

Using Screening Questions to Identify Persons with Mobility Impairment: Field Test Results

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Abstract

As part of the ongoing development of the Consumer Assessment of Health Plans Survey (CAHPS[®]), researchers noted the need for a set of screening questions to identify persons with mobility impairment (PWMI). The first step toward achieving this goal was the development and testing of a series of eleven screening questions, which were tested on a sample of 1124 adults enrolled in the Massachusetts Medicaid program (MassHealth). Paper questionnaires were mailed to sampled adults using a standard mailing protocol (initial questionnaire, reminder postcard, second questionnaire to nonrespondents). Professional interviewers then attempted to interview nonrespondents by telephone. A total of 564 questionnaires were completed for a response rate of 51% (RR1, AAPOR 2004).

In order to validate and refine the new PWMI screening questions, medical claims data including ICD-9 codes were obtained for the survey sample. Analyses of the data from both the questionnaire and medical claims allow us to address several research questions: Do the new screening questions appropriately identify PWMI? Is this group truly different from the group identified by the chronic condition screener? Can the 11-item series be shortened to reduce respondent burden without degrading its effectiveness? Can the same PWMI be identified by using claims data alone, negating the need for screening questions?

Keywords: screening, question development, mobility impairment

1. Introduction

The Consumer Assessment of Health Plans Study (CAHPS[®]) includes a series of questionnaires designed to gather plan members' reports and ratings of their medical health care. The information obtained through survey administration is used to help consumers make informed decisions when choosing health plans and to help health plans with some level of quality improvement.

As part of the ongoing development of the CAHPS[®] family of questionnaires, researchers noted the need for a set of screening questions to identify persons with mobility impairment (PWMI). PWMI generally need more complex services than non-impaired health plan members, and they often require both the provision and maintenance of special equipment. Although there is an established set of screeners to identify adults with chronic health conditions, previous research suggests that PWMI are a distinct subgroup of this population. Health plans in both the private and public sectors have an interest in learning more about the experiences of PWMI in order to improve the services they provide to this group.

The first step toward achieving this goal was the development and testing of a series of eleven screening questions. These questions were included in a dual-mode (mail and telephone) survey of Massachusetts Medicaid recipients. In order to validate and refine the new PWMI screening questions, medical claims data including ICD-9 codes were obtained for the survey sample. Analyses of the data from both the questionnaire and medical claims data allow us to address several research questions: Do the new questions appropriately identify PWMI? Is this group truly different from the group identified by the chronic health conditions screener? Can the eleven-item series be shortened to reduce respondent burden without degrading its effectiveness? Can the same PWMI be identified by using claims data alone?

2. Methods

2.1 Survey Instrument

A series of eleven questions was developed by the CAHPS[®] PWMI team and revised following two rounds of cognitive interviewing. According to the finalized screening series, a respondent would be considered to have a mobility impairment if he or she met the following criteria:

- used durable mobility equipment (such as a cane, leg brace, crutches, walker, wheelchair, or scooter) in the last twelve months;

OR

- in the last twelve months could not attempt, had

difficulty, or needed assistance with any of the following:

- standing for 20 minutes;
- walking 3 blocks;
- climbing 10 stairs;
- moving around the house;
- getting out of bed.

The new series was included in the biennial MassHealth Member Survey, which utilizes a modified version of the CAHPS[®] Medicaid questionnaire. The final survey instrument was comprised of a total of seventy-six questions. The self-administered questionnaire was printed Canadian-style in English on one side and Spanish of the other.

2.2 Sample

The sample for this study included a total of 1124 adults aged 18 to 64 who had been covered by a single Massachusetts Medicaid plan for at least six months prior to the date the sample was drawn, with no more than a forty-five-day lapse in Medicaid coverage. The file was checked for duplicate households, and in situations where multiple people were sampled from a single household, one person was randomly selected to remain in the sample.

2.3 Data Collection

An initial questionnaire packet was then mailed to all sample members. The packet included a questionnaire and a fact sheet with the answers to commonly asked questions about the research project. A postcard was mailed about ten days later to everyone reminding them to return the questionnaire as soon as possible and thanking them if they had already done so. Approximately three weeks later, a second questionnaire packet was sent to all nonrespondents. Three weeks after the second mailing, trained interviewers began calling nonrespondents in attempts to complete the questionnaire over the phone. A minimum of six calls were made on different days of the week and at different times of day. Spanish-speaking interviewers were available for the duration of the data collection period. No attempts were made to convert refusals.

