U.S. Bureau of Labor Statistics

Consumer Price Index

Measuring Price Change for Medical Care in the CPI

Medical care is one of eight major groups in the Consumer Price Index (CPI). There are two medical care classifications, medical care commodities (MCC) and medical care services (MCS), each containing several item categories (strata). This fact sheet focuses on the four medical care categories—prescription drugs, professional services, hospital services and health insurance—that generate the most user questions and interest.

MCS, the larger component of medical care in sample size and expenditure levels, is organized into three expenditure categories (EC):

- professional services;
- hospital and related services; and
- health insurance.

MCC, the other major component of medical care, includes:

- medicinal drugs; and
- medical equipment and supplies.

Table 1 gives the specific definitions for all published categories of the medical care group, along with each category's relative importance (see below) and the number of quotes selected for sampling. Note that care for invalids, elderly and convalescents in the home is now included in the hospital and related services category. Prior to January 2008, this series was part of the other goods and services major group. Also note that topical drugs are now part of nonprescription drugs effective with the publication of January 2010 data. Formerly, topical drugs were included in medical equipment and supplies.

Table 1. Definitions of published medical care indexes, the number of unique price observations (quotes), and relative importance as of December 2009.

Item	Definition	Number of quotes	Relative importance (percent)
Medical care	Medical care commodities and medical care services.	8,847	6.513
Medical care commodities	Prescription drugs, nonprescription over-the-counter-drugs, and other medical equipment and supplies.	3,106	1.611
Medicinal drugs	All prescription and over-the-counter drugs	2,389	1.530
Prescription drugs	All drugs dispensed by prescription. Mail order outlets are included. Prices reported represent transaction prices between the pharmacy, patient, and third party payer, if applicable.	1,550	1.222
Nonprescription drugs	All nonprescription drugs, including topicals.	839	.308
Medical equipment and supplies	Nonprescription medicines and dressings used externally, contraceptives, and supportive and convalescent medical equipment (i.e. adhesive strips, heating pads, athletic supporters, and wheelchairs).	716	.081
Medical care services		5,742	4.902

	Professional medical services, hospital services, nursing home services, and health insurance imputation.		
Professional services	Physicians, dentists, eye care providers, and other medical professionals.	3,329	2.796
Physicians' services	Services by medical physicians in private practice, including osteopaths, which are billed by the physician. Includes house, office, clinic, and hospital visits. (Excludes ophthalmologists. See Eyeglasses and eye care.)	1,415	1.450
Dental services	Services performed by dentists, oral or maxillofacial surgeons, orthodontists, periodontists, or other dental specialists in group or individual practice. Treatment may be provided in the office or hospital.	883	.715
Eyeglasses and eye care	Services provided by opticians, optometrists, and ophthalmologists. Includes eye exams, dispensing of eyeglasses and contact lenses, office visits, and surgical procedures in the office or hospital.	642	.249
Services by other medical professionals	Services performed by other professionals such as psychologists, chiropractors, physical therapists, podiatrists, social workers, and nurse practitioners in or out of the office.	389	.383
Hospital and related services	Services provided to inpatients and outpatients. Includes emergency room visits, nursing home care and adult day care. Includes transaction prices only.	2,413	1.619
Hospital services	Services provided to patients during visits to hospitals, ambulatory surgical centers, or other similar settings.	1,891	1.358
Inpatient* hospital services	Services for inpatients. Includes a mixture of itemized services, DRG-based services, per diems, packages, or other bundled services.	N/A	N/A
Outpatient* hospital services	Services provided to patients classified as outpatients in hospitals, free standing services facilities, ambulatory surgery, and urgent care centers.	N/A	N/A
Nursing home and adult day care services	Charges for residential care at nursing homes, nursing home units of retirement homes, and convalescent or rest homes. Also includes non-residential adult day care, a newer item with few price observations at this time.	327	.148
Care of invalids, elderly and convalescents in the home	Fees paid to individuals or agencies for the personal care of invalids, elderly or convalescents in the home including food preparation, bathing, light house cleaning, and other services.	195	.113
Health Insurance	Indirect approach based on retained earnings method. See health insurance section.	N/A	.487

N/A: Data not adequate for publication.
* Substratum index.

