

# Chapter 10

## Meeting the Care Needs of Patients with Multiple Chronic Conditions



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Primary care facilities and hospitals have long been aware of the significant burden borne by patients who present with chronic medical conditions. Current estimates suggest that nearly 50% of American adults have at least one chronic medical condition (Ward, Schiller, & Goodman, 2014; Wu & Green, 2000). Patients commonly present to the primary care setting for management of symptoms and functional impairments associated with hypertension, high cholesterol, diabetes, skin conditions, or arthritic conditions. Patients with chronic medical conditions often experience marked changes in overall quality of life, with varying degrees of compromise experienced across work, household, recreational, social, interpersonal, and familial domains of function. These changes in overall quality of life, in conjunction with the stress of diagnosis and the demands of disease management, often result in psychological distress that would be deemed clinically significant and require intervention. Primary care physicians are among the first healthcare providers tasked with managing these chronic medical conditions and the associated physical and psychological compromise. For patients with chronic medical conditions that require extensive intervention by medical providers or involve complex self-management regimens, patient care needs are much more likely to be assessed and managed through any number of general and specialty care clinics.

In 2010, the most prevalent chronic physical and psychological conditions experienced by American adults were hypertension (27%), hyperlipidemia (22%), allergies, sinusitis, and upper respiratory conditions (14%), arthritis (13%), depression and bipolar disorder (11%), diabetes (10%), and anxiety disorders (7%; Gerteis et al., 2014). The Centers for Medicare and Medicaid Services (2016) noted that, among Medicare and Medicaid recipients, the most

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common chronic medical conditions include arthritis, asthma, atrial fibrillation, cancer, chronic kidney disease, chronic obstructive pulmonary disease, diabetes, heart failure, hepatitis (chronic viral B and C), human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS), hyperlipidemia, hypertension, ischemic heart disease, osteoporosis, and stroke. Also numbered among commonly experienced chronic conditions are psychological disorders such as depression. The increasing prevalence of such chronic physical and psychological conditions is likely due to improvements in the effectiveness of medical interventions and the associated decrease in disease-related mortality, all of which translates to fewer people dying due to disease and more people living longer with chronic medical conditions.

One of the more pressing concerns for all parties involved in healthcare provision is the marked increase in the number of patients who present with multiple, concurrent, chronic medical conditions. It has been estimated that 32% of the American adult population are experiencing and attempting to manage two or more chronic medical conditions (Gerteis et al., 2014). When compared to patients diagnosed with a single chronic medical condition, patients with two or more chronic medical conditions present with greater disruptions in function and quality of life as well as increased mortality (Anderson, 2010; Boyd & Fortin, 2010; Lee et al., 2007). In 2010, the US Department of Health and Human Services (HHS) Agency for Healthcare Research and Quality convened a workgroup aimed at creating system-wide strategies to identify and focus clinical and research attention on patients with two or more chronic medical conditions. This workgroup eventually supported the use of the term multiple chronic conditions (MCC) to refer to such patients and put forward a strategic framework for disseminating data and improving the psychometric properties of measures used to capture MCC (Anderson, 2010). For the purposes of this chapter, the term MCC will be used to refer to patients with two or more chronic medical conditions, with terms such as comorbidity and multimorbidity used only when these terms have been used by other researchers to define patient groups.

Because MCC are associated with greater healthcare utilization and costs, and because patients with MCC often experience functional impairment and disability and clinically significant psychological distress, the MCC context serves as an ideal context for the integration of behavioral health interventions and medical interventions aimed at managing multiple, co-occurring chronic medical conditions and reducing the impact of such conditions on patient quality of life and overall well-being. The current chapter describes the scope and significance of MCC, functional impairment and disability experienced consequent to MCC, risk factors that contribute to the onset of MCC, traditional disease self-management approaches used in the context of MCC, and a newly proposed treatment program aimed at applying empirically supported cognitive-behavioral interventions to the problem of MCC. In this discussion of MCC, information pertaining to adults with MCC is emphasized; however, information relevant to MCC in children and older adult populations is also presented.

## Scope and Significance of MCC

### *Prevalence*

Although prevalence estimates for MCC vary depending on the population targeted, the setting in which the survey is completed, and the survey method employed, it can be generally agreed that the number of persons with MCC is staggering. It has been estimated that some 75 million Americans have two or more medical conditions (Anderson 2010), and by the year 2020, 81 million Americans will likely experience two or more chronic medical conditions (Anderson & Horvath, 2004).

The presence of MCC is associated with elevated rates of healthcare utilization. Using data from the 2009 National Ambulatory Medical Care Survey, Ashman and Beresovsky (2013) found that, of the 326 million physician office visits made by adults 18 years of age or older, nearly 123 million of these visits were made by patients with two or more chronic medical conditions. More than 67 million office visits were made by patients with at least three chronic medical conditions. Using data from the Nationwide Inpatient Sample, the largest all-payer inpatient database, Steiner and Friedman (2013) determined that, of approximately 28 million adult patients discharged from American hospitals in 2009, 39% had two to three chronic medical conditions and 33% had four or more chronic medical conditions. Ward et al. (2014) used data from the 2010 National Health Interview Survey to estimate the prevalence of multiple chronic conditions among US adults. The data revealed that, of the 117 million US adults determined to have at least one chronic medical condition, more than 32 million of these US adults had two chronic medical conditions, and nearly 28 million had at least three chronic medical conditions. Findings from these three studies suggest that an increasingly large portion of the nation's healthcare resources are being used to manage the care needs of patients with MCC.

Data also suggest that the likelihood of experiencing MCC increases as individuals get older. Machlin and Soni (2013) used data from the 2009 Medical Expenditure Panel Survey to estimate the prevalence of MCC across two age cohorts: adults aged 45–64 years and adults aged 65 years or older. These researchers examined the rates of occurrence of a wide array of chronic medical and psychiatric conditions, including arthritis, asthma, autism spectrum disorder, cancer, cardiac arrhythmias, chronic kidney disease, chronic obstructive pulmonary disease, congestive heart failure, coronary artery disease, dementia, depression, diabetes, hepatitis, HIV infection, hyperlipidemia, hypertension, osteoporosis, schizophrenia, stroke, and substance abuse disorders. It was estimated that 25% of all adults surveyed had been treated for at least two chronic medical conditions. This estimated rate of MCC increased to 31% for adults aged 45–64 and to 67% for adults aged 65 years or older. Among adults 65 years or older, nearly 25% had been treated for four or more chronic conditions.

While research findings suggest that MCC can be considered a near normative experience among older adults, it must be acknowledged that, for a significant number of adults with MCC, their experience of MCC likely began in childhood or

adolescence. It is estimated that 12% of young persons in the US have been diagnosed with MCC (Clark et al., 2015; Zhong et al., 2015). Although these findings suggest that MCC are common among young persons, no longitudinal examinations of the trajectory of MCC from childhood into adulthood were identified in the literature.

In addition to investigating the relation of MCC to advancing age, researchers have sought to determine the relation of MCC to other sociodemographic variables, including gender, race and ethnicity, and the interaction of these variables. Freid, Bernstein, and Bush (2012) used data collected from the National Health Interview Survey to examine the changing prevalence of MCC among US adults aged 45 years and older by gender, racial and ethnic group, and income. Survey participants were characterized as experiencing MCC based on the presence of two or more of the following medical conditions: diabetes, cancer, chronic bronchitis, current asthma, emphysema, heart disease, hypertension, kidney disease, and stroke. To determine the changing prevalence of MCC, survey data obtained from participants evaluated in the year 1999–2000 were compared to data obtained from participants evaluated in the year 2009–2010. Results revealed that, among adults aged 45–64 years and among adults aged 65 years and above, MCC increased for both men and women, for members of all racial and ethnic groups, and for most income groups.

## *Cost*

Patients with MCC are high healthcare utilizers and the cost of managing the care needs of persons with co-occurring conditions contributes significantly to the financial burden borne by society. Chronic conditions cost the US government billions of dollars each year as a function of direct medical costs and costs related to reduced work productivity. It is estimated that 71% of all healthcare expenditures in the US are spent on patients with MCC and over a third of all healthcare expenditures are spent on patients with five or more health conditions (Gerteis et al., 2014). In 2010, average annual healthcare spending was estimated to be \$4,731 for two chronic conditions, \$6,751 for three chronic conditions, \$9,162 for four chronic conditions, and \$15,954 for five or more conditions (Gerteis et al., 2014).

