MEPS HC-126A:
2009 Prescribed Medicines

September 2011

Agency for Healthcare Research and Quality
Center for Financing, Access, and Cost Trends
540 Gaither Road
Rockville, MD 20850
(301) 427-1406

Table of Contents

Table of Contents (continued)

A. Data Use Agreement

Individual identifiers have been removed from the micro-data contained in these files. Nevertheless, under sections 308 (d) and 903 (c) of the Public Health Service Act (42 U.S.C. 242m and 42 U.S.C. 299 a-1), data collected by the Agency for Healthcare Research and Quality (AHRQ) and/or the National Center for Health Statistics (NCHS) may not be used for any purpose other than for the purpose for which they were supplied; any effort to determine the identity of any reported cases is prohibited by law.

Therefore in accordance with the above referenced Federal Statute, it is understood that:

1. No one is to use the data in this data set in any way except for statistical reporting and analysis; and

2. If the identity of any person or establishment should be discovered inadvertently, then (a) no use will be made of this knowledge, (b) the Director Office of Management AHRQ will be advised of this incident, (c) the information that would identify any individual or establishment will be safeguarded or destroyed, as requested by AHRQ, and (d) no one else will be informed of the discovered identity; and

3. No one will attempt to link this data set with individually identifiable records from any data sets other than the Medical Expenditure Panel Survey or the National Health Interview Survey.

By using these data you signify your agreement to comply with the above stated statutorily based requirements with the knowledge that deliberately making a false statement in any matter within the jurisdiction of any department or agency of the Federal Government violates Title 18 part 1 Chapter 47 Section 1001 and is punishable by a fine of up to $10,000 or up to 5 years in prison.

The Agency for Healthcare Research and Quality requests that users cite AHRQ and the Medical Expenditure Panel Survey as the data source in any publications or research based upon these data.

B. Background

1.0 Household Component (HC)

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 non-institutionalized population. The MEPS Household Component (HC) also provides estimates of respondents' health status, demographic and socio-economic 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 5 Rounds of interviews covering 2 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 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 15,000 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. The NHIS sampling frame provides a nationally representative sample of the U.S. civilian non-institutionalized population and reflects an oversample of blacks and Hispanics. In 2006, the NHIS implemented a new sample design, which included Asian persons in addition to households with black and Hispanic persons in the oversampling of minority populations. MEPS oversamples additional policy relevant sub-groups such as Asians and low income households. The linkage of the MEPS to the previous year's NHIS provides additional data for longitudinal analytic purposes.

2.0 Medical Provider Component (MPC)

Upon completion of the household CAPI interview and obtaining permission from the household survey respondents, a sample of medical providers are contacted by telephone to obtain information that household respondents can not accurately provide. This part of the MEPS is called the Medical Provider Component (MPC) and information is collected on dates of visit, 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 drug detail information, including National Drug Code (NDC) and medicine name, as well as date 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/replace household reported expenditure information.

3.0 Survey Management and Data Collection

MEPS HC and MPC data are collected under the authority of the Public Health Service Act. Data are collected under contract with Westat, Inc. (MEPS HC) and Research Triangle Institute (MEPS 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) provides consultation and technical assistance.

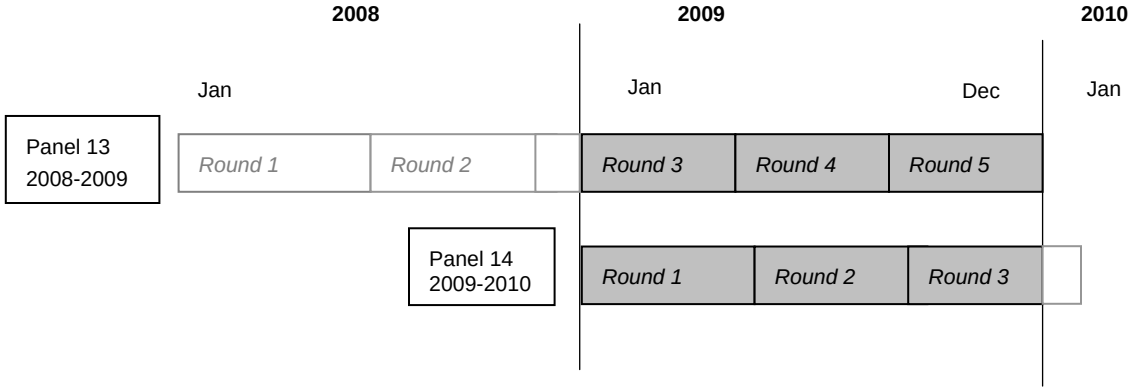
As soon as data collection and editing are completed, the MEPS survey data are released to the public in staged releases of summary reports, micro data files, and tables via the MEPS web site: www.meps.ahrq.gov . Selected data can be analyzed through MEPSnet, an on-line interactive tool designed to give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

Additional information on MEPS is available from the MEPS project manager or the MEPS public use data manager at the Center for Financing Access and Cost Trends, Agency for Healthcare Research and Quality, 540 Gaither Road, Rockville, MD 20850 (301-427-1406).

C. Technical Information

1.0 General Information

This documentation describes one in a series of public use event files from the 2009 Medical Expenditure Panel Survey (MEPS) Household Component (HC) and Medical Provider Component (MPC). Released as an ASCII data file (with related SAS and SPSS programming statements) and SAS transport file, the 2009 Prescribed Medicines public use file provides detailed information on household reported prescribed medicines for a nationally representative sample of the civilian noninstitutionalized population of the United States. Data from the Prescribed Medicines event file can be used to make estimates of prescribed medicine utilization and expenditures for calendar year 2009. The file contains 70 variables and has a logical record length of 531 with an additional 2-byte carriage return/line feed at the end of each record. As illustrated below, this file consists of MEPS survey data obtained in the 2009 portion of Round 3 and Rounds 4 and 5 for Panel 13, as well as Rounds 1, 2 and the 2009 portion of Round 3 for Panel 14 (i.e., the rounds for the MEPS panels covering calendar year 2009).



Incentive Experiment in Panel 13

With the encouragement of the Office of Management and Budget (OMB), an experiment was undertaken for MEPS Panel 13 (first fielded in 2008) to evaluate whether and how differential payments to household respondents might affect survey participation, the level of effort required to obtain participation, and the quality of the data collected. Each sampled household in Panel 13 was randomly assigned to one of three different levels of payment--$30, $50, or $70--with the experiment continuing through the panel's five rounds of data collection. Households receiving the $30 payment represent the control group, since that amount had been offered to all households in the 2007 panel. To learn more about this experiment, go to the Respondent Payment Experiment – Results from Panel 13. Agency for Healthcare Research and Quality, Rockville, MD.

Each record on this event file represents a unique prescribed medicine event; that is, a prescribed medicine reported as being purchased by the household respondent. In addition to expenditures

related to the prescribed medicine, each record contains household reported characteristics and medical conditions associated with the prescribed medicine.

Data from this event file can be merged with other 2009 MEPS-HC data files, for purposes of appending person characteristics such as demographic or health insurance coverage to each prescribed medicine record.

Counts of prescribed medicine utilization are based entirely on household reports. Information from the Pharmacy Component (PC) (within the MEPS-MPC, see Section B 2.0 for more details on the MPC) was used to provide expenditure and payment data, as well as details of the medication (e.g., strength, quantity, etc.).

The file can be used to construct summary variables of expenditures, sources of payment, and other aspects of utilization of prescribed medicines. Aggregate annual person-level information on the use of prescribed medicines and other health services use is provided on the 2009 Full Year Consolidated Data File, where each record represents a MEPS sampled person.

The following documentation offers a brief overview of the types and levels of data provided and the content and structure of the files and the codebook. It contains the following sections:

Data File Information
Sample Weight
General Data Editing and Imputation Methods
Strategies for Estimation
Merging/Linking MEPS Data Files
References
Variable to Source Crosswalk

For more information on MEPS HC survey design see T. Ezzati-Rice, et al. (1998-2007) and S. Cohen, 1996. For information on the MEPS MPC design, see S. Cohen, 1998. A copy of the survey instrument used to collect the information on this file is available on the MEPS Web site at the following address: www.meps.ahrq.gov.

2.0 Data File Information

The 2009 Prescribed Medicines public use data set contains 333,629 prescribed medicine records. Each record represents one household reported prescribed medicine that was purchased during calendar year 2009. Of the 333,629 prescribed medicine records, 326,575 records are associated with persons having a positive person-level weight (PERWT09F). The persons represented on this file had to meet either criterion a or b below:

a) Be classified as a key in-scope person who responded for his or her entire period of 2009 eligibility (i.e., persons with a positive 2009 full-year person-level sampling weight (PERWT09F > 0), or

b) Be an eligible member of a family all of whose key in-scope members have a positive person-level weight (PERWT09F > 0). (Such a family consists of all persons with the same value for FAMIDYR.) That is, the person must have a positive full-

year family-level weight (FAMWT09F >0). Note that FAMIDYR and FAMWT09F are variables on the 2009 Population Characteristics file.

Persons with no prescribed medicine use for 2009 are not included on this file (but are represented on MEPS person-level files). A codebook for the data file is provided (in file H126acb.pdf).

This file includes prescribed medicine records for all household members who resided in eligible responding households and for whom at least one prescribed medicine was reported. Only prescribed medicines that were purchased in calendar year 2009 are represented on this file. This file includes prescribed medicines identified in the Prescribed Medicines (PM) section of the HC survey instrument, as well as those prescribed medicines identified in association with other medical events. Each record on this file represents a single acquisition of a prescribed medicine reported by household respondents. Some household members may have multiple acquisitions of prescribed medicines and thus will be represented in multiple records on this file. Other household members may have no reported acquisitions of prescribed medicines and thus will have no records on this file.

When diabetic supplies, such as syringes and insulin, were mentioned in the Other Medical Expenses (OM) section of the MEPS-HC, the interviewer was directed to collect information on these items in the Prescribed Medicines section of the MEPS questionnaire. The respondent was also asked the questions in the Charge Payment (CP) section of the HC. To the extent that these items are purchased without a prescription, they represent a non-prescription addition to the MEPS prescription drug expenditure and utilization data. Although these items may be purchased without a prescription, a prescription purchase may be required to obtain third party payments. Analysts are free to code and define diabetic supply/equipment and insulin events utilizing their own coding mechanism. If desired, this would enable analysts to subset the Prescribed Medicines file to exclude these types of events.

It should also be noted that refills are included on this file. The HC obtains information on the name of the prescribed medicine and the number of times the medicine was obtained. The data collection design for the HC does not allow separate records to be created for multiple acquisitions of the same prescribed medicine. However, in the PC, each original purchase, as well as any refill, is considered a unique prescribed medicine event. Therefore, for the purposes of editing, imputation, and analysis, all records in the HC were “unfolded” to create separate records for each original purchase and each refill. Please note that for multiple acquisitions of the same drug, MEPS did not collect information in the HC to distinguish between the original purchase and refills. The survey only collected data on the number of times a prescribed medicine was acquired during a round. In some cases, all purchases may have been refills of an original purchase in a prior round or prior to the survey year. The file also includes a variable, (SAMPLE), which indicates whether or not the household reported receiving a free sample of that drug in that round. (To obtain more details on free samples, please see Section 2.6.2.5.)

Each record on this file includes the following: an identifier for each unique prescribed medicine; detailed characteristics associated with the event (e.g., national drug code (NDC), medicine name, selected Multum Lexicon variables [see Section 2.6.3 for more information on the Multum Lexicon variables included on this file], etc.); conditions, if any, associated with the medicine;

the date on which the person first used the medicine; total expenditure and sources of payments; types of pharmacies that filled the household's prescriptions; whether the prescription is one of which the household received a free sample during the round; and a full-year person-level weight.

