A New Approach to Disability Prevention in the Medicare Population: Implications and Strategies for Implementation

By

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Abstract

Medicare is the federally-administered health insurance program that serves individuals over 65 who meet eligibility requirements. The solvency of this program has become a topic of much debate within health policy circles. As the number of Medicare beneficiaries is expected to increase significantly during the coming decades, emphasis has been placed on cost containment and quality improvement. A significant number of elders reports functional and cognitive impairments. Furthermore, the vast majority of beneficiaries reports at least one chronic illness. Chronic illness and functional impairment both increase the risk for future disability. Functional decline and disability are directly responsible for short- and long-term health care costs, and certain health and lifestyle characteristics such as heart disease, diabetes, smoking, body mass index, and physical activity have been shown to predict future disability. Thus, Medicare must transition from an acute care focus to alternative methods of chronic care management, disease and disability prevention. Community-based interventions to promote lifestyle modifications and chronic disease management have been evaluated and proven effective in decreasing disability and health resource use. These community-based efforts will need to be developed in conjunction with office-based chronic care management strategies. This paper reviews effective community-based interventions in order to recommend a new model of community-based health promotion for Medicare beneficiaries. In order for this type of model to be successful, Medicare will need to change its reimbursement policies that currently promote office-based, procedurally-oriented care to policies that enhance a team approach to disability prevention and health promotion among seniors.
Medicare Statistics: Spending, Health Status, and Disability

In 2004, there were 35.4 million Americans ages 65 and older covered by Medicare. The majority of beneficiaries were female and white, between the ages of 65 and 74. However, minorities and people over 85 are a growing population.

In 2003, health care expenditures in this country amounted to $1.7 trillion, and Medicare contributed 17%, or $283 billion, of these costs. Medicare expenditures in 2004 totaled $295 billion, the majority of which contributed to hospital payments. However, physicians and other suppliers represented 26% of expenditures.
Total payments $295 billion
* Adapted from Kaiser Family Foundation Medicare Chartbook

A small percentage of Medicare beneficiaries accounts for the majority of spending. Twelve percent of beneficiaries in 2002 incurred no costs, while 35 percent incurred less than $1000. However, 12 percent of Medicare beneficiaries accounted for 69 percent of total Medicare spending; these recipients incurred costs of greater than $15,000 per person.

Approximately 28 percent of beneficiaries still living at home reported fair or poor health in 2002, although this percentage was higher in minorities. Most also reported at least one chronic illness: 82% of beneficiaries between 65 and 84 admitted to one or more chronic illness. The most common illnesses reported were hypertension and arthritis.
Additionally, a significant portion of Medicare beneficiaries reported functional and cognitive impediments.\(^1\) Approximately one quarter of recipients ages 65-84 reported ADL and IADL limitations.\(^1\) ADL, or activities of daily living, limitations refer to limitations of personal care, such as dressing and grooming, while IADL, or instrumental activities of daily living, limitations refer to activities of independent living, such as shopping and food preparation. Chronic illnesses precipitate approximately one third of functional limitations.\(^2\)

* Adapted from Kaiser Family Foundation Medicare Chartbook\(^1\)
Figure 4, Limitations Among Medicare Beneficiaries, 2002*

According to the Administration on Aging, “eighty percent of the illness burden in the United States is the result of chronic illness occurring between the age of 55 and death,” and seventy percent of older people have over one chronic illness. These conditions increase the risk of functional decline and increase utilization and costs. The number of older adults who incur functional impairment as a result of chronic medical problems is expected to increase by approximately 300 percent in 2049. People with disabilities require more home health services; these expenses for elderly people equaled $27.2 billion in 1996.

* Adapted from Kaiser Family Foundation Medicare Chartbook
Table 1, Home Health Service Use and Expenses in Medicare Population Over Age 65, 1996*

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Percent with expense</td>
<td>13%</td>
</tr>
<tr>
<td>Average annual expense per person</td>
<td>$6041</td>
</tr>
<tr>
<td>Percent paid out of pocket</td>
<td>14.5%</td>
</tr>
<tr>
<td>Amount paid out of pocket</td>
<td>$3.9 billion</td>
</tr>
<tr>
<td>Percent paid by Medicare</td>
<td>58.9%</td>
</tr>
<tr>
<td>Amount paid by Medicare</td>
<td>$16 billion</td>
</tr>
</tbody>
</table>

* Adapted from AHRQ

Healthy People 2010 has developed objectives related to disability: reduce the number of adults who experience functional limitations and limitations with activities of daily living, and increase the proportion of older adults who participate in an organized health promotion activity to 90 percent.5

