

# Quality Dimensions That Most Concern People With Physical and Sensory Disabilities

Lisa I. Iezzoni, MD, MSc; Roger B. Davis, ScD; Jane Soukup, MSc; Bonnie O'Day, PhD

**Background:** People with physical and sensory disabilities face important challenges in obtaining high-quality health care. We examined whether persons who are blind or have low vision, who are deaf or hard of hearing, or who have mobility impairments or manual dexterity problems are satisfied with the technical and interpersonal aspects of their care.

**Methods:** By using a 1996 nationally representative survey of 16 403 community-dwelling elderly and disabled Medicare beneficiaries, we identified persons with disabling conditions. Adjusted odds ratios (AORs) and 95% confidence intervals (CIs) controlled for demographic characteristics and managed care membership in predicting dissatisfaction with 12 dimensions of care.

**Results:** Of an estimated 33.58 million noninstitutionalized Medicare beneficiaries, 64.1% (an estimated 21.51 million) reported at least 1 potential disability and 29.5% (an estimated 9.89 million) reported more than 1 potential disability. Roughly 98% of people with and without disabili-

ties believed their physicians were competent and well trained. But statistically significantly more people with disabilities reported dissatisfaction with care for 10 of the 12 quality dimensions. Persons reporting any major disability were more likely to be dissatisfied with physicians completely understanding their conditions (AOR, 2.4; 95% CI, 1.9-3.1), physicians completely discussing patients' health problems (AOR, 2.4; 95% CI, 1.9-2.9), physicians answering all patients' questions (AOR, 2.3; 95% CI, 1.7-3.1), and physicians often seeming hurried (AOR, 1.6; 95% CI, 1.4-1.9).

**Conclusions:** Persons with disabilities generally reported positive views of their care, although they were significantly more likely to report poor communication and lack of thorough care. These findings held regardless of the disabling condition. Thoughtful systematic approaches are required to improve communication and to reduce time pressures that might compromise the health care experiences of people with disabilities.

*Arch Intern Med.* 2003;163:2085-2092

From the Division of General Medicine and Primary Care, the Department of Medicine, Harvard Medical School, Beth Israel Deaconess Medical Center, the Charles A. Dana Research Institute, and the Harvard-Thorndike Laboratory, Boston, Mass (Drs Iezzoni and Davis and Ms Soukup); and Cherry Engineering Support Services, Inc, McLean, Va (Dr O'Day). The authors have no relevant financial interest in this article.

**T**HE QUALITY of health care is multidimensional, encompassing multiple technical and interpersonal attributes. Ensuring confidence and comfort with all dimensions is important for everybody seeking health services. However, strategies for improving specific aspects of care could vary for patients with differing sensory and physical abilities. In particular, persons with potentially disabling conditions—people who are blind or have low vision, who are deaf or hard of hearing, or who have impaired mobility—confront special physical and communication challenges within the typical general medical setting.

Facilitating physical access and communication for persons with special sensory and physical requirements necessitates careful forethought, including user-friendly physical spaces; accessible furnishings and equipment; appro-

priate communication strategies, such as braille or large-print educational materials, American Sign Language interpreters, and telecommunication devices; and trained physicians, nurses, and office staff. Nevertheless, despite such mandates as the 1990 Americans with Disabilities Act, persons with disabilities still face numerous physical, communication, and attitudinal barriers within health care settings.<sup>1-7</sup> Overall, people with disabilities are less satisfied with their health care than others.<sup>8</sup>

Administrative, financial, and organizational factors exacerbate negative experiences, as do reduced appointment times and hurried physicians. Although people with disabilities do not necessarily have acute or chronic illnesses, many have narrow margins of health and need more time with their physicians to address complex issues.<sup>9-11</sup> Often, health insurance inadequately covers items or services required by people with disabilities,

such as long-term physical therapy or assistive technologies.<sup>12-17</sup> In these circumstances, discussing options and developing alternative approaches to meet patients' needs may require additional time with clinicians.

Little systematic information exists about how persons with specific disabilities perceive their care. Herein, we look at patients' views of technical and interpersonal dimensions. For persons with disabling conditions, technical quality is important because of patients' frequently complicated medical conditions. Interpersonal quality is salient given potential communication barriers and continuing societal discomfort with disabilities. We use a nationally representative survey of Medicare beneficiaries to examine our hypothesis that persons with potentially disabling conditions perceive more problems with technical and interpersonal quality than do other people.

---

## METHODS

### DATABASE

We examined responses from 16 403 community-dwelling (non-institutionalized) Medicare beneficiaries interviewed in the 1996 Medicare Current Beneficiary Survey (MCBS). Medicare covers almost all elderly persons (those aged  $\geq 65$  years) and people younger than 65 years who have met the Social Security Administration's definitions of disability (unable to work for at least 1 year) and have received disability insurance (Social Security disability insurance) cash payments for 2 years.<sup>18</sup> As described elsewhere,<sup>19,20</sup> the MCBS is an ongoing longitudinal survey of a representative panel of Medicare beneficiaries, with an oversampling of persons younger than 65 years ( $n=2378$  [14.5%]) and of persons 85 years and older ( $n=2072$  [12.6%]). We eliminated 106 persons (0.6%) receiving Medicare under the end-stage renal disease entitlement, including the only respondents younger than 18 years ( $n=2$ ).

Persons typically remain impaneled in the MCBS for 4 years, with the sample replenished annually (eg, to replace respondents who died). The MCBS interviews panel members or their proxies in person 3 times yearly, tracking participants wherever they reside and using 2 types of surveys: (1) computer-assisted community questionnaires for persons living in the community and (2) facility questionnaires for respondents in long-term care or institutional settings. With the facility questionnaire, interviewers query administrators or designated staff, not the Medicare beneficiary, and, therefore, do not address respondents' perceptions of care. We used results only from the MCBS community survey, which included questions about demographic characteristics, health status and functioning, perceptions of care, and usual source of care. We considered self- and proxy-reported responses. Among persons younger than 65 years, proxies supplied 22.4% of the responses; 9.0% of persons 65 years and older had proxies.

