

## Attachment 2

### Medicare Health Outcomes Survey Publications

The Medicare HOS Partners and other leading health outcomes experts are involved in research utilizing Medicare HOS data. These efforts have resulted in the publication of a number of manuals, peer-reviewed articles, and technical reports. Research based on the HOS data has been published in academic peer-reviewed journals such as *International Journal of Geriatric Psychiatry*, *Health Services Research*, *Health and Quality of Life Outcomes*, *International Journal for Quality in Health Care*, *Health Care Financing Review*, and *Cancer*. Topics such as depression, smoking, health disparities, and chronic illness have been investigated utilizing HOS data.

The following list of publications (manuals, peer-reviewed articles, and technical reports) has been assembled to provide additional information on the Medicare HOS and to facilitate the utilization of the HOS data files produced by the Medicare HOS Project. The publications are organized into the following categories: (1) Overview, (2) Methodology, (3) Results, and (4) Applications/Interventions.

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#### **Overview**

##### ***Peer Reviewed Articles***

Haffer, Samuel C. and Bowen, Sonya E. "Measuring and Improving Health Outcomes in Medicare: The Medicare HOS Program." *Health Care Financing Review*. Summer 2004. Volume 25(4): 1-3.

Jones, Nathaniel, III, Jones, Stephanie L. and Miller, Nancy A. "The Medicare Health Outcomes Survey program: Overview, context, and near-term prospects." *Health and Quality of Life Outcomes*. July 12, 2004. Volume 2(33).

Cooper, James K., Kohlmann, Thomas, Michael, James, Haffer, Samuel C. and Stevic, Marcia. "Health Outcomes. New Quality Measure for Medicare." *International Journal for Quality in Health Care*. February 2001. Volume 13(1): 9-16.

Golden, William. "Counterpoint: Integrating Health Status into the Quality Equation." *International Journal for Quality in Health Care*. February 2001. Volume 13(1): 5-6.

Safran, Dana G. "Counterpoint: Measuring, Monitoring and Reporting Functional Health Outcomes: Opportunities and Challenges in a Bold National Initiative." *International Journal for Quality in Health Care*. February 2001. Volume 13(1): 7-8.

Haffer, Samuel C., Cooper, James K. and Gordon, Catherine. "The Health of Seniors Project." *Managed Care and Aging*. American Society on Aging. Volume 5(2).

## *Technical Reports*

### **The Medicare Health Outcomes Survey Evaluation Final Report**

In 2003 and 2004, CMS funded an independent evaluation of the HOS program. The evaluation encompassed three components: 1) a review of the context for the HOS program; 2) an evaluation of the HOS instrument and operational protocol; and 3) an assessment of policy issues related to turning HOS data into useful information for health plans, QIOs, CMS and health care researchers. This final report summarizes the findings of the overall evaluation. A brief overview is provided on the measurement of quality of care and, in particular, the transition from structural and process measures of care to outcomes of care. Also discussed is the role of quality of care assessment and improvement within a broader strategy of health plan performance measurement. Several national initiatives are noted. Further, factors that contributed to the development of the HOS program are reviewed, followed by a discussion of the HOS program administration and data utilization.

### **Sample Baseline Report**

After the administration of each baseline cohort, a cohort specific baseline report is produced. The baseline reports present physical component summary and mental component summary scores. The scores are case mix adjusted using demographics, chronic medical conditions, and HOS study design variables. The baseline reports also provide plan, state, and HOS national information on the Centers for Disease Control (CDC) Healthy Days measure, the HEDIS Management of Urinary Incontinence (UI) in Older Adults measure, additional health status indicators, and demographics.

### **Sample Performance Measurement Report**

After the administration of each follow up cohort, a cohort specific performance measurement report is produced. A performance measurement report data set is created by merging a cohort's baseline and follow up data. Additionally, death information is incorporated into the performance measurement data set for those baseline respondents who died between baseline and follow up. The HOS performance measurement results are computed using a rigorous case mix/risk adjustment model. Plans are rated on whether they performed *Better than Expected*, *Same as Expected*, or *Worse than Expected* on Physical and Mental Health. The performance measurement reports also provide plan, state, and HOS national information on health status indicators and demographics.

