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Design, Methods, and Field Results of the Medical Expenditure Panel Survey Medical Provider Component (MEPS MPC) including the Medical Organizations Survey (MOS)—2016 Data Year

Abstract

This report focuses on the MEPS Medical Provider Component (MPC) data collection effort that collected information from medical providers on health care events that took place between January 1, 2016, and December 31, 2016. The report describes the MPC sample design, survey methodology, procedures for data collection, sample sizes and response rates as well as the relationship between the MEPS Household Component (HC) survey and the MPC survey. Additionally, it includes information on the Medical Organizations Survey (MOS), which was new in the 2015 MPC data year collection and was fielded again in the 2016 MPC. The MOS was funded in part by support from the Robert Wood Johnson Foundation.

Suggested Citation

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DESIGN, METHODS, AND FIELD RESULTS OF THE MEDICAL EXPENDITURE PANEL SURVEY MEDICAL PROVIDER COMPONENT (MEPS MPC) INCLUDING THE MEDICAL ORGANIZATIONS SURVEY (MOS)—2016 DATA YEAR

Design, Methods, and Field Results of the Medical Expenditure Panel Survey Medical Provider Component (MEPS MPC) including the Medical Organizations Survey (MOS)–2016 Data Year

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Introduction

The Medical Provider Component (MPC) of the ongoing Medical Expenditure Panel Survey (MEPS), conducted annually since 1997, is a voluntary survey designed to supplement, replace, and validate health care expenditure and source of payment data collected in the MEPS Household Component (HC). It is also used as the core imputation source for missing HC payment and charge data. MPC data are collected a year after the household health care event information is collected to allow adequate time for billing transactions to be completed.

This report focuses on the 2016 data year MEPS MPC and Medical Organizations Survey (MOS) data collection efforts that collected information from medical providers on health care events reported in the MEPS HC and on organizational characteristics of selected office-based physician practices, respectively. This report describes the MPC sample design, survey methodology, procedures for data collection, sample sizes, and response rates, as well as the relationship between the HC survey and the MPC survey. It also includes information on the MEPS MOS which was added to the MPC for the 2015 and 2016 MPC data collections and was funded in part by support from the Robert Wood Johnson Foundation. RTI International was the prime contractor for this MPC and MOS data collection.

Relationship of the Household Component to the Medical Provider Component

The MEPS HC is designed to collect detailed information on the demographic characteristics, health status, health insurance, employment, and medical care use and expenditures of individuals and families in the United States. For data year 2016 estimates, the HC collected data from 33,259 individuals and about 13,500 families in 183 different communities (primary sampling units) across the country that can be used to produce nationally representative estimates for the civilian noninstitutionalized population. Health care utilization, associated expenditures, and the names and addresses of providers who delivered care to these sample persons were collected over

the course of three interviews that were conducted during calendar year 2016 and the early part of 2017 using computer assisted personal interviewing. The medical providers who were identified during these interviews were eligible for inclusion in the MPC sample.

Objectives of the MPC

The primary objective of the MPC data collection effort described in this report was to collect data from medical providers (hospitals, physicians, home care agencies, pharmacies, and long-term health care facilities) on charges, payments, and sources of payments for specific health care services provided to HC sample persons from January 1, 2016, to December 31, 2016. MPC data are collected annually for MEPS and are used to validate, supplement, and/or replace expenditure data collected in the HC for selected persons and medical events. More specifically, MPC data were used to:

1) serve as the primary imputation source for item nonresponse to reduce the potential for bias in survey estimates of medical expenditures

2) serve as the main source of expenditure information on physician charges that are associated with hospital care but not billed by the hospital (e.g., separately billing doctors such as radiologists and lab technicians)

3) serve as the primary source of expenditure information for Medicaid recipients

4) replace expenditure information reported in the HC with information reported by providers which is generally more complete and may be less prone to reporting errors

5) provide data that can be used to conduct methodological studies to validate the accuracy and completeness of household-reported data

The MPC was not designed as an independent nationally representative sample of providers for estimation purposes. Accordingly, the 2016 MPC data were used solely for expenditure editing and imputation purposes and the data were not released publicly as a stand-alone data file.