All findings used MCBS sampling weights to produce nationally representative Medicare population estimates. Our analyses used SAS-callable SUDAAN statistical software, version 7.5 (Research Triangle Institute, Research Triangle Park, NC).

### DISABILITY INDICATORS

The MCBS offers several ways to identify persons with disabilities. The most obvious is age. At some point, Medicare beneficiaries younger than 65 years (except those with end-stage renal disease) have met the Social Security Administration's employment-related definition of disabled and have received Social Security disability insurance.<sup>18</sup> This administrative definition, however, may not reflect functional abilities over time

(ie, in 1996, when interviewed by the MCBS).<sup>21-23</sup> The MCBS asks whether specific conditions (eg, heart or lung problems, cancer, mental retardation, or psychiatric disorders) originally caused Medicare eligibility.<sup>24</sup> Again, the functional implications of many of these conditions in 1996 are unclear. To identify disabilities, other investigators<sup>20,24-26</sup> have used perceived health status (excellent, fair, or poor) or difficulties performing activities of daily living or instrumental activities of daily living. These general measures do not indicate specific sensory or physical limitations.

Annually, the MCBS asks about specific sensory and physical abilities.<sup>19</sup> We used these responses to identify 5 categories of potential disabilities pertaining to vision, hearing, walking, reaching overhead, and grasping and writing (algorithm available from the authors). For each category, we created 2 levels based on answers about the extent of difficulties, assigning people to the most severe level for which they qualified.

We also created 2 summary measures, each with 3 groups (no difficulty, any minor or moderate difficulty, and any major difficulty), and 0, 1, or 2 or more disabling conditions. These summary measures produced similar results, and we report findings using the first approach.

### PERCEPTIONS OF CARE

The September to December round of the MCBS includes supplemental surveys on experiences with and perceptions of respondents' usual source of care. The questionnaire asks about 6 aspects of physicians' technical quality (carefulness, competence, understanding of medical history, understanding of clinical conditions, completeness, and patients' confidence in their physician) and 6 dimensions of interpersonal quality (physician seems hurried, physician does not explain, physician acts as if he or she is doing the patient a favor, physician informs the patient completely, physician answers all questions, and whether patients depend on physicians to feel better). Interviewees were asked to respond to 12 statements reflecting these dimensions, with the following response options: strongly agree, agree, disagree, and strongly disagree.

We grouped agree and strongly agree responses (and likewise disagree and strongly disagree responses). The directionality of the 12 statements varied. Agreement sometimes suggested poor experiences and sometimes good care. We modeled responses with negative connotations. One statement ("depends on doctor in order to feel better both physically and emotionally") offers mixed messages: neither agreement nor disagreement necessarily indicates poor experiences, simply different views of physicians' roles. For this statement, we model disagreement.

### MANAGED CARE MEMBERSHIP

People enrolled in managed care might have different experiences and satisfaction levels than beneficiaries enrolled in traditional Medicare.<sup>27,28</sup> In 1996, the MCBS added a special supplement of persons enrolled in "risk" health maintenance organizations (HMOs), 22.9% of our sample. In addition, Medicare administrative records indicated that 22.7% of MCBS respondents had been enrolled in an HMO for at least part of the previous calendar year. About 2.6% of persons had discordant information about HMO participation. We designated persons as having managed care membership if they were in the HMO supplement or if Medicare administrative records indicated HMO membership during the prior year.

### ANALYSES

We used the direct standardization method of SUDAAN statistical software to adjust for age, using 7 groups (18-44, 45-64, 65-69, 70-74, 75-79, 80-84, and  $\geq 85$  years). For each disability cat-

**Table 1. Population Estimates of Disabling Conditions and of Having a Specific Physician by Age\***

Disabling Condition	All (N = 33.58)†	Age‡		Has a Specific Physician‡	
		<65 y (n = 3.67)	≥65 y (n = 29.91)	Those Aged <65 y	Those Aged ≥65 y
Vision					
Blind	0.21 (0.6)	0.04 (1.2)	0.17 (0.6)	65.4	94.0
Very low vision	2.88 (8.6)	0.45 (12.3)	2.43 (8.1)	84.9	91.3
Hearing					
Deaf or very hard of hearing	2.43 (7.2)	0.22 (6.1)	2.20 (7.4)	86.8	88.8
Hard of hearing	12.41 (37.0)	0.91 (24.9)	11.50 (38.5)	81.8	91.8
Walking					
Major difficulties	4.97 (14.8)	0.85 (23.0)	4.12 (13.8)	88.5	92.4
Moderate difficulties	5.17 (15.4)	0.97 (26.5)	4.20 (14.1)	84.1	90.0
Reaching overhead					
Major difficulties	2.94 (8.8)	0.73 (19.4)	2.24 (7.5)	85.9	91.4
Moderate difficulties	2.60 (7.8)	0.51 (13.5)	2.10 (7.0)	86.6	92.0
Grasping and writing					
Major difficulties	2.06 (6.1)	0.45 (12.1)	1.61 (5.4)	90.3	92.2
Moderate difficulties	2.50 (7.5)	0.54 (14.8)	1.96 (6.6)	84.9	91.7

\*Data are from the 1996 Medicare Current Beneficiary Survey.

†Data are given as population estimates in millions (population percentages). The population estimates were reweighted for Medicare beneficiaries, excluding those qualifying because of end-stage renal disease.