Using data from the 2009 Medical Expenditure Panel Survey, it was determined that the average annual medical care expenditure for adults with two to three chronic conditions was \$8,478 and that the average medical care expenditure for adults with four or more chronic conditions was \$16,257 (Machlin & Soni, 2013). These care expenditures are in stark contrast to the average medical expenditure of \$2,367 that is spent to manage the health needs of adults who do not require treatment for MCC.

Due to the fact that the Medicare program was designed to support the healthcare needs of persons aged 65 years and older as well as persons under age 65 with permanent disabilities, Medicare patients are recognized as being high healthcare utilizers and as contributing significantly to healthcare costs. Schneider, O'Donnell, and Dean (2009) examined Medicare expenditures associated with MCC across

adults aged 65 years and older. Results revealed that the annual Medicare payment for beneficiaries with one condition was \$7,172, the annual payment for beneficiaries with two conditions was \$14,931, and the annual payment for beneficiaries with three or more conditions was \$32,498.

In an older but influential study, Wolff, Starfield, and Anderson (2002) examined data from a random sample of approximately 1.2 million Medicare beneficiaries who were 65 years of age and older and found that 67% of those sampled experienced MCC. Beneficiaries with MCC accounted for 95% of Medicare costs. After controlling for the effects of age and gender, individuals with four or more chronic medical conditions were almost 100 times more likely to undergo hospitalization for a medical circumstance that could have been managed with a primary care intervention. While the average annual cost for Medicare beneficiaries with no chronic condition was \$211, the average annual cost for Medicare beneficiaries with four or more chronic conditions was \$13,973. The investigators concluded that improvements in primary care access and interventions could lead to a reduction in hospitalization rates and costs, especially for those beneficiaries with MCC.

As part of a finer analysis of healthcare expenditures associated with multiple chronic conditions, Skinner, Coffey, Jones, Heslin, and Moy (2016) examined the ambulatory care costs and hospitalization costs incurred by persons with chronic medical conditions. Using the 2012 State Inpatient Databases (SID), databases developed as part of the Agency for Healthcare Research and Quality Healthcare Cost and Utilization Project, Skinner and colleagues reviewed 1.43 million claims to determine the number of chronic medical conditions experienced by claimants. Findings revealed that approximately 38% of claimants had two or three chronic conditions, 30% had four or five chronic conditions, and 10% had six or more chronic conditions. Using claimants with zero or one chronic condition as the comparison group, claims data revealed that ambulatory care costs were 19% higher for claimants with two or three conditions, 32% higher for those with four or five conditions, and 31% higher for those with six or more conditions. When hospital stays involved management of acute conditions (i.e., dehydration, bacterial pneumonia, and urinary tract infections), results revealed that hospital stays were 11% longer for claimants with two or three conditions, 21% longer for those with four or five conditions, and 27% longer for those with six or more conditions. When hospital stays were required to manage chronic conditions (e.g., diabetes, chronic obstructive pulmonary disease, and congestive heart failure), the relation of increasing numbers of chronic conditions to lengthier hospital stays was again observed. Finally, it was determined that the relation of increasing chronic conditions to increasing care costs was largely a function of lengthier hospital stays experienced by persons with MCC rather than higher per day care costs.

The SID databases used by Skinner et al. (2016) include hospital discharge data from US community hospitals. Zulman and colleagues undertook the study of MCC as found among US Veterans and as managed within the Veterans Administration healthcare system (Zulman et al., 2015). To determine the economic impact of high utilization patients on the VA healthcare system, these researchers reviewed the files of 5.2 million patients who received VA healthcare services in the year 2010. The

researchers found that 50% of the total VA healthcare expenditures for 2010 were made as part of managing the healthcare needs of the 5% of patients ( $N = 261,699$ ) with the highest rates of care utilization. Approximately two-thirds of those patients had chronic conditions that affected three or more organ systems.

Lehnert et al. (2011) completed a systematic review of 35 studies that examined healthcare outcomes (i.e., physician use, hospital use, and medication use) and healthcare costs (i.e., medication costs, out-of-pocket costs, and total healthcare costs) among elderly persons with MCC. The authors noted that, although the synthesis of studies was limited by the variability in definitions of MCC used and the different outcomes measures employed across studies, it can be concluded that the relation of MCC to healthcare use and healthcare cost is positive, with each additional chronic condition associated with an increase in healthcare utilization and an exponential increase in the cost of that healthcare. The authors noted that there are few care models that properly attend to the needs of elderly persons with MCC. They recommended that a comprehensive care management approach be taken in treating such patients, one that would accommodate the different diseases, treatment settings, care providers, and treatment locations that are part of usual care for persons with MCC.

Using an integrated healthcare model, Bayliss and colleagues sought to demonstrate the utility of continuity of care in reducing healthcare utilization among elderly persons with MCC (Bayliss et al., 2015). This study was conducted in response to findings from earlier studies that characterized older MCC populations as more vulnerable to fragmented healthcare and indicated low continuity of care as associated with inappropriate medication use, more emergency room visits and hospitalizations, and higher mortality rates. Using the electronic records of 12,200 members of Kaiser Permanente in Colorado, a not-for-profit integrated healthcare delivery system, the researchers examined the relation between patients' perceptions of care continuity and their utilization of healthcare services. Participating patients were 65 years or older, and continuity of care was assessed using Bice and Boxerman's (1977) Continuity of Care Index. The results indicated that after controlling for demographics and clinical covariates, greater primary and specialty care continuity was associated with fewer inpatient admissions and fewer emergency room visits. Of note, analyses performed on the subgroup of patients who attended three or more primary care visits and three or more specialty care visits revealed that specialty care continuity contributed to a decrease in hospital admissions and primary care continuity contributed to a decrease in emergency room visits.

Studies examining the cost of MCC in the young are limited. In one of the best available studies examining chronic conditions among young persons and the associated healthcare costs, Zhong et al. (2015) performed a retrospective cohort study of all dependents ( $N = 14,727$ ) of Mayo Clinic employees over the 4-year period between 2004 and 2007. The researchers determined that, for children with no chronic condition, average annual medical costs totaled \$1,483; for children with four or five chronic conditions, average annual medical costs ranged from \$12,524 to \$33,782. Children's experiences of MCC also were determined to persist over time and to be associated with consistently high medical costs. Those children with MCC that

placed them in the top 10th percentile of healthcare expenditures during the first year of the study were more likely to incur similarly high healthcare costs 3 years later.

### *Impairment and Disability*

When a medical condition is experienced as a chronic and disabling circumstance, the effect of that condition on function tends to follow a familiar and predictable progression from disease diagnosis to functional impairment to partial or total disability (Duckworth & Iezzi, 2010; Duckworth, Iezzi, & Shearer, 2012). For patients with MCC, this progression from disease diagnosis to disability is often accelerated and associated with even greater burden. Impairment is defined as “a loss, loss of use, or derangement of any body part, organ system, or organ function,” while disability is defined as “an alteration of an individual’s capacity to meet personal, social or occupational demands because of an impairment” (Cocchiarelli & Andersson, 2001, p. 3). For persons with MCC, physical impairments may include the reduced ability to sit, stand, walk, lift, carry, bend, etc. Physical impairments then lead to reduced involvement in routine activities. For patients who are less than 65 years of age, the ability to work is often affected, which can lead to financial losses that interfere with MCC patients’ ability to maintain basic necessities of living, including food, shelter, clothing, and healthcare. Regardless of age, the presence of MCC is associated with a marked decrease in housekeeping and home maintenance tasks, recreational activities, social interactions, familial and marital activities, and physical and nonphysical intimacy. Physical impairments can sometimes be so extreme that they render MCC patients unable to engage in basic activities of daily living (ADLs) such as eating, bathing, dressing, toileting, and sleeping. The more changes in ADLs and overall quality of life that persons with MCC experience, the more likely it is that they will experience emotional distress. The emotional distress can reach such an intensity that it can be disabling.

