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Chronic Conditions among Medicare Beneficiaries: A Methodological Overview

The Office of Enterprise Data and Analytics, within the Centers for Medicare & Medicaid Services (CMS), has developed a set of information products and analytics examining chronic conditions among Medicare fee-for-service beneficiaries. Users can access chartbooks and chartpaks, tabular geographic data reports (data years 2007-2018), an interactive dashboard and atlas (data year 2018), as well as links to publications from the CMS website. CMS produces this information to provide researchers and policymakers with a better understanding of the burden of chronic conditions among beneficiaries and the implications for our health care system. Information on prevalence, utilization, and Medicare spending for specific chronic conditions and multiple chronic conditions demonstrates the overall burden and complexity of chronic conditions among Medicare beneficiaries and can be used to identify high risk Medicare beneficiaries, as well as inform policy makers and providers about resource utilization of patients with chronic diseases.

This document provides an overview of the data, methods, and metrics used to develop the various chronic condition reports and supersedes all prior documentation and published reports.

Data Source and Study Population

Medicare is the United States' Federal health insurance program for persons aged 65 years or older, persons under age 65 years with certain disabilities, and persons of any age with end-stage renal disease (ESRD). The data used in the chronic condition reports are based upon CMS administrative enrollment and claims data for Medicare beneficiaries enrolled in the fee-for-service program. These data are available from the CMS Chronic Condition Data Warehouse (CCW), a database with 100% of Medicare enrollment and fee-for-service claims data[1].

For all the chronic condition public use files reporting prevalence, utilization and spending, the Medicare beneficiary population is limited to fee-for-service beneficiaries. We excluded Medicare beneficiaries with any Medicare Advantage enrollment during the year since claims data are not available for these beneficiaries. Also, we excluded beneficiaries who were enrolled at any time in the year in Part A only or Part B only, since their utilization and spending cannot be compared directly to beneficiaries enrolled in both Part A and Part B. Beneficiaries who died during the year were included up to their date of death if they met the other inclusion criteria[2].

[1] www.ccwdata.org

[2] In 2018, exclusions due to MA enrollment or Part A or B only enrollment were about 44.9% of the total population.

Chronic Conditions and Multiple Chronic Conditions

The CMS CCW database includes pre-defined indicators for chronic conditions and mental health conditions. To be consistent with the parameters outlined in the Department of Health and Human Services Initiative on Multiple Chronic Conditions (MCC)[3,4], we examined the following conditions:

Alcohol Abuse
Alzheimer's Disease and Related Dementia
Arthritis (Osteoarthritis and Rheumatoid)
Asthma
Atrial Fibrillation
Autism Spectrum Disorders
Cancer (Breast, Colorectal, Lung, and Prostate)
Chronic Kidney Disease
Chronic Obstructive Pulmonary Disease
Depression
Diabetes
Drug Abuse/Substance Abuse
Heart Failure
Hepatitis (Chronic Viral B & C)
HIV/AIDS
Hyperlipidemia (High cholesterol)
Hypertension (High blood pressure)
Ischemic Heart Disease
Osteoporosis
Schizophrenia and Other Psychotic Disorders
Stroke

A Medicare beneficiary is considered to have a chronic condition if the CMS administrative data have a claim indicating that the beneficiary received a service or treatment for the specific condition. Chronic conditions are identified by diagnoses codes on the Medicare claims. On October 1, 2015 the conversion from the 9th version of the International Classification of Diseases (ICD-9-CM) to version 10 (ICD-10-CM) occurred. Regardless of when a claim was submitted for payment, services that occurred prior to October 1, 2015, use ICD-9 codes. Chronic conditions identified in 2015 are based upon ICD-9 codes for the first ¾ of the year (January-September) 2015 and ICD-10 codes for the last quarter of the year (October-December). Starting in 2016, chronic conditions identified are based upon ICD-10 codes for the full year. Detailed information on the identification of these conditions is available at the Chronic Condition Warehouse (www.ccwdata.org).

To classify MCC for each Medicare beneficiary, these conditions are counted and grouped into four categories (0-1, 2-3, 4-5 and 6 or more).

Geographic Information

Chronic condition information is presented at the national, state, and county levels and is based upon the beneficiary's residence, rather than where care was received. State/county FIPS codes are included.