‡Data are given as percentage of persons, among those who report having a specific physician at a usual source of care. For all beneficiaries regardless of the presence of a disabling condition, 81.3% younger than 65 years and 89.8% 65 years and older had a specific physician.

egory and each quality dimension, we produced 2 multivariable logistic regression models predicting negative perceptions of care based on the following: (1) age group, sex, and presence and extent of the disabling condition; and (2) age group, sex, disabling condition, race, ethnicity, residence location (urban vs rural), educational level, annual household income (<\$25 000 and ≥\$25 000), and managed care participation. The second model, thus, adjusts for other patient and organizational attributes that could affect perceptions of care to isolate the contributions of disability. We report adjusted odds ratios (AORs) with 95% confidence intervals.

We also produced separate multivariable models for persons 65 years and older and those younger than 65 years (ie, persons receiving Social Security disability insurance). We failed to find consistent important numerical differences by these broad age groups, although in some instances a nonsignificant trend suggested that younger persons were less satisfied than older persons. Herein, we report the results from the models combining elderly and younger respondents. Only 117 MCBS respondents were blind; results from this group are unstable, rarely reaching statistical significance.

We used the Cronbach  $\alpha$  coefficient to assess whether the directionality of responses agreed across sets of questions.

## RESULTS

Of an estimated 33.58 million noninstitutionalized Medicare beneficiaries, 64.1% (an estimated 21.51 million) reported at least 1 of 5 potentially disabling conditions (**Table 1**) and 29.5% (an estimated 9.89 million) reported more than 1 potentially disabling condition. Among people younger than 65 years (10.9% of noninstitutionalized Medicare beneficiaries, or 3.67 million persons), 73.1% (an estimated 2.68 million) noted at least 1 of the 5 disabling conditions and 45.4% had more than 1 condition.

Across the 5 disability categories, from 93.3% to 96.7% of persons 65 years and older reported having a usual source of care. At that usual care source, 88.8% to 94.0% saw a specific physician (Table 1). Among per-

sons younger than 65 years, 4.5% to 8.8% did not have a usual source of care, with roughly 34.6% of blind persons lacking a usual care source. Younger Medicare beneficiaries were less likely to have specific physicians at their usual care site (Table 1).

Among persons 65 years and older, those with more severe impairments were older, on average, than those with less severe limitations. After adjusting for age, higher percentages of women than men reported all disabling conditions, except hearing difficulties. After adjusting for age and sex, higher percentages of black than white persons reported all disabling conditions, except hearing difficulties. Adjusted percentages for Hispanic persons and people of other races varied by disabling condition. Persons with disabling conditions were more likely than others to have only high school educations and annual incomes of less than \$25 000.

## PERCEPTIONS OF TECHNICAL AND INTERPERSONAL CARE

**Table 2** and **Table 3** show percentages of persons (adjusted for age and sex) reporting negative views of their care for those without the specific disability or with only minor difficulties, those with moderate difficulties, and those with major limitations. Among the technical quality dimensions across all disabilities (Table 2), respondents most commonly reported that they “often have health problems that should be discussed but are not,” with 12.1% to 15.0% of persons with major disabilities expressing this view, significantly higher than for persons without disabilities ( $P < .001$ ), except for the vision category. The next most common concerns were generally that physicians are not “very careful to check everything when examining [them]” and do not have “a complete understanding of the things that are wrong with [them],” cited by 7.0% to 11.0% of persons with major

**Table 2. Those Concerned About the Technical Quality of Care Provided by Their Usual Physician for a Disabling Condition\***

Disabling Condition	Aspect of Technical Quality†					
	Careful	Competent	History	Understanding	Complete	Confidence
Vision						
No or minor difficulty	5.8	0.9	3.8	5.3	8.0	4.9
Very low vision	10.4‡	2.1§	5.2	8.9‡	14.2‡	7.8‡
Blind	8.8	1.0	3.7	11.0	12.1	9.3
Hearing						
No or minor difficulty	5.5	0.9	3.4	4.9	7.7	4.4
Hard of hearing	7.0§	1.2	4.7	6.8	9.4§	6.2‡
Deaf or very hard of hearing	9.0‡	1.5	4.6	7.0	13.5‡	7.7§
Walking						
No or minor difficulty	5.4	0.9	3.4	4.7	7.3	4.4
Moderate difficulty	8.0‡	1.4	4.7	7.2‡	9.9‡	5.9
Major difficulty	8.6‡	1.5	5.4‡	8.6‡	14.2‡	7.9‡
Reaching overhead						
No or minor difficulty	5.8	0.8	3.7	5.0	7.6	4.6
Moderate difficulty	7.9§	2.0§	4.2	7.4§	14.1‡	6.7
Major difficulty	9.1‡	1.5	6.5‡	9.5‡	13.3‡	8.4‡
Grasping and writing						
No or minor difficulty	5.9	0.9	3.7	5.3	7.8	4.8
Moderate difficulty	8.4	1.4	4.3	5.8	12.5‡	5.3
Major difficulty	9.3§	1.7	6.8‡	9.6‡	15.0‡	9.1‡
Any of the conditions listed						
No difficulty	4.1	0.7	2.5	3.5	6.0	3.5
Any minor or moderate difficulty	6.9‡	1.0	4.1§	5.7‡	8.5‡	5.2§
Any major difficulty	8.2‡	1.4§	5.4‡	8.1‡	12.8‡	7.4‡

\*Data are given as adjusted (reweighted) population percentages. Values were adjusted by age group (18-44, 45-64, 65-69, 70-74, 75-79, 80-84, and ≥85 years) and sex. Data are from the 1996 Medicare Current Beneficiary Survey.

†Careful indicates “doctor is very careful to check everything when examining you”; competent, “doctor is competent and well trained”; history, “doctor has a good understanding of your medical history”; understanding, “doctor has a complete understanding of the things that are wrong with you”; complete, “often have health problems that should be discussed but are not”; and confidence, “has great confidence in doctor.”

‡ $P < .001$  vs persons with no or minor difficulties.

§ $P < .01$  vs persons with no or minor difficulties.

|| $P \leq .05$  vs persons with no or minor difficulties.

limitations. Few people reported problems with other technical dimensions of care, with more than 90% saying they have “great confidence in [their] doctor.”

