

# Not If, But When: Impact of a Driving and Dementia Awareness and Education Campaign for Primary Care Physicians



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## ABSTRACT

### Background

Canadian physicians are responsible for assessing medical fitness to drive; however, national data indicate that physicians lack confidence in performing such assessments and face numerous barriers to addressing driving in patients with dementia. We report on the impact of a provincial Web-based resource ([www.notifbutwhen.ca](http://www.notifbutwhen.ca)) regarding driving cessation in dementia aimed towards primary care physicians (PCPs).

### Methods

A pre/post cross-sectional survey ( $n = 134$  baseline and  $n = 113$  follow-up) of English-speaking, Nova Scotian PCPs. Descriptive statistics, chi-square, Pearson correlation, and multivariable logistic regression (controlling for sex, years of practice, and practice type) are reported.

### Results

Most PCPs consider discussions regarding driving cessation to be routine part of dementia care; however, report multiple barriers to such discussions. Although the Web-based resource and awareness campaign were not associated with improvement in physician comfort in assessing driving risk in dementia, after completion of the campaign, fewer PCPs reported avoiding the topic of driving. Additionally, family resistance and lack of resources were less often reported as barriers.

### Conclusions

Despite a lack of confidence, Nova Scotian PCPs routinely discuss driving cessation, and perform driving assessments for individuals with dementia. The Web-based resource and awareness campaign have shown moderate effectiveness in

addressing specific barriers to assessment (e.g., caregiver resistance, lack of resources). Future efforts will address additional barriers, such as lack of comfort in decision-making.

**Key words:** dementia, driving, primary care, driving assessment

## INTRODUCTION

In Canada, physicians are responsible for assessing medical fitness to operate a motor vehicle; however, guidelines for reporting medical fitness to local licensing authorities vary by province and territory. Nova Scotia is one of three provinces where the reporting of potentially unsafe drivers is at the discretion of the physician. While national surveys have found that primary care physicians (PCPs) are generally willing to accept responsibility for determining medical fitness to drive, many PCPs admit they lack confidence in performing driving assessments, and feel conflicted between their professional duty to the patient and provincial reporting requirements.<sup>(1,2)</sup>

Dementia is a progressive, neurodegenerative disease, and the trajectory of cognitive decline varies from case to case. The task of assessing driving safety in patients with Alzheimer's disease and related dementias presents a significant challenge to Canadian physicians. While many individuals in the early stages of dementia can continue to drive safely,<sup>(3)</sup> impairments in attention and judgment, coordination, and reaction time<sup>(4,5)</sup> will eventually compromise driving ability. There are currently no in-office cognitive tests with validated cut-off scores for predicting fitness to drive in dementia.<sup>(6)</sup> While physicians currently lack a validated in-office assessment tool, educational initiatives have proven effective in improving knowledge and confidence in performing driving assessments for patient with dementia<sup>(7)</sup> and increasing physician reporting.<sup>(8)</sup>

Health-care professionals play an important role in ensuring appropriately timed cessation occurs for individuals with dementia; physician advice is one of the most frequently

cited reasons a patient with dementia stops driving.<sup>(9)</sup> Given the potential negative consequences for both patient and caregiver associated with driving cessation, physicians must strike a delicate balance between reducing the risk to the public, while aiming to support safe driving behaviour for as long as possible.<sup>(10-12)</sup> There is considerable variability in physicians' self-reported views and behaviours regarding role in, and approach to, driving cessation in dementia.<sup>(13)</sup> Physicians who view themselves as playing an important role in the cessation process are more likely to address the issue with their patients.<sup>(13)</sup> Unfortunately, patients with dementia and their caregivers do not often raise the issue of driving safety with a health-care professional,<sup>(9)</sup> which is not surprising, given that such conversations can be traumatic for patients, families, and the health-care provider.<sup>(14)</sup>

The number of Canadians diagnosed with Alzheimer's disease and related dementias is predicted to double within a single generation.<sup>(15)</sup> Therefore, physicians may expect to be increasingly called upon to participate in the driving cessation process—including counseling patients and families about the dangers of driving with dementia and the inevitability of driving cessation, performing and organizing assessments regarding driving fitness, and liaising with local authorities to ensure appropriate licence revocation.