3. Results

3.1 Response Rate

A total of 564 questionnaires were completed (386 by mail and 178 by phone) for a response rate of 51% (RR1, AAPOR 2004).

3.2 Demographics

Demographic characteristics of respondents are presented in Table 1 and are similar to the results of other CAHPS[®] studies with the Massachusetts Medicaid population. Most respondents were aged 35 or older (65%), female (71%), not Hispanic (80%), and identified themselves as white (63%).

Table 1.
Field Test Respondent Demographics

Age		
	18 to 34	35%
	35 to 44	25%
	45 to 54	25%
	55+	15%
Sex		
	Male	29%
	Female	71%
Ethnicity		
	Hispanic	20%
	Not Hispanic	80%
Race*		
	White	63%
	Black	12%
	Asian	12%
	Other	8%

Total n=564

* Total does not add to 100% because respondents were allowed to select more than one category

3.3 Identifying PWMI

In order to validate the PWMI screening questions, the survey results were compared with medical claims data from the previous two years. A list of ICD-9 diagnostic codes thought to be indicative of a mobility impairment was compiled and included codes for:

- use of a personal care attendant;
- use of a hospital bed;
- use of a walker, cane, orthotics, wheelchair, or wheelchair support;
- any one of a series of medical diagnoses.

Table 2 presents the self-reported mobility impairment status (obtained from survey data) compared with the medical claims data for each sample member. Overall, very few members had a medical claim that met any of

the criteria listed above. When these claims were present, however, the majority of respondents indicated in the questionnaire that they did have a mobility impairment. For example, while only 8 people had a claim for a personal care attendant, all of them reported having a mobility impairment in the questionnaire. The screening questions also identified 79% of the 34 people with a claim for durable mobility equipment and 86% of the 22 people with a diagnosis from the list.

Table 2.
Self-reported Mobility Impairment by Medical Claims for Mobility-related Care (n)

Medical Claims Data	Self-Reported Mobility Impairment		
	No	Yes	Total
Use of personal care attendant			
Yes	–	8	8
No	275	281	556
Use of hospital bed			
Yes	–	–	–
No	275	289	564
Use of walker, cane, orthotics, or wheelchair support			
Yes	7	27	34
No	268	262	530
ICD-9 diagnosis codes for conditions known to impair mobility			
Yes	3	19	22
No	272	270	542

3.4 PWMI Compared with Chronic Health Condition

The CAHPS® questionnaire includes a set of screening questions to identify adults with chronic health conditions. Anyone who meets the following criteria is considered to have such a condition:

- has seen a health provider three or more times in the last twelve months for the same condition (excluding pregnancy) AND this condition has lasted for at least three months;
- OR
- has taken medicine prescribed by a doctor (other than for birth control) in the last twelve months AND this medicine was to treat a condition that has

lasted for at least three months.

Table 3 presents the results of the screening questions for mobility impairment and chronic health condition. It can be seen that 51% of those who did not report a mobility impairment indicated that they have some kind of chronic health condition.

Table 3.
Self-reported Chronic Health Condition versus Mobility Impairment [n (%)]

Chronic Health Condition	Mobility Impairment	
	Yes	No
Yes	237 (83)	137 (51)
No	48 (17)	134 (49)
Total	285 (100)	271 (100)

3.5 Shortening the PWMI Screening Series

One of the PWMI screening items asks whether the respondent uses any equipment or device such as a cane, leg brace, crutches, walker, wheelchair, or scooter. It was determined that regardless of any decisions about shortening the screening series, this item would be retained to serve as an indicator of the severity of the impairment. The data in Table 4 compare the number of people who self-report a mobility impairment overall with their answer to the single item regarding the use of durable mobility equipment. It can be seen that 76% of those with an impairment do not report using mobility equipment.

Table 4.
Rate of Self-reported Mobility Impairment by Use of Durable Mobility Equipment [n (%)]

Use Durable Mobility Equipment	Mobility Impairment	
	Yes	No
Yes	70 (24)	–
No	219 (76)	275 (100)
Total	289 (100)	275 (100)

In order to determine which additional question or questions would identify the most PWMI, two initial sets

of analyses were done. First, we compared the number of respondents who said “no” to the durable mobility equipment screener but who indicated they had difficulty with mobility in any of the other five screening items. Of those remaining five screeners, the question regarding difficulty walking three blocks yielded the highest number of positive responses (n=163). These data are presented in Table 5a.