Disability and Health Resource Use

As the number of adults with chronic illnesses increases, we must be concerned about the costs incurred by these people. Varying studies have reported differences in costs based on disability. One bright note is that disability among the elderly may be declining. Cutler analyzed data from the national Long-Term Care Survey and the National Health Interview Survey and found that functional limitations among the elderly have decreased from 0.5 to 3.2 percent per year.6 However, he noted that each ADL impairment increased spending by $650, while each IADL impairment increased it by $1,200.6 A longitudinal cohort study in a community setting showed that 46.3% of total expenditures were due to older people with stable functional dependence or who declined
to dependence. Only ten percent of the cohort declined to dependence but accounted for over 20% of total expenditures. This study showed that functional decline accounted for both short- and long-term care costs, while stable dependence accounted for predominantly long-term care expenditures. Weiner et al. performed an analysis to assess which clinical factors predicted healthcare utilization in a population of disabled women. They found that the factors most closely associated with increasing health resource use were heart disease, diabetes, and low skinfold thickness. Similarly, Vita et al. performed a longitudinal study that defined high, moderate, and low risk for disability based on smoking, body mass index, and exercise participation. They found that those with high health risks had twice the disability compared to those with low health risks; compared to the high-risk group, disability was postponed by over five years in the low-risk group. Focusing on predicting disability and health resource use will become increasingly important in order to ameliorate burgeoning Medicare costs.

**Disablement Model**

As we focus on predicting and decreasing disability, we first must understand prevention and disability models (Appendix A). While the original model of the disablement process begins with pathology, two other entry points to this process consist of physiologic aging and deconditioning/disuse. All three processes contribute to impairments in organ system functioning. These impairments are defined as specific abnormalities in various organ systems, but this definition can be adapted to include a broad range of physiologic fitness levels, from very high to very low. In a modified disabling model, symptoms may determine functional limitations, may be improved by exercise, and may precede impairments and so should be added to the disabling process.
model at the same level as impairments.\textsuperscript{10} Further difficulty lies in precisely defining functional limitations. While most studies rely on self-reported functional limitations, many participants have few limitations at baseline; however, these studies do not take the process a step further by asking how easy an activity is.\textsuperscript{10} People may not report any functional limitations but may be unable to easily walk a mile. As a result, performance assessments of functional processes have been developed, such as tests of walking, in order to distinguish between functional limitations and physical functioning.\textsuperscript{10}

Nevertheless, these tests evaluate more than one point in the disablement process and so make it difficult to determine precisely the point in the disabling process at which a participant is currently positioned.\textsuperscript{10} A study of women without baseline mobility impairments found that decreased mobility performance levels predicted future deterioration in self-reported mobility.\textsuperscript{10} As a result, a modified view of the disablement process might place functional performance as a separate point in the course between functional limitations and impairments.\textsuperscript{10} This disablement process is important to understand in order to evaluate studies on disability prevention; many studies do not precisely define the point of the disablement pathway at which an intervention is designed to affect.

**Current Medicare Prevention Policies**

Factors leading to disability are a result of the interrelationships between physiology, environment, and behavior.\textsuperscript{2} Disease prevention includes three strata of prevention activities: primary, secondary, and tertiary prevention. Primary prevention strategies reduce exposure to health risks, secondary prevention strategies detect disease at early
stages in order to control them, and tertiary prevention strategies restore individuals with illnesses to their maximum level of health. Any program focusing on disability prevention must attend to all three levels. The compression of morbidity hypothesis argues that prevention efforts compress disability into a shorter timeframe at the end of life, decreasing overall disability burden and health care costs. However, others argue that it is difficult to associate improved disability with health promotion initiatives when other factors such as medical advances may also have an effect.

Despite the increasing interest and research in disability and disease prevention, there is much work to be done. While the Medicare Modernization Act of 2003 added coverage for certain preventive services, including a first-time preventive care visit, a General Accounting Office analysis of year 2000 data showed that many elders did not receive all appropriate preventive services, and many did not realize that they had medical conditions such as hypertension that could cause future disability.
Additionally, Medicare's fee-for-service program does not insure periodic health examinations, where many preventive services are rendered. While Medicare covers many important screening tests, it does not provide coverage for tests that are an integral part of disability prevention, such as vision and hearing tests, nor does it provide treatment for these conditions.

Table 2, Preventive Services Recommended by US Preventive Services Task Force*

<table>
<thead>
<tr>
<th>Service</th>
<th>Task force recommendation</th>
<th>Covered by Medicare?</th>
</tr>
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<tbody>
<tr>
<td>Pneumovax</td>
<td>Recommends</td>
<td>Yes</td>
</tr>
<tr>
<td>Influenza vaccine</td>
<td>Recommends</td>
<td>Yes</td>
</tr>
<tr>
<td>Mammography</td>
<td>Recommends</td>
<td>Yes</td>
</tr>
<tr>
<td>Colorectal CA screening</td>
<td>Recommends</td>
<td>Yes</td>
</tr>
<tr>
<td>Service</td>
<td>Recommends</td>
<td>Yes</td>
</tr>
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</tr>
<tr>
<td>DEXA</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Vision screen</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Hearing screen</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Smoking cessation counseling</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Injury prevention counseling</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Dental health</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

* Adapted from GAO

Although 93 percent of BRFSS respondents over 65 indicated that they had received a checkup in the past 2 years, only 10 percent of women reported receiving all recommended preventive services. The majority of beneficiaries received care for chronic medical problems, but did not necessarily receive recommended preventive care. Clearly, there needs to be other models by which preventive services are provided.