Interpersonal quality seemed more problematic than technical quality (Table 3). Respondents most commonly reported that the “doctor often seems to be in a hurry,” with 15.8% to 24.1% of persons with major disabilities noting this (vs <11.6% of those without disabilities). The next most frequent concern was that the “doctor often does not explain medical problems,” expressed by 12.9% to 16.7% of those with major limitations. Regardless of disability, more than 85% of persons do not rely on their physician “in order to feel better both physically and emotionally.”

We tested whether responses to the 6 interpersonal quality questions pointed in the same direction (negative vs positive views). The Cronbach  $\alpha$  for these questions exceeded .85 for all disability categories; persons dissatisfied with one interpersonal dimension tended strongly to be dissatisfied with other dimensions.

#### DISABILITY AND PERCEPTIONS OF CARE

**Table 4** and **Table 5** show the AORs of reporting concerns about technical and interpersonal dimensions of care, after controlling for demographic characteristics and HMO enrollment. We did not find statistically signifi-

cant and consistent associations between satisfaction and basic demographic characteristics (age <65 or ≥65 years, sex, race, ethnicity, educational level, income, and urban vs rural residence) across the dimensions of care and disability groups.

Adjusted odds ratios were generally statistically significant for all disability categories for all 12 dimensions of care with 2 exceptions: perceptions of competence and whether people rely on their physicians to feel better. Although the AORs tended to be somewhat higher for interpersonal than technical dimensions, persons with disabilities seemed much more concerned than others about both broad aspects care. Adjusted odds ratios were generally more significant for the 3 disabilities relating to impaired mobility compared with the vision and hearing categories, but all 5 disability groups reported problems.

We considered whether proxy respondent status affected perceptions of care by adding proxy status to our multivariable regression models. Proxy respondent status rarely reached statistical significance, although we found a trend toward proxies reporting more negative views of care. Even these trends, however, varied across dimensions of care and disability groups.

Persons enrolled in HMOs reported significantly more problems for all dimensions of care except for physician competence and whether physicians seem hur-

**Table 3. Those Concerned About the Interpersonal Quality of Care Provided by Their Usual Physician for a Disabling Condition\***

Disabling Condition	Aspect of Interpersonal Quality†					
	Hurry	Explains	Favor	Informs	Answers	Feel Better
<b>Vision</b>						
No or minor difficulty	14.2	9.3	5.8	6.9	3.0	14.0
Very low vision	18.3‡	14.2‡	9.8‡	10.2‡	6.4‡	13.1
Blind	24.1	16.4	11.3	6.4	11.4§	20.4§
<b>Hearing</b>						
No or minor difficulty	13.1	8.9	5.4	6.7	3.2	14.2
Hard of hearing	16.7‡	10.7	6.9	8.0§	3.5	14.2
Deaf or very hard of hearing	18.7‡	12.9§	9.3‡	9.6	4.8§	12.6
<b>Walking</b>						
No or minor difficulty	13.8	8.4	5.4	6.1	2.7	14.4
Moderate difficulty	16.1§	11.3‡	7.0§	8.9‡	4.7‡	14.0
Major difficulty	17.9‡	14.7‡	8.5‡	11.0‡	6.1‡	12.6
<b>Reaching overhead</b>						
No or minor difficulty	14.0	8.8	5.5	6.5	2.9	14.3
Moderate difficulty	17.2	12.6‡	8.0	9.4‡	4.5	13.8
Major difficulty	17.9‡	15.3‡	9.2‡	11.1‡	6.3‡	12.5
<b>Grasping and writing</b>						
No or minor difficulty	14.2	9.0	5.6	6.7	3.1	14.2
Moderate difficulty	18.6	12.5‡	8.2‡	8.8§	4.7§	12.8
Major difficulty	15.8	16.7‡	8.8‡	11.6‡	5.9‡	14.1
<b>Any of the conditions listed</b>						
No difficulty	11.6	7.1	4.7	5.4	2.5	14.7
Any minor or moderate difficulty	15.7‡	9.5‡	6.1	6.8§	3.2	14.4
Any major difficulty	17.1‡	13.9‡	8.2‡	10.0‡	5.2‡	12.9

\*Data are given as adjusted (reweighted) population percentages. Values were adjusted by age group (18-44, 45-64, 65-69, 70-74, 75-79, 80-84, and ≥85 years) and sex. Data are from the 1996 Medicare Current Beneficiary Survey.

†Hurry indicates "doctor often seems to be in a hurry"; explains, "doctor often does not explain medical problems"; favor, "doctor often acts as though he/she was doing you a favor by talking to you"; informs, "doctor tells [you] all [you] want to know about your condition and treatment"; answers, "doctor answers all your questions"; and feel better, "depends on doctor in order to feel better both physically and emotionally" (the table presents the percentage of persons who disagree or strongly disagree with this statement).

‡ $P < .001$  vs persons with no or minor difficulties.

§ $P \leq .05$  vs persons with no or minor difficulties.

|| $P < .01$  vs persons with no or minor difficulties.

ried. For all 12 quality dimensions, the AORs associated with HMO membership were similar across the 5 disability categories.

#### COMMENT

Most persons with disabilities were satisfied with their care and equally likely as those without disabilities to perceive their physicians as competent and well trained. The most common concern was that physicians seem hurried, articulated by roughly one fifth of respondents, regardless of disability and HMO membership. Nevertheless, even after accounting for various factors, people with disabilities were significantly more likely than those without disabilities to report other problems, including incomplete understanding of clinical histories and conditions, lack of thoroughness, and inadequate communication. These findings held across disabling conditions. People with disabilities were much less likely than others to have confidence in their physicians.

Given the breadth of quality concerns, devising strategies to improve the experiences of patients with disabilities requires careful thought. Two threads possibly linking the various concerns are communication and time. Although people with disabilities believe their physicians are competent, they are simultaneously less satis-

fied with their physicians' thoroughness and communications. These latter issues may not reflect reservations about physicians' technical competence, but instead worries that physicians do not take the time required to understand fully patients' clinical concerns and communicate effectively.