Data from this file can be merged with previously released MEPS-HC person-level data using the unique person identifier, DUPERSID, to append person characteristics such as demographic or health insurance coverage to each record. Data from this file can also be merged with the 2009 Full Year Consolidated Data File to estimate expenditures for persons with prescribed medicines. The Prescribed Medicines event file can also be linked to the MEPS 2009 Medical Conditions File and additional MEPS 2009 event files. Please see the 2009 Appendix File for details on how to link MEPS data files.

2.1 Codebook Structure

For each variable on the file, both weighted and unweighted frequencies are provided. The codebook and data file sequence list variables in the following order:

Unique person identifiers
Unique prescribed medicine identifiers
Other survey administration variables
Prescribed medicine characteristics variables
ICD-9 codes for medical conditions
Clinical Classification Software codes for medical conditions
Multum Lexicon variables
Expenditure variables
Weight and variance estimation variables

2.2 Reserved Codes

The following reserved code values are used:

Value	Definition
-1 INAPPLICABLE	Question was not asked due to skip pattern
-7 REFUSED	Question was asked and respondent refused to answer question
-8 DK	Question was asked and respondent did not know answer
-9 NOT ASCERTAINED	Interviewer did not record the data
-14 NOT YET TAKEN/USED	Respondent answered that the medicine has not yet been used

Generally, values of -1, -7, -8 and -9 have not been edited on this file. However, this is not true if the pharmacist determined a prescription drug name to be a confidentiality risk. In these instances, the corresponding NDC was replaced with -9, and the Multum Lexicon therapeutic class replaced the drug name determined to be a confidentiality risk. The values of -1 and -9 can be edited by analysts by following the skip patterns in the questionnaire. The value -14 was a valid value only for the variable representing the year the household member first used the

medicine (RXBEGYRX). RXBEGYRX = -14 means that when the interviewer asked the respondent the year the household member first started using the medicine, he/she responded that the household member had not yet started using the medicine (See section C, 2.6.2.1).

A copy of the Household Component questionnaire can be found at www.meps.ahrq.gov/survey_comp/survey_questionnaires.jsp by selecting Prescribed Medicines (PM) from the questionnaire section.

2.3 Codebook Format

The codebook describes an ASCII data set (although the data are also being provided in a SAS transport file). The following codebook items are provided for each variable:

Identifier	Description
Name	Variable name (maximum of 8 characters)
Description	Variable descriptor (maximum 40 characters)
Format	Number of bytes
Type	Type of data: numeric (indicated by NUM) or character (indicated by CHAR)
Start	Beginning column position of variable in record
End	Ending column position of variable in record

2.4 Variable Naming Conventions

In general, variable names reflect the content of the variable, with an eight-character limitation. Generally, all imputed/edited variables end with an "X."

2.4.1 General

Variables contained on this file were derived from the HC questionnaire itself, the MPC data collection instrument, the CAPI, or from the Multum Lexicon database from Cerner Multum, Inc. The source of each variable is identified in Section D, entitled "Variable-Source Crosswalk." Sources for each variable are indicated in one of five ways:

1. Variables which are derived from CAPI or assigned in sampling are so indicated as "CAPI derived" or "Assigned in sampling," respectively;

2. Variables which come from one or more specific questions have those numbers and the questionnaire section indicated in the "Source" column;

3. Variables constructed from multiple questions using complex algorithms are labeled "Constructed" in the "Source" column;

4. Variables which have been imputed are so indicated; and

5. Variables derived from the Multum Lexicon database are so indicated.

2.4.2 Expenditure and Source of Payment Variables

Only imputed/edited versions of the expenditure variables are provided on the file. Expenditure variables on this event file follow a standard naming convention and are 7 characters in length.

The 12 source of payment variables and one sum of payments variable are named consistently in the following way:

The first two characters indicate the type of event:

IP - inpatient stay	OB - office-based visit
ER - emergency room visit	OP - outpatient visit
HH - home health visit	DV - dental visit
OM - other medical equipment	RX - prescribed medicine

In the case of the source of payment variables, the third and fourth characters indicate:

SF - self or family	OF - other Federal Government
MR - Medicare	SL - State/local government
MD - Medicaid	WC - Workers' Compensation
PV - private insurance	OT - other insurance
VA - Veterans Administration/CHAMPVA	OR - other private
TR - TRICARE	OU - other public
	XP - sum of payments

The fifth and sixth characters indicate the year (09). The seventh character, "X", indicates the variable is edited/imputed.

For example, RXSF09X is the edited/imputed amount paid by self or family for the 2009 prescribed medicine expenditure.

2.5 Data Collection

Data regarding prescription drugs were obtained through the HC questionnaire and a pharmacy follow-back component (within the Medical Provider Component).

2.5.1 Methodology for Collecting Household-Reported Variables

During each round of the MEPS-HC, respondents were asked to supply the name of any prescribed medicine they or their family members purchased or otherwise obtained during that round. For each medicine in each round, the following information was collected: whether any free samples of the medicine were received; the name(s) of any health problems the medicine was prescribed for; the number of times the prescription medicine was obtained or purchased; the year, month, and day on which the person first used the medicine; and a list of the names, addresses, and types of pharmacies that filled the household's prescriptions. In the HC, respondents were asked if they send in claim forms for their prescriptions or if their pharmacy providers do this automatically for them at the point of purchase. For those who said their pharmacy providers automatically send in claims for them at the point of purchase, charge and

payment information was collected in the pharmacy follow-back component (unless the purchase was an insulin or diabetic supply/equipment event that was mentioned in the household component; see Section 4.0 for details). However, charge and payment information was collected for those who said they send in their own prescription claim forms, because it is thought that payments by private third-party payers for those who filed their own claim forms for prescription purchases would not be available from pharmacies. Uninsured persons were treated in the same manner as those whose pharmacies filed their prescription claims at the point of purchase. Persons who said they did not know if they sent in their own prescription claim forms were treated as those who said they did send in their own prescription claim forms.

In consultation with an industry expert, outlier values for the number of times a household reported purchasing or otherwise obtaining a prescription drug in a particular round were determined by comparing the number of days a person was in the round and the number of times the person was reported to have obtained the drug in the round. For these events, a new value for the number of times a drug was purchased or otherwise obtained by a person in a round was imputed. In addition, for rounds in which a household respondent did not know/remember the number of times a certain prescribed medicine was purchased or otherwise obtained, the number of fills or refills was imputed.

For those rounds that spanned two years, drugs mentioned in that round were allocated between the years based on the number of times the respondent said the drug was purchased in the respective year, the year the person started taking the drug, the length of the person's round, the dates of the person's round, and the number of drugs for that person in the round. In addition, a "folded" version of the PC on a drug level, as opposed to an acquisition level, was used for these types of events to assist in determining how many acquisitions of the drug should be allocated between the years.

2.5.2 Methodology for Collecting Pharmacy-Reported Variables

If the household member with the prescription gave written permission to release his or her pharmacy records, pharmacy providers identified by the household were contacted by telephone for the pharmacy follow-back component. Following an initial telephone contact, the signed permission forms and materials explaining the study were faxed (or mailed) to cooperating pharmacy providers. The materials informed the providers of all persons participating in the survey who had prescriptions filled at their place of business and requested a computerized printout of all prescriptions filled for each person. Starting with the 2009 pharmacy data collection, pharmacies could choose to report information in computer assisted telephone interviews (CATI). The CATI instrument was also used to enter information from printouts. For each medication listed, the following information was requested: date filled; national drug code (NDC); medication name; strength of medicine (amount and unit); quantity (package size/amount dispensed); and payments by source. Starting with the 2009 pharmacy data collection, when an NDC was provided, often the drug name and other drug characteristics were obtained from secondary proprietary data sources.

2.6 File Contents

2.6.1 Survey Administration Variables

2.6.1.1 Person Identifier Variables (DUID, PID, DUPERSID)

The dwelling unit ID (DUID) is a five-digit random number assigned after the case was sampled for MEPS. The three-digit person number (PID) uniquely identifies each person within the dwelling unit. The eight-character variable DUPERSID uniquely identifies each person represented on the file and is the combination of the variables DUID and PID. For detailed information on dwelling units and families, please refer to the documentation for the 2009 Full Year Population Characteristics File.

2.6.1.2 Record Identifier Variables (RXRECIDX, LINKIDX, DRUGIDX)

The variable RXRECIDX uniquely identifies each record on the file. This 15-character variable comprises the following components: prescribed medicine drug-round-level identifier generated through the HC (positions 1-12) + enumeration number (positions 13-15). The prescribed medicine drug-round-level ID generated through the HC (positions 1-12) can be used to link a prescribed medicine event to the conditions file and to other event files, via link files, and is provided on this file as the variable LINKIDX. For more details on linking, please refer to Section 6.2 and to the 2009 Appendix File. The prescribed medicine drug-level ID generated through the HC, DRUGIDX, can be used to link drugs across rounds. DRUGIDX was first added to the file for 2009; for 1996 through 2007, the RXNDC linked drugs across rounds.

The following hypothetical example illustrates the structure of these ID variables. This example illustrates a person in Rounds 1 and 2 of the household interview who reported having purchased Amoxicillin three times. The following example shows three acquisition-level records, all having the same DRUGIDX (00002026002), for one person (DUPERSID=00002026) in two rounds. Generally, within a round, one NDC is associated with a prescribed medicine event because matching was performed at a drug level, as opposed to an acquisition level. The LINKIDX (000020260083) remains the same for both records in Round 1 but varies across rounds. The RXRECIDX (000020260083001, 000020260083002, 000020260103001) differs for all three records.

DUPERSID	PURCHRD	RXRECIDX	LINKIDX	DRUGIDX	RXNDC
00002026	1	000020260083001	000020260083	00002026002	00093310905
00002026	1	000020260083002	000020260083	00002026002	00093310905
00002026	2	000020260103001	000020260103	00002026002	00003010955

Starting with the 2008 Prescribed Medicines file, there can be multiple RXNDCs for a LINKIDX. All the acquisitions in the LINKIDX represent the same drug (active ingredients), but the RXNDCs may represent different manufacturers. (For more details on matching, please see Section 4.0).

2.6.1.3 Panel Variable (PANEL)

PANEL is a constructed variable used to specify the panel number for the person. Panel will indicate either Panel 13 or Panel 14 for each person on the file. Panel 13 is the panel that started in 2008, and Panel 14 is the panel that started in 2009.

2.6.1.4 Round Variable (PURCHRD)

The variable PURCHRD indicates the round in which the prescribed medicine was purchased and takes on the value of 1, 2, 3, 4, or 5. Rounds 3, 4, and 5 are associated with MEPS survey data collection from Panel 13. Similarly, Rounds 1, 2, and 3 are associated with data collected from Panel 14.

2.6.2 Characteristics of Prescribed Medicine Events

2.6.2.1 Date When Prescribed Medicine Was First Taken (RXBEGDD-RXBEGYRX)

There are three variables which indicate when a prescribed medicine was first taken (used), as reported by the household respondent. They are the following: RXBEGDD indicates the day on which a person first started taking a medication, RXBEGMM denotes the month in which a person first started taking a medication, and RXBEGYRX reflects the year in which a person first started taking a medicine. These "first taken" questions are only asked the first time a prescription is mentioned by the household respondent. These questions are not asked about refills of the prescription in subsequent rounds. Starting with the 2009 file, values were carried forward from prior rounds for all medications first reported in 2009. As a result, Panel 13 medications first reported in Rounds 1 or 2 in 2008 have RXBEGYRX = -1. Users should also note that the value -14 (not yet used or taken) is not relevant for refills. The variable DRUGIDX (see Section 2.6.1.2) can be used to determine whether a medication was reported in a prior round. For purposes of confidentiality, RXBEGYRX was bottom-coded at 1924, consistent with top-coding of the age variables on the 2009 Full Year Population Characteristics Public Use File (HC-123).

