HEDIS Measures

Effectiveness of Care Measures

The Effectiveness of Care domain contains measures that use a variety of perspectives to look at the clinical quality of care an organization provides. One group of measures examines how well the organization delivers preventive services and keeps its members healthy. One group is concerned with whether the most up-to-date treatments are offered to treat acute episodes of illness and help members get better. One group looks at care delivered to people with chronic diseases to see how well the organization's health care delivery system helps members cope with illness. Another looks at whether members can get appropriate tests.

This section includes measures in 10 subdomains:

- Prevention and Screening.
- Respiratory Conditions.
- Cardiovascular Conditions.
- Diabetes.
- Musculoskeletal Conditions.
- Behavioral Health.
- Medication Management and Care Coordination.
- Overuse/Appropriateness.
- Measures Collected Through the Medicare Health Outcomes Survey.
- Measures Collected Through the CAHPS Health Plan Survey.

Prevention and Screening

Adult BMI Assessment (ABA)

This measure assesses the percentage of members 18–74 years of age who had an outpatient office visit and had their body mass index (BMI) documented during the measurement year or the year before the measurement year.

Obesity is the second leading cause of preventable death in the United States. It is a complex, multifaceted, chronic disease that is affected by environmental, genetic, physiological, metabolic, behavioral and psychological components. Approximately 127 million American adults are overweight, 60 million are obese and 9 million are severely obese.[6] Obesity affects every ethnicity, socioeconomic class and geographic region in the U.S. This disease has been growing by epidemic proportions, with the prevalence increasing by approximately 50 percent per decade. Obesity's impact on individual overall health has drastically increased, as well. It increases both morbidity and mortality rates and the risk of conditions such as diabetes, CHD and cancer. It has a substantial negative effect on longevity, reducing the length of life of people who are severely obese by an estimated 5–20 years.[7] Overweight and obesity are also contributing causes to more than 50 percent of all-cause mortality among American adults aged 20–74, which results in a significant economic impact—approximately $99.2 billion is spent annually on obesity-related medical care and disability in the U.S.[8]

It is estimated that the aggregate cost of obesity ranges from 5 percent–7 percent of the total of annual medical expenditures in the U.S. ($75 billion per year).[9,10] In 1994 the estimated cost of obesity to U.S. business was $12.7 billion ($10.1 billion due to moderate or severe obesity; $2.6 billion due to mild obesity). Obesity-attributable business expenditures include paid sick leave, life insurance and health insurance, totaling $2.4 billion, $1.8 billion and $800 million, respectively.[11] Not only is the prevalence of obesity increasing, but the relative per capita spending among obese Americans is also increasing. That increase accounted for 27 percent of the growth in real per capita spending between 1987 and 2001. Within that period, the prevalence of obesity increased by 10.3 percentage points, to almost 24 percent of the adult population.[12] The rise in obesity is directly correlated to drastic increases in three major conditions: diabetes, hyperlipidemia and heart disease. The increase in per capita spending is caused by the increase in obesity prevalence and the increase in spending on the obese, relative to those of normal weight.[6]

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[6] American Obesity Association. AOA Fact Sheets: "What is Obesity; Obesity in the U.S.; and Health Effects of Obesity." http://www.obesity.org/subs/fastfacts/aoafactsheets.shtml (March 2005).

[7] Olshansky, S., D. Passaro, et al. "A Potential Decline in Life Expectancy in the United States in the 21st Century." 2005. *New England Journal of Medicine.* 352:11: 1138–45.

[8] Thomas, A., B. Hodges, et al. 2003. "Obesity in Women: A Guide to Assessment and Management." Brigham and Women's Hospital, Boston, MA. http://www.brighamandwomens.org/medical/guidelines.asp

[9] Finkelstein, E.A., I.C. Fiebelkorn, G. Wang. 2003. "National medical spending attributable to overweight and obesity: how much, and who's paying?" *Health Aff Suppl.* W3-219-26.

[10] Finkelstein, E.A., C.J. Ruhm, K.M. Kosa. 2005. "Economic causes and consequences in obesity." *Annu Rev Public Health.* 26:239–57.

[11] Thompson, D., J.B. Brown, et al. 1998. "Estimated economic costs of obesity to U.S. business." *Am J Health Promot.* 13(2):120-27.

[12] Thorpe, K., C. Florence, D. Howard, P. Joski. October 20, 2004. "The Impact of Obesity on Rising Medical Spending." *Health Affairs* Web Exclusive.

Guidelines from various organizations, including the Institute for Clinical Systems Improvement (ICSI); the U.S. Preventive Services Task Force (USPSTF); the National Heart, Lung, and Blood Institute (NHLBI); and the Michigan Quality Improvement Consortium, indicate that the first step in weight management is assessment of height and weight in order to calculate a member's BMI.

BMI is considered the most efficient and effective method for assessing excess body fat; it is a starting point for assessing the relationship between weight and height; and it is the most conducive method of assessment in the primary care setting.[13]

Weight Assessment and Counseling for Nutrition and Physical Activity for Children/ Adolescents (WCC)

This measure assesses the percentage of members 3–17 years of age who had an outpatient visit with a primary care practitioner/OB-GYN and who had evidence of BMI percentile documentation, counseling for nutrition and counseling for physical activity during the measurement year.

One of the most important developments in pediatrics in the past two decades has been the emergence of a new chronic disease: obesity in childhood and adolescence. The rapidly increasing prevalence of obesity among children is one of the most challenging dilemmas currently facing pediatricians. In addition to the growing prevalence of obesity in children and adolescents, overweight children at risk of becoming obese are also of great concern. The Centers for Disease Control and Prevention (CDC) states that overweight children and adolescents are more likely to become obese as adults. For example, one study found that approximately 80 percent of children who were overweight at 10–15 years of age were obese adults at age 25.[14] Another study found that 25 percent of obese adults were overweight as children; it also found that if overweight begins before 8 years of age, obesity in adulthood is likely to be more severe.[15]

BMI is a useful screening tool for assessing and tracking the degree of obesity among adolescents. Screening for overweight or obesity begins in the provider's office with the calculation of BMI. Providers can estimate a child's BMI percentile for age and gender by plotting the calculated value of BMI on growth curves published and distributed by the CDC.[16] Medical evaluations should include investigation into possible endogenous causes of obesity that may be amenable to treatment, and identification of any obesity-related health complications.[17]

Because BMI norms for youth vary with age and gender, BMI percentiles rather than absolute BMI must be determined. The cut-off values to define the heaviest children are the 85th and 95th percentiles. In adolescence, as maturity is approached, the 85th percentile roughly approximates a BMI of 25, which is the cut-off for overweight in adults. The 95th percentile roughly approximates a BMI of 30 in the adolescent near maturity, which is the cut-off for obesity in adults. The cut-off recommended by an

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[13] NHLBI. 2001. "The Practical Guide: Identification, Evaluation, and Treatment of Overweight and Obesity." U.S. Department of Health and Human Services. Public Health Service. National Institutes of Health. NIH Pub No: 00-4084.

[14] Whitaker, R.C., J.A. Wright, M.S. Pepe, K.D. Seidel, W.H. Dietz. 1997. "Predicting obesity in young adulthood from childhood and parental obesity." *N Engl J Med.* 37(13):869–73.

[15] Freedman, D.S., L.K. Khan, W.H. Dietz, S.R. Srinivasan, G.S. Berenson. 2001. "Relationship of childhood overweight to coronary heart disease risk factors in adulthood: The Bogalusa Heart Study." *Pediatrics.* 108:712–18.

[16] Dorsey, K.B., C. Wells, H.M. Krumholz, J.C. Concato. July 2005. "Diagnosis, evaluation, and treatment of childhood obesity in pediatric practice." *Arch Pediatr Adolesc Med.* 159:632–8.

[17] Inge, T.H., N.F. Krebs, V.F. Garcia, J.A. Skelton, K.S. Guice, R. S. Strauss, C.T. Albanese, M.L. Brandt, L.D. Hammer, C.M. Harmon, T.D. Kane, W.J. Klish, K.T. Oldham, C.D. Rudolph, M.A. Helmrath, E. Donovan, S.R. Daniels. July 2004. "Bariatric surgery for severely overweight adolescents: concerns and recommendations." *Pediatrics*. 114(1):217–23.

expert committee to define overweight (BMI ≥95th percentile) is a conservative choice designed to minimize the risk of misclassifying non-obese children.[18]

About two-thirds of young people in grades 9–12 do not engage in recommended levels of physical activity. Daily participation in high school physical education classes dropped from 42 percent in 1991 to 33 percent in 2005.[19] In the past 30 years, the prevalence of overweight and obesity has increased sharply for children. Among young people, the prevalence of overweight increased from 5.0 percent to 13.9 percent for those aged 2–5 years; from 6.5 percent to 18.8 percent for those aged 6–11 years; and from 5.0 percent to 17.4 percent for those aged 12–19 years. In 2000, the estimated total cost of obesity in the U.S. was about $117 billion. Promoting regular physical activity and healthy eating, as well as creating an environment that supports these behaviors, is essential to addressing the problem.[19]

Childhood Immunization Status (CIS)

This measure assesses the percentage of children who became 2 years old during the measurement year and who had received these vaccinations on or before 2 years of age: four diphtheria-tetanus-acellular pertussis (DTAP); three polio (IPV); one measles, mumps, and rubella (MMR); three H influenza type B (HiB); three hepatitis B (HepB); one chicken pox (VZV); four doses of pneumococcal conjugate (PCV); one hepatitis A (HepA); two or three rotavirus (RV); and two influenza (flu) vaccines. This measure follows the CDC Advisory Committee on Immunization Practices (ACIP) guidelines for immunizations.

A basic method for prevention of illness is immunization. Childhood immunizations help prevent serious illnesses such as polio, tetanus and hepatitis. Vaccines are a proven way to help a child stay healthy and avoid the potentially harmful effects of childhood diseases like mumps and measles. Even preventing "mild" diseases saves hundreds of lost school days and work days, and millions of dollars.

Many organizations improve immunization rates by developing electronic systems that track immunization status and notify physicians or parents when an immunization is due. Other organizations have found that weekend or evening hours, aggressive efforts to educate parents and collective efforts to improve rates at the community level have increased immunization performance.

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[18] Baker, S., S. Barlow, W. Cochran, G. Fuchs, W. Klish, N. Krebs, R. Strauss, A. Tershakovec, J. Udall. May 2005. "Overweight children and adolescents: a clinical report of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition." *J Pediatr Gastroenterol Nutr.* 40(5):533–43.

[19] Centers for Disease Control and Prevention (CDC). April 2007. "Physical activity and good nutrition: essential elements to prevent chronic diseases and obesity." Atlanta (GA); National Center for Chronic Disease Prevention and Health Promotion.

Immunizations for Adolescents (IMA)

This measure assesses the percentage of adolescents 13 years of age during the measurement year who received the following vaccinations on or before their 13th birthday: one dose of meningococcal vaccine and one tetanus, diphtheria toxoids and acellular pertussis (Tdap) vaccine, and have completed the human papillomavirus (HPV) vaccine series. This measure follows the Advisory Committee on Immunization Practices (ACIP) guidelines for immunizations.[20,21,22]

These vaccines are available for adolescents to prevent them from acquiring serious diseases and help protect against disease in populations that lack immunity, such as infants, the elderly and individuals with chronic conditions. Healthy People 2020, a national initiative to measure and improve public health, has established objectives to increase vaccination coverage for adolescents, including the Tdap, meningococcal and HPV vaccines.[23]

In 2014, data from NIS-Teen showed that 88 percent of adolescents surveyed had received a Tdap vaccine; 79 percent had received a meningococcal vaccine; and 40 percent of female adolescents and 22 percent of male adolescents had received full doses of the HPV vaccine.[24]

Immunization rates can be improved through the development and use of electronic systems that track immunization status and notify physicians or parents when an immunization is due. Additionally, expanded hours, parent education and community outreach have also helped to increase immunization performance.

Lead Screening in Children (LSC)

This measure assesses the percentage of children 2 years of age who received one or more capillary or venous blood tests for lead poisoning on or before their second birthday.

The National Health and Nutrition Examination Survey, an ongoing series of cross-sectional surveys on the health and nutrition of the U.S. population, reports on the blood lead levels of children and adults. Children 1–5 years of age have the highest prevalence of elevated blood lead levels of any age group in the U.S., although the prevalence has declined over the past several decades. Even with these decreases, an estimated 310,000 children in this country remain at risk for exposure to harmful levels of lead.[25] Blood lead levels of African American children and among low-income families remain significantly higher than those of other races and those of other income status.

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[20] Meites, E., A. Kempe, L.E. Markowitz. 2016. "Use of a 2-Dose Schedule for Human Papillomavirus Vaccination—Updated Recommendations of the Advisory Committee on Immunization Practices." *MMWR Morb Mortal Wkly Rep* 65:1405–08. DOI: http://dx.doi.org/10.15585/mmwr.mm6549a5.

[21] Broder, K.R., M.M. Cortese, J.K. Iskander, et al. 2006. "Preventing tetanus, diphtheria, and pertussis among adolescents: use of tetanus toxoid, reduced diphtheria toxoid and acellular pertussis vaccines recommendations of the Advisory Committee on Immunization Practices (ACIP)." *MMWR Recomm Rep* 55(RR-3):1–34.

[22] Cohn, A.C., J.R. MacNeil, T.A. Clark, et al. 2013. "Prevention and control of meningococcal disease: recommendations of the Advisory Committee on Immunization Practices (ACIP)." *MMWR Recomm Rep* 62(RR-2):1–28.

[23] HHS. 2016. "Healthy People 2020: Immunization and Infectious Diseases, Objectives." Last updated January 27. https://www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases/objectives

[24] Reagan-Steiner, S., D. Yankey, J. Jeyarajah, et al. 2015. "National, Regional, State, and Selected Local Area Vaccination Coverage Among Adolescents Aged 13–17 Years—United States, 2014" *MMWR Morb Mortal Wkly Rep* 31;64(29):784-92.

[25] CDC. May 2005. "Blood Lead Levels—United States, 1999–2002." *MMWR Morbidity & Mortality Weekly Report.* 54(20):513–16.

Lead poisoning in childhood primarily affects the central nervous system, the kidneys and the blood-forming organs. Adverse effects in young children have been noted at levels as low as 10 µg/dL and include impairments in cognitive function and initiation of various behavioral disorders.[26] Recent studies have noted effects of lead on cognitive ability at levels even below the level of concern of 10 µg/dL.

Elevated blood lead levels (BLL) are not just important from a health standpoint; they also have significant financial impact. One study estimated the economic benefit of decreased lead exposure in a 3.8-million-person cohort of children aged 2 years in 2000. Based on the reduction in lead exposure since the 1970s, the estimated increase in earnings for the cohort of children would be between $110 billion and $319 billion over their lifetimes.[27] Another study estimated that the avoidable medical costs per child with an elevated blood lead level to be $1,300. In addition, an elevated BLL was associated with avoidable special education costs of $3,331 per child and a 1 µg/dL increase in BLL resulted in a decreased lifetime earnings of $1,147.[28]

Breast Cancer Screening (BCS)

This measure assesses the percentage of women 50–74 years of age who had a biennial mammogram to screen for breast cancer.

Breast cancer is the second most common type of cancer among American women. In 2013, over 3 million women were estimated to be living with breast cancer. Advancing age is the primary risk factor for breast cancer, which is most commonly diagnosed between 55–64.[29]

Mammograms are the best method to detect early breast cancer, before it is big enough to feel or cause symptoms and is easier to treat.[30] Detecting early breast cancer via mammography can provide women with a greater range of treatment options, such as less aggressive surgery (e.g., lumpectomy vs. mastectomy), less toxic chemotherapy or the option to forego chemotherapy. Mammography can also reduce the risk of dying from breast cancer by 20 percent.[31]

Conversely, mammography can lead women to be diagnosed and treated for noninvasive or invasive breast cancer that would otherwise not have become a health threat during their lifetime. It could produce false-positive results, which may lead to invasive follow-up examinations like biopsies and cause women to experience anxiety, or false-negative results in which cancer is missed. Mammography

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[26] Committee on Measuring Lead in Critical Populations NRC. 1993. "Measuring lead exposure in infants, children, and other sensitive populations." Washington DC: National Academy Press. http://www.nap.edu/books/030904927X/html/R1.html (October 10, 2005)

[27] Grosse, S.D., T.D. Matte, J. Schwartz, R.J. Jackson. 2002. "Economic gains resulting from the reduction in children's exposure to lead in the United States." *Environ. Health Perspect.* 563–9.

[28] U.S. Department of Health Human Services, Public Health Service/Center for Disease Control. 1991. "Strategic plan for the elimination of childhood lead poisoning." Prepared for Risk Management Subcommittee of Department of Health & Human Services. As quoted in Needleman, H.L.: "Childhood lead poisoning: the promise and abandonment of primary prevention." *American Journal of Public Health.* Volume 88(12), December 1998, 1871–7.

[29] Howlader, N., A.M. Noone, M. Krapcho, D. Miller, K. Bishop, S.F. Altekruse, C.L. Kosary, M. Yu, J. Ruhl, Z. Tatalovich, A. Mariotto, D.R. Lewis, H.S. Chen, E.J. Feuer, and K.A. Cronin. 2016. "SEER Cancer Statistics Review, 1975-2013." National Cancer Institute. http://seer.cancer.gov/csr/1975_2013/ (Accessed December 5, 2016)

[30] Centers for Disease Control and Prevention (CDC). 2012. "What Is Breast Cancer?" http://www.cdc.gov/cancer/breast/basic_info/screening.htm (Accessed June 4, 2012)

[31] American Cancer Society. 2015. "Breast Cancer Facts & Figures 2015-2016." http://www.cancer.org/acs/groups/content/@research/documents/document/acspc-046381.pdf (Accessed November 30, 2016)

exposes women to radiation, though the risk of radiation-induced breast cancer has been found to be minimal.[32]

Given the benefits and risks of mammography, major clinical organizations have developed guidelines on the attributes of screening programs that produce the highest net benefit for women. The U.S. Preventive Services Task Force (USPSTF) and the American College of Physicians recommend that women ages 50–74 should have biennial screening. These organizations note that, for women ages 40–49, the decision to start screening should be an individual one.[32,33] The American Cancer Society recommends that women 40–44 should have a choice about whether to have annual mammograms, and recommends annual mammograms start by age 45.[34] The American College of Obstetricians and Gynecologists, the National Comprehensive Cancer Network (NCCN) and the American College of Radiology (ACR) recommend annual mammograms for women ages 40 and older.[35,36,37]

Digital breast tomosynthesis (DBT), a newer mammography technology, uses three-dimensional (3D) images. The USPSTF states that the current evidence is insufficient to assess the balance of benefits and harms of using DBT as a primary screening method for women at average risk of breast cancer. Screening for women at higher risk for breast cancer was not within the scope of USPSTF recommendations.[32] The NCCN and the ACR recommend using conventional mammography or DBT for screening women at low, intermediate or high risk for breast cancer.[36,37]

Studies have found that DBT may reduce false positives and detect slightly more invasive cancers than conventional mammography alone, but there are potential risks. It is not clear whether the extra cases detected by DBT are clinically significant or that DBT reduces morbidity or mortality,[32] and there could be increased costs for patients, based their benefits plan. The earliest-approved DBT method that involves a 3D imaging procedure and a conventional mammography procedure has about twice the radiation dose than conventional mammography alone. A newer DBT method uses one imaging procedure and software to reconstruct images; it delivers radiation dose levels similar to conventional digital mammography. Given these concerns, experts in the field emphasize the need for engaging patients in shared decision making when considering mammography screening.[36]

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[32] U.S. Preventive Services Task Force (USPSTF). 2016. "Screening for Breast Cancer: U.S. Preventive Services Task Force Recommendation Statement." Annals of Internal Medicine. 164(4) 279-296. (December 5, 2016) doi: 10.7326/M15-2886.

[33] American College of Physicians (ACP): Wilt, T.J., Harris, R.P., and Qaseem, A. 2015. "Screening for Cancer: Advice for High-Value Care." *Annals of Internal Medicine* 162:718–25. (December 6, 2016) doi: 10.7326/M14-2326.

[34] American Cancer Society. 2015. "American Cancer Society Recommendations for Early Breast Cancer Detection in Women Without Breast Symptoms." http://www.cancer.org/cancer/breastcancer/moreinformation/breastcancerearlydetection/breast-cancer-early-detection-acs-recs (Accessed December 1, 2016)

[35] American College of Obstetricians and Gynecologists (ACOG). 2011. "Breast Cancer Screening." https://www.acog.org/-/media/Practice-Bulletins/Committee-on-Practice-Bulletins----Gynecology/Public/pb122.pdf?dmc=1&ts=20161206T1058366330 (Accessed December 5, 2016)

[36] National Comprehensive Cancer Network (NCCN). 2016. "Breast Cancer Screening and Diagnosis." https://www.nccn.org/professionals/physician_gls/pdf/breast-screening.pdf (Accessed March 29, 2017)

[37] American College of Radiology (ACR). 2016. "ACR Appropriateness Criteria: Breast Cancer Screening." https://acsearch.acr.org/docs/70910/Narrative/ (Accessed March 29, 2017)

Cervical Cancer Screening (CCS)

The percentage of women 21–64 years of age who were appropriately screened for cervical cancer using either of the following criteria:

- Women age 21–64 who had cervical cytology performed every 3 years.
- Women age 30–64 who had cervical cytology/human papillomavirus (HPV) co-testing performed every 5 years.

Cervical cancer can be detected in its early stages by regular screening using a Pap (cervical cytology) test. Several organizations, including the American College of Obstetricians and Gynecologists (ACOG), the American Medical Association (AMA) and the American Cancer Society (ACS), recommend Pap testing every one to three years for all women who have been sexually active or who are over 21.[38,39,40]

Efforts to improve care tend to build on past efforts. For example, after moderately successful efforts to improve cervical cancer screening rates by educating patients, reducing barriers to care and revising practice guidelines, a subsequent effort to develop a reminder system might prove especially effective, but only because of the groundwork laid by previous efforts. The same reminder system established prior to the other efforts might not be as effective.

Organizations need to educate women about the importance of Pap tests, provide information and counseling on the procedure to reduce anxiety and fear and make the tests convenient and accessible. Many organizations encourage women to have a Pap test during their gynecologic visit by providing them with notification cards that are filled out during the visit and mailed back to them with the test results. Other organizations send reminder "thinking of you" cards encouraging women to receive recommended Pap tests. Allowing an annual well-women visit without a referral also removes one potential barrier to cervical cancer screening, and may help boost screening rates.

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[38] ACOG. "Cervical Cancer Screening: Resource Overview." American Congress of Obstetricians and Gynecologists. http://www.acog.org/Womens-Health/Cervical-Cancer-Screening (Accessed April 1, 2017). *ACOG Practice Bulletin No. 45.* http://www.acog.org/from_home/publications/press_releases/nr07-31-03-1.cfm

[39] Hawkes, A.P., C.B. Kronenberger, T.D. MacKenzie, A.L. Mardis, T.E. Palen, W.W. Schulter, et al. 1996. "Cervical cancer screening: American College of Preventive Medicine practice policy statement." *Am J Prev Med.* Sep-Oct;12(5):342–4.

[40] Saslow, D., et al. 2002. "American Cancer Society Guideline for the Early Detection of Cervical Neoplasia and Cancer." *CA Cancer J Clin* 52: 342–62. http://caonline.amcancersoc.org/cgi/content/full/52/6/342

Colorectal Cancer Screening (COL)

This measure is based on several organizations' clinical guidelines—USPSTF,[41] ACS[42] and AHRQ/American Gastroenterological Association.[43] It assesses whether adults 50–75 years of age have had appropriate screening for colorectal cancer (CRC). "Appropriate screening" is defined by meeting any one of the screening methods below:

- Fecal occult blood test (FOBT) during the measurement year.
- Flexible sigmoidoscopy during the measurement year or the four years before the measurement year.
- Colonoscopy during the measurement year or the nine years before the measurement year.
- CT colonography during the measurement year or the four years before the measurement year.
- FIT-DNA test during the measurement year or the two years before the measurement year.

CRC is the second leading cause of cancer-related deaths in the U.S.[41] It places significant economic burden on society: treatment costs over $6.5 billion per year. Unlike other screening tests that only detect disease, some methods of CRC screening can detect premalignant polyps and guide their removal, which in theory can prevent the cancer from developing.

Health plans are particularly well positioned to measure and influence the use of preventive services like CRC screening.[44,45] Some have made special efforts to improve screening rates among enrolled populations and have demonstrated that CRC detected during screening is associated with being diagnosed with early-stage disease.[46]

Compelling evidence gathered during the past decade shows that systematic screening can reduce mortality from CRC. Colorectal screening may also lower mortality by allowing detection of cancer at earlier stages, when treatment is more effective.[47]

Chlamydia Screening in Women (CHL)

This measure assesses the percentage of sexually active women 16–24 years of age who were screened for chlamydia. Screening is essential because the majority of women who have the condition do not experience symptoms. The main objective of chlamydia screening is to prevent pelvic inflammatory disease (PID), infertility and ectopic pregnancy, all of which have very high rates of occurrence among women with untreated chlamydia infection. The specifications for this measure are consistent with current clinical guidelines, such as those of the USPSTF.[48]

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[41] USPSTF. 2002. "Screening for colorectal cancer: recommendations and rationale." *Ann Int Med* 137(2): 129–31.

[42] Winawer, S.J., R.H. Fletcher, L. Miller, et al. 1997. "Colorectal cancer screening: clinical guidelines and rationale." *Gastroenterology* 112:594-642. (Published errata appear in *Gastroenterology* 1997 Mar;112(3):1060 and 1998 Mar;114(3):625.)

[43] Smith, R.A., V. Cokkinides, A.C. von Eschenbach, B. Levin, et al. 2002. "American Cancer Society guidelines for the early detection of cancer." *CA Cancer J Clin* 52:8–22.

[44] Merenstein, D., H. Rabinowitz, D.Z. Louis. 1999. "Health care plan decisions regarding preventive services." *Arch Fam Med* 8:354–6.

[45] Amonkar, M.M., S. Madhavan, S.A. Rosenbluth, K.J. Simon. 1999. "Barriers and facilitators to providing common preventive screening services in managed care settings." *J Community Health* 24:229–47.