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## **Methodology**

### *Manuals*

**National Committee for Quality Assurance (NCQA). *HEDIS*<sup>®</sup>, Volume 6: Specifications for the Medicare Health Outcomes Survey. Washington DC: NCQA Publication, 1998 - 2005.** NCQA annually publishes the *HEDIS*<sup>®</sup>, Volume 6: Specifications for the Medicare Health Outcomes Survey manual. The manual contains background information about the survey, the measure description, the HEDIS<sup>®</sup> protocol, the English and Spanish versions of the HOS questionnaires, and the text for the survey letters and postcards. In addition, the appendix

contains a description of how longitudinal health outcomes are analyzed in HOS and a list of available HOS resource materials. Copies of HEDIS® Volume 6 may be purchased by calling NCQA Customer Support at (888) 275-7585 or via NCQA's Secure Online Order Center ([www.ncqa.org](http://www.ncqa.org)).

### ***Peer Reviewed Articles***

Hope, MaryAnne DePesquo and Shannon, Erin Dowd "A Comparison of Two Procedures to Fit Multi-Level Data: PROC GLM versus PROC MIXED." *SUGI 30 Proceedings*. April 2005.

Gandek, Barbara, Sinclair, Samuel J., Kosinski, Mark and Ware, John E. "Psychometric Evaluation of the SF-36® Health Survey in Medicare Managed Care." *Health Care Financing Review*. Summer 2004. Volume 25(4): 5-25.

McCall, Nancy, Khatutsky, Galina, Smith, Kevin and Pope, Gregory C. "Estimation of Non-Response Bias in the Medicare FFS HOS." *Health Care Financing Review*. Summer 2004. Volume 25(4): 27-41.

Kazis, Lewis E., Lee, Austin, Spiro, Avron, Rogers, William, Ren, Xinhua S., Miller, Donald R., Selim, Alfredo, Hamed, Alaa and Haffer, Samuel C. "Measurement Comparisons of the Medical Outcomes Study and Veterans SF-36® Health Survey." *Health Care Financing Review*. Summer 2004. Volume 25(4): 43-58.

Haffer, Samuel C. "Using Multiple Survey Vendors to Collect Health Outcomes Information: How Accurate Are the Data?" *Health and Quality of Life Outcomes*. April 16, 2003. Volume 1(6).

Hwang, Yi-Ting, Bierman, Arlene S., Haffer, Samuel C. and Wun, Lap Min. "Weight Adjustments in Estimates for the 1999 Medicare Health Outcomes Survey." *ASA Proceedings of the Joint Statistical Meetings*. 2002. 1565-1570.

Jones, Debra, Kazis, Lewis, Lee, Austin, Rogers, William, Skinner, Katherine, Cassar, Liana, Cassar, Wilson, Nancy, Hendricks, Ann. "Health Status Assessments Using the Veterans SF-12 and SF-36: Methods for Evaluating Outcomes in the Veterans Health Administration." *Journal of Ambulatory Care Management*. July 2001. Volume 24(3): 68-86.

Ware, John E. and Kosinski, Mark. "Interpreting SF-36® Summary Health Measures: A Response." *Quality of Life Research*. 2001. Volume 10(5): 405-413, 415-420.

### ***Technical Reports***

#### **Estimation and Analysis of Non-Response Bias in Medicare Surveys - Final Report**

This report examines the potential degree of non-response bias in two major survey efforts that collect information from five different Medicare beneficiary populations: the 2000 Medicare Health Outcomes Survey (HOS) and the 2000 Consumer Assessment of Health Plans Survey

(CAHPS®). The report explores the two possible types of non-responses and the premise that non-responses may be a major threat to the validity of survey sample estimates.