2.6.2.2 Prescribed Medicine Attributes (RXNAME-RXSTRUNT)

For each prescribed medicine included on this file, several data items collected describe in detail the medication obtained or purchased. These data items are the following:

a. Medication name - pharmacy reported (RXNAME)

b. National drug code (RXNDC)

c. Quantity of the prescribed medicine dispensed (RXQUANTY), e.g., number of tablets in the prescription

d. Form of the prescribed medicine (RXFORM), e.g., powder

e. Unit of measurement for form of Rx/prescribed medicine (RXFRMUNT), e.g., oz

f. Strength of the dose of the prescribed medicine (RXSTRENG), e.g., 10

g. Unit of measurement for the strength of the dose of the prescribed medicine (RXSTRUNT), e.g., gm

The 2009 file contains multiple values of RXFORM and RXFRMUNT not found in Prescribed Medicines files in prior years. There was no reconciliation of inconsistencies or duplication between RXFORM and RXFRMUNT. Please refer to Appendices 1, 2, and 3 for definitions for RXFORM, RXFRMUNT, and RXSTRUNT abbreviations, codes and symbols. Please refer to Appendix 4 for therapeutic class code definitions.

The national drug code (NDC) is an 11-digit code. The first 5 digits indicate the manufacturer of the prescribed medicine. The next 4 digits indicate the form and strength of the prescription, and the last 2 digits indicate the package size from which the prescription was dispensed. NDC values were imputed from a proprietary database to certain PC prescriptions because the NDC reported by the pharmacy provider was not valid. These records are identified by RXFLG=3.

For the years 1996-2004, AHRQ's licensing agreement for the proprietary database precluded the release of the imputed NDC values to the public, so for these prescriptions, the household-reported name of the prescription (RXHHNAME) and the original NDC (RXNDC) and prescription name (RXNAME) reported by the pharmacy were provided on the file to allow users to do their own imputation. In addition, for the years 1996-2004, the imputed NDC values for the RXFLG=3 cases could be accessed through the MEPS Data Center. For those events not falling into the RXFLG=3 category, the reserve code (-13) was assigned to the household-reported medication name (RXHHNAME). The household-reported name of the prescription (RXHHNAME) is no longer provided on this file; however, this variable may be accessed through the MEPS Data Center as can the original pharmacy-reported name and NDC. For information on accessing data through the MEPS Data Center, see the Data Center section of the MEPS Web site at: www.meps.ahrq.gov/data_stats/onsite_datacenter.jsp.

Imputed data on this event file, unlike other MEPS event files, may still have missing data. This is because imputed data on this file are imputed from the PC or from a proprietary database. These sources did not always include complete information for each variable but did include an NDC, which would typically enable an analyst to obtain any missing data items. For example, although there are a substantial number of missing values for the strength of the prescription that were not supplied by the pharmacist, these missing values were not imputed because this information is embedded in the NDC.

2.6.2.3 Type of Pharmacy (PHARTP1-PHARTP8)

Household respondents were asked to list the type of pharmacy from which household members purchased their medications. A respondent could list multiple pharmacies associated with each member's prescriptions in a given round or over the course of all rounds combined covering the survey year. All household-reported pharmacies are provided on this file, but there is no link in the survey or in the data file enabling users to know the type of pharmacy from which a specific prescription was obtained if multiple pharmacies are listed. The variables PHARTP1 through PHARTP8 identify the types of pharmacy providers from which the person's prescribed

medicines were purchased. The possible types of pharmacies include the following: (1) mail-order, (2) another store, (3) HMO/clinic/hospital, (4) drug store, and (5) on-line. A -1 value for PHARTPn indicates that the household did not report "n^{th}" pharmacy.

2.6.2.4 Analytic Flag Variables (RXFLG-INPCFLG)

There are four flag variables included on this file (RXFLG, PCIMPFLG, CLMOMFLG, and INPCFLG).

RXFLG indicates whether or not there was any imputation performed on this record for the NDC variable, and if imputed, from what source the NDC was imputed. If no imputation was performed, RXFLG = 1. If the imputation source was another PC record, RXFLG = 2. Similarly, if the imputation source was a secondary, proprietary database and not the PC database, RXFLG = 3.

PCIMPFLG indicates the type of match between a household-reported event and a PC-reported event. PCIMPFLG = 1 indicates an exact match for a specific event for a person between the PC and the HC. PCIMPFLG = 2 indicates not an exact match between the PC and HC for a specific person (i.e., a person's household-reported event did not have a matched counterpart in the person's corresponding PC records). PCIMPFLG assists analysts in determining which records have the strongest link to data reported by a pharmacy. It should be noted that whenever there are multiple purchases of a unique prescribed medication in a given round, MEPS did not collect information that would enable designating any single purchase as the "original" purchase at the time the prescription was first filled, and then designating other purchases as "refills." The user needs to keep this in mind when the purchases of a medication are referred to as "refills" in the documentation. Because matching was performed at a drug level as opposed to an acquisition level, the values for PCIMPFLG are either 1 or 2. For more details on general data editing/imputation methodology, please see Section 4.0.

CLMOMFLG indicates if a prescription medicine event went through the Charge Payment (CP) section of the HC. Prescription medicine events that went through the CP section of the HC include: (1) events where the person filed their own prescription claim forms with their insurance company, (2) events for persons for whom the respondent did not know if they filed their own prescription claim forms with their insurance company, and (3) insulin and diabetic supply/equipment events (OMTYPE = 2 or 3) that were mentioned in the Other Medical Expenses section of the HC. For these types of events, information on payment sources was retained to the extent that these data were reported by the household respondent in the CP section of the HC.

INPCFLG denotes whether or not a household member had at least one prescription drug purchase in the PC (0 = no, 1 = yes).

2.6.2.5 Free Sample Variable (SAMPLE)

SAMPLE indicates if a respondent reported the person received a free sample of the prescription medicine in the round (0 = no, 1 = yes). Respondents were asked in each round whether or not the person received any free samples of a reported prescribed medicine during the round. However, respondents were not asked to report the number of free samples a person received,

nor was it made clear that free samples were included in the count of the number of times that the respondent reported a person purchasing or otherwise obtaining the prescribed medicine during the round. It is important for analysts to note that SAMPLE is *not* a count variable of free samples; SAMPLE = 1 indicates that a person was reported getting a free sample of the prescribed medicine during the round. This flag variable simply allows individual analysts to determine for themselves how free samples should be handled in their analysis.

2.6.2.6 Condition Codes (RXICD1X-RXICD3X) and Clinical Classification Codes (RXCCC1X-RXCCC3X)

Information on household-reported medical conditions associated with each prescribed medicine event are provided on this file. There are up to three condition and clinical classification codes listed for each prescribed medicine event (99.7 percent of prescribed medicine events have 0-3 condition records linked). To obtain complete information associated with an event, the analyst must link to the 2009 Medical Conditions File. Details on how to link to the MEPS 2009 Medical Conditions File are provided in the 2009 Appendix File. The user should note that, for confidentiality restrictions, provider-reported condition information (for non-prescription medicines events) is not publicly available. Provider-reported condition data for non-prescription medicines events can be accessed only through the MEPS Data Center.

The medical conditions reported by the HC respondent were recorded by the interviewer as verbatim text, which were then coded to fully-specified 2009 ICD-9-CM codes, including medical condition, V-codes, and a small number of E-codes, by professional coders. Although codes were verified and error rates did not exceed 2.5 percent for any coder, analysts should not presume this level of precision in the data; the ability of household respondents to report condition data that can be coded accurately should not be assumed. For detailed information on conditions, please refer to the documentation on the 2009 Medical Conditions File. For frequencies of conditions by event type, please see the 2009 Appendix File, HC-126I.

The ICD-9-CM condition codes were aggregated into clinically meaningful categories. These categories, included on the file as RXCCC1X-RXCCC3X, were generated using Clinical Classification Software (CCS) (formerly known as Clinical Classifications for Health Care Policy Research (CCHPR)), which aggregates conditions and V-codes into 263 mutually exclusive categories, most of which are clinically homogeneous.

In order to preserve household member confidentiality, nearly all of the condition codes provided on this file have been collapsed from fully-specified codes to 3-digit code categories. The reported ICD-9-CM code values were mapped to the appropriate clinical classification category prior to being collapsed to the 3-digit categories. Because of this collapsing, it is possible for there to be duplicate 3-digit ICD-9-CM condition codes linked to a single prescribed medicine event when different fully-specified codes are collapsed into the same code. This would result in two or more of the condition code variables on this file being set to the same value on a single record. For more information on ICD-9-CM codes, see the HC-128 documentation.

The condition codes (and clinical classification codes) linked to each prescribed medicine event are sequenced in the order in which the conditions were reported by the household respondent, which was in chronological order of reporting and not in order of importance or severity.

Analysts who use the 2009 Medical Conditions file in conjunction with this prescribed medicines event file should note that the conditions on this file are sorted differently than they appear on the Medical Conditions file.

2.6.3 Multum Lexicon Variables from Cerner Multum, Inc.

Each record on this file contains the following Multum Lexicon variables:

PREGCAT	pregnancy category variable - identifies the FDA pregnancy category to which a particular drug has been assigned
TCn	therapeutic classification variable - assigns a drug to one or more therapeutic/chemical categories; can have up to three categories per drug
TCnSn	therapeutic sub-classification variable - assigns one or more sub-categories to a more general therapeutic class category given to a drug
TCnSn_n	therapeutic sub sub-classification variable - assigns one or more sub sub-categories to a more general therapeutic class category and sub-category given to a drug

Users should carefully review the therapeutic classification variables when conducting trend analyses or pooling years or panels, because Multum's therapeutic classification has changed across the years of the MEPS. The Multum variables on each year of the MEPS Prescription Medication files reflect the most recent classification available in the year the data were released. The Multum classification has changed over time by the addition of new classes and subclasses, and by changes in the hierarchy of classes. Three examples follow. 1) In the 1996-2004 Prescription Medication files, antidiabetic drugs are a subclass of the hormone class, but in the 2005-2009 files, the antidiabetic subclass is part of a newly added class of metabolic drugs. 2) In the 1996-2004 files, antihyperlipidemic agents are categorized as a class with a number of subclasses including HMG-COA reductase inhibitors (statins). In the 2005-2009 files, antihyperlipidemic drugs are a subclass, and HMG-COA reductase inhibitors are a sub-subclass, in the metabolic class. 3) In the 1996-2004 files, the psychotherapeutic class comprises drugs from four subclasses: antidepressants, antipsychotics, anxiolytics/sedatives/hypnotics and CNS stimulants. In the 2005-2009 files, the psychotherapeutic class is comprised only of antidepressants and antipsychotics. Changes in the therapeutic classification may occur between any years. For additional information on these and other Multum Lexicon variables, as well as the Multum Lexicon database itself, please refer to www.multum.com/Lexicon.htm.

Researchers using the Multum Lexicon variables are requested to cite Multum Lexicon as the data source.

2.6.4 Expenditure Variables (RXSF09X-RXXP09X)

2.6.4.1 Definition of Expenditures

Expenditures on this file refer to what is paid for health care services. More specifically, expenditures in MEPS are defined as the sum of payments for care received, including out-of-

pocket payments and payments made by private insurance, Medicaid, Medicare, and other sources. The definition of expenditures used in MEPS differs slightly from its predecessors, the 1987 NMES and 1977 NMCES surveys, where "charges" rather than "sum of payments" were used to measure expenditures. This change was adopted because charges became a less appropriate proxy for medical expenditures during the 1990s because of the increasingly common practice of discounting charges. Although measuring expenditures as the sum of payments incorporates discounts in the MEPS expenditure estimates, the estimates do not incorporate any manufacturer or other rebates associated with Medicaid or other purchases. Another general change from the two prior surveys is that charges associated with uncollected liability, bad debt, and charitable care (unless provided by a public clinic or hospital) are not counted as expenditures, because there are no payments associated with those classifications. For details on expenditure definitions, please reference the following, "Informing American Health Care Policy" (Monheit, Wilson, Arnett, 1999).