[46] Myers, R.E., J. Murray, D. Weinberg, et al. 1997. "Analysis of colorectal cancer stage among HMO members targeted for screening." *Arch Intern Med* 157:2001–6.

[47] Kavanaugh, A., E. Giovannucci, C. Fuchs, et al. 1998. "Screening endoscopy and risk of colorectal cancer in United States men." *Cancer Causes Control* 9:455-462.

[48] USPSTF. 2001. "Screening for Chlamydia Infection." http://www.ahrq.gov/clinic/uspstf/uspschlm.htm

Chlamydia trachomatis is the most common sexually transmitted disease (STD) in the U.S. The CDC estimates that approximately three million people are infected with chlamydia each year. Risk factors associated with becoming infected with chlamydia are the same as risks for contracting other STDs (e.g., multiple sex partners). Chlamydia is more prevalent among adolescent (15–19) and young adult (20–24) women.

Organizations continue to register weak performance in chlamydia screening, with commercial rates remaining below 35 percent. Even the best-performing commercial plans screen only a third of eligible women—a significant missed opportunity for early diagnosis and treatment.

Both practitioner and patient may be unaware of the extent to which annual screenings prevent the spread of this disease. The organization should educate practitioners about the value and cost effectiveness of chlamydia screening, and provide incentives to encourage screening and clinical practice guidelines and other decision support tools that help practitioners identify members at risk.

Care for Older Adults (COA)

This measure assesses the percentage of adults 66 years and older who had each of the following during the measurement year:

- Advance care planning.
- Functional status assessment.
- Medication review.
- Pain assessment.

According to U.S. Census statistics, there were 40.3 million people over the age of 65 in 2010. That population is projected to increase to 55.9 million by 2020.[49] As the population ages, physical function decreases, pain increases and cognitive ability can decrease. Older adults can become increasingly depressed or have medication regimens of increased complexity. As people age, consideration should be given to their choices for end-of-life care and an advance care plan should be executed. Assessing functional status and pain, medication review and advance care planning can ensure that older adults receive comprehensive care that prevents further health status decline and considers their wishes.

Functional status assessment

Screening is effective in identifying functional decline.[50] Physical ability is an important indicator for health and well-being in old age, as it decreases with age. Physical functional decline is often an initial symptom of illness in older people, and early detection of functional decline allows earlier treatment or intervention.[51]

Pain assessment

Pain is also a frequent symptom of illness and disease in older ambulatory and hospitalized patients.[52] Elderly individuals are more likely to have arthritis, bone and joint disorders, cancer and other chronic disorders associated with pain.[53] Additionally, the consequences of under-treating pain can have a negative effect on the health and quality of life in the elderly, with the onset of depression, anxiety,

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[49] West, L., S. Cole, D. Goodkind, and W. He. 2014. "65+ in the United States: 2010" *Current Population Reports* 23–212. https://www.census.gov/content/dam/Census/library/publications/2014/demo/p23-212.pdf (Accessed May 22, 2017)

[50] Administration on Aging. U.S. Department of Health and Human Services. *A Profile of Older Americans: 2009*. http://www.aoa.gov/aoaroot/aging_statistics/profile/2009/docs/2009profile_508.pdf (Accessed May 4, 2011)

[51] Extermann et al .2005. "Use of comprehensive geriatric assessment in older cancer patients: Recommendations from the task force on CGA of the International Society of Geriatric Oncology (SIOG)." *Critical Reviews in Oncology/Hematology* 55:241–52.

[52] Fleming, et al. 1995. "Practical Functional Assessment of Elderly Persons: A Primary-Care Approach." *Mayo Clinic Proceedings* 70:890–910.

[53] Chodosh, J. et al. May 2004 ."The Quality of Medical Care Provided to Vulnerable Older Patients with Chronic Pain." *JAGS* Vol. 52, No. 5.

reduced socialization, sleep disturbance and impaired mobility. The American Geriatrics Society (AGS) Panel on Persistent Pain in Older Adults (2002) suggests that a health care professional should assess a patient for evidence of persistent pain, on initial presentation or admission to any health care service.[53]

Advance care planning

As people age, consideration should be given to their treatment wishes if they lose the ability to manage their care. A large discrepancy exists between the wishes of dying patients and their actual end-of-life care. Advance directives are widely recommended as a strategy to improve compliance with patient wishes at the end of life and thereby ensure appropriate use of health care resources. There is expert consensus on the need for advance directives, as well as a regulatory mandate, but only 15 percent–25 percent of adults complete them, usually after a serious illness or hospitalization.[54,55,56] It has been found that most adults would prefer to discuss advance directives while they are well, preferably with a doctor who has known them over time. Most say they look to their doctors to initiate the discussion.

Medication review

The vast majority of older adults take medications to address at least three or more chronic conditions. Many have multiple prescribing physicians and use more than one pharmacy, necessitating regular review of medications. The Task Force on Medications Partnership recommends that all community-dwelling older adults have a medication review performed at least yearly.[57]

A medication list should include prescriptions and over-the-counter (OTC) medications (including herbals, supplements), dose, frequency and reason for taking the medication. Poor medication management can lead to adverse drug events, overdoses and underutilization of drugs, all of which can result in increased hospitalizations.[58]

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[54] Cugliari, A.M., T. Miller, J. Sobal. 1995. "Factors promoting completion of advance directives in the hospital." *Arch Intern Med* 155:1893–8.

[55] Emanuel, L., M.J. Barry, J.D. Stoeckle, L.M. Ettelson, E.J. Emanuel. 1991. "Advance directives for medical care—a case for greater use." *N Engl J Med* 324:889–95.

[56] Stetler, K.L., B.A. Elliott, C.A. Bruno. 1992. "Living will completion in older adults." *Arch Intern Med.* 152:954–9.

[57] Task Force on Medicines Partnership. 2002. The National Collaborative medicines Management Services Programme. "Room for Review. A Guide to Medication Review." http://www.medicines-partnership.org/medication-review (Accessed September 2005)

[58] Bikowski, R.M., C.M. Ripsin, V.L. Lorraine. 2001. "Physician-patient congruence regarding medication regimens." *J. Am. Geriatr. Soc.* 1353–7.

Respiratory Conditions

Appropriate Testing for Children With Pharyngitis (CWP)

This measure reports the percentage of children between 3 and 18 years of age who were diagnosed with pharyngitis, prescribed an antibiotic at an outpatient visit and received a group A strep test. A higher rate indicates better performance (i.e., appropriate testing).

Pharyngitis is the only condition among upper respiratory infections (URI) where diagnosis is validated easily and objectively through administrative and laboratory data, and it can serve as an important indicator of appropriate antibiotic use among all respiratory tract infections. Overuse of antibiotics has been directly linked to the prevalence of antibiotic resistance; promoting judicious use of antibiotics is important to reducing levels of antibiotic resistance.[59] Pediatric clinical practice guidelines[60] recommend that only children diagnosed with group A streptococcus (strep) pharyngitis, based on appropriate lab tests, be treated with antibiotics. A strep test (rapid assay or throat culture) is the definitive test of group A strep pharyngitis. Excess use of antibiotics is highly prevalent for pharyngitis: about 35 percent of the total 9 million antibiotics prescribed for pharyngitis in 1998 were estimated to be in excess.[61]

Organizations have shown effective ways of targeting physicians and members to reduce inappropriate antibiotic prescribing at past HEDIS conferences. Organizations can also work with national and state public health agencies—such as the CDC—to educate and raise awareness with members and physicians on inappropriate antibiotic use. In 1995, the CDC initiated a national health campaign in 1995 to reduce antibiotic resistance by promoting judicious use of antibiotics for infectious respiratory diseases through media outreach, guideline dissemination to physicians, cold prescription pads and patient education materials.

Use of Spirometry Testing in the Assessment and Diagnosis of COPD (SPR)

This measure looks at the percentage of members 40 years of age and older during the measurement year with a new diagnosis of chronic obstructive pulmonary disease (COPD) who received spirometry testing to confirm the diagnosis within a reasonable period. COPD defines a group of diseases characterized by airflow obstruction, and includes chronic bronchitis and emphysema. Symptoms of COPD range from chronic cough and sputum production to severe, disabling shortness of breath, leading to significant impairment of quality of life.[62] COPD is a major cause of chronic morbidity and mortality. The National Heart, Lung, and Blood Institute (NHLBI) estimates that over 15 million adults have been diagnosed with COPD, but that the actual number of those with the disease may be higher.[63] While other major causes of death have been decreasing, COPD mortality has risen, making it the third

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[59] Gonzales, R., D.C. Malone, J.H. Maselli, M.A. Sande. 2001. "Excessive antibiotic use for acute respiratory infections in the United States." *Clinical Infectious Diseases* 33:757–62.

[60] Schwartz, B., S.M. Marcy, W.R. Phillips, M.A. Gerber, S.F. Dowell. 1998. "Pharyngitis—principles of judicious use of antimicrobial agents." *Pediatrics* 101(1):171–4.

[61] Seppala, H., T. Klaukka, J. Vuopiio-Varikila. 1997. "The effect of changes in the consumption of microcline antibiotics on erythromycin resistance in group A streptococci in Finland." *New England Journal of Medicin*e 337:441–6.

[62] Centers for Disease Control and Prevention (CDC). 2014. *FastStats: Chronic Obstructive Pulmonary Disease (COPD) Includes: Chronic Bronchitis and Emphysema.* http://www.cdc.gov/nchs/fastats/copd.htm (Accessed July 23, 2014)

[63] National Heart, Lung, and Blood Institute. 2013. Morbidity & Mortality: 2013 Chart Book on Cardiovascular, Lung and Blood Diseases. http://www.nhlbi.nih.gov/files/docs/research/2012_ChartBook.pdf (Accessed November 18, 2015)

leading cause of death in the U.S.[64] Without intervention, deaths from COPD are projected to increase by more than 30 percent in the next 10 years.[65]

Spirometry is a simple test that measures the amount of air a person can breathe out and the amount of time it takes to do so. A spirometry test is required to confirm a COPD diagnosis and determine the severity of the disease, its impact on the patient's health status and the risk of future events (such as exacerbations, hospital admissions or death), to eventually guide therapy.[66] However, spirometry tests to confirm COPD diagnoses are largely underutilized. In a survey study of an HMO and a university-affiliated county medical center, only 38 percent of COPD patients in the HMO and 42 percent of patients in the medical center system had spirometry results documented in their medical records.[67] A more recent study found that only a third of patients with COPD had their diagnosis confirmed with spirometry.[68]

Pharmacotherapy Management of COPD Exacerbation (PCE)

This measure assesses the percentage of COPD exacerbations for members 40 years of age and older who had an acute inpatient discharge or emergency department (ED) visit and who received appropriate medications. Two rates are reported:

- Dispensed a systemic corticosteroid (or there is evidence of an active prescription) within 14 days of the event.
- Dispensed a bronchodilator (or there is evidence of an active prescription) within 30 days of the event.

COPD defines a group of diseases characterized by airflow obstruction, and includes chronic bronchitis and emphysema. Symptoms of COPD range from chronic cough and sputum production to severe, disabling shortness of breath, leading to significant impairment of quality of life.[62] COPD is a major cause of chronic morbidity and mortality. The National Heart, Lung, and Blood Institute (NHLBI) estimates that over 15 million adults have been diagnosed with COPD, but that the actual number of those with the disease may be higher.[63] While other major causes of death have been decreasing, COPD mortality has risen, making it the third leading cause of death in the U.S.[64] Without intervention, deaths from COPD are projected to increase by more than 30 percent in the next 10 years.[65] Exacerbations may be the most significant drivers of negative impacts on a COPD patient.[66] Patients experiencing exacerbations are at higher risk for repeat exacerbations, more rapid decline in lung function, and reduced exercise capacity and these effects are more pronounced for patients with severe COPD.[69,70] In addition to physical effects, COPD exacerbations result in reduced quality of life and ability

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[64] Hoyert, D., and J. Xu. 2012. Deaths: Preliminary Data for 2011. National Vital Statistics Reports. 61(6):1-52. http://www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_06.pdf (Accessed July 23, 2014)

[65] World Health Organization (WHO). 2014. *Chronic Respiratory Diseases: Chronic Obstructive Pulmonary Disease.* http://www.who.int/respiratory/copd/en/ (Accessed July 23, 2014)

[66] Global Initiative for Chronic Obstructive Lung Disease (GOLD). 2015. *Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease.* http://www.goldcopd.org/guidelines-global-strategy-for-diagnosis-management.html (Accessed November 16, 2015)

[67] Mapel et al. 2000. "Utilization in COPD: Patient Characteristics and Diagnostic Evaluation." *Chest* 117: 346S–53S.

[68] Arne, M., K. Lisspers, B. Ställberg, G. Boman, H. Hedenström, C. Janson, M. Emtner. April 2010. "How often is diagnosis of COPD confirmed with spirometry?" *Respiratory Medicine* 104(4):550-6. doi: 10.1016/j.rmed.2009.10.023.

[69] Donaldson, G.C., T.A.R. Seemungal, A. Bhowmik, and J.A. Wedzicha. 2002. "Relationship between exacerbation frequency and lung function decline in chronic obstructive pulmonary disease." *Thorax* 57:847–52.

[70] Spencer, S., P.M.A. Calverley, P.S. Burge, and P.W. Jones. 2004. "Impact of preventing exacerbations on deterioration of health status in COPD." *European Respiratory Journal* 23:698–702.

to conduct activities of daily living independently.[71] Proper therapy following an exacerbation, including pharmacotherapy, can slow disease progression and reduce the risk of future exacerbations.[66]

Medication Management for People With Asthma (MMA)

This measure assesses the percentage of members 5–64 years of age during the measurement year who were identified as having persistent asthma and who were dispensed appropriate medications that they remained on during the treatment period. Two rates are reported:

- The percentage of members who remained on an asthma controller medication for at least 50 percent of the treatment period.
- The percentage of members who remained on an asthma controller medication for at least 75 percent of the treatment period.

Appropriate medication adherence could ameliorate the severity of many asthma-related symptoms.[72] According to the Asthma Regional Council, two-thirds of adults and children who display asthma symptoms are considered "not well controlled" or "very poorly controlled" as defined by clinical practice guidelines.[73] Pharmacologic therapy is used to prevent and control asthma symptoms, improve quality of life, reduce the frequency and severity of asthma exacerbations, and reverse airflow obstruction.[74]

Asthma Medication Ratio (AMR)

This measure assesses the percentage of members 5–64 years of age who were identified as having persistent asthma and had a ratio of controller medications to total asthma medications of ≥0.50 during the measurement year.

Medications for asthma are usually categorized into long-term controller medications used to achieve and maintain control of persistent asthma and quick-reliever medications used to treat acute symptoms and exacerbations.[75] Appropriate ratios for these medications could potentially prevent a significant proportion of asthma-related costs (hospitalizations, emergency room visits, missed work and school days).[74]

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[71] Miravitlles, M., M. Ferrer, A. Pont, et al. 2004. "Effect of exacerbations on quality of life in patients with chronic obstructive pulmonary disease: a 2 year follow up study." *Thorax* 59:387-395. doi: 10.1136/thx.2003.008730.

[72] Akinbami, L.J. *The State of Childhood Asthma, United States, 1980–2007. Advance Data from Vital and Health Statistics.* Revised February 16, 2009. *Pediatrics 123* (Supplement); S131-45. Hyattsville, MD: National Center for Health Statistics. http://pediatrics.aappublications.org/cgi/content/full/123/Supplement_3/S131 (March 2010)

[73] Asthma Regional Council. 2010. *Living with Asthma in New England: Results from the 2006 BRFSS and Call-back Survey.* http://www.asthmaregionalcouncil.org/uploads/Surveillance/BRFSS%20-%20Living%20with%20Asthma%20in%20New%20England%20February%202010.pdf (December 2010)

[74] National Heart Lung and Blood Institute/National Asthma Education and Prevention Program. August 2007. *Measures of asthma assessment and monitoring: Expert panel report 3: guidelines for the diagnosis and management of asthma.* Washington (DC): National Heart Lung and Blood Institute (NHLBI).

[75] British Thoracic Society. June 2009. *British Guideline on the management of asthma. A national clinical guideline.* Scotland: British Thoracic Society (BTS).

Cardiovascular Conditions

Controlling High Blood Pressure (CBP)

This intermediate-outcome measure assesses members 18-85 years of age who had a diagnosis of hypertension (HTN) and whose BP was adequately controlled (<140/90 mm Hg) during the measurement year.

About one of three U.S. adults, or about 75 million people have high blood pressure, also known as hypertension.[76] Hypertension increases the risk of heart disease and stroke, two of the leading causes of death in the U.S.[77] A person with hypertension is four times more likely to die from a stroke and three times more likely to die from heart disease.[78] The estimated annual average direct and indirect costs of hypertension from 2012–2013 were $51.2 billion.[79] Hypertension was the primary cause of approximately 3.7 million hospital outpatient visits in 2011 and about 900,000 ED visits in 2012.[79]

Despite varying definitions and treatment recommendations of hypertension by different organizations, all guidelines agree that controlling hypertension will significantly reduce the risks of cardiovascular disease mortality and lead to better health outcomes, such as reduction of heart attacks, stroke and kidney disease.[80] Managing and treating hypertension would reduce cardiovascular disease mortality for males and females by 30.4 percent and 38.0 percent, respectively.[81] Treatment to improve hypertension includes dietary and lifestyle changes, as well as appropriate use of medications.

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[76] Merai R, Siegel C, Rakotz M, Basch P, Wright J, Wong B; DHSc., Thorpe P. CDC Grand Rounds: A Public Health Approach to Detect and Control Hypertension. *MMWR Morb Mortal Wkly Rep* 2016 Nov 18;65(45):1261-1264

[77] Yoon, S.S., C.D. Fryar, M.D. Carroll. 2015. Hypertension Prevalence and Control Among Adults: United States, 2011–2014. NCHS data brief, no 220. Hyattsville, MD: National Center for Health Statistics.

[78] CDC. 2012. Vital signs: Getting Blood Pressure Under Control. https://www.cdc.gov/vitalsigns/hypertension/index.html

[79] Benjamin, E.J. et al. 2017. "Heart Disease and Stroke Statistic-2017 Update: A Report From the American Heart Association." *Circulation* 135:00–00. DOI: 10.1161/CIR.0000000000000485.

[80] James, P.A., S. Oparil, B.L. Carter, W.C. Cushman, C. Dennison-Himmelfarb, et al. 2014. "Evidence-Based Guideline for the Management of High Blood Pressure in Adults: Report from the Panel Members Appointed to the Eight Joint National Committee (JNC8)." *JAMA* 311(5): 507–20. doi:10.1001/jama.2013.284427.

[81] Patel, S.A., M. Winkel, M.K. Ali, K.M. Narayan, N.K. Mehta. 2015. "Cardiovascular mortality associated with 5 leading risk factors: national and state preventable fractions estimated from survey data." Ann Intern Med. 163:245–53. doi: 10.7326/M14-1753.

Persistence of Beta-Blocker Treatment After a Heart Attack (PBH)

This measure assesses the percentage of adults 18 years of age and older who were hospitalized and discharged with a diagnosis of AMI and who received persistent beta-blocker treatment for six months after discharge.

According to results of large-scale clinical trials, beta-blockers consistently reduce subsequent coronary events, cardiovascular mortality and all-cause mortality by 20 percent–30 percent after an acute myocardial infarction (AMI) *when taken indefinitely*.[82,83] Literature suggests that adherence to beta-blockers declines significantly within the first year.[84,85,86]

About half of AMI survivors who are eligible for beta-blocker therapy do not receive it. Test data reveal significant underutilization of beta-blockers 180 days post-MI. There is evidence suggesting that around 2,900–5,000 lives are lost in the United States in the first year following AMI, from under-prescribing of beta-blockers.[87]

In 2004, the ACC/AHA updated the *Guidelines for the Management of Patients With Acute Myocardial Infarction* and indicated that long-term beta-blocker therapy should begin as early as possible after the event for all patients without a contraindication to beta-blockers and continue indefinitely.[88]

The key to improving rate of use of beta-blockers is for organizations to educate providers about the value of these agents, to offer incentives to encourage their appropriate and timely use and to provide physicians with guidelines and other decision support tools that will help them prescribe drugs appropriately. In addition, organizations can ensure that beta-blocker medications are available on their prescription drug formularies.

Statin Therapy for Patients With Cardiovascular Disease (SPC)

This measure assesses the percentage of males 21–75 years of age and females 40–75 years of age who were identified as having clinical atherosclerotic cardiovascular disease (ASCVD) who met the following criteria. The following rates are reported:

1. *Received Statin Therapy.* Members who were dispensed at least one high or moderate-intensity statin medication.
2. *Statin Adherence 80%.* Members who remained on a high or moderate-intensity statin medication for at least 80% of the treatment period.

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[82] 1999 Update: *ACC/AHA Guidelines for the Management of Patients with Acute Myocardial Infarction.*

[83] "Health and Economic Benefits of Increased B-Blocker Use Following Myocardial Infarction." December 6, 2000. *JAMA* Vol. 284, No. 21.

[84] Krumholz, H.M., M.J. Radford, Y. Wang, J. Chan, A. Heiat, T.A. Marciniak. 1998. "National use and effectiveness of beta-blockers for the treatment of elderly patients after acute myocardial infarction." National Cooperative Cardiovascular Project. *JAMA* 280:623–9.

[85] Norwegian Multicenter Study Group. 1994. "Timolol-induced Reduction in Mortality and Reinfarction in patients with Acute Myocardial Infarction 1998–1992." *J Am Coll Cardiol* 23:1023–30.

[86] Yusef, S., J. Wittes, L. Friedman. 1988. "Overview of Results of Randomized Clinical Trials in Heart Disease." *JAMA* 260:2088–93.

[87] Bradford, W.D., J. Chen, H.M. Krumholz. 1999. "Under-utilisation of beta-blockers after acute myocardial infarction. Pharmacoeconomic implications." *Pharmacoeconomics* Mar;15(3):257–68.

[88] American College of Cardiology. 2004. *Updated Practice Guidelines* (web version). http://www.acc.org/clinical/guidelines/stemi/exec_summ/index.pdf

Cardiovascular disease is the leading cause of death in the United States. More than 85 million American adults have one or more types of cardiovascular disease.[89] It is estimated that by 2030, more than 43 percent of Americans will have a form of cardiovascular disease.[90] In 2011, the total cost of cardiovascular disease and stroke in the United States was estimated to be $320 billion. This total includes direct costs such as the cost of physicians and other health professionals, hospital services, prescribed medications and home health care, as well as indirect costs due to loss of productivity from premature mortality.

Interventions to address cardiovascular disease are increasing: since 2000, the number of inpatient cardiovascular operations and procedures increased by 28 percent, from 5,939,000 to 7,588,000.[89] By 2030, direct medical costs for cardiovascular disease are projected to increase to nearly $918 billion.[90]

Statins (HMG CoA reductase inhibitors) are a class of drugs that lower blood cholesterol. Statins work in the liver by preventing the formation of cholesterol, thus lowering the amount of cholesterol in the blood.[91] Statins are most effective in lowering low-density lipoprotein cholesterol (LDL-C). The amount of cholesterol-lowering effect is based on statin intensity, which is classified as either high, moderate or low.

Statins are among the most commonly prescribed medications in the United States, accumulating $17 billion in sales in 2012.[92] According to recent blood cholesterol treatment guidelines from the American College of Cardiology and American Heart Association (ACC/AHA), statins of moderate or high intensity are recommended for adults with established clinical ASCVD. Many studies support the use of statins to reduce ASCVD events in primary and secondary prevention.

One meta-analysis of data from 170,000 patients in 26 randomized controlled trials found that intensive statin therapy reduces major vascular events by 15 percent.[93] The study also found a 13 percent reduction in coronary death or nonfatal myocardial infarction, a 19 percent reduction in coronary revascularization and a 16 percent reduction in ischemic stroke.[93]

Another systematic review and meta-analysis estimates that long term statin therapy reduces the risk for ASCVD events by 25 percent–45 percent.[94]

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[89] Mozaffarian, D., E.J. Benjamin, A.S. Go, et al. 2015. "Heart disease and stroke statistics—2015 update: a report from the American Heart Association." *Circulation* 131:e29-e322. doi: 10.1161/CIR.0000000000000152

[90] Heidenreich, P.A., J.G. Trogdon, O.A. Khavjou, et al. 2011. "Forecasting the future of cardiovascular disease in the United States: a policy statement from the American Heart Association." *Circulation* 123:933–44.

[91] American Heart Association (AHA). 2014. "Drug therapy for cholesterol." http://www.heart.org/HEARTORG/Conditions/Cholesterol/PreventionTreatmentofHighCholesterol/Drug-Therapy-for-Cholesterol_UCM_305632_Article.jsp. (January 11, 2015)

[92] Consumer Reports. 2014. "Are you taking the right treatment for your high cholesterol?" March. http://www.consumerreports.org/cro/2014/03/treating-high-cholesterol-with-statins/index.htm

[93] Cholesterol Treatment Trialists' (CTT) Collaboration. 2010. "Efficacy and safety of more intensive lowering of LDL cholesterol: a meta-analysis of data from 170,000 participants in 26 randomised trials." *Lancet* 376(9753):1670–81. doi:10.1016/S0140-6736(10)61350-5.

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Diabetes

Comprehensive Diabetes Care (CDC)

This composite measure with seven different rates looks at how well an organization cares for the common and serious chronic disease of diabetes. It uses a single sample of diabetic members 18–75 years of age to evaluate organization performance on aspects of diabetes care. As a set, the rates provide a comprehensive picture of the clinical management of members with diabetes. This measure looks at the percentage of individuals with diabetes who meet the following criteria:

- Had a hemoglobin (HbA1c) blood test.
- Have poorly controlled diabetes (HbA1c >9.0%).
- Have controlled diabetes (HbA1c <8.0%).
- Have controlled diabetes (HbA1c <7.0% for a selected population)*.
- Had a retinal or dilated eye examination.
- Have been screened or monitored for kidney disease.
- Have blood pressure <140/90 mm Hg.

