MCBS
Medicare Current Beneficiary Survey

CMS
CENTERS FOR MEDICARE & MEDICAID SERVICES
OFFICE OF ENTERPRISE DATA & ANALYTICS

Data Highlight December 2017

Prevalence and Health Care Expenditures among Medicare Beneficiaries Aged 65 Years and Over with Heart Conditions

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Heart disease has been the leading cause of death for Americans aged 65 years and over for the past several decades.[1,2] Heart conditions as a category represent one of the most common, burdensome, and expensive health problems among the Medicare population.[3,4] Congestive heart failure and heart rhythm problems are two of the five most common specific causes for inpatient admissions of Americans age 65 years and over.[5] Direct medical costs associated with heart disease (not including stroke) totaled $281 billion in 2015 in the United States—a figure that could more than double by 2035, due to the expanding population of older Americans.[6]

Using data from the 2013 Medicare Current Beneficiary Survey (MCBS),[7] this report presents the prevalence and impact (utilization, total cost of care, and out-of-pocket health care costs) of having a heart condition on the Medicare population aged 65 years and over.

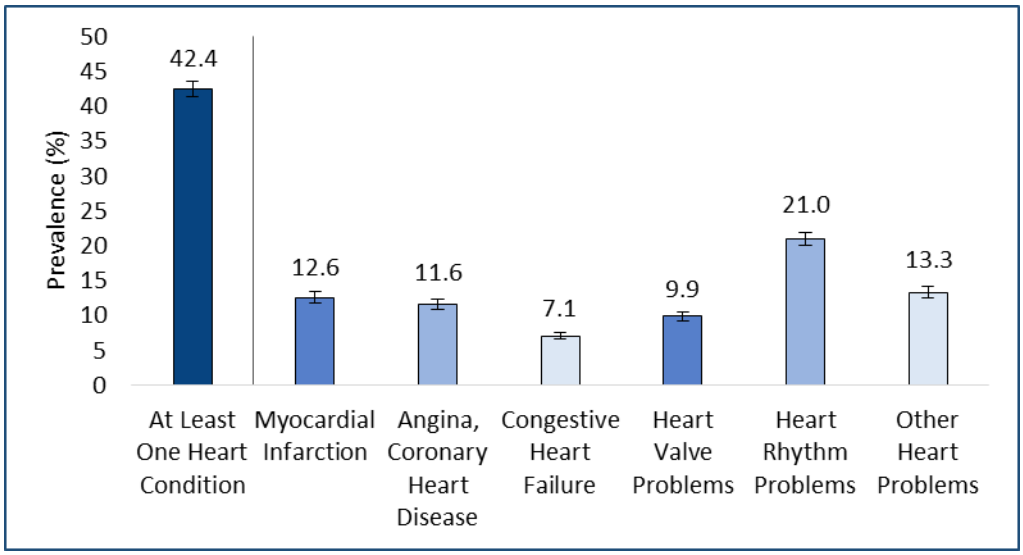
Forty-two percent of Medicare beneficiaries aged 65 years and over have at least one heart condition.

KEY FINDINGS

Data from the 2013 Medicare Current Beneficiary Survey

- At least one heart condition was reported by 42.4% of Medicare beneficiaries aged 65 years and over. Heart rhythm problems (21.0%) were the most common heart condition.
- Beneficiaries with heart conditions had substantially more inpatient admissions than those without.
- The total cost of care for beneficiaries with heart conditions averaged $18,270, compared to $9,302 for those without.
- Out-of-pocket health care costs for beneficiaries with heart conditions averaged $2,329, compared to $1,534 for those without.

