

Multiple Chronic Conditions: A Strategic Framework

**Optimum Health and Quality of Life
for Individuals with Multiple Chronic Conditions**



U.S. Department of Health & Human Services

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Foreword

We are pleased to present a strategic framework for the U.S. Department of Health and Human Services (HHS) to improve the health status of individuals with multiple chronic conditions. This framework contains a vision statement, goals, objectives, and discrete strategies to guide the department in coordinating its efforts internally and collaborating with stakeholders externally. The framework is designed to address the spectrum of all population groups with multiple chronic conditions.

A cornerstone of our nation's approach to chronic diseases must be to prevent their occurrence. An enhanced focus on prevention and public health is essential to ensuring optimum health and quality of life for all people. In addition, however, prevention is an important consideration for persons who already have one or more chronic conditions. This framework's focus is on improving the health and function of people who currently have multiple chronic conditions.

The intention for this framework is to catalyze change within the context of how chronic illnesses are addressed in the United States—from an approach focused on individual chronic diseases to one that uses a multiple chronic conditions approach. It is this culture change, or paradigm shift, and the subsequent implementation of these strategies that will provide a foundation for realizing the vision of *optimum health and quality of life for individuals with multiple chronic conditions*.

Background

More than one in four Americans have multiple (two or more) concurrent chronic conditions (MCC),¹ including, for example, arthritis, asthma, chronic respiratory conditions, diabetes, heart disease, human immunodeficiency virus infection, and hypertension. Chronic illnesses are “conditions that last a year or more and require ongoing medical attention and/or limit activities of daily living.”² In addition to comprising physical medical conditions, chronic conditions also include problems such as substance use and addiction disorders, mental illnesses, dementia and other cognitive impairment disorders, and developmental disabilities.

The prevalence of multiple chronic conditions among individuals increases with age and is substantial among older adults, even though many Americans with MCC are under the age of 65 years. As the number of chronic conditions in an individual increases, the risks of the following outcomes also increase: mortality, poor functional status, unnecessary hospitalizations, adverse drug events, duplicative tests, and conflicting medical advice.^{1,2,3,4,5} This picture is even more complex as some combinations of conditions, or clusters, have synergistic interactions, but others do not.⁵ For example, the poor health outcomes of individuals with serious mental illnesses and other behavioral health problems warrants special attention because of the co-occurrences of those conditions with other chronic conditions.

The resource implications for addressing multiple chronic conditions are immense: 66% of total health care spending is directed toward care for the approximately 27% of Americans with MCC.¹ Increased spending on chronic diseases among Medicare beneficiaries is a key factor driving the overall growth in spending in the traditional Medicare program.⁶ Individuals with MCC have faced substantial challenges related to the out-of-pocket costs of their care, including higher costs for prescription drugs and total out-of-pocket health care.¹

¹ Anderson G. Chronic Care: Making the Case for Ongoing Care. Princeton, NJ: Robert Wood Johnson Foundation, 2010. Available at <http://www.rwjf.org/files/research/50968chronic.care.chartbook.pdf>. Last accessed December 2, 2010.

² Warshaw G. Introduction: advances and challenges in care of older people with chronic illness. *Generation* 2006;30(3):5–10. (see also: Hwang W, Weller W, Ireys H, Anderson G. Out-of-pocket medical spending for care of chronic conditions. *Health Affairs* 2001;20:267–278)

³ Lee TA, Shields AE, Vogeli C, Gibson TB, Woong-Sohn M, Marder WD, Blumenthal D, Weiss KB. Mortality rate in veterans with multiple chronic conditions. *J Gen Intern Med* 2007;22(Suppl 3):403–407.

⁴ Vogeli C, Shields AE, Lee TA, Gibson TB, Marder WD, Weiss KB, Blumenthal D. Multiple chronic conditions: prevalence, health consequences, and implications for quality, care management, and costs. *J Gen Intern Med* 2007;22(Suppl 3):391–395.

⁵ Wolff JL, Starfield B, Anderson G. Prevalence, expenditures, and complications of multiple chronic conditions in the elderly. *Arch Intern Med* 2002;162(20):2269–2276.