![Figure 7, Reasons for Provider Visits, 2000*](image)
Disability Prevention Literature

There are many points of intervention in decreasing disability. Various studies have evaluated community-based programs, home visits, exercise programs, team collaboration, and chronic disease management as potential means of reducing disability in elders. Each method has benefits and drawbacks. In order to decrease disability in elders, Medicare will need to develop a program that encompasses many different methods of disability prevention.

Health Enhancement Program

The Health Enhancement Program is a part of the previously-named Senior Wellness Project developed by the University of Washington, a coalition of senior centers called Senior Services, Inc., and Aging and Disability Services of the Seattle area. It is a community-based program, sustained by nurses, volunteers, mentors, and social workers, that encourages individuals to participate in caring for their chronic illnesses, engage in physical and social activity, enhance nutrition, and manage depression. A health screening is performed to determine future disability risks, and the participant and nurse practitioner develop an action plan, with input from the participant’s physician. The participants then set goals based on identified risks in the areas of physical activity, nutrition, alcohol, smoking, chronic illness self-management, social activity, falls, depression, memory, incontinence, and medication management. Participants receive encouragement from volunteer mentors with chronic diseases as well as education on problem-solving, medication, and disease management. Two of the most important
components of the program are its emphasis on physical activity and chronic disease self-management skills.\textsuperscript{13}

Several studies have evaluated outcomes of the Health Enhancement Program. A one-year follow-up study reporting on 201 chronically ill elders over the age of 70 found that participants in the program reported fewer disability days and improved health.\textsuperscript{13} However, objective measures of physical performance were unchanged, although the intervention group showed improvements in the timed up-and-go test.\textsuperscript{13} The number of program participants who were hospitalized decreased by 38\%, and the number of hospitalized controls increased by 69\%, although this was not statistically significant.\textsuperscript{13} However, there were statistically significant fewer hospital days in the intervention group: 33 total hospital days in the intervention group and 116 in the control group.\textsuperscript{13} There were no differences in depression, alcohol use, smoking cessation, or nutrition status due to the intervention, although the intervention participants did improve both attitudes regarding physical activity as well as level of physical activity participation.\textsuperscript{13} The study provided an estimated savings of $1200 per participant.\textsuperscript{13}

Another study evaluated whether the Health Enhancement Program improved ADLs. Among those not ADL disabled at baseline, 14.3\% of the intervention group and 21.3\% of the control group developed ADL disabilities at one year.\textsuperscript{14} Similarly, 80.5\% of intervention participants with ADL disabilities at baseline reported improvements at one year, while only 46.5\% of the control group improved.\textsuperscript{14} While neither result was statistically significant, the intervention did promote modest improvements in ADL disabilities.\textsuperscript{14} Due to these promising results, the program was disseminated to other areas, and an evaluation of whether the disseminated program provided similar results to
the initial program was performed. This study showed that intervention participants reported less depression, more physical activity, and better health. However, there were no differences in reported functional status and hospital days.

Unfortunately, these studies had high refusal rates of approximately 30%, and it is unclear whether people who refuse have different disability risks than those who participate. Some studies show that refusers are healthier, while others show that they are less healthy than participants, and therefore refusers may be a very heterogeneous group with varying reasons for refusal. Minder et al. performed a study to evaluate this group and reported on three subgroups of refusers: those who reported being too healthy to participate in the study, those who reported being too ill to participate, and those who reported no interest in participating. People who were “too healthy” to participate had lower nursing home admissions than participants. However, those who were too ill and those who had no interest had significantly higher nursing home admissions than participants. Disability trials need to evaluate the reasons for refusal in all refusers in order to determine how their refusals affect study outcomes.

Health Education

Other models of community interventions to improve health and decrease disability in elders are available. The Cochrane group performed a review of diabetes interventions that targeted provider education and those that targeted patient education. Those interventions that only focused on changing provider behavior had very little impact on diabetes outcomes, while those that intervened on both provider and patient behaviors had a significant impact. A program of health talks, on-site screenings, and wellness-promotion days was developed in a continuing care retirement community. Participants
increased regular exercise and dietary monitoring, although there was no significant increase in participation in screening tests such as mammograms. This program focused on providing education to elders on the benefits of health-promoting behaviors. Many participants reported that they did not participate in healthy behaviors because they were not educated on the benefits of these behaviors. This suggests the necessity of discussing primary and secondary prevention with seniors.

A meta-analysis of patient education and counseling trials showed promising results. Patient education and counseling programs improved behaviors related to STD prevention, physical activity, injury prevention, nutrition, stress management, substance abuse, and weight control, but were especially effective for tobacco, alcohol, nutrition, and weight control. The most effective programs utilized behavioral techniques such as self-monitoring as well as multiple communication modalities, such as personal communication and multi-media.