Although medical insurance premiums are an important part of consumers' medical spending, the direct pricing of health insurance policies is not included in the CPI. As explained below, BLS reassigns most of this spending to the other medical categories (such as Hospitals) that are paid for by insurance. The extreme difficulty distinguishing changes in insurance quality from changes in its price forces the CPI to use this indirect method.

General Information on CPI Medical Care

The CPI measures inflation at the retail level, and reflects the average price change over time for a constant quality, constant quantity market basket of goods and services. In most cases it approximates what households spend *out-of-pocket* on goods and services used for day-to-day living. Therefore, medical care indexes are limited to items with an out-of-pocket expenditure, although in the case of medical care the term out-of-pocket includes any health insurance premium amounts that are deducted from employee paychecks.

The Consumer Expenditure Survey (CE) collects annual consumer spending for each CPI category; this provides the basis for the item category weights. BLS replaces these weights every two years with ones based on more recent Consumer Expenditure Surveys. To obtain the category weights, BLS combines expenditures from the CE's for two years and updates them for price change to the December before their first use in the CPI. For example, the expenditures reported on CE's for 2007 and 2008 updated to December 2009 became the basic weights for use in the CPI from January 2010 through December 2011. Every month, to compute that month's index, BLS updates the base weights for price change from the previous month. Every year, the BLS publishes *relative importances* for the previous December; these are base weights updated for price change and expressed as a percentage of total weight. Weights for components with greater than average price change will increase more than those with smaller than average price change. As a result, the change in a component's relative importance from one December to the next reflects its price change relative to that of all other categories as well as the biennial weight updates.

For the medical care categories the CE collects information on household out-of-pocket expenses. These may include data such as healthcare services received, who received it, the amount of payment made, and insurance reimbursements received. Medical care expenditures eligible for the CPI include out-of-pocket expenses paid by the consumer. These include fees (not recouped through health insurance) that consumers paid directly to retail outlets for medical goods and to doctors and other medical providers for medical services, as well as health insurance premiums that consumers paid (including Medicare Part B). To arrive at the consumer out-of-pocket medical expense, the CE nets out direct insurance reimbursements to the consumer from the total amounts paid by the consumer.

Since medical care only includes consumers' out-of-pocket expenditures (and excludes employer provided health care), its share in the CPI is smaller than its share of gross domestic product (GDP) and other national accounts measures.

Medical Care Outlet and Item Selection

Throughout the year, the Bureau conducts household Point-of-Purchase surveys (POPS) in the CPI pricing areas. The POPS provides the sampling frame of outlets or retail businesses for most CPI item categories including those in the medical care indexes. BLS selects the outlet sample for each item category in each pricing area using probability proportional to the reported expenditure. Approximately one quarter of the outlets "rotate" annually so that over a four year period the entire outlet sample is reselected. This keeps the sample up to date and replenishes outlets lost to refusals and going out-of-business. BLS sends its field staff to the selected outlets to select a sample of items that the outlet sells in each assigned category; thus, the item sample rotates over the four year period. The field staff uses probability proportional to reported outlet sales for sampling goods and services priced in the CPI. During the initial visit to a business, the field staff verifies that the outlet carries the item category to be priced, proceeds to select a sample of items in the category based on the outlet's estimated or actual revenue, and records all price-determining features for the selected items. Some medical care items, such as prescription drugs or hospital services, require special sampling procedures to reduce the burden on the outlets' respondents.

Prescription Drugs

The *prescription drugs* index is comprised of drugs one may purchase by prescription at a retail, mail order or Internet pharmacy. However, prescription drugs that are primarily consumed and paid for as part of hospital visits are not included in this sample.