⁶ Thorpe KE, Ogden LL, Galactionova K. Chronic conditions account for rise in Medicare spending from 1987 to 2006. *Health Affairs*. 2010;29(4):1–7.

Multiple chronic conditions can contribute to frailty and disability; conversely, most older persons who are frail or disabled have MCC. The confluence of MCC and functional limitations, especially the need for assistance with activities of daily living, produces high levels of spending. Functional limitations can often complicate access to health care, interfere with self-management, and necessitate reliance on caregivers.⁷

A report by the Institute of Medicine in 2001 highlighted the complexities of and the need for care coordination for individuals with multiple conditions.⁸ Noting that there is evidence that patients receiving care for one chronic condition may not receive care for other, unrelated conditions, the IOM articulated that a challenge of designing care around specific conditions is to avoid defining patients solely by their disease or condition.^{8,9} The Chronic Care Model further elucidates the elements required to improve chronic illness care, including systems requirements for healthcare organization, community resources, self-management support, delivery design, decision support, and clinical information.¹⁰ This seminal model represents a conceptual foundation for innovative approaches to addressing MCC.

Overall, the MCC population is characterized by tremendous clinical heterogeneity, and substantially varies in the number of chronic conditions, the severity of illness and functional limitations, and the clustering of conditions. Indeed, developing means for determining homogeneous subgroups among this heterogeneous population is viewed as an important step in the effort to improve the health status of the total population and only recently is beginning to be addressed by researchers.¹¹ Identifying such subgroups will assist in more effectively developing and targeting interventions. A related consideration is disparities in access to health care, public health, and other services, which may present implications for the population of persons with MCC.

The combined effects of increasing life expectancy and the aging of the population will dramatically increase the challenges of managing multiple chronic conditions among the burgeoning population of older persons. Although there has been tacit appreciation of the quality of care and cost implications prompted by the increasing MCC population, the delivery of community health and health care services generally continues to be centered around individual chronic diseases. In addition, insufficient attention has been

⁷ Alecxih L, Shen S, Chan I, Taylor D, Drabek J. Individuals Living in the Community with Chronic Conditions and Functional Limitations: A Closer Look. Office of the Assistant Secretary for Planning & Evaluation, U.S. Department of Health and Human Services. January 2010. Available at <http://aspe.hhs.gov/daltcp/reports/2010/closerlook.htm> Last accessed December 2, 2010.

⁸ Committee on Quality of HealthCare in America, Institute of Medicine. Crossing the Quality Chasm: A New Health System for the 21st century. Washington D.C.: National Academies Press; 2001.

⁹ Redelmeier, Donald A., Siew H.Tan, and Gillian L.Booth. The treatment of unrelated disorders in patients with chronic medical diseases. *N Engl J Med* 1998;338(21):1516–1520.

¹⁰ Wagner E. Chronic disease management: what will it take to improve care for chronic illness? *Effective Clinical Practice* 1998; 1:2–4.

¹¹ Kronick RG, Bella M, Gilmer TP, Somers SA. The Faces of Medicaid II: Recognizing the Care Needs of People with Multiple Chronic Conditions. Center for Health Care Strategies, Inc., October 2007.

paid to the services and support required to meet longer-term needs of those with MCC to enable them to live as well as possible in community settings.

Role of the U.S. Department of Health and Human Services

The U.S. Department of Health and Human Services administers a large number of federal programs directed toward preventing and managing chronic conditions, including, for example, financing health care services (Centers for Medicare and Medicaid Services); delivering care and services to persons with chronic conditions (Administration on Aging, Health Resources and Services Administration, and Indian Health Service); conducting basic, interventional, and systems research (Agency for Healthcare Research and Quality, National Institutes of Health); implementing programs to prevent and manage chronic disease (Centers for Disease Control and Prevention, and Substance Abuse and Mental Health Services Administration); promoting the economic and social well being of families, children, individuals, and communities (Administration for Children and Families); and overseeing development of safe and effective drug therapies (Food and Drug Administration).