Diabetes is one of the most costly and highly prevalent chronic diseases in the U.S. Approximately 26.5 million Americans have diabetes, and seven million of these cases are undiagnosed. Complications from the disease cost the country nearly $245 billion annually. In addition, diabetes is the seventh leading cause of death in the United States.[95] Many complications, such as amputation, blindness and kidney failure, can be prevented if detected and addressed in the early stages.

Many organizations have developed comprehensive diabetes management programs that help members with diabetes maintain control over their blood sugar and minimize the risk of complications. These programs can benefit quality of life and be cost-effective in the end. The challenge faced by organizations is to bring more members with diabetes into these programs and help them incorporate healthy behaviors and monitoring practices into their lifestyle. Organizations can learn from higher-performing organizations and develop integrated approaches to treating members with diabetes.

**This criterion refers to a subset of the diabetic population. Because of concerns about patient safety related to aggressive HbA1c management, NCQA refined the indicator for HbA1c <7.0% for a Selected Population by adding exclusions for members within a specific age cohort and with certain comorbid conditions. Therefore, the denominator for the HbA1c <7.0% for a Selected Population indicator is different from the other indicators.*

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[95] http://care.diabetesjournals.org/content/36/4/1033.full.pdf+html

Statin Therapy for Patients With Diabetes (SPD)

This measure assesses the percentage of members 40–75 years of age with diabetes who do not have clinical atherosclerotic cardiovascular disease (ASCVD) who met the following criteria. Two rates are reported:

1. *Received Statin Therapy.* Members who were dispensed at least one statin medication of any intensity.
2. *Statin Adherence 80%.* Members who remained on a statin medication of any intensity for at least 80% of the treatment period.

Diabetes is a complex group of diseases marked by high blood sugar due to the body's inability to make or use insulin. Diabetes can lead to serious complications.[96] Twenty-nine million (9.3 percent) of Americans had diabetes in 2012 and 1.7 million adults were newly diagnosed with diabetes.[97] Patients with diabetes have elevated cardiovascular risk, thought to be due in part to elevations in unhealthy cholesterol levels. Having unhealthy cholesterol levels places patients at a significant risk for developing ASCVD.[98]

Primary prevention for cardiovascular disease is an important aspect of diabetes management. The risk of an adult with diabetes developing cardiovascular disease is two to four times higher than that of an adult without diabetes.[99] In addition to being at a higher risk for developing cardiovascular disease, patients with diabetes tend to have worse survival after the onset of cardiovascular disease.[100] The CDC estimates that adults with diabetes are 1.7 times more likely to die from cardiovascular disease than adults without diabetes.[96]

Numerous studies have demonstrated the efficacy of statins in reducing cardiovascular risk. The use of statins for primary prevention of cardiovascular disease in patients with diabetes, based on their age and other risk factors, is recommended by guidelines from the American Diabetes Association (ADA) and the American College of Cardiology/American Heart Association (ACC/AHA). Cholesterol lowering medications, such as statins, are among the most commonly prescribed drugs in America, accumulating $17 billion in sales in 2012. In the United States, 22 percent of adults (45 and older) take statins.[96] Evidence shows statin use decreases cardiovascular mortality in patients with established cardiovascular disease, and total mortality rates. Primary and secondary prevention trial data strongly support starting lipid-lowering therapy with a statin in most patients with type 2 diabetes.[101]

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96 Centers for Disease Control and Prevention (CDC). 2014. "National Diabetes Statistics Report: Estimates of Diabetes and Its Burden in the United States, 2014." Atlanta, GA: U.S. Department of Health and Human Services.

97 ADA. 2014. "Statistics About Diabetes." http://www.diabetes.org/diabetes-basics/statistics/ Accessed January 2015.

98 ADA. 2015. "Standards of Medical Care in Diabetes-2015: Cardiovascular disease and risk management." *Diabetes Care* 38(Suppl. 1): S49–S57. doi: 10.2337/dc15-S011

99 American Heart Association (AHA). 2012. "Cardiovascular Disease & Diabetes." Last modified July 5. http://www.heart.org/HEARTORG/Conditions/Diabetes/WhyDiabetesMatters/Cardiovascular-Disease-Diabetes_UCM_313865_Article.jsp (January 2015)

100 Stone, N.J., J. Robinson, A.H. Lichtenstein, et al. 2013. "2013 ACC/AHA Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults." *J Am Coll Cardiol* 63(25 Pt B):2889–934. doi: 10.1016/j.jacc.2013.11.002. Epub 2013 Nov 12.

101 Spratt, K.A. 2009. "Managing Diabetic Dyslipidemia: Aggressive Approach." *J Am Osteopath Assoc* 109(5 Suppl): S2-7. http://www.jaoa.org/cgi/content/full/109/5_suppl_1/S2

Musculoskeletal Conditions

Disease-Modifying Anti-Rheumatic Drug Therapy for Rheumatoid Arthritis (ART)

This measure assesses whether members, 18 years of age and older, diagnosed with rheumatoid arthritis (RA) have been prescribed a disease modifying anti-rheumatic drug (DMARD). DMARDs modify the disease course of rheumatoid arthritis through attenuation of the progression of bony erosions, reduction of inflammation and long-term structural damage. The utilization of DMARDs is also expected to provide improvement in functional status.

RA is a chronic autoimmune disorder often characterized by progressive joint destruction and multisystem involvement. It affects approximately 2.5 million Americans, and affects women disproportionately.[102,103,104] There is no cure; consequently, the goal of treatment is to slow the progression of the disease and thereby delay or prevent joint destruction, relieve pain and maintain functional capacity.

Evidence-based guidelines support early initiation of DMARD therapy in patients diagnosed with RA. These guidelines include the American College of Rheumatology Subcommittee on Rheumatoid Arthritis Guidelines: *Guidelines for the Management of Rheumatoid Arthritis.*[105] All patients with RA are candidates for DMARD therapy, and the majority of the newly diagnosed should be started on DMARD therapy within three months of diagnosis.

The American Pain Society's *Guideline for the Management of Pain in Osteoarthritis, Rheumatoid Arthritis, and Juvenile Chronic Arthritis* notes that almost all people with RA require pharmacotherapy with a DMARD.[106] An important desirable attribute of a HEDIS measure is the ability of organizations and providers to take action to improve performance on a measure. Providers can convey the importance of a particular course of therapy to their patients and subsequently follow compliance as part of condition management. Individuals experiencing pain and functional limitations may be more likely to comply with recommended therapy. In addition, organizations can ensure that members and providers have the necessary information to assure that benefits and treatment options are readily available to members seeking treatment.

Osteoporosis Management in Women Who Had a Fracture (OMW)

This measure assesses how well the organization manages women 67–85 years of age who are at high risk for a second fracture. It studies whether female members who suffered a fracture had evidence of either a bone mineral density (BMD) test or prescription for a drug to treat osteoporosis in the six months after date of the fracture.

Osteoporosis is a skeletal disorder characterized by compromised bone strength that puts a person at increased risk for fractures. Morbidity and mortality related to osteoporotic fractures are a major health issue. Ten million Americans have osteoporosis, and another 18 million are at risk for osteoporosis due

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[102] Hochberg, M.C., and T.D. Spector. 1990. "The epidemiology of rheumatoid arthritis: an update." *Epidemiol Rev* 12:247–52.
[103] McDuffie, F.C. 1985. "Morbidity impact of rheumatoid arthritis on society." *Is J Med* 78:1–5.
[104] Alarcon, G.S. 1995. "Epidemiology of rheumatoid arthritis." *Rheumatoid Arthritis* 21:589–604.
[105] Harris, E.D., and R. Zorab (editors). 1997. *Rheumatoid Arthritis.* Philadelphia: WB Saunders Company.
[106] American Pain Society. 2002. *Guideline for the Management of Pain in Osteoarthritis, Rheumatoid Arthritis, and Juvenile Chronic Arthritis* 76–80. Glenview, Illinois.

to low bone mass. 80 percent of people with osteoporosis are women.[107] Women who suffer a fracture are at increased risk of suffering additional fractures.

Treatment of osteoporotic fractures is estimated at $10–$15 billion annually in the U.S. In 1995, osteoporotic fractures caused 432,000 hospital admissions, 2.5 million physician visits and 180,000 nursing home admissions.[108] The aging U.S. population is likely to increase the future financial cost of osteoporosis care.

One study showed that less than 5 percent of patients with osteoporotic fractures are referred for medical evaluation and treatment. Another retrospective study of over 1,000 postmenopausal women who sustained a fracture of the distal radius found that only 24 percent received either a diagnostic evaluation or treatment for the condition.[109] This and other research suggests a high potential for organizations to improve how well they manage women at an increased risk for fracture. The organization can improve its performance on this measure by both educating practitioners on follow-up care after fracture and by tracking administrative data for the occurrence of fracture and following up to ensure that appropriate care was provided.

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[107] NIH Consensus Development Panel on Osteoporosis Prevention, Diagnosis and Therapy. 2001. *Osteoporosis Prevention, Diagnosis and Therapy*. 285: 785–95.

[108] National Osteoporosis Foundation.

[109] Stephen, A.B., and W.A. Wallace. 2001. "The management of osteoporosis." *The Journal of Bone and Joint Surgery (BR)* 83B:316–23.

Behavioral Health

Antidepressant Medication Management (AMM)

This two-part measure looks at:

- The percentage of members with major depression who were initiated on an antidepressant drug and who received an adequate acute-phase trial of medications (three months).
- The percentage of members with major depression who were initiated on an antidepressant drug and who completed a period of continuous medication treatment (six months).

In a given year, an estimated 20.9 million American adults suffer from a depressive disorder or depression.[110] Without treatment, symptoms associated with these disorders can last for years, or can eventually lead to death by suicide or other causes. Fortunately, many people can improve through treatment with appropriate medications.

According to the American Psychiatric Association,[111] successful treatment of patients with major depressive disorder is promoted by a thorough assessment of the patient and close adherence to treatment plans. Treatment consists of an *acute phase,* during which remission is induced; a *continuation phase,* during which remission is preserved; and a *maintenance phase,* during which the susceptible patient is protected against the recurrence of a subsequent major depressive episode.

When pharmacotherapy is part of the treatment plan, it must be integrated with the psychiatric management and any other treatments that are being provided. Patients who have started taking an antidepressant medication should be carefully monitored to assess their response to pharmacotherapy as well as the emergence of side effects, clinical condition and safety. Factors to consider when determining the frequency of patient monitoring include the severity of illness, the patient's cooperation with treatment, the availability of social supports and the presence of comorbid general medical problems. In practice, the frequency of monitoring during the acute phase of pharmacotherapy can vary from once a week in routine cases to multiple times per week in more complex cases.

Patients who have been treated with antidepressant medications in the acute phase should be maintained on these agents to prevent relapse.[111] Organizations and providers have an opportunity to track antidepressant use in patients and provide appropriate follow-up care to monitor clinical worsening and suicide risk. Monitoring should include continuing appropriate use of antidepressants in patients progressing toward remission. In addition, organizations can foster programs and system changes that would help primary care physicians and other providers ensure success in the identification and ongoing care of patients with depression. Organizations can address the lack of member knowledge and understanding of depression and the use of antidepressant medication by developing and distributing patient educational materials.

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[110] National Institute of Mental Health. 2000. *Depression.* Bethesda (MD): National Institute of Mental Health, U.S. Department of Health and Human Services. Updated September 13, 2006 (NIH Publication No. 00-3561).

[111] American Psychiatric Association. 2000. *Practice Guideline for the Treatment of Patients with Major Depressive Disorder.* Arlington, Virginia. www.psych.org

Follow-Up Care for Children Prescribed ADHD Medication (ADD)

The two rates of this measure assess follow-up care for children prescribed an attention deficit/hyperactivity disorder (ADHD) medication.

ADHD is one of the more common chronic conditions of childhood. Children with ADHD may experience significant functional problems, such as school difficulties; academic underachievement; troublesome relationships with family members and peers; and behavioral problems.[112] Given the high prevalence of ADHD among school-aged children (4 percent–12 percent), primary care clinicians will regularly encounter children with ADHD and should have a strategy for diagnosing and long-term management of this condition.[113]

Practitioners can convey the efficacy of pharmacotherapy to their patients. American Academy of Pediatrics (AAP) guidelines[111] recommend that once a child is stable, an office visit every three to six months allows assessment of learning and behavior. Follow-up appointments should be made at least monthly until the child's symptoms have been stabilized.

Organizations and providers have an opportunity to track medication use in patients and provide the appropriate follow-up care to monitor clinical symptoms and potential adverse events. In addition, organizations can foster programs and system changes that would help primary care practitioners and other providers ensure success in the ongoing care of patients with ADHD.

Follow-Up After Hospitalization for Mental Illness (FUH)

This measure looks at continuity of care for mental illness. It measures the percentage of members 6 years of age and older who were hospitalized for treatment of selected mental disorders or intentional self-harm and who had a follow-up visit by a mental health provider within 30 days, or within 7 days after their discharge from the hospital. The specifications for this measure are consistent with guidelines of the National Institute of Mental Health and the Centers for Mental Health Services.

It is important to provide regular follow-up therapy to patients after they have been hospitalized for mental illness. An outpatient visit with a mental health practitioner after discharge is recommended to make sure that the patient's transition to the home or work environment is supported and that gains made during hospitalization are not lost. It also helps health care providers detect early post-hospitalization reactions or medication problems and provide continuing care. According to a guideline developed by the American Academy of Child and Adolescent Psychiatry and the American Psychiatric Association, there is a need for regular and timely assessments and documentation of the patient's response to all treatments.[114]

The organization should make a practice of helping schedule follow-up appointments when a patient is discharged, as part of the treatment or case management plan, and should educate patients and practitioners about the importance of follow-up visits. Systems should be established to generate reminder or "reschedule" notices that are mailed to patients in the event that a follow-up visit is missed or canceled. In many cases, it may also be necessary to develop outreach systems or assign case managers to encourage recently released patients to keep follow-up appointments or reschedule missed appointments.

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[112] American Academy of Pediatrics. 2000. "Clinical Practice Guideline: Diagnosis and Evaluation of the Child With Attention-Deficit/Hyperactivity Disorder." *Pediatrics* 105(5):1158–70.

[113] American Academy of Pediatrics. 2001. "Clinical Practice Guideline: Treatment of the School-Aged Child With Attention-Deficit/Hyperactivity Disorder." *Pediatrics* 108(4):1033–43.

[114] American Academy of Child and Adolescent Psychiatry, American Psychiatric Association. 1997. *Criteria for Short-Term Treatment of Acute Psychiatric Illness.* http://www.psych.org/psych_pract/ criteria121503.pdf (August 2, 2005)

Follow-Up After Emergency Department Visit for Mental Illness (FUM)

This measure assesses the percentage of ED visits for members 6 years of age and older with a principal diagnosis of mental illness or intentional self-harm, who had a follow-up visit for mental illness. Two rates are reported:

1. The percentage of ED visits for which the member received follow-up within 30 days of the ED visit (31 total days).
2. The percentage of ED visits for which the member received follow-up within 7 days of the ED visit (8 total days).

Many individuals are affected by a serious mental illness (SMI). Data from the National Survey on Drug Use and Health showed that in 2013, an estimated 10 million Americans 18 years of age and older had an SMI (4.2 percent of all U.S. adults).[115] Mental illness can affect people of all ages. The CDC's National Health and Nutrition Examination Survey showed that approximately 13 percent of children 8–15 had a diagnosable mental illness within the previous year, and estimated that 21.4 percent of adolescents 13–18 had experienced a severe mental disorder at some point in their lives.[116,117] The CDC's National Health Interview Survey of 2011–2012 also revealed that 7.5 percent of children 6–17 had used prescribed medication for emotional or behavioral difficulties during the past 6 months.[118]

Although ED visits are common among patients suffering from mental illness, many may be avoidable. In 2007, approximately 12 million ED visits were related to mental health or substance abuse—1 out of 8 (12.5 percent) of all ED visits.[119] More than 7.6 million were related to mental health conditions only. Two million (28.9 percent) of mental health-related ED visits listed a mental health disorder as the primary diagnosis.

Research suggests that for people with SMI, both low-intensity interventions, such as appointment reminders, and high-intensity interventions, such as assertive community treatment, can be effective following an ED visit, to encourage follow-up care in the outpatient setting.[120]

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[115] National Institute of Mental Health (NIMH). 2013. *Serious Mental Illness (SMI) Among U.S. Adults.* http://www.nimh.nih.gov/health/statistics/prevalence/serious-mental-illness-smi-among-us-adults.shtml. (Accessed November 15, 2015)

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[117] Merikangas, K.R., et al. 2010. "Lifetime Prevalence of Mental Disorders in US Adolescents: Results from the National Comorbidity Study-Adolescent Supplement (NCS-A)." *Journal of the American Academy of Child and Adolescent Psychiatry* 49.10: 980–9. PMC. Web. (Accessed February 5, 2016)

[118] Centers for Disease Control and Prevention. 2014. *NCHS Data Brief, Use of Medication Prescribed for Emotional or Behavioral Difficulties Among Children Aged 6-17 Years in the United States, 2011-2012.* http://www.cdc.gov/nchs/data/databriefs/db148.htm#x2013;17 Years in the United States, 2011–2012

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[120] Kreyenbuhl, J., I. Nossel, L. Dixon. 2009. "Disengagement from Mental Health Treatment among Individuals with Schizophrenia and Strategies for Facilitating Connections to Care: A Review of the literature." *Schizophrenia Bulletin* 35:696–703.

Follow-Up After Emergency Department Visit for Alcohol and Other Drug Abuse or Dependence (FUA)

This measure assesses the percentage of ED visits for members 13 years of age and older with a principal diagnosis of alcohol or other drug (AOD) abuse or dependence, who had a follow up visit for AOD. Two rates are reported:

1. The percentage of ED visits for which the member received follow-up within 30 days of the ED visit (31 total days).
2. The percentage of ED visits for which the member received follow-up within 7 days of the ED visit (8 total days).

AOD is a serious public health issue. According to 2013 data from the Substance Abuse and Mental Health Service Administration (SAMHSA), young adults aged 18–25 had the highest percentage of alcohol dependence or abuse (13 percent) among individuals aged 12 or older.[121] In the same year, young adults aged 18–25 had the highest percentage of illicit drug dependence or abuse (7.4 percent) among persons 12 years of age and older. In the United States, 6.6 percent of persons aged 12 or older (an estimated 17.3 million individuals) in 2013 were dependent on or abused alcohol within the year prior to being surveyed.[121]

With a large number of individuals experiencing AOD, the use of ED services is a common and serious issue. In 2007, approximately 12 million ED visits were related to mental health or substance abuse—1 out of 8 (12.5 percent) of all ED visits.[119] Nearly 3 million of those ED visits were related to substance abuse only. Among those, 33 percent listed substance abuse as the primary diagnosis.[119] In 2011, the Drug Abuse Warning Network indicated that there were approximately 2.5 million drug misuse or abuse ED visits nationwide.

AOD can have serious, irreversible effects on health and well-being. Several studies have demonstrated that substance abuse treatment during or after an ED visit has been linked to a reduction in substance use, future ED use, hospital admissions and bed days.[122,123,124]

This measure focuses on individuals with AOD who return to the community after a visit to the ED, because they may be particularly vulnerable to losing contact with the health care system. High use of the ED may signal a lack of access to ongoing care or a gap in fulfilling urgent care needs. Linking patients to appropriate follow-up care may reduce future ED visits.[125]

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[125] New England Health Care Institute (NEHI). 2010. "A Matter of Urgency: Reducing Emergency Department Overuse, A NEHI Research Brief." http://www.nehi.net/writable/publication_files/file/nehi_ed_overuse_issue_brief_032610finaledits.pdf

Diabetes Screening for People With Schizophrenia or Bipolar Disorder Who Are Using Antipsychotic Medications (SSD)

This measure assesses the percentage of members 18–64 years of age with schizophrenia, schizoaffective disorder or bipolar disorder who were dispensed an antipsychotic medication and had a diabetes screening during the measurement year.

People with schizophrenia are at greater risk of metabolic syndrome due to their serious mental illness.[126] Diabetes screening is important for anyone with schizophrenia or bipolar disorder, and the added risk associated with antipsychotic medications contributes to the need to screen people with schizophrenia for diabetes. Diabetes screening for individuals with schizophrenia or bipolar disorder who are prescribed an antipsychotic medication may lead to earlier identification and treatment of diabetes.

Diabetes Monitoring for People With Diabetes and Schizophrenia (SMD)

This measure assesses the percentage of members 18–64 years of age with schizophrenia or schizoaffective disorder and diabetes, who had both an LDL-C test and an HbA1c test during the measurement year.

Prevalence rates of metabolic syndrome in people with schizophrenia is 42.6 percent for males and 48.5 percent for females, compared with rates in the general population (24 percent for males, 23 percent for females).[126]

Among patients with co-occurring schizophrenia and metabolic disorders, the nontreatment rate for diabetes is approximately 32 percent.[127] In addition to general diabetes risk factors, diabetes is promoted in patients with schizophrenia by initial and current treatment with olanzapine and mid-potency first-generation antipsychotics (FGA), as well as by current treatment with low-potency FGAs and clozapine.[128]

Improving blood sugar control has shown to lead to lower use of health care services and better overall satisfaction with diabetes treatment.[129] People who control their diabetes also report improved quality of life and emotional well-being.[130]

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[126] Cohn, T., D. Prud'homme, D. Streiner, H. Kameh, G. Remington. 2004. "Characterizing coronary heart disease risk in chronic schizophrenia: high prevalence of the metabolic syndrome." *Can J Psychiatry* 49(11):753–60.

[127] Nasrallah, H.A., J.M. Meyer, D.C. Goff, J.P. McEvoy, S.M. Davis, T.S. Stroup, et al. 2006. "Low rates of treatment for hypertension, dyslipidemia and diabetes in schizophrenia: data from the CATIE schizophrenia trial sample at baseline." *Schizophr Res* 86(1-3): 15–22.

[128] Nielsen, J., S. Skadhede, C.U. Correll. 2010. "Antipsychotics associated with the development of type 2 diabetes in antipsychotic-naive schizophrenia patients." *Neuropsychopharmacology* 35(9):1997–2004.

[129] Asche, C.J., C. LaFleur, C. Conner. 2011. "A Review of Diabetes Treatment Adherence and the Association with Clinical and Economic Outcomes." *Clinical Therapeutics* 33(1):74–109.

[130] Saatci, E., G. Tahmiscioglu, N. Bozdemir, et al. 2010. "The Well-being and Treatment Satisfaction of Diabetic patients in Primary Care." *Health Quality of Life Outcomes* 8:67.

Cardiovascular Monitoring for People With Cardiovascular Disease and Schizophrenia (SMC)

This measure assesses the percentage of members 18–64 years of age with schizophrenia or schizoaffective disorder and cardiovascular disease, who had an LDL-C test during the measurement year.

Patients with schizophrenia are likely to have higher levels of blood cholesterol and are more likely to receive less treatment. Patients with schizophrenia and elevated blood cholesterol levels are prescribed statins at approximately a quarter of the rate of the general population. Furthermore, certain atypical antipsychotic drugs increase total and low-density lipoprotein (LDL) cholesterol and triglycerides, and decrease high-density lipoprotein (HDL) cholesterol, which increases the risk of coronary heart disease.[131]

Among patients with co-occurring schizophrenia and metabolic disorders, rates of nontreatment for hyperlipidemia and hypertension were 62.4 percent for hypertension and 88.0 percent for hyperlipidemia.[127] Atypical antipsychotic medications elevate the risk of metabolic conditions, relative to typical antipsychotic medications.[132]

Adherence to Antipsychotic Medications for Individuals With Schizophrenia (SAA)*

This measure assesses the percentage of members with schizophrenia or schizoaffective disorder who were 19–64 years of age during the measurement year and were dispensed and remained on an antipsychotic medication for at least 80 percent of the treatment period.

For people with schizophrenia, nonadherence to treatment with antipsychotics is common, and medication nonadherence is a significant cause of relapse.[133,134] Measuring antipsychotic medication adherence may lead to less relapse and fewer hospitalizations. Additionally, there is potential to lead to interventions to improve adherence and help close the gap in care between people with schizophrenia and the general population.

**Adapted by NCQA with permission of the measure developer, CMS.*

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131 Hennekens, C.H., A.R. Hennekens, D. Hollar, D.E. Casey. 2005. "Schizophrenia and increased risks of cardiovascular disease." *Am Heart J* 150:1115–21.

132 Nasrallah H.A. 2008. "Atypical antipsychotic-induced metabolic side effects: insights from receptor-binding profiles." *Mol Psychiatry* 13(1): 27–35.

133 Olfson, M., S. Hansell, C.A. Boyer. 1997. "Medication noncompliance." *New Dir Ment Health Serv* 73:39–49.

134 Ascher-Svanum, H., B. Zhu, D.E. Faries, D. Salkever, E.P. Slade, X. Peng, et al. 2010. "The cost of relapse and the predictors of relapse in the treatment of schizophrenia." *BMC Psychiatry* 10:2.

Metabolic Monitoring for Children and Adolescents on Antipsychotics (APM)*

This measure assesses the percentage of members 1–17 years of age who had two or more antipsychotic prescriptions and had metabolic monitoring.

Antipsychotic medications offer the potential for effective treatment of psychiatric disorders in children; however, they can also increase a child's risk for developing serious health concerns, including metabolic health complications. Antipsychotic medications are associated with several potentially adverse impacts, including weight gain[135] and diabetes.[136,137]

A multi-year study of youth enrolled in three HMOs found that exposure to atypical antipsychotics was associated with a fourfold risk of diabetes in the following year, compared with children not prescribed a psychotropic medication, the broader class of medications under which antipsychotics fall.[136] Another study of youth enrolled in a state Medicaid plan found that those starting an antipsychotic had three times the risk of developing diabetes, compared with youth starting other psychotropic medications.[137] The association of atypical antipsychotics with diabetes has been found to be greater among children and adolescents than among adults.[138]

Research suggests that metabolic problems in childhood and adolescence are associated with poor cardiometabolic outcomes in adulthood.[139] The long-term consequences of pediatric obesity and other metabolic disturbances include higher risk of heart disease in adulthood.[140] Due to the potential negative health consequences associated with children developing cardiometabolic side effects from an antipsychotic medication, it is important to both establish a baseline and continuously monitor metabolic indices to ensure appropriate management of side-effects.

