will be anonymous. The information gathered will be stored and handled in full compliance with Data Protection Law and Principles. Your participation is very important towards developing and improving this area.

Clinician Variables

Question 1:

What OT grade are you?

a. OT Manager
b. Clinical Specialist OT
c. Senior OT
d. Staff Grade OT

Question 2:

How many years have you been practicing OT?

a. 0-5 years
b. 6-10 years
c. 11-15 years
d. Over 15 years

Question 3:

What county do you work in?

_____ Drop down box

Question 4:

What setting do you work in? Tick all that apply

a. Acute Hospital
b. Specialised Stroke Unit
c. Rehabilitation Unit
d. Community/PCCC
e. Residential Care
f. Other please specify _____

Question 5:

Have you received any formal training or attended any education sessions on assessing fitness to drive post stroke?

a. No
b. Yes (Details including approximate date and contact hours):
_____

Client Variables

Question 6:

What percentage of your current caseload comprises of individuals with stroke?

a. Less than 25%
b. 25% - 49%
c. 50%-74%
d. 75% -100%

(*continued*)

Question 7:

What percentage of your clients with stroke fit within each age category?

AGE RANGE	Less than 25%	25%-49%	50%-74%	75%-100%
18-30years				
31-64years				
Over 65 years				

Question 8:

Are your clients with stroke normally inpatients, outpatients or community based? Circle all that apply.

a. Inpatients
b. Outpatients
c. Community
d. Other please specify _____

Question 9:

What percentage of your caseload would have been driving prior to stroke?

a. Less than 25%
b. 25-49%
c. 50-74%
d. 75% - 100%
e. Don't know

Question 10:

In your initial Occupational Therapy Interview, do you consistently ask about driving with the client and/or family?

a. Yes
b. No

Question 11:

In your experience, which member of the MDT is typically seen as the person responsible for addressing driving post stroke?

a) Consultant Geriatrician/Neurologist
b) Occupational Therapist
c) Physiotherapist
d) Speech and language therapist
e) Nursing
f) Medical Social worker
g) Psychologist
h) General Practitioner
i) Other please specify: _____

(*continued*)

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Question 12:

Which of these factors would encourage you to address driving post stroke and which of these factors would deter you from addressing driving post stroke?

Factor	Typical **WOULD** address driving	Typically **WOULD NOT** address driving	Don't know
Stroke severity is moderate to severe			
Stroke severity is mild			
Age > 70 years			
Family have expressed concerns regarding clients ability to drive			
The client reports that they will not return to driving			
Family do not wish for the client to return to driving			
Discharge destination is long term care			
The client has a mild cognitive impairment post stroke			
The client has a moderate to severe cognitive impairment post stroke			
The client has a visual inattention			
The client has a quadrantanopia visual field deficit			
The client has a hemianopia visual field deficit			
The client has a mild sensory deficit			
The client has a moderate to severe sensory deficit			
The client has a mild upper or lower limb hemiplegia			
The client has a moderate to severe upper or lower limb hemiplegia			
The client presents with apraxia			
The client demonstrates reduced insight, judgement and awareness			
The client demonstrates unsafe, unpredictable and/or impulsive behaviours			
The client has a pre-existing medical condition that may impact their ability to drive e.g. epilepsy/diabetes/peripheral neuropathy/macular degeneration/arthritis			
The client has poor visual acuity			
The client has poor hearing			
The client was not the main driver in the household prior to stroke			
Clinical setting is acute (the therapist feels it is too early to address driving)			
The client currently uses a walking frame for mobility.			
The client uses wheeled mobility such as a self propelling wheelchair or powered chair.			
The client has a mild expressive or receptive aphasia			
The client has a moderate to severe receptive or expressive aphasia			
Please give details of any other scenarios or comments regarding whether you would or would not typically address driving?			