Although many patients, regardless of disability, viewed physicians as hurried, persons with disabilities may face special risks from time constraints for 3 reasons: complex underlying medical conditions; extra knowledge, skill, sensitivity, or time required because of the disabling condition itself; and discordant perceptions and expectations between physicians and patients, especially about the experience of disability. Examples include informing blind persons about actions during the physical examination or discussing treatment plans with a deaf person through an American Sign Language interpreter. Positioning people with extensive mobility limitations on examination tables generally takes more time than required for other patients. Physicians may focus on the disabling conditions when patients prefer to address wellness care or other clinical concerns.<sup>29,30</sup>

The MCBS has important limitations for our purpose. We cannot assess whether specific accommodations may resolve dissatisfaction articulated by respondents. All functional deficits are self-reported, raising

**Table 4. Data for Being Concerned About the Technical Quality of Care Provided by a Usual Physician for a Disabling Condition\***

Disabling Condition	Aspect of Technical Quality†					
	Careful	Competent	History	Understanding	Complete	Confidence
Vision						
Very low vision	1.9 (1.5-2.5)‡	2.1 (1.2-3.6)§	1.4 (1.0-1.9)	1.7 (1.3-2.1)‡	1.8 (1.5-2.1)‡	1.7 (1.3-2.2)‡
Blind	1.4 (0.6-3.1)	1.3 (0.2-9.6)	0.6 (0.1-2.7)	2.0 (0.8-4.5)	1.3 (0.6-2.7)	1.5 (0.6-3.9)
Hearing						
Hard of hearing	1.2 (1.0-1.4)	1.3 (0.8-2.1)	1.3 (1.0-1.6)	1.3 (1.0-1.6)	1.2 (1.1-1.4)§	1.4 (1.2-1.8)‡
Deaf or very hard of hearing	1.8 (1.3-2.4)‡	1.5 (0.7-3.1)	1.3 (0.8-1.9)	1.3 (0.9-1.8)	1.7 (1.4-2.2)‡	1.7 (1.2-2.4)‡
Walking						
Moderate difficulty	1.5 (1.2-1.9)‡	1.6 (0.9-2.9)	1.4 (1.1-2.0)§	1.7 (1.3-2.1)‡	1.4 (1.2-1.7)‡	1.3 (1.0-1.8)
Major difficulty	1.7 (1.3-2.1)‡	1.5 (0.9-2.5)	1.6 (1.2-2.1)‡	1.9 (1.5-2.4)‡	2.1 (1.6-2.6)‡	1.9 (1.5-2.5)‡
Reaching overhead						
Moderate difficulty	1.4 (1.1-1.8)§	2.0 (1.1-3.7)	1.1 (0.8-1.6)	1.6 (1.2-2.1)§	2.1 (1.7-2.7)‡	1.4 (1.0-2.0)
Major difficulty	1.7 (1.4-2.2)‡	1.6 (0.9-2.8)	1.8 (1.4-2.4)‡	1.9 (1.5-2.5)‡	1.9 (1.6-2.2)‡	1.9 (1.4-2.5)‡
Grasping and writing						
Moderate difficulty	1.4 (1.1-1.9)§	1.2 (0.6-2.5)	1.0 (0.6-1.7)	1.1 (0.8-1.5)	1.7 (1.3-2.1)‡	1.0 (0.7-1.5)
Major difficulty	1.6 (1.2-2.1)‡	1.7 (1.0-2.9)	2.0 (1.5-2.7)‡	1.9 (1.4-2.5)‡	2.1 (1.6-2.6)‡	2.0 (1.4-2.7)‡
Any of the conditions listed						
Any minor or moderate difficulty	1.6 (1.3-2.0)‡	1.6 (0.9-3.1)	1.5 (1.1-2.0)§	1.6 (1.3-2.1)‡	1.5 (1.2-1.8)‡	1.5 (1.1-1.9)§
Any major difficulty	2.2 (1.7-2.8)‡	2.0 (1.1-3.9)	2.0 (1.5-2.7)‡	2.4 (1.9-3.1)‡	2.4 (1.9-2.9)‡	2.3 (1.7-3.0)‡

\*Data are given as adjusted odds ratios (95% confidence intervals). The odds ratios were adjusted by age group, sex, race/ethnicity, urban vs rural residence, educational level, income, health maintenance organization membership, and disabling condition. Data are from the 1996 Medicare Current Beneficiary Survey.

†Aspects are defined in the second footnote to Table 2.

‡ $P < .001$ .

§ $P < .01$ .

|| $P \leq .05$ .

**Table 5. Data for Being Concerned About the Interpersonal Quality of Care Provided by a Usual Physician for a Disabling Condition\***