Objective of the MOS

The objective of the MOS is to provide data that can be used for evaluating relationships between provider organization characteristics and individuals' health care use and expenditures. More specifically, these data support studies of the association between practice characteristics and consumer access, service use, expenditures, and quality of care. Analytic weights were developed

for MEPS sample persons with linked MOS responses to enable nationally representative analyses of the MOS target population. The derivation of the MOS weight accounted for several factors including the probability of selection for MEPS, nonresponse to MEPS, non-authorization for the MPC, and nonresponse to the MOS. The MOS target population in 2016 reflects an estimated 146,956,636 persons (the sum of MOS analytic weights) who visited their usual source of care (USC) provider in an office-based setting at least once during the year.

Sample Selection: Design and Implementation

The MPC sample for the 2016 data year was derived from providers identified during HC interviews as having provided health care for reported medical events during calendar year 2016. Only providers for whom a signed permission form was obtained from the household authorizing contact were eligible for data collection in the MPC. In 2016, permission was granted to contact nearly three-quarters of providers who were eligible for the MPC.

The categories of providers included:

- Office-Based Physicians: Office-based medical doctors (MDs), doctors of osteopathy (DOs), and other medical providers under the supervision of MDs and DOs
- Hospitals: Hospital facilities providing inpatient, outpatient, and emergency room care
- Separately Billing Doctors (SBDs): All individually identified physicians who treated the patient at the hospital, but who billed separately from the hospital facility
- Home Care Agencies
- Pharmacies
- Long-term Health Care Facilities ("Institution")

The MPC sample did not include dentists, optometrists, psychologists, podiatrists, chiropractors, and others not providing care under the supervision of an MD or DO. These types of providers were considered out of scope. Jails, prisons, and medical facilities or pharmacies outside the United States were also considered out of scope.

Office-Based Physicians

MPC

The MPC office-based physician eligible sample included MDs and DOs as well as providers practicing under the direction or supervision of an MD or DO (e.g., physician assistants and

nurse practitioners working in clinics). These types of providers of care in HMOs were in scope for the MPC, as well. Due to budget constraints, only a subsample of office-based physicians was selected for inclusion. Since household respondents are unable to report Medicaid payment data, providers associated with individuals reported as receiving Medicaid benefits were oversampled for the MPC. Physicians associated with persons considered likely to have high expenditures, including persons who were in an institution for at least part of the year, who died during the year, or who had at least one of the following events: hospital stay, home health visit, surgery in an office setting, surgery in a hospital outpatient setting, were also oversampled. For calendar year 2016, nearly half of the 37,356 person/provider pairs[1] reported by household respondents for which permission to contact the provider was granted were selected for MPC data collection (18,000/37,356).

MOS

To maximize the sample for the MOS project, all 13,570 USC pairs with a signed authorization form were selected with certainty and administered both the MPC survey and the MOS questionnaire. This same process was true for the 2015 MOS.

Note: The remaining MPC provider categories discussed below are not applicable to the MOS.

Hospitals

All hospitals that were reported as the site of care for inpatient stays, outpatient department visits, and emergency room encounters for sample persons were included in the MPC. Hospitals were sampled with certainty because: 1) sample persons often do not know the total amounts for each source of payment for a hospital stay; 2) hospital-based medical events are high cost; and 3) a large percentage of national medical expenditures are associated with hospital care and getting the most accurate data was imperative. HMO hospitals were in scope for the MPC.

Separately Billing Doctors

All physicians identified from records of MPC sampled hospitals (not HC sample persons) as providing care to sample persons during the course of any hospital event in calendar year 2016,

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[1] A person/provider pair (or pair) represents one sample person visiting a health care provider during the year. A health care provider can be visited by more than one sample person during the year, resulting in many person/provider pairs for one provider.

but whose charges were not contained in the hospital bill (e.g., anesthesiologists, pathologists, radiologists) were included in the MPC.

Many types of care provided to a person during a hospital stay are not included in the facility bill, but are billed separately by individual providers. Many times, household respondents are not even aware of the services provided. Therefore, in the MPC data collection all potential SBDs associated with a hospital medical event are identified through medical records abstraction. Data are collected for these SBDs separately from the hospital data collection. To avoid duplication, SBDs identified by hospitals that had already been selected for the office-based physician sample are not included in the SBD sample. SBD nodes[2] are also categorized with a priority flag prior to being fielded by the contractor. High priority nodes include those associated with an inpatient stay for which the role was "active/providing direct care" (excluding radiology and pathology specialty codes), and all nodes for which the specialty was surgery or anesthesiology. Medium priority nodes include all other nodes associated with an inpatient stay, nodes for which the specialty was radiology with an active role, and pathology codes with an active role (excluding those pathology nodes with only pathology CPT codes), and all other nodes with an active role. All other nodes are considered low priority. Over the course of a data collection cycle, AHRQ directs the inclusion or exclusion of low priority nodes based on budget considerations.