## Context

We originally set out to develop a public service announcement (PSA) campaign to raise public awareness of the dangers of driving and dementia. However, PCP involvement in stakeholder focus group discussions to guide PSA development indicated that comfort with assessing fitness to drive was a barrier to their enthusiasm for supporting a project that may result in more caregivers asking for help and support navigating driving cessation in patients with dementia. Based on this feedback, we identified the need for a companion educational resource to accompany the PSA campaign. PCPs in the focus groups strongly indicated a preference for a Web-based resource instead of paper-based. In order to inform the content of the resource, we consulted with community stakeholders, including the local Alzheimer's Society, and distributed a cross-sectional survey to Nova Scotian primary care physicians examining their behaviours and perceived barriers to assessing fitness to drive for individuals with dementia.<sup>(2)</sup> Physician responses informed the content of a provincial Web-based resource, and were used to inform knowledge translation activities related to the resource including a television PSA to raise caregiver awareness of the dangers of driving and dementia, print materials (bumper stickers, advertisements on local transit, information cards for physicians and Alzheimer's Society support staff to provide to patients and caregivers, and plain-language information sheets for patients and caregivers). The Web-based resource ([www.notifbutwhen.ca](http://www.notifbutwhen.ca)) aims to guide physicians

through the process of driving cessation in dementia, from the time that cognitive concerns are first noticed, through to when dementia severity precludes safe driving.<sup>(2)</sup> The resource includes: a summary of the evidence regarding driving safety in dementia, in-office driving assessments and national guidelines regarding driving safety in dementia,<sup>(16,17)</sup> as well as referral forms for local driving assessment agencies; an algorithm for determining when on-road assessment may be needed; a step-by-step guide to the process of driving cessation once concerns are raised to the provincial Registry of Motor Vehicles; and printable information sheets and checklists for caregivers. One year following the launch of the Web-based resource and awareness campaign, PCPs were re-surveyed. Here, we report on physician awareness of the campaign and Web-based resource, and on changes in driving assessment practices.

## METHODS

### Study Design, Population, and Instrument

An anonymous survey targeted Nova Scotian PCPs to provide baseline data on self-reported views and behaviours, and a second anonymous survey provided data on self-reported views and behaviours one year following the launch of the Web-based resource and PSA campaign. Baseline self-reported attitudes and behaviours of Nova Scotian PCPs who care for individuals with dementia, and perceived barriers to addressing driving safety, were assessed with a cross-sectional survey.<sup>(2)</sup> One year following the launch of the Web-based resource and awareness campaign, PCPs were re-surveyed. To optimize response rates, the follow-up survey was shortened (from 33 items to 11) and additional items ( $n = 5$ ) were added to evaluate awareness of the "Not if, but when" PSA campaign, as well as awareness, use, and perceived utility of the information available on the Web resource. Surveys were distributed in-person at a Continuing Medical Education session in Halifax, NS, in December 2011, and faxed to a provincial registry of PCPs in February 2012.

Study approval was received from the Intuitional Research Ethics Boards for the Capital District Health Authority in Halifax, NS. Participants received a cover letter describing the research, and decided whether or not to complete and submit the anonymous survey.

Descriptive statistics were calculated using unpaired *t*-tests for continuous variables and the chi-squared test for dichotomous variables (Tables 1 and 2). Spearman correlations were used to calculate the correlation coefficients for the association between sex, practice type (urban/rural), and years of practice, with all physician responses at baseline and follow-up. Effect sizes and multivariable logistic regression controlling for sex, practice type (urban/rural), and years of practice was performed to evaluate changes in physician responses (Table 3). A cut-off value of  $p < .05$  was used.

**RESULTS**

A total of 159 baseline and 121 follow-up surveys were returned. Surveys were excluded from analysis if the physician did not practise in Nova Scotia ( $n = 19$  at baseline and  $n = 8$  at follow-up) or reported not having patients with dementia

TABLE 1.  
Demographics of baseline and follow-up respondents

Demographics	Baseline n, % mean, (SD)	Follow-up n, % mean, (SD)	p value
Sex (female)	71, 53.0	56, 49.6	0.682
Years of practice	17.7 (10.9)	22.6 (11.5)	0.001
Urban	77, 57.1	54, 49.1	0.261
Aware of campaign	-	34, 32.7	-
Aware of website	-	32, 29.1	-
Visited website	-	16, 13.2.0	-

in their practice ( $n = 6$  at baseline). Therefore, 134 baseline and 113 follow-up surveys were included in analysis.