**Patient Self-Management**

While community interventions to improve self-efficacy, knowledge, and health promoting behaviors are an important component of any disability prevention program, it is important to manage elders’ chronic illnesses as well. There are many aspects to successful disease management programs, but one essential component of these programs is patient self-management. There have been numerous studies evaluating self-management education programs. Hypertension, diabetes, and asthma self-management programs were associated with significant improvements in clinical endpoints, while arthritis programs showed only a trend toward benefit. However, many studies were methodologically unsound, and it is therefore difficult to draw any
firm conclusions. Furthermore, the majority of elders have more than one chronic illness, so trials studying self-management of single illnesses are less useful. In contrast, the Chronic Disease Self-Management Program (CDSMP) enrolls patients with more than one disease to help them manage the multiple facets of their illnesses. The assumptions of the program are that patients with various chronic illnesses require similar self-management practices, patients are able to learn to manage their diseases on a day-to-day basis, and patients who are knowledgeable about their diseases and who practice self-management will improve their health and require fewer health care services. The CDSMP is a 17-hour course that teaches people to manage their symptoms, maintain functional status, and comply with appropriate medication regimens. Community-dwelling elders inappropriately use between 12% and 40% of medications, and medication errors are a leading cause of death in the elderly. Any program that can improve medication usage has the potential for improved health outcomes in elders.

Trained lay advisors teach the CDSMP course once a week for 7 weeks at community-based sites. At six months, participants showed improvements in amount of exercise, communication skills, self-reported health status, fatigue, disability, and limitations in physical and social activities. There were no differences between intervention and control groups in pain, physical discomfort, difficulty breathing, and psychological well-being, but the intervention group had significantly fewer hospitalizations. A cost analysis demonstrated savings of approximately $750 per person, while the cost of the program was $70 per person. Of note, since participants had multiple chronic conditions, the results of certain symptom outcomes may have been underestimated since some people did not have the target symptoms. One difference between this program
and the Health Enhancement Program is that there was no physician input in the CDSMP.\textsuperscript{21} While this program targeted people with multiple diseases, it could certainly be used in conjunction with specific disease-management programs and physician-targeted programs.\textsuperscript{21}

The CDSMP was also evaluated at 2 years to determine efficacy. Compared to baseline, participants demonstrated improvements in health distress, self-efficacy, energy/fatigue, and self-rated health.\textsuperscript{22} They also utilized fewer physician and ER visits.\textsuperscript{22} There was no change in hospitalizations and physical and social activity limitations.\textsuperscript{22} While there was a slight increase in disability at one year, there was no further functional decline at two years.\textsuperscript{2} The cost savings at two years were approximately $390 to $520 per patient.\textsuperscript{4}

**Physical Activity Programs**

While the CDSMP and Health Enhancement Program discuss and encourage exercise along with other activities to prevent functional decline, other programs have specifically targeted physical activity alone. The Healthy People 2010 objectives focus on physical activity as an important health indicator.\textsuperscript{5} People over 60 have the lowest rates of physical activity compared to all adults, with minorities and those over 75 having especially high levels of physical inactivity.\textsuperscript{3} Furthermore, lack of physical activity contributes to muscle disuse and deconditioning that predisposes people to injuries. In 1999, over one fifth of fee-for-service Medicare beneficiaries had injury claims, with a total cost of over $8 billion.\textsuperscript{23}
The Task Force on Community Preventive Services performed a systematic review of studies of physical activity interventions and recommended six interventions to improve activity levels.\textsuperscript{24}

<table>
<thead>
<tr>
<th>Type of Recommended Approach</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Informational approaches</strong></td>
<td>Communitywide campaign</td>
</tr>
<tr>
<td></td>
<td>Point-of-decision prompts to use stairs</td>
</tr>
<tr>
<td><strong>Behavioral/social approaches</strong></td>
<td>School-based physical education</td>
</tr>
<tr>
<td></td>
<td>Social support interventions in community settings (e.g. buddy systems)</td>
</tr>
<tr>
<td></td>
<td>Individually adapted behavior change</td>
</tr>
<tr>
<td><strong>Environmental/policy approach</strong></td>
<td>Enhanced access to physical activity venues combined with informational campaigns</td>
</tr>
</tbody>
</table>

* Adapted from CDC MMWR\textsuperscript{24}

Kcsor performed a critical review of the evidence on prevention of disability by exercise.\textsuperscript{25} Resistance training was found to improve walking speed, chair-rise transfers, and stair-climbing ability.\textsuperscript{25} The Longitudinal Study on Aging and the Aerobics Center Longitudinal Study both reported delayed progression of functional decline and improved functional status in adults who were more physically active.\textsuperscript{25} The effects of physical activity on disability are inconsistent and disappointing, however. Resistance training did not affect disability in a pooled analysis of randomized controlled trials.\textsuperscript{25} However, 35\% of RCTs did show a benefit of physical activity on disability.\textsuperscript{25} The Fitness Arthritis and Seniors Trial (FAST) demonstrated less incidence of ADL disability in elders participating in strength and aerobic training, with a relative risk of 0.57.\textsuperscript{26} A community
study in Taiwan reported that physically active people were much less likely to develop ADL disability (RR 0.52), while the Established Populations of Epidemiological Studies of the Elderly showed that elders with high levels of physical activity had a greater chance of dying without disability (RR 1.86).  

