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Functional Impairment and Internet Use Among Older Adults: Implications for Meaningful Use of Patient Portals

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Authors

Greysen, S Ryan
Garcia, Carie Chin
Sudore, Rebecca L
[et al.](#)

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Discussion | In a decade with increasing emphasis and accountability for glycemic control and cardiovascular risk management among patients with diabetes, we found that patients with diabetes have experienced a disproportionate reduction in in-hospital mortality over time and a complete reversal in risk of mortality relative to patients without diabetes. This interesting trend warrants additional study to elucidate its origins. Potential explanations include coincident improvements in inpatient glycemic control, improvements in outpatient glycemic control, improved nonglycemic cardiovascular risk management among patients with diabetes, and/or advances in therapies for diseases that disproportionately affect patients with diabetes.

Neel M. Butala, AB
 Benjamin K. Johnson, MA
 James D. Dziura, PhD
 Jesse S. Reynolds, MS
 Thomas J. Balcezak, MD, MPH
 Silvio E. Inzucchi, MD
 Leora I. Horwitz, MD, MHS

Author Affiliations: Medical student at Yale School of Medicine, New Haven, Connecticut (Butala); Yale Center for Analytical Sciences, School of Public Health, Yale University, New Haven, Connecticut (Johnson, Dziura, Reynolds); Yale–New Haven Hospital, New Haven, Connecticut (Balcezak); Section of General Internal Medicine, Department of Medicine, Yale School of Medicine, New Haven, Connecticut (Balcezak, Horwitz); School of Public Health, Yale University, New Haven, Connecticut (Balcezak); Section of Endocrinology, Department of Medicine, Yale School of Medicine, New Haven, Connecticut (Inzucchi); Center for Outcomes Research and Evaluation, Yale–New Haven Hospital, New Haven, Connecticut (Horwitz).

Corresponding Author: Leora I. Horwitz, MD, MHS, Section of General Internal Medicine, Department of Medicine, Yale School of Medicine, PO Box 208093, New Haven, CT 06520-8093 (leora.horwitz@yale.edu).

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Functional Impairment and Internet Use Among Older Adults: Implications for Meaningful Use of Patient Portals

Medicare is currently dispensing \$30 billion in incentives to health care facilities that adopt the use of electronic medical records (EMRs). In 2014, incentives for “meaningful use” of EMRs will require online access by patients, and reimbursement penalties of up to 5% for nonadoption will begin in 2015.¹ Broader use of online patient portals to EMRs is intended to improve care coordination; yet the impact of common problems in Medicare-eligible patients, such as chronic illness or functional impairment, on Internet use is unknown.

Methods | This study was approved by the institutional review board for the University of California, San Francisco. We used the Health and Retirement Study (<http://hrsonline.isr.umich.edu>), a nationally representative sample of community-dwelling seniors (limited to Medicare-eligible individuals aged ≥65 years, excluding the 3%-6% of all Medicare patients who live in nursing homes), for cross-sectional analysis of Internet use at 2 time points, 2002 and 2010 (Table). Information regarding informed consent is available at the Health and Retirement Study website. We performed descriptive statistics (χ^2 or *t* test) and multivariable regression analysis (modified Poisson) to characterize features of Internet use at each time point.

Results | Overall rates of Internet use doubled from 2002 through 2010 (from 21% to 42%); however, changes in use differed by demographic and health characteristics. Overall, groups with the lowest rates showed the largest relative increases from 2002 through 2010: those with less than a high school education (from 4% to 9%), nonwhite race (from 7% to 21%), functional impairment (from 10% to 23%), poor or fair self-rated health (from 11% to 25%), age 75 years or older (from 12% to 27%), unpartnered status (from 12% to 29%), and any chronic condition (from 19% to 40%) (Table).