Disabling Condition	Aspect of Interpersonal Quality†					
	Hurry	Explains	Favor	Informs	Answers	Feel Better
Vision						
Very low vision	1.4 (1.2-1.6)‡	1.5 (1.3-1.8)‡	1.6 (1.3-2.0)‡	1.5 (1.2-1.9)‡	2.0 (1.5-2.6)‡	1.0 (0.8-1.2)
Blind	1.8 (1.1-3.1)§	1.3 (0.6-2.7)	1.7 (0.7-3.9)	1.1 (0.5-2.6)	3.1 (1.2-7.9)§	1.8 (1.1-3.1)§
Hearing						
Hard of hearing	1.3 (1.1-1.4)‡	1.2 (1.1-1.4)	1.3 (1.1-1.6)	1.2 (1.0-1.4)§	1.0 (0.8-1.3)	1.0 (0.9-1.1)
Deaf or very hard of hearing	1.4 (1.2-1.7)‡	1.4 (1.0-1.8)§	1.6 (1.2-2.1)‡	1.5 (1.1-1.9)	1.5 (1.1-2.0)§	1.1 (0.9-1.3)
Walking						
Moderate difficulty	1.2 (1.0-1.4)§	1.4 (1.2-1.7)‡	1.3 (1.0-1.7)§	1.6 (1.3-1.9)‡	1.9 (1.4-2.5)‡	1.0 (0.8-1.2)
Major difficulty	1.4 (1.2-1.7)‡	1.8 (1.5-2.3)‡	1.5 (1.1-1.9)	1.9 (1.6-2.3)‡	2.4 (1.9-3.1)‡	1.0 (0.8-1.2)
Reaching overhead						
Moderate difficulty	1.4 (1.1-1.7)	1.6 (1.2-2.0)‡	1.4 (1.0-2.0)§	1.5 (1.2-1.8)‡	1.6 (1.2-2.2)§	1.0 (0.8-1.2)
Major difficulty	1.5 (1.2-1.7)‡	1.9 (1.6-2.4)‡	1.7 (1.3-2.1)‡	1.9 (1.6-2.3)‡	2.2 (1.6-3.0)‡	1.0 (0.8-1.1)
Grasping and writing						
Moderate difficulty	1.3 (1.1-1.6)	1.4 (1.2-1.7)‡	1.4 (1.0-1.7)§	1.3 (1.0-1.8)§	1.4 (1.0-2.0)§	0.9 (0.7-1.1)
Major difficulty	1.2 (1.0-1.5)	2.0 (1.6-2.6)‡	1.6 (1.2-2.1)	1.7 (1.4-2.1)‡	1.9 (1.4-2.6)‡	1.1 (0.9-1.4)
Any of the conditions listed						
Any minor or moderate difficulty	1.4 (1.2-1.6)‡	1.4 (1.2-1.6)‡	1.3 (1.0-1.6)§	1.3 (1.0-1.5)§	1.3 (1.0-1.8)	1.0 (0.8-1.1)
Any major difficulty	1.6 (1.4-1.9)‡	2.1 (1.7-2.6)‡	1.7 (1.4-2.1)‡	2.0 (1.6-2.4)‡	2.3 (1.7-3.1)‡	1.0 (0.8-1.2)

\*Data are given as adjusted odds ratios (95% confidence intervals). The odds ratios were adjusted by age group, sex, race/ethnicity, urban vs rural residence, educational level, income, health maintenance organization membership, and disabling condition. Data are from the 1996 Medicare Current Beneficiary Survey.

†Aspects are defined in the second footnote to Table 3.

‡ $P < .001$ .

§ $P \leq .05$ .

|| $P < .01$ .

questions about their validity.<sup>31,32</sup> The use of proxy respondents further complicates the interpretation of findings, although research<sup>33-38</sup> offers contradictory evidence about the direction of potential bias. The MCBS does not indicate the extent of respondents' acute and chronic underlying disease nor how long they spent with

physicians during office visits. Therefore, we cannot directly test the hypothesis that disabled patients are especially susceptible to time constraints. Finally, the MCBS does not identify instances during which effective communication is impeded by stigmatizing attitudes about disability among physicians.<sup>39-44</sup>

Other studies<sup>45-47</sup> suggest that satisfaction with care relates strongly to time spent: patients with longer visits report greater satisfaction. Persons with substantial health problems generally are less satisfied with medical care than healthier individuals, possibly because they believe their needs are not fully met.<sup>48,49</sup> Whether visit lengths have diminished in recent years and the relationship between time spent and managed care insurance remain controversial. Nevertheless, most agree that the average office visit lasts less than 20 minutes.<sup>50-52</sup>

Anecdotal reports<sup>53</sup> raise questions about how much more time might be needed to accommodate persons with sensory or physical disabilities. An internist, for example, described a routine office visit with a middle-aged woman with multiple sclerosis.<sup>4</sup> The internist and her assistants tried unsuccessfully to lift the woman onto the high unadjustable examining table; the patient's daughter, familiar with transferring her mother, performed the maneuver. Valuable time, thus, was expended simply positioning the patient before more meaningful interactions could occur. The various interchanges that build patient-physician relationships, confidence, and trust—and may be valued more highly than technical competence<sup>54</sup>—must await these most basic accommodations. Inaccessible facilities also implicitly suggest that the needs of persons with disabling conditions have not been adequately addressed within a practice.

Our results support the recommendations of Wagner and colleagues,<sup>55,56</sup> who examined the research evidence from the United States and Europe about improving health care outcomes for persons with chronic conditions. Providing complete information was 1 of 4 essential elements when designing systems of care, as were practice redesign, patient education, and expert systems (eg, physician education and consultations). Other investigators<sup>57-59</sup> have found that communication, respect, and involvement in decision making are especially valued by patients. Patients who report that their physicians “do not always take enough time to answer questions” or “do not provide sufficient information” are likely to consider changing physicians.<sup>60(p37)</sup> Perceptions of stigmatizing attitudes about disabling conditions<sup>39-44</sup> certainly could compound these problems.

Thoughtful systematic approaches are required to improve accommodations for communicating with blind and deaf persons and to reduce the time demands and physical efforts of people with impaired mobility (eg, moving around offices, undressing and dressing, and positioning on examination tables). These concerns largely reflect the structure of the health care system, the often-neglected branch of the structure-process-outcome quality triad articulated by the late Avedis Donabedian.<sup>61,62</sup> Although analysts frequently reduce structure to “bricks and mortar,” Donabedian's original formulation reached more broadly, encompassing physician characteristics, their “tools and resources,” and “the physical and organizational settings in which they work. The concept of structure includes the human, physical, and financial resources that are needed to provide medical care.”<sup>61(p81)</sup>

For people with disabilities, many and varied structural accommodations are important to ensure delivery

of the highest-quality care. Some do involve bricks and mortar (eg, ramps, widened doorways, and automatically adjustable examination tables), while others represent essential tools (eg, large-print and braille written materials and readily available sign language interpreters), and yet others reflect policies (eg, scheduling longer appointments). Strategies may reach beyond individual practices to the broader health care system, such as paying more for routine visits of persons needing interpreters or special physical accommodations.