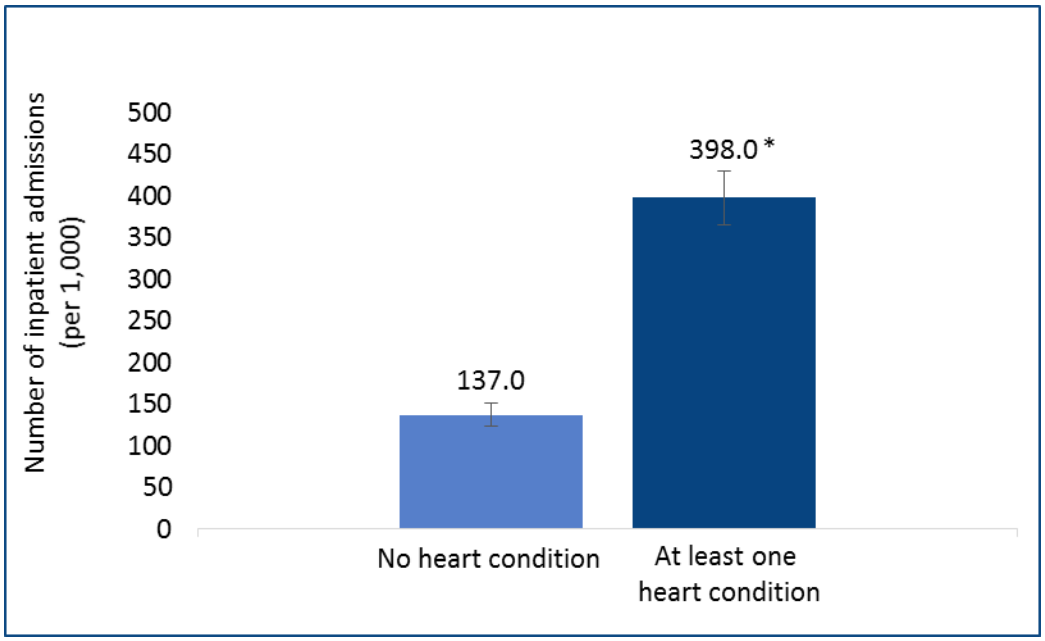
Figure 1. Prevalence of self-reported heart conditions among Medicare beneficiaries aged 65 years and over, 2013



SOURCE: Medicare Current Beneficiary Survey, 2013 Cost & Use, community-dwelling respondents aged 65 years and over (unweighted sample n=7,973). 95% confidence intervals are represented with error bars. Survey weights were used to account for the complex sample design; balanced repeated replication weights were used for variance estimation.

Beneficiaries with at least one heart condition averaged nearly three times as many inpatient admissions as those without.

Figure 2. Number of inpatient admissions per 1,000 beneficiaries by heart condition status among Medicare beneficiaries aged 65 years and over, 2013