Table. Demographic and Clinical Characteristics of Seniors as Determinants of Internet Use in 2002 and 2010

Characteristic	Internet Use, No. (%) ^a		Increase 2002 to 2010, %
	2002 (n = 9340)	2010 (n = 9315)	
Overall (entire sample)	1892 (21)	3481 (42)	100
Demographic characteristics			
Sex			
Male	915 (25)	1562 (46)	85
Female	977 (18)	1919 (39)	117
Race			
White	1767 (23)	3101 (46)	100
Nonwhite	125 (7)	379 (21)	200
Married or partnered			
No	453 (12)	963 (29)	142
Yes	1438 (28)	2518 (51)	84
Education less than high school			
No	1788 (26)	3325 (49)	87
Yes	104 (4)	155 (9)	125
Age ^b			
Mean (SD)	74.6 (6.9)	74.6 (7.3)	...
No. (%), y			
65.0-69.9	882 (32)	1168 (59)	84
70.0-74.9	535 (24)	1174 (47)	92
≥75.0	474 (12)	1139 (27)	127
Any chronic health condition			
No	515 (26)	602 (52)	102
Yes	1377 (19)	2879 (40)	107
Self-rated health			
Fair or poor	1612 (25)	2938 (47)	93
Good or excellent	279 (11)	543 (25)	131
Functional impairment ^c			
No	1635 (25)	2848 (50)	98
Yes	257 (10)	633 (23)	134

^a Internet use was defined by a "yes" response to the question, "Do you regularly use the World Wide Web, or the Internet, for sending and receiving e-mail or for any other purpose, such as making purchases, searching for information, or making travel reservations?" Data are No. (%) unless otherwise specified.

^b Participants ranged in age from 65 to 109 years.

^c Defined as difficulty with either activities of daily living (bathing, toileting, dressing, eating, walking) or instrumental activities of daily living (shopping, housekeeping, cooking, finances, telephone use, transportation outside the home).

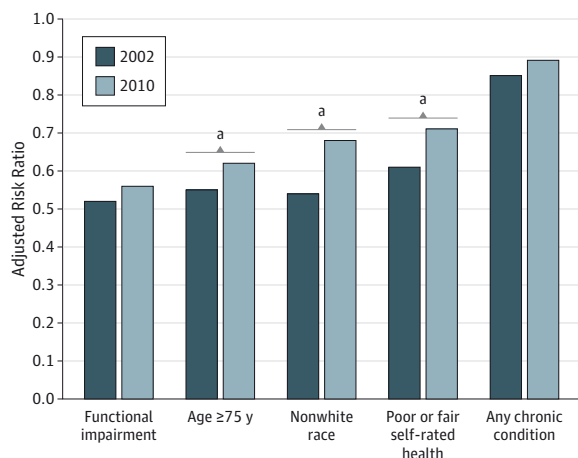
In multivariable regression analysis adjusted for demographic characteristics and socioeconomic status, those older than 75 years or with functional impairments were less likely to use the Internet than all other groups in both 2002 and 2010. Comparing these adjusted ratios in the 2002 to 2010 period, there were significant changes in 3 low-use groups: those aged 75 years or older, nonwhites, and those with poor or fair self-rated health. There was no significant change, however, for those with functional impairment (**Figure**).

Discussion | Internet use has increased in Medicare-eligible patients from 2002 through 2010 but remains low for the frailest seniors. Our results suggest that functional impairment is more predictive of Internet nonuse than chronic illness, poor self-rated health, or age, which has important implications for patient portal use. Whereas prior studies of the "digital divide" in health care have highlighted differences in demographic characteristics and socioeconomic status,² our study demonstrates the additional impact of functional limitations that are prevalent in the Medicare population. If these trends from the early years of EMR use persist into the current era of rapid implementation, the frailest and most vulnerable pa-

tients may be at risk for increasingly disengaged and uncoordinated care as more aspects of health care move online.