Baseline and follow-up survey results (Table 1) indicate that the demographic characteristics (gender, practice type) of respondents were consistent between baseline and follow-up surveys, except that follow-up respondents reported significantly more years of practice ( $p = .01$ ). All analyses comparing baseline and follow-up survey responses were controlled for years of practice, sex, and practice location.

Results from baseline surveys have previously been reported.<sup>(2)</sup> At baseline (Table 2), years of practice showed a positive correlation with the probability of discussing driving as a part of routine assessment for patients with dementia ( $r = .19$ ;  $p = .03$ ). This association was not demonstrated in the follow-up survey results. Similarly, the follow-up survey results (Table 2) indicated that rural respondents were more likely to “always include driving discussions as a part of routine dementia care” ( $r = .26$ ;  $p = .01$ ) compared with urban respondents, and that urban respondents felt less equipped to assess fitness to drive in dementia compared with rural respondents ( $r = .28$ ;  $p = .04$ )— an association not found at baseline.

TABLE 2.  
Primary care physicians’ practises for assessment of fitness to drive in patients with dementia

Characteristics	Baseline (n, %)	Follow-up (n, %)	$\chi^2$ (p)
Driving assessments are part of routine care for dementia patients <sup>a</sup>	95, 71.4	99, 87.6	8.65 (<0.01)
Timing of driving assessment			
At diagnosis	73, 54.9	64, 60.4	0.52 (0.47)
3 years after diagnosis	2, 1.5	1, 0.9	0.15 (0.70)
Upon collateral concerns from family	42, 31.3	19, 17.9	(5.09) (0.02)
Mild stage dementia	9, 6.7	22, 20.8	9.02 (<0.01)
Moderate stage dementia	0, 0	0, 0	0 (0)
Severe stage dementia	7, 5.3	0, 0	4.05 (0.04)
Avoidance of driving discussions <sup>b</sup>			
Often	5, 3.7	2, 1.8	0.7 (0.61)
Sometimes	88, 65.7	57, 51.4	4.58 (0.03)
Never	41, 30.6	52, 46.8	6.14 (0.01)
Reasons for avoiding driving discussions			
Lack of comfort in decision-making	54, 40.3	41, 36.3	1.55 (0.21)
Lack of support from the family/caregiver	36, 26.9	11, 9.7	5.90 (0.02)
Lack of available resources to offer	55, 41.0	29, 25.7	1.08 (0.30)
Lack of familiarity with standards and guidelines	49, 36.6	31, 27.4	0 (0.97)
Concern about negative impact on relationship	58, 43.3	33, 29.2	0.38 (0.54)
How well equipped to assess driving safety in dementia <sup>c</sup>			
Poorly	37, 27.6	34, 33.7	0.73 (0.39)
Somewhat	80, 59.7	50, 49.5	2.03 (0.15)
Adequately	16, 11.9	15, 14.9	0.21 (0.65)
Very well	1, 0.7	2.0	0.06 (0.80)

<sup>a</sup>Positive association with years of practice ( $r = .19$ ;  $p = .03$ ) at baseline.

<sup>b</sup>Positive association with rural practice location ( $r = .26$ ;  $p = .01$ ) at follow up.

<sup>c</sup>Negative association with rural practice location at follow up ( $r = .28$ ;  $p = .03$ ).

TABLE 3.

Probability for physicians responding positively for each question regarding perceived barriers, attitudes and behaviours at follow-up<sup>a</sup>

	OR (CI)	p
Driving assessments are a part of routine care	2.4 (1.20-4.80)	0.01
Timing of driving assessments		
at diagnosis	0.86 (0.39-1.88)	0.71
Mild stage dementia or later	2.2 (1.06-4.57)	0.03
When collateral concerns are presented	0.41 (0.21-0.79)	0.01
Discussions about driving are never avoided	1.82 (1.05-3.16)	0.03
Barriers to discussing driving:		
Lack of support from the family	0.24 (0.11-0.52)	<0.01
Lack of available resources to offer patients/families	0.55 (0.31-0.96)	0.04
Feeling poorly equipped to perform driving assessments	0.66 (0.37-1.18)	0.16

<sup>a</sup>Controlling for years of practice, practice type and sex.

Following the launch of the Web-based resource and dissemination of the awareness campaign, 34% of follow-up respondents reported having seen the “Not if, but when” PSA and 30% reported being aware of the website. Awareness of the campaign and resource were not linked to years of practice or practice type. Physicians who were aware of the campaign and/or website were less likely to rate themselves as “poorly equipped” to assess driving safety in patients with dementia ( $r = -.21$ ;  $p = .05$ ).