### **HOS/CAHPS® Survey Integration Formative Study Design - Final Report**

This document provides a preliminary assessment to determine the feasibility of integrating the HOS and the Medicare Advantage (MA) CAHPS® surveys into one survey instrument. To conduct this assessment, HSAG gathered and reviewed information from a variety of sources, including 1) key stakeholders; 2) published and unpublished literature; and 3) analyses of data from the current HOS, MA CAHPS®, and Medicare Fee-For-Service CAHPS® surveys. This report summarizes the findings. To evaluate the feasibility of integrating the HOS and MA CAHPS® surveys, seven key aspects of these two surveys were examined: Questionnaire Content; Survey Administrative Protocols; Analytic Strategies; Sampling Methods; Cost and Burden; Dissemination of the Results; and Uses of the Results. This report will help to inform future discussions regarding the advantages and disadvantages of integration.

### **Imputing Physical and Mental Summary Scores (PCS and MCS) for the Veterans SF-12 Health Survey in the Context of Missing Data**

This report describes a new method (modified regression estimation) for estimating the Physical Component Score (PCS) and the Mental Component Score (MCS) from the Veterans SF-12 Health Survey in the context of missing data. The report provides a SAS® macro implementing this method, with instructions for use of the macro.

### **Imputing the Physical and Mental Summary Scores (PCS and MCS) for the MOS SF-36 and the Veterans SF-36 Health Survey in the presence of Missing Data**

This report compares five different methods for imputing missing data in responses to the SF-36. The various methods are compared in terms of both variance and degree of bias.

### **Calculating HOS Performance Measurement Results**

This document provides a detailed outline of the steps utilized for the calculation of HOS Performance Measurement results. The Performance Measurement results are based on risk adjusted mortality rates, and changes in physical and mental functioning and well being, among living beneficiaries over a two-year period. SAS® code utilized for the calculation of the *Cohort III* Performance Measurement results is also included.

### **HOS/VA (Veterans Administration) Comparison Project Part 1: Measurement Equivalence of Medicare HOS SF-36 and VA Veterans SF-36**

This paper provides evidence that SF-36 scales can be computed and compared between the HOS and VA. Although differences exist between the two instruments, the paper's establishment of partial metric equivalence suggests that quantitative comparisons between the two samples are appropriate. An electronic version of the VA Veterans SF-36 is available for download: VA Veterans SF-36 Instrument.

### **HOS/VA Comparison Project Part 2: Test of Reliability and Validity at the Scale Level for the Medicare HOS SF-36 and VA Veterans SF-36**

This paper provides evidence that the VA Veterans SF-36 scales and component summaries are as reliable and valid as those generated utilizing the Medicare HOS version. The results strongly

suggest that the VA Veterans SF-36 is suitable for comparisons at the scale level with the Medicare HOS version. An electronic version of the VA Veterans SF-36 is available for download: VA Veterans SF-36 Instrument.

### **Psychometric Analysis of the Spanish-Language Version of the Medicare Health Outcomes Survey**

This paper presents tests of data quality, scaling assumptions and reliability for the Spanish-language version of the Medicare HOS. Additionally, it reviews the psychometric and clinical validity of the Spanish instrument, including the calculation of summary measures and SF-36<sup>®</sup> descriptive statistics.

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## **Results**

### ***Manuals***

**Ware, John E., Gandek, Barbara, Sinclair, Samuel J. and Kosinski, Mark A. *Measuring and Improving Health Outcomes: An SF-36<sup>®</sup> Primer for the Medicare Health Outcomes Survey*. Waltham MA: Health Assessment Lab and Quality Metric Incorporated, 2004.**

This primer provides general information about the HOS: how it came to be, what its components are, how HOS data are collected and analyzed, and how HOS results have been used. Information on the construction, scoring, reliability, validity and interpretation of the SF-36<sup>®</sup> Health Survey is summarized. Multiple tables of normative data are included to allow health plans and others using the SF-36<sup>®</sup> to compare their data with reference norms for the Medicare managed care population, overall and by categories such as age and gender. Examples of studies that demonstrate the impact of interventions such as disease management and geriatric assessment in improving or maintaining SF-36<sup>®</sup> scores are provided. Copies of the primer may be purchased via QualityMetric's Secure Online Order Center ([www.qualitymetric.com](http://www.qualitymetric.com)).