Home Care Agencies

All home care agencies, hospitals, social service agencies, and other places identified as providing paid home care services were included in the MPC. However, self-employed and unpaid persons identified as providing home care were not considered in scope for the MPC.

Pharmacies and Other Sources of Prescribed Medicines

All pharmacies reported by HC respondents as places where they purchased or obtained outpatient prescription medicines were included. "Pharmacies"—or sources of prescribed drugs—included all establishments filling prescriptions for outpatient prescription drugs including but not

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[2] An SBD node is a unique combination of the following data elements which are specific to the original hospital or institutional medical event: patient name, SBD provider name, dates(s) of service, location of service (ER, inpatient, or outpatient), and the hospital or institution at which the services were delivered.

limited to: drug stores, grocery stores, discount stores, mail order pharmacies, online pharmacies, clinics, HMOs, and hospitals.

Long-term Health Care Facilities (Nursing Homes, Assisted Living Facilities, etc.)

Long-term health care facilities, which included nursing homes, assisted living facilities, rehabilitation facilities, as well as other health care facilities providing long-term health care to a sample person (who, for periods of time during calendar year 2016, also resided in the community), were considered in scope for MPC collection. Expenditures from long term care facilities, while collected in the MPC for methodological purposes of tracking and evaluating full-year expenses for persons who were institutionalized part of the year, were not included in final MEPS expenditure data.

MPC Instruments and Data Collection Procedures

MPC samples are fielded on an ongoing basis as health care provider data are collected in the MEPS HC. More specifically, the MPC fielding is done in waves, as sample sizes from the HC become large enough to be fielded efficiently. The 2016 data year provider sample was fielded in multiple waves during calendar year 2017 and early 2018. Hospitals, long-term health care facilities, office-based providers, home care providers, and HMO providers were all fielded as one group. The first wave of this group was fielded in February 2017 and the last wave was fielded in August 2017. Pharmacy providers were the second group, with the first wave fielded in February 2017 and the last wave fielded in July 2017. Separately billing doctors were the last provider group fielded, with the first SBD wave released in August 2017 and the last SBD wave fielded in November 2017.

All providers fielded for the MPC were contacted via telephone by a data collection specialist (DCS). To facilitate efficient navigation through the provider's organization, the DCS followed a scripted contact guide. A separate contact guide was designed for each provider type (hospital, office-based provider, home care, pharmacy, SBD). The contact guides used for the MPC 2016 data year collection can be found at the following link: https://meps.ahrq.gov/mepsweb/survey_comp/survey_results_MPC_CG_ques.jsp?MPC_CG=All &MPC_CGYr=2016&Submit5=Search.

Following the contact guide, the DCS identified the appropriate respondent (source of data) with release of information authority, explained the nature of the study, gained cooperation, and determined the mode of data collection.

The sources of data for each provider type are listed below. (Note that for purposes of data collection, an event was defined as a distinct visit or stay on a specific date with a specific health care provider by a member of a participating household.)

- **Hospitals**. There are typically three points of contact for hospital providers:

  - *Health Information Management Department*: This department houses all event level data, diagnostic and procedural information, and records of physicians who provided services for these events.

  - *Patient Accounts/Billing Department*: This department houses all expenditure data for the events identified in the medical records. In some cases, hospitals and institutions outsource the billing function to an external billing service.

  - *Medical Staff Office/Administrative Office*: This department maintains additional information for locating SBDs that may not be available from either the Health Information Management Department or the Patient Accounts/Billing Department.

    Note: HMOs house their medical and billing data within administrative offices at the local, regional, or corporate levels.

- **Office-based providers and SBDs**: Office-based providers and SBDs either maintain a billing or patient accounts department internally, or outsource the claims administration/billing function to an external billing service.

  Note: HMOs house their medical and billing data within administrative offices at the local, regional, or corporate levels.

- **Home care agencies**: Most home care providers maintain an internal billing or patient accounts department.