Comparison of survey results prior to the Web resource and awareness campaign to survey results one year following the launch of the resource and campaign (Table 3) indicate that respondents at follow-up reported a higher likelihood of addressing fitness to drive as part of routine care in dementia (OR 2.4; CI 1.20–4.80;  $p = .01$ ). While there was no significant change in PCPs’ reports of comfort in assessing fitness to drive in dementia, following launch of the resource and awareness campaign, respondents were less likely to report avoiding discussions about driving (OR = 2.2; CI = 1.06–4.57;  $p = .03$ ), and those who reported that they “sometimes [avoided] such discussions” were less likely to cite family resistance (OR = 0.24; CI = 0.11–0.52;  $p = <.01$ ) or a lack of available resources to offer patients/families as barriers (OR = 0.55; CI = 0.31–0.96;  $p = 0.04$ ). PCPs surveyed after launch of the Web resource and awareness campaign were also less likely to wait for concerns to be presented by family members before initiating discussions about driving (OR = 0.41; CI = 0.21–0.79;  $p = .01$ ).

## DISCUSSION

Driving and dementia continues to be a common issue encountered by Nova Scotian primary care physicians. In Nova Scotia, PCPs continue to address the topic of driving safety, and perform driving assessments for individuals with dementia, despite lack of confidence in administering such assessments. Our findings are consistent with other reports

indicating that physicians lack confidence in assessing fitness to drive,<sup>(1)</sup> are concerned about negatively impacting the physician–patient relationship,<sup>(18)</sup> and sometimes avoid the topic of driving cessation when caring for older adults with dementia.<sup>(1,13)</sup>

One year following the launch of a Web-based resource and public awareness campaign regarding driving and dementia, PCPs surveyed reported similar comfort levels in administering driving assessments compared with baseline respondents. This is not surprising given the lack of availability of a validated in office test to predict on-road safety in dementia.<sup>(6)</sup> However, an increasing proportion of PCPs reported including discussions about driving cessation as a part of routine care for individuals with dementia, and fewer PCPs reported waiting until caregivers raised concerns regarding driving to start the conversation with the patient and caregiver. We speculate that the “Not if, but when” campaign was successful in encouraging PCPs to be pro-active in addressing medical fitness to drive for dementia patients; however, further in-office tools may be required in order to improve physician comfort.

The public awareness campaign and online education resources for physicians and families have shown modest effectiveness in addressing specific barriers to assessment. After the Web-resource and awareness campaign, fewer respondents reported avoiding discussions about fitness to drive, and fewer respondents cited family resistance or lack of resources as barriers to such discussions. These results are encouraging, and suggest that the public awareness campaign and Web resource may have been successful in improving family/caregiver acceptance of the inevitability of cessation, and in providing a useful resource in primary care to which family members can be referred when issues surrounding driving and dementia arise. Future efforts could be directed towards additional barriers such as PCPs’ lack of comfort in assessing fitness to drive in dementia, and PCPs’ reported concerns regarding the impact of driving cessation on the physician–patient relationship.

Our results should be interpreted with caution. While a paired pre- and post-survey (where each respondent was surveyed before and after the intervention) would have provided increased power with a lower sample size, the original survey was not intended as a research question, but rather to guide development of the Web-based resource. Therefore, although we cannot be sure how many respondents completed both surveys, the unpaired cross-sectional design may limit the Hawthorne effect, whereby respondents' follow-up reports of awareness of the resource and campaign, as well as their baseline and follow-up self-reported behaviours, may be affected by the lack of anonymity. Additionally, we were unable to determine a response rate due to the fact that the surveys were distributed by the local academic institution's continuing medical education program that did not provide numbers for its circulation. Further, it is possible that respondents may have had more of an interest in driving cessation than the non-respondents, and therefore the proportion of PCPs who routinely address issues surrounding driving as a part of routine dementia care may be high in both the baseline and follow-up data. Self-reported years of practice differed significantly between baseline and follow-up survey respondents, with the follow-up group reporting more years of practice. Although the mean for both groups is more than 15 years of practice, the difference may confound survey responses. However, driving assessment as part of routine care was not significantly associated with years of practice in the follow-up group. Finally, our results may not be applicable to other provinces that have mandatory reporting requirements for physicians.