The problem with many studies of physical activity is the modest doses of physical activity assessed in each trial. Many trials test doses of physical activity that do not meet the recommended daily physical activity guidelines. Studies also do not examine varying intensity and duration of physical activity interventions, and most trials only last eight to twelve weeks. Despite the well-designed observational trials, assessment of physical activity is determined by self-report, and people are placed into quartiles representing the amount of physical activity. These categories are broad and do not provide the accuracy needed to determine types of physical activity necessary to prevent and minimize disease; for instance, we need to determine whether activities need to encompass balance, transfers, endurance, and strengthening to improve outcomes. Nevertheless, physical activity has been shown to improve functional limitations and reduce the effects of illnesses such as arthritis, heart disease, diabetes, hypertension, dementia, obesity, and stroke.  

An important community-based exercise program is the Lifetime Fitness Program. This program was designed in conjunction with the Health Enhancement Program of Seattle to provide endurance, balance, strengthening, and flexibility training for elders in senior center settings. Most participants in this program averaged one visit per week, although half attended fewer than three visits per month. Higher users attended classes over once a week, and compared to controls, this group had lower healthcare
expenditures and risk of hospitalizations.\textsuperscript{28} While there were no differences found in healthcare costs between the entire intervention group and controls, the intervention group consisted of many people participating in exercise sessions fewer than once a week.\textsuperscript{28} This study did not assess disability factors in the intervention or control groups but did show a difference in healthcare resource use, even for people who did not participate in physical activity sessions as frequently as recommended. It appears that participants in studies who best comply with physical activity regimens obtain the best results.\textsuperscript{26} There are several hypotheses explaining the preventative effects of exercise on disability: increased muscle strength, improved aerobic capacity, reduced pain, improved mood, weight loss, and favorable effects on the course of conditions such as heart and respiratory diseases.\textsuperscript{26} However, physical activity trials need to enroll more people, extend trial lengths, examine a variety of interventions with varying intensities and durations, and examine specific outcomes using the disablement model in order to determine which approaches are most effective.

\textbf{Preventive Home Visits}

Other community-based approaches may be useful in preventing disability in elders. While it is necessary to improve the entire range of chronic illness care, Medicare will need to focus on both community-based care and office-based care of elders. Utilizing preventive home visits and other team-collaborative approaches to chronic care may improve functional decline in elders. A study in Switzerland evaluated preventive home visits performed by public health nurses.\textsuperscript{29} Participants underwent annual comprehensive geriatric assessments at home.\textsuperscript{29} Results were discussed with geriatricians in order to develop recommendations to improve health, and nurses then performed follow-up visits
every three months to detect problems, provide health education, and provide
courage in self-care and communication skills.\textsuperscript{29} The study stratified people into
high and low baseline risk based on ADL dependence, depression, impaired cognition,
impaired gait, use of 6 or more medications, and reporting more than 3 chronic
conditions.\textsuperscript{29} Participants at low baseline risk displayed significantly less ADL
dependence, fewer nursing home admissions, and reduced health care costs at 3 years
than controls, while there was no difference between the control group and those at high
baseline risk.\textsuperscript{29}

Another trial of home visits was performed in which nurses provided home visits to
elderly patients with hypertension, in which they educated patients, checked blood
pressure, and negotiated lifestyle changes.\textsuperscript{30} After 6 months of nursing visits, 36.5\% of
participants and 6.8\% of controls had blood pressure readings under 160/90.\textsuperscript{30} The
intervention group participated in more frequent slow walking compared to controls,
while weight was unchanged between groups.\textsuperscript{30} These studies provide evidence that
trained professionals working in collaboration with primary care physicians to provide
home visits that manage illnesses may improve outcomes and disability, although
baseline risk for disability may be a significant factor in determining interventions that
work well. Trained professionals must perform the home visits, however, in order to see
any benefit; patients of nurses who were unable to pinpoint problems exhibited no benefit
from the home visit intervention.\textsuperscript{29}

\textbf{Novel Medicare Community-Based Program for Disability Prevention}

In order to decrease disability in seniors, Medicare needs to develop programs that are
both community and office-based. These programs need to overlap and should involve
multiple members of the health care team, including physicians, nurses, nurse
practitioners, social workers, community lay health advisors, physical therapists, and
others. One important component of this program will be a community-based multi-
faceted program involving health screenings and interventions in community and senior
centers.