Thus, strategies to reduce the digital divide in Medicare patients will also need to address functional limitations. Existing software can read web pages out loud for visually impaired individuals, and voice recognition software may make Internet use easier for those who cannot easily manipulate a mouse or keyboard. Furthermore, emerging mobile technologies such as touchscreens, smartphones, and motion sensors may enable a wide range of body gestures to further expand the ways that people can interact with EMRs via the Internet.³ Although more evidence is needed to validate outcomes for these approaches,⁴ it is clear that patient portals will require greater agility to adapt to patient needs. Beyond adaptive changes in the technology per se, more training is needed for frail seniors and their caregivers to use portals effectively to engage in care. Indeed, caregivers (often younger and not functionally impaired) are likely important but overlooked targets for expanding portal use and improving care coordination for frail seniors.⁵ Without such adaptations, frail seniors who might otherwise benefit the most from portals may be the least likely to engage.

Figure. Adjusted Risk Ratios for Internet Use in 2002 and 2010 in Low-Use Groups



Relative risk of 1.0 indicates no difference in change from 2002 to 2010 compared with reference group (from left to right, vs no functional impairment [$P = .08$], age younger than 75 years [$P = .04$], white race [$P = .01$], good or better self-rated health [$P = .02$], no chronic condition [$P = .86$]). Risk ratios are adjusted for demographic characteristics (sex, race, marital status) and socioeconomic status (education and net worth). All analyses are weighted for differential probability of selection and the complex sampling design of the Health and Retirement Study.

^aStatistically significant comparison.

Meaningful use of EMRs will soon require patient portal use by Medicare patients, and more seniors are going online now than ever⁶; however, our findings highlight the need for health care providers to address functional barriers to Internet use and for future research to target digital health interventions to the specific needs of the frailest patients in this aging population.

S. Ryan Greysen, MD, MHS, MA
 Carie Chin Garcia, MD
 Rebecca L. Sudore, MD, MPH
 Irena Stijacic Cenzer, MA
 Kenneth E. Covinsky, MD, MPH

Author Affiliations: Division of Hospital Medicine, University of California, San Francisco (Greysen); Department of Medicine, California Pacific Medical Center, San Francisco (Chin Garcia); San Francisco Veterans Affairs Medical Center, San Francisco, California (Sudore, Cenzer, Covinsky); Division of Geriatric Medicine, University of California, San Francisco (Sudore, Cenzer, Covinsky).

Corresponding Author: S. Ryan Greysen, MD, MHS, MA, Division of Hospital Medicine, University of California, San Francisco, 533 Parnassus Ave, PO Box 0131, San Francisco, CA 94113 (ryan.greysen@ucsf.edu).

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Statistical analysis: Greysen, Cenzer, Covinsky.

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The Effect of a Physician Partner Program on Physician Efficiency and Patient Satisfaction

Despite the advantages of electronic health records, concerns have been raised about the amount of computer time spent documenting care¹ and its adverse effects on the physician-patient relationship.

Using scribes to reduce physician documentation time has resulted in improved satisfaction among urologists² and increased productivity among emergency department physicians³ and cardiologists.⁴ Although scribes have been used in primary care,⁵ their effects have received little formal evaluation.

We created a new position, a Physician Partner (P²), to facilitate patient care during the office visit and tested this in 2 practices at an academic medical center to determine its effect on physician efficiency and patient satisfaction.

Two P²s, one with a bachelor's degree and the other a licensed vocational nurse, performed scribing and other administrative functions for 3 geriatricians (D.B.R., B.K.K., and 1 other) and 2 general internists (E.G. and 1 other) in a 2:1 ratio (Figure). During the study, the practices used an electronic health record (cView; Orion Health) that relied primarily on scanned paper outpatient notes.

Methods | Two P²s, one with a bachelor's degree and the other a licensed vocational nurse, performed scribing and other administrative functions for 3 geriatricians (D.B.R., B.K.K., and 1 other) and 2 general internists (E.G. and 1 other) in a 2:1 ratio (Figure). During the study, the practices used an electronic health record (cView; Orion Health) that relied primarily on scanned paper outpatient notes.