Because of the leading role HHS plays in health research, and payment for and delivery of health care services, HHS also must provide leadership in improving health outcomes among individuals with MCC. Moreover, increases in the costs of treating, poor outcomes among, and complexity of managing those with MCC necessitate that HHS develop, implement, and coordinate programs and policies that improve the care provided to individuals and their health. To achieve this goal, HHS will need to engage stakeholders in implementing effective strategies to address, improve, and better manage the health status of individuals with MCC.

The health reform law—the Patient Protection and Affordable Care Act—provides HHS with new opportunities for addressing the prevention of chronic conditions, as well as enhancing the clinical management and improving the health status of individuals with MCC. This law will facilitate these advances through developing and testing of new approaches to coordinated care and management, patient-centered benefits, and quality measures. New initiatives also will be aimed at enhancing the understanding among patients and caregivers about the appropriate use of medications. States will have the option of providing “health homes” for Medicaid enrollees with chronic conditions. Importantly, the creation of a new Center for Medicare and Medicaid Innovation within CMS presents unprecedented opportunities to examine and test the most promising approaches to care coordination and health improvement.

Two other important new initiatives mandated in the Patient Protection and Affordable Care Act also have implications for preventing and mitigating chronic conditions: (1) the *National Strategy for Quality Improvement in Health Care*, which will include priorities to improve the delivery of health care; and (2) the *National Prevention and Health Promotion Strategy*, which aims to bring prevention and wellness to the forefront of national policy by identifying and prioritizing actions across many sectors to reduce the

incidence and burden of the leading causes of death and disability. All of those efforts can be connected through *Healthy People 2020*, which will establish national health objectives and serve as the basis for the development of state and community plans.

HHS Interagency Workgroup

To identify HHS options for improving the health of this heterogeneous population, the HHS Assistant Secretary for Health convened a departmental workgroup on individuals with multiple chronic conditions. Nearly all HHS operating divisions are participating. The workgroup's initial major effort was to produce a collation of HHS programs, activities, and initiatives focused on improving the health of individuals with MCC. This inventory,¹² released in March 2009 and slated for update, contains more than 50 efforts across HHS directed primarily to the health care needs of people with two or more chronic health conditions. In addition, multiple interagency workgroup meetings have been held on topics such as reducing rehospitalizations and adverse drug events in this population. The workgroup also has assisted HHS in both health reform and comparative effectiveness research efforts related to MCC. Many other efforts that focus on this population are under way across the department.

The workgroup believes that, among other beneficial effects, a strategic HHS framework that provides a roadmap for improving the health status of persons with MCC will help ensure a more coordinated and comprehensive approach to implementing the considerable work already directed toward this need. Accordingly, the workgroup developed a draft of this strategic framework that was announced in the *Federal Register* on May 19, 2010. Because HHS recognizes that stakeholder and community involvement is essential to successful implementation of the framework, the *Federal Register* notice invited interested parties to review and comment on the draft strategic framework and to provide feedback to the department. The workgroup reviewed comments from the public and stakeholder organizations and then used them in developing this final version of the strategic framework.

¹² Available at http://www.hhs.gov/ophs/initiatives/mcc/mcc_inventory.pdf.

HHS Vision and Strategic Framework on Multiple Chronic Conditions

The vision that drives the department's efforts is *Optimum Health and Quality of Life for Individuals with Multiple Chronic Conditions*. Within the vision's focus on the individual with MCC, development of the framework elucidated four interdependent domains that benefit the individual: strengthening the health care and public health systems; empowering the individual to use self-care management; equipping care providers with tools, information, and other interventions; and supporting targeted research about individuals with MCC and effective interventions. Accordingly, to achieve its vision, this framework comprises these four overarching goals:

1. Foster health care and public health system changes to improve the health of individuals with multiple chronic conditions
2. Maximize the use of proven self-care management and other services by individuals with multiple chronic conditions
3. Provide better tools and information to health care, public health, and social services workers who deliver care to individuals with multiple chronic conditions
4. Facilitate research to fill knowledge gaps about, and interventions and systems to benefit, individuals with multiple chronic conditions

Each of these goals includes several key objectives and strategies that the department—in conjunction with stakeholders and those who have or care for those with multiple chronic conditions—should use to guide its efforts. These efforts should build on and potentiate HHS programs and resources focused on the MCC population. Although this framework addresses those individuals with MCC, many of the strategies, including the prevention of additional chronic conditions, also apply to persons with only one or those with no chronic condition.