The American Academy of Child and Adolescent Psychiatry guidelines recommend metabolic monitoring, including monitoring of glucose and cholesterol levels, for children and adolescents on antipsychotic medications.[137]

* *Developed with financial support from the Agency for Healthcare Research and Quality (AHRQ) and CMS under the CHIPRA Pediatric Quality Measures Program Centers of Excellence grant number U18HS025296.*

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[136] Andrade, S.E., J.C. Lo, D. Roblin, et al. December 2011. "Antipsychotic medication use among children and risk of diabetes mellitus." *Pediatrics* 128(6):1135–41.

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Medication Management and Care Coordination

Annual Monitoring for Patients on Persistent Medications (MPM)

This measure looks at the percentage of members 18 years and older on persistent medications who received annual monitoring for the drugs of interest, reported as three separate rates and as a total rate.

Patient safety is highly important, especially for patients at increased risk of adverse drug events from long-term medication use. Persistent use of these drugs warrants monitoring and follow-up by the prescribing physician to assess for side-effects and adjust drug dosage/therapeutic decisions accordingly. The drugs included in this measure have deleterious effects in the elderly.

The costs of annual monitoring are offset by the reduction in health care costs associated with complications arising from lack of monitoring and follow-up of patients on long-term medications. The total costs of drug-related problems due to misuse of drugs in the ambulatory setting has been estimated to exceed $76 billion annually.[141]

Appropriate monitoring of drug therapy remains a significant issue to guide therapeutic decision making and provides largely unmet opportunities for improvement in care for patients on persistent medications.[142] Although there are no specific clinical guideline recommendations on the frequency of monitoring for the drugs identified in the measure, annual monitoring represents a conservative standard of care and is supported by FDA drug labeling recommendations for each drug.

Organization interventions, such as reminder systems, can help improve monitoring of patients on persistent medications and educating clinicians and patients can be cost-effective due to the high costs associated with adverse drug events.[143]

Medication Reconciliation Post-Discharge (MRP)

This measure assesses the percentage of discharges from January 1–December 1 of the measurement year for Medicare members 18 years of age and older, for whom medications were reconciled the date of discharge through 30 days after discharge (31 total days).

Medication reconciliation is critical post-discharge for all individuals who use prescription medications. Prescription medication use is common among adults of all ages. On average, 82 percent of adults in the U.S. take at least 1 medication (prescription or nonprescription, vitamin/mineral, herbal/natural supplement); 29 percent take 5 or more.

Older adults are the biggest consumers of medications: 17 percent–19 percent of people 65 and older take at least 10 medications in a given week.[144] 62 percent of adults 65 and older have multiple chronic conditions; the higher number of chronic conditions they experience, the more providers are involved in their care. As the number of providers increases, the less likely patients are to understand, remember and reconcile multiple instructions.[145] Patients with more than 1 chronic condition are likely to take more medications; therefore, ensuring proper medication reconciliation is imperative to preventing unintended complications.

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141 Johnson, J.A., and J.L. Bootman. 1995. "Drug-related morbidity and mortality: A cost-of-illness model." *Arch Intern Med* 155:1949–56.

142 Classen, D. 2003. "Medication safety. Moving from illusion to reality." *JAMA* 289(9):1154–6.

143 Bates, D.W. 1999. "Frequency, consequences and prevention of adverse drug events." *J Qual Clin Pract* 19:13-7.

144 Patterns of medications use in the United States 2006: a report from the Slone Survey. http://www.bu.edu/slone/files/2012/11/SloneSurveyReport2006.pdf (Accessed July 17, 2014)

145 Vogeli, C., A.E. Shields, T.A. Lee, et al. 2007. "Multiple Chronic Conditions: Prevalence, Health Consequences, and Implications for Quality, Care Management, and Costs." *J Gen Intern Med* 22(suppl 3): 391–5.

The high prevalence of prescription medications can result in potentially negative consequences for patients if not used and monitored appropriately. Approximately 1.5 million preventable adverse drug events occur in the United States each year.[143] Many of these result from medication errors, drug interactions or inappropriate use of medications.

Hospital medication records are often incomplete when patients are admitted. A comparison of medication histories maintained for admitted patients with community pharmacy records revealed that hospital records omitted 25 percent of the medications in use. As a result, patients were discharged from the hospital without being continued on some chronic medications.[144]

Significant changes can occur to a patient's medications during hospitalization. Beers et al. found that 45 percent of all discharge medications were initiated during hospitalization.[144] Provider errors and patient misunderstanding of discharge medications are also common. One observational study found that 81.4 percent of patients experienced a provider error or had no understanding of at least one intended medication change upon discharge. Providers were more likely to make an error on a medication that was unrelated to the primary diagnosis, which emphasizes the importance of knowing the patient's current medications upon admission and discharge so that they are properly reconciled. Patients were more likely to misunderstand medication changes that were unrelated to the primary diagnosis, which stresses the importance of proper communication to the patient prior to and following discharge.[145]

Implementing routine medication reconciliation after discharge from an inpatient facility is an important step to ensuring that medication errors are addressed and patients understand new medications. The process of resolving discrepancies on a patient's medication list reduces the risk of adverse drug interactions being overlooked and helps physicians minimize duplication and complexity of a medication regimen,[146] which in turn may increase patient adherence to the regimen and reduce hospital readmission rates.

Transitions of Care (TRC)

This measure assesses the transitions of care for Medicare members 18 years and older who had an inpatient discharge. Four rates are reported:

1. *Notification of Inpatient Admission.* Documentation of receipt of notification of inpatient admission on the day of admission or the following day.
2. *Receipt of Discharge Information.* Documentation of receipt of discharge information on the day of discharge or the following day.
3. *Patient Engagement After Inpatient Discharge.* Documentation of patient engagement (e.g., office visits, visits to the home, telehealth) provided within 30 days after discharge.
4. *Medication Reconciliation Post-Discharg*e. Documentation of medication reconciliation on the date of discharge through 30 days after discharge (31 total days).

The Medicare population includes older adults and individuals with complex health needs who often receive care from multiple providers and settings, and thus experience highly fragmented care and adverse health care utilization patterns and outcomes. This population is at particular risk during transitions of care because of higher comorbidities, declining cognitive function and increased

[146] Wenger, N.S. and R. Young. August 2004. Working paper: "Quality Indicators of Continuity and Coordination of Care for Vulnerable Elder Persons." RAND.

medication use.[147] Transitions from the inpatient setting to home often results in poor care coordination, including communication lapses between

inpatient and outpatient providers, intentional and unintentional medication changes, incomplete diagnostic work-ups and inadequate beneficiary, caregiver and provider understanding of diagnoses, medication and follow-up needs.[148]

Poor hospital transitions are not only associated with poor health outcomes, but also increased health care utilization and cost, including duplicate medical services, medication errors and increased emergency department visits and readmissions.[149] In 2010, Medicare beneficiaries 65 years and older accounted for 11.9 million (approximately 34 percent) of all hospital discharges in the United States.[150] One study estimated that inadequate care coordination and poor care transitions resulted in $25 billion–$45 billion in unnecessary spending in 2011.[151] Other studies have found that care coordination programs that do not incorporate timely transitional care elements are unlikely to result in reduced hospitalizations and associated Medicare spending,[152] and current payment structures do not provide much incentive for the collaboration necessary to implement effective care coordination post-discharge.[153]

Hospital transitions require clear communication between inpatient and outpatient providers to ensure optimal health outcomes during patient handoffs.[154,155,156,157,158] Effective care coordination efforts must include notifying patients' primary care practitioners (PCP) of admission, PCP receipt of meaningful and timely discharge information,[155,156,159] patient engagement through follow-up provided post-discharge and medication reconciliation post-discharge.

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147 Vognar, L., and N. Mujahid. 2015. "Healthcare transitions of older adults: An overview for the general practitioner." *Rhode Island Medical Journal* http://www.rimed.org/rimedicaljournal/2015/04/2015-04-15-ltc-vognar.pdf (Accessed July 12, 2016)

148 Rennke, S., O.K. Nguyen, M.H. Shoeb, Y. Magan, R.M. Wachter and S.R. Ranji. 2013. "Hospital-initiated transitional care as a patient safety strategy: A systematic review." *Annals of Internal Medicine* 158(5, Pt. 2), 433–40.

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151 Health Affairs. 2012. *Health Policy Brief: Care Transitions.* September 13, 2012. http://healthaffairs.org/healthpolicybriefs/brief_pdfs/healthpolicybrief_76.pdf (Accessed July 12, 2016)

152 Peikes, D., A. Chen, J. Schore and R. Brown. 2009. "Effects of care coordination on hospitalization, quality of care, and health care expenditures among Medicare beneficiaries." *Journal of the American Medical Association* 301(3).

153 Coleman, E.A. and R.A. Berenson. 2004. "Lost in transition: Challenges and opportunities for improving the quality of transitional care." *Annals of Internal Medicine* 141(7), 533–6.

154 Kripalani, S., A.T. Jackson, J.L. Schnipper and E.A. Coleman. 2007. "Promoting effective transitions of care at hospital discharge: A review of key issues for hospitalists." *Journal of Hospital Medicine* 2(5).

155 Kripalani, S., F. LeFevre, C.O. Phillips, M.V. Williams, P. Basaviah and D.W. Baker. 2007. "Deficits in communication and information transfer between hospital-based and primary care physicians: Implications for patient safety and continuity of care." *Journal of the American Medical Association* 297(8), 831–41.

156 Peart, K. N. 2015. *When used effectively, discharge summaries reduce hospital readmissions.* http://news.yale.edu/2015/01/15/when-used-effectively-discharge-summaries-reduce-hospital-readmissions (Accessed May 4, 2015)

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Notification of inpatient admission

Significant information gaps exist regarding inpatient admissions. Multiple studies have found that PCPs are often not aware, notified or given a standard timeline for notification of their patients' hospital admissions.[160,161,162,163,164,165,166] Two studies found that direct communication between PCPs and hospital physicians rarely occurs (from 3 percent–23 percent of the time).[156,167] Another study found that the majority of clinicians estimated that without notifications, they would have known about less than 25 percent of inpatient admissions and discharges before their patient's next visit. Approximately half reported that they call the inpatient team more often when they get notifications and think that notifications improve patient safety by increasing clinician awareness of patients' clinical events and medication changes.

Receipt of discharge information

Hospital discharge processes are not standardized, present risks to patient safety and are consistently poor.[156,157,158,159,168,169,170,171] Studies have found that discharge summaries are often delayed.[164,158] One study[157] found that discharge summaries were unavailable at the first post-discharge visit between 66 percent and 88 percent of the time, and remained unavailable 23 percent–49 percent of the time four weeks post-discharge. Discharge summaries often lack sufficient administrative and medical information, including diagnostic test results (missing 33 percent–63 percent of the time), treatment or hospital course (missing 7 percent–22 percent of the time), discharge medications (missing 2 percent–40 percent of the time), test results pending at discharge (missing 65 percent of the time), patient or family counseling (missing 90 percent–92 percent of the time) and follow-up plans

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(missing 2 percent–43 percent of the time).[157]Another study interviewed almost 1,800 PCPs and found that discharge summaries were unavailable for 58 percent of patients within two weeks post-discharge.[167]

Patient engagement after inpatient discharge

Numerous studies have found that timely follow-up can help ensure continuity of care and improve health outcomes;[148,172,173,174,175,176,177,178,179,180,181,182,183,184,185,186] however, studies have also found poor patient engagement post-discharge and significant opportunities for improvement. For example, many patients do not know their discharge diagnosis, do not understand the purpose of their new medications and do not receive sufficient discharge instructions and necessary follow-up.[148,179,187] A growing body of literature has demonstrated that Medicare beneficiaries do not receive follow-up to the extent it is needed.[180,181] One study found that nearly half of all Medicare patients do not have an outpatient follow-up prior to readmission. A study of Medicare fee-for-service claims data for nearly 12 million Medicare beneficiaries discharged from a hospital found that 20 percent of patients were readmitted within 30 days, and 50 percent of nonsurgical patients were

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182 Misky, G.J., H.L. Wald and E.A. Coleman. 2011. "Post-hospitalization transitions: Examining the effects of timing of primary care provider follow-up." *Journal of Hospital Medicine* 5(7), 392–7.

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184 Naylor, M. D., Brooten, D. A., Campbell, R., et al. 2003. "Comprehensive discharge planning and home follow-up of hospitalized elders." *Journal of the American Medical Association* 281, 613–20.

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readmitted without having seen an outpatient doctor for follow-up.[167] Another study, which focused on high-risk patients, found that an average of 38 percent of hospital patients had early follow-up after discharge.[180]

Medication reconciliation post-discharge

Medication reconciliation is critical post-discharge for all individuals who use prescription medications. Prescription medication use is common among adults of all ages. On average, 82 percent of adults in the U.S. take at least 1 medication (prescription or nonprescription, vitamin/mineral, herbal/natural supplement); 29 percent take 5 or more.

Older adults are the biggest consumers of medications: 17 percent–19 percent of people 65 and older take at least 10 medications in a given week.[188] 62 percent of adults 65 and older have multiple chronic conditions; the higher number of chronic conditions they experience, the more providers are involved in their care. As the number of providers increases, the less likely patients are to understand, remember and reconcile multiple instructions.[189] Patients with more than 1 chronic condition are likely to take more medications; therefore, ensuring proper medication reconciliation is imperative to preventing unintended complications.

The high prevalence of prescription medications can result in potentially negative consequences for patients if not used and monitored appropriately. Approximately 1.5 million preventable adverse drug events occur in the United States each year.[141] Many of these result from medication errors, drug interactions or inappropriate use of medications.

Hospital medication records are often incomplete when patients are admitted. A comparison of medication histories maintained for admitted patients with community pharmacy records revealed that hospital records omitted 25 percent of the medications in use. As a result, patients were discharged from the hospital without being continued on some chronic medications.[176]

Significant changes can occur to a patient's medications during hospitalization. Beers et al. found that 45 percent of all discharge medications were initiated during hospitalization. Provider errors and patient misunderstanding of discharge medications are also common. One observational study found that 81.4 percent of patients experienced a provider error or had no understanding of at least one intended medication change upon discharge. Providers were more likely to make an error on a medication that was unrelated to the primary diagnosis, which emphasizes the importance of knowing the patient's current medications upon admission and discharge so that they are properly reconciled. Patients were more likely to misunderstand medication changes that were unrelated to the primary diagnosis, which stresses the importance of proper communication to the patient prior to and following discharge.

Note: *Medication Reconciliation Post-Discharge is also a standalone measure in HEDIS, which Medicare plans report separately.*

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Follow-Up After Emergency Department Visit for People With Multiple High-Risk Chronic Conditions (FMC)

This measure assesses the percentage of emergency department visits for members who have multiple high-risk chronic conditions and had a follow-up service within 7 days of the ED visit. The Medicare population includes a large number of individuals and older adults with high-risk multiple chronic conditions (MCC) who often receive care from multiple providers and settings and, as a result, are more likely to experience fragmented care and adverse healthcare outcomes, including an increased likelihood of ED visits.[190,191] Medicare beneficiaries with MCCs require high levels of care coordination, particularly as the transition from the ED to the community. During these transitions, they often face communication lapses between ED and outpatient providers and inadequate patient, caregiver and provider understanding of diagnoses, medication and follow-up needs.[192,193,194,195] This poor care coordination results in an increased risk for medication errors, repeat ED visits, hospitalization, nursing home admission and death.[192,196,197] Medicare beneficiaries with MCCs not only experience poorer health outcomes, but also greater health care utilization (e.g., physician use, hospital and ED use, medication use) and costs (e.g., medication, out-of-pocket, total health care).[198] Medicare beneficiaries with MCCs are some of the heaviest users of high-cost, preventable services such as those offered by the ED.[199,200] An estimated 75 percent of health care spending is on people with MCCs.[201,202]

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Overuse/Appropriateness

Non-Recommended Cervical Cancer Screening in Adolescent Females (NCS)

This measure assesses the percentage of female adolescents 16–20 years of age who were unnecessarily screened for cervical cancer. A lower rate indicates better performance for this measure.

There are multiple medical societies and evidence-based guidelines which recommend against cervical cancer screening in a general population of females under 21 years of age; however, fewer than 25 percent of clinicians provide care consistent with guidelines.[203,204] Although screening has been shown to be highly effective in the 21–65 age group, the USPSTF determined there is adequate evidence that screening women younger than 21—regardless of sexual history—does not reduce the incidence and mortality of cervical cancer, compared with beginning screening at 21. The USPSTF found evidence that screening in the younger age group leads to more harm than benefit because abnormal test results are likely to be transient and to resolve on their own, and resulting treatment may have an adverse effect on future child-bearing. Thus, the USPSTF specifically recommends against screening women under 21 years of age.

This measure has the potential to decrease the use of non-recommended cervical cancer screening in adolescent females and to ensure that providers follow recommended guidelines. Adherence to guidelines could prevent adolescent females from experiencing harm, including more-frequent testing and invasive diagnostic procedures (such as colposcopy and cervical biopsy), in addition to short-term increase in anxiety and distress that results from abnormal test results. Additionally, this measure has the potential to decrease the financial burden associated with inappropriate screening practices.[39]

Non-Recommended PSA-Based Screening in Older Men (PSA)

This measure assesses the percentage of men 70 years and older who were screened unnecessarily for prostate cancer using prostate-specific antigen (PSA)-based screening. For this measure, a lower rate indicates better performance.

Prostate cancer is the most commonly diagnosed form of non-skin cancer among men in the United States.[205,206] The current lifetime risk for a male to develop prostate cancer is 15.9 percent;[207] however, the risk of dying from it is 2.9 percent.[208] According to the National Cancer Institute's Surveillance Epidemiology and End Results data (2005–2009), the median age at diagnosis for men is 67 years of

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age.[209] Because diagnosis is closely linked to screening, the apparent incidence of prostate cancer increases with increasing age until 84, after which it declines. Although prostate cancer is the fifth leading cause of all cancer deaths in the U.S., the survival rates are relatively high, with 23 deaths per 100,000 per year. Localized prostate cancer has a five-year survival rate of 100 percent, and approximately 81 percent of prostate cancers are diagnosed at the local stage.[210]

The primary tests used to screen for prostate cancer are the digital rectal exam (DRE), which allows for physical examination of the prostate, and the PSA blood test, which evaluates presence of an antigen in a patient's blood.[211] PSA-based screening is commonly used in lieu of DRE. The cost of a PSA test can range from $70–$400. Approximately 30 million men undergo PSA testing in the U.S. annually, translating to an estimated $3 billion in associated direct costs.[212,213]

However, there are a variety of issues associated with PSA-based screening. Research has shown PSA-based screening is not focal, which can result in misdiagnoses and unnecessary performance of diagnostic procedures.[209] The likelihood of PSA tests producing false-positive results is also relatively high, with some studies yielding 80 percent false-positive results when the cut-off range used is between 2.5 and 4.0 ng/mL.[214] Men with false-positive results not only experience negative psychological effects, but are also more likely to have follow-up testing in the following year, including one or more biopsies.[212]

In addition to issues of test specificity and sensitivity, prostate cancer is subject to over-diagnosis, the detection of a condition that would have remained silent and caused no morbidity during a patient's lifetime. Two large-scale PSA-based screening studies reveal over-diagnosis rates ranging from 17 percent–50 percent.[214,213] The main harms result from complications due to biopsies and treatment that typically follow abnormal results. Studies have shown that out of 1,000 men screened, 110 (11 percent) would be diagnosed with prostate cancer, and roughly half of those diagnosed experience complications from treatment.[215] Complications include erectile dysfunction, urinary incontinence, serious cardiovascular events, deep vein thrombosis and pulmonary embolism.[215]

The American Urological Association (AUA) recommends against routine PSA screening in men age 70 and older or any man with a life expectancy of less than 10–15 years.[209] The United States Preventive Services Task Force (USPSTF), however, recommends against PSA-based screening for prostate cancer in men in the general U.S. population, regardless of age,[216] stating that the overall benefits do not outweigh the associated harms with testing, subsequent diagnosis, procedures and treatment. This recommendation updates the 2008 USPSTF recommendation against PSA-based screening among men 75 and older. Evidence supporting the performance of screening among men younger than 75 was limited at the time.

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Appropriate Treatment for Children With Upper Respiratory Infection (URI)

This measure calculates the rate of antibiotic prescribing in children with URI. It examines the proportion of children between 3 months and 18 years of age who were given a single diagnosis of URI at an outpatient visit and who *did not* receive an antibiotic prescription for that episode of care within three days of the visit. Only the first eligible episode of URI for each child during the measurement year will be counted. A higher rate indicates better performance.

The common cold (or URI) is a frequent reason for children visiting the doctor's office. Though existing clinical guidelines do not support the use of antibiotics for the common cold, physicians often prescribe them for this ailment.[217] Pediatric clinical practice guidelines[219] do not recommend antibiotics for a majority of upper respiratory tract infections because of the viral etiology of these infections, including the common cold. A performance measure of antibiotic use for URI sheds light on the prevalence of inappropriate antibiotic prescribing in clinical practice and raises awareness of the importance of reducing inappropriate antibiotic use to combat antibiotic resistance in the community.

Avoidance of Antibiotic Treatment in Adults With Acute Bronchitis (AAB)

Antibiotics are most often inappropriately prescribed for adults with acute bronchitis.[59] This measure assesses whether antibiotics were inappropriately prescribed for healthy adults 18–64 years of age with bronchitis and builds on an existing HEDIS measure that targets inappropriate antibiotic prescribing for children with URI.

Antibiotics are not indicated in clinical guidelines for treating adults with acute bronchitis who do not have a comorbidity or other infection for which antibiotics may be appropriate.[218,219] Inappropriate antibiotic treatment of adults with acute bronchitis is of clinical concern, especially since misuse and overuse of antibiotics lead to antibiotic drug resistance.[220] Acute bronchitis consistently ranks among the 10 conditions that account for most ambulatory office visits to U.S. physicians; furthermore, while the vast majority of acute bronchitis cases (more than 90 percent) have a nonbacterial cause, antibiotics are inappropriately prescribed 65 percent–80 percent of the time.[59,221]

For all three inappropriate antibiotic use measures, the organization can influence physicians' antibiotic prescribing behavior through interventions such as reminders of guideline recommendations, contracting and reimbursement based on physician profiles and claims payment. It can change clinical practice by monitoring and providing feedback to physicians about their prescribing behaviors. In addition, the organization can develop patient education interventions to discourage seeking antibiotics for viral conditions (such as the common cold), or without confirmatory tests such as group A strep test for pharyngitis, and to educate members about the importance of appropriate antibiotic use.

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Use of Imaging Studies for Low Back Pain (LBP)

This measure assesses whether imaging studies (plain x-ray, MRI, CT scan) are overused to evaluate members with low back pain.

Approximately 2.5 million Americans visit outpatient clinical settings for low back pain each year. An estimated 75 percent–85 percent of all Americans will experience back pain at some point in their lives, and approximately 25 percent of Americans will experience at least one day of back pain during any three-month period.[222,223]

Choosing Wisely, an initiative of the American Board of Internal Medicine Foundation in collaboration with more than 70 specialty society partners, promotes a "national dialogue on avoiding wasteful or unnecessary medical tests, treatments and procedures" by publishing recommendations from the specialty societies to, "facilitate wise decisions about the most appropriate care based on a patient's individual situation."[224] Since the release of the initial Choosing Wisely lists, six specialty societies have published recommendations regarding the use of imaging for patients with low back pain,[225] indicating the topic's importance to healthcare providers.

Clinical guidelines for treating patients with acute low back pain strongly recommend against the use of imaging in the absence of "red flags" (i.e., indications of a serious underlying pathology such as a fracture or tumor).[225] Unnecessary or routine imaging is problematic because it is not associated with improved outcomes and exposes patients to unnecessary harms such as radiation exposure and further unnecessary treatment.[226]

There is no compelling evidence to justify substantial deviation from the diagnostic strategy published in clinical guidelines, which indicate that for most patients with low back pain, diagnostic imaging is usually unnecessary. Although patients may have a perceived need for imaging studies, efforts to educate patients on appropriate indications for imaging are within a provider's capacity. Organizations can provide information, best-care practice models and other support to providers, imaging centers and members to increase knowledge and ensure that imaging studies are used appropriately for evaluation of lower back pain patients, based on the duration of symptoms and the presence of red flags.

Use of Multiple Concurrent Antipsychotics in Children and Adolescents (APC)*

This measure assesses the percentage of children and adolescents 1–17 years of age who were on two or more concurrent antipsychotic medications. For this measure, a lower rate indicates better performance.

Antipsychotic prescribing for children has increased rapidly in recent decades, driven by new prescriptions and by longer duration of use.[227] The frequency of prescribing antipsychotics among youth

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222 AANS. "Low Back Pain." Last modified December 2011. http://www.aans.org/Patient%20Information/Conditions%20and%20Treatments/Low%20Back%20Pain.aspx

223 NIH. "Handout on Health: Back Pain." National Institute of Arthritis and Musculoskeletal and Skin Diseases. Last modified March 2015. http://www.niams.nih.gov/Health_Info/Back_Pain/default.asp

224 Choosing Wisely: An initiative of the ABIM foundation. 2015. "Choosing Wisely Recommendations." http://www.choosingwisely.org/wp-content/uploads/2015/01/Choosing-Wisely-Recommendations.pdf

225 Downie, A., et al. 2013. "Red flags to screen for malignancy and fracture in patients with low back pain: systematic review." *BMJ* 347:f7095. doi: 10.1136/bmj.f7095

226 Chou, R., R. Fu, J.A. Carrino, R.A. Deyo. 2009. "Imaging strategies for low-back pain: systematic review and meta-analysis." *Lancet*. 373:463-72. doi: 10.1016/S0140-6736(09)60172-0

227 Patten, S.B., W. Waheed, L. Bresee. 2012. "A review of pharmacoepidemiologic studies of antipsychotic use in children and adolescents." *Canadian Journal of Psychiatry* 57:717–21.

increased almost fivefold from 1996–2002, from 8.6 per 1,000 children to 39.4 per 1,000.[228] Although some evidence supports the efficacy of antipsychotics in youth for certain narrowly defined conditions, less is known about the safety and effectiveness of antipsychotic prescribing patterns in community use (e.g., combinations of medications, off-label prescribing, dosing outside of recommended ranges).