### ***Peer Reviewed Articles***

Grace, Susan C., Shannon, Erin Dowd, Drachman, David, and Ellis, Beth Hartman. "Multiple Cohorts Analysis of the Medicare Health Outcomes Survey, 1998-2002." *Health Care Financing Review*. Spring 2005. Volume 26(3): 125-128.

Lied, Terry R. and Haffer, Samuel C. "Health Status of Dually Eligible Beneficiaries in Managed Care Plans." *Health Care Financing Review*. Summer 2004. Volume 25(4): 59-74.

Ellis, Beth Hartman, Shannon, Erin Dowd, Cox, Jacquilyn Kay, Aiken, Leona and Fowler, Brenda M. "Chronic Conditions: Results of the Medicare Health Outcomes Survey, 1998-2000." *Health Care Financing Review*. Summer 2004. Volume 25(4): 75-91.

Bierman, Arlene S. "Coexisting Illness and Heart Disease Among Elderly Medicare Managed Care Enrollees." *Health Care Financing Review*. Summer 2004. Volume 25(4): 105-117.

Ellis, Beth Hartman, Bannister, Wade M., Cox, Jacquilyn Kay, Fowler, Brenda M., Shannon, Erin Dowd, Drachman, David, Adams, Randall W. and Giordano, Laura A. "Utilization of the propensity score method: an exploratory comparison of proxy-completed to self-completed responses in the Medicare Health Outcomes Survey." *Health and Quality of Life Outcomes*. September 18, 2003. Volume 1(47).

Arday, David R., Milton, Micah H., Husten, Corinne G., Haffer, Samuel C., Wheelless, Sara C., Jones, Shelton M. and Johnson, Ruby E. "Smoking and Functional Status Among Medicare Managed Care Enrollees". *American Journal of Preventive Medicine*. April 2003. Volume 24(3): 234-241.

Haffer, Samuel C., Bowen, Sonya E., Shannon, Erin Dowd and Fowler, Brenda M. "Assessing Beneficiary Health Outcomes and Disease Management Initiatives in Medicare." *Disease Management and Health Outcomes*. February 2003. Volume 11(2): 111-124.

Baker, Frank, Haffer, Samuel C. and Denniston, Maxine. "Health-Related Quality of Life of Cancer and Noncancer Patients in Medicare Managed Care." *Cancer*. February 1, 2003. Volume 97(3): 674-681.

Cooper, James K., Harris, Yael and McGready, John. "Sadness Predicts Death in Older People." *Journal of Aging and Health*. November 2002. Volume 14(4): 509-526.

McCall, Nancy T., Parks, Peggy, Smith, Kevin, and Griggs, Michelle. "The prevalence of major depression or dysthymia among aged Medicare Fee-for-Service beneficiaries." *International Journal of Geriatric Psychiatry*. 2002. Volume 17: 557-565.

Bierman, Arlene S., Lawrence, William F., Haffer, Samuel C. and Clancy, Carolyn M. "Functional Health Outcomes as a Measure of Health Care Quality for Medicare Beneficiaries." *Health Services Research*. December 2001. Volume 35(6) Part II: 90-109.

Cooper, James K. and Kohlmann, Thomas. "Factors associated with health status of older Americans." *Age and Ageing*. November 2001. Volume 30(6): 495-501.

Bierman, Arlene S., Haffer, Samuel C. and Hwang, Yi-Ting. "Health Disparities Among Older Women Enrolled in Medicare Managed Care." *Health Care Financing Review*. Summer 2001. Volume 22(4): 187-198.

Bierman, Arlene S., Haffer, Samuel C., Hwang, Yi-Ting and Mandelblatt, Jeanne. "Elderly Women in Managed Care: Impact of Race/Ethnicity, Education, and Income on HRQOL." *Quality of Life Research*. October 2000. Volume 9(3). Published Abstract.