(*continued*)

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Off Road Assessment Variables

Question 13:

Do you assess fitness to drive with clients post stroke in your practice?

a. Yes
b. No (skip to question 23)

Question 14:

Who do you typically receive driving assessment referrals from? Circle all that apply.

a. Consultant in Stroke
b. Consultant Geriatrician
c. General Practitioner
d. Clinical Nurse Specialist/Advanced Nurse Practitioner in Stroke/Public Health Nurse
e. Other OT colleagues
f. Other members of the MDT e.g. Physiotherapist, Speech and Language Therapist, Social worker
g. Self referral by client or family
h. Insurance company
i. Driving identified as an issue in OT assessment
j. Other: _____

Question 15:

What proportion of the clients with stroke, who were driving prior to the stroke, do you typically assess?

a. Less than 25%
b. 49%-25%
c. 74%-50%
d. 99-75%
e. 100%

Question 16:

How do you currently ADDRESS fitness to drive among clients post stroke? Circle all that apply.

a. Discussion with the client and give advice
b. Complete Off Road Driving Assessments and make referral for the On Road Driving Assessment as required
c. Complete formal Off Road Driving Assessment only
d. Complete referral for On Road Driving Assessment only
e. Give details of the On Road Assessor to the client/family only
f. Send letter to the GP recommending a referral for further assessment only

Question 17:

What domains do you assess in the Off Road Driving evaluation? Circle all that apply.

a. Cognition
b. Perception
c. Sensation
d. Proprioception
e. Praxis
f. Vision
g. Hearing
h. Motor/Physical skills

(*continued*)

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Question 18:

If you use any of the following assessments in your off-road assessment, how useful do you find them?

Assessment	Not Used	I don't find this assessment useful at all	I find this assessment Moderately useful	I find this assessment Very useful
Visual Acuity Screen				
Visual Fields Screen				
Brain Injury Visual Assessment Battery For Adults				
Muscle Strength				
Sensory Testing				
Functional Range of Motion				
Assessment of Motor and Process Skills				
Trail Making Test A				
Trail Making Test B				
MVPT (Motor Free Visual Perception Test)				
Clock Drawing Test				
Addenbrooke's Cognitive Examination				
Mini Mental State Examination				
Letter/Number/Star cancellation				
Test of Everyday Attention (TEA)				
Rivermead Behavioural Memory Test				
Rivermead Perceptual Assessment Battery				
Behavioural Assessment of the Dysexecutive Syndrome (BADS)				
Rookwood Driving Battery				
OT DORA- Occupational Therapy Off				
Road Assessment				
Montreal Cognitive Assessment (MOCA)				
Stroke Driver Screening Assessment				
Functional Observations or Assessments				
Other Please specify _____				
Other Please specify _____				

Question 19:

What is the average duration of the Off Road Driving assessment?

a. Less than half an hour
b. 1-2 hours
c. 2-3 hours
d. N/A

(*continued*)

Question 19:

Do you complete a formal report of your findings from the Off Road Driving Assessment?

a. Yes
b. No (Skip to question 21)

Question 20:

If yes, where is the report documented? Circle all that apply.

a. OT notes
b. Medical Chart
c. Copy Sent to G.P/Consultant
d. Copy sent with referral for On Road Driving Assessment referral as required
e. Other :_____

Question 21:

What proportion of your stroke clients are deemed **FIT** to drive after the OT Off Road Driving Assessment alone, with no need for further On Road Driving Assessment?

a. Less than 25%
b. 25%-49%
c. 40%-74%
d. 75%-100%
e. Not applicable

Question 22:

What proportion of stroke clients are deemed **UNFIT** to return to driving post OT Off Road Driving Assessment alone?

a. Less than 25%
b. 25%-49%
c. 40%-74%
d. 75%-100%
e. Not applicable

On Road Assessment Variables

Question 23:

Do you refer clients post stroke for On Road Driving Assessments as required?

a. Yes (including asking the GP to refer for On Road Driving Assessment)
b. No (continue to question 38)

Question 24:

What proportion of your clients post stroke would be referred for On Road Driving assessments?

a. Less than 25%
b. 25% - 49%
c. 50% - 74%
d. 75% - 99%
e. 100%

(*continued*)

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Question 25:

Who do you refer clients to/provide information on for the On Road Driving Assessment?