- **Pharmacies**: Since most pharmacies are part of a national or regional chain**,** there are three primary sources for prescription data (mail order pharmacies are captured in the first two sources mentioned):

  - Corporate level

  - Central or regional pharmacy office

  - Local retail pharmacy store

Once a provider was contacted and agreed to participate in the survey, a customized data collection instrument was used to collect the information. All 2016 data collection instruments

were designed for electronic data collection and were specific to a provider type (hospitals, office-based providers, home care providers, long-term care providers, pharmacies, and SBDs), allowing for the collection of data elements that were unique to the provider type, as well as a core set of data elements common to all provider types. The event forms that were used to collect MPC data for 2016 can be found at the following link:

https://meps.ahrq.gov/mepsweb/survey_comp/survey_results_MPC_ques.jsp?MPC=All&MPCYr=2016&Submit4=Search.

The instruments collected financial and medical characteristics about each event recorded in the provider's records for a sample person in calendar year 2016. As stated previously, for data collection purposes, an event was defined as a distinct visit or stay on a specific date with a specific health care provider by a member of a participating household. Consequently, all events reported by MPC-sampled providers from January 1, 2016, through December 31, 2016, were collected. Matching the MPC data collected to the HC-reported data was performed after all MPC data for a provider type was collected. Table 1 summarizes the data elements that were collected for each provider type.

There were two primary modes of data collection: telephone interview and abstraction.

- **Telephone interview**: If the provider (or their staff) elected to participate in a telephone interview, a DCS trained in telephone interviewing conducted the interview, administering the data collection instrument specific to the provider type.

- **Abstraction**: As an alternative to the telephone interview, providers were given the option to send medical and billing records. If the provider (or their staff) elected to send records, those records were reviewed by an abstractor trained in medical and billing chart review. The abstractor utilized the same data collection instrument that was used for telephone interviewing to extract the same set of data elements from the records.

For the 2016 data year, approximately 90 percent of hospital providers and 48 percent of office-based providers opted to send the medical and billing records for abstraction, as opposed to participating in a telephone interview. Additionally, 43 percent of home care providers and 26 percent of SBDs elected to send medical and billing records for abstraction. When necessary, providers were reimbursed for copying and administrative fees.

The data collection protocol for pharmacy providers is slightly different from that for other provider types in that data collection focuses on the request for a patient profile (a computer-

generated listing of the prescriptions dispensed to a given customer). The DCS reviews the patient profile and identifies and records the pharmacy-specific data items listed in Table 1. Upon request, nearly all pharmacies provide this computer-generated profile for sample persons via fax, FedEx, or regular mail rather than over the phone. One large chain with a large number of sample persons provided the prescription data via electronic file.

Table 1: MPC Data Elements Collected by Provider Component

Data Elements	Hospital	Office-based	Home Care	Pharmacy	SBD	Institution
Date of service	X	X	X	X	X	X
Setting of care	X	X			X	
Medical condition	X	X	X		X	X
Type of personnel seen			X			
Prescribed medicine				X		
Quantity and dosage of medicine				X		
Procedures and services	X	X	X		X	X
Full established charge	X	X	X		X	X
Total charge	X	X	X		X	X
Payment amount	X	X	X	X	X	X
Payer source	X	X	X	X	X	X
Reason for discrepancy between total charge and total payments	X	X	X		X	X
SBDs	X					X
Comparison of total number of events reported in MPC against total events reported in HC and explanation if discrepancy cannot be resolved.	X	X	X		X	X

MOS Instrument and Data Collection Procedures

Practices eligible for the MOS survey were those identified as an office-based provider by a respondent in the MEPS HC and identified by that respondent as his or her USC with whom they had a visit in 2016. The 2016 data year MOS survey was fielded in March 2017 through October 2017.

The purpose of the MOS instrument was to collect information not captured in the MPC concerning the organization of medical practices and resources available to practices identified as a household person's USC. The MOS was designed to complement MPC data with additional information on the characteristics of providers. The MOS collected data in the following topical areas: organization characteristics, health information technology, case management and use of clinical data, and financial arrangements. MOS data can be linked to MEPS sample respondents in the 2016 Full Year Consolidated Data File to enable analyses at the person level using characteristics of provider practices.

After contacting the selected office-based providers, MOS DCSs introduced the MOS survey and identified an appropriate MOS respondent. Although in some instances the MOS respondent was the MPC point of contact (POC), the data collection protocols anticipated scenarios in which the MOS respondent would be a different person than the MPC respondent and unfamiliar with the MPC or its history in that practice. Materials were developed to introduce the MOS to either the MPC POC or a different POC for the MOS. The MOS questionnaire was designed to be completed by either telephone, online, or by mailing or faxing a completed questionnaire.