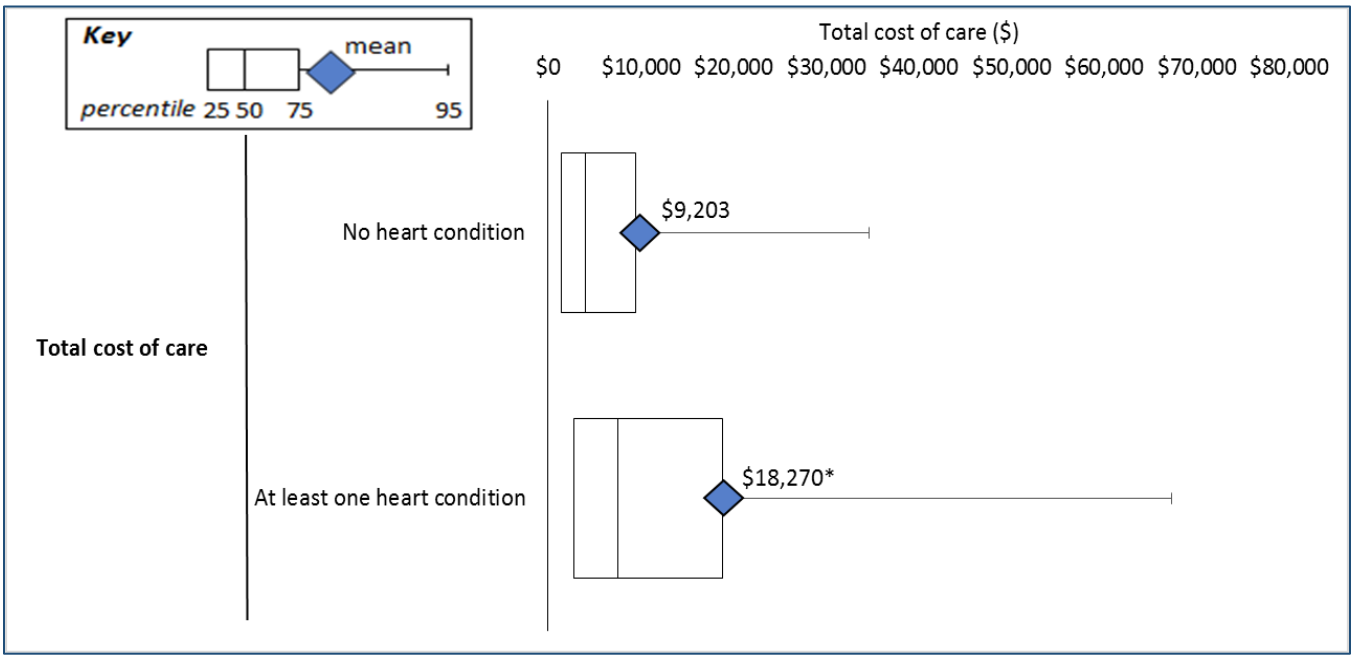
SOURCE: Medicare Current Beneficiary Survey, 2013 Cost & Use, community-dwelling respondents aged 65 years and over (n=7,973).

*p<0.05 (p-values from adjusted Wald test; 'no heart condition' is the reference group). 95% confidence intervals are represented with error bars. Survey weights were used to account for the complex sample design; balanced repeated replication weights were used for variance estimation.

- Beneficiaries with at least one heart condition averaged 398 inpatient admissions per 1,000 beneficiaries, nearly three times as many inpatient admissions per 1,000 beneficiaries as those without (137 per 1,000 beneficiaries).

The total cost of care per beneficiary was higher for beneficiaries with at least one heart condition compared to those without.

Figure 3. Total cost of care per beneficiary by heart condition status among Medicare beneficiaries aged 65 years and over, 2013