In developing these community programs, it is imperative that we develop valid
methods of determining future disability and health risks for seniors. Different
approaches will be necessary to decrease disability in different populations. Importantly,
it may be necessary to develop interdisciplinary geriatric teams, which may improve
health outcomes and decrease health resource use. Various studies have developed
disability risk stratification methods, but the studies sampled in this paper have each used
different approaches. For instance, some use a risk stratification approach involving
patient comorbidities, such as diabetes, while others use an approach that accounts for
baseline cognitive function, gait, ADL dependence, and comorbid conditions. Medicare
needs to participate in the development of a standardized and validated risk stratification
tool that is useful in both office and community-based practice. Some high-risk elders
will need a more intense program of rehabilitation and chronic care team coordination in
order to improve health outcomes and disability, while low-risk elders may benefit from
home-based and community-based preventive programs. Unless we possess a tool that
distinguishes between populations at various risk, we hazard expending energy and
resources that have negligible benefits in certain populations. Furthermore, we need
better ways of assessing the effectiveness of disability prevention efforts. Many studies
rely on self-report, using tools such as the Health Assessment Questionnaire (HAQ),
while others use a battery of performance tests such as the 6-minute walk and timed “Up and Go” test, but Stewart discusses the inability of these tests to distinguish between the various processes of disablement. Besides developing risk stratification tools, we need to determine how best to assess which interventions affect the various aspects of the disablement process. It is possible that some of the promising study results thus far have had diffused benefits because they did not assess appropriate outcomes. Future studies on disability prevention must account for the disablement process in order to better evaluate intervention effects. Additionally, different interventions may produce various results along the disablement continuum, and we need to know which combinations of interventions are most efficacious.

With this in mind, a novel Medicare approach for community-based disability prevention follows. As the logic model in Appendix B shows, this model will need to involve many community stakeholders, including elders, senior and community centers, physicians, nurse practitioners, nurses, social workers, public health officials, community researchers, physical therapists, and community volunteers. The cornerstone of this approach will be community-based health screenings for all Medicare beneficiaries. These health screenings may be performed by physicians, nurses and nurse practitioners, and public health nurses, with input from physical therapists and social workers. The purpose of these screenings is to determine risk for future disability in order to develop an action plan with both beneficiary and medical provider that allows them to set goals and establish their individual health promotion needs.

Once beneficiaries have been categorized into disability risk groups, they will be encouraged to participate in various community activities organized within the senior
center. On-site wellness promotion days will be developed in which seniors can participate in education sessions and receive preventive care such as influenza vaccinations. Chronic Disease Self-Management Program courses will be provided to seniors, and volunteer mentors acting as lay health advisors will be available to provide encouragement and education to seniors. These lay health advisors will need to include minorities who can communicate effectively due to their comprehension of culture and language. A Lifetime Fitness Program will also be available in the same facility and will provide classes encompassing balance, strengthening, and cardiovascular fitness. Elders will be encouraged to form groups with similar exercise interests in order to provide motivation and inspiration to each other.

Community-based nurse practitioners and public health nurses will be available to help clients with disease management techniques and will communicate effectively with primary care providers to provide holistic and comprehensive care to seniors. These practitioners will perform home visits on selected clients in order to help with medication management, symptom management, education, disease self-management, and injury prevention. Those beneficiaries who are found to be at highest risk for disability will be referred to appropriate case managers in order to receive more intense management. While they may benefit from these interventions as well, most disability prevention studies thus far have focused on elders with fewer baseline disabilities, and this program is geared toward this lower-risk population.

Thus, this community-based program will apply primary, secondary, and tertiary prevention strategies to disability prevention. Education classes and wellness promotion days will relay the importance of smoking cessation, decreased alcohol consumption,
weight loss, physical activity, nutrition, and injury prevention, and immunizations. Secondary prevention will encompass education regarding cancer screening and early detection and treatment of potential disabling diseases such as hypertension, incontinence, depression, visual and hearing impairment, and falls. Tertiary prevention will encompass self-management of chronic illnesses.

These interventions are designed to affect multiple levels of the socioecological framework. Within the Health Belief Model, they are designed to increase the perceived benefits of health promotion and disease management, decrease perceived barriers, and increase self-efficacy. Both the Health Enhancement Program and the Chronic Disease Self-Management Program improve knowledge and self-efficacy, and using these programs as a basis for the Medicare community care program would be expected to have the same effects. The program will also improve social capital by decreasing social isolation of community elders and increasing interpersonal trust. Providing multiple activities in the community centers may increase the cohesiveness of participating elders. As seniors benefit from the program, they may in turn become volunteer mentors to help other elders; these norms of reciprocity will sustain the program and provide opportunities for civic membership to these elders. At the population level, the inequities faced by many elders, especially minorities, may improve with access to program resources and decreased psychosocial stress due to the social support incorporated into the program. Medicare will need to make a concerted effort to provide these programs in low-income and rural communities.

Short-term and long-term outcomes need to be evaluated. Among the important short-term outcomes are improved elder understanding of health promotion activities,
improved physical activity level among seniors, increased community support of elder health promotion, and increased chronic disease self-management practices. Important long-term outcomes are improvements in objective performance tests, improvements in ADLs and IADLs, improvements in health outcomes, and decreased health resource use. The long-term impacts of the program will be decreased disability, improved health, and decreased Medicare costs.