Haffer, Samuel C., Bierman, Arlene S., Hwang, Yi-Ting and Mandelblatt, Jeanne. "Assessing the HRQOL of Socioeconomically Disadvantaged Elders in Medicare Managed Care." *Quality of Life Research*. October 2000. Volume 9(3). Published Abstract.

Arday, David R. "Receipt of Advice to Quit Smoking in Medicare Managed Care - United States, 1998." *Morbidity and Mortality Weekly Report (MMWR)*. September 8, 2000. Volume 49(35): 797-801.

Stevic, Marcia O., Haffer, Samuel C., Cooper, James, Adams, Randall and Michael, James. "How Healthy ARE our Seniors?: Baseline Results from the Medicare Health Outcomes Survey." *Journal of Clinical Outcomes Management*. August 2000. Volume 7(8): 39-42.

### ***Technical Reports***

#### **Multiple Cohorts Analysis: Longitudinal Analysis of SF-36® Summary Scores in the Medicare Health Outcomes Survey - Final Report**

This technical report examines changes in the PCS and MCS scores for beneficiaries of Medicare Advantage (MA) Plans (formerly referred to as Medicare + Choice Organizations) who completed a Medicare Health Outcomes Survey at yearly intervals from 1998 through 2002. This study incorporates data from those MA beneficiaries that participated in the HOS on more than one occasion. Trends in physical component summary and mental component summary scores were examined for beneficiaries who completed the survey two years, three years, four years, and five years in a row. The examination of these trends provides information on whether or not declines in health status accelerate over time or remain constant. This information is valuable in determining the optimal number of years to wait before conducting the follow up survey.

#### **Evaluation of Disease Status based on Patient Self-Report in the Medicare Health Outcomes Survey**

Using data from patients who are eligible for both Medicare and VA care, this report compares patient self-reports of chronic conditions to actual chronic conditions as documented from diagnostic codes obtained from these patients' medical records. Accuracy of the patient self-reports was quantitatively assessed for a variety of chronic conditions, by calculating sensitivity (the probability that patients would report the disease given its indication in the medical records), and specificity (the probability that patients would not report the disease given its absence in the medical records).

#### **Evaluating the Two-Year Follow Up Health Status of Medicare Fee-For-Service Beneficiaries Using the Health Outcomes Survey**

This report presents an analysis of follow up results for the HOS, which was administered to a sample of Medicare Fee-for-Service beneficiaries in 1998 and 2000. The primary goal of this analysis is to assess the feasibility of using longitudinal estimates of self-reported health status for cohorts of Medicare beneficiaries to evaluate the care provided to Fee-for-Service beneficiaries by physician group practices or by Fee-for-Service providers in small geographic areas.

#### **Comparison of the Health Status of Medicare Fee-For-Service and Managed Care Enrollees Using the HOS**

This report compares Medicare Fee-for-Service and Medicare Managed Care enrollees on a variety of health measures, including physical health status, mental health status, reports of chronic conditions, and activities of daily living (ADLs). The report also assesses the extent to

which differences in health status are due to differences in the demographic composition of the two populations.

### **MCS Outlier Evaluation Report**

This project was a collaborative effort among CMS, HSAG, and NCQA. The evaluation involved surveying all 28 outlier plans from the *Cohort I* Performance Measurement Results, as well as 20 randomly selected "average" plans.

### **Report on the Health Status of the Medicare Disabled**

For *Cohort I Baseline*, 279,135 Medicare beneficiaries were sampled. 167,248 seniors (age 65 or older) responded to the survey. Additionally, 10,513 (out of a total of 18,864) disabled beneficiaries responded to the survey. This report performs a comparison between these two groups.

### **Report on the Health Status of the Medicare Dual Eligible**

For *Cohort I Baseline*, 171,510 Medicare beneficiaries responded to the survey. Additionally, 6,247 beneficiaries enrolled in both Medicare and Medicaid completed a survey. This report performs a comparison between these two groups.