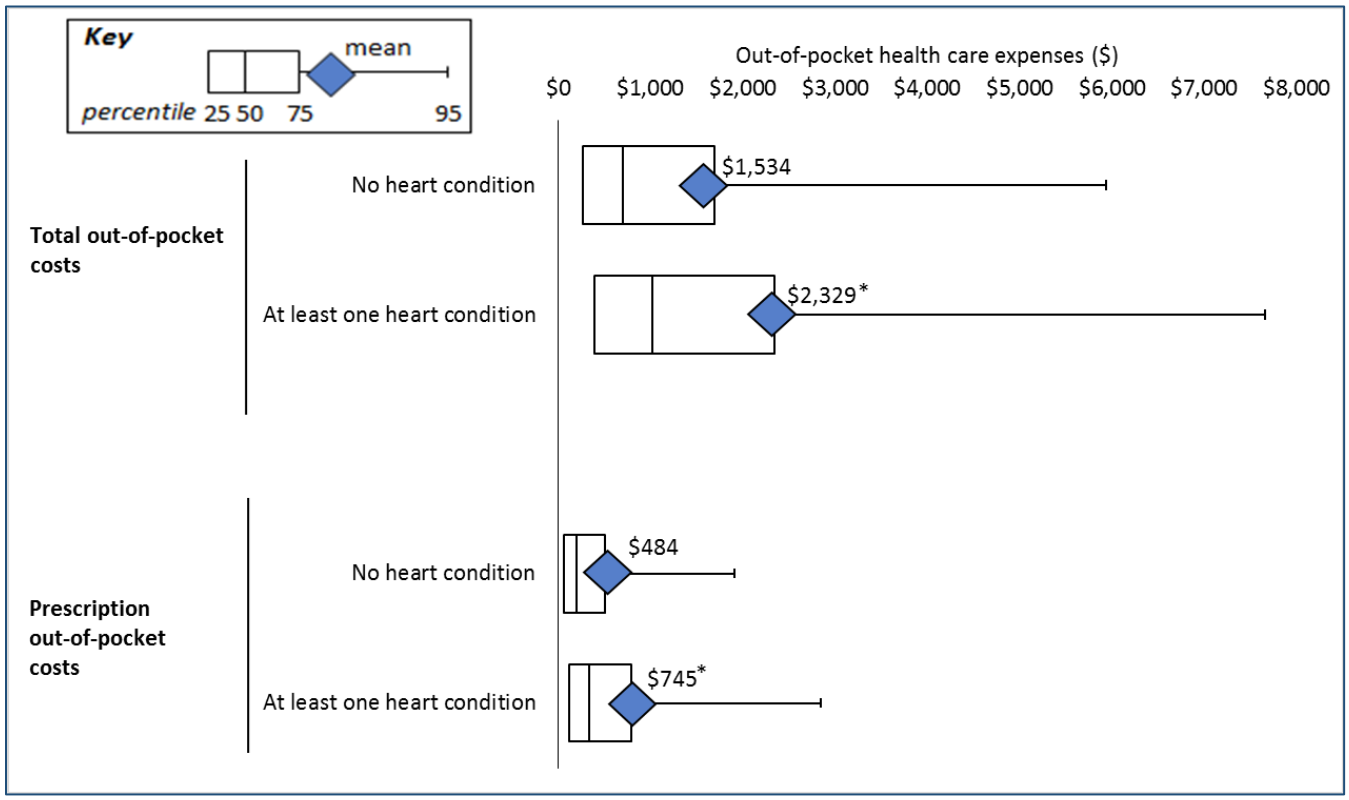
SOURCE: Medicare Current Beneficiary Survey, 2013 Cost & Use, community-dwelling respondents aged 65 years and over (n=7,973).

*p<0.05 (p-values from adjusted Wald test; first category listed is the reference group). Survey weights were used to account for the complex sample design; balanced repeated replication weights were used for variance estimation.

- Beneficiaries with at least one heart condition averaged almost double the total cost of care ($18,270), compared to those without a heart condition ($9,203).

Out-of-pocket health care costs per beneficiary were higher for beneficiaries with at least one heart condition than those without.

Figure 4. Out-of-pocket health care costs per beneficiary by heart condition status among Medicare beneficiaries aged 65 years and over, 2013



SOURCE: Medicare Current Beneficiary Survey, 2013 Cost & Use, community-dwelling respondents aged 65 years and over (n=7,973).

*p<0.05 (p-values from adjusted Wald test; first category listed is the reference group). Survey weights were used to account for the complex sample design; balanced repeated replication weights were used for variance estimation.

- Total out-of-pocket health care costs were higher among beneficiaries with at least one heart condition ($2,329) than those without ($1,534).
- Prescription out-of-pocket health care costs were higher among beneficiaries with at least one heart condition ($745) than those without ($484).

SUMMARY

Heart conditions are common and costly among the Medicare population aged 65 years and over. In 2013, 42.4% of Medicare beneficiaries aged 65 years and over reported that they had at least one heart condition. The prevalence estimates presented here across types of heart conditions are comparable with figures from other national surveys of this age group.[2,8]

The burden of having a heart condition was evident in terms of health care utilization, costs to the health care system, and costs to the beneficiary. Inpatient admissions were nearly three times as common for beneficiaries with a heart condition compared to those without. From the health care system's perspective, having a heart condition was expensive, with those having a heart condition accumulating approximately twice the total cost of care compared to beneficiaries without a heart condition. Having a heart condition was also financially burdensome from the beneficiary's perspective—out-of-pocket health care costs averaged nearly $800 per year higher for beneficiaries with a heart condition than those without.

