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Discussions About Driving Between Older Adults and Primary Care Providers

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Abstract

Background/Objectives—Driving confers both risks and benefits to older adults, and physicians have been tasked with counseling them. We sought to estimate how many older patients discuss driving with a primary care provider during a calendar year, and to describe discussion triggers.

Design—Observational retrospective medical record review.

Setting—Three primary care clinics (geriatrics, hospital-based general internal medicine [GIM], and community-based GIM) affiliated with a tertiary care hospital.

Participants—Random sample of 240 older (≥ 65 years) patients with ≥ 1 visit in 2014 (January 1 to December 31).

Measurements—Standardized chart abstraction of patient demographics, medical diagnoses, and presence and context of discussions about driving. Provider factors (obtained from clinic administrators) included gender and average amount worked per week.

Results—Geriatric clinic patients were oldest, had more medical diagnoses, and had a median of 4 visits in 2014 (versus 3 visits in GIM clinics). Documented discussions about driving

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occurred with a greater proportion of patients in the geriatric (n=22; 28%, 95% CI 18-39%) and GIM hospital (n=15; 19%, 95%CI 11-29%) clinics than the GIM community clinic (n=6, 7.5%, 95%CI 2.8-16%). Medical diagnoses that might affect driving were prevalent but not associated with increased frequency of documented discussions. In multivariable analysis, patients were more likely to have 1 documented driving discussion in 2014 if they went to the geriatric clinic or had a primary care provider aged 45 years or who worked <6 half-day clinics per week.

Conclusion—Over one year, a minority of older patients had a documented discussion about driving with a primary care provider, with differences by clinic and provider characteristics. Strategies to support routine and preparatory conversations about driving should incorporate these findings.

Keywords

older adult; automobile driving; preventive health services; physician-patient relations; women physicians

INTRODUCTION

Some older drivers are at increased risk for crashes and associated morbidity and mortality, yet driving cessation is also associated with negative outcomes.^{1, 2} Balancing the risks and benefits of driving at the level of individual patients is a difficult task often assigned to physicians,^{3, 4} whose clinical knowledge and relationships with patients may allow them to discuss driving in a personalized manner. Patients and families often welcome this physician involvement,^{3, 5} albeit with inclusion of family members. Physicians appear to recognize and accept their role in older driver safety, while acknowledging the existence of barriers to making the discussion comfortable or routine.⁶⁻⁸ These barriers include inadequate training, concern over harming the physician-patient relationship, time pressures in clinical practice, and inadequate resources for further evaluation or alternative transportation.^{7, 9}

A few prior studies have examined the perceptions and self-reported practices of physicians concerning older driver assessment. In a sample of 455 Canadian family physicians, almost 90% said they had assessed 1 older driver in the previous year and almost all wanted additional training.¹⁰ More recently, among 38 surveyed physicians in South Carolina, only 27% had ever assessed an older patient's fitness-to-drive.⁸ In a survey of 351 physicians caring for patients with dementia in North and South Carolina, 59% said they address driving; older physicians and those who believed this was the physician's role were more likely to discuss driving.⁹

To date there has been no description of actual practices regarding discussion of driver safety. Many physicians say that they discuss driving with at least *some* of their older patients, but it is unclear how often it occurs with *each* of their patients. We therefore sought to estimate, based on medical record documentation, how many older patients have 1 discussion with a primary care provider about driving within a calendar year. We also sought to describe the most common triggers of these discussions, including whether they occurred in the setting of Medicare Wellness Exams, previously suggested as a time to include questions about driving.⁷

METHODS

Following rigorous retrospective chart review procedures,¹¹ two trained research staff members used a standardized abstraction form and written coding manual to review patients' electronic medical records. Patients were eligible for inclusion if they: were ≥ 65 years old; were registered at one of three internal medicine clinics; and had ≥ 1 clinic visit between January 1 and December 31, 2014. The primary care clinics, all affiliated with an academic hospital in an urban area, were a geriatric clinic, a general internal medicine (GIM) clinic located within the hospital, and a GIM clinic located off-site in a residential neighborhood. All clinics use the same electronic health record (Epic), including note templates. We included the three clinics because we hypothesized the frequency of discussions might vary among them.

Using a random sample taken from clinic rosters, abstractors reviewed medical records until they included 80 older patients from each clinic. All data were entered directly into a secure online database.¹² The abstraction process was pilot-tested in five records, with minimal additional training or clarifications required. A 10% sample of charts (n=24) were abstracted independently by the lead investigator for the primary variable of interest (driving discussions), with 100% interrater reliability. The Colorado Multiple Institution Review Board approved this study as exempt but required that patient ages ≥ 89 be recorded as 89.