The public and private sectors share responsibility for implementing these activities. HHS is particularly grateful to the numerous stakeholders—including organizations and individuals—that provided input to HHS through the public comments process regarding the framework's goals, objectives, and strategies. HHS looks to build and strengthen partnerships with all interested stakeholders to achieve these important goals for individuals with MCC.

Goal 1: Foster health care and public health system changes to improve the health of individuals with multiple chronic conditions.

Improving the health status of persons with MCC requires heightened coordination of complex medical and longitudinal psychosocial care. Moreover, persons with MCC should have access to community and other public health services, as well as improved medical care coordination. Achieving this coordination for individuals within a system comprising numerous independent providers, and including coordination across acute- and long-term care systems, has been difficult. Unfortunately, the current model of fee-

for-service medical care offers few financial incentives to coordinate care. In addition, traditional disease management programs—without a strong link to primary care and that are focused on discrete conditions—have not been optimally effective.^{13,14} Changes to the delivery and provider payment system, development of accompanying quality and performance metrics, and increased involvement of the public health system can complement efforts to achieve well-coordinated care for those with MCC.

Objective A: Identify evidence-supported models for persons with multiple chronic conditions to improve care coordination—To address gaps in care coordination, several models that have emerged in recent years emphasize patient-centered multidisciplinary care, provider communication and cooperation to smooth transitions across settings, and incorporation of public health and community resources. These models include patient-centered medical homes, community health teams, accountable care organizations, primary care and behavioral health integration models,¹⁵ palliative care, and models that deliver health care services in the home and community settings. Those models may have an overarching effect of enhancing health status among individuals with MCC. Important elements for successful care coordination include person-centered care that empowers the affected individual in care management, team-based care, and aligned payment incentives.

- Strategy 1.A.1. Define and identify populations with MCC broadly, and MCC subgroups with specific clusters of conditions, and explore focusing care models on the subgroups at high risk of poor health outcomes. (See also Strategy 4.B.3.)
- Strategy 1.A.2. Develop and expand pilot studies and demonstration projects for innovative, multidisciplinary, longitudinal person-centered care models that improve health outcomes and quality of life while maintaining or decreasing net costs, and implement evidence-supported models.

Objective B: Define appropriate health care outcomes for individuals with multiple chronic conditions—Improved health care outcomes for individuals with MCC comprise a broad spectrum, such as maintaining function, palliating symptoms, preventing adverse drug events, avoiding unnecessary emergency department visits, and reducing hospitalizations and rehospitalizations. These outcomes are not different in kind from relevant outcome measures for other persons, but they do differ in importance because of the increased risk of negative outcomes among persons with MCC; for example, as

¹³ Geyman JP. Disease Management: Panacea, another false hope, or something in between. *Ann Fam Med* 2007;5(3):257–260.

¹⁴ Peikes D, Chen A, Schore J, Brown R. Effects of care coordination on hospitalization, quality of care, and health care expenditures among Medicare beneficiaries. *JAMA* 2009;301(6):603–618.

¹⁵ For example, Screening, Brief Intervention, and Referral to Treatment (SBIRT, see also: <http://sbirt.samhsa.gov/index.htm>); and specialty care medical homes (see: Alakeson V, Frank RG, Katz RE. Specialty care medical homes for people with severe, persistent mental disorders. *Health Affairs* 2010; 29:867–73).

the number of chronic conditions increases in an individual, so does the risk of rehospitalization.¹⁶

- Strategy 1.B.1. Define desired healthcare outcomes appropriate for individuals with MCC.
- Strategy 1.B.2. Ensure that testing of care models includes evaluation of MCC-relevant outcomes.

Objective C: Develop payment reform and incentives—Health care professionals have few incentives to provide care coordination for individuals with MCC, approaches that may avoid poor outcomes such as hospitalization and rehospitalization. Moreover, limitations on reimbursement for many nonphysician providers further constrain multidisciplinary care delivery to individuals with MCC. Financial incentives would encourage use of care models that, in turn, encourage relevant categories of providers to spend the additional time needed to address the care complexities for this population.