While this Medicare program combines various interventions with proven effectiveness, there are barriers to its implementation. Some communities do not have community or senior centers where these activities can take place. This is especially problematic in rural and indigent urban areas. Furthermore, transportation to intervention activities for many elders is difficult. This program will also require community partnerships that may be difficult to forge. Physicians will need to be involved in action plans for their patients, and coordination between community nurses and physicians’ offices may be difficult. Community and senior centers will need to invest in resources such as equipment and staff in order to effectively participate in the program. Staff will require training in interventions such as the CDSMP. Other professionals, such as nurse practitioners and public health nurses, will require access to office space and equipment in order to provide the necessary services and screenings to elders. Additionally, these providers would need to be hired directly by Medicare, as they would need to have the ability and flexibility to network with all possible area providers. Various community volunteers will be needed to ensure that wellness promotion days and the disease self-management and fitness activities are successful. Seniors will need to be recruited and trained as lay health advisors in an ongoing manner. Incentives to participate in the
program will need to be developed, as will methods of recruitment. The educational and physical activity interventions may need to be ongoing rather than one-time in order to prevent the decline of intervention effects seen in elders over time.

One public health mantra that always needs to be remembered is to “start where the people are.” If seniors and community members do not feel this is important, the program will be unsuccessful. While a general program can be outlined by the Centers for Medicare and Medicaid Services (CMS), each community will be different and may need to vary interventions in order to appeal to their particular population. It will be difficult for CMS to perform assurance activities on this program, given this variation. An impact evaluation using a large sample will be needed to determine the effectiveness of these interventions, since most recent studies have been performed on only one to two hundred people.

Strategies for dealing with these challenges include changes to Medicare structure and function. Using Medicare trust fund money to distribute community grants used for infrastructure and resources, including transportation, will be paramount. Incentives to seniors and lay health advisors could include decreased premium rates; additionally, patient interviews have suggested that upgraded hospital accommodations and free medical equipment would be incentives to participate. In order to perform program evaluation and assurance functions, Medicare needs to be decentralized. Regional offices may perform assurance functions in order to determine that the program is being implemented and coordinated appropriately.

**Recommended Changes to Medicare Reimbursement Policies**
Of paramount importance is changing Medicare reimbursement policies. Medicare’s fee-for-service program is unable to provide the comprehensive preventive needs of the elderly population. Its payment systems are oriented to acute rather than chronic care and disability prevention. Claims are based on in-person services rather than population-based services. Medicare payments are categorized into separate silos; hospital care is paid by Part A, while outpatient care is paid by Part B. The new prescription drug plan, Part D, is creating yet another silo to finance drug benefits. Its fee-for-service payment systems vary by provider, with inpatient care reimbursed via diagnosis-related-group and physician services reimbursed per visit. The DRG is a prospective payment system that pays a set fee based on the diagnoses treated in the hospital; these types of prospective payment systems provide incentives to deliver less care, since the hospitalization is reimbursed not by length of stay and care provided but solely by the diagnoses. A five-day hospital stay for pneumonia is reimbursed at the same rate as a two-day hospital stay. In contrast, fee-for-service physician pay encourages physicians to provide more care. However, they are not compensated for spending the extra time needed to care for patients with complex medical problems; in essence, they are compensated for quantity rather than quality. This poor compensation provides incentives for inappropriately low levels of medical care for chronically ill patients.

Separate and uncoordinated services undermine chronic care and prevention efforts. Prevention of disability requires processes that would be paid for by Part B, while Part A would reap the benefits. Since Part A and Part B are administered separately, it is difficult for Medicare to provide the coordinated services needed to decrease health resource use. Medicare is very centralized and regulation-based. As
chronic care management and disability prevention are primarily local functions that require partnerships between providers, community organizations, seniors' groups, and local governments, Medicare will be unable to administer these programs from Washington, D.C.\textsuperscript{33}

While the fee-for-service program is adequate to provide acute visit-based and hospital-based payments for beneficiaries, only 26\% of physician visits in a 2000 Medicare Current Beneficiary Survey were for acute problems, while the majority of visits were for chronic diseases.\textsuperscript{12} There is no reimbursement for the considerable effort of chronic care coordination; merely ordering more tests and procedures is rewarded under current Medicare reimbursement policies, however.\textsuperscript{35}

A major problem with the current Medicare structure is its initial development as an indemnity insurance plan.\textsuperscript{36} In general, insurance against disability is reasonable, since disability is unpredictable and incurs high costs.\textsuperscript{36} However, insuring people who already have multiple chronic illnesses that increase their risk for disability is a pointless task.\textsuperscript{36} Thus, while Medicare typically serves elders with multiple medical problems-for whom indemnity insurance is inappropriate-it continues to use the fee-for-service indemnity insurance model, paying for acute hospitalizations and chronic care visits while failing to reimburse activities that would decrease the utilization of these resources.\textsuperscript{36} Chronic care and disability prevention require multiple activities that would be difficult to reimburse using an indemnity model. For instance, phone calls to patients in order to effectively coordinate care are a necessary component of dealing with chronic illnesses. However, an indemnity payer would have difficulty reimbursing this communication, since the costs of submitting, reimbursing, and collecting these bills would exceed the actual cost
of the reimbursement. A model disability prevention plan will require health assessments, action plans, care team coordination, and novel techniques to improve patient participation in illness management. These services are not covered under current reimbursement policies. Medicare regulations are very specific about which services and providers are eligible for payment; only those providing services directly related to physician services may be reimbursed. Thus, community-based services, such as those described in this paper, would not be covered since they are not directly related to physician services. Patient education and self-management classes are generally not covered, except in diabetes care. Medicare reimbursements require standardized billing approaches; community-based chronic care and disability prevention approaches to this point are not standardized and would therefore not be reimbursed.