Variables

Abstracted items included demographic characteristics (age as of January 1, 2015; gender; race; ethnicity; preferred language; need for translator) and all medical diagnoses (ICD-9 CM codes listed in the "past medical history" and "problem list" sections of the medical record). For each patient, staff recorded the total number of in-person visits to the primary care clinic (including visits to any physician, physician assistant, nurse practitioner, social worker, or pharmacist within the clinic; excluding telephone-only contact, immunization clinics or nurse visits). For each visit, staff reviewed all provider notes for discussions of driving (defined as any mention of driving, including driving status, safety concerns, or driving cessation). Staff recorded whether the patient had "Medicare Wellness Exam" visit (identified by type of visit or by provider documentation), as well as the age, gender and average amount worked per week (obtained from clinic administration) for each patient's designated primary care provider.

Data Analysis

We classified ICD-9 codes using the Clinical Classifications Software (Healthcare Cost and Utilization Project of the Agency for Healthcare Research and Quality).¹³ Diagnosis categories were based on those previously identified as potentially affecting driving ability or elevating crash risk among older adults.³

For analysis, we described demographic, clinical, and provider characteristics using proportions and 95% confidence intervals (CI) or medians and interquartile ranges (IQR). We compared these characteristics across clinics using Kruskal Wallis nonparametric tests (for continuous variables) or chi square tests (for categorical variables). To identify factors

associated with the primary outcome (1 documented discussion about driving), we calculated adjusted odds ratios (AORs) and their 95% CIs. Factors identified as potentially significant in univariate logistic regression ($P < 0.2$) were included in the final multivariable model, with an *a priori* limit of up to one factor per ten events. Statistical analyses were performed using Stata IC 11.2.

RESULTS

Patients in the geriatric clinic were generally older than those in the GIM clinics, but there were no differences by gender, race, or ethnicity (**Table 1**). Patients in the geriatric clinic had a median of 4 visits (IQR 2-6) in 2014, which was slightly higher than patients in the GIM hospital (median 3 visits, IQR 2-4) or GIM community (median 3 visits, IQR 2-5) clinics ($P < 0.05$ under Kruskal Wallis; data not shown).

There was a high prevalence of medical conditions that could affect driving safety (**Table 1**). Musculoskeletal disorders were most common, with 71% (95% CI 65-77%) of all participants having 1 diagnosis in this category, followed by visual (51%, 95% CI 45-58%), neurocognitive (48%, 95% CI 41-54%) and cardiopulmonary (48%, 95% CI 41-54%) disorders. There was a generally higher prevalence of these diagnoses in the geriatric clinic and lower prevalence in the GIM community clinic.

Approximately half of providers for this sample of older patients were female, with a higher proportion in the geriatric clinic than in the GIM community clinic (**Table 2**). The median provider age was 46 years. Providers worked a median of 6 half-day clinic sessions per week (IQR 2.5-7, range 0.25-9), excluding supervision sessions with resident physicians, without significant differences across clinics. Only two patients in the geriatric clinic had a “Medicare Wellness Visit” in 2014, and less than one third of older patients in the GIM clinics had one.

Across clinics, a minority of patients had 1 documented discussion about driving in 2014; these occurred for more patients in the geriatric ($n=22$; 28%, 95% CI 18-39%) and GIM hospital ($n=15$; 19%, 95% CI 11-29%) clinics than the GIM community clinic ($n=6$, 7.5%, 95% CI 2.8-16%; **Table 2**). Among patients with any documented discussion about driving, most had only a single visit where driving was documented (median 1 visit, IQR 1-1), with only four patients (9.3%, 95% CI 2.6-22%) having 3 such visits. Only two documented discussions (2.9%, 95% CI 0.4-10%) resulted in a documented referral to a licensing authority or other resource (as identified through review of providers’ notes). Across clinics, all documented discussions about driving were with a primary care provider (physician, physician assistant, or nurse practitioner), with none documented by nurses, social workers, pharmacists, or other provider types. The most commonly identified trigger for a documented driving discussion was a medical condition that might affect driving ability, followed by continuation of a prior conversation or general questioning about activities of daily living (**Table 2**).