- Strategy 1.C.1. Work with stakeholders to identify, develop, and test incentives and payment approaches (e.g., episode-based payments across care settings) that promote effective care coordination for individuals with MCC.
- Strategy 1.C.2. Disseminate information about and implement the use of incentives that promote cost-effective care coordination by providers who care for individuals with MCC.

Objective D: Implement and effectively use health information technology—By facilitating coordinated care and providing uniform information to all providers caring for an individual with MCC, interoperable health information technology has great potential to help clinicians, health care delivery systems, families, and individuals improve the quality and safety of care for those with MCC.

- Strategy 1.D.1. Encourage the meaningful use of electronic health records, personal health records, patient portals, and clinical registries to improve care for individuals with MCC.
- Strategy 1.D.2. Test and implement the use of secure messaging and additional health information exchange platforms (e.g., telemedicine and remote monitoring) to improve care for individuals with MCC.
- Strategy 1.D.3. Encourage the use of health information technology as a public health tool for monitoring the population's health and key performance measures related to mitigating the impact of MCC.

¹⁶ Friedman B, Jiang HJ, Elixhauser A. Costly hospital readmissions and complex chronic illness. *Inquiry*. 2008;45:408–421.

Objective E. Promote efforts to prevent the occurrence of new chronic conditions and to mitigate the consequences of existing conditions—In addition to addressing health outcomes in persons with MCC, systems should be strengthened and fully used for preventing the occurrence of additional chronic conditions.

- Strategy 1.E.1. Develop and implement preventive health and public health systems approaches that increase effectiveness in the prevention of new chronic conditions among persons with MCC, including conditions potentially arising from interactions between existing chronic conditions or therapies for those conditions, and the progression and exacerbation of existing chronic conditions.
- Strategy 1.E.2. Adopt public health policies (e.g., targeting unhealthy and risky behaviors, environments, and foods associated with increased risk of chronic disease) to prevent exacerbations or occurrence of new chronic conditions in persons with existing chronic conditions.
- Strategy 1.E.3. Explore incentives to improve individuals' participation in chronic disease risk behavior and other prevention programs.

Objective F. Perform purposeful evaluation of models of care, incentives, and other health system interventions—Monitoring and providing ongoing feedback about interventions can assist in improving both the use and impact of interventions for MCC.

- Strategy 1.F.1. Conduct ongoing surveillance—through providers and individuals with MCC—of the impact and effectiveness of interventions for MCC.
- Strategy 1.F.2. Disseminate feedback to individuals with MCC, providers, researchers, and policymakers on needs and options for making more effective use of, and improving, interventions for MCC.

Goal 2: Maximize the use of proven self-care management and other services by individuals with multiple chronic conditions.

Even the highest quality provision of care to individuals with MCC alone will not guarantee improved health outcomes for this population. Individuals must be informed, motivated, and involved as partners in their own care.¹⁷ Self-care management can be important in managing risk factors that lead to the development of additional chronic conditions. However, some individuals with MCC (e.g., those with severe illness or substantial cognitive decline) will be limited in their ability to perform self-care. The important role that families and other caregivers provide in managing chronic conditions must be recognized and supported.

¹⁷ Greenhalgh T. Chronic illness: beyond the expert patient. *BMJ* 2009;338:629–631.

Objective A: Facilitate self-care management—Chronic disease self-care management programs have generated a significant evidence-base.^{18,19} Translating and replicating these programs in multiple settings (e.g., health care, home, work, and assisted living) will improve the health status of the MCC population.

- Strategy 2.A.1. Continually improve and bring to scale evidence-based, self-care management activities and programs, and develop systems to promote models that address common risk factors and challenges that are associated with many chronic conditions.
- Strategy 2.A.2. Enhance sustainability of evidence-based, self-management activities and programs.
- Strategy 2.A.3. Improve the efficiency, quality, and cost-effectiveness of evidence-based, self-care management activities and programs.