If examining trends in MEPS expenditures or performing longitudinal analysis on MEPS expenditures please refer to Section C, sub-section 6.3 for more information.

2.6.4.2 Sources of Payment

In addition to total expenditures, variables are provided which itemize expenditures according to major source of payment categories. These categories are:

1. Out-of-pocket by user (self) or family,
2. Medicare,
3. Medicaid,
4. Private Insurance,
5. Veterans Administration/CHAMPVA, excluding TRICARE
6. TRICARE,
7. Other Federal sources – includes Indian Health Service, Military Treatment Facilities, and other care by the Federal government,
8. Other State and Local Source – includes community and neighborhood clinics, State and local health departments, and State programs other than Medicaid,
9. Workers' Compensation, and
10. Other Unclassified Sources – includes sources such as automobile, homeowner's, and liability insurance, and other miscellaneous or unknown sources.

Two additional source of payment variables were created to classify payments for events with apparent inconsistencies between insurance coverage and sources of payment based on data collected in the survey. These variables include:

11. Other Private – any type of private insurance payments reported for persons not reported to have any private health insurance coverage during the year as defined in MEPS, and

12. Other Public – Medicare/Medicaid payments reported for persons who were not reported to be enrolled in the Medicare/Medicaid program at any time during the year.

Though relatively small in magnitude, data users/analysts should exercise caution when interpreting the expenditures associated with these two additional sources of payment. While these payments stem from apparent inconsistent responses to health insurance and source of payment questions in the survey, some of these inconsistencies may have logical explanations. For example, private insurance coverage in MEPS is defined as having a major medical plan covering hospital and physician services. If a MEPS sampled person did not have such coverage but had a single service type insurance plan (e.g., dental insurance) that paid for a particular episode of care, those payments may be classified as "other private." Some of the "other public" payments may stem from confusion between Medicaid and other state and local programs or may be from persons who were not enrolled in Medicaid, but were presumed eligible by a provider who ultimately received payments from the public payer.

3.0 Sample Weight (PERWT09F)

3.1 Overview

There is a single full year person-level weight (PERWT09F) assigned to each record for each key, in-scope person who responded to MEPS for the full period of time that he or she was in-scope during 2009. A key person either was a member of an NHIS household at the time of the NHIS interview, or became a member of a family associated with such a household after being out-of-scope at the time of the NHIS (the latter circumstance includes newborns as well as persons returning from military service, an institution, or living outside the United States). A person is in-scope whenever he or she is a member of the civilian noninstitutionalized portion of the U.S. population.

3.2 Details on Person Weight Construction

The person-level weight PERWT09F was developed in several stages. Person-level weights for Panel 13 and Panel 14 were created separately. The weighting process for each panel included an adjustment for nonresponse over time and calibration to independent population figures. The calibration was initially accomplished separately for each panel by raking the corresponding sample weights to Current Population Survey (CPS) population estimates based on five variables. The five variables used in the establishment of the initial person-level control figures were: census region (Northeast, Midwest, South, West); MSA status (MSA, non-MSA); race/ethnicity (Hispanic, non-Hispanic with black as sole reported race, non-Hispanic with Asian

as sole reported race, and other); sex; and age. A 2009 composite weight was then formed by multiplying each weight from Panel 13 by the factor .52 and each weight from Panel 14 by the factor .48. The choice of factors reflected the relative sample sizes of the two panels, helping to limit the variance of estimates obtained from pooling the two samples. The composite weight was again raked to the same set of CPS-based control totals. When poverty status information derived from income variables became available, a final raking was undertaken on the previously established weight variable. Control totals were established using poverty status (five categories: below poverty, from 100 to 125 percent of poverty, from 125 to 200 percent of poverty, from 200 to 400 percent of poverty, at least 400 percent of poverty) as well as the original five variables used in the previous calibrations.

3.2.1 MEPS Panel 13 Weight

The person-level weight for MEPS Panel 13 was developed using the 2008 full year weight for an individual as a "base" weight for survey participants present in 2008. For key, in-scope members who joined an RU some time in 2009 after being out-of-scope in 2008, the 2008 family weight associated with the family the person joined served as a "base" weight. The weighting process included an adjustment for nonresponse over Rounds 4 and 5 as well as raking to population control figures for December 2009. These control figures were derived by scaling back the population totals obtained from the March 2010 CPS to correspond to a national estimate for the civilian noninstitutionalized population provided by the Census Bureau for December 2009. Variables used in the establishment of person-level control figures included: census region (Northeast, Midwest, South, West); MSA status (MSA, non-MSA); race/ethnicity (Hispanic, black but non-Hispanic, Asian but non-Hispanic, and other); sex; and age. Key, responding persons not in-scope on December 31, 2009 but in-scope earlier in the year retained, as their final Panel 13 weight, the weight after the nonresponse adjustment.

3.2.2 MEPS Panel 14 Weight

The person-level weight for MEPS Panel 14 was developed using the MEPS Round 1 person-level weight as a "base" weight. For key, in-scope members who joined an RU after Round 1, the Round 1 family weight served as a "base" weight. The weighting process included an adjustment for nonresponse over Round 2 and the 2009 portion of Round 3 as well as raking to the same population control figures for December 2009 used for the MEPS Panel 13 weights. The same five variables employed for Panel 13 raking (census region, MSA status, race/ethnicity, sex, and age) were used for Panel 14 raking. Similarly, for Panel 14, key, responding persons not in-scope on December 31, 2009 but in-scope earlier in the year retained, as their final Panel 14 weight, the weight after the nonresponse adjustment.

Note that the MEPS Round 1 weights incorporated the following components: the original household probability of selection for the NHIS; ratio-adjustment to NHIS-based national population estimates at the household (occupied dwelling unit) level; adjustment for nonresponse at the dwelling unit level for Round 1; and poststratification to figures at the family and person level obtained from the March CPS data base of the corresponding year (i.e., 2008 for Panel 13 and 2009 for Panel 14).

3.2.3 The Final Weight for 2009

The composite weights of two groups of persons who were out-of-scope on December 31, 2009 were poststratified. Specifically, the weights of those who were in-scope some time during the year, out-of-scope on December 31, and entered a nursing home during the year were poststratified to a corresponding control total obtained from the 1996 MEPS Nursing Home Component. Those who died while in-scope during 2009 were poststratified to corresponding estimates derived using data obtained from the Medicare Current Beneficiary Survey (MCBS) and Vital Statistics information provided by the National Center for Health Statistics (NCHS). Separate decedent control totals were developed for the "65 and older" and "under 65" civilian noninstitutionalized populations.

Overall, the weighted population estimate for the civilian noninstitutionalized population for December 31, 2009 is 302,964,200 (PERWT09F>0 and INSC1231=1). The sum of the person-level weights across all persons assigned a positive person-level weight is 306,660,588.

3.3 Coverage

The target population for MEPS in this file is the 2009 U.S. civilian noninstitutionalized population. However, the MEPS sampled households are a subsample of the NHIS households interviewed in 2007 (Panel 13) and 2008 (Panel 14). New households created after the NHIS interviews for the respective Panels and consisting exclusively of persons who entered the target population after 2007 (Panel 13) or after 2008 (Panel 14) are not covered by MEPS. Neither are previously out-of-scope persons who join an existing household but are unrelated to the current household residents. Persons not covered by a given MEPS panel thus include some members of the following groups: immigrants; persons leaving the military; U.S. citizens returning from residence in another country; and persons leaving institutions. The set of uncovered persons constitutes only a small segment of the MEPS target population.

3.4 Using MEPS Data for Trend Analysis

MEPS began in 1996, and the utility of the survey for analyzing health care trends expands with each additional year of data. However, it is important to consider a variety of factors when examining trends over time using MEPS. Statistical significance tests should be conducted to assess the likelihood that observed trends may be attributable to sampling variation. The length of time being analyzed should also be considered. In particular, large shifts in survey estimates over short periods of time (e.g. from one year to the next) that are statistically significant should be interpreted with caution, unless they are attributable to known factors such as changes in public policy, economic conditions, or MEPS survey methodology.

Specifically, beginning with the 2007 data, the rules used to identify outlier prices for prescription medications became much less stringent than in prior years. Starting with the 2007 Prescribed Medicines file, there is less editing of prices and quantities reported by pharmacies, more variation in prices for generics, lower mean prices for generics, higher mean prices for brand name drugs, greater differences in prices between generic and brand name drugs, and a somewhat lower proportion of spending on drugs is by families, as opposed to third-party payers. Starting with the 2008 Prescribed Medicines file, improvements in the data editing changed the

distribution of payments by source: (1) more spending on Medicare beneficiaries is by private insurance, rather than Medicare, and (2) less out-of-pocket payments and more Medicaid payments among Medicaid enrollees. Starting with the 2009 data, additional improvements increased public program amounts and reduced out-of-pocket payments and, for Medicare beneficiaries with both Part D and Medicaid, decreased Medicare payments and increased Medicaid and other state and local government payments. Therefore, users should be cautious in the types of comparisons they make about prescription drug spending before and after 2007, 2008, and 2009. In addition, some therapeutic class codes have changed over time.

Looking at changes over longer periods of time can provide a more complete picture of underlying trends. Analysts may wish to consider using techniques to smooth or stabilize analyses of trends using MEPS data such as comparing pooled time periods (e.g. 1996-97 versus 2004-05), working with moving averages, or using modeling techniques with several consecutive years of MEPS data to test the fit of specified patterns over time. Finally, researchers should be aware of the impact of multiple comparisons on Type I error. Without making appropriate allowance for multiple comparisons, undertaking numerous statistical significance tests of trends increases the likelihood of concluding that a change has taken place when one has not.

4.0 General Data Editing and Imputation Methodology

The general approach to preparing the household prescription data for this file was to utilize the PC prescription data to impute information collected from pharmacy providers to the household drug mentions. For events that went through the Charge Payment (CP) section of the HC (events where the person filed their own prescription claim forms with their insurance company, events for persons for whom the respondent did not know if they filed their own prescription claim forms with their insurance company, and insulin and diabetic supply/equipment events (OMTYPE=2 or 3) that were mentioned in the Other Medical Expenses section of the HC), information on payment sources was retained to the extent that these data were reported by the household respondent in the CP section of the HC. A matching program was adopted to link PC drugs and the corresponding drug information to household drug mentions. To improve the quality of these matches, all drugs on the household and pharmacy files were coded using a proprietary database on the basis of the medication names provided by the household respondent and pharmacy, and, when available, the NDC provided in the pharmacy follow-back component. The matching process was done at a drug (active ingredient) level, as opposed to an acquisition level. Considerable 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 pharmacy file.

Drug price-per-unit outliers were analyzed on the pharmacy file by first identifying the average wholesale unit price (AWUP) of the drug by linkage through the NDC to a secondary data file. In general, prescription drug unit prices were deemed to be outliers by comparing unit prices reported in the pharmacy database to the AWUP reported in the secondary data file and were edited, as necessary.

Beginning with the 2007 data, the rules used to identify outlier prices for prescription medications in the PC changed. New outlier thresholds were established based on the distribution of the ratio of retail unit prices relative to the AWUP in the 2006 MarketScan Outpatient Pharmaceutical Claims database. The new thresholds vary by patent status, whereas in prior

years they did not. These changes improve data quality in three ways: (1) the distribution of prices in the MEPS better benchmarks to MarketScan, overall and by patent status (Zodet et al. 2010), (2) fewer pharmacy-reported payments and quantities (for example, number of pills) are edited, and (3) imputed prices reflect prices paid, rather than AWUPs. As a result, compared with earlier years of the MEPS, starting with 2007 there is more variation in prices for generics, lower mean prices for generics, higher mean prices for brand name drugs, greater differences in prices between generic and brand name drugs, and a somewhat lower proportion of spending on drugs by families, as opposed to third-party payers. Beginning with the 2008 data, pharmacy reports of free antibiotics were not edited as if they were outliers.