As the US population ages, the MCBS remains a critical source of data to monitor the financial and health burden associated with heart conditions in the older American population.

Please note that these findings are potentially sensitive to how heart conditions are defined. The MCBS data from community-dwelling beneficiaries are self-reported and may differ from prevalence estimates based on clinical and/or administrative data.

DEFINITIONS

Heart Condition – We used six MCBS questions to determine whether beneficiaries had ever been diagnosed with a heart condition. All items listed below rely exclusively on a respondent's self-report; no validation of this information occurs via additional data sources (e.g., Medicare claims). All question responses include four options: 1) Yes; 2) No; 3) Don't Know; and 4) Refused. For most beneficiaries, these questions were asked annually during the fall interview. The first time the questions were administered, the respondent was asked "Has a doctor ***ever*** told you that you have [condition]?" In subsequent years, the questions were worded "***Since [the last interview]***, has a doctor told you that you have [condition]?" During data processing, the variables were then recoded, using data from previous years when available, so that all analysis presented here shows whether beneficiaries had ***ever*** been diagnosed with the listed condition.

(1) **Myocardial infarction:** Has a doctor ever told you that you had a myocardial infarction or heart attack?
(2) **Angina pectoris, or coronary heart disease:** Has a doctor ever told you that you had a new episode of angina pectoris or coronary heart disease?
(3) **Congestive heart failure:** Has a doctor ever told you that you had a new episode of congestive heart failure?
(4) **Problems with heart valves:** Has a doctor ever told you that you had a new episode of problems with the valves of the heart, such as aortic stenosis?
(5) **Problems with heart rhythm:** Has a doctor ever told you that you had a new episode of problems with the rhythm of your heartbeat, such as atrial fibrillation?
(6) **Other heart problem:** Has a doctor ever told you that you had a new episode of any other heart condition?

Inpatient Admission – The variable IPAEVNTS is constructed from a combination of survey-reported and, for Medicare Fee-for-Service beneficiaries, administrative Medicare records. Inpatient admissions include short stays in general hospitals as well as long-term stays in other settings, such as psychiatric hospitals. Adjustments were made for beneficiaries who had gaps in the reference period and who also had periods with Medicare Advantage plan coverage during the year. Among these beneficiaries, three beneficiaries received an adjustment, whereby the number of inpatient admissions was incremented by one. Adjustment and imputation procedures for this variable and the cost of care variables were performed prior to the release of the 2013 MCBS Limited Data Set (LDS) file.[9] No additional imputations were performed on the LDS file variables used in this analysis.

Total Cost of Care – A beneficiary's total cost of care includes all costs incurred for events falling into the following categories: dental, facility, home health, hospice, inpatient, institutional, medical provider, outpatient, and prescribed medicine events. Data for total cost of care is derived from the Type of Service record, which is summarized by beneficiary to construct the Person Summary record. The variable PAMTTOT is computed from Medicare records as well as survey responses. It includes 11 sources of payments: Medicare fee-for-service, Medicaid, Medicare managed care, private insurance managed care, Veterans' Administration, employment-based private health insurance, individually purchased private health insurance, private insurance from an unknown source, out-of-pocket,

uncollected liability, and other public insurance. The MCBS attempts to collect all sources of payers for every health care encounter for all beneficiaries; however, imputation is necessary when this information is incomplete. To impute costs, the roster of payers for each medical claim was determined. Beneficiaries with complete payment information were used as donors to impute payment data for those beneficiaries with incomplete information. Beneficiaries requiring imputation were matched to donors based on the roster of payers and several demographic variables. Payment data from matched donors were used to fill in the incomplete data (hot-deck imputation). The 7,973 beneficiaries in the sample accumulated 588,765 cost events over the course of the year. The total cost of care was imputed for 20.6% of events. These events included 317,267 prescription medicine events, for which total costs were imputed for 7.3%. Further adjustments were made for beneficiaries who had gaps in the reference period; as a result, the total cost of care (an annual total cost) were revised higher for 6.6% of the beneficiaries.