With the goal of identifying promising avenues for health promotion and disease prevention among older adults, Barile and his colleagues (2013) used baseline and 2-year follow-up data from 27,334 respondents to the Medicare Health Outcomes Survey to examine associations among MCC, ADLs, and quality of life. Activities of daily living were assessed using a six-item measure (Katz, Ford, Moskowitz, Jackson, & Jaffe, 1963), and health-related quality of life was assessed using two items from the CDC’s Healthy Days Measures (Moriarty, Zack, & Kobau, 2003). Findings indicated that MCC, when present at baseline and as a circumstance that developed over the 2-year sampling period, were associated with reduced engagement in ADLs and poorer quality of life. The authors concluded that any effective intervention for patients with MCC would have significant effects on clinical outcomes and healthcare costs. They also emphasized the need for broad-based interventions designed to impact different aspects of MCC (i.e., increase patient engagement in health-promoting behaviors [e.g., exercise, good nutrition, and stress management] and decrease patient engagement in disease-promoting behaviors [e.g., overeating, smoking, and substance use]).

Salive (2013) examined the administrative claims of over 31 million Medicare beneficiaries for the presence of 15 prevalent medical conditions, and he reviewed 17 studies examining MCC among community samples of older adults. It was determined that 67% of the Medicare beneficiaries experienced multimorbidity, with multimorbidity present in 50% of beneficiaries younger than 65 years of age, 62% of those aged 65 to 74 years, and 82% of those aged 85 years and older. Based on his review of the 17 community studies, Salive concluded that multimorbidity was associated with adverse drug events, poor functional status, poor quality of life, increased disability, and elevated risk of death. He noted that these conclusions were consistent with two other systematic literature reviews of this literature (Fortin et al., 2004; Gijzen et al., 2001).

Gully, Rasch, and Chan (2011) used data from the Medical Expenditure Panel Survey (2002–2004) to examine the relations among MCC, disability, and health-care utilization. Among those persons reporting limitations in any basic or instrumental ADLs, 35% experienced four or more medical conditions. The investigators also noted that limitations of any kind consistently predicted more emergency department visits and hospitalizations and greater problems with healthcare access.

In an attempt to develop models that would allow for the prediction of functional outcomes experienced by persons with MCC, Alonso-Moran, Nuno-Solinis, Onder, and Tonnara (2015) conducted a review of studies published between 1994 and 2014 that examined persons with MCC and documented the outcomes experienced by such patients. From a total of 3,674 citations, the researchers identified 29 articles that met criteria for inclusion in the review. Different measures of multimorbidity were employed across studies, with the Charlson Comorbidity Index (Charlson, Pompei, Ales, & MacKenzie, 1987) being the most frequently used measure (used in 12 of the 29 studies). Clinical and administrative data were used to establish rates of hospital admission and readmission. The diseases identified as contributing most significantly to the prediction of negative health and functional outcomes were chronic obstructive pulmonary disease, cardiac heart failure, cerebrovascular disease, and diabetes. As a multidimensional construct, ADLs served as an important predictor of functional impairment and disability.

Research has been undertaken to determine whether different patterns of multimorbidity are associated with different patterns of functional impairment and disability (Jackson et al. 2015; Quinones, Markwardt, & Botosaneanu, 2016). For their study of multimorbidity and functional impairment, Jackson and colleagues surveyed a total of 7,270 older women (aged between 76 and 81 years) who participated in the Australian Longitudinal Study on Women's Health. Survey data were collected every 3 years over the 9-year period between 2002 and 2011. Functional ability and functional decline were assessed using eight basic ADLs (grooming, eating, bathing, dressing upper body, dressing lower body, getting up from chair, walking, and toileting) and eight instrumental ADLs (doing housework, managing finances, preparing meals, taking medications, using the telephone, shopping, doing laundry, and managing transportation). Data pertaining to 31 self-identified chronic conditions were submitted to factor analysis, and three patterns of multimorbidity were revealed: (1) musculoskeletal/somatic (representing conditions such as back



pain, arthritis, and headache), (2) neurological/mental health (representing conditions such as dementia, depression, anxiety, and stroke), and (3) cardiovascular (representing conditions such as hypertension, heart attack, and angina). When applied to data collected during the initial project year, persons who evidenced higher factor scores across the three patterns of multimorbidity evidenced higher levels of functional impairment (as measured by basic and instrumental ADLs [IADLs]) than did a reference group of persons who obtained lower factor scores. Findings revealed that, during the 7-year period between 2005 and 2011, women in the cardiovascular group experienced the greatest decline in basic ADLs, while women in the neuromuscular/mental group experienced the greatest decline in IADLs. The authors concluded that different multimorbidity patterns were associated with different patterns of functional decline and disability and that such findings would have implications for both the management and prevention of MCC.

A large-scale study of older Americans revealed findings similar to those obtained by Jackson et al. (2015) in their study of older Australian women. Using data from the Health and Retirement Study and employing a prospective cohort design, Quinones et al. (2016) examined 8,782 participants, aged 65 years and older, to identify combinations of chronic conditions and to determine the manner in which different combinations of chronic conditions contribute to functional impairment and disability. Unlike the Jackson et al. study, depressive symptoms were included as one of the chronic conditions evaluated in this study. The three most prevalent combinations of chronic conditions were (1) hypertension and arthritis; (2) hypertension, arthritis, and cardiovascular disease; and (3) hypertension, arthritis, and diabetes. Only one of the 14 identified multimorbidity combinations included depressive symptoms. Compared to persons with any other single chronic condition or combination of chronic conditions, persons who reported the combination of arthritis, hypertension, and depressive symptoms evidenced the highest level of disability across both basic ADLs and IADLs. This finding held even after the influence of age, gender, education, race/ethnicity, and body mass index was controlled. The authors indicated that, when added to other chronic conditions, depressive illness might confer a level of burden greater than that associated with adding another chronic medical condition (e.g., asthma).

The importance of disability to the health and survival of persons with chronic medical conditions was made even more salient by Marengoni, von Strauss, Rizzuto, Winblad, and Fratiglioni's (2009) examination of data from the Kungsholmen Project (1987–2000), a Swedish, community-based, prospective study of aging and dementia. Data from 2,368 persons, aged 75 years and older, were used to determine the independent and combined contributions of MCC and disability to function and survival outcomes at three-year follow-up. At baseline assessment, 52% of participants were diagnosed with MCC and 12% experienced partial or total disability, with partial disability defined as need for assistance with two to four basic ADLs and total disability defined as the need for assistance with five to six basic ADLs. At 3-year follow-up, the health status of 85 participants had worsened and 365 participants had died. The number of diagnosed conditions was positively and significantly associated with risk of functional decline but was not significantly associated

with risk of mortality. Interestingly, baseline disability had the highest effect on survival independent of the number of MCC. The authors concluded that, among elderly persons, disability is a stronger predictor of function and survival than is multimorbidity.

Disability of any kind (physical or psychological) represents a significant complicating aspect of the MCC experience. Each additional chronic condition increases functional impairment and decreases quality of life (Jindai, Nielson, Vorderstrasse, & Quinones, 2016). In fact, the amount and kind of disability may play a more important role in the MCC experience than an actual count of chronic conditions. Additional research examining the contribution of disability to MCC-related morbidity and mortality is warranted.

### *MCC and Psychological Distress*

It has been long recognized that patients with chronic medical conditions experience co-occurring psychological conditions, most commonly depressive disorders, anxiety disorders, and substance use disorders. However, the process by which these medical conditions and psychological conditions co-occur is not always understood. Psychological factors are known to play a significant role in the development, maintenance, and exacerbation of chronic medical conditions, and chronic medical conditions are known to precipitate psychological distress reactions, even in patients who do not have any psychiatric history prior to medical diagnosis. It is also clear that some psychological disorders constitute a significant burden for the individual sufferer and for the healthcare system. Given all that is known about the interacting influences of medical and psychological conditions and the burden these conditions present in isolation and in combination, it is important to recognize that few studies have examined the relation between medical and psychological conditions in the context of MCC.

Cabassa et al. (2013) used the data from National Epidemiologic Survey on Alcohol and Related Conditions to determine the risk of MCC conferred by the presence of a psychiatric disorder as well as the risk conferred by ethnic/racial identity (African American, Hispanic, and non-Hispanic White). Data collected from 33,107 survey participants were submitted to multinomial logistic regression analyses. Findings revealed that participants diagnosed with psychiatric disorders experienced a higher likelihood of MCC than participants with no psychiatric diagnosis. It was determined that, after controlling for the effect of covariates (i.e., other sociodemographic variables, body mass index, psychiatric disorders, and quality of life), African American participants experienced the highest odds of MCC and Hispanic participants the lowest likelihood of MCC.