Beginning with the 2009 data, three changes in editing sources of payment data were made to improve data quality, based on a validation study (Hill et al., 2011). Two changes were made in editing fills for which pharmacies reported partial payment data. First, if the third party amount was missing and the third party payer was a public payer, then pharmacy reports of zero out-of-pocket amounts were preserved rather than imputed. Second, somewhat tighter outlier thresholds were implemented for the fills with partial payment data, and somewhat looser outlier thresholds were implemented for fills with complete payment data. Another change affected Medicare beneficiaries with both Part D and Medicaid coverage--reported Medicaid and other state and local program payments were no longer edited to be Medicare payments.

Drug matches between household drug mentions and pharmacy drug events for a person in the PC were based on drug code, medication name, and the round in which the drug was reported. The matching of household drug mentions to pharmacy drugs was performed so that the most detailed and accurate information for each prescribed medicine event was obtained. Beginning with the 2008 Prescribed Medicines file, the criteria for matching were changed to allow multiple NDCs for the same drug reported by pharmacies (for example, different manufacturers) to match to one drug reported by the household. Exact dates of purchase were only available from the follow-back component. The matching program assigned scores to potential matches. Numeric variables required exact matches to receive a high score, while partial scores could be assigned to matches between character variables, such as prescription name, depending on the degree of similarity in the spelling and sound of the medication names. Household drug mentions that were deemed exact matches to PC drugs for the same person in the same round required sufficiently high scores to reflect a high quality match. Initially, exact matches were used only once and were taken out of the donor pool from that point on (i.e., these matches were made without replacement). Beginning with the 2008 Prescribed Medicines file, however, for remaining persons with pharmacy data from any round and unmatched household drugs, additional matches are made with replacement across rounds. Any refill of a household drug mention that had been matched to a pharmacy drug event was also matched to the same pharmacy drug event. All remaining unmatched household drug mentions for persons either in or out of the PC were statistically matched to the entire pharmacy donor base with replacement by medication name, drug code, type of third party coverage, health conditions, age, sex, and other characteristics of the individual. Potential PC donor records were omitted from these matches whenever a NDC was imputed to the PC record and was not an exact match on a generic product code applied to all records in the HC and PC. Some matches have inconsistencies between the PC donor’s potential sources of payment and those of the HC recipient, and these were resolved. Beginning with the 2008 data, the method used to resolve inconsistencies in potential payers was changed to better reflect the distribution of sources of payment among the acquisitions with

consistent sources of payment. This change (1) reduced Medicare payments and increased private payments among Medicare beneficiaries, and (2) reduced out-of-pocket payments and increased Medicaid payments among Medicaid enrollees. In addition, Medicare, Medicaid, and private drug expenditures better benchmark totals in the National Health Expenditure Accounts.

For more information on the MEPS Prescribed Medicines editing and imputation procedures, please see J. Moeller, 2001.

4.1 Rounding

Expenditure variables on the 2009 Prescribed Medicines file have been rounded to the nearest penny. Person-level expenditure variables released on the 2009 Full Year Consolidated Data File were rounded to the nearest dollar. It should be noted that using the 2009 MEPS event files to create person-level totals will yield slightly different totals than those found on the 2009 Full Year Consolidated Data File. These differences are due to rounding only. Moreover, in some instances, the number of persons having expenditures on the 2009 event files for a particular source of payment may differ from the number of persons with expenditures on the 2009 Full Year Consolidated Data File for that source of payment. This difference is also an artifact of rounding only. Please see the 2009 Appendix File, HC-126I, for details on such rounding differences.

4.2 Edited/Imputed Expenditure Variables (RXSF09X-RXXP09X)

There are 13 expenditure variables included on this event file. All of these expenditures have gone through an editing and imputation process and have been rounded to the second decimal place. There is a sum of payments variable (RXXP09X) which, for each prescribed medicine event, sums all the expenditures from the various sources of payment. The 12 sources of payment expenditure variables for each prescribed medicine event are the following: amount paid by self or family (RXSF09X), amount paid by Medicare (RXMR09X), amount paid by Medicaid (RXMD09X), amount paid by private insurance (RXPV09X), amount paid by the Veterans Administration/CHAMPVA (RXVA09X), amount paid by TRICARE (RXTR09X), amount paid by other federal sources (RXOF09X), amount paid by state and local (non-federal) government sources (RXSL09X), amount paid by Worker's Compensation (RXWC09X), and amount paid by some other source of insurance (RXOT09X). As mentioned previously, there are two additional expenditure variables called RXOR09X and RXOU09X (other private and other public, respectively). These two expenditure variables were created to maintain consistency between what the household respondent reported as a person's private and public insurance status for hospitalization and physician coverage and third party prescription payments from other private and public sources (such as a separate private prescription policy or prescription coverage from the Veterans Administration, the Indian Health Service, or a State assistance program other than Medicaid). Users should exercise caution when interpreting the expenditures associated with these two additional sources of payment. While these payments stem from apparent inconsistent responses to health insurance and source of payment questions in the survey, some of these inconsistencies may have logical explanations. Please see Section 2.7.4 for details on these and all other source of payment variables.

5.0 Strategies for Estimation

5.1 Developing Event-Level Estimates

The data in this file can be used to develop national 2009 event-level estimates for the U.S. civilian noninstitutionalized population on prescribed medicine purchases (events) as well as expenditures, and sources of payment for these purchases. Estimates of total number of purchases are the sum of the weight variable (PERWT09F) across relevant event records while estimates of other variables must be weighted by PERWT09F to be nationally representative. The tables below contain event-level estimates for selected variables.

Selected Event (Purchase) Level Estimates

All Prescribed Medicine Purchases

Estimate of Interest	Variable Name	Estimate (SE)
Number of purchases (in millions)	PERWT09F	3185.7 (86.56)
Mean total payments per purchase	RXXP09X	$81 (1.5)
Mean out-of-pocket payment per purchase	RXSF09X	$18 (0.4)
Mean proportion of expenditures paid by private insurance per purchase	RXPV09X /RXXP09X	0.211 (0.0046)

Example by Drug Type: Statins (TC1S1_1 = 173 or TC1S1_2 = 173 or TC1S2_1 = 173 or TC1S3_1 = 173 or TC2S1_1 = 173 or TC2S1_2 = 173)

Estimate of Interest	Variable Name	Estimate (SE)
Number of purchases (in millions)	PERWT09F	210.4 (7.20)
Mean total payments per purchase	RXXP09X	$81 (1.9)
Mean annual total payments per person	RXXP09X (aggregated across purchases within person)	$474 (12.0)

Example by Associated Condition: Hypertension (RXICD1X = ”401” or RXICD2X = ”401” or RXICD3X = ”401”)

Estimate of Interest	Variable Name	Estimate (SE)
Number of purchases (in millions)	PERWT09F	517.6 (15.71)
Mean total payments per	RXXP09X	$41 (1.1)

Estimate of Interest	Variable Name	Estimate (SE)
purchase		
Mean annual total payments per person	RXXP09X (aggregated across purchases within person)	$398 (11.4)

5.2 Person-Based Estimates for Prescribed Medicine Purchases

To enhance analyses of prescribed medicine purchases, analysts may link information about prescribed medicine purchases by sample persons in this file to the annual full year consolidated file (which has data for all MEPS sample persons), or conversely, link person-level information from the full year consolidated file to this event-level file (see Section 6 below for more details). Both this file and the Full Year Consolidated File may be used to derive estimates for persons with prescribed medicine purchases and annual estimates of total expenditures for these purchases; however, if the estimate relates to the entire population, this file cannot be used to calculate the denominator, as only those persons with at least one prescribed medicine purchase are represented on this data file. Therefore, the full year consolidated file must be used for person-level analyses that include both persons with and without prescribed medicine events.

5.3 Variables with Missing Values

It is essential that the analyst examine all variables for the presence of negative values used to represent missing values. For continuous or discrete variables, where means or totals may be taken, it may be necessary to set negative values to values appropriate to the analytic needs. That is, the analyst should either impute a value or set the value to one that will be interpreted as missing by the computing language used. For categorical and dichotomous variables, the analyst may want to consider whether to recode or impute a value for cases with negative values or whether to exclude or include such cases in the numerator and/or denominator when calculating proportions.

Methodologies used for the editing/imputation of expenditure variables (e.g., total expenditures and sources of payment) are described in Section 4.2.

5.4 Variance Estimation (VARSTR, VARPSU)

MEPS has a complex sample design. To obtain estimates of variability (such as the standard error of sample estimates or corresponding confidence intervals) for MEPS estimates, analysts need to take into account the complex sample design of MEPS for both person-level and family-level analyses. Several methodologies have been developed for estimating standard errors for surveys with a complex sample design, including the Taylor-series linearization method, balanced repeated replication, and jackknife replication. Various software packages provide analysts with the capability of implementing these methodologies. Replicate weights have not been developed for the MEPS data. Instead, the variables needed to calculate appropriate standard errors based on the Taylor-series linearization method are included on this file as well as all other MEPS public use files. Software packages that permit the use of the Taylor-series linearization method include SUDAAN, Stata, SAS (version 8.2 and higher), and SPSS (version

12.0 and higher). For complete information on the capabilities of each package, analysts should refer to the corresponding software user documentation.

Using the Taylor-series linearization method, variance estimation strata and the variance estimation PSUs within these strata must be specified. The variance strata variable is named VARSTR, while the variance PSU variable is named VARPSU. Specifying a "with replacement" design in a computer software package, such as SUDAAN, provides standard errors appropriate for assessing the variability of MEPS survey estimates. It should be noted that the number of degrees of freedom associated with estimates of variability indicated by such a package may not appropriately reflect the actual number available. For MEPS sample estimates for characteristics generally distributed throughout the country (and thus the sample PSUs), one can expect at least 100 degrees of freedom for the 2009 full year data associated with the corresponding estimates of variance and usually substantially more.

Prior to 2002, MEPS variance strata and PSUs were developed independently from year to year, and the last two characters of the strata and PSU variable names denoted the year. However, beginning with the 2002 Point-in-Time PUF, the variance strata and PSUs were developed to be compatible with MEPS data associated with the NHIS sample design used through 2006. Such data can be pooled and the variance strata and PSU variables provided can be used without modification for variance estimation purposes for estimates covering multiple years of data.

As a result of the change in the NHIS sample design in 2006, a new set of variance strata and PSUs have been established for variance estimation purposes for use with MEPS Panel 12 and subsequent MEPS panels. There were 165 variance strata associated with both MEPS Panel 13 and Panel 14, providing a substantial number of degrees of freedom for subgroups as well as the nation as a whole. Each variance stratum contains either two or three variance estimation PSUs.

6.0 Merging/Linking MEPS Data Files

Data from this file can be used alone or in conjunction with other files for different analytic purposes. This section summarizes various scenarios for merging/linking MEPS event files. Each MEPS panel can also be linked back to the previous year's National Health Interview Survey public use data files. For information on obtaining MEPS/NHIS link files please see www.meps.ahrq.gov/data_stats/more_info_download_data_files.jsp.

6.1 Linking to the Person-Level File

Merging characteristics of interest from the person-level file (e.g., MEPS 2009 Full Year Consolidated File) expands the scope of potential estimates. For example, to estimate the total number of prescribed medicine purchases of persons with specific demographic characteristics (such as age, race, sex, and education), population characteristics from a person-level file need to be merged onto the prescribed medicines file. This procedure is illustrated below. The MEPS 2009 Appendix File, HC-126I, provides additional detail on how to merge MEPS data files.

1. Create data set PERSX by sorting the 2009 Full Year Consolidated File by the person identifier, DUPERSID. Keep only variables to be merged onto the prescribed medicines file and DUPERSID.

2. Create data set PMEDS by sorting the 2009 Prescribed Medicines File by person identifier, DUPERSID.

3. Create final data set NEWPMEDS by merging these two files by DUPERSID, keeping only records on the prescribed medicines file.