Additional investigations must explore why people with disabilities are generally less satisfied with their care than others. Solutions that improve care for persons with disabilities are likely to improve experiences for everybody.<sup>63</sup>

Accepted for publication November 21, 2002.

This study was supported by grant RO1 HS10223-03 from the Agency for Healthcare Research and Quality, Rockville, Md.

Corresponding author: Lisa I. Iezzoni, MD, MSc, Division of General Medicine and Primary Care, Department of Medicine, Beth Israel Deaconess Medical Center, East Campus RO-137, 330 Brookline Ave, Boston, MA 02215.

## REFERENCES

1. President's Advisory Commission on Consumer Protection and Quality in the Health Care Industry. *Consumer Bill of Rights and Responsibilities*. Washington, DC: Advisory Commission on Consumer Protection and Quality in the Health Care Industry; 1997:45-49.
2. US Department of Health and Human Services. *Healthy People 2010*. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health. Washington, DC: US Government Printing Office; 2000.
3. Thierry JM. Promoting the health and wellness of women with disabilities. *J Womens Health*. 1998;7:505-507.
4. Andriacchi R. Primary care for persons with disabilities: the internal medicine perspective. *Am J Phys Med Rehabil*. 1997;76(suppl):S17-S20.
5. Grabois EW, Nosek MA, Rossi D. Accessibility of primary care physicians' offices for people with disabilities. *Arch Fam Med*. 1999;8:44-51.
6. Sanchez J, Byfield G, Brown TT, LaFavor K, Murphy D, Laud P. Perceived accessibility versus actual physical accessibility of healthcare facilities. *Rehabil Nurs*. 2000;25:6-9.
7. Rose KA. A survey of the accessibility of chiropractic clinics to the disabled. *J Manipulative Physiol Ther*. 1999;22:523-529.
8. Harris Interactive Inc. *2000 National Organization on Disability/Harris Survey of Americans With Disabilities*. New York, NY: Harris Interactive Inc; 2000.
9. Burns TJ, Batavia AI, Smith QW, DeJong G. Primary health care needs of persons with physical disabilities: what are the research and service priorities? *Arch Phys Med Rehabil*. 1990;71:138-143.
10. Gans BM, Mann NR, Becker BE. Delivery of primary care to the physically challenged. *Arch Phys Med Rehabil*. 1993;74(12 Spec No.):S15-S19.
11. Bockenek WL, Mann N, Lanig IS, DeJong G, Beatty LA. Primary care for persons with disabilities. In: DeLisa JA, Gans BM, eds. *Rehabilitation Medicine: Principles and Practice*. Philadelphia, Pa: Lippincott-Raven Publishers; 1998:905-928.
12. Cassel CK, Besdine RW, Siegel LC. Restructuring Medicare for the next century: what will beneficiaries really need? *Health Aff (Millwood)*. 1999;18:118-131.
13. LaPlante MP, Hendershot GE, Moss AJ. Assistive technology devices and home accessibility features: prevalence, payment, need, and trends. *Adv Data*. 1992; 217:1-11.
14. Iezzoni LI. Clinical crossroads: a 44-year-old woman with difficulty walking. *JAMA*. 2000;284:2632-2639.
15. Foote SM, Hogan C. Disability profile and health care costs of Medicare beneficiaries under age sixty-five. *Health Aff (Millwood)*. 2001;20:242-253.
16. Robinson JC. *The Corporate Practice of Medicine: Competition and Innovation in Health Care*. Berkeley: University of California Press; 1999.
17. Pelka F. *The ABC-CLIO Companion to the Disability Rights Movement*. Santa Barbara, Calif: ABC-CLIO Inc; 1997.