Byles et al. (2014) used data from 236,508 participants in the New South Wales 45 and Up Study, an ongoing study of healthy aging among Australian adults, to examine the associations among self-reported physical conditions, psychological distress (as measured by the Kessler Psychological Distress Scale; Kessler et al.,

2002), and disability (as measured by the SF-36 Physical Function subscale; Ware, Kosinski, & Keller, 1994). The investigators focused on heart attack/angina, other heart disease, stroke, and diabetes as singular physical conditions and as co-occurring physical conditions. As singular conditions, all medical conditions were associated with higher risk of high to very high psychological distress; the significance of the relation of individual medical conditions to psychological distress was maintained even after comorbidity, disability, and sociodemographic factors were added to the prediction model. When compared to participants reporting no need for assistance with daily life tasks, women who reported needing assistance with daily life tasks were seven times more likely to experience marked psychological distress, and men who reported needing assistance with daily life tasks were nine times more likely to experience marked psychological distress. Participants who were unable to work due to illness or disability had the highest rates of psychological distress.

Finally, Banhato et al. (2016) examined depressive symptoms in a sample of 1,558 Brazilian patients with MCC, all of whom attended a center that treated patients with hypertension, diabetes, and chronic kidney disease and underwent semi-structured interview over the 3-month study period. Results revealed that 33% of the study sample had depressive symptoms. After controlling for age and education, the presence of depressive symptoms was predicted by being female, being a smoker, and having diabetes. Although study findings regarding the prevalence of depressive symptoms are interesting, depressive symptoms were measured using only two items from a patient history form. These findings need to be replicated using brief but psychometrically sound measures of depression and other psychological disorders that are common among persons with chronic medical conditions.

Although clinically significant psychological distress occurs in relation to MCC, healthcare providers sometimes fail to recognize symptoms of psychological distress and/or appreciate the influence of distress symptoms on the health and treatment outcomes experienced by patients with MCC. Also key to the healthcare provider's effective evaluation and treatment of such patients is knowledge of the coping strategies, both adaptive and maladaptive, that patients routinely employ to managing their medical conditions and the associated changes in function. Early and ongoing assessment and management of the psychological symptoms serve to improve patients' overall health and well-being and need to become a routine component of care provision for patients with MCC.

## **Biological and Environmental Risk Factors Associated with MCC**

Biological and environmental risk factors for a single medical condition such as cardiovascular disease, diabetes, stroke, arthritis, renal disease, respiratory disease, or cancer have been long recognized; however, the relation of these risk factors to

MCC has not been well established. There are a handful of studies that actually examine biological and lifestyle risk factors that contribute to the etiology of MCC. Overall, the evidence seems to provide stronger support for the contribution of environmental factors to MCC.

Gijzen et al. (2001) reviewed 82 studies that examined the causes and consequences of medical comorbidity. Only four of the reviewed studies revealed support for genetic susceptibility and familial risk as causes of comorbidity, and the support for these biological variables relations was considered weak. On the other hand, evidence for the relation of comorbidity to healthcare utilization, quality of life, and mortality was stronger. In a more recent review, Salive (2013) identified 16 studies that examined the prevalence of multimorbidity in elderly community samples. He noted that body mass index was one biological risk factor associated with multimorbidity. He also indicated that there was more evidence for the role of childhood financial hardship, lifetime earnings, lower education, tobacco use, poor dietary habits, alcohol consumption, and physical inactivity as contributors to multimorbidity.

Using data from a sample of 1,594 adults with long-term physical disability due to muscular dystrophy, post-polio syndrome, or spinal cord injury, Smith, Molton, and Jensen (2016) examined the incidence, prevalence, age at onset, as predictors of five chronic conditions: arthritis, cancer, coronary heart disease, diabetes, and hypertension. During the 3.5-year study period, the most commonly reported new-onset conditions were arthritis (14%), hypertension (9%), and cancer (7%). The report of new conditions occurred most frequently among participants between the ages of 56 and 65 years, and the strongest risk factors included greater body mass index and waist circumference and the presence of another comorbid condition at baseline. Research examining whether changes in modifiable factors (e.g., exercise) at midlife or earlier can help to prevent or delay onset of comorbid conditions was recommended by the authors.

More evidence is beginning to accumulate supporting the significance of the relation of adverse childhood events (ACE) to long-term health and overall well-being (Ben-Shlomo & Kuh, 2002; McCrory, Dooley, Laytr, & Kenny, 2015; Raposa, Hammen, Brennan, O'Callaghan, & Najman, 2014). ACE include family dysfunction, parental illness, neglect, and abuse of all types. The exact manner in which ACE influence the development of physical disease later in life has yet to be empirically proven; however, McCrory et al. (2015) proposed three approaches that might be taken in modeling the contribution of ACE to disease in later adulthood. For one set of explanatory models, the authors propose that ACE be viewed as distal factors that act on proximal factors (e.g., low education leading to lower occupational position and income), which then specify environmental conditions in adulthood (e.g., substandard housing, poor nutrition, and poor health behavior) and contribute to the onset of chronic conditions. As a second approach, aspects of the early psychosocial environment would be viewed as instrumental in going from ACE to disease. For example, children who grow up in risky social environments may be more likely to develop maladaptive coping styles, emotional dysregulation, and social cognitions that increase their exposure to stress and affect their responses to stress later in life (Repetti, Taylor, & Seeman, 2002). As a third approach, these authors recommend

that emphasis be placed on neurophysiological pathways (e.g., endocrine and immunologic systems) in determining children's responses to stress. These models would emphasize the chronic activation of the sympathetic nervous system and activation of the hypothalamic-pituitary-adrenal axis that characterize responses to stress. Chronic activation of these systems can lead to chronic homeostatic dysregulation, which can exhaust physiological systems and increase the risk for disease.

In one of the few empirical examinations of the relation of ACE to disease, McCrory et al. (2015) used data from 6,912 participants in the initial wave of the Irish Longitudinal Study on Aging to examine the influence of ACE on disease risk, disease onset, and disease comorbidity. A four-item measure was used to document participants' experiences of ACE, and the risk, onset, and comorbidity related to nine chronic disease types were established by doctor diagnosis. Results indicated that ACE were associated with increased risk of cardiovascular disease, lung disease, and emotional, nervous, or psychiatric disorders. The relation of ACE to disease conformed to a dose-response pattern, with increased numbers of ACE translating to increased disease risk later in life. ACE were also associated with earlier onset for any physical disease or psychological disorder. The authors concluded that childhood may be a sensitive period for the development of medical conditions and highlighted the import of using a lifespan approach to studying chronic conditions.

Another study examined the relation between self-reported ACE and multimorbidity and the contribution of other social, behavioral, and psychological factors to that relation (Sinnott, McHugh, Fitzgerald, Bradley, & Kearney, 2015). Data were collected from 2,047 participants recruited from a large primary care center as part of the Mitchelstown cohort phase of the Cork and Kerry Diabetes and Heart Disease Study. The number of ACE experienced was documented using the Center for Disease Control ACE measure. Multimorbidity status was defined as 0 chronic diseases, 1 chronic disease, or 2 or more chronic diseases. ACE were reported by 28% of participants in the multimorbidity group, 21% of participants in the single-disease group, and 16% of participants with no chronic diseases. Results of ordinal logistic regression analyses revealed that, after adjusting for education, health coverage, smoking, exercise, diet, body mass index, and anxiety/depression scores, a positive history of ACE conferred a 1.4 increased risk for multimorbidity.

## Medical Management of MCC

The medical management of a chronic medical condition is usually dictated by well-established, condition-specific guidelines for use of pharmacotherapy as well as condition-specific recommendations around exercise, nutrition, and other lifestyle behaviors. For example, the management of cardiovascular disease can initially include a host of medications (e.g., antihypertensive, statin, beta-blocker, angiotensin-converting enzyme, aspirin, antidepressant, and anxiolytic), which then might be followed by physical rehabilitation and psychological management when indicated.