The following is an example of SAS code, which completes these steps:

```
PROC SORT DATA=IN.HCXXX (KEEP=DUPERSID AGE31X AGE42X AGE53X
SEX RACEX EDUCYR)
OUT=PERSX;
   BY DUPERSID;
RUN;

PROC SORT DATA=IN.HCXXXA
OUT=PMEDS;
   BY DUPERSID;
RUN;

DATA NEWPMEDS;
MERGE PMEDS (IN=A) PERSX (IN=B);
   BY DUPERSID;
      IF A;
RUN;
```

6.2 Linking to the Medical Conditions File

The CLNK provides a link from MEPS event files to the 2009 Medical Conditions File. When using the CLNK, data users/analysts should keep in mind that (1) conditions are self-reported, (2) there may be multiple conditions associated with a prescribed medicine purchase, and (3) a condition may link to more than one prescribed medicine purchase or any other type of purchase. Users should also note that not all prescribed medicine purchases link to the condition file.

6.3 Longitudinal Analysis

For Panels 1 through 8, panel-specific files (called Longitudinal Weight Files) containing estimation variables to facilitate longitudinal analysis are available for downloading in the data section of the MEPS Web site. To create longitudinal files for these panels, it is necessary to link data from two subsequent annual files that contain data for the first and second years of the panel, respectively. Starting with Panel 9, it is not necessary to link files for longitudinal analysis because Longitudinal Data Files have been constructed and are available for downloading on the Web.

References

Cohen, S.B. (1998). Sample Design of the 1996 Medical Expenditure Panel Survey Medical Provider Component. *Journal of Economic and Social Measurement,* 24, 25-53.

Cohen, S.B. (1996). The Redesign of the Medical Expenditure Panel Survey: A Component of the DHHS Survey Integration Plan. *Proceedings of the COPAFS Seminar on Statistical Methodology in the Public Service.*

Cox, B.G. and Cohen, S.B. (1985). Imputation Procedures to Compensate for Missing Responses to Data Items. In D.B. Owen and R.G.Cornell (Eds.), *Methodological Issues for Health Care Surveys* (pp. 214-234). New York, NY: Marcel Dekker.

Ezzati-Rice, T.M., Rohde, F., Greenblatt, J. (2008). *Sample Design of the Medical Expenditure Panel Survey Household Component, 1998–2007* (Methodology Report No. 22). Rockville, MD: Agency for Healthcare Research and Quality.

Hill, S.C., Zuvekas, S.H., and Zodet, M.W. (2011). Implications of the Accuracy of MEPS Prescription Drug Data for Health Services Research. *Inquiry* 48(3). Forthcoming 2011.

Moeller J.F., Stagnitti, M., Horan, E., et al. (2001). *Outpatient Prescription Drugs: Data Collection and Editing in the 1996 Medical Expenditure Panel Survey (HC-010A)* (MEPS Methodology Report No. 12, AHRQ Pub. No. 01-0002). Rockville, MD: Agency for Healthcare Research and Quality.

Monheit, A.C., Wilson, R., and Arnett, III, R.H. (Eds.). (1999) *Informing American Health Care Policy*. San Francisco, CA: Jossey-Bass Inc.

Shah, B.V., Barnwell, B.G., Bieler, G.S., Boyle, K.E., Folsom, R.E., Lavange, L., Wheeless, S.C., and Williams, R. (1996). *Technical Manual: Statistical Methods and Algorithms Used in SUDAAN Release 7.0*. Research Triangle Park, NC: Research Triangle Institute.

Zodet, M.W., Hill, S.C., and Miller, E. Comparison of Retail Drug Prices in the MEPS and MarketScan: Implications for MEPS Editing Rules. Agency for Healthcare Research and Quality Working Paper No. 10001, Februrary 2010.

D. Variable-Source Crosswalk

VARIABLE-SOURCE CROSSWALK

FOR MEPS HC-126A: 2009 Prescribed Medicines Events

Survey Administration Variables

Variable	Description	Source
DUID	Dwelling unit ID	Assigned in sampling
PID	Person number	Assigned in sampling
DUPERSID	Sample person ID (DUID + PID)	Assigned in sampling
RXRECIDX	Record ID – Unique Prescribed Medicine Identifier	Constructed
LINKIDX	Link to condition and other event files	CAPI derived
DRUGIDX	Link to drugs across rounds	CAPI derived
PANEL	Panel indicator	Assigned in sampling
PURCHRD	Round in which the Rx/prescribed medicine was obtained/purchased	CAPI derived

Prescribed Medicines Events Variables

Variable	Description	Source
RXBEGDD	Day person first used medicine	PM11OV2
RXBEGMM	Month person first used medicine	PM11OV1
RXBEGYRX	Year person first used medicine	PM11
RXNAME	Medication name (Imputed)	Imputed
RXNDC	National drug code (Imputed)	Imputed
RXQUANTY	Quantity of Rx/prescribed medicine (Imputed)	Imputed
RXFORM	Form of Rx/prescribed medicine (Imputed)	Imputed
RXFRMUNT	Unit of measurement for form of Rx/prescribed medicine (Imputed)	Imputed
RXSTRENG	Strength of Rx/prescribed medicine dose (Imputed)	Imputed
RXSTRUNT	Unit of measurement for strength of Rx/prescribed medicine dose (Imputed)	Imputed

Variable	Description	Source
PHARTP1-PHARTP8	Type of pharmacy provider – (1st-8th)	PM16
RXFLG	Flag variable indicating imputation source for NDC on pharmacy donor record	Constructed
PCIMPFLG	Flag indicating type of household to pharmacy prescription match	Constructed
CLMOMFLG	Charge/payment, Rx claim filing, and OMTYPE =2 or =3 (insulin and diabetic supply equipment events) status	CP01/Constructed
INPCFLG	Flag indicating if the person has at least one record in the pharmacy component	Constructed
SAMPLE	Flag indicating if a person received a free sample of this drug in the round	CAPI derived
RXICD1X	3 digit ICD-9 condition code	PM09
RXICD2X	3 digit ICD-9 condition code	PM09
RXICD3X	3 digit ICD-9 condition code	PM09
RXCCC1X	Modified clinical classification code	Constructed/Edited
RXCCC2X	Modified clinical classification code	Constructed/Edited
RXCCC3X	Modified clinical classification code	Constructed/Edited
PREGCAT	Multum pregnancy category	Cerner Multum, Inc.
TC1	Multum therapeutic class #1	Cerner Multum, Inc.
TC1S1	Multum therapeutic sub-class #1 for TC1	Cerner Multum, Inc.
TC1S1_1	Multum therapeutic sub-sub-class for TC1S1	Cerner Multum, Inc.
TC1S1_2	Multum therapeutic sub-sub-class for TC1S1	Cerner Multum, Inc.
TC1S2	Multum therapeutic sub-class #2 for TC1	Cerner Multum, Inc.
TC1S2_1	Multum therapeutic sub-sub-class for TC1S2	Cerner Multum, Inc.
TC1S3	Multum therapeutic sub-class #3 for TC1	Cerner Multum, Inc.
TC1S3_1	Multum therapeutic sub-sub-class for TC1S3	Cerner Multum, Inc.
TC2	Multum therapeutic class #2	Cerner Multum, Inc.
TC2S1	Multum therapeutic sub-class #1 for TC2	Cerner Multum, Inc.
TC2S1_1	Multum therapeutic sub-sub-class for TC2S1	Cerner Multum, Inc.
TC2S1_2	Multum therapeutic sub-sub-class for TC2S1	Cerner Multum, Inc.
TC2S2	Multum therapeutic sub-class #2 for TC2	Cerner Multum, Inc.
TC3	Multum therapeutic class #3	Cerner Multum, Inc.
TC3S1	Multum therapeutic sub-class #1 for TC3	Cerner Multum, Inc.

Variable	Description	Source
TC3S1_1	Multum therapeutic sub-sub-class for TC3S1	Cerner Multum, Inc.
RXSF09X	Amount paid, self or family (Imputed)	CP11/Edited/ Imputed
RXMR09X	Amount paid, Medicare (Imputed)	CP12/CP13/Edited/ Imputed
RXMD09X	Amount paid, Medicaid (Imputed)	CP12/CP13/Edited/ Imputed
RXPV09X	Amount paid, private insurance (Imputed)	CP12/CP13/Edited/ Imputed
RXVA09X	Amount paid, Veteran's Administration (Imputed)	CP12/CP13/Edited/ Imputed
RXTR09X	Amount paid, TRICARE (Imputed)	CP12/CP13/Edited/ Imputed
RXOF09X	Amount paid, other Federal (Imputed)	CP12/CP13/Edited/ Imputed
RXSL09X	Amount paid, state and local government (Imputed)	CP12/CP13/Edited/ Imputed
RXWC09X	Amount paid, Worker's Compensation (Imputed)	CP12/CP13/Edited/ Imputed
RXOT09X	Amount paid, other insurance (Imputed)	CP12/CP13/Edited/ Imputed
RXOR09X	Amount paid, other private (Imputed)	Constructed/Imputed
RXOU09X	Amount paid, other public (Imputed)	Constructed/Imputed
RXXP09X	Sum of payments RXSF09X – RXOU09X (Imputed)	CP12/CP13/Edited/ Imputed

Weights

Variable	Description	Source
PERWT09F	Final person-level weight	Constructed
VARSTR	Variance estimation stratum, 2009	Constructed
VARPSU	Variance estimation PSU, 2009	Constructed

Appendix 1
Definitions for RXFORM, Form of Prescribed Medicines

Appendix 1

Definitions for RXFORM, Form of Prescribed Medicines

Dosage Form	Definition
-7	refused
-8	don’t know
-9	not ascertained
ACC	accessory
ADR	acetic acid drop
AE	aerosol
AER	aerosol
AER SPRAY	aerosol spray
AERA	aerosol with adapter
AERO	aerosol
AEROP	aerosol powder
AEROSOL	
AMP	ampule
ARA	aerosol liquid w/adapter (inhaler)
ARO	aerosol solid
AUTO INJ	auto-injection
BACK SUPPORT BELT	
BAG	
BAL	balm
BALM	
BAN	bandage
BANDAGE	
BAR	
BATTERY	
BENCH	
BOT	bottle
BOTTLE	
BOX	
BOXES	
BRACE	
BRIEF	

Dosage Form	Definition
BUT	butterfly
C	capsules, or cream (varies)
C12	12 hour extended-release capsule
C24	24 hour extended-release capsule
CA	capsule
CANE	
CAP	capsule, caplets
CAP DR	delayed-release capsule
CAP ER	extended-release capsule
CAP SA	slow-acting capsule
CAPLET	
CAPLT	caplet
CAPS	capsules
CAPSULE	
CAPSULE SA	slow-acting capsule
CATHETER	
CC	cubic centimeter
CER	capsule, extended-release, tablet, extended-release
CHAMBER	
CHEW	chewable tablet
CHEW TAB	chewable tablet
CHEW TABS	chewable tablets
CHEWABLE	
CHW	chewable tablets
CLEANSER	
COLLAR	
COMBO	
COMPOUND	
CON	condom
CONC	concentrate
CONDOM	
CONTAINER	
COTTON	

Dosage Form	Definition
CP12	capsule, extended-release, 12 hour
CP24	capsule, extended-release, 24 hour
CPSR	slow-release capsule
CR	cream
CRE	cream
CREA	cream
CREAM	
CRM	cream
CRY	crystal
CRYSTAL	
CTB	chewable tablets
CTG	cartridge
CUTTER	
DEV	device
DEVI	device
DEVICE	
DIA	diaper
DIAPER	
DIAPHRAM	
DIS	disk, or dermal infusion system
DISK	
DISKUS	
DOS PAK	dose pack
DR	drop
DRC	delayed-release capsule
DRE	dressing
DRESSING	
DRO	drop
DROP	
DROPS	
DROPS OPTH OTI	ophthalmic/otic drops
DROPS SUSP	drops suspension
DRP	drop
DRPS	drops