MPC Sample Size and Completion Rates

Table 2 presents provider level sample sizes and completion rates by provider type, while Table 3 presents pair level sample sizes and completions rates by provider type. These two levels measure different concepts. The provider completion rate is a measure of provider cooperation. The pair completion rate is a measure of pair coverage and is used to determine how many pairs complementary provider data is obtained.

For data collection purposes, a provider was classified as a participant if health care event data were obtained for any of the provider's sampled patients during calendar year 2016. Each event reported by the provider was required to have, at a minimum, a date of service and a procedure or service. Individual providers were identified by a unique provider ID. As Table 2 illustrates, 86 percent of the 6,170 eligible hospital providers and about 87 percent of the 12,903 eligible

office-based providers participated in the survey. Furthermore, 83 percent of the 323 eligible HMOs, which can be a hospital or an office-based provider, participated in the survey. Fifty-five percent of SBD providers, 91 percent of pharmacy providers, and 85 percent of home care providers also participated in the survey. Overall refusal rates ranged from 0 percent for HMOs, institutions, and pharmacy providers to 3.6 percent for SBD providers. Refusals are categorized based on speaking with the POCs and having a definitive response on their desire to not participate. Providers classified as "other nonresponse" were primarily those who could not be located, who could be located, but had no record of providing care to the sampled patient, or no definitive contact was made before the end of the data collection period. Overall, non-participation rates ranged from 9 percent for pharmacies and institutions to 42 percent for SBDs. Note that when comparing the original sample with the final eligible sample, the original sample includes providers that were later determined to be out of scope for the MEPS MPC, or providers that eventually were merged or split.

Table 2: 2016 Sample Sizes and Completion Rates in the Medical Provider Component Sample by Provider Type – Provider Level

Provider Type	Final Eligible Sample	Completion Rate	Refusal Rate	Other Non-participation Rate
Hospital	6,170	0.861	0.023	0.116
Office-based	12,903	0.869	0.020	0.111
HMO	323	0.833	0.000	0.167
Home care	763	0.847	0.007	0.146
Institution	128	0.906	0.000	0.094
SBD	22,573	0.549	0.036	0.415
Pharmacy*	7,637	0.906	0.000	0.094

Table 3 presents sample sizes and completion rates by provider type at the pair level. Completion rates at the pair level were mostly similar to or lower than the provider level: 85 percent for hospitals, 86 percent for office–based physicians, 77 percent for HMOs, 54 percent for SBDs, 85 percent for pharmacies, and 84 percent for home care agencies.

Table 3: 2016 Sample Sizes and Completion Rates in the Medical Provider Component Sample by Provider Type – Pair Level

Provider Type	Final Eligible Sample	Completion Rate	Refusal Rate	Other Non-participation Rate
Hospital	10,162	0.851	0.081	0.068
Office-based	16,927	0.861	0.070	0.069
HMO	790	0.766	0.000	0.234
Home care	817	0.841	0.111	0.048
Institution	131	0.908	0.046	0.046
SBD	27,490	0.539	0.049	0.412
Pharmacy*	17,366	0.849	0.067	0.084

Completion rate calculations include completes and partial completes. Completes include no events within the provider/pair that are missing critical items and partial completes include providers/pairs for which at least one event is missing a critical item and at least one event is not missing any critical items.
* For pharmacies only, completion rate calculations also include additional categories of partial pairs, which are pairs that are missing at least one critical item for all events.

MOS Sample Size and Completion Rates

Table 4 presents sample sizes and completion rates for the MOS at the practice and pair level. At the practice level, the MOS completion rate was 76 percent. At the pair level, the completion rate was 77 percent.

Table 4: 2016 Sample Sizes and Completion Rates in the Medical Organizations Survey

Survey Status	MOS Practices	USC/Office Based Provider Pairs
Eligible	7,064	12,211
Complete/Partial complete	5,331	9,400
Nonresponse	1,733	2,811
Eligibility rate	98.7%	98.8%
Completion rate	75.5%	76.9%
Nonresponse rate	24.5%	23.0%

MPC Changes Over Time

Over the last decade, there have been significant developments in the United States health care delivery system, including the consolidation of major health systems and increased use of electronic health records. These developments have affected the way in which health care information is recorded, maintained, and released. This section describes how the MPC has evolved to respond to these developments, while maintaining the ability to compare data year to year.