Medical management of MCC consists of similar approach but requires an appreciation for the complexity of managing several serious medical conditions at the same time. Although there are a number of different medical models of care, the most influential model is the Chronic Care Model (CCM; Wagner, Austin, & Von Korff, 1996; Wagner et al., 2001). The CCM has become the standard in guiding the assessment and management of MCC. It was largely developed out of a recognition that chronically ill patients are often dealing with co-occurring physical, psychological, and cognitive sequelae and require an integration of care systems to meet their needs. The CCM is a collaborative, patient-centered, and goal-oriented model of care and dictates that healthcare providers and patients collaboratively generate the care plan and set goals for accomplishing that plan, that healthcare providers train and support patients in their self-management efforts, and that follow-up care be provided to alter and redefine the care plan as needed.

Wagner et al. (1996) also noted that, regardless of research design employed to study the treatment of chronic illness, components of high-quality care were characterized by the following: (1) using clearly defined plans and protocols; (2) changing the organization of practice to provide more time, variety of resources, and closer monitoring to be more able to meet the needs of patients (e.g., when appointments are scheduled); (3) providing systematic attention to the information and attending to behavioral change in patients (e.g., self-management); (4) relying on quick access to specialty services (e.g., expert consultation); and (5) providing information that is supportive (e.g., reminders or feedback). Development of the CCM also led to the development of stepped care protocols (Von Korff, 2000). Stepped care interventions are clinical guidelines that go from least costly and demanding to most costly and demanding and are assigned to patients based on observable outcomes. Stepped care for individuals requires higher levels of coordination among service providers (e.g., PCPs, specialist care providers, providers representing other allied care disciplines, or case managers).

Bleich et al. (2015) conducted a systematic review of programs treating patients with high-need and high-cost MCC. Their review yielded 27 treatment studies, with 12 of the 27 studies being randomized control trials (RCTs) that covered 5 models of care (care or case management, chronic disease self-management, disease management, nursing home care, and transitional care). With the exception of the transitional care model, all models of care yielded some positive clinical outcomes, but most studies did not show these models of care to be associated with marked improvements in clinical outcomes, patient satisfaction, or healthcare utilization and spending. The care or case management and disease management models were the only two models of care associated with improvements across all three outcome categories, with the care or case management model having its greatest effect on healthcare utilization and spending and the disease management model having its greatest effect on clinical outcomes. The authors did add the caveat that model processes and applications varied considerably across studies and these variations may explain the different model effects observed within and across outcome categories.

Smith, Wallace, O'Dowd, and Fortin (2016) completed a systematic review of interventions for patients with multimorbidity in primary care and community settings.

Eighteen RCTs were identified, with nine studies focusing on more commonly experienced comorbid conditions and the remaining nine studies focusing on multimorbidity among older adults. In 12 studies, the organization of care served as the target for intervention (i.e., changing the care context from standard care to case management or a multidisciplinary team approach). In six studies, interventions were delivered directly to patients, with emphasis placed on education and self-management. Overall, the results were mixed, with no clear improvements observed across clinical outcomes or healthcare utilization and only small to moderate improvements observed across measures of mental health, patient-reported functional outcomes, medication compliance, and patient-related health behaviors. The authors concluded that it is difficult to improve clinical and associated outcomes among patients with multimorbidity.

Brady et al. (2013) conducted a meta-analysis of 23 studies evaluating the physical and psychological benefit of the Chronic Disease Self-Management Model (Lorig et al., 1999), a 6-week community-based intervention aimed at improving self-management of chronic conditions by increasing self-efficacy skills. Results indicated moderate improvements in self-efficacy and small to modest improvements in psychological health and health behaviors 12 months posttreatment. However, improvements across physical health outcomes were less consistent.

## **Integrating Empirically Supported Cognitive-Behavioral Strategies for the Management of MCC**

Rehabilitation strategies that can be used across different medical conditions are required to manage the physical and psychological sequelae of MCC. Interventions that serve to improve coping strategies used in relation to a single chronic condition are likely to be beneficial to persons experiencing MCC. Treatment programs for MCC should be guided by a philosophy that dictates that the complexity and challenge of living with MCC be fully appreciated and that every effort be made to maintain as much function as possible across as many life domains as possible. The following sections present an array of empirically supported strategies that we have found useful in our efforts to help patients identify and manage their chronic conditions and the functional limitations and psychosocial challenges that are often associated with MCC.

### ***Goal Setting***

While patients will have to accept physical limitations associated with MCC, patients will still want to optimize their functioning and make improvements across life domains in which change is possible. Goal setting is characterized by the

identification of a specific behavioral goal. Rather than immediately implementing a behavior change, patients can benefit from the progressive change that occurs through goal setting. Goal setting involves the creation of an action plan and a time-frame for the completion of each goal-directed action. To enhance the objectivity of goals and action plans, goals should be specific, measurable, achievable, realistic/relevant, and timed (SMART; Doran, 1981; Bovend'Eerd, Botell, & Wade, 2009). Patients may have a difficult time identifying clear and realistic goals and physicians and psychologists should assist patients in the identification of patient-specific SMART goals. Appropriate SMART goals in the context of MCC management may include increasing compliance with treatment recommendations and decreasing treatment interfering behaviors.

Adherence to the action plan is critical to achieving an identified goal. Pacing is a strategy that can optimize the likelihood of both action plan adherence and goal achievement. Pacing involves increasing an infrequent behavior in a controlled manner. The goals of pacing are to increase patients' consistent engagement in desired behaviors and decrease the influence mood has on patients' engagement in the desired behaviors (Nielson, Jensen, Karsdorp, & Vlaeyen, 2013). There is a strong association between mood and engagement in goal-directed behaviors, with negative mood predicting less behavioral engagement and positive mood predicting more behavioral engagement (Andrews, Strong, & Meredith, 2012). While patients with MCC may understand the way in which negative mood and underactivity can hinder treatment, patients may not intuitively understand the way in which overactivity can also hinder treatment. Overactivity refers to a level of behavior that exceeds the level specified within a patient's action plan. Patients should be oriented to the risk of exhaustion and burnout associated with overactivity and the cyclical nature of overexertion and underactivity. To increase the likelihood of achieving treatment goals, patients with MCC should adhere to their action plans, neither over nor under engaging in goal-oriented behaviors.

### ***Therapeutic Writing and the Psychological Benefits of the Medical Narrative***

Therapeutic writing is a strategy that patients can use to monitor their medical conditions; the physical, psychological, and functional changes they experience consequent to their medical conditions; and the interaction of these experiences throughout the treatment and management of their medical conditions. Therapeutic writing is also referred to as expressive writing or journaling in the psychological intervention literature. Therapeutic writing involves personal reflection and/or emotional disclosure through writing on multiple occasions over a period of time (Cummings, Hayes, Saint, & Park, 2014). In their review examining the health benefits of therapeutic writing, Baikie and Wilhelm (2005) found that therapeutic writing was associated with improvements in the following health-related outcomes: blood pressure,



immune system function, lung function, mood/affect, and self-reported psychological well-being. Baikie and Wilhelm also found that therapeutic writing was associated with fewer days in the hospital, fewer stress-related visits to the doctor, and fewer posttraumatic stress and avoidance systems. The results of other reviews have suggested that the effects of therapeutic writing may be more modest than previously thought (Frisina, Borod, & Lepore, 2004; Zachariae & O'Toole, 2015). Despite small effect sizes, Zachariae and O'Toole conclude that therapeutic writing may still be clinically relevant due to the inexpensive and easily disseminable nature of writing interventions.

Although the general effectiveness of therapeutic writing as a psychological intervention has been demonstrated, there are number of implementation strategies that psychologists and other behavioral health specialists can utilize to optimize the effectiveness of therapeutic writing. The benefits of therapeutic writing will be further enhanced when delivered in the context of a multicomponent intervention that incorporates empirically supported and complimentary therapeutic strategies. Miller (2014) outlined several strategies for the use of therapeutic writing in psychotherapy including interactive journaling, structured writing prompts for patients pertaining to treatment-relevant information, and encouraging patients to integrate the information they learn into their journal entries. Miller also suggested that interactive journaling may promote behavior change. Cummings et al. (2014) recommended that psychologists and other behavioral health specialists monitor patient's engagement in writing and consider incorporating designated writing time into sessions. Patients should be encouraged to monitor the relation of skills learned in treatment to the experience of psychological distress. Psychologists and other behavioral health specialists should consider therapeutic writing as a tool to help patients gain insight regarding effective and ineffective coping strategies. Therapeutic writing can help patients to track the changes they make in treatment and promote continued change.

