Functional Impairment and Internet Use among Older Adults: Implications for meaningful use of patient portals

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To the Editor

Medicare is currently dispensing $30 billion in incentives to adapt Electronic Medical Records (EMRs). In 2014, incentives for "meaningful use" of EMRs will require online access by patients and reimbursement penalties up to 5% for non-adoption 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 patients, such chronic illness or functional impairment, on internet use is unknown.

Methods

We used the Health and Retirement Study (http://hrsonline.isr.umich.edu), a nationally-representative sample of community-dwelling seniors (limited to Medicare-eligible, age 65) for cross-sectional analysis of internet use at 2 time-points, 2002 and 2010 (Table). We performed descriptive statistics (chi-square or t-test) and multivariable (MV) regression analysis (modified Poisson) to characterize features of internet use at each time-point.

Results

Overall rates of internet use doubled 2002–2010 (21% vs. 42%); however, changes in use differed by demographic and health characteristics. Overall, groups with the lowest rates showed the largest relative increases 2002–2010: non-Whites (7% to 21%; 200% increase),

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functionally-impaired (10% to 23%), low self-rated health (11% to 25%), age 75, (12% to 26%), non-married (12% to 29%), and any chronic condition (19% to 40%) (Table).

In MV regressions adjusted for demographics and socio-economic status, those over age 75 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 2002 to 2010, there were significant changes in several low-use groups: age 75, non-Whites, and those with poor SRH. There was no significant change, however, for those with functional impairment (Figure).

Comment

Internet use has increased in Medicare-eligible patients from 2002–2010 but remains very low for the frailest seniors. Our results suggest functional ability is more predictive of internet non-use than chronic illness, self-rated health, or age which has important implications for patient portal use. While prior studies of the "digital divide" in healthcare have highlighted demographic and SES differences,[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 patients may be at risk for increasingly dis-engaged and un-coordinated care as more aspects of healthcare move online.

Thus, strategies to reduce the "digital divide" in Medicare patients will also need to address functional limitations. Existing disability software can "read" webpages out loud for the visually-impaired and voice-recognition software may improve internet use for those who cannot easily use 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 web-based interactions with the EMR.[3] While more evidence is needed to validate outcomes for these approaches,[4] it is clear 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.

Meaningful use of EMRs will soon require patient portal use by Medicare patients and more seniors are going online now than ever;[6] however, our findings highlight the need for providers to address functional barriers to internet use and future research to target digital health interventions to the specific needs of the frailest patients in this aging population.

Acknowledgments

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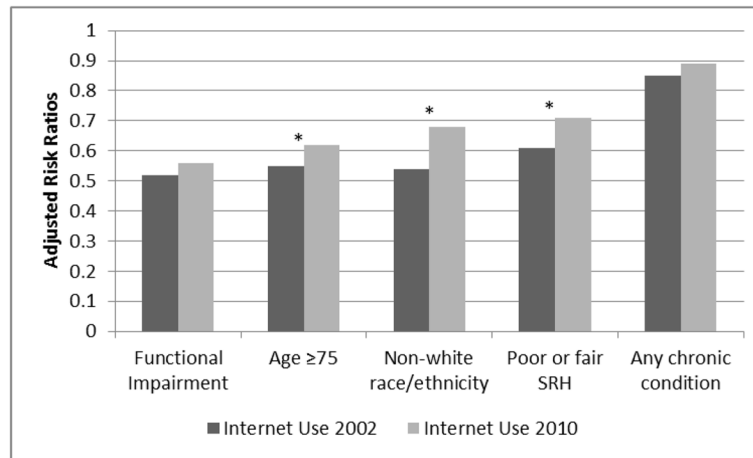
Figure.

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

*p<.05 for change in RR from 2002 to 2010; RR of 1.0 indicates no difference from reference group. Reference groups: 1. no functional impairment; 2. age <75; 3. White race; 4. Good or better SRH

**Risk ratios adjusted for demographics (gender, race, marital status) and socio-economic status (education and net worth).

All analyses weighted for differential probability of selection and the complex sampling design of the HRS.

Table

Demographics and clinical features of seniors as determinants of internet use in 2002 and 2010

Characteristic		Internet Use in 2002 (n=9,340)	Internet Use in 2010 (n=9,315)	Percent increase 2002–10
Overall	(entire sample)	1892 (21%)	3481 (42%)	100%
Demographics	Gender			
	Male	915 (25%)	1562 (46%)	85%
	Female	977 (18%)	1919 (39%)	117%
	Ethnicity			
	White	1767 (23%)	3101 (46%)	100%
	Non-White	125 (7%)	379 (21%)	200%
	Married or Partnered			
	Yes	1438 (28%)	2518 (51%)	84%
	No	453 (12%)	963 (29%)	142%
Age	Range 50–109	Mean 74.6 (±6.9)	Mean 74.6 (±7.3)	
	65–70	882 (32%)	1168 (59%)	84%
	70–75	535 (24%)	1174 (47%)	92%
	75	474 (12%)	1139 (27%)	127%
Health	Any Chronic Condition			
	No	515 (26%)	602 (52%)	102%
	Yes	1377 (19%)	2879 (40%)	107%
Self-Rated Health	Fair or Poor			
	No	1612 (25%)	2938 (47%)	93%
	Yes	279 (11%)	543 (25%)	131%
Functional Status	ADL/IADL Difficulty			
	No	1635 (25%)	2848 (50%)	98%
	Yes	257 (10%)	633 (23%)	134%

[*]
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?"

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ADL = Activities of Daily Living: bathing, toileting, dressing, eating, walking; IADL = Instrumental ADL: shopping, housekeeping, cooking, finances, telephone use, transportation outside the home.