Adapting the MPC instruments to CAI (Computer-Assisted Interviewing) from PAPI (Paper-and-Pencil Interviewing)

During the 2009 data year collection cycle, a computer-assisted interviewing system was developed by the MEPS MPC team for both interviewing and record abstraction, which was a change from the previous MEPS MPC paper-and-pencil interviewing methodology. This integrated data collection system is flexible and supports the effort to recruit providers by telephone and to interview medical records and billing staffs of medical facilities or providers. The system is also used to abstract information from medical records and patient accounts from providers that send hardcopy records. Data for all provider types are collected in this electronic data collection system, which was used and refined during the 2016 data year collection cycle. The integrated system also produces reports for the MEPS MPC team and develops data files for the matching process for developing medical expenditure estimates.

Consolidation of Health Systems

Since the MEPS was designed in the mid-1990s, health care delivery in the United States has evolved in many ways. One change has had a large impact on MPC operations: the trend toward consolidation of health care facilities. This has occurred both by individual physicians moving into group practices (Welch et al., 2013) and by independent hospitals being acquired by health care systems (Tsai & Jha, 2014). There has also been consolidation among group practices as well as hospital systems acquiring physician group practices. Consolidation can complicate the identification of an appropriate POC within the provider facility. In the MPC sample design, the frame of *events*, the basic data collection unit, is nested within a hierarchy of *patient-provider pairs* and *contact groups*.

The source of the event level use data—the household respondent—is generally accurate at distinguishing a provider as an office-based physician or a hospital. However, the contact

information supplied often includes the name of the physician but may not include the group's practice name, name of the hospital, or the name of the health care system that owns the hospital. Poor information about the linkages among providers and their institutional affiliations can result in errors as providers are sorted into contact groups for the purposes of MPC data collection. Errors can result in multiple contacts to the same contact group because it was not identified that two physicians belonged to the same group. Errors can also result from "overgrouping," where physicians are mistakenly added to a contact group. Overgrouping can result in erroneous disavowals.

These experiences have led the MPC team to be careful about the sorting of events and pairs into contact groups for initial contacts to physician offices, hospitals, and health care systems. A stage of this sorting occurs during sample preparation. The MPC team has also introduced various automated approaches to matching providers and improving accuracy in the formation of contact groups. Adoption of the National Provider Identifier (NPI) in the 2010 MPC has helped to mitigate the problem, but has not completely solved it. A single provider may bill through any of several NPIs and provider facilities often have separate NPIs for different units within the facility. And, despite the best efforts of the field interviewers in the HC, a portion of providers identified by household respondents are not matched to NPIs in the directory available on the field laptops. To address this situation, the MPC team has developed matching algorithms based on address, telephone numbers, and other data elements that might indicate that providers belong in the same contact group.

File Transfer Protocol and Other Secure Data Transfer Options

In addition to accepting hardcopy records, the MEPS MPC now offers several electronic options to POCs to reduce the burden of data transfers. The MPC provides the option to deliver data via CDs containing PDFs of records. Other data transfer choices have also been made available: During the 2013 cycle, the MEPS MPC team developed documented procedures and instructions for providers to use a secure File Transfer Protocol (FTP) site and secure email. During the 2016 data year collection cycle, we continued to offer both FTP and secure email routinely to our largest providers. Requests from other POCs for FTP or secure email were also accommodated.

The MEPS MPC also accepts electronic data files that contain the requested data fields. In the 2009 through 2014 data year collections, two pharmacy contact groups provided data electronically, and one hospital/office-based provider POC provided electronic records. With the more widespread adoption of electronic health records, we anticipate the frequency of

submission of electronic data files to increase and expand to other provider types in future years of the MPC. For the 2016 data year collection cycle, the MEPS MPC developed an application to allow POCs to securely download Authorization Form packets from and upload records to a MEPS MPC website.

MOS Changes Over Time

Key changes to the MOS from the first data collection completed during the 2015 data collection cycle compared to the 2016 data collection cycle are described below.

Staffing and Training

Staffing and training of the MOS DCSs differed during the 2016 data collection when compared to the 2015 data collection. During the 2015 data collection, MOS was a new survey for all MPC DCSs; during the 2016 data collection, veteran MOS staff from the previous data collection were available to work during the new cycle. A more streamlined training was able to focus on instrument changes and allowed for a quicker data collection start. Throughout data collection, staff working on office-based providers were identified to replenish MOS staffing levels as needed; the connections between office-based providers and MOS data collection made this a natural transition for many staff.