Objective B: Facilitate home and community-based services—Home and community-based services (HCBS) often play a critical role in enabling individuals with MCC to live and work successfully in their communities. Evidence-based programs and services have been developed in recent years to assist the MCC population in attaining healthier and more independent lives. Examples of such programs are those that retrain Medicaid home health aides to provide appropriate home-based physical activity training to beneficiaries; deliver HCBS that prevent falls; and provide peer support to reduce the severity of depressive symptoms. Other innovations include home-based information technology and community-based organizations that provide care transition services.

- Strategy 2.B.1. Improve access to effective HCBS for the MCC population through information and referral, options counseling, and smooth care transitions.
- Strategy 2.B.2. Improve infrastructure (e.g., telemonitoring and shared information services) to support HCBS, and promote educational and technological innovations that permit individuals with MCC to remain maximally functional and independent, understand and better manage their conditions, and reside safely in their homes or other settings.
- Strategy 2.B.3. Provide training and information on evidence-based self-care management to, and improve supports for, family caregivers.

Objective C: Provide tools for medication management—As the number of chronic conditions increase, so do the number of medications prescribed and the degree of nonadherence to regimens.²⁰ In addition to reducing adverse drug events and medication errors, tools to improve knowledgeable use of medications may reduce chronic disease progression.

¹⁸ Selected publications at <http://patienteducation.stanford.edu/bibliog.html>.

¹⁹ Selected publications at <http://www.ahrq.gov/qual/ptmgmt/ptmgmtap1.htm>

²⁰ Tinetti ME, Bogardus ST, Agostini JV. Potential pitfalls of disease-specific guidelines for patients with multiple conditions. *New Engl J Med* 2004;351(27):2870–2874.

- Strategy 2.C.1. Develop and disseminate shared decision-making and other tools for individuals with MCC to provide accessible information about treatment choices and improve adherence to medication regimens.
- Strategy 2.C.2. Identify or develop and then disseminate tools to help individuals with MCC and their caregivers recognize drug-drug interactions and potential adverse drug events from complex medication regimens.
- Strategy 2.C.3. Foster improved and culturally appropriate health literacy to facilitate better informed decision-making about use of medications.

Goal 3: Provide better tools and information to health care, public health, and social services workers who deliver care to individuals with multiple chronic conditions.

Health care, public health, and social services professionals and family caregivers practice in a vacuum of published data regarding care for those with multiple chronic conditions. Providing these professionals and family caregivers with the tools and information they need to care for individuals with MCC is critical to improve care provision. Moreover, because most management of chronic conditions occurs outside the medical care setting, attention must be focused across the care continuum both to sustain and improve adherence with prevention and treatment strategies for improved health outcomes.

Objective A: Identify best practices and tools—The MCC population is clinically heterogeneous. Irrespective of the specific combinations of chronic conditions, there likely are general approaches that facilitate improved, optimized care. The goal of identifying individual best practices is to promote a systematic approach to the assessment and management of this complex population, including the prevention of additional co-morbidities.

- Strategy 3.A.1. Identify, develop, disseminate, and foster integration of best practices information relevant to the general care of individuals with MCC.²¹
- Strategy 3.A.2. Identify, develop, endorse, and use key quality metrics, in the form of performance measures, to promote best practices in the general care of individuals with MCC.
- Strategy 3.A.3. Identify, develop, and validate materials that assist providers in educating individuals with MCC and family caregivers in appropriate self-care and shared decision-making.

²¹ Examples of care areas may include chronic pain, mental and cognitive health, nutrition, physical activity, medication management, transitional care, and communication structures for inter-professional care coordination.

- Strategy 3.A.4. Develop and disseminate tools for use by and across different organizations, providers, and family caregivers that improve the use and management of medications, including promotion of knowledgeable use of medications, reduction of prescription of inappropriate medications, and reduction of patient risks associated with polypharmacy.

Objective B: Enhance health professionals training—Health care, public health, and social services professionals are dependent on and influenced by training programs that prepare them for the environments in which they will practice. Evidence suggests that many health care professional trainees feel uncomfortable with key chronic care competencies.²² Addressing these gaps, as well as the need for improving providers' cultural competencies, will ensure that the current and next generations of providers are proficient in caring for individuals with MCC and in interacting with family caregivers.