Table 5a.
Self-reported Use of Durable Mobility Equipment by Positive Response to Other Screening Items (n)

	Use Mobility Equipment		
	No	Yes	Total
Has any difficulty standing for 20 minutes	129	56	185
Has any difficulty walking 3 blocks	163	56	219
Has any difficulty walking up 10 stairs	145	54	199
Has any difficulty getting around the house	108	48	156
Has any difficulty getting out of bed	120	47	167

The second step was to correlate the responses to all the screening items (Table 5b). It was decided that the next item to be included in the shortened screening series should have the lowest correlation to the durable mobility equipment screener (since that item would definitely be retained) and the highest correlation to the remaining screening questions. Based on the results of both the correlation and the analyses presented in Table 5a, the item regarding difficulty walking three blocks was selected for additional testing.

Table 5b.
Correlation of Self-reported Mobility Difficulty and Use of Durable Mobility Equipment

	Stand 20 minutes	Walk 3 blocks	Walk 10 stairs	Getting around house	Getting out of bed	Use DME
Standing 20 minutes	1	.668	.677	.640	.573	.378
Walking 3 blocks	.668	1	.729	.662	.567	.318
Walking 10 stairs	.677	.729	1	.680	.586	.330
Getting around house	.640	.662	.680	1	.684	.344
Getting out of bed	.573	.567	.586	.684	1	.309
Use DME	.378	.318	.330	.344	.309	1

Total n=564

Note: All correlations are statistically significant at the p<.05 level

We then ran a test similar to the one presented in Table 5a to identify the number of respondents who did not report using mobility equipment or having difficulty walking three blocks, but did report having mobility difficulty in any of the four remaining screeners. Table 6 presents these results. We also cross-checked those who were identified by the full eleven-item screening series with those identified by shortened series (Table 7). It can be seen in both tables that a total of 56 PWMI (19%) are not identified by the combination of the screeners for use of mobility equipment and difficulty walking three blocks.

Table 6.
Self-reported Use of Durable Mobility Equipment or Difficulty Walking 3 Blocks by Positive Response to Other Screening Items (n)

	Use Mobility Equipment or Difficulty Walking 3 Blocks		
	No	Yes	Total
Has any difficulty standing for 20 minutes	23	162	185
Has any difficulty walking up 10 stairs	22	177	199
Has any difficulty getting around the house	11	145	156
Has any difficulty getting out of bed	28	139	167

Table 7.
Mobility Impairment Identified with Eleven-Item Screener versus Shortened Series [n (%)]

Mobility Impairment Identified by DME Use and Walking 3 Blocks	Mobility Impairment Identified with Full Screener	
	Yes	No
Yes	233 (81)	–
No	56 (19)	275 (100)
Total	289 (100)	275 (100)

4. Conclusions

This field test of the PWMI screening items allowed us to answer our initial research questions.

We needed to test whether the new screening questions appropriately identify PWMI, and whether the same PWMI could be identified by examining medical claims data alone. Based on the analyses of self-reported mobility impairment and claims data from the previous two years, it seems clear that the new screening items do indeed identify the majority of PWMI. The screeners were used to correctly identify 100% of the respondents who had received personal care attendant services, 79% of those who had used durable mobility equipment, and

86% of those with a diagnosis known to be indicative of mobility impairment. It also seems clear that claims data alone is not sufficient to effectively achieve this goal. There is the potential for false positives as well as false negatives, and it is also not feasible to expect these data to be available for most researchers.

To determine whether the CAHPS® chronic health conditions screener could be used to identify PWMI, we compared the survey responses to both sets of screening questions. Although there is some overlap of the chronically ill and mobility impaired, PWMI are in fact a distinct group. Fully half of the respondents who reported having a chronic health condition did not report a mobility impairment, and 17% of those who reported having a mobility impairment did not identify themselves as having a chronic health condition.

Another goal of this field test was to learn whether all eleven screening items were necessary or if the series could be shortened to reduce respondent burden without sacrificing effectiveness. We found that 81% of those identified by the full eleven-item series could be identified by the items regarding the use of durable mobility equipment and difficulty walking three blocks. This shortened series is much shorter and easier to embed in existing questionnaires while still capturing the majority of PWMI.

This field test was the first step in the development of a self-administered screener to identify people with mobility impairments. The data show that the development team is on the right track, but more work is needed to further refine the questions and validate their effectiveness.

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References

The American Association for Public Opinion Research. 2004. *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys. 3rd Edition*. Lenexa, Kansas: AAPOR.