These policies would need to be revised in order to promote community-based disability prevention services. For one, decentralizing Medicare into regional offices would allow those offices to fund local disability prevention programs on a lump-sum basis. Rather than paying for in-person visits, each regional office could pay local communities a prospective payment based on the number of seniors eligible for services in that community. The local communities would hire and train the necessary staff, improve infrastructure, and form the necessary partnerships in order to provide these services. They would also be responsible for submitting program plans to the regional office; the regional office would be responsible for conducting evaluations to assess whether implementation and impact objectives were met and to provide technical assistance. While this would require increased funding initially, the future benefits regarding increased elder functioning and decreased disability would likely be
tremendous. This would require significant community involvement; while community involvement would improve the chances for successful implementation of the program, it would also bring many challenges. Among these challenges are the development of partnerships, securing the necessary staff, providing the necessary training, and ensuring sustainability.

In response to growing evidence of the benefits of comprehensive preventive care, the Centers for Medicare and Medicaid Services have designed demonstration projects to evaluate the most effective methods for providing preventive and health promotion activities to seniors. The Program of All-Inclusive Care for the Elderly (PACE) was a demonstration project in which sites provided comprehensive and interdisciplinary clinical and social services for frail nursing home-eligible elders.\(^ {37} \) This demonstration showed a lower rate of nursing home admissions and hospitalizations in participants, as well as improved health status and less decline in physical functioning.\(^ {37} \) However, this project was designed for frail elders who already had significant ADL limitations. Evidence suggests that this population needs different services to prevent further disability compared to healthier elders with fewer ADL limitations.\(^ {29} \) Thus, other ongoing Medicare demonstrations will evaluate the effects of focused preventive efforts on the health of seniors. The Medicare Preventive Services-Medicare Lifestyle Modification Program is currently evaluating the effects of the provision of lifestyle modification services to Medicare beneficiaries in order to reduce or possibly reverse the progression of coronary artery disease.\(^ {37} \) While this program exclusively focuses on people with heart disease, the Senior Risk Reduction Demonstration has been designed to evaluate the utilization of health risk appraisals in identifying the need for lifestyle
modifications regarding diet, alcohol and tobacco abuse, and physical activity. Tailored interventions via the mail, Internet, and telephone coaching will connect people to the accessible services in their particular communities. The results of these demonstrations will be very useful in improving the community-based approach in this paper but will likely be unavailable for several years. However, the recognition by CMS that preventive programs are a necessary component to Medicare services is a positive step. As the evaluations of these programs are published, CMS may realize the benefit of changing reimbursement policies to support community-based and individual preventive programs. 

Conclusion

There are many promising community-based models for disability prevention. Medicare needs to change its structure and reimbursement policies to allow these models to become widely disseminated. It needs to decentralize in order to directly fund, provide technical assistance, and evaluate community-based health promotion activities. These community programs will be based on health screenings performed by Medicare funded practitioners who network with community providers in order to provide comprehensive health promotion to seniors. They will risk stratify elders and direct them to the most appropriate preventive services. These health promotion services will include wellness days, educational activities, disease self-management trainings, fitness trainings, and preventive home visits. The services will be provided in order to improve the health status of seniors and decrease health resource use. In this way, Medicare may be able to contain its rapidly rising costs.
Appendix A, Current Disabling Process and Suggested Framework for Disablement*

*Adapted from Phillips-Harris and Stewart

Diagram:
- Pathology
- Impairment
- Functional Limitations
- Disability

Diagram:
- Pathology
- Physiological Fitness
- Functional performance
- Physical functioning
- Disability
Appendix B: Logic Model of Medicare Community-Based Disability Prevention Program

**Resources**
- Centers for Medicare and Medicaid Services
  - Funding
  - Elders
  - Senior/Community Centers
  - Physicians
  - Nurse practitioners
- Nurses/Public health Nurses
- Public health depts
- Community Researchers
- Physical therapists
- Community Volunteers
- Community

**Intervention activities**
- Obtain and develop community/senior center Resources
- Community-based health Screenings
- Development of action plan with beneficiary, nurse, and physician
- Train volunteer mentors/lay health advisors
- Recruit community Volunteers
- Quarterly wellness promotion days
- Provide chronic disease self-management program courses at centers
- Provide fitness/activity programs at centers

**Level-Specific Impacts**

- Individual Level
  - Increased perceived benefits
  - Decreased

- Community Level
  - Increased social capital
  - Interpersonal

- Population Level
  - Inequity: access to resources, decreased psychosocial stress

**Behavior**

- **Short-term**
  - Improved elder understanding of health promotion
  - Health promotion goals set with action plan
  - Participation in wellness promotion days
  - Increased participation in physical activity
  - Improved disease self-management

- **Long-term**
  - Decreased disability in elders
  - Improved health outcomes for Medicare beneficiaries
  - Decreased health resource utilization
  - Decreased Medicare costs

**Impact**
References