- Strategy 3.B.1. Identify or develop information relevant to the general care of individuals with MCC for use in health and social service professional training programs.
- Strategy 3.B.2. Disseminate information relevant to the general care of individuals with MCC to all HHS-funded or supported health and social service professional training programs for inclusion in required curricula, as appropriate.
- Strategy 3.B.3. Ensure that health care, public health, and social services professionals receive training on monitoring the health and wellbeing of family caregivers for individuals with MCC.
- Strategy 3.B.4. Develop and foster training within both traditional and nontraditional professional settings (e.g., medicine, nursing, social work, psychology/counseling, clinical pharmacy, chaplaincy, vocational rehabilitation, community health workers) that emphasizes increased competency in palliative and patient-centered approaches.

Objective C: Address multiple chronic conditions in guidelines—Evidence-based, person-centered clinical guidelines assist health care providers in providing high quality care to individuals. More often than not, guidelines on specific chronic conditions do not take into account the presence of MCC and, importantly, how these co-morbidities may affect the treatment plan.²³ Moreover, guidelines for persons with mental illness and substance abuse rarely address the co-occurrence of other chronic conditions. As the evidence base grows to facilitate greater specificity in guidelines (see also Goal 4.C.),

²² Darer JD, Hwang W, Pham HH, Bass EB, Anderson G. More training needed in chronic care: a survey of US physicians. *Acad Med* 2004;79(6):541–548.

²³ Boyd CM, Darer J, Boult C, Fried LP, Boult L, Wu AW. Clinical practice guidelines and quality of care for older patients with multiple comorbid diseases: implications for pay for performance. *JAMA* 2005;294(6):716–724.

those who develop guidelines must focus on using such evidence. Better incorporation of relevant information, however limited, will enhance guidelines' applicability to an increasing number of individuals with MCC.

- Strategy 3.C.1. Ensure that developers of guidelines include information on the most common comorbidities clustering with the incident chronic condition and on the management of risk factors to prevent the occurrence of additional chronic conditions.
- Strategy 3.C.2. Ensure that clearinghouses or repositories of chronic disease guidelines encourage labeling and promotion of selected guidelines that incorporate information on individuals with MCC.

Goal 4: Facilitate research to fill knowledge gaps about, and interventions and systems to benefit, individuals with multiple chronic conditions.

Significant gaps exist in the approach to care for individuals with MCC. Bolstering research efforts will enable improved characterization of the MCC population, support health care and other providers in coordinating and managing care for this population, and assist in tracking progress in improving health for individuals with MCC. This goal encompasses a broad spectrum of research considerations, including, for example, basic investigation of medical therapies, epidemiologic study of the impact of comorbidities on disease trajectories, efficacy and effectiveness of promising interventions for health promotion and self-management (as described in Goal 2), and health system care management strategies (as described in Goal 1).

Objective A: Increase the external validity of trials—As the number of individuals with MCC grows, ensuring that treatment interventions (e.g., drugs, devices, lifestyle modifications, alternative medicine) for these conditions are safe and effective becomes more important. To achieve this end, efforts to improve understanding of interactions between comorbidities and to limit exclusions of this increasingly large population in clinical trials may assist in preventing adverse events and poor outcomes that otherwise might have occurred if this population were not included in the study design.

- Strategy 4.A.1. Develop methods to assess the inclusion of individuals with MCC in clinical trials. Such methods should include determining 1) optimal trial designs for including MCC patients; 2) optimal approaches for recruiting MCC patients; 3) the potential risks of exposing some MCC patients to new interventions; and 4) the appropriate analysis of outcomes data from clinical trials that include individuals with MCC.
- Strategy 4.A.2. Improve the external validity of HHS-funded community and clinical intervention trials by ensuring that individuals with MCC are not unnecessarily excluded (as determined by scientific experts and external stakeholders).
- Strategy 4.A.3. Ensure, through guidance or regulation, that individuals with MCC are not unnecessarily excluded from clinical trials for the approval of prospective drugs and devices.

- Strategy 4.A.4. Assess and strengthen postmarketing surveillance for potential intervention-related adverse events and poor outcomes among individuals with MCC.