a. Irish Wheelchair Association (MAATS Programme)
b. Disabled Drivers Association
c. Transport and Mobility Consultants Ireland/Motability Ireland
d. South East Mobility
e. Dublin Mobility
f. Irish School of Motoring
g. Mobility First
h. OC Cars and Mobility
i. Cu Chulainn Driving Assessments Cork
j. Results Driving Assessment Services
k. Southern Mobility
l. Other _____

Question 26:

Are you informed of the result of the On Road Driving Assessment?

a. Yes
b. No (skip to question 31)

Question 27:

Typically, what percentage of your stroke clients pass the On Road Driving Assessment?

a. Less than 25%
b. 25%-49%
c. 50%-74%
d. 75%-100%

Question 28:

Of the remaining who do not pass, typically what percentage fail the On Road Driving Assessment, with no option for lessons and are recommended to cease driving with immediate effect?

a. Less than 25%
b. 25%-49%
c. 50%-74%
d. 75%-100%

Question 29:

What percentage of your stroke clients require lessons after the On Road Driving Assessment?

a. Less than 25%
b. 25%-49%
c. 50%-74%
d. 75%-100%

Question 30:

Generally, does the outcome of the On Road Driving Assessment match your expectations?

	Mostly	Sometimes	Rarely
YES			
NO			

Question 31:

After assessment, what percentage of your clients require adaptations to their cars to enable them to drive post stroke?

a. Less than 25%
b. 25%-49%
c. 50%-75%
d. 75%-100%
e. Don't know

(*continued*)

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Question 32:

Do you ever sit in on the On Road Driving Assessments?

a. Yes
b. No (skip to question 35)

Question 33:

If yes, what proportion of the On Road Driving Assessments do you sit in on?

a. Less than 25%
b. 25%-49%
c. 50%-74%
d. 75%-100%

Question 34:

When would it be required and/or appropriate for you to sit in on the On Road Driving Assessment? Circle all that apply.

a. The client is anxious about the assessment and the therapists presence may ease anxiety
b. The therapists knowledge of the client would assist with the On Road Driving Assessment
c. The clients has a severe cognitive impairment
d. The client has a significant physical impairment
e. To answer any questions relating to the client that the driving instructor may have
f. Other please give details: _____

Question 35:

Is there a formal communication pathway between the OT and the driving assessor prior to the On Road Driving Assessment?

a. Yes
b. No(Skip to question 37)

Question 36:

If yes, what are the methods of communication between the OT and the driving instructor? Circle all that apply.

a. Referral sent to the driving instructor
b. OT report and referral sent to the instructor
c. Verbal discussion with the driving instructor
d. Verbal discussion for clients with complex needs
e. OT Report and referral sent and verbal discussion on all clients

Results of Off Road/On Road Assessments

Question 37:

Do you inform the GP of the outcome of the Off Road or On Road Driving Assessments?

a. Yes
b. No

Guidelines

Question 38:

Are you aware of the "Slainte agus Tiomaint: Medical Fitness to Drive Guidelines"?

a. Yes
b. No (continue to question 41)

(*continued*)

Question 39:

Do you consistently apply these guidelines to current clinical practice?

a. Yes
b. No

Question 40:

How useful do you find these guidelines?

a. Not useful at all
b. Slightly useful
c. Moderately useful
d. Useful
e. Very useful

Skills and Training

Question 41:

I am confident in my skills and abilities to assess returning to driving with clients post stroke.

a. Not confident at all
b. Slightly confident
c. Moderately confident
d. Confident
e. Very confident

Question 42:

I am competent to assess returning to driving with clients post stroke.

a. Not competent at all
b. Slightly competent
c. Moderately competent
d. Competent
e. Very competent

Question 43:

I would like to have a more structured and standardised pathway developed nationally with regards to assessing returning to driving post stroke in Ireland.

a. Strongly Agree
b. Agree
c. Neither agree nor disagree
d. Disagree
e. Strongly disagree

Do you have any other comments to add?

Thank you for taking the time to complete this survey

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