The final multivariable logistic regression model included clinic and the primary care provider’s age group and average amount worked; provider gender was significant in

unadjusted analysis only and was not included in the final model. Patients at the GIM community clinic were less likely than those at the geriatric clinic to have a documented discussion about driving (AOR 0.14, 95%CI 0.04-0.45). Patients were more likely to have a documented discussion if their primary care provider was younger (age ≥ 45 years; AOR 3.65, 95%CI 1.62-8.25) or worked <6 half-day clinics per week (AOR 2.94, 95%CI 1.35-6.37).

DISCUSSION

Over one year, less than one quarter of older patients in this sample had a documented discussion about driving with their primary care provider. This finding—the first available description of physician behavior, rather than self-report—appears to confirm prior anecdotal evidence that discussions about driving are not routine,⁵ albeit with the caveat that chart documentation is imperfect. The type of clinic was associated with the likelihood of having a documented discussion, as were provider characteristics. Our findings likely reflect variation in both clinic populations and provider perspectives, and they have implications for future training and program implementation related to older driver safety.

Most older adults at some point face a decision about driving “retirement,”¹⁴ a complicated and emotional transition. Recommendations from older adults and providers call for earlier and routine questioning about driving as a way to “normalize” the topic.^{5, 7} Discussing driving before safety concerns arise confers multiple benefits: identification of treatable conditions; referral for specialist evaluation and retraining to support prolonged mobility; and a longer time period for patients to adjust and plan. Although prior surveys and qualitative studies with physicians suggested that many discuss driving with older patients^{5, 8-10} there was suspicion that these discussions occurred with only a fraction of patients.⁵ Our study provides objective estimates of actual provider behavior, using medical record documentation as a proxy. Acknowledging the risks of under-documentation, our estimates suggest that, each year, only a minority of older patients discuss driving with their primary care providers. This might stem from practical barriers to conversations, including the lack of validated tools to identify drivers at highest risk of crash. Documented referrals for further evaluation or retraining were rare in this study, likely reflecting both a dearth of available resources and provider ignorance about those that do exist.^{7, 15}

Differences among clinics included that the geriatric clinic treated a generally older and more medically-complicated population. Geriatricians are likely more attuned to specific concerns of the older adult population, including identification of geriatric syndromes and avoidance of potentially harmful prescription medications,¹⁶ and perhaps the issue of driving safety. Yet most older adults receive care from generalists in internal medicine or family medicine—providers who are generally well-equipped to care for older adults. As the older adult population continues to grow, primary care providers will need both continuing medical education about geriatric-specific issues (including driving safety) and acceptable strategies to incorporate these topics into routine clinical care.¹⁷

In prior work, providers suggested the annual preventive Medicare visits (including the “Welcome to Medicare” and “Annual Wellness” exams) as a time to ask older adults about

driving as an instrumental activity of daily living.⁷ In this study, we found almost no geriatric clinic patients and less than one third of GIM patients had a Medicare Wellness visit over the course of one year. This may reflect reimbursement issues, as it can be challenging to combine (and bill for) a Wellness exam with a visit for an acute medical issue.¹⁸ The strategy of routine questioning about driving during a Medicare Wellness visit – i.e., primary prevention – may be best suited for generalist clinics, which have both a healthier patient population and providers less familiar with geriatric-specific concerns like driving safety.¹⁷ A different approach, such as tools to identify patients at highest risk of crash because of varied combinations of medical conditions or medications – i.e., secondary prevention – may be preferred in geriatric clinics.

Patients with younger physicians were more likely to have had a documented discussion about driving, a finding in conflict with prior work suggesting older physicians are more likely to bring up driving.⁹ The discrepancy may result from different study populations or methods. Our finding is supported by other work showing that older physicians may be less likely to follow updated screening or preventive care guidelines,¹⁹ although in the case of driving, guidelines are not as clear as with some other preventive services. The question of how provider age affects discussions about driving – including whether patients prefer such discussions with younger or older physicians – merits further study.

Patients whose providers who worked less (<6 half-day clinic sessions) were more likely to have a documented discussion about driving, compared to those whose providers worked more. Providers who work more hours may be less likely to either discuss or document driving because they may be more concerned with efficiency for administrative aspects of clinical care (which can account for half of a primary care provider's work duties¹⁹), given they have less non-clinical time to complete these tasks before the next clinic session. Prior work suggests excessive provider workload can negatively impact patient care (including incomplete discussions of treatment options) and patient satisfaction.²⁰ Short outpatient appointments, myriad medical issues to address, and high patient volumes place stresses on primary care providers and hamper preventive counseling²¹ and care of chronic disease,²² and these stresses weigh especially on those who work most.