A medical narrative is important in addressing the psychological distress that often accompanies MCC. A medical narrative is a written, first-person account of all that the patient has experienced as a consequence of the medical condition. Outside of the medical context, narratives have been incorporated into the treatment of posttraumatic stress reactions (Monson et al., 2006; Resick & Schnicke, 1993) as well as the treatment of stress responses, more broadly. To construct a narrative, individuals are asked to write about their stressful experience and their interpretation about the event and their role in the event. Given the stress and life-changing consequences associated with medical conditions, narratives are highly applicable to patients with MCC. The narrative analysis centers on the way a patient tells his/her narrative. The psychologist or behavioral health specialist assesses the amount of narrative details provided, narrative coherence, amnesia for or gaps in the chronology of the event, the affect that accompanies the telling (e.g., shame), and the interpretations that are made (e.g., lack of agency). Consistent with cognitive-behavioral therapy and cognitive processing therapy, psychologists and other behavioral health specialists help patients to identify inaccurate and unhelpful interpretations within the narrative and adopt more adaptive interpretations of their

experience (Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012; Monson et al., 2006). It is assumed that more objective interpretations of their medical condition and their current life circumstances will lead to more positive affect and more adaptive behavioral responses to the unique challenges associated with having MCC. Beyond objective interpretation, there is evidence that increased integration of stressful life experiences into the macronarrative of one's life is predictive of decreased psychological distress (Holland, Currier, Coleman, & Neimeyer, 2010; Lancaster & Carlson, 2015). The use of medical narratives can influence the way in which medical conditions are placed within a patient's larger life context and the meaning a patient makes of their medical conditions. Medical narratives can aid the integrated care team members in identifying those person-specific interpretations and reactions to medical conditions that most influence recovery and quality of life and guide interventions related to the patient's acquisition and use of the most effective coping strategies.

### *Therapeutic Reading and the Psychological Benefits of Reading*

Bibliotherapy is one form of self-help that has been developed based on empirically supported psychological treatments and has been shown to be effective at reducing psychological distress and pain and improving quality of life across a variety of clinical populations (Högdahl, Birgegård, & Björck, 2013; Johnston, Foster, Shennan, Starkey, & Johnson, 2010; Thorsell et al., 2011). Muschalla, Glatz, and Linden (2013) found bibliotherapy to improve health-related knowledge among patients with cardiovascular disease. It appears that reading about illness may help to familiarize patients with treatment options and the healthcare system in which they are being treated. Bibliotherapy is also a convenient self-help resource for patients with MCC, particularly if constraints associated with their medical conditions impact patients' physical functioning and mobility. Patients can access treatment within their home and complete treatment at a pace that corresponds to their individual level of strength and stamina. The empirical basis and practical nature of bibliotherapy make it an appropriate treatment option for patients with MCC.

While the first aim of bibliotherapy is to reduce psychological distress, bibliotherapy and therapeutic reading can result in other positive effects. Therapeutic reading refers to patients' use of literature as a resource for understanding, expressing, and managing challenges specific to their medical problems as well as other difficult life circumstances. The use of books can also help patients to gain insight into personal challenges and promote positive identification with others who are experiencing similar challenges (Heath, Sheen, Leavy, Young, & Money, 2005). Information about chronic illnesses and their associated consequences are often presented to patients in a formal manner. To supplement the formal presentation of medical information, Kaptein, Meulenberg, and Smyth (2015) suggested that patients may benefit from exposure to art forms that depict illness, including novels. Kaptein and colleagues proposed that informal representations of illness may help

to humanize medical conditions and medical care. In summary, therapeutic reading has obvious implications for the treatment of psychological distress as well as the potential to increase health-related knowledge and patients' emotional understanding of their condition-specific experiences.

### *Self-Advocacy and Effective Management of System Issues*

Navigating the healthcare system can be challenging, particularly when patients are managing MCC and frequently interacting with multiple healthcare providers. The ability to obtain, understand, process, and communicate health-related information is referred to as health literacy (Institute of Medicine, 2004). Following the onset of medical conditions, efforts to minimize the condition symptoms (secondary prevention) and to minimize the functional impairments that are associated with the condition symptoms (tertiary prevention) are necessarily complex (Hayes, Barlow, & Nelson-Gray, 1999). The success of such efforts depends on person-level variables, including prior history of chronic disease, prior history of coping with medical conditions, availability and ability to access support within their own social network, availability and ability to access healthcare, ability to negotiate compensation systems (e.g., the worker's compensation system, insurance companies, and the legal system), as well as system-level variables, including healthcare initiatives and mass media campaigns designed to increase awareness of resources both to prevent health-related adverse events and to limit the negative consequences of medical conditions. Patients with MCC need to educate themselves about their medical conditions, the roles of their various healthcare providers, and the larger healthcare system.

While understanding the healthcare system is an important skill, patients are also expected to take an active part in their treatment. Medical self-advocacy refers to a patient's assertiveness regarding his/her healthcare needs, willingness to challenge healthcare providers, and active participation in treatment decision-making (Brashers, Haas, & Neidig, 1999). Martin et al. (2011) examined the relation of literacy skills to patients' self-advocacy, which was measured by responses to a vignette that described barriers to scheduling a medical appointment. Responses were coded as counterproductive, passive, somewhat proactive, becoming proactive, and proactive, with level of proactivity equated with level of self-advocacy. Results revealed that literacy skills were associated with more proactive responses to the vignette.

Closely related to medical self-advocacy is patient activation. Patient activation refers to the skills and confidence that allow patients to actively engage in their healthcare (Hibbard & Greene, 2013). Hibbard, Greene, Shi, Mittler, and Scanlon (2015) examined the influence of patient activation on health-related outcomes at a 4-year follow-up assessment among patients with chronic conditions. Results revealed that higher activation at baseline was associated with greater self-management and functioning and less costly healthcare utilization at the 4-year follow-up assessment. Most recently, Hibbard, Mahoney, and Sonet (2017) examined

the impact of patient activation on health-related outcomes among cancer patients. Findings demonstrated that patients who were actively involved in their treatment were more likely to perceive their treatment plan as consistent with their values, cope with treatment side effects effectively, and initiate healthier diets in comparison to less activated patients. It appears that patients who actively engage in treatment are more likely to experience positive outcomes than patients who take a less active role in their treatment.

In addition to engagement in treatment, patient activation skills include interpersonal effectiveness skills. Interpersonal effectiveness skills are used to optimize the likelihood that patients will successfully manage the complex healthcare system and experience improved health outcomes. In the context of medical consultation, patients should first acknowledge the effort healthcare providers are putting into their treatment and the components of treatment the patient finds to be helpful. Second, patients should indicate the components of treatment that have not been found to be helpful and about and/or request alternative treatment options in an assertive manner. Third, patients should explain why honoring their request or exploring the proposed alternatives would benefit the healthcare provider (e.g., greater patient treatment compliance or patient gratitude). The patient should highlight their shared goal with the healthcare provider, improving the patient's health. These components are consistent with the components of dialectical behavior therapy (DBT) interpersonal effectiveness skills (Linehan, 2014). The goals of DBT interpersonal effectiveness skills include: obtaining the objective goal; maintaining self-respect; and maintaining relationships. Because the goal of medical self-advocacy is to optimize desired health outcomes, interpersonal effectiveness skills can help patients to effectively convey their requests and maintain a working relationship with their healthcare providers. Positive relationships between patients and healthcare providers can further increase the likelihood of patients experiencing improved health outcomes.

### *Acceptance and Life Purpose*

While there are multiple skills patients can learn that can improve their current situation, there are circumstances in which improvements are limited. This is particularly true for a patient with MCC and the impact medical conditions can have on a patient's level of functioning. Acceptance and the re-creation of life purpose are a model of coping often referred to within the chronic pain literature (McCracken & Vowles, 2014). Acceptance is not a passive resignation aimed at tolerating illness and functional impairment. Acceptance of pain is characterized not only by the absence of attempts to control or avoid pain but by the pursuit of personal goals and engagement in valued actions regardless of pain experiences (McCracken, 1998). Valued actions can be conceptualized as activities that give life meaning. For

patients with MCC, acceptance and engagement in valued action involve the identification and implementation of functional and lifestyle adjustments that are necessary for patients to have the most satisfying and normal lives possible.