Item sampling: This index employs a streamlined sampling method. At each of the pharmacies selected, the BLS field staff selects a specific item for each of the assigned number of items to be priced. To do this, the field staff obtains a list of the last 20 prescriptions dispensed. This "last 20 list" serves as a proxy for *all* the prescription drugs dispensed at that pharmacy, and a price is obtained for each prescription on the list. The price includes both patient and insurance payments to the pharmacy, and the sum of all 20 prices makes up total spending (by the consumer at this pharmacy). Thus, each price represents an observed share of total spending, and the probability of any one prescription being selected is proportional to its share in total spending. The more frequently a certain drug shows up

in the "last 20 list" and the more expensive it is, the more likely it is to be selected for the index. This item selection procedure is done for every outlet when it is initiated for pricing.

Special pricing procedures for prescription drugs

Drugs losing patent protection: When a brand-name drug in the sample loses its patent protection, generic versions of the drug receive a one-time chance to replace the original, brand-name drug even if the pharmacy continues to sell the brand name drug. Six months after a drug in the sample loses patent protection, CPI field staff selects among all drugs (including the original) that the Food and Drug Administration deems to be therapeutically-equivalent. Delaying the reselection for six months allows emerging generic drugs an opportunity to gain market share. The chance of drug selection is proportional to the number of prescriptions sold for each version of the drug over the previous 3 months. If a generic is selected, the CPI treats any price difference between the original drug and its selected substitute as a price change, and reflects this change in the index in the month when the procedure was performed.

When prescription drugs become available over-the-counter (OTC), the CPI continues to price them in the *prescription drug* index until they rotate out under normal rotation procedures. They are not transferred to the *non-prescription drugs* index. The observations remain in the prescription drug sample, and any price change is reflected in the *prescription drug* index. Similarly, if any over-the-counter drugs were to change so they required prescriptions, they would remain in the *non-prescription drugs and medical supplies* index until the next rotation and any resulting price change would occur in that index.

Professional Services

The *professional services* index covers services that are performed and billed by private-practice medical doctors, dentists, eye care providers, and other medical providers. Physicians' and dental services have most of the weight for this category. Below is an example of initiating physicians' services, but the methodology applies to all providers in this EC.

Item sampling: At the initial visit CPI field staff establishes the practitioner's specialty, disaggregates to an appropriate service, and describes the characteristics of the selected visit and any related procedures on a CPI-specific checklist. Current Procedural Terminology (CPT) codes are collected to help describe the item accurately. Unless the selected combination of services changes or the CPT code is modified, the item descriptions remain fixed for pricing. The *physicians' services* index includes consumer out-of-pocket payments, Medicare B payments, and insurance reimbursements. The total fee reported for each priced service reflects the amount the physician expects to receive from the patient and/or insurance carrier.

Hospital Services

There is a growing consensus that the most appropriate way to measure hospital services is by tracking treatment outcomes rather than medical inputs consumed. From this vantage point, a day spent occupying a hospital room and the time in an operating room are not separate consumer services, but individual components of *one* hospital visit which may be all or part of a medical treatment. The current CPI method follows medical treatments, a method that lies between the old medical-inputs method and the ideal medical-outcomes method. Measuring the value of different treatment outcomes is the subject of research in the industry, but is not yet considered a feasible methodology for the CPI medical care indexes.

Item sampling: Hospital services include inpatient and outpatient services. The pricing unit is the hospital visit, defined by a date of admission, a date of discharge as documented on a hospital bill, and the specific diagnosis or medical condition. At the initial visit CPI field staff works with the respondent to select a hospital bill based on revenues generated by eligible payers (i.e. privately insured and uninsured patients). Then, the field staff describes the item in terms of the bundle of goods and services consumed during that visit, or the physical (or mental) state required for the patient to be discharged from the hospital. Bills used for the CPI are sanitized of patient-identifying characteristics and do not contravene the Health Insurance Portability and Accountability Act of 1996 (HIPPA) confidentiality mandates.

The objective of sampling for the hospital stratum is to identify a specific eligible payer to follow over time. The sampling is based on hospital revenue. The items are distinguished by their reason(s) for admission to the hospital (i.e. heart attack, emergency visit, scheduled surgery, chronic illness, diagnostics, etc.), and associated primary diagnosis type. They are further broken down by the insurers' reimbursement arrangements in the contract (i.e. itemized charges, diagnosis related group-DRG, case rate, per diem, etc.) and the patients' expected payments (if any).