Study limitations include that driving status is not documented in a standardized location in the medical record for patients at these clinics. Patients who were no longer driving may not have needed discussion with their provider; the fact that their non-driver status was not documented, however, may still be suboptimal, given the multiple negative health consequences associated with driving cessation.¹ Discussions that occurred but were not documented would have been missed in our study, so our estimates are conservative; if there were systematic biases (e.g., by gender) in how these discussions were documented, then our results might change. We did not collect information about medications, which can affect driving, and a limitation of the medical diagnosis data is that we could not estimate the severity of single diseases or their combinations. We also did not record where patients lived, but geography is important to consider when discussing driving retirement and transportation options. Our results may not generalize to other settings, especially as these clinics were affiliated with a tertiary care hospital and medical school, and the physicians in the GIM clinics were part of the same academic department. In addition, Colorado does not

require physicians to report potentially-unsafe drivers, and practices may differ in states with mandatory reporting. Finally, abstractors were not blinded to the study's purpose, but they used a standardized form and interrater reliability was 100%.

Despite these limitations, this study provides the first objective estimates concerning the frequency, at the patient level, with which driving is discussed between older patients and primary care providers. Given differences among geriatric and generalist clinics in the frequency of discussions, of Medicare Wellness visits, and of patient comorbidities, differing strategies for encouraging physician assessment and counseling about driving may be warranted. Further exploration of the effect of provider characteristics on these discussions will also be important to refine training and implementation approaches. As the older population grows, so too will the importance of addressing older driver safety in an efficient, acceptable, and evidence-based manner.

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Table 1

Demographic and clinical characteristics of patients, by site of primary care

	Geriatric Clinic (N=80) N (%)	GIM hospital clinic (N=80) N (%)	GIM community clinic (N=80) N (%)	Total (N=240) N (%)
Age group (years) ***				
65-74	6 (7.5)	42 (53)	50 (63)	98 (41)
75-84	40 (50)	30 (38)	21 (26)	91 (38)
85	34 (42.5)	8 (10)	9 (11)	51 (21)
Female	54 (68)	48 (60)	42 (53)	144 (60)
Race				
White	52 (65)	64 (80)	68 (85)	184 (77)
Black/African-American	12 (15)	9 (11)	5 (6.3)	26 (11)
Asian	8 (10)	2 (2.5)	2 (2.5)	12 (5)
Other/Not documented	8 (10)	5 (6.3)	5 (3.8)	18 (7.5)
Hispanic ethnicity	7 (8.8)	5 (6.3)	2 (2.5)	14 (5.8)
Preferred language *				
English	70 (88)	79 (99)	77 (96)	226 (94)
Spanish	3 (3.8)	0 (0)	0 (0)	3 (1.3)
Other	7 (8.8)	1 (1.3)	3 (3.8)	11 (4.6)
Need for translator	7 (8.8)	0 (0)	2 (2.5)	9 (5.8)
Neurocognitive disorders ***	53 (66)	33 (41)	28 (35)	114 (48)
Syncope (245); conditions associated with dizziness or vertigo (93)	23 (29)	19 (24)	13 (16)	55 (23)
Cerebrovascular disease ^a ***	28 (35)	15 (19)	9 (11)	52 (22)
Cognitive disorders ^b ***	27 (34)	4 (5.0)	8 (10)	39 (16)
Epilepsy, seizure (83)	4 (5.0)	3 (3.8)	2 (2.5)	9 (3.8)
Parkinson's disease (79)	0 (0.0)	0 (0.0)	1 (1.3)	1 (0.4)
Visual disorders **	51 (64)	41 (51)	31 (39)	123 (51)
Cataract (86)	34 (43)	34 (43)	26 (33)	94 (39)
Retinal disorders ^c **	22 (28)	18 (23)	7 (8.8)	47 (20)
Glaucoma (88)	16 (20)	13 (16)	14 (18)	43 (18)
Blindness and vision defects (89)	17 (21)	11 (14)	11 (14)	39 (16)
Cardiopulmonary disorders **	47 (59)	40 (50)	27 (34)	114 (48)
Heart disease ^d	27 (34)	23 (29)	20 (25)	70 (29)
Conduction disorder, arrhythmia ^e **	31 (39)	20 (25)	14 (18)	65 (27)
Chronic obstructive pulmonary disease and bronchiectasis (127)	18 (23)	9 (11)	9 (11)	36 (15)
Congestive heart failure (108)	12 (15)	4 (5.0)	8 (10)	24 (10)
Respiratory failure, insufficiency, arrest (131)	1 (1.3)	5 (6.3)	2 (2.5)	8 (3.3)