Objective B: Understand the epidemiology of multiple chronic conditions—Limited research has yielded information about the constellations of conditions that are most prevalent and most important in terms of disability among individuals with MCC. Additional research identifying the most common patterns of MCC can help in targeting specific interventions for specific subgroups and monitoring the impact of those interventions. Such research should utilize public program (e.g., Medicare) and other existing datasets.

- Strategy 4.B.1. Stimulate epidemiological research to determine the most common dyads and triads of MCC.
- Strategy 4.B.2. Determine the distribution of MCC for Medicare and Medicaid beneficiaries, as well as clients of HRSA-funded community health centers and Indian Health Service hospitals and clinics, and use this information to plan interventions and monitor their effectiveness.
- Strategy 4.B.3. Develop tools to identify and target population subgroups of individuals with MCC who are at high risk for poor health outcomes. (See also Strategy 1.A.1.)

Objective C: Increase clinical, community, and patient-centered health research—Neither the treatment of comorbidities nor the impact of comorbidities on patients' health status over time have been well characterized in the literature. Therefore, research that elucidates the evidence base for the prevention, management, and treatment of individuals with MCC is urgently needed. Research that expands the capacity of clinicians to direct care toward outcomes of highest importance to individuals with MCC will be essential, as will be examination of the policies that create disincentives for providers to adequately address the needs of individuals with MCC. Feedback on research progress should be provided to the public and to key groups—including individuals, providers, researchers, and policy makers—on approaches for reducing barriers to and improving interventions for MCC.

- Strategy 4.C.1. Expand research on the optimal clinical, self-care, and community-based approaches for health promotion, disease prevention, and healthcare management of individuals with MCC, as well as on the systems to best support and sustain this programming.
- Strategy 4.C.2. Innovate and strengthen methods for researchers to improve measurement of patient-centered outcomes of treatments and other interventions for individuals with MCC. (Note: this strategy builds upon work called for in Strategy 1.B.)

- Strategy 4.C.3. Improve knowledge about patient trajectories temporally in relation to changes in health status, functional status, and health services use.

Objective D: Address disparities in multiple chronic conditions populations—It is likely that as racial and ethnic, gender, gender identity, disability, sexual orientation, age, geographic, and socioeconomic disparities of access to care and health outcomes exist in the total population, those disparities also exist in the MCC population. Additional research directed toward understanding the roles of disparities in the MCC population would assist in focusing interventions.

- Strategy 4.D.1. Stimulate research to more clearly elucidate differences between and opportunities for prevention and intervention in MCC among various sociodemographic groups.
- Strategy 4.D.2. Use research findings on group-specific indicators for MCC risk and intervention options to leverage HHS disparities programs and initiatives to address the MCC population.

Next Steps and Future Direction

The aging of the population, the continued existence of chronic disease risk factors (e.g., tobacco use, poor nutrition, low physical activity levels), and the marvels of modern medicine will contribute to increasing numbers of Americans with multiple chronic conditions. The majority of individuals with chronic diseases in the United States also have multiple chronic conditions. Now is the time to view person-centered chronic disease prevention and care management through the prism of MCC.

The impact of multiple chronic conditions represents more than the sum of their parts. Multiple chronic conditions can overwhelm individuals, their families and others who care for them, health care professionals and other service providers, and our systems of care in the United States. HHS, in concert with numerous stakeholders, has developed the interlinked strategies in this framework to help individuals with MCC, their families, health care providers, health care and public health systems, and communities to identify and implement approaches to optimizing health and quality of life, while also reducing the burdens of multiple chronic conditions. This framework will help HHS to identify gaps in its efforts to address the health status of individuals with MCC, and in developing initiatives to support the implementation of many of the stated strategies.

The HHS Strategic Framework builds upon existing resources and efforts and provides guidance for developing future approaches. HHS will seek to continue engaging with the public and private sectors as efforts move forward to adopt, implement, and, when indicated, further modify the framework. The Interagency Workgroup on Multiple Chronic Conditions will continue assisting HHS in ensuring a coordinated and comprehensive effort for moving forward. Partnerships between the public and private sectors will be critical to achieving the vision of *Optimum Health and Quality of Life for Individuals with Multiple Chronic Conditions*.