Acceptance has also been discussed in the context of chronic illness. Acceptance of illness is associated with quality of life among heart failure patients, with greater illness acceptance predicting greater quality of life (Obiegło, Uchmanowicz, Wleklik, Jankowska-Polańska, & Kuśmierz, 2016). In the broader context of chronic disease, Karademas, Tsagaraki, and Lambrou (2009) examined the impact of illness acceptance among a sample of hospitalized patients with histories of cancer, chronic coronary artery disease, and chronic renal disease. Findings revealed that illness acceptance was positively associated with self-reported health and negatively associated with psychological distress. It appears that acceptance of illness may be a protective factor and a goal of treatment should be to increase acceptance among patients with MCC.

Acceptance and commitment therapy (ACT) is an empirically supported treatment that emphasizes the importance of acceptance and valued actions as mechanisms of change in the treatment of psychological distress (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). ACT has been shown to improve self-reported physical functioning and distress among patients managing chronic pain (Hann & McCracken, 2014). ACT has also been shown to improve quality of life and decrease distress among cancer patients (Feros, Lane, Ciarrochi, & Blackledge, 2013). Through the lens of cognitive-behavioral therapy, acceptance can be viewed as an adaptive response for patients with MCC when efforts to reverse or limit the progression of medical conditions are no longer adaptive. Behavioral health specialists can help patients with MCC to reallocate their efforts toward developing new coping skills, rather than attempting to change fixed medical circumstances.

While accepting the changes that occur in the context of MCC is important, purpose in life has also been shown to improve health outcomes. Zilioli, Slatcher, Ong, and Gruenewald (2015) examined the impact of perceived life purpose on allostatic load and self-health locus of control at a 10-year follow-up assessment. Allostatic load consisted of measures of physiological dysregulation across the following areas: cardiovascular, lipid, glucose metabolism, inflammation, sympathetic nervous system reactivity, parasympathetic nervous system reactivity, and hypothalamic-pituitary-adrenal axis reactivity. Results revealed that greater life purpose predicted greater self-health locus of control and lower levels of allostatic load. Kim, Sun, Park, Kubzansky, and Peterson (2013) examined the relation of life purpose to health outcomes among patients with coronary heart disease and found that greater life purpose at baseline was associated with a decreased likelihood of experiencing a myocardial infarction at a 2-year follow-up assessment. In addition to cardiovascular events, Cohen, Bavishi, and Rozanski (2016) conducted a meta-analysis and found that greater life purpose predicted reduced risk for all-cause mortality. Life purpose appears to be a protective factor against morbidity and mortality, and helping patients develop a greater sense of life purpose should be a high treatment priority in the management of MCC.

## ***Relaxation Techniques and Meditation***

Similar to the relation of mood to behavior, the negative influence of stress on physical health outcomes is well documented (Thoits, 2010). Due to the stress associated with chronic medical conditions, relaxation training should be an integral part of treatment for patients with MCC. Relaxation and meditation can be performed in a number of ways, including progressive muscular relaxation, mindfulness meditation, meditative relaxation, transcendental meditation, guided imagery, and breathing retraining. Based on their 2005 review, Schneider et al. concluded that across cardiovascular disease risk factors including blood pressure, cholesterol, and smoking, transcendental meditation was found to be an effective risk reduction strategy. Across cardiovascular events and endpoints including myocardial ischemia, left-ventricular mass, and atherosclerosis, transcendental meditation effectively increased exercise tolerance and maximum work load. Across physiological neuroendocrine mechanisms that contribute to cardiovascular compromise, including baseline levels of respiration and heart rate, spontaneous skin resistance, heart rate reactivity, sympathetic adrenergic receptor sensitivity, and basal and average cortisol levels, transcendental meditation effectively reduced stress and increased relaxation. In a more recent meta-analysis examining the impact of transcendental meditation on cardiovascular health, Schneider and Carr (2014) found transcendental meditation was associated with decreased cardiovascular disease risk factors including hypertension, psychosocial stress, and smoking as well as cardiovascular events.

In addition to the physical benefits, relaxation and meditation can also help patients with MCC manage psychological distress. In their systematic review and meta-analysis examining the physiological and psychological effects of meditation, Goyal et al. (2014) found that meditation was associated with significant decreases in anxiety, depression, and pain. Galante, Galante, Bekkers, and Gallacher (2014) conducted a meta-analysis examining the influence of kindness-based meditation on psychological health outcomes. The results revealed that kindness-based meditation was associated with significant decreases in depression and significant increases in mindfulness and self-compassion. Given the comorbidity of chronic conditions and psychiatric conditions, these collective findings suggest that relaxation and meditation should be included as treatment components in the management of MCC.

## ***Communication and Assertiveness Skills***

Effective communication is characterized by a balanced exchange between two or more individuals, with each individual presenting information effectively and listening to the information being presented. Effective communication between patients and healthcare providers is essential in the treatment of MCC.

Communication skills can be sorted into two broad categories: information seeking and information verification (McGee & Cegala, 1998). In the medical context, information seeking is characterized by question asked by both the patient and members of the integrated care team. Information verification is characterized by one individual (e.g., patient or healthcare provider) requesting another individual (e.g., patient or healthcare provider) repeat previously presented information. Information verification also includes one individual (e.g., patient or healthcare provider) summarizing information that has been presented by another individual (e.g., patient or healthcare provider). It is vital that information related to the following be sought and verified: symptoms, diagnosis, prognosis, treatment, procedures/tests, physical examination, procedural information (i.e., insurance plans and paper work), follow-up appointments and referral information, and medical history (Cegala, McClure, Marinelli, & Post, 2000). Information seeking and information verification are particularly relevant to patients with MCC because their health is dependent on their ability to understand and present information about their co-occurring and interacting medical conditions.

Patients and healthcare providers comprise a communication dyad; however, the majority of research has focused on the implementation of communication skills training among healthcare providers as a means to improve patient outcomes (Boissy et al., 2016; Fujimori et al., 2014; Rao, Anderson, Inui, & Frankel, 2007; Uitterhoeve, Bensing, Grol, Demulder, & Achterberg, 2010). While training healthcare providers to communicate effectively is important, providing patients with communication skills training may provide a more direct pathway to improving patient outcomes. McGee and Cegala (1998) conducted a communication skills training among patients. During the communication skills training, participants were asked questions to encourage articulation of medical history, provided assistance with the wording and writing of questions to gather desired information, and encouraged to verify their understanding of information presented to them. Results revealed that communication skills training increased information-seeking and information-verifying behaviors, the amount of information gathered, and the amount of information recalled among patients. This finding suggests that communication skills training may increase patients' knowledge of their medical conditions.

The communication skills training protocol used by McGee and Cegala (1998) guided the content included in subsequent patient communication skills trainings. Cegala et al. (2000) also conducted communication skills training among patients. Results revealed that patients who underwent training gathered information more effectively, provided more information, and made more verifying summary statements during medical interviews than patients who did not receive communication skills training. Harrington, Noble, and Newman (2004) conducted a systematic review of studies aimed at increasing participants' communication in medical consultations. Results revealed that communication skills training increased patients' adherence to treatment recommendations, level of participation in medical consultations, perceptions of control over health, attendance of appointments, and clinical outcomes. The collective findings support the assumption that outcomes for patients

with MCC are optimized when patients have medical-related knowledge and are able to share this knowledge with healthcare providers.

Given their frequent interactions with numerous healthcare providers, assertive behavior is a specific communication skill that can greatly benefit patients with MCC. Assertive behavior is characterized by making a request of others and refusing requests made by others that an individual deems to be overly burdensome or unreasonable (Duckworth & Mercer, 2006). Assertive behavior can be contrasted with aggressive and passive behavior. Aggressive behavior is characterized by an imposition of one's own requests or opinions on others, and passive behavior is characterized by an overconcern for the needs and opinions of others at the expense of one's own needs or opinions (Duckworth, 2008). Duckworth discussed the implications of aggressive and passive behavior when communicating with healthcare providers, both of which can result in patients with MCC not having their healthcare needs met. Aggressive behavior may be perceived as threatening to healthcare providers, and providers may refuse healthcare-related requests that are made in an aggressive manner. Passive behavior may lead to the non-articulation of healthcare needs. Assertive behavior optimizes the likelihood of patients getting their healthcare needs met.