Both the efficacy and side effects of antipsychotic medications vary by age. Children and adolescents prescribed antipsychotics are more at risk for serious health concerns, including weight gain, extrapyramidal side effects, hyperprolactinemia and some metabolic effects.[229] This suggests that use of multiple concurrent antipsychotics may pose differing risks for children and adolescents compared with adults. While there is no research on long-term effects of multiple concurrent antipsychotics on children's health, the increased side effect burden of certain antipsychotic medications for youth has implications for future physical health concerns including obesity and diabetes. Girls treated with certain antipsychotics may also be at increased risk for gynecological problems[230] and osteoporosis.[231] Risks of multiple concurrent antipsychotics, compared with monotherapy, have not been systematically investigated; existing evidence appears largely in case reports.[232] In general, the field also lacks high-quality studies of side effects associated with the use of multiple concurrent antipsychotic medications in adults.[233]

The American Academy of Child and Adolescent Psychiatry recommends that clinicians avoid the simultaneous use of multiple concurrent antipsychotic medications for children and adolescents.[234]

**Developed with financial support from the Agency for Healthcare Research and Quality (AHRQ) and CMS under the CHIPRA Pediatric Quality Measures Program Centers of Excellence grant number U18HS025296.*

Potentially Harmful Drug-Disease Interactions in the Elderly (DDE)

This measure assesses the percentage of Medicare members 65 years of age and older who have evidence of an underlying disease, condition or health concern and who were dispensed an ambulatory prescription for a potentially harmful medication, concurrent with or after the diagnosis. The following rates are reported.

- A history of falls and a prescription for anticonvulsants, SSRIs, antipsychotics, benzodiazepines, nonbenzodiazepine hypnotics or tricyclic antidepressants.
- Dementia and a prescription for antipsychotics, benzodiazepines, nonbenzodiazepine hypnotics, tricyclic antidepressants, H2 receptor antagonists or anticholinergic agents.
- Chronic kidney disease and prescription for Cox-2 selective NSAIDs or nonaspirin NSAIDs.
- Total rate (the sum of the three numerators divided by the sum of the three denominators).

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228 Cooper, W.O., P.G. Arbogast, H. Ding, G.B. Hickson, D.C. Fuchs, and W.A. Ray. 2006. "Trends in prescribing of antipsychotic medications for US children." *Ambulatory Pediatrics* 6(2):79–83.

229 Correll, C.U., C.J. Kratochvil, J.S. March. 2011. "Developments in pediatric psychopharmacology: Focus on stimulants, antidepressants, and antipsychotics." *Journal of Clinical Psychiatry* 72:655–70.

230 Talib H.J., E.M. Alderman. 2013. "Gynecologic and reproductive health concerns of adolescents using selected psychotropic medications." *Pediatric and Adolescent Gynecology* 26:7–15.

231 Cohen D, O. Bonnot, N. Bodeau et al. 2012. "Adverse effects of second-generation antipsychotics in children and adolescents." *Journal of Clinical Psychopharmacology* 32:309–16.

232 Safer, D.J., J.M. Zito, S. DosReis. 2003. "Concomitant psychotropic medication for youths." *American Journal of Psychiatry* 160(3): p. 438–49.

233 Van Bennekom, M., H. Gijsman, F. Zitman. 2013. "Antipsychotic polypharmacy in psychotic disorders: A critical review of neurobiology, efficacy, tolerability and cost effectiveness." *Journal of Psychopharmacology* 27: 327.

234 American Academy of Child and Adolescent Psychiatry. 2011. *Practice Parameter for the Use of Atypical Antipsychotic Medications in Children and Adolescents.* http://www.aacap.org/App_Themes/AACAP/docs/practice_parameters/Atypical_Antipsychotic_Medications_web.pdf. (Accessed July 12, 2012)

Members with more than one disease or condition may appear in the measure multiple times (i.e., in each indicator for which they qualify). A lower rate represents better performance for all rates.

Almost 90 percent of adults 65 and older take at least one medication, significantly more than any other age group.[235] While pharmacotherapy is an essential component of medical treatment for many older adults, certain medications are associated with increased risk of harm from drug side-effects and drug toxicity; these medications pose a concern for patient safety. Use of potentially inappropriate medications (PIM) in the elderly can lead to poor health outcomes, including adverse drug events, confusion, falls, and mortality.[236,237] Adults 65 and older are twice as likely as those below age 65 to experience adverse drug events and are almost seven times as likely to be hospitalized for adverse drug events.[238] It's estimated that 30 percent of elderly-patient hospital admissions may be linked to drug-related problems or toxic effects.[239]

The DDE and DAE measures are based on recommendations in the American Geriatrics Society (AGS) 2015 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults. The AGS Beers Criteria are one of the most widely used sources about the safety of medication prescribing in older adults.[240] They include evidence-based recommendations on medications that are potentially harmful in all older adults and those with specific diseases or conditions. The development of the 2015 Updated Beers Criteria was based on a systematic literature review and discussion by a panel of experts in geriatric care and pharmacotherapy. NCQA's measurement advisory panels also provide guidance on the specific conditions and medications included in the DDE and DAE measures.

Reducing prescriptions of high-risk drugs in the elderly also represents an opportunity to reduce the costs associated with harm from medications (e.g., hospitalizations from drug toxicity) and to encourage clinicians to consider safer, alternative medications. Reducing unnecessary prescribing will also help to reduce cost, given that the elderly population represents one-third of all prescription drug expenditures in the U.S., but comprises only 13 percent of the population.[241]

Interventions focused on minimizing the use of PIMs can reduce the incidence of adverse drug events in older adults and their contribution to poor health outcomes and health care costs. Organizations can employ various interventions, such as direct provider and patient education and implementing clinical decision support systems that help flag potentially inappropriate medications. In addition, they can influence medication selection through alerts in their pharmacy benefit systems or formulary restrictions and support planning and implementing interventions to reduce drug-related morbidity and mortality in older adults. Studies have shown that integration of the AGS Beers Criteria recommendations in electronic health records can provide instant feedback and medication alternatives when PIMs are originally selected.[242]

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235 Agency for Healthcare Research and Quality. 1996. *Health Care Use in America—1996 Medical Expenditure Panel Survey Highlights.* Rockville, Maryland: Agency for Healthcare Research and Quality. http://www.meps.ahrq.gov/papers/hl9_99-0029/hl9.htm#Fig1 (March 9, 2004)

236 Stockl, K.M., L. Le, S. Zhang, et al. 2010. "Clinical and economic outcomes associated with potentially inappropriate prescribing in the elderly." *Am J Manag Care* 16:e1–e10.

237 Fick, D.M., L.C. Mion, M.H. Beers, J.L. Waller. 2008. "Health Outcomes Associated with Potentially Inappropriate Medication Use in Older Adults." *Research in Nursing & Health.* 31(1): 42–51.

238 Budnitz, D., D.A. Pollock, K.N. Widenbach, A.B. Mendelson, T.J. Schroeder, and J.L. Annest. 2006. "National Surveillance of Emergency Department Visits for Outpatient Adverse Drug Events." *Journal of the American Medical Association* 296:1858–66.

239 Hanlon, J.T., K.E. Schmader, M.J. Koronkowski, et al. 1997. "Adverse drug events in high risk older outpatients." *J Am Geriatr Soc.* 45:945–8.

240 Radcliff, S., Yue, J., Rocco, G., Aiello, S.E., Ickowicz, E., Hurd, Z., Samuel, M.J. and Beers, M.H. 2015. "American Geriatrics Society 2015 updated Beers Criteria for potentially inappropriate medication use in older adults." *Journal of the American Geriatrics Society*, 63(11): 2227-2246.

241 Families USA. 2000. *Cost Overdose: Growth in Drug Spending for the Elderly, 1992-2010.* Washington, DC. July: 2.

242 Fick, D.M., and T.P. Selma. 2012. "2012 American Geriatrics Society Beers Criteria: New Year, New Criteria, New Perspective." *The American Geriatrics Society.*

Use of High-Risk Medications in the Elderly (DAE)

This measure assesses the percentage of Medicare members 66 years of age and older who received a high-risk medication. Two rates are reported:

- Members who had at least one dispensing event for a high-risk medication.
- Members who had at least two dispensing events for the same high-risk medication.

For both rates, a lower rate indicates better performance.

Almost 90 percent of adults 65 and older take at least one medication, significantly more than any other age group.[235] While pharmacotherapy is an essential component of medical treatment for many older adults, certain medications are associated with increased risk of harm from drug side-effects and drug toxicity; these medications pose a concern for patient safety. Use of potentially inappropriate medications (PIM) in the elderly can lead to poor health outcomes, including adverse drug events, confusion, falls, and mortality.[236] Adults 65 and older are twice as likely as those below age 65 to experience adverse drug events and are almost seven times as likely to be hospitalized for adverse drug events.[239] It's estimated that 30 percent of elderly-patient hospital admissions may be linked to drug-related problems or toxic effects.[238]

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Use of Opioids at High Dosage (UOD)*

This measure assesses, for members 18 years of age and older, the rate per 1,000 who are receiving prescription opioids for 15 days or more at a high dosage. A lower rate indicates better performance.

The morbidity and mortality associated with opioid use has reached epidemic proportions, and is recognized by the Centers for Disease Control and Prevention, the Surgeon General and the White House as a significant public health problem in the U.S. Prescription opioid pain relievers cause nearly three out of four prescription drug overdoses.[243] The age-adjusted prescription opioid mortality rate has nearly quadrupled from 1999–2011, from 1.4 per 100,000 to 5.4 per 100,000.[243] In 2011, there were 16,917 fatal overdoses involving prescription opioids.[244]

Although prescription opioids are appropriate components of a pain management treatment plan for certain conditions,[245,246,247] there is limited evidence demonstrating the long-term beneficial effects of opioid use for chronic pain management for nonterminal conditions.[248,249] In addition, long-term daily use of opioids can lead to increased tolerance, addiction or dependence.[250,251] Studies suggest a correlation between high opioid dosage and a greater risk of overdoses and fractures.[252,253,254]

The 2016 CDC guideline on opioid prescribing recommends the use of "additional precautions" when prescribing dosages ≥50 morphine equivalent dose (MED), and generally recommends avoiding dosages ≥90mg MED.[255] The Washington State Agency Medical Directors Group suggests that 120 MED should be the maximum threshold dosage level prescribed without special consideration.[256]

**Adapted with financial support from CMS and with permission from the measure developer, Pharmacy Quality Alliance (PQA).*

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243 Centers for Disease Control and Prevention (CDC). 2011. "Vital Signs: Overdoses of Prescription Opioid Pain Relievers—United States, 1999-2008." *MMWR* 60: 1–6.

244 CDC. 2014. "Drug-poisoning Deaths Involving Opioid Analgesics: United States, 1999–2011" *NCHS Data Brief* 166. http://www.cdc.gov/nchs/data/databriefs/db166.pdf

245 Bressler H.B., W.J. Keyes, P.A. Rochon, E. Badley. 1999. "The prevalence of low back pain in the elderly. A systemic review of the literature." *Spine* 24:1813–19.

246 Gureje O., M. Von Korff, G.E. Simon, R. Gater. 1998. "Persistent pain and well-being: a World Health Organization study in primary care." *JAMA* 280:147–51.

247 Manchikanti L., P.S. Staats, V. Singh, et al. 2003. "Evidence-based practice guidelines for interventional techniques in the management of chronic spinal pain." *Pain Physician* 6:3–80.

248 Chou R., G.J. Fanciullo, P.G. Fine, et al. 2009. "Clinical guidelines for the use of chronic opioid therapy in chronic noncancer pain." *Journal of Pain* 10(2):113–30.

249 Noble M., J.R. Treadwell, S.J. Tregear, et al. 2010. "Long-term opioid management for chronic noncancer pain." *Cochrane Database Syst Rev* 1(1). doi: 10.1002/14651858.

250 King, L. 2007. "Pain Medications: How Long is Too Long." Pain EDU. http://www.painedu.org/articles_timely.asp?ArticleNumber=10 (Accessed January 5, 2016)

251 National Institutes of Health (NIH). 2011. "Opioids and Chronic Pain." Medline Plus. https://www.nlm.nih.gov/medlineplus/magazine/issues/spring11/articles/spring11pg9.html

252 Dunn, K.M., K.W. Saunders, C.M. Rutter, C.J. Banta-Green, J.O. Merrill, M.D. Sullivan, M. Von Korff. 2010. "Overdose and prescribed opioids: Associations among chronic non-cancer pain patients." *Annals of Internal Medicine* 152(2), 85–92. http://doi.org/10.1059/0003-4819-152-2-201001190-00006

253 Paulozzi, L.J., et al. 2011. "A History of Being Prescribed Controlled Substances and Risk of Drug Overdose Death." *Pain Medicine* 13: 87–95. doi: 10.1111/j.1526-4637.2011.01260.x.

254 Saunders, K.W., K.M. Dunn, J.O. Merrill, M. Sullivan, C. Weisner, J.B. Braden, M. Von Korff. 2010. "Relationship of Opioid Use and Dosage Levels to Fractures in Older Chronic Pain Patients." *Journal of General Internal Medicine* 25(4), 310–15. http://doi.org/10.1007/s11606-009-1218-z

255 CDC. 2016. *CDC Guideline for Prescribing Opioids for Chronic Pain — United States, 2016.* http://www.regulations.gov/#!documentDetail;D=CDC-2015-0112-0002

256 Agency Medical Directors Group (AMDG). 2015. *Interagency Guideline on Prescribing Opioids for Pain."* http://www.agencymeddirectors.wa.gov/Files/2015AMDGOpioidGuideline.pdf

Use of Opioids from Multiple Providers (UOP)*

This measure assesses, for members 18 years of age and older, the rate per 1,000 members who are receiving prescription opioids for 15 days or more from multiple providers. Three rates are reported:

1. *Multiple Prescribers.* The rate per 1,000 members receiving prescriptions for opioids from four or more prescribers.
2. *Multiple Pharmacies.* The rate per 1,000 members receiving prescriptions for opioids from four or more pharmacies.
3. *Multiple Prescribers and Multiple Pharmacies.* The rate per 1,000 members receiving prescriptions for opioids from four or more prescribers and four or more pharmacies. (i.e., the rate per 1,000 of members who are numerator compliant for both the Multiple Prescribers and Multiple Pharmacies rates).

A lower rate indicates a better performance.

The morbidity and mortality associated with opioid use has reached epidemic proportions, and is recognized by the Centers for Disease Control and Prevention, the Surgeon General and the White House as a significant public health problem in the U.S. Prescription opioid pain relievers cause nearly three out of four prescription drug overdoses.[243] The age-adjusted prescription opioid mortality rate nearly quadrupled from 1999–2011, from 1.4 per 100,000 to 5.4 per 100,000.[243] In 2011, there were 16,917 fatal overdoses involving prescription opioids.[244] One area of risk related to opioid use is the receipt of opioids prescriptions from multiple prescribers and pharmacies. Prescription drug monitoring programs (PDMP), which are state-run electronic databases that collect statewide data on the prescribing and dispensing of controlled prescription drugs to patients, have found that the highest use of opioids is found among a small proportion of patients who use multiple providers and pharmacies.

A study using data from the Massachusetts Prescription Monitoring Program (PMP) from 1996–2006 reported that most individuals used no more than two prescribers and one to two pharmacies, and had no early refills. A small number, around 0.5 percent of patients, saw four or more prescribers and used four or more pharmacies.[257] Evidence suggests that people who see multiple prescribers and use multiple pharmacies are at higher risk of overdose.[253] Studies also show that patients who use four or more prescribers or pharmacies have a higher likelihood of opioid-related overdose death compared to patients who receive opioids from one prescriber or one physician.[258]

**Adapted with financial support from CMS and with permission from the measure developer, Pharmacy Quality Alliance (PQA).*

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[257] Katz, N., L. Panas, M. Kim, A.D. Audet, A. Bilansky, J. Eadie, P. Kreiner, F.C. Paillard, C. Thomas, and G. Carrow. 2010. "Usefulness of prescription monitoring programs for surveillance—analysis of Schedule II opioid prescription data in Massachusetts, 1996–2006." *Pharmacoepidemiology and Drug Safety* 19: 115–23. doi: 10.1002/pds.1878.

[258] Gwira Baumblatt, J.A., C. Wiedeman, J.R. Dunn, W. Schaffner, L.J. Paulozzi, T.F. Jones. 2014. High-risk use by patients prescribed opioids for pain and its role in overdose deaths. *JAMA Intern Med* 174(5):796–801. PMID: 24589873

Risk of Continued Opioid Use (COU)*

This measure assesses the percentage of members 18 years of age and older who have a new episode of opioid use that puts them at risk for continued use. A lower rate indicates better performance for this measure. Two rates are reported:

1. The percentage of members whose new episode of opioid use lasts at least 15 days in the 30-day period starting on the day of their index prescription.
2. The percentage of members whose new episode of opioid use lasts at least 31 days in a 62- day period starting on the day of their index prescription.

Since 2006, the average days' supply for opioid prescriptions has risen 33 percent (from 13.3 to 17.7 days in 2015).[259] Literature suggests that an association exists between the duration of initial opioid therapy and continued use.[260] Continued opioid use for noncancer pain is associated with increased risk of opioid use disorder (OUD), opioid-related overdose, hospitalization and opioid overdose-related mortality.[261] The sharpest increases in the probability of continuing opioid use at one and three years post-initial-prescription were observed after the fifth and thirty-first days on therapy.[261] To address the association between prescribing practices and risk of continued opioid use and its associated negative outcomes, NCQA identified a measure concept that assesses members with a new episode of opioid use who are dispensed opioids for a period of time that puts them at an increased risk of continued use.

The intent of this measure is to identify a population that is at risk for opioid overuse and misuse who may benefit from additional monitoring, services or support.

**Adapted with financial support from CMS from a measure developed by the Minnesota Department of Human Services.*

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[259] Guy, G.P. Jr., K. Zhang, M.K. Bohm, et al. 2017. "Vital signs: changes in opioid prescribing in the United States, 2006–2015." *MMWR Morb Mortal Wkly Rep.* 66:697–704.

[260] Shah A., C.J. Hayes, and B.C. Martin. 2017. "Characteristics of initial prescription episodes and likelihood of long-term opioid use—United States, 2006–2015." *MMWR. Morbidity and Mortality Weekly Report* 66(10): 265–9.

[261] Brat G.A., D. Agniel, A. Beam, B. Yorkgitis, M. Bicket, M. Homer, K.P. Fox, D.B. Knecht, C.N. McMahill-Walraven, N. Palmer and I. Kohane. "Postsurgical prescriptions for opioid naïve patients and association with overdose and misuse: retrospective cohort study." *BMJ* 360: j5790.

Measures Collected Through the Medicare Health Outcomes Survey

The Medicare Health Outcomes Survey (HOS)

This measure assesses a Medicare Advantage organization's ability over time to maintain or improve the health status of its members. The measure is designed to quantify the physical and mental health of the Medicare population at the beginning and end of a defined period. The HEDIS Medicare HOS is the primary health outcome measure for seniors enrolled in a Medicare health plan.

The measure is based on a random sample of individuals whose functional status is assessed at the beginning and end of a two-year period. It evaluates physical and mental health functional status using the Veterans 12-Item Health Survey (VR-12). HOS also measures how well seniors are able to do basic activities of daily living, such as bathing and dressing, and whether or not they are getting help with things that might help or hurt their functioning, such as, advice to reduce the risk of falling and encouragement to do regular physical activity. Researchers and clinicians use patient-based assessments like the VR-12:

- To look at the health of the general population.
- To evaluate treatment outcomes and procedures.
- To provide external performance measurement.

The functional status of the elderly normally declines over a two-year period. The measure considers expected decline and looks at whether the change in the physical and mental health status of each Medicare beneficiary surveyed was better, the same or worse than expected, accounting for risk-adjustment factors.

Fall Risk Management (FRM)

This Medicare HOS survey measure assesses two facets of falls risk management for Medicare members:

- *Discussing Fall Risk*. The percentage of members 65 years of age and older who were seen by a practitioner in the past 12 months and who discussed falls or problems with balance or walking with their current practitioner.
- *Managing Fall Risk.* The percentage of members 65 years of age and older who had a fall or had problems with balance or walking in the past 12 months, who were seen by a practitioner in the past 12 months and who received a recommendation for how to prevent falls or treat problems with balance or walking from their current practitioner.

Unintentional injuries are the seventh leading cause of death in older adults, and falls are responsible for two-thirds of these deaths.[262] Falls can have serious psychological and social consequences. Many elderly people who fall develop a fear of subsequent falls, which can result in self-imposed functional limitations. Of those

[262] National Center for Health Statistics. "Health, United States, 2015: With Special Feature on Racial and Ethnic Health Disparities." *Table 20. Leading causes of death and numbers of deaths, by age: United States, 1980 and 2014.* https://www.cdc.gov/nchs/data/hus/hus15.pdf#020

older adults who fall, 20 percent–30 percent suffer moderate to severe injuries that may reduce mobility and independence, as well as increase the risk of premature death.[263,264] Recurrent falls are a common reason for the need for long-term care; a recent study found that falls were a significant factor in 40 percent of admissions to long-term care.[265,266]

Because falls have the potential to cause serious harm and significantly limit functional status of the elderly, a clinical practice to routinely monitor and manage risk factors can have significant impact in preventing unintentional injuries from falls. The American Geriatrics Society, along with the British Geriatrics Society and the American Academy of Orthopedic Surgeons, published clinical practice guidelines for the prevention of falls in older people.[267]

Management of Urinary Incontinence in Older Adults (MUI)

This survey measure provides information on how well physicians manage urinary incontinence (UI) in Medicare members 65 years of age and older. The measure assesses the following components, based on responses to survey items in the Medicare HOS:

- *Discussing UI.* The percentage of Medicare members 65 years of age and older who reported having a urine leakage in the last six months and who discussed their urinary leakage problem with a health care provider.
- *Discussing Treatment of UI.* The percentage of Medicare members 65 years of age and older who reported having urine leakage in the past six months and who discussed treatment options for their current urine leakage problem.
- *Impact of UI.* The percentage of Medicare members 65 years of age and older who reported having urine leakage in the past six months and who reported that urine leakage made them change their daily activities or interfered with their sleep a lot.

UI, or the unintentional loss of urine, is a condition that affects between 10 percent and 30 percent of adults. An estimated 13 million Americans suffer from bladder control problems; 85 percent of these are women. The prevalence of UI increases with age, and although it should not be considered a normal part of aging, up to 35 percent of people 60 years of age and older are incontinent. The underlying causes of UI can be diagnosed and managed effectively by a practitioner.[268,269] UI can cause a wide

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263 Sterling, D.A., J.A. O'Connor, J. Bonadies. 2001. "Geriatric falls: Injury severity is his and disproportionate to mechanism." *J Trauma-Injury Infection and Critical Care* 50(1):116–9.

264 Grisso, J.A., D.F. Schwarz, V. Wolfson, M. Polansky, K. LaPann. 1992. "The impact of falls in an inner-city African-American population." *J Am Geriatr Soc* 40:673–8.

265 NIH. "National Institute of Arthritis and Musculoskeletal and Skin Disorders." *Osteoporosis: Progress and promise.* www.niams.nih.gov/hi/topics/osteoporosis/opbkgr.htm (Accessed December 30, 2003)

266 NIH. Osteoporosis and Related Bone Diseases-Resource Center. *Fast facts on osteoporosis.* www.osteo.org/osteolinks.asp (January 12, 2004)

267 American Geriatrics Society, British Geriatrics Society, American Academy of Orthopedic Surgeons. 2001. "Guideline for the prevention of falls in older persons." *J Am Geriatr Soc* 49(5):664-672.

268 Tannenbaum C., L. Perrin, C.E. DuBeau, G.A. Kuchel. 2001. "Diagnosis and Management of Urinary Incontinence in the Older Patient." *Arch Phys Med Rehabil* 82:134–8.

269 Lee S.Y., D. Phanamus, S.D. Fields. 2000. "Urinary Incontinence—a primary care guide to managing acute and chronic symptoms in older adults." *Geriatrics* 55(11): 65–71.

range of morbidity in the elderly, including pressure ulcers, urinary tract infections (UTI), social withdrawal and depression.[270] UI is one of the major causes of institutionalization of the elderly.[271,272]

In 1996, AHRQ updated the *Clinical Practice Guidelines on Urinary Incontinence in Adults*. These and other guidelines provide consensus on effective treatments for UI, which can improve or even "cure" most patients.[272]

Since UI is associated with poor physical and mental health status, organizations can educate providers and invest in patient education initiatives to improve the functional and health status of elderly patients who suffer from multiple comorbid conditions.

Osteoporosis Testing in Older Women (OTO)

This Medicare HOS survey measure assesses the number of women 65–85 years of age who report ever having received a bone density test to check for osteoporosis.

Osteoporosis is the most common of the bone diseases that will affect Americans.[273] In the U.S., 10 million people are estimated to have osteoporosis; another 34 million are estimated to have low bone mass, placing them at risk for osteoporosis and related fractures.[273] The prevalence of osteoporosis is high among older women. Published economic assessments suggest that diagnosis and treatment of women at risk for osteoporosis would be more cost-effective by targeting treatment to those with the lowest bone measurement results.

In 2002, the USPSTF updated its previous recommendations on osteoporosis screening and found at least fair evidence that screening improves health outcomes. It concluded that benefits significantly outweigh any harm, and recommends that clinicians routinely screen all women 65 and older for osteoporosis.[274]

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[270] Fantl, J.A., D.K. Newman, J. Colling, et al. 1996. *Urinary Incontinence in Adults: Acute and Chronic Management.* Rockville, Maryland: US Dept of Health and Human Services, Public Health Service, Agency for Health Care Policy and Research. Clinical Practice Guideline No. 2, 1996 Update. AHCPR Publication No. 96-0682 AHRQ. *Overview: Urinary incontinence in adults, clinical practice guidelines update.* http://www.ahcpr.gov/news/ press/overview.htm

[271] National Kidney and Urologic Disease Advisory Board. 1994.