Out-of-Pocket Health Care Costs – Estimates of annual out-of-pocket health care costs represent all health care encounters and prescription medications costs reported by the beneficiary; these estimates were not restricted to heart condition–related use or medications. The variable PAMTOOP was used to identify total out-of-pocket costs and the variable AAMTOOP, where the event type was prescription medicine, was used to identify prescription out-of-pocket costs. Both variables are computed from Medicare records as well as survey responses. The MCBS attempts to collect all sources of payers for every health care encounter for all beneficiaries; however, imputation is necessary when this information is incomplete. Imputation was performed as described for total cost of care; overall, the beneficiary out-of-pocket health care cost component was imputed for 21.4% of the 588,765 cost events, and out-of-pocket health care costs were imputed for 23.2% of the 317,267 prescription medicine events. As noted above per adjustment, annual out-of-pocket health care costs were revised higher for 6.6% of the beneficiaries in this sample.

DATA SOURCES AND METHODS

We analyzed data from the 2013 Medicare Current Beneficiary Survey (MCBS), an in-person, nationally representative, longitudinal survey of Medicare beneficiaries sponsored by the Centers for Medicare & Medicaid Services (CMS) and directed by the Office of Enterprise Data and Analytics (OEDA). The MCBS is the most comprehensive and complete survey available on the Medicare population and is essential in capturing data not otherwise collected through operations and administration of the Medicare program. The MCBS contains detailed self-reported information on multiple types of heart conditions, health care use, and out-of-pocket health care costs. MCBS data files are available to researchers with a data use agreement.[10] Information on ordering MCBS files from CMS can be obtained through CMS' LDS website at https://www.cms.gov/Research-Statistics-Data-and-Systems/Files-for-Order/Data-Disclosures-Data-Agreements/DUA_-_NewLDS.html.

The MCBS employs a rotating panel design in which beneficiaries remain in the sample for a maximum of four years. Each year, beneficiaries who have remained in the sample for up to four years exit the sample, and a new sample of beneficiaries are selected to replace those exiting the sample (roughly one-third of the sample is replaced each year). We used cross-sectional survey weights to account for overall selection probability of each sample person and included adjustments for the stratified sampling design, survey nonresponse, and coverage error. Balanced repeated replication (BRR) weights were used for variance estimation.

We used adjusted Wald tests to test for statistically significant differences in proportions or means across groups. These tests adjust the degrees of freedom to account for the complex survey design.[11] All significant findings cited in-text are statistically significant at the $p<0.05$ level unless otherwise

stated. P-values underwent a Bonferroni correction to account for the number of independent categories within each variable. Since the analytic dataset had negligible rates of item nonresponse (less than 1%), we performed complete case analysis using appropriate sub-population or domain statements to ensure no observations were excluded from the survey-weighted analyses. SAS 9.4 was used to construct analytic datasets and Stata/SE 14.1 was used to conduct the analyses.

Study Population. The sampling frame for this analysis included all Medicare beneficiaries enrolled in the Medicare program at any time during 2013 and living in the community (i.e., not living in a facility), aged 65 years and over, in the lower 48 US states or Puerto Rico, who responded that they do/do not have a heart condition (see heart condition definition above). The final dataset included 7,973 beneficiaries (weighted N=39,672,659).

ABOUT THE AUTHORS

This report was written under contract number HHSM-500-2014-00035I/T0002 by Christopher Ward, Erin Ewald, and Kevin T. Koenig of NORC at the University of Chicago, in collaboration with Nicholas Schluterman at the Centers for Medicare & Medicaid Services (CMS) Office of Enterprise Data and Analytics (OEDA).

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