Despite the potential for assertiveness skills to increase the likelihood of patients getting their health needs met, little research has examined the effects of assertiveness training among medical patients. Studies have shown assertiveness skills training to improve communication skills and satisfaction outcomes among a variety of populations including psychiatric patients, students, and healthcare providers (Lin et al., 2004, 2008; Tavakoli, Lumley, Hijazi, Slavin-Spenny, & Parris, 2009). The lack of assertiveness skill training among patients is surprising given the evidence that passive and aggressive manifestations of anger have been shown to positively relate to certain types of cancer (Penedo et al., 2006; White et al., 2007), cardiovascular disease (Kop et al., 2008; Mostofsky, Penner, & Mittleman, 2014), and chronic pain (Bruehl, Chung, & Burns, 2006; Burns et al., 2015). It appears that assertiveness skills training may serve patients with MCC in two ways: increasing the likelihood that health needs are met and decreasing the negative physical health effects associated with aggressive and passive behavior.

Duckworth (2008) provided an outline for assertiveness skills training protocols. Patients should be oriented to the rationale for assertiveness skills training as well as the definitions of assertive, aggressive, and passive behavior. Targets of assertiveness skills training include nonverbal forms of communication, giving and receiving compliments and criticisms, and making and refusing requests. These skills should be learned and practiced in a variety of ways, with therapists modeling assertive verbal communication for patients, patients role-playing assertive communication with others, patients practicing assertive communication within sessions, and patients practicing assertive behavior between sessions through homework assignments. In the context of MCC, this would include practicing assertive behavior with healthcare providers. In addition to practicing skills through role-plays and real-life homework assignments, effective assertiveness skills training is characterized by providing patients with reinforcement and corrective feedback. These proposed



protocol components are consistent with the protocol components (i.e., modeling, role-playing, feedback, and application) included in effective assertiveness skills trainings (Tavakoli et al., 2009). Through practice of assertiveness skills, therapists can assess patients' understanding of skills, reinforce assertive behavior, and correct aggressive and passive behavior. Assertiveness skills can decrease communication barriers that prevent patients from getting their healthcare needs met and facilitate the working alliance between patients and healthcare providers.

### ***Social Support and Intimacy***

While it is important for patients to use communication skills to strengthen their relationships with healthcare providers, it is also important that patients develop and maintain personal relationships. Social support has been proposed to contribute to improve health through two pathways. The first pathway suggests that social relationships reduce the effects of stressors by providing informational, emotional, and/or tangible resources (Cohen, Gottlieb, & Underwood, 2001). Through this pathway, relationships are conceptualized as social support that buffers the negative impact of stressors on a patient's health (Holt-Lunstad, Smith, & Layton, 2010). The second pathway suggests that the effects of social relationships on health are direct, with the biological, behavioral, cognitive, and emotional factors present within social relationships having a positive effect on patient health. Social relationship partners can model health protective behaviors and provide greater purpose in life for patients (Cohen, 2004; Cohen et al., 2001). In summary, pathways of social relationships to health outcomes are highly relevant to interventions for patients with MCC.

Regardless of the pathways through which the effects occur, the positive impact of social relationships is well documented. In their meta-analytic review, Holt-Lunstad et al. (2010) found that stronger social relationships were associated with a 50% reduced mortality risk. Within the chronic disease literature, Barth, Schneider, and von Känel (2010) examined the influence of social support on the development of coronary heart disease. Results revealed that lower functional support positively predicted all-cause mortality including cardiac-related mortality. These findings are consistent with findings from a review by Compare et al. (2013) that determined that a lack of social support (i.e., being unmarried) and the presence of depression symptoms significantly predicted poorer cardiac disease prognosis. Pinguet and Duberstein (2010) examined the impact of social support on cancer mortality. Findings demonstrated that perceived social support was associated with a 25% decrease in mortality risk, social network size was associated with a 20% decrease in mortality risk, and being married was associated with a 12% decrease in mortality risk. These findings suggest that the quantity of social support and the types of relationships that a patient possesses are predictive of disease trajectory.

Intimate relationships have been proposed to be a type of relationship that is relevant to health outcomes among patients with chronic disease (Pietromonaco,

Uchino, & Schetter, 2013; Reis & Franks, 1994). Intimacy refers to close and familiar relationships. Intimacy can take many forms including cognitive intimacy (i.e., sharing thoughts or ideas), experiential intimacy (i.e., engaging in activities together), emotional intimacy, and physical or sexual intimacy (Tolstedt & Stokes, 1983). Changes in intimacy as a result of medical conditions can happen in a number of ways, including but not limited to the following: poor physical health, physical limitations, pain, hormonal changes, medication side effects and substance use, depression, anxiety, stress, body image changes, weight gain/loss, scars, poor sleep, and chronic fatigue. Many individuals report significant changes in sexual well-being after diagnosis and treatment for medical conditions (Gandaglia et al., 2014; Schover et al., 2014). In the aftermath of medical conditions and treatment, couples will be well served by receiving psychoeducation about sexual dysfunction, sexual intimacy, and other forms of intimacy. Couples should be oriented to the fact that the social relationships a patient possesses, including intimate relationships, contribute to quality of life among patients and the partners of patients with medical conditions (Leung, Pachana, & McLaughlin, 2014; Kim, Duberstein, Sörensen, & Larson, 2005). Similar to the process of accepting limitations and redefining life purpose following the onset of chronic disease, patients and their partners should consider broadening their definition of intimacy to include forms of intimacy other than sexual intimacy. Given the protective effect social relationships and intimacy have on health outcomes, patients with MCC should be encouraged to interact with and strengthen their existing social relationships.

## Future Directions

The challenge of managing MCC cannot be overstated, and the individual burden and individual and societal costs of MCC are significant. While there are established guidelines that dictate the management of single conditions, there are few empirical tests of the relative effectiveness of any condition-specific treatment when implemented in the context of multiple, comorbid medical and psychiatric conditions. Studies that have evaluated the impact of different models of care on clinical and functional outcomes experienced by patients with MCC suggest some modest benefit from care delivered in accord with a care or case management model or a disease management model. While these care models are gaining traction, it is still the case that most patients with MCC receive care that involves multiple providers across multiple care settings. It is far too often the case that patients with MCC receive medical care that is not comprehensive, not coordinated, and not co-located. It is also far too often the case that the psychosocial needs of patients with MCC are not evaluated or treated.

Given the increasing rates of MCC, and given the current realities of the health-care system, there is great need for an integrated approach to advancing healthcare service provision and research around MCC. In 2008, the US Department of Health and Human Services undertook development of a strategic framework that would

guide the conceptualization and evaluation of MCC (U.S. Department of Health and Human Services, 2010). The strategic framework identifies four overarching goals, each goal having multiple objectives that would serve to mitigate the effects of MCC:

1. Foster healthcare and public health system changes to improve the health of individuals with MCC.
2. Maximize the use of proven self-care management and other services by individuals with MCC.
3. Provide better tools and information to healthcare, public health, and social services workers who deliver care to individuals with MCC.
4. Facilitate research to fill knowledge gaps about, and interventions and systems to benefit, individuals with MCC (p. 6).

Also critical to prevention and management of MCC is research establishing the independent and interactive contributions of those biological (e.g., age, body mass, and genetics/family history of disease) and environmental (e.g., ACE) factors considered to heighten an individual's risk for MCC. Such research would go far in shaping general and targeted prevention efforts. There is also a great need for research addressing the behavioral, cognitive, emotional, interpersonal, and social factors that contribute to patients' willingness and ability to monitor their disease status; adhere to multiple, complex treatment regimens; and advocate effectively with care providers and other healthcare system representatives to receive the least intrusive, most effective, and least costly care their conditions warrant. The rehabilitation model is a care model that we think holds promise for managing the physical, functional, and psychosocial limitations that result from MCC. As part of such an approach, patients with MCC would develop and practice skills relevant to (1) medical regimen adherence; (2) goal setting aimed at increasing healthy lifestyle behaviors and reducing risky lifestyle behaviors as well as goal setting aimed at achieving maximal function across all relevant life domains; (3) assertive communication and effective self-advocacy around issues of healthcare and around issues that impact overall quality of life and well-being; (4) managing physiological arousal, emotional distress, and interpersonal discord; and (5) accepting that treatment gains have been maximized and defining a new life purpose that permits a sense of personal fulfillment.

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