[272] Scientific Committee of the First International Consultation on Incontinence, Assessment and Treatment of Urinary Incontinence. 2000. *Lancet* 355(17):2153–8

[273] NIH. National Institute of Arthritis and Musculoskeletal and Skin Disorders. *Osteoporosis: Progress and promise.* www.niams.nih.gov/hi/topics/osteoporosis/opbkgr.htm (December 30, 2003)

[274] AHRQ, USPSTF. 2002. *Recommendations and Rationale: Screening for Osteoporosis in Postmenopausal Women.* http://www.ahrq.gov/clinic/3rduspstf/osteoporosis/osteorr.htm

Physical Activity in Older Adults (PAO)

This measure assesses different facets of promoting physical activity in older adults.

Despite the proven benefits of regular physical activity on the health of older adults, over half of the older population is sedentary (47 percent of older adults 65–74 years of age and 61 percent of adults over 75 do not engage in physical activity).[275,276] Less than a third of the elderly population is regularly active. In particular, older women, who share a higher burden of morbidity and mortality, are less likely to exercise than older men: 66 percent of women, compared to 54 percent of men 75 and older, do not engage in leisure-time physical activity, according to the CDC Behavioral Risk Factor Surveillance Survey.

By targeting the health care system, this measure complements national efforts to increase physical activity levels in the community through a wide range of community actions and environmental and policy approaches, as well as behavioral/social interventions recommended by the United States Task Force on Community Preventive Services.[275]

Engaging in 30 minutes or more of moderate physical activity most days of the week is recommended for the general population by the USPSTF.[275] Increased physical activity is especially important for the older population, which can most benefit from increased activity levels to improve the gradual decline in functioning and health status associated with increasing age.[275] Furthermore, studies have shown that even a small increase in physical activity leads to health benefits. Encouraging people to be more physically active is even more cost-effective and has greater health benefits than getting people to quit smoking.

Currently there is a low prevalence of physicians counseling patients to exercise; therefore, there is high potential for organizations to improve on this measure. Examples of effective interventions for changing patient behavior include patient goal setting, written exercise prescriptions, individually tailored exercise regimens and multidimensional approaches. Organizations can help reduce health care costs through cost-effective behavior-change interventions that demonstrate favorable return on investment, especially considering the higher health care charges associated with each risk factor.

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[275] CDC. 2001. "Increasing Physical Activity: A Report on Recommendations of the Task Force on Community Preventive Services." *MMWR.* Vol 50 (RR-18), Oct 26.

[276] Guide to Clinical Preventive Services, 2nd Edition, *Counseling to Promote Physical Activity.* 1996.

Measures Collected Through the CAHPS Health Plan Survey

Flu Vaccinations for Adults Ages 18–64 (FVA)

This measure looks at the percentage of members 18–64 years of age who received an influenza vaccination.

The disease burden for influenza is large, and the potential for prevention is high. Influenza infections result in significant health care expenditures each year, and the vaccine is safe and effective. Specifications are consistent with current recommendations from ACIP. This group has an increased prevalence of people with high-risk medical conditions, and age-specific strategies have been more successful to increase vaccine coverage than those based on medical conditions.

Healthy adults in this age group without high-risk conditions will benefit by a reduced number of illnesses, physician visits, missed workdays and antibiotic use, and will have reduced disease transmission from contacts who are at high-risk for influenza-related complications. Organizations can implement a variety of interventions for increasing coverage. Successful vaccination programs combine publicity and education for health care workers and other potential vaccine recipients. Programs include identifying people at high risk; patient reminder/recall systems; assessment of practice-level vaccination rates with feedback to health care providers and staff; and efforts to remove administrative and financial barriers that prevent people from receiving the vaccine. Organizations can also contribute to cooperative and communitywide immunization clinics scheduled just before the start of the flu season.

Flu Vaccinations for Adults Ages 65 and Older (FVO)

This measure looks at how well organizations help protect America's seniors from potentially life-threatening influenza outbreaks. It looks at the percentage of members 65 years of age and older who received the influenza vaccine. Specifications for this measure are consistent with current ACIP recommendations.[277]

Influenza accounts for 10,000–40,000 or more deaths each year in the U.S.[278] Older adults are at high risk for developing serious infections (such as pneumonia) following the flu. For this reason, experts recommend that all adults 65 years of age and older receive a flu vaccination every year to reduce the risk of developing serious complications if they become infected. Vaccination programs against influenza have been shown to reduce the incidence of illness and death, and are cost-effective, as well.

ACIP, the ACP and the Infectious Disease Society of America recommend yearly influenza vaccination for adults 65 and older to protect against infection and reduce the risk of complications from infection.[279,280] Organizations can implement a variety of interventions to increase influenza coverage. Successful vaccination programs combine publicity and education for health care workers and other potential vaccine recipients. Programs include developing a plan for identifying people at high risk; use of patient reminder/recall systems; assessment of practice-level vaccination rates with feedback to

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277 ACIP. 2006. *Adult Immunization Recommendations.* http://www.cdc.gov/nip/recs/adult-schedule.htm#print

278 CDC. 2005. "Prevention and Control of Influenza—Recommendations of the Advisory Committee on Immunization Practices." *MMWR* 54(RR08);1–40.

279 American College of Physicians Task Force on Adult Immunization and Infectious Diseases Society of America. 1994. *Guides for Adult Immunization, Third Edition.* American College of Physicians, Philadelphia, PA.

280 Barker W., and J.P. Mullooly. 1980. "Impact of epidemic type A influenza in a defined adult population." *Am J Epidemiol* 112:798–811.

health care providers and staff; and efforts to remove administrative and financial barriers that prevent people from receiving the vaccine, including use of standing orders programs. Organizations can also contribute to cooperative and communitywide immunization clinics scheduled just prior to the start of the flu season.

Medical Assistance With Smoking and Tobacco Use Cessation (MSC)

This three-part survey measure looks at the health care provider's role in curbing smoking and tobacco use and focuses on health care providers' efforts to help members quit smoking or using tobacco by evaluating the following components.

- *Advising Smokers and Tobacco Users to Quit.* The percentage of members 18 years of age and older who were current smokers/tobacco users and who received advice to quit from their practitioner.
- *Discussing Cessation Medications.* The percentage of members 18 and older who were current smokers/ tobacco users and whose practitioner discussed or recommended smoking/tobacco use cessation medications.
- *Discussing Cessation Strategies.* The percentage of members 18 and older who were current smokers/ tobacco users and whose practitioner discussed or provided smoking/tobacco use cessation methods or strategies.

Smoking and tobacco use is the leading preventable cause of death in the U.S., causing more than 430,700 deaths each year. Over 47 million Americans smoke or use tobacco, despite the risks. Seventy percent of smokers are interested in stopping smoking completely; smokers report that they would be more likely to stop smoking if a doctor advised them to quit.[281] A number of clinical trials have demonstrated the effectiveness of clinical quit-smoking programs. Getting even brief advice to quit is associated with a 30 percent increase in the number of people who quit.[282]

Specifications for this measure are consistent with current USPSTF recommendations.[283] Quitting smoking reduces the risk of lung and other cancers, heart attack, stroke and chronic lung disease. Women who stop smoking before pregnancy or during the first three months of pregnancy reduce their risk of having a low-birth-weight baby to the same risk as women who never smoked. The excess risk of CAD is reduced by about half, one year after quitting, and continues to decline gradually.[283]

Smokers who quit before age 45 are likely to avoid 54 percent–67 percent of expected lifetime economic losses due to smoking, and those over 70 are likely to avoid 32 percent–52 percent of such costs. Organizations should encourage physicians to talk openly with patients about smoking and provide opportunities and programs that encourage and support quitting. Evidence suggests that tracking smoking status as a "vital sign" leads to more aggressive counseling and higher quit rates. Organizations can offer tobacco cessation classes and offer a "stop smoking tool kit" as part of their benefits, and pharmaceutical aids such as nicotine patches and other such smoking cessation supports could be offered without copayment.

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[281] CDC. "Cigarette Smoking Among Adults—United States 2003." *MMWR* May 27, 2005; 54(20);509–13.
[282] Fiore, M.C., W.C. Bailey, S.J. Cohen, et al. 2000. *Treating Tobacco Use and Dependence. Quick Reference Guide for Clinicians.* Rockville, Maryland: Public Health Service, U.S. Department of Health and Human Services.
[283] USPSTF. *Counseling: Tobacco Use.* Release Date: November 2003. http://www.ahrq.gov/clinic/uspstf/ uspstbac.htm

Pneumococcal Vaccination Status for Older Adults (PNU)

This measure looks at the number of Medicare members 65 years of age and older who ever report having received a pneumococcal vaccination.

Pneumonia infection is a common cause of illness and death in the elderly. Each year, pneumonia causes an estimated 40,000 deaths among adults in the U.S. Pneumonia accounts for more deaths than any other vaccine-preventable bacterial disease.[284] The burden of this disease is high for older adults, but the potential for prevention is also high. Pneumonia infections result in significant health care costs each year, and vaccination is safe and effective.

The specifications for this measure are consistent with current recommendations from ACIP,[285] which recommends pneumococcal vaccine for all individuals who are 65 and older to protect against infection. Medicare Part B fully covers the cost of the vaccine and its administration every five years. Many seniors are unaware of the need for vaccination against pneumonia or they harbor misconceptions about the vaccinations' usefulness.

Outreach includes awareness through educational efforts or reminder programs. Successful vaccination programs combine publicity and education for health care workers and other potential vaccine recipients. Programs include developing a plan for identifying people at high risk; use of patient reminder/recall systems; assessment of practice-level vaccination rates with feedback to health care providers and staff; and efforts to remove administrative and financial barriers that prevent people from receiving the vaccine, including use of standing orders programs. Organizations can also contribute to cooperative and community wide immunization clinics.

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[284] CDC. 1997. "Prevention of Pneumococcal Disease: Recommendations of the Advisory Committee on Immunization Practices (ACIP)." *MMWR* 46(RR-08):1–24.

[285] CDC. 2002. "Prevention and control of influenza: recommendations of ACIP." *MMWR* 51(RR-3):1–31.

Access/Availability of Care Measures

Measures in this domain look at how members access basic and important services offered by their organization. **Access** refers to members' ability to get the services they require from a health care system. There are many access measures in HEDIS. The *Effectiveness of Care* section contains an access measure for well-child care immunization rates and access measures for women's health care.

Adults' Access to Preventive/Ambulatory Health Services (AAP)

This measure looks at whether adult members 20 years of age and older receive preventive and ambulatory services from the organization. It looks at the percentage of members who have had a preventive or ambulatory visit to their physician. Consider the other side of this measure: How many patients *never* access the system? What services do they receive? How does preventive care and counseling occur for these members? Without a patient visit, they do not receive counseling on diet, exercise, smoking cessation, seat belt use and behaviors that put them at risk. If the organization's services are not being used, are there barriers to access? Maintaining access to care requires more than making providers and services available—it involves analysis and systematic removal of barriers to care.

Children and Adolescents' Access to Primary Care Practitioners (CAP)

Like the *Adults' Access* measure, this measure looks at visits to pediatricians, family physicians and other organization providers of primary care as a way to assess general access to care for children and adolescents who are 12 months to 19 years of age.

Annual Dental Visit (ADV)

This measure looks at Medicaid members' use of the organization's dental services. It measures the percentage of members between 2 and 20 years of age with dental coverage who had a dental check-up during the past year.

The average American adult has between 10 and 17 decayed, missing or filled permanent teeth. About half of all adults have gingivitis (gum inflammation) and 80 percent have experienced some degree of destruction of the bone supporting the teeth.

Tooth decay is the most common disease known to man. The number of cavities in school-age children has been declining since the 1940s, yet the average child still has at least:

- 1 cavity in permanent teeth by age 9.
- 2.6 cavities in permanent teeth by age 12.
- 8 cavities in permanent teeth by age 17.

Guidelines set by the American Academy of Pediatric Dentistry (AAPD), the American Dental Association (ADA) and the American Academy of Pediatrics (AAP) recommend the first dental visit occur for children by one year of age.[286,287,288] Regular visits to the dentist provide access to cleaning, early diagnosis and treatment, as well as education on how to prevent problems.

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[286] American Academy of Pediatrics. 2003. Section on Pediatric Dentistry; Policy Statement: Oral Health Risk Assessment Timing and Establishment of the Dental Home. *Pediatrics* 111(5).
[287] American Academy of Pediatric Dentistry. 2002. "Guideline on infant oral health." *Pediatr Dent* 2:24(special issue):46.
[288] Baby's First Teeth. *Journal of the American Dental Association* February 2002: Vol 133.

Initiation and Engagement of Alcohol and Other Drug Abuse or Dependence Treatment (IET)

This measure assesses the degree to which the organization initiates and engages members identified with a need for alcohol and other drug (AOD) abuse and dependence services and the degree to which members initiate and continue treatment once the need has been identified. Two rates are reported:

- *Initiation of AOD Treatment.* The percentage of adolescent and adult members with a new episode of AOD abuse or dependence who initiate treatment through an inpatient AOD admission, outpatient visit, intensive outpatient encounter, partial hospitalization, telehealth or medication assisted treatment (MAT) within 14 days of the diagnosis.
- *Engagement of AOD Treatment.* The percentage of adolescent and adult members with a new episode of AOD abuse or dependence who initiated treatment and who had two or more additional AOD services or MAT within 34 days of the initiation visit.

In 2015, 20.8 million people (7.8 percent of the U.S. population) 12 years of age and older were classified as having a substance use disorder (SUD) within the past year.[289] One in 10 deaths among working adults in the U.S. is due to alcohol misuse.[290] In 2014, 47,055 deaths were due to drug overdose—61 percent due to opioid use.[290] Treatment of medical problems caused by substance abuse plays a huge burden in the health care system, but interventions may help to diminish the social and economic impact.[291]

Total overall costs of substance misuse and substance use disorders in the U.S., including loss of work productivity, direct health care expenditures and crime-related costs, exceed $400 billion annually.[290] Conservative estimates suggest that for every dollar invested in addiction treatment programs, between $4 and $7 is directly returned in drug-related crime, criminal justice costs and theft.[292]

Treatment engagement is an intermediate step between initially accessing care and completing a full course of treatment. Individuals who complete treatment or receive more days of treatment typically show more improvement than those who leave care prematurely. This measure serves as an immediate indicator, along the path to the desired outcome.

A study published in the Journal of Behavioral Health Services and Research in January 2010 examined the link between process quality measures and patient outcomes. The study concluded that patients meeting the engagement indicator of this measure improved significantly more in all domains of the Addiction Severity Index Alcohol, Drug and Legal composite (i.e., alcohol, drug, psychiatric, medical, legal, employment, and family-social) than patients who did not engage. Furthermore, the relationship was stronger for alcohol and legal outcomes for patients seen in outpatient settings compared to inpatient settings.[293]

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[289] SAMHSA. 2016. "Key Substance Use and Mental Health Indicators in the United States: Results from the 2015 National Survey on Drug Use and Health" https://www.samhsa.gov/data/sites/default/files/NSDUH-FFR1-2015Rev1/NSDUH-FFR1-2015Rev1/NSDUH-FFR1-2015Rev1/NSDUH-National%20Findings-REVISED-2015.pdf

[290] U.S. Department of Health and Human Services (HHS), Office of the Surgeon General. November 2016. *Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health.* Washington, DC: HHS.

[291] Schneider Institute for Health Policy, Brandeis University. 2001. *Substance Abuse: The Nation's Number One Health Problem,* for The Robert Wood Johnson Foundation. Princeton, New Jersey.

[292] National Institute on Drug Abuse. 2012. *Principles of Drug Addiction Treatment: A Research-Based Guide, No. 12–4180.* https://d14rmgtrwzf5a.cloudfront.net/sites/default/files/podat_1.pdf

[293] Harris, A.H.S., K. Humphreys, T. Bowe, Q. Tiet, J.W. Finney. 2010. "Does Meeting the HEDIS Substance Abuse Treatment Engagement Criterion Predict Patient Outcomes?" J*ournal of Behavioral Health Services and Research*.

Prenatal and Postpartum Care (PPC)

This composite measure is a combination of two rates; it aims to provide relevant and comparable data and create efficiency in data collection:

- Timeliness of Prenatal Care.
- Postpartum Care.

The first rate looks at how well the organization provides timely prenatal care to pregnant women. It measures the percentage of pregnant women in the organization who began prenatal care during the first 13 weeks of pregnancy, or within 42 days of enrollment, for women who were more than 13 weeks pregnant when they enrolled. Care can be delivered by a variety of appropriate obstetrical, primary care or nurse-midwife practitioners. The second rate of this measure looks at care rendered to women after they have delivered a baby. It measures the percentage of women who had live births and who had a postpartum visit on or between 21 and 56 days after delivery.

Preventive medicine is fundamental to prenatal care. Healthy diet, counseling, vitamin supplements, identification of maternal risk factors and health promotion must occur early in pregnancy to have an optimal effect on outcome. Poor outcomes include spontaneous abortion, low-birth-weight babies, large-for-gestational-age babies and neonatal infection. Early prenatal care is also an essential part of helping a pregnant woman prepare to become a mother. Ideally, a pregnant woman will have her first prenatal visit during the first trimester of pregnancy. Some women enroll in an organization at a later stage of pregnancy; in this case, it is essential for the organization to begin providing prenatal care as quickly as possible.

ACOG[294] recommends that women see their health care provider at least once between four and six weeks after giving birth. The first postpartum visit should include a physical examination and is an opportunity for the health care practitioner to answer parents' questions, give family planning guidance and counsel on nutrition.

Use of First-Line Psychosocial Care for Children and Adolescents on Antipsychotics (APP)*

This measure assesses the percentage of children and adolescents 1–17 years of age who had a new prescription for an antipsychotic medication and had documentation of psychosocial care as first-line treatment.

Although antipsychotic medications may serve as effective treatment for a narrowly defined set of psychiatric disorders in children, they are often being prescribed for nonpsychotic conditions such as attention-deficit hyperactivity disorder and disruptive behaviors,[295,296,297] conditions for which

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[294] American Academy of Pediatrics and The American College of Obstetricians and Gynecologists. *Guidelines for Perinatal Care* (5th Edition). October 2002.

[295] McKinney, C., and K. Renk. 2011. "Atypical antipsychotic medications in the management of disruptive behaviors in children: safety guidelines and recommendations." *Clinical Psychology Review* 31(3):465–71.

[296] Cooper, W.O., G.B. Hickson, C. Fuchs, P.G. Arbogast, W.A. Ray. 2004. "New Users of Antipsychotic Medications Among Children Enrolled in TennCare." *Archives of Pediatric Adolescent Medicine* 158(8):753–9. DOI:10.1001/archpedi.158.8.753.

[297] Olfson, M., C. Blanco, L. Liu, C. Moreno, G. Laje. 2006. "National Trends in the Outpatient Treatment of Children and Adolescents with Antipsychotic Drugs." *Archives of General Psychiatry* 63(6):679–85. DOI:10.1001/archpsyc.63.6.679.

psychosocial interventions are considered first-line treatment.[298,299] Thus, clinicians may be underutilizing safer first-line psychosocial interventions and using antipsychotics for nonprimary indications in children and adolescents.

Antipsychotic medications are associated with a number of potential adverse impacts, including weight gain[300] and diabetes,[301,302] which can have serious implications for future health outcomes. Children without primary indication for an antipsychotic and who are not given the benefit of a trial of psychosocial treatment first, may unnecessarily incur the risks associated with antipsychotic medications. Mental health conditions in youth are associated with a number of potential adverse effects, including increased risk for substance use.[303] To the extent that psychosocial interventions are associated with better outcomes,[304,305,306] underuse of these therapies may lead to poorer mental and physical health outcomes.

In the absence of a Food and Drug Administration indication for an antipsychotic medication, guidelines recommend that psychosocial treatments be provided prior to initiating an antipsychotic.[307,308,309] Guidelines for individual conditions that recommend use of antipsychotics in the absence of a primary indication address the use of psychosocial interventions prior to use of an antipsychotic. Treatment guidelines for management of aggression[309] and disruptive behavior disorders all endorse psychosocial interventions as first-line treatment.

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298 Kutcher, S., M. Aman, S.J. Brooks, J. Buitelaar, E. van Daalen, J. Fegert and S. Tyano. 2004. "International consensus statement on attention-deficit/hyperactivity disorder (ADHD) and disruptive behaviour disorders (DBDs): clinical implications and treatment practice suggestions." *European Neuropsychopharmacolog.* 14(1):11–28.

299 Pappadopulos, E., N.S. Rosato, C.U. Correll, et al. December 2011. "Experts' recommendations for treating maladaptive aggression in youth." *Journal of Child and Adolescent Psychopharmacology* 21(6):505-515.

300 Andrade, S.E., J.C. Lo, D. Roblin, et al. December 2011. Antipsychotic medication use among children and risk of diabetes mellitus. *Pediatrics* 128(6):1135–41.

301 Bobo, W.V., W.O. Cooper, C.M. Stein, et al. October 1, 2013. "Antipsychotics and the risk of type 2 diabetes mellitus in children and youth." *JAMA Psychiatry* 70(10):1067–75.

302 Correll, C.U. 2008. "Antipsychotic use in children and adolescents: minimizing adverse effects to maximize outcomes". *FOCUS: The Journal of Lifelong Learning in Psychiatry* 6(3):368–78.

303 Substance Abuse and Mental Health Services Administration. May 3, 2007. The NSDUH Report: Depression and the initiation of alcohol and other drug use among youths aged 12 to 17. Rockville, MD.

304 Jensen, P.S., S.P. Hinshaw, J.M. Swanson, et al. February 2001. "Findings from the NIMH Multimodal Treatment Study of ADHD (MTA): implications and applications for primary care providers." *Journal of Developmental and Behavioral Pediatrics* 22(1):60–73.

305 Eyberg, S.M., M.M. Nelson, S.R. Boggs. January 2008. "Evidence-based psychosocial treatments for children and adolescents with disruptive behavior." *Journal of Clinical Child and Adolescent Psychology* 37(1):215–37.

306 Schimmelmann, B.G., S.J. Schmidt, M. Carbon, C.U. Correll. March 2013. "Treatment of adolescents with early-onset schizophrenia spectrum disorders: in search of a rational, evidence-informed approach." *Current Opinion in Psychiatry* 26(2):219–30.

307 American Academy of Child and Adolescent Psychiatry. 2011. *Practice Parameter for the Use of Atypical Antipsychotic Medications in Children and Adolescents.* http://www.aacap.org/App_Themes/AACAP/docs/practice_parameters/Atypical_Antipsychotic_Medications_web.pdf (Accessed July 12, 2012)

308 Gleason, M.M., H.L. Egger, G.J. Emslie, et al. December 2007. "Psychopharmacological treatment for very young children: contexts and guidelines." *J Am Acad Child Adolesc Psychiatry* 46(12):1532–72.

309 Scotto, Rosato N., C.U. Correll, E. Pappadopulos, A. Chait, S. Crystal, P.S. Jensen. June 2012. "Treatment of maladaptive aggression in youth: CERT guidelines II. Treatments and ongoing management." *Pediatrics* 129(6):e1577–86.

Experience of Care Measures

Measures in this domain assess members' experience of care across several products and populations and give a general indication of how well the organization meets member expectations. The NCQA CPM has long felt that consumer experience with health care is a critical component of quality of care and is itself an outcome of care.

CAHPS Health Plan Survey 5.0H, Adult Version (CPA)

This measure provides information on commercial and Medicaid members' experience with the health plan. Results summarize member experiences through ratings, composites and individual question summary rates.

Four global rating questions reflect overall satisfaction.

- Rating of All Health Care.
- Rating of Health Plan.
- Rating of Personal Doctor.
- Rating of Specialist Seen Most Often.

Seven composite scores summarize responses in key areas.

- Claims Processing *(commercial only).*
- Customer Service.
- Getting Care Quickly.
- Getting Needed Care.
- How Well Doctors Communicate.
- Shared Decision Making.
- Plan Information on Costs *(commercial only).*

Item-specific question summary rates are reported for the rating questions and each composite question. Question Summary Rates are also reported individually for two items summarizing the following concepts.

- Health Promotion and Education.
- Coordination of Care.

Note: *Medicare member experience with the organization is assessed through the Medicare CAHPS survey. This measure is administered by CMS on behalf of Medicare Advantage (MA) plans.*

CAHPS Health Plan Survey 5.0H, Child Version (CPC)

This measure provides information on parents' experience with their child's Medicaid organization. Results summarize member experiences through ratings, composites and individual question summary rates. Four global rating questions reflect overall satisfaction.

- Rating of All Health Care.
- Rating of Health Plan.
- Rating of Personal Doctor.
- Rating of Specialist Seen Most Often.

Five composite scores summarize responses in key areas.

- Customer Service.
- Getting Care Quickly.
- Getting Needed Care.
- How Well Doctors Communicate.
- Shared Decision Making.

Item-specific question summary rates are reported for the rating questions and each composite question. Question Summary Rates are also reported individually for two items summarizing the following concepts:

- Health Promotion and Education.
- Coordination of Care.

Children With Chronic Conditions (CCC)

This measure provides information on parents' experience with their child's Medicaid organization for the population of children with chronic conditions. Three composites summarize experience with basic components of care essential for successful treatment, management and support of children with chronic conditions:

- Access to Specialized Services.
- Family Centered Care: Personal Doctor Who Knows Child.
- Coordination of Care for Children With Chronic Conditions.

Item-specific question summary rates are reported for each composite question. Question Summary Rates are also reported individually for two items summarizing the following concepts:

- Access to Prescription Medicines.
- Family Centered Care: Getting Needed Information.

Utilization and Risk Adjusted Utilization Measures

Measures in this domain gather information about how organizations manage the provision of member care and how they use and manage resources. Use of services is affected by many member characteristics, which can vary greatly among organizations and include age and sex, current medical condition, socioeconomic status and regional practice patterns.[310] Consumers and purchasers should consider the information provided by these measures as a starting point for discussion. Analyzing Effectiveness of Care and Utilization results together may provide information about how resources are used, the extent of care and possible inappropriate care.

There are three kinds of measures in this domain:

- *Measures that express rates of service,* often expressed as "per 1,000 member years (or months)."
- *Measures that express the percentage of members who received certain services.* These are similar to the measures in the Effectiveness of Care domain and report information on members who were continuously enrolled in the organization for a certain period.
- *Utilization measures that are risk-adjusted.*

HEDIS reports many of these measures in table form. Each table includes a large number of data elements, broken down by age and sex.