[3] www.hhs.gov/ash/initiatives/mcc/

[4] Goodman, R.A., et al. Defining and Measuring Chronic Conditions: Imperatives for Research, Policy, Program, and Practice. *Preventing Chronic Disease.* 25 April 2013.
http://www.cdc.gov/pcd/collections/pdf/PCD_MCC_Collection_5-17-13.pdf.

Notes on Data Interpretation

On October 1, 2015 the conversion from the 9th version of the International Classification of Diseases (ICD-9-CM) to version 10 (ICD-10-CM) occurred. Regardless of when a claim was submitted for payment, services that occurred prior to October 1, 2015, use ICD-9 codes. Chronic conditions identified in 2015 are based upon ICD-9 codes for the first ¾ of the year (January-September) 2015 and ICD-10 codes for the last quarter of the year (October-December). Starting in 2016, chronic conditions identified are based upon ICD-10 codes for the full year. For this reason, there is data discontinuity for estimates between 2015-2017 and previous years.

Preliminary comparisons between 2014 and 2015 showed only modest changes in prevalence for most of the chronic conditions, which largely were consistent with changes observed in previous years. This is to be expected given that three-quarters of the data for 2015 still utilize ICD-9 codes. Further discussion of the impact of the ICD conversion can be found here.

Prevalence

Estimates of prevalence for the 21 individual chronic conditions do not mean that the beneficiary has only that condition, as beneficiaries may have any of the other conditions examined or conditions not included in our list. Estimates of the prevalence of MCC may vary from other sources, as estimates of MCC will be influenced by the number and type of conditions that are used. Also, although these reports include a broad set of common chronic conditions, our set of conditions excludes important behavioral disorders and developmental conditions, which are prevalent among the Medicare-Medicaid enrollee population ages 18-64 years– also known as dual eligible. Prevalence estimates are not age or sex adjusted and since women tend to live longer than men, women would be expected to have more chronic conditions. Finally, these geographic-level estimates (e.g. state, county) are measures of the overall magnitude of chronic conditions in the Medicare population and do not take into account differences in the composition of beneficiaries across areas. Similarly differences in beneficiary characteristics across geographic areas, such as the proportion of disabled or dually-eligible beneficiaries, have not been adjusted for and may explain some geographic variability.

Geographic variation in prevalence estimates of chronic conditions and MCC can be affected by using diagnoses on administrative claims to infer the presence of a chronic condition. Variability in coding diagnoses can lead to both the over and under diagnosis of specific conditions and affect estimates of chronic conditions (Singh, 2009). Also, there is evidence that regional variation in care is associated with the supply of health care resources, which can affect prevalence estimates; since in places where more health care resources are available, the likelihood that diagnoses will be identified may be increased.

Utilization and Medicare Spending

The Medicare utilization and payment information presented for the 21 conditions represents beneficiaries with the condition. The information should not be used to attribute utilization or payments strictly to the specific condition selected as beneficiaries with any of the specific conditions presented may have other health conditions that contribute to their Medicare utilization and payment amounts.

For example, in 2014 the average Medicare payments for fee-for-service beneficiaries with atrial fibrillation were $24,643– this average includes beneficiaries with only atrial fibrillation as well as beneficiaries with atrial fibrillation and other health conditions. Similarly, utilization and Medicare spending information presented by the number of chronic conditions may include services and expenditures not related to the chronic conditions examined.

Suppression Criteria

CMS is obligated by the federal Privacy Act, 5 U.S.C. Section 552a and the HIPAA Privacy Rule, 45 C.F.R Parts 160 and 164, to protect the privacy of individual beneficiaries and other persons. All direct identifiers have been removed and information is suppressed that is based upon one (1) to ten (10) beneficiaries. Suppressed data are noted by an asterisk "*". Counter or secondary suppression is applied in cases where one sub-group (e.g. age group) is suppressed, then the other sub-group is suppressed.

More detailed information on the data sources and measures can be found at:

Chronic Condition Data Warehouse. Chronic Condition Categories.

Centers for Medicare & Medicaid Services. Geographic Variation Public Use File: A Methodological Overview. Baltimore, MD. 2013.

Centers for Medicare & Medicaid Services. Geographic Variation Public Use File: Technical Supplement on Standardization. Baltimore, MD. 2013.

Brian E. O'Donnell, Kathleen M. Schneider, John M. Brooks, Gregory Lessman, June Wilwert, et al. Standardizing Medicare Payment Information to Support Examining Geographic Variation in Costs. *MMRR 2013*: Volume 3 (3).