## CONCLUSION

The impact of the awareness and educational campaign on PCP practices, and reported barriers to addressing driving cessation for dementia patients, is encouraging. These results may be further improved with growing awareness of the online resource. The [notifbutwhen.ca](http://www.notifbutwhen.ca) website continues to represent a valuable resource for physicians, as well as other health-care professionals and family members. Future work will focus on improving awareness of the online resource, and broadening the scope of [www.notifbutwhen.ca](http://www.notifbutwhen.ca) to include specific information for other Canadian provinces.

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## CONFLICT OF INTEREST DISCLOSURES

The authors declare that no conflicts of interest exist.

## REFERENCES

1. Jang RW, Man-Son-Hing M, Molnar FJ, *et al.* Family physicians' attitudes and practices regarding assessments of medical fitness to drive in older persons. *J Gen Intern Med.* 2007;22(4):531–43.
2. Moorhouse P, Hamilton L, Fisher T, *et al.* Barriers to assessing fitness to drive in dementia in Nova Scotia: informing strategies for knowledge translation. *Can Geriatr J.* 2011;14(3):61–5.
3. Ott BR, Heindel WC, Papandonatos GD, *et al.* A longitudinal study of drivers with Alzheimer disease. *Neurology.* 2008;70(14):1171–78.
4. Rebok GW, Keyl PM, Bylsma FW, *et al.* The effects of Alzheimer disease on driving-related abilities [Internet]. *Alzheimer Dis Assoc Disord.* 1994;8(4):228–40.
5. Parasuraman R, Nestor P. Attention and driving: assessment in elderly individuals with dementia. *Clin Geriatr Med.* 1993;9(2):377–87.
6. Molnar FJ, Patel A, Marshall SC, *et al.* Clinical utility of office-based cognitive predictors of fitness to drive in persons with dementia: a systematic review. *J Am Geriatr Soc.* 2006;54(12):1809–24.
7. Byszewski AM, Graham ID, Amos S, *et al.* A continuing medical education initiative for Canadian primary care physicians: the driving and dementia toolkit: a pre- and postevaluation of knowledge, confidence gained, and satisfaction. *J Am Geriatr Soc.* 2003;51(10):1484–89.
8. Meuser TM, Carr DB, Berg-Weger ML, *et al.* Driving and dementia in older adults: implementation and evaluation of a continuing education project. *The Gerontologist.* 2006;46(5):680–87.
9. Croston J, Meuser TM, Berg-Weger M, *et al.* Driving retirement in older adults with dementia. *Top Geriatr Rehabil.* 2009;25(2):154–62.
10. Taylor BD, Tripodes S. The effects of driving cessation on the elderly with dementia and their caregivers. *Accid Anal Prev.* 2001;33(4):519–28.
11. Marottoli RA, Mendes de Leon CF, Glass TA, *et al.* Driving cessation and increased depressive symptoms: prospective evidence from the New Haven EPESE. *J Am Geriatr Soc.* 1997;45(2):202–06.
12. Marottoli RA, Mendes de Leon CF, Glass TA, *et al.* Consequences of driving cessation: decreased out-of-home activity levels. *J Gerontol B Psychol Sci Soc Sci.* 2000;55(6):S334–40.
13. Adler G, Rottunda SJ. The driver with dementia: a survey of physician attitudes, knowledge, and practice. *Am J Alzheimers Dis Other Demen.* 2011;26(1):58–64.
14. Molnar FJ, Byszewski AM, Marshall SC, *et al.* In-office evaluation of medical fitness to drive: Practical approaches for assessing older people. *Can Fam Physician.* 2005;51(3):372–79.
15. Alzheimer Society of Canada. Rising Tide: The impact of dementia on Canadian society. Alzheimer Society of Canada; 2010. Available from: [http://www.alzheimer.ca/~media/Files/national/Advocacy/ASC\\_Rising\\_Tide\\_Full\\_Report\\_e.pdf](http://www.alzheimer.ca/~media/Files/national/Advocacy/ASC_Rising_Tide_Full_Report_e.pdf)

16. Canadian Medical Association. CMA driver's guide: determining medical fitness to operate motor vehicles, 8th edition. Available from: <http://www.cma.ca/driversguide>
17. Chertkow H. Introduction: the Third Canadian Consensus Conference on the Diagnosis and Treatment of Dementia, 2006. *Alzheimers Dement.* 2007;3(4):262–65.
18. Marshall SC, Gilbert N. Saskatchewan physicians' attitudes and knowledge regarding assessment of medical fitness to drive. *CMAJ.* 1999;160(12):1701–04.

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