Utilization

Well-Child Visits in the First 15 Months of Life (W15)

This measure looks at the adequacy of well-child care for infants. It measures the percentage of children who had between one and six or more well-child visits by the time they turned 15 months of age.

The AAP recommends six well-child visits in the first year of life: the first within the first month of life, and then at around 2, 4, 6, 9 and 12 months of age.[311] These visits are of particular importance during the first year of life, when an infant undergoes substantial changes in abilities, physical growth, motor skills, hand-eye coordination and social and emotional growth. Regular check-ups are one of the best ways to detect physical, developmental, behavioral and emotional problems. They also provide an opportunity for the clinician to offer guidance and counseling to the parents.

Well-Child Visits in the Third, Fourth, Fifth and Sixth Years of Life (W34)

This measure looks at the use of routine check-ups by preschool and early school-age children. It assesses the percentage of children 3, 4, 5 and 6 years of age who received at least one well-child visit with a primary care practitioner during the measurement year.

Well-child visits during the preschool and early school years are particularly important. A child can be helped through early detection of vision, speech and language problems. Intervention can improve communication skills and avoid or reduce language and learning problems.

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[310] MedPac. Report to the Congress: *Promoting Greater Efficiency in Medicare*. June 2007. http://www.medpac.gov/documents/Jun07_EntireReport.pdf (Accessed October 13, 2008)

[311] American Academy of Pediatrics. 2000. Committee on Practice and Ambulatory Medicine: "Recommendations for Preventive Pediatric Health Care." *Pediatrics* 105: 645–6.

The AAP recommends annual well-child visits for 2–6 year-olds.[312]

Adolescent Well-Care Visits (AWC)

This measure looks at the use of regular check-ups by adolescents. It reports the percentage of adolescents 12–21 years of age who had one or more well-care visits with a primary care provider or OB/GYN during the measurement year. Adolescents benefit from an annual preventive health care visit that addresses the physical, emotional and social aspects of their health.

Adolescence is a time of transition between childhood and adult life and is accompanied by dramatic changes. Accidents, homicide and suicide are the leading causes of adolescent deaths. Sexually transmitted diseases, substance abuse, pregnancy and antisocial behavior are important causes of—or result from—physical, emotional and social adolescent problems.

The AMA's Guidelines for Adolescent Preventive Services, the federal government's Bright Futures Program and the AAP guidelines recommend comprehensive annual check-ups for adolescents.[313]

Frequency of Selected Procedures (FSP)

This measure lists several frequently performed procedures (mostly surgical, listed below) that contribute substantially to overall cost. Wide variations among geographic regions in medical procedure rates appear to have little correlation with health outcomes. The reasons for this are unclear. Some variation is because of unnecessary procedures; conversely, some procedures may not be performed often enough. These rates are likely to be strongly influenced by how the organization manages care.

Bariatric weight loss surgery Procedures such as gastric bypass and gastric banding, which change the digestive system's anatomy, limit the amount of food that can be eaten and digested and thus promote weight loss.

Tonsillectomy The surgical removal of the tonsils or adenoids.

PCI Percutaneous coronary intervention. Encompasses a variety of procedures used to treat patients with stenotic coronary arteries found in coronary heart disease.

Hysterectomy Removal of the uterus, most commonly because of the presence of benign or malignant tumors.

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[312] American Medical Association. *Guidelines for Adolescent Preventive Health Services—Recommendations for Physicians and other Health Professionals.*

[313] *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescent*s. 2nd ed., rev. 1994; 2000; 2002. http://www.brightfutures.org/guidelines.html

Cholecystectomy	Removal of the gall bladder. It is sometimes required as a treatment for gallstones or infection. HEDIS measures both laparoscopic procedures (those performed using a small surgical scope) and regular surgery.
Back surgery	All spinal fusions and disk surgeries, including laminectomy with and without disk removal.
Cardiac catheterization	Insertion of a slender sensing device into the heart to measure functions such as blood pressure and cardiac output or to evaluate the extent of CAD radiographically. This procedure is used in diagnosing heart disease.
CABG	Coronary artery bypass grafting. A surgical procedure to allow blood circulation to bypass an obstructed artery in the heart.
Prostatectomy	Removal of the prostate gland. It is a common treatment for benign or malignant enlargement of the prostate.
Total hip or total knee replacement	Procedures to replace joints damaged by arthritis.
Carotid endarterectomy	Used to prevent strokes when there is a narrowing in the arteries that supply the brain with blood.
Mastectomy	Excision of the breast.
Lumpectomy	Excision of a breast tumor with a limited amount of associated tissue.

Variation in procedure rates present a starting point in examining the kind of care that is being rendered to members. Coding practices, epidemiology, demographics and practice patterns may be responsible for variation. Examining these measures may help eliminate unwarranted variation in the delivery of medical care.

Ambulatory Care (AMB)

This measure assesses member use of two kinds of ambulatory services:

- Outpatient visits.
- Emergency department visits.

Outpatient visits include office visits or routine visits to hospital outpatient departments. Emergency rooms often deliver nonemergency care.

Inpatient Utilization—General Hospital/Acute Care (IPU)

This measure assesses the extent to which the organization's members receive inpatient hospital treatment because of pregnancy and childbirth, for surgery or for nonsurgical medical treatment.

The organization reports how many hospital stays occurred during the measurement year and the length of hospitalization.

Identification of Alcohol and Other Drug Services (IAD)

This measure provides an overview of members with an AOD claim and the extent to which the different levels of chemical dependency services are used. It reports the number and percentage of members with an AOD claim (i.e., containing a diagnosis of AOD abuse or dependence and a specific AOD-related service during the measurement year) in the following categories:

- Inpatient.
- Intensive outpatient or partial hospitalization.
- Outpatient (including ambulatory medication-assisted treatment [MAT] dispensing events).
- ED.
- Telehealth.
- Any services.

In each category, the organization reports by age and sex the number of members with an AOD diagnosis who received the service and the percentage that received the service out of all members with a chemical dependency benefit.

Treatment of medical problems caused by substance abuse plays a huge burden in the health care system.[291] In 2015, 20.8 million people (7.8 percent of the U.S. population) 12 years of age and older were classified as having a substance use disorder (SUD) within the past year and approximately 3.5 million adults within this population received substance use treatment and 2.3 million adults received treatment in a specialty substance use disorder program.[289,290] Total overall costs of substance misuse and substance use disorders in the U.S., including loss of work productivity, direct health care expenditures and crime-related costs, exceed $400 billion annually.[290]

Mental Health Utilization (MPT)

It is estimated that 22.1 percent of American adults suffer from a diagnosable mental disorder. Federal legislation defines serious mental illness as "a mental disorder that substantially interferes with one's life activities and ability to function." Given this definition, it is estimated that 5.4 percent of the adult population in the U.S. is affected by serious mental illness each year.[314] Approximately half of those receive some form of treatment. Overall, 15 percent of adults and 21 percent of children ages 9–17 receive mental health services in any one year,[315] though very few of those treated receive adequate treatment.

Different "intensity levels" of mental health care exist:

- Inpatient treatment.
- Intensive outpatient and partial hospitalization.
- Outpatient, ED, telehealth treatment.

Purchasers may be interested in the percentage of members who received mental health services at each of these intensity levels. This measure also provides information about access to mental health services.

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[314] U.S. Public Health Service. 1999. *Mental Health: A Report of the Surgeon General.* http://www.surgeongeneral.gov/library/mentalhealth/home.html

[315] Wang, P., O. Demler, R. Kessler. 2002. "Adequacy of Treatment for Serious Mental Illness in the United States." *American Journal of Public Health* 92: 92–8.

Antibiotic Utilization (ABX)

This measure assesses the number of all antibiotic prescriptions prescribed to enrolled members, as well as antibiotics of concern, to encourage plans to reduce potential overuse, which may contribute to drug resistance. It reports outpatient utilization of antibiotic prescriptions, stratified by age and gender, for the following:

- Total number of antibiotic prescriptions.
- Average number of antibiotic prescriptions per member per year (PMPY).
- Total days supplied for all antibiotic prescriptions.
- Average days supplied per antibiotic prescription.
- Total number of prescriptions for antibiotics of concern.
- Average number of prescriptions PMPY for antibiotics of concern.
- Percentage of antibiotics of concern for all antibiotic prescriptions.
- Average number of antibiotics PMPY reported by drug class:
  - For selected "antibiotics of concern."
  - For all other antibiotics.

Standardized Healthcare-Associated Infection Ratio (HAI)

Hospital-reported standard infection ratios (SIR) for four different healthcare-associated infections (HAI), adjusted for the proportion of members discharged from each health plan's contracted acute care hospital. The measure reports the proportion of total discharges from hospitals with a high, moderate, low or unavailable SIR, next to a total plan-weighted SIR for each of the following infections:

- *HAI-1:* Central line-associated blood stream infections (CLABSI).
- *HAI-2:* Catheter-associated urinary tract infections (CAUTI).
- *HAI-5:* Methicillin-resistant staphylococcus aureus (MRSA) blood laboratory-identified events (bloodstream infections).
- *HAI-6:* Clostridium difficile laboratory-identified events (intestinal infections) (CDIFF).

Note: *A lower SIR indicates better performance. SIRs >1.0 indicate that more infections occurred than expected; SIRs <1.0 indicate fewer infections occurred than expected.*

HAIs are infections contracted while receiving care in a medical setting, such as a hospital. HAIs generally occur when the body's natural protective barriers are compromised; for example, from indwelling medical devices (e.g., urinary catheter), during the course of medical procedures (e.g., surgery, injection) or from exposure to a contaminated environment or health care worker.[316]

[316] Office of Disease Prevention and Health Promotion (ODPHP). "National Action Plan to Prevent Health Care-Associated Infections: Road Map to Elimination." 2015. http://health.gov/hcq/prevent-hai.asp

The CDC HAI prevalence survey and the National Inpatient Survey, conducted in a large sample of U.S. acute care hospitals, indicate that 1 in 25 hospitalized patients has an HAI while receiving care for a different condition;[317] findings also indicate that there are 721,800 HAIs in a given year and 75,000 hospitalized patient deaths are due to HAIs.[318]

The cost of extended hospital stay and treatment of HAIs is high; HAIs generate billions in potentially preventable health care expenditures every year.[318,319] Studies suggest that 55 percent–70 percent of HAIs are preventable (range depends on infection type and using current prevention strategies).[320] Although infection-specific 2013 data show progress in HAI prevention, more can be done to improve patient safety in the hospital and reduce patient exposure to HAIs. The U.S. Department of Health and Human Services (HHS) made decreasing HAIs an agency priority goal in 2009.[320]

This measure assesses plan network adequacy and patient safety. Its intent is to improve patient outcomes by giving health plans an incentive to partner with hospitals for quality improvement activities that minimize patients' risk of exposure to health care-associated infections and improve patient safety.

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[317] Magill, Shelley S., et al. 2014. "Multistate point-prevalence survey of health care–associated infections." *New England Journal of Medicine* 370.13: 1198–208.

[318] Scott, R.D. 2009. "The direct medical costs of healthcare-associated infections in US hospitals and the benefits of prevention." 1–16. http://www.cdc.gov/HAI/pdfs/hai/Scott_CostPaper.pdf

[319] Klevens, R. Monina, et al. 2007. "Estimating health care-associated infections and deaths in US hospitals, 2002." *Public Health Reports* 122.2: 160.

[320] Umscheid, C.A., et al. 2011. "Estimating the proportion of healthcare-associated infections that are reasonably preventable and the related mortality and costs." *Infection Control* 32.02: 101-114.

Risk Adjusted Utilization

Plan All-Cause Readmissions (PCR)

Discharge from a hospital is a critical transition point in a patient's care. Poor care coordination at discharge can lead to adverse events for patients and avoidable rehospitalization. Readmission to the hospital within 30 days of discharge is frequently avoidable and can lead to adverse outcomes for patients.[321] Any preventable hospitalization can have a negative impact on health outcomes, particularly for older adults and adults with multiple chronic conditions. Health risks associated with hospitalization include infection, adverse drug events, loss of function, isolation and negative quality of life, and readmission.

Hospital readmissions may indicate poor care or missed opportunities to coordinate care better. Research shows that specific hospital-based initiatives to improve communication with beneficiaries and their caregivers, coordinate care after discharge and improve the quality of care during the initial admission can avert many readmissions.

There is extensive evidence about adverse events in patients, and this measure aims to distinguish readmissions from complications of care and pre-existing comorbidities.[322] This measure assesses the number of acute inpatient stays during the measurement year that were followed by an unplanned acute readmission for any diagnosis within 30 days for members 18 years of age and older in the following categories:

- Count of Index Hospital Stays (denominator).
- Count of 30-Day Readmissions (numerator).
- Average Adjusted Probability of Readmission.

"Potentially preventable readmissions" are defined as readmissions that are directly tied to conditions that could have been avoided in the inpatient setting. While not all preventable readmissions can be avoided, most potentially preventable readmissions can be prevented if the best quality of care is rendered and clinicians are using current standards of care.

Health plans should aim to reduce any potentially avoidable hospitalization and readmission to the hospital within 30 days of discharge, as this is a particularly critical point where interventions may reduce unnecessary hospitalization. Below are a few examples of successful health plan interventions to reduce readmissions:

- In a retrospective study of more than 100,000 Medicare Advantage beneficiaries,[323] found that implementation of a post-discharge telephone intervention reduced readmissions, compared with a control group (9.3 percent and 11.5 percent, respectively; $p<0.0001$). As a group, overall cost savings were $499,458 for members who received the intervention, with $13,964,773 in savings to the health plan. A similar randomized controlled trial of a post-discharge telephone intervention in

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[321] Medicare Payment Advisory Commission. "Data Book: Health Care Spending and the Medicare Program." Baltimore, MD: MedPAC, 2015. Available at http://medpac.gov/documents/reports/june-2015-report-to-the-congress-medicare-and-the-health-care-delivery-system.pdf?sfvrsn=0 (Accessed May 4, 2016)

[322] Gallagher, B., L. Cen and E.L. Hannan. 2005. *Readmissions for Selected Infections Due to Medical Care: Expanding the Definition of a Patient Safety Indicator.* http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=aps.section.1636 (Accessed October 13, 2008)

[323] Costantino, M.E., Frey, B., Hall, B., Painter, P. 2013. "The Influence of a Postdischarge Intervention on Reducing Hospital Readmissions in a Medicare Population." Population Health Management. Oct;16(5):310-6. doi: 10.1089/pop.2012.0084. Epub 2013 Mar 28.

a commercial health insurance population found a 22 percent reduction in readmissions for the treatment group, compared with the control group.[324]

- EmblemHealth achieved a 24 percent reduction in 30-day readmissions among its Medicaid population. This plan implemented a project focusing on the integration of case management at the point-of-care at medical offices. These case management teams, consisting of nurse case managers, social worker case managers, health navigators, and pharmacists, provided care transition interventions and short-term case management services to members hospitalized for non-maternity, medical conditions.[325]

Hospitalization Following Discharge From a Skilled Nursing Facility (HFS)

This measure assesses the percentage of skilled nursing facility discharges to the community, for members 18 years of age and older, that were followed by an unplanned acute hospitalization for any diagnosis within 30 and 60 days. Data are reported in the following categories:

1. Count of skilled nursing facility discharges to the community (SND).
2. Count of observed 30-day hospitalizations.
3. Count of expected 30-day hospitalizations.
4. Count of observed 60-day hospitalizations.
5. Count of expected 60-day hospitalizations.

Hospital admission and readmission events during and after skilled nursing care are important to consider as they are associated with worse patient outcomes.[326] For an increasing proportion of beneficiaries, skilled nursing care is essential to safe and successful transitions back to the community. The SNF population generally includes older beneficiaries with increased comorbidities, more medications and more severe illness. Patients readmitted to a hospital from inpatient rehabilitation facilities (IRF) and SNFs were found to be twice as likely to die within 30 days and nearly four times as likely to die within 100 days than patients without a readmission event. Hospital readmission was found to be the strongest predictor of death among older adults requiring skilled nursing care (unadjusted hazard ratio 28.2, p-value <0.0001).[327]

Hospitalization events among beneficiaries requiring skilled nursing care contributes to rising Medicare spending. In 2006, readmission events among Medicare beneficiaries requiring skilled nursing care following an index hospitalization cost Medicare $4.34 billion.[328] These hospital readmissions during or after SNF stays are often preventable. Among Medicare beneficiaries, 1 in 10 SNF stays results in a potentially preventable readmission during the SNF stay and 1 in 20 results in a potentially preventable readmission after SNF discharge.

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[324] Melton, L.D., C. Foreman, E. Scott, M. McGinnis, M. Cousins, 2012. "Prioritized Post-Discharge Telephonic Outreach Reduces Hospital Readmissions for Select High-Risk Patients." *American Journal of Managed Care.* Dec;18(12):838-44.

[325] Kolbasovsky, A., J. Zeitlin, W. Gillespie. 2012. "Impact of point-of-care case management on readmissions and costs." *Am J Manag Care.* Aug 1;18(8):e300-6.

[326] MedPAC. March 2017. Report to Congress: Medicare Payment Policy. http://medpac.gov/docs/defaultsource/reports/mar17_entirereport.pdf

[327] Hakkarainen, T.W., S. Arbabi, M.M. Willis, G.H. Davidson, D.R. Flum. 2016. "Outcomes of Patients Discharged to Skilled Nursing Facilities After Acute Care Hospitalizations." *Ann Surg.* 263(2):280–5. doi:10.1097/SLA.0000000000001367.

[328] Mor, V., O. Intrator, Z. Feng, D.C. Grabowki. 2010. "The Revolving Door of Rehospitalization From Skilled Nursing Facilities." *Health Affairs.* 29(1): 57–64. doi: 10.1377/hlthaff.2009.0629.

Health plans are accountable for a member's entire episode of care including care prior to a SNF admission, during a SNF stay and after a SNF discharge. Plans can reduce hospitalizations and readmissions for members requiring skilled nursing care in several ways, including strengthening care transitions (e.g., share medication reconciliations and diagnostic workups) between hospitals and SNFs; promoting admissions to SNFs with appropriate staffing levels and technical capabilities; and coordinating follow-up care with primary care providers to support members with complex care needs. Many health systems and organizations have made financial and resource investments in the post-acute care sector to improve outcomes, reduce readmissions and control expenditures.

Acute Hospital Utilization (AHU)

For members 18 years of age and older, this measure assesses the risk-adjusted ratio of observed to expected acute inpatient discharges during the measurement year reported by Surgery, Medicine and Total.

NCQA investigated the appropriateness of developing this risk adjusted HEDIS measure by building on the existing, unadjusted measure: *Inpatient Utilization—General Hospital/Acute Care (IPU)*. Since 1993, the IPU measure has reported the unadjusted total discharges per member month/year from acute inpatient care.

The aim of applying a risk adjustment strategy to this utilization measures is to allow better comparison of inpatient use across health plans and to create an "even playing field" by removing the effect of select patient characteristics and health status differences on the reported results.

Test results reveal that risk adjustment is a desirable refinement and demonstrate that the proposed risk adjustment strategy is both accurate and reliable. NCQA's advisory panels agree that the results support the reliability of the risk adjustment model and that the measures can help identify opportunities for quality improvement.

Emergency Department Utilization (EDU)

For members 18 years of age and older, this measure assesses the risk-adjusted ratio of observed to expected emergency department (ED) visits during the measurement year.

NCQA investigated the appropriateness of developing this risk adjusted HEDIS measure by building on the existing, unadjusted measure: *Ambulatory Care (AMB).* Since 1993, the AMB measure has reported the unadjusted ED and outpatient services across health plan members of all ages.

The aim of applying a risk adjustment strategy to this utilization measure is to allow better comparison of inpatient use across health plans and to create an "even playing field" by removing the effect of select patient characteristics and health status differences on the reported results.

Test results reveal that risk adjustment is a desirable refinement and demonstrate that the proposed risk adjustment strategy is both accurate and reliable. NCQA's advisory panels agree that the results support the reliability of the risk adjustment model and that the measures can help identify opportunities for quality improvement.

Hospitalization for Potentially Preventable Complications (HPC)*

For members 67 years of age and older, this measure assesses the rate of discharges for ambulatory care sensitive conditions (ACSC) per 1,000 members and the risk-adjusted ratio of observed to expected discharges for ACSC by chronic and acute conditions.

Ambulatory care sensitive conditions are acute and chronic health conditions that can be managed or treated in the outpatient setting. Appropriate access to care, high-quality care coordination, a focus on chronic disease self-management and connection to community resources can reduce the probability that individuals with these chronic and acute conditions will develop complications or exacerbations that result in hospitalization.

Hospital and inpatient care is the largest component of total health care costs for older adults (24 percent of Medicare spending, approximately $129 billion dollars in 2013).[329] Hospitalization also poses several risks for older adults, who frequently develop serious conditions as a result of hospitalization such as delirium, infection and decline in functional ability.[330,331]

Reducing the rate of hospitalization for potentially preventable complications of acute and chronic conditions for older adults will improve patient health, reduce costs and improve quality of life. It is important to note that some complications or exacerbations are unavoidable and therefore the appropriate rate of hospitalization is not "zero"; however, this measure will provide important information to health plans, providers and consumers and other stakeholders about how well a system of care helps older adults with chronic and acute conditions prevent hospitalization.

** Adapted with financial support from CMS and with permission from the measure developer, the Agency for Healthcare Research and Quality (AHRQ).*

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[329] Kaiser Family Foundation (KFF). *Medicare Spending and Financing Fact Sheet.* http://kff.org/medicare/fact-sheet/medicare-spending-and-financing-fact-sheet/ (Accessed May 5, 2015)

[330] Gillick, M.R., N.A. Serrell, and L.S. Gillick. 1982. "Adverse consequences of hospitalization in the elderly." *Social Science & Medicine 16*(10), 1033–8.

[331] Covinsky, K.E., E. Pierluissi, and C.B. Johnston. 2011. "Hospitalization-associated disability." *JAMA* 306(16), 1782–93.

Health Plan Descriptive Information Measures

The measures in this domain provide information about an organization's structure, staffing and enrollment—factors that contribute to its ability to provide members with effective health care. Measures include information on practitioners, such as the number of board-certified physicians and how physicians are compensated, and examine how an organization coordinates member care with other community organizations.

Board Certification (BCR)

This measure reports the percentage of the following types of physicians whose board certification is active as of December 31 of the measurement year:

- Family medicine physicians.
- Internal medicine physicians.
- Pediatricians.
- OB/GYN physicians.
- Geriatricians.
- Other physician specialists.

It ensures that physicians meet rigorous criteria and have evidence of:

- Professional standing.
- Commitment to lifelong learning and self-assessment.
- Cognitive expertise.
- Evaluation of practice performance in order to maintain an "active" board certification. The American Board of Medical Specialties (ABMS) and the American Osteopathic Association (AOA) member boards require participation in a program of ongoing maintenance of certification.[332]

The quality of the doctors participating in an organization's network has a significant effect on the overall quality of care delivered to members. As a result, purchasers and consumers want information that helps them assess the quality of an organization's physicians (though HEDIS does not directly measure the quality of every doctor in an organization).

The changing scope of medical information, increased public concern for the need to recredentialed physicians and evidence that knowledge and skills of practicing physicians decay over time motivated specialty boards to limit the duration of certificates.[333] To date, all ABMS member boards have agreed to issue time-limited certificates that necessitate subsequent recertification, usually at intervals of 10 years or less.

Board certification shows what percentage of the organization's physicians have sought and obtained board certification. While there are valid reasons why physicians may not have done this—and board certification alone is not a guarantee of quality—certification provides a baseline established by standardized, specialty-specific competency testing.

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[332] American Board of Medical Specialties (ABMS). *The Meaning of Board Certification.* http://www.abms.org

[333] Brennan, T.A., R.I. Horwitz, F.D. Duffy, C.K. Cassel, L.D. Goode, R.S. Lipner. 2004. "The Role of Physician Specialty Board Certification Status in the Quality Movement." *JAMA* 292 (9): 1038–43.

Enrollment by Product Line (ENP)

This measure reports the total number of members enrolled for each product line, by age and sex. The information reported in this measure is used by some employer groups to determine membership size, and can be used to help interpret data from other measures.

Enrollment by State (EBS)

This measure reports the number of members enrolled as of December 31 of the measurement year, by state.

Language Diversity of Membership (LDM)

This measure reports the number and percentage of Medicaid, Medicare and commercial members enrolled at any time during the measurement year, by spoken English language proficiency, spoken language preferred for health care, and preferred language for written materials. Since there are varying classifications for language, this measure is intended to standardize the format of collection and reporting of spoken language information.

Race/Ethnicity Diversity of Membership (RDM)

This measure reports the number and percentage of members enrolled any time during the measurement year, by race and ethnicity. Since there are varying classification schemes for race and Hispanic origin, this measure is intended to standardize the format of collection and reporting of race/ethnicity.

Total Membership (TLM)

This measure looks at the number of members enrolled as of December 31 of the measurement year.

Whenever you make a sizeable investment—as with health care coverage—it is important to know that the company you put your trust in is stable and will remain so for the near future. It is particularly important to be able to recognize changes in a health plan's structure or financing that could potentially affect its ability to deliver high-quality care and service.

Stability is also important to consider when reviewing other aspects of organization performance, because past performance is a good predictor of future performance only if the organization's structure and health care delivery systems are reasonably stable.

Measures Collected Using Electronic Clinical Data Systems

ECDS are a network of data containing a plan member's personal health information and records of their experiences in the health care system. ECDS may also support other care-related activities directly or indirectly through various interfaces, including evidence-based decision support, quality management and outcome reporting.

ECDS data are structured to promote consistent and reliable execution of automated quality measurement queries, providing results to the care team. Health plans that establish an enterprise network of interoperable ECDS will foster a member-centered, team-based approach to improving health care quality and better communication across health care service providers.

To qualify for HEDIS ECDS reporting, data must use standard layouts, meet measure technical specifications and be accessible by the care team upon request.

For specific requirements on allowable ECDS data, refer to http://www.ncqa.org/ECDS.

Depression Screening and Follow-Up for Adolescents and Adults (DSF)*

This measure assesses the percentage of members 12 years of age and older who were screened for clinical depression using a standardized tool and, if screened positive, who received follow-up care.