Instrumentation

Based on review of the data from the 2015 data collection, AHRQ revised the order of some of the MOS survey questions before the start of the 2016 cycle. However, minimal wording changes were made to the questions, so that consistency could be maintained between the two data collection cycles.

Use of MPC Data in Expenditure Estimation

Data obtained from providers in the MPC are critical to the development of MEPS expenditure estimates. Since insurance providers negotiate reimbursement rates with providers that are significantly lower than the total established list price that appears on a billing statement, expenditures in the MEPS are defined as the sum of payments from all payer sources including out-of-pocket payments. While most household respondents can report with some degree of accuracy how much they pay out of pocket for medical care, including prescribed medicines, they do not always know the total payments made on their behalf by third-party payers.

Providers generally have more complete information on reimbursement arrangements (capitation versus fee-for-service) and how much was paid by payer source for care delivered to household respondents.

In general, the methodology used to develop 2016 MEPS medical expenditure estimates was based on merging medical events reported in the HC with data from the MPC using a probabilistic matching procedure. For all medical events except prescribed medicines, the first stage of the MEPS expenditure estimation methodology involved matching the provider-reported expenditure data in the MPC to the household-reported medical event in the HC using dates and detailed information on conditions and procedures that were collected in both the HC and MPC. Because of the matching, each medical event in the HC either had expenditure data from both the MPC and HC, from the MPC or HC only, or from neither source (i.e., missing payment data). Household-reported event type may be different from provider-reported event type, so some cross-event type matches were permitted. However, "event type" on the final files released to the public was defined according to the HC classification. A hierarchical approach was used to develop complete expenditure data. When a match was found for a particular medical event, expenditure data from the MPC were substituted for household-reported information. In certain cases, if MPC data were not available, and complete household payment data were available, the household data were used. A series of logical edits were applied to both the HC and MPC data to correct for several issues with the reported data (e.g., outliers, misreported data). For more information on the types of issues encountered and the logical edits applied, see "Section 2.5.11 - Utilization, Expenditures and Source of Payment Variables" of the documentation for the 2016 Full Year Consolidated Data File (HC-192) at the following link: https://meps.ahrq.gov/mepsweb/data_stats/download_data_files_detail.jsp?cboPufNumber=HC-192.

Where MPC or HC payment data were not available, either due to item nonresponse or because the payment was not tied to a specific visit (as in capitation arrangements), payment components (e.g., private insurance, Medicare, Medicaid and/or out-of-pocket payments) were imputed using a predictive mean matching procedure. This procedure uses regression models (based predominantly on events with completely reported expenditure data assigned to the donor pool) to predict total expenses for each event. Then, for each event with missing payment information, a donor event with the closest predicted payment having the same pattern of expected payment sources as the event with missing payment was used to impute the missing payment component values. Data collected in the MPC were used as donors whenever possible when imputing

expenditures because those data are generally regarded as more accurate than information collected in the HC.

For prescribed medicines, the general approach to matching data was to merge drug information collected from MPC pharmacy providers to HC drug data. To improve the quality of matches, all HC drugs were assigned codes (Generic Product Identifier or GPI) from a proprietary database (the Master Drug Data Base or MDDB) based on the medication names provided by the household. These codes were also assigned to the prescriptions in the MPC by using the NDC (when available) or medication names reported by the pharmacy providers. Software was developed that merged MPC drug data to the HC drug data by matching drug events from each file on a variety of characteristics (e.g., person id, GPI, potential payment sources, age, sex, health status, geographic location, and medication names). Selected editing was done prior to the matching to correct data inconsistencies in both data sets and to fill in missing data and correct outliers on the MPC file. For HC events that did not have corresponding data in the MPC, the MPC data were used as the imputation source.

Summary

The MEPS MPC is a voluntary survey designed to supplement and validate health care expenditure and source of payment data collected in the MEPS HC. The MEPS MOS is also a voluntary survey designed to expand current MPC data collection activities to include information on the organization of the practices of office-based care providers identified as a USC in the MEPS HC and having been seen by the HC respondent in 2016. This report, an update and enhancement to MEPS Methodology Report #23: *Design, Methods, and Field Results of the Medical Expenditure Panel Survey Medical Provider Component—2006 Calendar Year Data*, focuses on the MPC data collection effort that collected information from medical providers on health care events that took place between January 1, 2016, and December 31, 2016. The report describes the MPC sample design, survey methodology, procedures for data collection, sample sizes, and response rates as well as the relationship between the HC survey and the MPC survey. Additionally, it includes information on the MOS survey which was new in the 2015 MPC data year collection and was fielded again in the 2016 MPC. Both the 2015 and 2016 MOS were funded in part by the Robert Wood Johnson Foundation.