Dosage Form	Definition
DSK	disk
DSPK	tablets in a dose pack
DSPT	tablet, dispersible
DT	tablet, disintegrating
EAR DROP	
EAR DROPS	
EAR DRP	ear drop
EAR SUSP	ear suspension
EC TABS	enteric coated tablets
ECC	enteric coated capsules
ECT	enteric coated tablets
ELI	elixir
ELIX	elixir
ELIXER	
ELIXIR	
ELX	elixir
EMERGENCY KIT	
EMO	emollient
EMU	emulsion
EMUL	emulsion
EMULSION	
ENE	enema
ENEM	enema
ENEMA	
ER	
ERC	capsule, extended-release
ERSUS	suspension, extended-release
ERT	tablet, extended-release
ERTA	extended-release-tablets
ERTC	tablet, chewable, extended-release
EST	
EXTN CAP	extended-release capsule
EXTRACT	
EYE DRO	eye drop

Dosage Form	Definition
EYE DROP	
EYE DROPS	
EYE DRP	eye drop
EYE EMU	
EYE OIN	
EYE SO	eye solution
EYEDRO	
FIL	film
FILM	film
FILM ER	film, extended-release
FILMTAB	
FILMTABS	
FLOWMETER	
FOA	foam
FOAM	
GAU	gauze
GAUZE	
GEF	effervescent granules
GEL	
GEL CAP	gel capsule
GELS	gel-forming solution
GER	granule, extended-release
GFS	gel-forming solution
GLOVE	
GRA	granules
GRAN	granules
GRANULES	
GRAR	granules for reconstitution
GRR	grams
GTT	drops
GUM	
HFA	
HOSE	medical hosiery
HU	capsule

Dosage Form	Definition
ICR	control-release insert
IMPLANT	
IN	injectible
INH	inhalant, inhaler
INH AER	inhalant aerosol
INHAL	inhalant
INHAL SOL	inhalant solution
INHALER	
INHL	inhalant
INJ	injectible
INJECTION (S)	
INSERT	
INSULIN	
IUD	intrauterine devise
IV	intravenous
JEL	jelly
JELLY	
KI	
KIT	
L	lotion
LAN	
LANCET	
LANCET (S)	
LI	liquid
LINIMENT	
LIQ	liquid
LIQD	liquid
LIQUID	
LOLLIPOP	
LOT	lotion
LOTION	
LOTN	lotion
LOZ	lozenge
LOZENGE	

Dosage Form	Definition
MASK	
MCG	microgram
METER	
MG	milligram
MIS	miscellaneous
MISC	miscellaneous
MIST	
MONITOR	
MOUTHWASH	
NAS	nasal spray
NASAL	
NASAL INHALER	
NASAL POCKET HL	nasal inhaler, pocket
NASAL SOLN	nasal solution
NASAL SPR	nasal spray
NASAL SPRAY	
NDL	needle
NE	nebulizer
NEB	nebulizer
NEBULIZER	
NEEDLE	
NEEDLES	
NMA	enema
NMO	nanomole, millimicromole
NOSE DROPS	
ODR	ophthalmic drop (ointment)
ODT	oral disintegrating tablet
OIL	
OIN	ointment
OINT	ointment
OINT TOP	topical ointment
OINTA	ointment with applicator
OINTMENT	
ONT	ointment

Dosage Form	Definition
OP	ophthalmic solution
OP DROPS	ophthalmic drops
OP SOL	ophthalmic solution
OPH	ophthalmic
OPH S	ophthalmic solution or suspension
OPH SOL	ophthalmic solution
OPH SOLN	ophthalmic solution
OPHT SOL	ophthalmic solution
OPHTH DROP (S)	ophthalmic drops
OPHTH OINT	ophthalmic ointment
OPHTH SOLN	ophthalmic solution
OPT SLN	ophthalmic solution
OPT SOL	ophthalmic solution
OPTH	ophthalmic solution or suspension or ointment
OPTH S	ophthalmic solution or suspension
OPTH SLN	ophthalmic solution
OPTH SOL	ophthalmic solution
OPTH SUSP	ophthalmic suspension
OPTIC	
ORAL	
ORAL INHL	oral inhalant
ORAL INHALER	
ORAL PWD	oral powder
ORAL RINSE	
ORAL SOL	oral solution
ORAL SUS	oral suspension
ORAL SUSP	oral suspension
OTHER	
OTI	otic solution
OTIC	
OTIC SOL	otic solution
OTIC SOLN	otic solution
OTIC SUS	otic suspension

Dosage Form	Definition
OTIC SUSP	otic suspension
PA	tablet pack, pad or patch (varies)
PAC	pack
PACK	
PAD	
PADS	
PAK	pack
PAS	paste
PASTE	
PAT	patch
PATCH	
PATCHES	
PCH	patch
PDR	powder
PDS	powder for reconstitution
PEDIATRIC DROPS	
PEL	pellets
PEN	
PI1	powder for injection, 1 month
PI3	powder for injection, 3 months
PIH	powder for inhalation
PKG	package
PKT	packet
PLASTER	
PLEDGETS	
PO-SYRUP	syrup by mouth (oral syrup)
POPSICLE	
POUCH	
POW	powder
POWD	powder
POWDER	
POWDER/SUSPENS	powder/suspension
PRO	prophylactic
PST	paste

Dosage Form	Definition
PT24	patch, 24 hour
PULVULE	
PWD	powder
PWD F/SOL	powder for solution
PWDI	powder for injection
PWDIE	powder for injection, extended-release
PWDR	powder for reconstitution
PWDRD	powder for reconstitution, delayed-release
RCTL SUPP	rectal suppository
RECTAL CREAM	
REDITABS	
REF	
RIN	rinse
RING	
RINSE	
ROLL	
S	syrup, suspension, solution (varies)
SA CAPS	slow-acting capsules
SA TAB	slow-acting tablet
SA TABLETS	slow-acting tablets
SA TABS	slow-acting tablets
SAL	salve
SCRUB	
SER	extended-release suspension
SET	
SGL	soft b23gel cap
SHA	shampoo
SHAM	shampoo
SHMP	shampoo
SHOE	
SLT	sublingual tablet
SL TAB	sublingual tablet

Dosage Form	Definition
SO	solution
SOA	soap
SOL	solution
SOLN	solution
SOLUTION	
SOLU	solution
SP	spray
SPG	sponge
SPN	
SPONGE	
SPR	spray
SPRAY	
SRN	syringe
STK	stick
STOCKING	
STP	strip
STR	strip
STRIP	
STRIPS	
STRP	strip
SU	suspension, solution, suppository, powder, or granules for reconstitution (varies)
SUB	sublingual
SUP	suppository
SUPP	suppository
SUPPOSITORIES	
SUPPOSITORY	
SUS	suspension
SUS/LIQ	suspension/liquid
SUSP	suspension
SUSPEN	suspension
SUSPENDED RELEASE CAPLET	
SUSPENSION	

Dosage Form	Definition
SWA	Swab
SWAB	
SWABS	
SYP	syrup
SYR	syrup
SYRG	syringe
SYRINGE	
SYRP	syrup
SYRUP	
T	tablet
T12	12 hour extended-release tablet
T24	24 hour extended-release tablet
TA	tablet
TAB	tablet
TAB CHEW	chewable tablet
TAB DR	delayed-release tablet
TAB EC	enteric coated tablet
TAB SL	Slow-acting tablet
TAB SUBL	sublingual tablet
TABL	tablet
TABLET	
TABLET CUTTER	
TABLET SPLITTER	
TABLETS	
TABS	tablets
TAP	tape
TAPE	
TB	tablet
TB12	tablet, extended-release 12 hour
TB24	tablet, extended-release 24 hour
TBCH	chewable tablet
TBCR	tablet, extended-release
TBDP	tablet, dispersible
TBEC	tablet, delayed-release

Dosage Form	Definition
TBS	tablets
TBSL	sublingual tablet
TBSR	slow-release tablet
TC	tablet, chewable
TCP	tablet, coated particles
TDM	extended-release film
TDR	orally disintegrating tablets
TDS	transdermal system
TEF	effervescent tablet
TER	extended-release tablet
TERF	film, extended-release
TES	test
TEST	
TEST STRIP	
TEST STRIPS	
TIN	tincture
TOP CREAM	topical cream
TOP OINT	topical ointment
TOP SOL	topical solution
TOP SOLN	topical solution
TOPICAL	
TOPICAL CREAM	
TOPICAL OINTMENT	
TOPICAL SOLUTION	
TRO	troche
TTB	time release tablet
TUB	tube
TUBE	
UNDERWEAR	
UNIT DOSE	
UNT	unit
VAGINAL CREAM	
VAPORIZER	
VIA	vial

Dosage Form	Definition
VIAL	
VIAL(S)	
VIL	vial
WAF	wafer
WALKER	
WASH	
WIPES	
Z-PAK	

Appendix 2
Definitions for RXFRMUNT,
Unit of Measure for Form of Prescribed Medicines

Appendix 2

Definitions for RXFRMUNT, Unit of Measure for Form of Prescribed Medicines

Code	Description
-7	refused
-8	don’t know
-9	not ascertained
CAPLT	caplet
CAPS	capsule
CC	cubic centimeter
G	gram
GM	gram
GR	gram
L	liter
MCL	microliter
MG	milligram
ML	milliliter
OZ	ounce
QT	quarter
TAB	tablet

Appendix 3
Definitions for RXSTRUNT,
Unit of Measure for Strength of Prescribed Medicines

Appendix 3

Definitions for RXSTRUNT, Unit of Measure for Strength of Prescribed Medicines

Abbreviations, Codes and Symbols	Definition
-7	refused
-8	don't know
-9	not ascertained
%	percent
09	compound
91	other specify
ACTIVATION	activation
ACTUATION	actuation
CC	cubic centimeters
CM2	square centimeter
DOSE	dose
DRP	drop
EL	ELISA (enzyme linked immunosorbent assay)
G	gram
GM	gram
GR	grain
HR or HRS	hour, hours
INH	inhalation
IU	international unit
MCG	microgram
MEQ	microequivalent
MG	milligram
ML	milliliter
MMU	millimass units
OZ	ounce
PACKET	packet
PFU	plaque forming units
SQ CM	square centimeter
U or UNIT	units

Appendix 4
Definitions of Therapeutic Class Code

Appendix 4

Definitions of Therapeutic Class Code

Therapeutic Class Code	Definition
-9	not ascertained
-1	inapplicable
1	anti-infectives
2	amebicides
3	anthelmintics
4	antifungals
5	antimalarial agents
6	antituberculosis agents
7	antiviral agents
8	carbapenems
9	cephalosporins
10	leprostatics
11	macrolide derivatives
12	miscellaneous antibiotics
13	penicillins
14	quinolones
15	sulfonamides
16	tetracyclines
17	urinary anti-infectives
18	aminoglycosides
19	antihyperlipidemic agents
20	antineoplastics
21	alkylating agents
22	antineoplastic antibiotics
23	antimetabolites
24	antineoplastic hormones
25	miscellaneous antineoplastics
26	mitotic inhibitors
27	radiopharmaceuticals
28	biologicals
30	antitoxins and antivenins
31	bacterial vaccines