18. Office of Disability, Social Security Administration. *Disability Evaluation Under Social Security*. Washington, DC: Social Security Administration; 1998. SSA publication 64-039.
19. Adler GS. A profile of the Medicare Current Beneficiary Survey. *Health Care Financ Rev*. 1994;15:153-163.
20. Adler GS. Medicare beneficiaries rate their medical care: new data from the MCBS (Medicare Current Beneficiary Survey). *Health Care Financ Rev*. 1995;16:175-187.
21. US General Accounting Office. *Social Security Disability: SSA Making Progress in Conducting Continuing Disability Reviews*. Washington, DC: US General Accounting Office; 1998. Publication GAO/HEHS-98-198.
22. Yelin EH. The recent history and immediate future of employment among persons with disabilities. In: West J, ed. *The Americans With Disabilities Act: From Policy to Practice*. New York, NY: Milbank Memorial Fund; 1991:129-149.
23. Wunderlich GS, ed. *Measuring Functional Capacity and Work Requirements: Summary of a Workshop*. Washington, DC: National Academy Press; 1999.
24. Rosenbach ML. Access and satisfaction within the disabled Medicare population. *Health Care Financ Rev*. 1995;17:147-167.
25. Rosenbach ML, Adamache KW, Khandker RK. Variations in Medicare access and satisfaction by health status: 1991-93. *Health Care Financ Rev*. 1995;17:29-49.
26. Chan L, Doctor JN, MacLehose RF, et al. Do Medicare patients with disabilities receive preventive services? a population-based study. *Arch Phys Med Rehabil*. 1999;80:642-646.
27. Gold M, Nelson L, Brown R, Ciemnecki A, Aizer A, Docteur E. Disabled Medicare beneficiaries in HMOs. *Health Aff (Millwood)*. 1997;16:149-162.
28. Ware JE Jr, Bayliss MS, Rogers WH, Kosinski M, Tarlov AR. Differences in 4-year health outcomes for elderly and poor, chronically ill patients treated in HMO and fee-for-service systems: results from the Medical Outcomes Study. *JAMA*. 1996;276:1039-1047.
29. Stuifbergen AK, Becker H, Sands D. Barriers to health promotion for individuals with disabilities. *Fam Community Health*. 1990;13:11-22.
30. Stuifbergen AK, Becker HA, Ingalsbe K, Sands D. Perceptions of health among adults with disabilities. *Health Values*. 1990;14:18-26.
31. Kelly-Hayes M, Jette AM, Wolf PA, D'Agostino RB, Odell PM. Functional limitations and disability among elders in the Framingham study. *Am J Public Health*. 1992;82:841-845.
32. Mathiowetz NA, Lair TJ. Getting better? change or error in the measurement of functional limitations. *J Econ Soc Meas*. 1994;20:237-262.
33. Iezzoni LI, McCarthy EP, Davis RB, Siebens H. Mobility problems and perceptions of disability in self- and proxy-respondents. *Med Care*. 2000;38:868-876.
34. Todorov A, Kirchner C. Bias in proxies' report of disability: data from the National Health Interview Survey on disability. *Am J Public Health*. 2000;90:1248-1253.
35. Epstein AM, Hall JA, Tognetti J, Son LH, Conant L Jr. Using proxies to evaluate quality of life: can they provide valid information about patients' health status and satisfaction with medical care? *Med Care*. 1989;27(suppl):S91-S98.
36. Magaziner J, Simonsick EM, Kashner TM, Hebel JR. Patient-proxy response comparability on measures of patient health and functional status. *J Clin Epidemiol*. 1988;41:1065-1074.
37. Rothman ML, Hedrick SC, Bulcroft KA, Hickam DH, Rubenstein LZ. The validity of proxy-generated scores as measures of patient health status. *Med Care*. 1991;29:115-124.
38. Dorevitch MI, Cossar RM, Bailey FJ, et al. The accuracy of self and informant ratings of physical functional capacity in the elderly. *J Clin Epidemiol*. 1992;45:791-798.
39. Zola IK. *Missing Pieces: A Chronicle of Living With a Disability*. Philadelphia, Pa: Temple University Press; 1982.
40. Saxton MS, Howe F, eds. *With Wings*. New York: Feminist Press, City University of New York; 1987.
41. Murphy RF. *The Body Silent*. New York, NY: WW Norton Co Inc; 1990.
42. Price R. *A Whole New Life: An Illness and a Healing*. New York, NY: Plume; 1994.
43. Morris J. *Pride Against Prejudice: Transforming Attitudes to Disability*. London, England: Women's Press Limited; 1996.
44. Barnes C, Mercer G, Shakespeare T. *Exploring Disability: A Sociological Introduction*. Cambridge, England: Polity Press; 1999.
45. Lin CT, Albertson GA, Schilling LM, et al. Is patients' perception of time spent with the physician a determinant of ambulatory patient satisfaction? *Arch Intern Med*. 2001;161:1437-1442.
46. Gross DA, Zyzanski SJ, Borawski EA, Cebul RD, Stange KC. Patient satisfaction with time spent with their physician. *J Fam Pract*. 1998;47:133-137.
47. Greene MG, Adelman RD, Friedman E, Charon R. Older patient satisfaction with communication during an initial medical encounter. *Soc Sci Med*. 1994;38:1279-1288.
48. Schlesinger M, Druss B, Thomas T. No exit? the effect of health status on dissatisfaction and disenrollment from health plans. *Health Serv Res*. 1999;34:547-576.
49. Druss BG, Schlesinger M, Thomas T, Allen H. Chronic illness and plan satisfaction under managed care. *Health Aff (Millwood)*. 2000;19:203-209.
50. Mechanic D, McAlpine DD, Rosenthal M. Are patients' office visits with physicians getting shorter? *N Engl J Med*. 2001;344:198-204.
51. Stafford RS, Saglam D, Causino N, et al. Trends in adult visits to primary care physicians in the United States. *Arch Fam Med*. 1999;8:26-32.
52. Blumenthal D, Causino N, Chang YC, et al. The duration of ambulatory visits to physicians. *J Fam Pract*. 1999;48:264-271.
53. Iezzoni LI. What should I say? communication around disability. *Ann Intern Med*. 1998;129:661-665.
54. Mechanic D, Meyer S. Concepts of trust among patients with serious illness. *Soc Sci Med*. 2000;51:657-668.
55. Wagner EH, Austin BT, Von Korff M. Organizing care for patients with chronic illness. *Milbank Q*. 1996;74:511-544.
56. Wagner EH, Glasgow RE, Davis C, et al. Quality improvement in chronic illness care: a collaborative approach. *Jt Comm J Qual Improv*. 2001;27:63-80.
57. Gerteis M, Edgman-Levitan S, Daley J, Delbanco TL, eds. *Through the Patient's Eyes*. San Francisco, Calif: Jossey-Bass Publishers Inc; 1993.
58. Cleary PD, Edgman-Levitan S, Roberts M, et al. Patients evaluate their hospital care: a national survey. *Health Aff (Millwood)*. 1991;10:254-267.
59. Gerteis M, Edgman-Levitan S, Walker JD, Stokes DM, Cleary PD, Delbanco TL. What patients really want. *Health Manage Q*. 1993;15:2-6.
60. Keating NL, Green DC, Kao AC, Gazmararian JA, Wu VY, Cleary PD. How are patients' specific ambulatory care experiences related to trust, satisfaction, and considering changing physicians? *J Gen Intern Med*. 2002;17:29-39.
61. Donabedian A. *Explorations in Quality Assessment and Monitoring: Volume I: The Definition of Quality and Approaches to Its Assessment*. Ann Arbor, Mich: Health Administration Press; 1980.
62. Donabedian A. The quality of care: how can it be assessed? *JAMA*. 1988;260:1743-1748.
63. Zola IK. Toward the necessary universalizing of a disability policy. *Milbank Q*. 1989;67(suppl 2, pt 2):401-428.