For More Information

Additional information on MEPS is available from the MEPS Project Director at the Center for Financing Access and Cost Trends, Agency for Healthcare Research and Quality, 5600 Fishers Lane, Mailstop 07W41A, Rockville, MD 20857; MEPSProjectDirector@ahrq.hhs.gov.

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Additional Background on MEPS HC, MEPS MPC, and MEPS MOS

Household Component

The Medical Expenditure Panel Survey (MEPS) provides nationally representative estimates of health care use, expenditures, sources of payment, and health insurance coverage for the U.S. civilian noninstitutionalized population. The MEPS Household Component (HC) also provides estimates of respondents' health status, demographic and socioeconomic characteristics, employment, access to care, and satisfaction with health care. Estimates can be produced for individuals, families, and selected population subgroups. The panel design of the survey, which includes five rounds of interviews covering two full calendar years, provides data for examining person level changes in selected variables such as expenditures, health insurance coverage, and health status. Using computer assisted personal interviewing (CAPI) technology, information about each household member is collected, and the survey builds on this information from interview to interview. All data for a sampled household are reported by a single household respondent.

The MEPS HC was initiated in 1996. Each year a new panel of sample households is selected. Because the data collected are comparable to those from earlier medical expenditure surveys conducted in 1977 and 1987, it is possible to analyze long-term trends. Each annual MEPS HC sample size is about 14,000 households. Data can be analyzed at either the person or event level. Data must be weighted to produce national estimates.

The set of households selected for each panel of the MEPS HC is a subsample of households participating in the previous year's National Health Interview Survey (NHIS) conducted by the National Center for Health Statistics of the Centers for Disease Control and Prevention. The NHIS sampling frame provides a nationally representative sample of the U.S. civilian noninstitutionalized population and reflects an oversample of blacks, Hispanics and, starting in 2006, Asians. The linkage of the MEPS to the previous year's NHIS provides additional data for longitudinal analytic purposes.

Medical Provider Component

Upon completion of the household CAPI interview, and after obtaining permission from the household survey participants, a sample of medical providers are contacted by telephone to obtain information on medical events that household respondents cannot accurately provide. This part of the MEPS is called the Medical Provider Component (MPC) and information is collected on dates

of visits, diagnosis and procedure codes, charges, and payments. The Pharmacy Component (PC), a subcomponent of the MPC, does not collect charges or diagnosis and procedure codes but does collect detailed information on prescriptions, including National Drug Code (NDC) and medicine name, as well as date(s) prescriptions were filled and sources and amounts of payment. The MPC is not designed to yield national estimates. It is primarily used as an imputation source to supplement and/or replace household-reported expenditure information.

Medical Organizations Survey

The Robert Wood Johnson Foundation provided support and funding to the Agency for Healthcare Research and Quality (AHRQ) to conduct a new pilot survey of health care providers called the Medical Organizations Survey (MOS) in 2015 and 2016. Designed as an add-on to the MPC, the MOS is intended to collect supplemental information on usual source of care (USC) practice characteristics for MEPS sample persons who saw their USC during the year. The MOS data collection is for a subset of office-based care providers already included in the MPC sample. The design of the MOS is multi-modal including phone, fax, mail, self-administration, electronic transmission, and secure email. The MEPS MOS data file includes a population weight from which national estimates can be derived.

Survey Management

MEPS HC and MPC data are collected under the authority of the Public Health Service Act. Data are collected under contract with Westat (HC) and RTI International (MPC). Data sets and summary statistics are edited and published in accordance with the confidentiality provisions of the Public Health Service Act and the Privacy Act. The National Center for Health Statistics (NCHS) of the Centers for Disease Control and Prevention provides consultation and technical assistance related to the selection of the MEPS household sample.

As soon as data collection and editing are completed, the MEPS survey data are released to the public in staged releases of summary reports, micro data files, and tables via the MEPS Web site at www.meps.ahrq.gov. Selected data can be analyzed through a summary tables app and through MEPSnet, a set of online interactive tools designed to give data users the capability to statistically analyze MEPS data in a menu-driven environment.