Therapeutic Class Code	Definition
32	colony stimulating factors
33	immune globulins
34	in vivo diagnostic biologicals
36	recombinant human erythropoietins
37	toxoids
38	viral vaccines
39	miscellaneous biologicals
40	cardiovascular agents
41	agents for hypertensive emergencies
42	angiotensin converting enzyme inhibitors
43	antiadrenergic agents, peripherally acting
44	antiadrenergic agents, centrally acting
45	antianginal agents
46	antiarrhythmic agents
47	beta-adrenergic blocking agents
48	calcium channel blocking agents
49	diuretics
50	inotropic agents
51	miscellaneous cardiovascular agents
52	peripheral vasodilators
53	vasodilators
54	vasopressors
55	antihypertensive combinations
56	angiotensin II inhibitors
57	central nervous system agents
58	analgesics
59	miscellaneous analgesics
60	narcotic analgesics
61	nonsteroidal anti-inflammatory agents
62	salicylates
63	analgesic combinations
64	anticonvulsants
65	antiemetic/antivertigo agents
66	antiparkinson agents
67	anxiolytics, sedatives, and hypnotics

Therapeutic Class Code	Definition
68	barbiturates
69	benzodiazepines
70	miscellaneous anxiolytics, sedatives and hypnotics
71	CNS stimulants
72	general anesthetics
73	muscle relaxants
74	neuromuscular blocking agents
76	miscellaneous antidepressants
77	miscellaneous antipsychotic agents
79	psychotherapeutic combinations
80	miscellaneous central nervous system agents
81	coagulation modifiers
82	anticoagulants
83	antiplatelet agents
84	heparin antagonists
85	miscellaneous coagulation modifiers
86	thrombolytics
87	gastrointestinal agents
88	antacids
89	anticholinergics/antispasmodics
90	antidiarrheals
91	digestive enzymes
92	gallstone solubilizing agents
93	GI stimulants
94	H2 antagonists
95	laxatives
96	miscellaneous GI agents
97	hormones/hormone modifiers
98	adrenal cortical steroids
99	antidiabetic agents
100	miscellaneous hormones
101	sex hormones
102	contraceptives
103	thyroid hormones
104	immunosuppressive agents

Therapeutic Class Code	Definition
105	miscellaneous agents
106	antidotes
107	chelating agents
108	cholinergic muscle stimulants
109	local injectable anesthetics
110	miscellaneous uncategorized agents
111	psoralens
112	radiocontrast agents
113	genitourinary tract agents
114	illicit (street) drugs
115	nutritional products
116	iron products
117	minerals and electrolytes
118	oral nutritional supplements
119	vitamins
120	vitamin and mineral combinations
121	intravenous nutritional products
122	respiratory agents
123	antihistamines
124	antitussives
125	bronchodilators
126	methylxanthines
127	decongestants
128	expectorants
129	miscellaneous respiratory agents
130	respiratory inhalant products
131	antiasthmatic combinations
132	upper respiratory combinations
133	topical agents
134	anorectal preparations
135	antiseptic and germicides
136	dermatological agents
137	topical anti-infectives
138	topical steroids
139	topical anesthetics

Therapeutic Class Code	Definition
140	miscellaneous topical agents
141	topical steroids with anti-infectives
143	topical acne agents
144	topical antipsoriatics
146	mouth and throat products
147	ophthalmic preparations
148	otic preparations
149	spermicides
150	sterile irrigating solutions
151	vaginal preparations
153	plasma expanders
154	loop diuretics
155	potassium-sparing diuretics
156	thiazide diuretics
157	carbonic anhydrase inhibitors
158	miscellaneous diuretics
159	first generation cephalosporins
160	second generation cephalosporins
161	third generation cephalosporins
162	fourth generation cephalosporins
163	ophthalmic anti-infectives
164	ophthalmic glaucoma agents
165	ophthalmic steroids
166	ophthalmic steroids with anti-infectives
167	ophthalmic anti-inflammatory agents
168	ophthalmic lubricants and irrigations
169	miscellaneous ophthalmic agents
170	otic anti-infectives
171	otic steroids with anti-infectives
172	miscellaneous otic agents
173	HMG-CoA reductase inhibitors
174	miscellaneous antihyperlipidemic agents
175	protease inhibitors
176	NRTIs
177	miscellaneous antivirals

Therapeutic Class Code	Definition
178	skeletal muscle relaxants
179	skeletal muscle relaxant combinations
180	adrenergic bronchodilators
181	bronchodilator combinations
182	androgens and anabolic steroids
183	estrogens
184	gonadotropins
185	progestins
186	sex hormone combinations
187	miscellaneous sex hormones
191	narcotic analgesic combinations
192	antirheumatics
193	antimigraine agents
194	antigout agents
195	5HT3 receptor antagonists
196	phenothiazine antiemetics
197	anticholinergic antiemetics
198	miscellaneous antiemetics
199	hydantoin anticonvulsants
200	succinimide anticonvulsants
201	barbiturate anticonvulsants
202	oxazolidinedione anticonvulsants
203	benzodiazepine anticonvulsants
204	miscellaneous anticonvulsants
205	anticholinergic antiparkinson agents
206	miscellaneous antiparkinson agents
208	SSRI antidepressants
209	tricyclic antidepressants
210	phenothiazine antipsychotics
211	platelet aggregation inhibitors
212	glycoprotein platelet inhibitors
213	sulfonylureas
214	biguanides
215	insulin
216	alpha-glucosidase inhibitors

Therapeutic Class Code	Definition
217	bisphosphonates
218	alternative medicines
219	nutraceutical products
220	herbal products
222	penicillinase resistant penicillins
223	antipseudomonal penicillins
224	aminopenicillins
225	beta-lactamase inhibitors
226	natural penicillins
227	NNRTIs
228	adamantane antivirals
229	purine nucleosides
230	aminosalicylates
231	nicotinic acid derivatives
232	rifamycin derivatives
233	streptomyces derivatives
234	miscellaneous antituberculosis agents
235	polyenes
236	azole antifungals
237	miscellaneous antifungals
238	antimalarial quinolines
239	miscellaneous antimalarials
240	lincomycin derivatives
241	fibric acid derivatives
242	psychotherapeutic agents
243	leukotriene modifiers
244	nasal lubricants and irrigations
245	nasal steroids
246	nasal antihistamines and decongestants
247	nasal preparations
248	topical emollients
249	antidepressants
250	monoamine oxidase inhibitors
251	antipsychotics
252	bile acid sequestrants

Therapeutic Class Code	Definition
253	anorexiants
254	immunologic agents
256	interferons
257	immunosuppressive monoclonal antibodies
261	heparins
262	coumarins and indandiones
263	impotence agents
264	urinary antispasmodics
265	urinary pH modifiers
266	miscellaneous genitourinary tract agents
267	ophthalmic antihistamines and decongestants
268	vaginal anti-infectives
269	miscellaneous vaginal agents
270	antipsoriatics
271	thiazolidinediones
272	proton pump inhibitors
273	lung surfactants
274	cardioselective beta blockers
275	non-cardioselective beta blockers
276	dopaminergic antiparkinsonism agents
277	5-aminosalicylates
278	cox-2 inhibitors
279	gonadotropin-releasing hormone and analogs
280	thioxanthenes
281	neuraminidase inhibitors
282	meglitinides
283	thrombin inhibitors
284	viscosupplementation agents
285	factor Xa inhibitors
286	mydriatics
287	ophthalmic anesthetics
288	5-alpha-reductase inhibitors
289	antihyperuricemic agents
290	topical antibiotics
291	topical antivirals

Therapeutic Class Code	Definition
292	topical antifungals
293	glucose elevating agents
295	growth hormones
296	inhaled corticosteroids
297	mucolytics
298	mast cell stabilizers
299	anticholinergic bronchodilators
300	corticotropin
301	glucocorticoids
302	mineralocorticoids
303	agents for pulmonary hypertension
304	macrolides
305	ketolides
306	phenylpiperazine antidepressants
307	tetracyclic antidepressants
308	SSNRI antidepressants
309	miscellaneous antidiabetic agents
310	echinocandins
311	dibenzazepine anticonvulsants
312	cholinergic agonists
313	cholinesterase inhibitors
314	antidiabetic combinations
315	glycylcyclines
316	cholesterol absorption inhibitors
317	antihyperlipidemic combinations
318	insulin-like growth factor
319	vasopressin antagonists
320	smoking cessation agents
321	ophthalmic diagnostic agents
322	ophthalmic surgical agents
323	antineoplastic monoclonal antibodies
324	antineoplastic interferons
325	sclerosing agents
327	antiviral combinations
328	antimalarial combinations

Therapeutic Class Code	Definition
329	antituberculosis combinations
330	antiviral interferons
331	radiologic agents
332	radiologic adjuncts
333	miscellaneous iodinated contrast media
334	lymphatic staining agents
335	magnetic resonance imaging contrast media
336	non-iodinated contrast media
337	ultrasound contrast media
338	diagnostic radiopharmaceuticals
339	therapeutic radiopharmaceuticals
340	aldosterone receptor antagonists
341	atypical antipsychotics
342	renin inhibitors
343	tyrosine kinase inhibitors
344	nasal anti-infectives
345	fatty acid derivative anticonvulsants
346	gamma-aminobutyric acid reuptake inhibitors
347	gamma-aminobutyric acid analogs
348	triazine anticonvulsants
349	carbamate anticonvulsants
350	pyrrolidine anticonvulsants
351	carbonic anhydrase inhibitor anticonvulsants
352	urea anticonvulsants
353	anti-angiogenic ophthalmic agents
354	H. pylori eradication agents
355	functional bowel disorder agents
356	serotoninergic neuroenteric modulators
357	growth hormone receptor blockers
358	metabolic agents
359	peripherally acting antiobesity agents
360	lysosomal enzymes
361	miscellaneous metabolic agents
362	chloride channel activators
363	probiotics

Therapeutic Class Code	Definition
364	antiviral chemokine receptor antagonist
365	medical gas
366	integrase strand transfer inhibitor
368	non-ionic iodinated contrast media
369	ionic iodinated contrast media
370	otic steroids
371	dipeptidyl peptidase 4 inhibitors
372	amylin analogs
373	incretin mimetics
374	cardiac stressing agents
375	peripheral opioid receptor antagonists
376	radiologic conjugating agents
377	prolactin inhibitors
378	drugs used in alcohol dependence
379	next generation cephalosporins
380	topical debriding agents
381	topical depigmenting agents
382	topical antihistamines
383	antineoplastic detoxifying agents
384	platelet-stimulating agents
385	group I antiarrhythmics
386	group II antiarrhythmics
387	group III antiarrhythmics
388	group IV antiarrhythmics
389	group V antiarrhythmics
390	hematopoietic stem cell mobilizer
391	mTOR kinase inhibitors
392	otic anesthetics
393	cerumenolytics
394	topical astringents
395	topical keratolytics
396	prostaglandin D2 antagonists
397	multikinase inhibitors
398	BCR-ABL tyrosine kinase inhibitors
399	CD52 monoclonal antibodies

Therapeutic Class Code	Definition
400	CD33 monoclonal antibodies
401	CD20 monoclonal antibodies
402	VEGF/VEGFR inhibitors
403	mTOR inhibitors
404	EGFR inhibitors
405	HER2 inhibitors
406	glycopeptide antibiotics
407	inhaled anti-infectives
408	histone deacetylase inhibitors
409	bone resorption inhibitors
410	adrenal corticosteroid inhibitors
411	calcitonin
412	uterotonic agents
413	antigonadotropic agents
414	antidiuretic hormones
415	miscellaneous bone resorption inhibitors
416	somatostatin and somatostatin analogs
417	selective estrogen receptor modulators
418	parathyroid hormone and analogs
419	gonadotropin-releasing hormone antagonists
420	antiandrogens
422	antithyroid agents
423	aromatase inhibitors
424	estrogen receptor antagonists
426	synthetic ovulation stimulants
427	tocolytic agents
428	progesterone receptor modulators
429	trifunctional monoclonal antibodies
430	anticholinergic chronotropic agents
431	anti-CTLA-4 monoclonal antibodies
432	vaccine combinations
433	catecholamines
437	immunostimulants
439	other immunostimulants
441	calcineurin inhibitors

Therapeutic Class Code	Definition
442	TNF alfa inhibitors
444	selective immunosuppressants
445	other immunosuppressants