	Geriatric Clinic (N=80) N (%)	GIM hospital clinic (N=80) N (%)	GIM community clinic (N=80) N (%)	Total (N=240) N (%)
Musculoskeletal disorders	64 (80)	55 (69)	51 (64)	170 (71)
Spondylosis; intervertebral disc disorders; other back problems (205)	49 (61)	49 (61)	42 (53)	140 (58)
Arthritis ^{f **}	42 (53)	25 (31)	25 (31)	92 (38)
Other				
Mental health disorders ^{g *}	43 (54)	26 (33)	32 (40)	101 (42)
Diabetes without (49) or with (50) complications	25 (31)	32 (40)	19 (24)	76 (32)
Alcohol (660) or substance (661) related disorders	3 (3.8)	3 (3.8)	3 (3.8)	9 (3.8)

Legend. GIM, General Internal Medicine. Numbers in parentheses after diagnoses refer to included Clinical Classifications Software codes.¹³

* $P < 0.05$, under Chi Square.

** $P < 0.01$, under Chi Square.

*** $P < 0.001$ under Chi Square.

^a Acute cerebrovascular disease (109); occlusion or stenosis of precerebral arteries (110); other and ill-defined cerebrovascular disease (111); transient cerebral ischemia (112); late effects of cerebrovascular disease (113).

^b Dementia, delirium, and amnesic and other cognitive disorders (653); coma, stupor, brain damage (85); intracranial injury (233).

^c Retinal detachment or defects, vascular occlusion, retinopathy (87).

^d Acute myocardial infarction (100); coronary atherosclerosis and other heart disease (101); pulmonary heart disease (103); other and ill-defined heart disease (104).

^e Conduction disorders (105); cardiac dysrhythmias (106); cardiac arrest and ventricular fibrillation (107).

^f Rheumatoid arthritis and related disease (202); osteoarthritis (203).

^g Adjustment disorder (650); anxiety disorder (651); mood disorder (657); schizophrenia and other psychotic disorders (659); suicide and intentional self-inflicted injury (652).

Table 2

Clinic characteristics and documented discussions about driving in 2014, by site of primary care

	Geriatric clinic N (%)	GIM hospital clinic N (%)	GIM community clinic N (%)	Total N (%)
Provider age in years (median, IQR, range)	<u>46</u> (10, 34-66)	<u>45</u> (7, 27-72)	<u>50</u> (14, 28-57)	<u>46</u> (10, 34-66)
Female primary care provider***	50 (63)	45 (56)	22 (28)	117 (49)
Provider has <6 clinic sessions per week**	44 (55)	38 (48)	23 (31)	105 (45)
"Medicare Wellness Visit" in 2014***	2 (2.5)	23 (29)	22 (28)	47 (20)
1 documented discussion about driving**	22 (28)	15 (19)	6 (7.5)	43 (18)
Separate visits with discussion of driving (median, IQR, range)	0 (1; 0-6)	0 (0; 0-4)	0 (0; 0-3)	0 (0; 0-6)
Total documented discussions about driving	36	23	10	69
Referral given after any driving discussion	0 (0)	0 (0)	2 (20)	2 (2.9)
Identified triggers for documented discussions^a	<u>48</u>	<u>31</u>	<u>51</u>	<u>130</u>
Medical condition that could affect driving***	<u>25 (52)</u>	<u>11 (35)</u>	<u>6 (12)</u>	<u>42 (32)</u>
General discussion of activities of daily living	<u>3 (6.3)</u>	<u>5 (16)</u>	<u>8 (17)</u>	<u>16 (12)</u>
Medication that could affect driving	<u>2 (4.2)</u>	<u>1 (3.2)</u>	<u>3 (5.9)</u>	<u>6 (4.6)</u>
Concern of family/friends	<u>2 (4.2)</u>	<u>1 (3.2)</u>	<u>3 (5.9)</u>	<u>6 (4.6)</u>
Car crash	<u>0 (0)</u>	<u>1 (3.2)</u>	<u>1 (2.0)</u>	<u>2 (1.5)</u>
Continuation of prior discussion	<u>13 (27)</u>	<u>7 (23)</u>	<u>20 (39)</u>	<u>40 (31)</u>
None identifiable	<u>3 (6.3)</u>	<u>5 (16)</u>	<u>8 (16)</u>	<u>16 (12)</u>

Legend.* $P < 0.05$, (among clinics, Chi square).** $P < 0.01$, (among clinics, Chi square).*** $P < 0.001$ (among clinics, Chi square).^a Multiple responses allowed for each discussion.