The goal of the *hospital services* index is to follow the transaction prices of selected services over time while keeping price-determining characteristics constant. The transaction price is the reimbursement received by the provider from all eligible sources; it is the amount paid by the insurance carrier (if applicable) and/or patient's out-of-pocket payments. With the exceptions of fee-for-service and fee schedule, each type of reimbursement reflects a lump sum payment based on the diagnosis, the type of procedure performed, or a flat fee per unit of service. Only quotes with payer-based transaction prices are eligible for inclusion in the priced sample of hospital services.

Health Insurance

The CPI began publishing a *health insurance* index in January 2006. The weights in the CPI do not include employer-paid health insurance premiums or tax-funded health care such as Medicare Part A and Medicaid. Currently, the index employs an indirect method for measuring price changes for health insurance premiums. Under this indirect method, the *medical care* index will not be affected by changes in policy characteristics, such as modifications to policy benefits and utilization changes. The approach implicitly assumes that the level of service from individual carriers is strictly a function of benefits paid. While other components may affect the index, such as more convenient claims handling or a 24-hour nurse line, their effects are probably small. This indirect approach factors medical insurance premiums into two parts:

- Changes in the prices of medical care items covered by health insurance policies
- Changes in the cost of administering policies, maintaining reserves and, as appropriate, profits.

Most expenditure for health insurance goes to the first item above, and reflects insurers' payments for medical treatments. The CPI allocates this portion to the indexes that account for medical care items (i.e. physicians' services). Thus, the weights for most of MCS indexes reflect out-of-pocket expenditures plus allocated health insurance benefit payments. (It is for this reason that providers' reimbursements from insurance companies are valid prices for the CPI.)

The price change that the CPI uses for the remaining weight, changes in the retained earnings of health insurance carriers (the second item above), is the product of two relatives of change:

- The change in the retained earnings ratio, and
- The change in the cost of medical items from elsewhere in CPI *medical care*.

Retained earnings ratios are calculated based on data obtained from various industry sources. BLS acquires calendar year data on premium income, benefits payments, and retained earnings from national non-profit health insurance carriers and from Bests Insurance for commercial carriers. The relative of change is calculated by dividing the previous year's ratio by the current year's ratio. The relative of change is then converted to a monthly relative (by taking its twelfth root), and these changes are used monthly to reflect retention margins. [1] The second relative reflects price change for the eight medical care items whose basic weight includes allocated health insurance premiums.

Challenges to pricing *health insurance* The current indirect method for measuring health insurance premium changes does not mimic the way consumers pay for health care and it forces the medical care indexes to measure changes in what medical care providers receive from insurance companies rather than what consumers pay for the medical items out of pocket. A direct measure that would have an index for health insurance premiums along with out-of-pocket indexes for the various medical items would be an ideal way to measure medical care price change—provided that BLS could produce an accurate constant-quality index for health premiums. The CPI has tested the feasibility of directly pricing health insurance policies several times and each time showed that there were major barriers to obtaining data on changes in quality variables such policy benefits and utilization (the number of claims per insured). Consequently, BLS was unable to produce consistent constant-quality premiums for health insurance policies for use as CPI prices. BLS plans further research to find alternative methods for measuring health insurance premium inflation

Further information may be obtained from the Office of Prices and Living Conditions, Bureau of Labor Statistics, 2 Massachusetts Avenue, NE., Room 3615, Washington, DC, 20212, or by calling (202) 691-6985.

(1) A hypothetical example of the calculation of the change in retained earnings for commercial carriers:

Year	Income	Benefit	Retention	Retention-benefit ratio
1	$100,000	$94,000	$6,000	.063830
2	$108,000	$100,000	$8,000	.080000

Year 2 adjustment for change in retentions:

a. Year 2 ratio / Year 1 ratio = .080000 / .063830 = 1.253329 relative of change, or 25.33 percent, which is the annual increase in the retention to benefits ratio.
b. Spreading this annual change equally over 12 months is done as follows: take the 12th root of the 12 month change of 1.253329, which equals 1.018995 or 1.9 percent per month.

Last Modified Date: April 12, 2010

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