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## **Applications/Interventions**

### ***Peer Reviewed Articles***

McDonald, Kathie, Ma, Jifeng and Dulabone, Elaine. "Use of HOS Data in Florida." *Health Care Financing Review*. Summer 2004. Volume 25(4): 93-104.

Selim, Alfredo J., Berlowitz, Dan R., Fincke, Graeme, Cong, Zhongxiao, Rogers, William, Haffer, Samuel C., Ren, Xinhua S., Lee, Austin, Qian, Shirley X., Miller, Donald R., Spiro, Avron, Selim, Bernardo J. and Kazis, Lewis E. "The Health Status of Elderly Veteran Enrollees in the Veterans Health Administration." *Journal of the American Geriatrics Society*. August 2004. Volume 52(8): 1271-1276.

Bierman, Arlene S. and Clancy, Carolyn M. "Health Disparities Among Older Women: Identifying Opportunities to Improve Quality of Care and Functional Health Outcomes." *Journal of the American Medical Women's Association*. Fall 2001. Volume 56(4): 155-160.

### ***Technical Reports***

### **Report on the Health Status of Disadvantaged Medicare Beneficiaries**

This report examines the predictors of disparities in health outcomes for Medicare beneficiaries in *Cohorts II* and *III* of the Medicare Health Outcomes Survey (HOS).

### **Report on Enrollment Duration: Cohort I Baseline**



This paper presents potential differences in health status between Medicare Health Outcomes Survey (HOS) *Cohort I Baseline* beneficiaries with fewer than six months tenure in their health plans and those with more than six months tenure.

**Report on Mental Health Status of Managed Care Beneficiaries: Cohort I Baseline and Follow Up**

This research examines the differences between beneficiaries at high risk for depression and those at low risk for depression sampled in the Medicare Health Outcomes Survey (HOS).

**Report on the Health Status of Managed Care Smokers and Nonsmokers: Cohort III Baseline and Follow Up**

This research examines differences in physical and mental health status for beneficiaries who were smokers and nonsmokers in *Cohort III* of the Medicare Health Outcomes Survey (HOS).

**Report on the Comparison of Seniors in Program of All-Inclusive Care for the Elderly (PACE) and Medicare Advantage Plans: Cohorts II, III, IV and V Baseline**

This report compares the health status of beneficiaries enrolled in Program of All-Inclusive Care for the Elderly (PACE) plans with the health status of beneficiaries enrolled in Medicare managed care plans who participated in *Cohorts II, III, IV and V Baseline* (1999 to 2002) of the Medicare Health Outcomes Survey (HOS).

**Medicare HOS National Pilot Project on Depression Final Report**

From 1999 to 2002, 16 M+COs and six QIOs participated in a pilot project to develop a strategy for using the HOS results to identify and treat beneficiaries with a high risk for depression. Claims and HOS data were used to develop a statistical profile of these high-risk beneficiaries. Each M+CO then provided their primary care providers with a list of the high-risk beneficiaries in their caseloads, as well as screening instruments, clinical guidelines, and treatment protocols for depression management. The participating plans were compared to non-participating plans to measure the impact on both process measures and HOS scores. A copy of the Pilot Project User's Guide is available below.

**The SF-36® Health Survey: A Summary of Responsiveness to Clinical Interventions**

This paper provides evidence that the SF-36® scales and summary measures are sensitive measures that can demonstrate changes in health due to various treatments, including pharmacological, surgical, and educational interventions.

**Medicare HOS National Pilot Project on Depression User's Guide**

This project represents a pioneering attempt to use HOS data to help identify and manage depression in a primary care setting. Six QIOs and 16 health plans participated in this quality improvement pilot project.

**Medicare HOS Information Synthesis**

This 1999 document reviews a number of interventions that have an effect on the overall well-being and functional status of seniors. The intent of the review is to provide direction in developing new interventions that are relevant to the specific needs of Medicare beneficiaries.