- *Depression Screening.* The percentage of members who were screened for clinical depression using a standardized tool.
- *Follow-Up on Positive Screen.* The percentage of members who screened positive for depression and received follow-up care within 30 days.

Depressive disorders are common mental disorders that occur in people of all ages. Major depressive disorder (MDD) is the second leading cause of disability worldwide, affecting an estimated 120 million people.[334] The lifelong prevalence is estimated to range from 10 percent–15 percent.[335] In the United States, 15.7 percent of people report that at some point in their lifetime they were told by a health care professional that they had depression.[336]

In adolescents, depression can also result in serious long-term morbidities such as generalized anxiety disorder and panic disorder, or lead to engagement in risky behaviors such as substance

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[334] Murray, C.J.L., T. Vos, R. Lozano, M. Naghavi, A.D. Flaxman, C. Michaud, M. Ezzati, et al. 2013. "Disability-Adjusted Life Years (DALYs) for 291 Diseases and Injuries in 21 regions, 1990–2010: a Systematic Analysis for the Global Burden of Disease Study 2010." *The Lancet* 380(9859):2197–23.

[335] Lépine, J.P., M. Briley. 2011. "The Increasing Burden of Depression." *Neuropsychiatric Disease and Treatment* 7(suppl 1):3–7.

[336] Centers for Disease Control and Prevention. 2009. "Anxiety and Depression Effective Treatments Exist: People with Depression and Anxiety Should Seek Help as Early as Possible to Reduce Health Effects and Improve Quality of Life. Based on 2006 Behavior Risk Factor Surveillance System." www.cdc.gov/Features/dsBRFSSDepressionAnxiety

use.[337,338,339,340] Adolescent-onset depression increases the risk of attempted suicide five-fold in comparison with nondepressed adolescents.[341] Most adolescents who commit suicide, the third leading cause of death among 15–24 year-olds, have a history of depression.,[342]

Depression has a large effect on health care costs and on productivity. Adolescents with depression have higher medical expenditures, including those related to general and mental health care, than adolescents without depression.[343] For working-age adults, one study showed a relationship between the severity of depression symptoms and work function and found that for every 1-point increase in PHQ-9 score (a measure of depression severity), patients experienced an additional mean productivity loss of 1.65 percent. Even minor levels of depression symptoms were associated with decreases in work function.[344] A survey study found that major depressive disorder severity is significantly associated with increased treatment usage and costs, unemployment, disability and reduced work performance.[345] When the results of the study were projected to the U.S. workforce, it was estimated that monthly depression-related worker productivity losses had human capital costs of nearly $2 billion.

Studies have found that patient outcomes improve when there is collaboration between a primary care provider, case manager and a mental health specialist to screen for depression, monitor symptoms, provide treatment and refer to specialty care as needed.[346,347,348]

**Adapted with financial support from CMS from a provider-level measure developed by Quality Insights of Pennsylvania (QIP).*

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337 Taylor, E. et al. 1996. "Hyperactivity and Conduct Problems as Risk Factors for Adolescent Development." *Journal of the American Academy of Child and Adolescent Psychiatry* 35:1213–26.

338 Foley, H.A., C.O. Carlton, R.J Howell. 1996. "The Relationship of Attention Deficit Hyperactivity Disorder and Conduct Disorders to Juvenile Delinquency: Legal Implications." *Bulletin of the American Academy of Psychiatry Law* 24:333–45.

339 Friedman, R.M., J.W. Katz-Levey, R.W Manderschied, D.L. Sondheimer. 1996. "Prevalence of Serious Emotional Disturbance in Children and Adolescents." In: Manderscheid, R.W., and M.A. Sonnenschein (eds.) *Mental Health.* United States. Rockville, MD: Center for Mental Health Services, 71-8.

340 O'Connell, M.E., Boat, T., Warner, K.E. 2009. "Preventing Mental, Emotional, and Behavioral Disorders Among Young People: Progress and possibilities." National Research Council and Institute of Medicine. http://www.whyy.org/news/sci20090302Mentalprepub.pdf

341 Garber, J. et al. 2009. "Prevention of Depression in At-Risk Adolescents: A Randomized Controlled Trial." *Journal of the American Medical Association* 301(21):2215–24.

342 Williams, S.B., E.A. O'Connor, M. Eder, E.P. Whitlock. 2009. "Screening for Child and Adolescent Depression in Primary Care Settings: A Systematic Evidence Review for the US Preventive Services Task Force." *Pediatrics* 123(4):e716-e735.

343 O'Connor, E.A., E.P. Whitlock, T.L. Beil, B.N. Gaynes. 2009. "Screening for Depression in Adult Patients in Primary Care Settings: A Systematic Evidence Review*." Annals of Internal Medicine* 151(11):793–803.

344 Beck, A., A.L Crain, L.I. Solberg, et al. 2011. "Severity of Depression and Magnitude of Productivity Loss." Annals of Family Medicine 9: 305-11.

345 Birnbaum, H. G., R.C. Kessler, D. Kelley, R. Ben-Hamadi, V.N. Joish, P.E. Greenberg. 2010. "Employer Burden of Mild, Moderate, and Severe Major Depressive Disorder: Mental Health Services Utilization and Costs, and Work Performance." *Depression and Anxiety* 27(1):78–89.

346 Von Korff, M., D. Goldberg. 2001. "Improving Outcomes in Depression." British Medical Journal 323:948–9.

347 Gilbody, S., P. Bower, J. Fletcher, D. Richards, A.J. Sutton. 2006. "Collaborative Care for Depression: A Cumulative Meta-Analysis and Review of Longer-Term Outcomes." *Archives of Internal Medicine* 166(21):2314–21.

348 Thota, A.B., T.A. Sipe, G.J. Byard, C.S. Zometa, R.A. Hahn, L.R. McKnight-Eily, D.P. Chapman et al. 2012. "Collaborative Care to Improve the Management of Depressive Disorders: A Community Guide Systematic Review and Meta-Analysis." *American Journal of Preventive Medicine* 42(5):525–38.

Utilization of PHQ-9 to Monitor Depression Symptoms for Adolescents and Adults (DMS)*

The percentage of members 12 years of age and older with a diagnosis of major depression or dysthymia, who have a PHQ-9 tool administered at least once during a four-month period. Two rates are reported.

1. *ECDS Coverage.* The percentage of members 12 and older with a diagnosis of major depression or dysthymia for whom a health plan can receive any electronic clinical quality data.
2. *Utilization of PHQ-9.* The percentage of PHQ-9 utilization. Members with a diagnosis of major depression or dysthymia whose measure data are reportable using ECDS and, had an outpatient encounter with a PHQ-9 score present in their record in the same assessment period as the encounter.

Major depressive disorder (MDD) is a leading cause of disability worldwide, affecting an estimated 120 million people.[335] The lifelong prevalence is estimated to range from 10 percent–15 percent.[336] In the United States, 15.7 percent of people report that at some point in their lifetime they were told by a health care professional that they had depression.[337]

Depression is also associated with other chronic medical conditions and increased morbidity and mortality. The mortality risk for suicide in depressed patients is more than 20-fold greater than in the general population.[349] In terms of other chronic conditions, depression is associated with a 60 percent increased risk of type 2 diabetes,[350] and has been identified as a risk factor for development of cardiovascular disease.[351] In adolescents, depression can also result in serious long-term morbidities such as generalized anxiety disorder and panic disorder or lead to engagement in risky behaviors such as substance use.[338,339,340]Adolescent-onset depression increases the risk of attempted suicide by five-fold, compared with nondepressed adolescents.[343] Most adolescents who commit suicide—the third leading cause of death among 15–24 year-olds—have a previous history of depression.[343]

Depression has large effects on both health care costs and lost productivity. Adolescents with depression have higher medical expenditures, including those related to general and mental health care, than adolescents without a diagnosis of depression.[344] A recent study showed a relationship between the severity of depression symptoms and work function in working-age adults, and found that for every 1-point increase in PHQ-9 score (a measure of depression severity), patients experienced an additional mean productivity loss of 1.65 percent. In a survey study, Birnbaum et al. found that major depressive disorder severity is significantly associated with increased treatment usage and costs, unemployment, disability and reduced work performance.[346] When the results of the study were projected to the U.S. workforce, it was estimated that monthly depression-related worker productivity losses had human capital costs of nearly $2 billion.

Numerous studies have found that patient outcomes improve when there is collaboration between a primary care doctor, case manager and a mental health specialist to screen for depression, monitor

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[349] Bostwick, J.M., V.S. Pankratz. 2000. "Affective Disorders and Suicide Risk: a Reexamination." *American Journal of Psychiatry* 157:1925–32.

[350] Mezuk, B., W.W. Eaton, S. Albrecht, S.H. Golden. 2008. "Depression and Type 2 Diabetes Over the Lifespan: A Meta-Analysis." *Diabetes Care* 31:2383–90.

[351] Van der Kooy, K.H. van Hout, H. Marwijk, H. Marten, C. Stehouwer, A. Beekman. 2007. "Depression and the Risk for Cardiovascular Diseases: Systematic Review and Meta-Analysis." *International Journal of Geriatric Psychiatry* 2:613–26.

symptoms, provide treatment and refer to specialty care as needed.[347,348,349,352,353] Standardized instruments are useful in identifying meaningful change in clinical outcomes over time. Guidelines recommend that providers establish and maintain regular follow-up with patients diagnosed with depression and use a standardized tool to track symptoms.[354,355]

**Adapted with financial support from the Agency for Healthcare Research and Quality (AHRQ) and CMS under the CHIPRA Pediatric Quality Measures Program Centers of Excellence grant number U18HS025296 from a depression measure developed by Minnesota Community Measurement.*

Depression Remission or Response for Adolescents and Adults (DRR)*

The percentage of members 12 years of age and older with a diagnosis of depression and an elevated PHQ-9 score, who had evidence of response or remission within 5 to 7 months of the elevated score. Four rates are reported:

1. *ECDS Coverage.* The percentage of members 12 and older with a diagnosis of major depression or dysthymia, for whom a health plan can receive any electronic clinical quality data.
2. *Follow-Up PHQ-9.* The percentage of members who have a follow-up PHQ-9 score documented within the five to seven months after the initial elevated PHQ-9 score.
3. *Depression Remission.* The percentage of members who achieved remission within five to seven months after the initial elevated PHQ-9 score.
4. *Depression Response.* The percentage of members who showed response within five to seven months after the initial elevated PHQ-9 score.

Depressive disorders are common mental disorders that occur in people of all ages. Major depressive disorder (MDD) is a leading cause of disability worldwide, affecting an estimated 120 million people.[335] The lifelong prevalence is estimated to range from 10 percent–15 percent.[336] In the United States, 15.7 percent of people report that at some point in their lifetime they were told by a health care professional that they had depression.[337]

Depression is associated with other chronic medical conditions and increased morbidity and mortality. The mortality risk for suicide in depressed patients is more than 20-fold greater than in the general population.[349] Depression is associated with a 60 percent increased risk of type 2 diabetes,[350] and has been identified as a risk factor for development of cardiovascular disease.[351] In addition, depression adversely affects the course, complications and management of other chronic medical illnesses.[352] In adolescents, depression can also result in serious long-term morbidities, such as generalized anxiety disorder and panic disorder, or lead to engagement in risky behaviors, such as substance use.[339,356] Adolescent-onset depression increases the risk of attempted suicide by five-fold in comparison to non-

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352 Katon, W.J., and M. Seelig. 2008. "Population-Based Care of Depression: Team Care Approaches to Improving Outcomes." *Journal of Occupational and Environmental Medicine* 50(4):459–67.

353 Unützer, J., W. Katon, C.M. Callahan, J.W. Williams Jr., E. Hunkeler, L. Harpole, M. Hoffing et al. 2002. "Collaborative Care Management of Late-Life Depression in the Primary Care Setting: A Randomized Controlled Trial." *Journal of the American Medical Association* 288(22):2836–45.

354 Mitchell, J., M. Trangle, B. Degnan, T. Gabert, B. Haight, D. Kessler, N. Mack, E. Mallen, H. Novak, D. Rossmiller, L. Setterlund, K. Somers, N. Valentino, S. Vincent. 2013. "Institute for Clinical Systems Improvement." *Adult Depression in Primary Car.* Updated September 2013.

355 Cheung, A.H., R.A. Zuckerbrot, P.S. Jensen, K. Ghalib, D. Laraque, R.E.K. Stein. 2007. GLAD-PC Steering Group. "Guidelines for Adolescent Depression in Primary Care (GLAD-PC): II. Treatment and Ongoing management." *Pediatric.* 120(5):e1313–26.

356 National Research Council and Institute of Medicine. 2009. *Depression in Parents, Parenting, and Children: Opportunities to Improve Identification, Treatment, and Prevention.* Washington, DC: National Academy Press.

depressed adolescents.[341] Most adolescents who commit suicide, the third leading cause of death among 15–24-year-olds, have a previous history of depression.[340]

Depression has long been recognized as a major contributor to disease burden.[357,358] The Global Burden of Disease study of 2010 identified depression as a leading cause of disease burden in the world. Depressive disorders were the second largest contributor to "years lived with disability," an indicator of the impact of disease burden.[359] This accounts for an estimated 10 percent of years lived with disability worldwide, which is three times the impact of diabetes, 8 times the impact of heart disease, and 40 times the impact of cancer.[357] These findings underscore the need for attention to depressive disorders and the implementation of effective interventions to reduce their disease burden.

Numerous studies have demonstrated the effectiveness of screening and treatment for depression. Recently published literature has focused on the care processes needed to treat and manage depression in primary care settings, where the majority of depression cases first present.

Studies have found that patient outcomes improve when there is collaboration between a primary care doctor, case manager and a mental health specialist to screen for depression and monitor symptoms, provide treatment and refer to specialty care as needed.[346,347,348] For the purposes of this measure, NCQA has elected to maintain alignment with existing NQF-endorsed provider-level depression measures, which use the PHQ-9 tool to assess improvement in depression symptom severity. The PHQ-9 is widely used by clinicians in the U.S. and commonly accepted in the behavioral health field as well. Furthermore, the PHQ-9 is quick to complete and score, and is recommended by the International Consortium for Health Outcomes Measurement (ICHOM) as the tool to be used to track depression symptoms in their standard set of outcome measures for depression and anxiety.[360] When more published data becomes available from research in clinical settings to demonstrate the validity of mapping and comparing scores across different depression symptom assessment tools (e.g., by using the PROMIS Depression Instruments), NCQA will consider expanding the tools used in the measure.

**Adapted with financial support from the Agency for Healthcare Research and Quality (AHRQ) and CMS under the CHIPRA Pediatric Quality Measures Program Centers of Excellence grant number U18HS025296 from depression measures developed by Minnesota Community Measurement.*

Unhealthy Alcohol Use Screening and Follow-Up (ASF)*

This measure assesses the percentage of members 18 years of age and older who were screened for unhealthy alcohol use using a standardized tool and received appropriate follow-up care if screened positive. Two rates are reported:

1. *Unhealthy Alcohol Use Screening.* The percentage of members who had systematic screening for unhealthy alcohol use.
2. *Counseling or Other Follow-Up.* The percentage of members who screened positive for unhealthy alcohol use and received brief counseling or other follow-up care within 61 days of a positive screening.

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[357] Murray, C.J.L, and A.D. Lopez. 1997. "Global Mortality, Disability, and the Contribution of Risk Factors: Global Burden of Disease Study." *The Lancet* 349(9063):1436–42.

[358] Üstün, T.B., J.L. Ayuso-Mateos, S. Chatterji, C. Mathers, C.J.L. Murray. 2004. "Global Burden of Depressive Disorders in the Year 2000." *British Journal of Psychiatry* 184(5):386–92.

[359] Ferrari, A. J., F.C. Charlson, R.E. Norman, S.B. Patten, G. Freedman, C.J.L. Murray, T. Vos, H.A. Whiteford. 2013. "Burden of Depressive Disorders by Country, Sex, Age, and Year: Findings from the Global Burden of Disease Study 2010." *PLoS Medicine* 10(11):e1001547.

[360] International Consortium for Health Outcomes Measurement (ICHOM). 2015. *ICHOM Standard Set for Depression & Anxiety.* http://www.ichom.org/medical-conditions/depression-anxiety/

Alcohol misuse is the third leading cause of preventable death in the United States, but only 20 percent of people who misuse alcohol seek treatment. Alcohol misuse can lead to chronic conditions such as cancer or cirrhosis of the liver, and is connected to neurological, social and behavioral health issues. Screening for alcohol misuse and timely follow-up after a positive screening is crucial. The Screening, Brief Intervention, and Referral to Treatment (SBIRT) model has shown to be an effective and cost-efficient way to identify or halt alcohol misuse in adults.

The U.S. Preventive Services Task Force's (USPSTF) grade B recommendation is "clinicians should screen adults aged 18 and older for alcohol misuse and provide persons engaged in risky or hazardous drinking with brief behavioral counseling interventions to reduce alcohol misuse." The USPSTF identified three standardized and validated screening tools for alcohol misuse in the primary care setting: The Alcohol Use Disorders Identification Test (AUDIT), the abbreviated AUDIT-Consumption (AUDIT-C) and single-question screening.[361] The USPSTF found that counseling interventions in the primary care setting can reduce weekly alcohol consumption and improve long-term adherence to recommended drinking limits. Screening and brief counseling interventions are also associated with better health outcomes, such as decreasing the probability of traumatic injury or death, especially related to motor vehicles, by decreasing the proportion of persons who engage in episodes of heavy drinking which results in high blood alcohol concentration.

**Adapted with financial support from the Substance Abuse and Mental Health Services Administration (SAMHSA) and with permission from the measure developer, the American Medical Association (AMA).*

Adult Immunization Status (AIS)

This measure assesses the percentage of members 19 years of age and older who are who are up to date on recommended routine vaccines for influenza, tetanus and diphtheria (Td) or tetanus, diphtheria and acellular pertussis (Tdap), zoster and pneumococcal. The measure calculates a rate for each vaccine and a composite rate:

- *Influenza Rate*: Members 19 years and older who received an influenza vaccine on or between July 1 of the year prior to the measurement period and June 30 of the measurement period.
- *Td/Tdap Rate:* Members 19 and older who received a Td or Tdap vaccine on or between January 1 of the nine years prior to the measurement period and December 31 of the measurement period.
- *Zoster Rate:* Members 50 and older who received one dose of the zoster live vaccine or two doses of the recombinant zoster vaccine on or after their 50th birthday.
- *Pneumococcal Rate:* Members 66 and older who were administered both the 13-valent pneumococcal conjugate vaccine and the 23-valent pneumococcal polysaccharide vaccine at least 12 months apart, with the first occurrence after the age of 60.
- *Composite Rate:* The number of required immunizations administered to members out of the total number of possible immunizations required for members determined by their age.

For adults, the Advisory Committee on Immunization Practices (ACIP) recommends routine vaccination against influenza, tetanus, diphtheria and pertussis for all adults, while vaccines for zoster and pneumococcal disease are recommended for older adults.[362] These vaccines are recommended to

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[361] U.S. Preventive Services Task Force (USPSTF). 2012. *Behavioral Counseling after Screening for Alcohol Misuse in Primary Care.* http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/alcohol-misuse-screening-and-behavioral-counseling-interventions-in-primary-care

[362] Kim, D.K., L.E. Riley, K.H. Harriman, P. Hunter, C.B. Bridges. 2017. "Advisory Committee on Immunization Practices Recommended Immunization Schedule for Adults Aged 19 Years or Older—United States, 2017." MMWR Morb Mortal Wkly Rep. 66:136–8. DOI: http://dx.doi.org/10.15585/mmwr.mm6605e2

prevent serious diseases. Healthy People 2020, which provides science-based, 10-year national objectives for improving the health of all Americans, recommends increasing the percentage of adults who are vaccinated against influenza, zoster and pneumococcal disease.[363]

Estimates of national vaccination coverage are available through the National Health Interview Survey (NHIS), in which a sample of adults self-report receipt of vaccines. In 2015, 45 percent of adults 19 and older reported that they received the influenza vaccine during the 2014–2015 flu season, well below the Healthy People 2020 target of 70 percent.[364] (Williams et al. 2017). 64 percent of adults 65 and older reported having ever received any pneumococcal vaccine, which is below the Healthy People 2020 target of 90 percent.[364] In 2015, 31 percent of adults ages 60 and older reported ever receiving the zoster vaccine.[364] Although zoster vaccination coverage meets the Healthy People 2020 target of 30 percent coverage, 70 percent of adults are not receiving this recommended vaccination. Although there is no corresponding Healthy People 2020 goal for routine Td or Tdap vaccination among adults, only 62 percent reported receiving any tetanus toxoid-containing vaccination during the past 10 years.[364]

There are evidence-based practices for improving adult vaccination coverage. Health care providers can routinely assess patients' vaccination history, implement reminder-recall systems, use standing-order programs and analyze practice- or provider-specific vaccination rates.[364] In addition, providing easy access and convenience for adult vaccination (such as walk-in visits or extended hours) within and outside of the health care setting is important for increasing adult vaccine uptake.[365] Leveraging health information technology to share immunization data among patients, providers, pharmacies, retail clinics and public health agencies and registries is also a key strategy for tracking patients' immunization history and keeping them up to date on vaccines.[366]

Prenatal Immunization Status (PRS)

This measure assesses the percentage of deliveries on or after 37 gestational weeks in the measurement period in which women received the following vaccinations:

- *Influenza Rate*: Influenza vaccine received on or between July 1 of the year prior to the measurement period and December 31 of the measurement period and prior to the delivery date.
- *Tetanus, diphtheria and acellular pertussis (Tdap) Rate*: Tdap vaccine administered during pregnancy.
- *Combination Rate*: Numerator-compliant for both indicators.

Note: *This measure is based on deliveries (women with multiple deliveries during the measurement year could be in the denominator more than once).*

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[363] U.S. Department of Health and Human Services. 2017. *HealthyPeople.gov 2020 Topics & Objectives: Immunization and Infectious Diseases.* (September 25) https://www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases

[364] Williams W.W., P. Lu, A. O'Halloran, et al. 2017. "Surveillance of Vaccination Coverage among Adult Populations—United States, 2015." *MMWR Surveill Summ.* 66(No. SS-11):1–28. DOI: http://dx.doi.org/10.15585/mmwr.ss6611a1.

[365] Ventola, C.L. 2016. "Immunization in the United States: Recommendations, Barriers, and Measures to Improve Compliance: Part 2: Adult Vaccinations." *Pharmacy and Therapeutics*. 41(8), 492–506.

[366] America's Health Insurance Plans. 2015. "Stakeholder Roundtable: Improving Adult Immunization Rates." Retrieved from https://www.ahip.org/wp-content/uploads/2016/04/Vaccine_Report_8.26.15-1.pdf

The Advisory Committee on Immunization Practices (ACIP) recommends influenza and Tdap vaccines for pregnant women to help protect them from serious illness and death, as well as to provide protection for their infants after birth.[367,368,369370]

Pregnant women are at higher risk for hospitalizations and death from influenza than other populations because changes in physiology and immune function predispose them to severe disease and worse outcomes from infections.[371] Worldwide, more than 500,000 pregnant women die from influenza each year.[372] An influenza vaccine during pregnancy significantly reduces the risk of contracting influenza for both mother and the infant following birth.[373,374,375,376] Infants are also highly susceptible to influenza and as there are no influenza vaccines are currently licensed for infants under 6 months of age the transfer of antibodies from an immunized mother to her fetus is the primary means of protecting infants after birth.[377,378]].

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[367] Advisory Committee on Immunization Practices (ACIP) 2017a. Grohskopf, L.A., L.Z. Sokolow, K.R. Broder, et al. "Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices—United States, 2017–18 Influenza Season." Centers for Disease Control and Prevention (CDC) *MMWR Recomm Rep.* 66(2);1–20.

[368] ACIP. 2017b. Robinson, C., J. Romero, A. Kempe, C. Pellegrini. "Advisory Committee on Immunization Practices Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger—United States, 2017." Centers for Disease Control and Prevention (CDC) *MMWR Recomm Rep.* 66(5);134–5.

[369] ACIP. 2017c. "Recommended Immunization Schedule for Adults Aged 19 Years or Older, United States, 2017." Centers for Disease Control and Prevention (CDC). https://www.cdc.gov/vaccines/schedules/downloads/adult/adult-combined-schedule.pdf

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[371] Yudin, M. 2014. "Risk management of seasonal influenza during pregnancy: current perspectives." *Int J Womens Health* 6: 681–9.

[372] Munoz, F. 2016. "Infant Protection Against Influenza Through Maternal Immunization: A Call for More Immunogenic Vaccines." *JAMA Pediatr.* 170(9):832–3. doi:10.1001/jamapediatrics.2016.1322.

[373] Shakib, J.H., K. Korgenski, et al. 2016. "Influenza in Infants Born to Women Immunized During Pregnancy." *Pediatrics*

[374] Madhi, S.A., C.L. Cutland , et al. 2014. "Influenza Immunization of Pregnant Women and Protection of Their Infants." *NEJM* 371(10): 918–31.

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[377] Steinhoff, M.C., S.B. Omer. 2012. "A review of fetal and infant protection associated with antenatal influenza immunization." *AMJ Obstet Gynecol.* 207(3 Suppl):S21–7.

[378] Jamieson, D.J., D.M. Kissin, C.B. Bridges, S.A. Rasmussen. 2012. "Benefits of influenza immunization during pregnancy for pregnant women." *AMJ Obstet Gynecol.* 207(3 Suppl):S17–20.

The Tdap vaccine is recommended for pregnant women because pertussis poses a high risk of serious illness and death to the infants of unvaccinated mothers. The Tdap vaccine given to a pregnant woman has been found to be effective in preventing pertussis in infants.[379],[380],[381],[382] No Tdap vaccines are currently licensed for infants under 2 months of age and the transfer of placental pertussis antibodies from an immunized mother to fetus provides short-term protection for the infant until old enough to be immunized.[383] In a study conducted in 2011–2012, Tdap immunization during pregnancy was 93 percent effective in preventing pertussis in infants under 2 months of age.[375]

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[379] Furuta, M., et al 2017. "Efficacy and safety of pertussis vaccination for pregnant women – a systematic review of randomised controlled trials and observational studies." *BMC Pregnancy and Childbirth.* 17:390.

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