Measuring Price Change for Medical Care in the CPI

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Medical care is one of the major item groups within the Consumer Price Index (CPI). This major group consists of medical care commodities and medical care services. Medical care services, the dominant component of medical care, is organized into two expenditure categories (EC's), professional medical services and hospital and related services. (An additional expenditure category for health insurance is part of medical care services but is not published separately.) Medical care commodities, comprised of prescription drugs and nonprescription medical equipment and supplies, is the other major component of medical care. (See the table for definitions and sample sizes.) The base period weight for each CPI item is the out-of-pocket expenditures households incurred for that item in a 3-year base period. Weights for CPI medical care reflect household expenditures for health insurance premiums, as well as for out-of-pocket medical expenses (those not covered by health insurance). The CPI does not include employer-paid health insurance premiums nor government-paid health care such as Medicare Part A; these are considered part of consumers' incomes and not their expenditures. Consequently, the share of medical care in the CPI is smaller than its share of the gross domestic product and other national accounts measures.

Improvements to procedures for prescription drugs

With publication of the January 1995 CPI, the Bureau of Labor Statistics (BLS) changed its treatment of prescription drugs that lose patent protection. Under the old procedure, the CPI did not substitute a generic version of a brand name drug, unless the selected retail outlet in which pricing was conducted stopped selling the drug. (Sample rotation—the CPI process that keeps item samples up to date—brings generic drugs into the prescription drug sample after they are in the market, but this rotation process does not compare prices between the original and substituted versions of an item.) Under the new procedure, generic versions of a drug receive a one-time chance to be substituted for an original, brand-name, drug—regardless of whether or not the store discontinues the brand name version of the drug. Six months after a drug in the sample loses patent protection, CPI field staff select among all therapeutically-equivalent drugs (including the original) sold in the surveyed stores. Timing of reselection allows emerging generic drugs an opportunity to gain market share, since the chance of selection is proportional to the sales of each version of the drug. When a therapeutically equivalent substitute is selected, the CPI treats the price difference between the original drug and its selected substitute as a price change and reflects this change in the index. As CPI item and outlet samples are rotated over time, respondents at outlets selected for pricing prescription drugs are asked to provide transaction prices, rather than just cash or published prices. The transaction price is the documented amount—total payment received by the outlet from all eligible sources, including the customer, the insurance provider, and/or any other party—the outlet actually is reimbursed, for providing the prescription to the customer. Each part of the transaction price is incorporated into the reported price. When possible, CPI field staff identify specific third party payment plans, such as a specific commercial insurance preferred provider organizations (PPO) plan or an employer-based plan, and ascertain whether the customer must pay a portion of the price. That way, the particular insurance provider payment arrangement for the identified drug is followed during subsequent visits to the outlet. This method allows more actual transaction price changes to be reflected in the index.

BLS Improvements to the Hospital CPI

Effective January 1997, the hospital index was restructured to enable the CPI to better handle new items and to allow for alternate ways of viewing the hospital sector of consumption. The previous structure of the CPI hospital index divided hospital room expenses, charges for other inpatient services, and the cost of outpatient services into separate compartments, forcing the CPI to regard what are actually inputs to medical treatment in hospitals, as consumer items. There is a growing consensus that the correct view of medical services is treatment outcomes. From this vantage point, a day occupying a hospital room or the time spent in an operating room are not separate consumer services—but individual components of an entire hospital visit.

For many medical procedures, the number of inpatient hospital days to achieve a particular outcome is decreasing. Furthermore, other treatments that once required an inpatient hospital stay are now performed as outpatient procedures. The CPI's response to these prevailing conditions is to combine the former three categories (room, inpatient ser-

vices, and outpatient services) into one category called hospital services. Differentiation between inpatient and outpatient (and among service types) now occur under the umbrella of this broad category.

In addition to changes in classification structure, BLS introduced new procedures for hospital data collection. The goal of this new process is to identify a payor, a diagnosis, and the payor's reimbursement arrangement from a selected hospital bill. Collecting information to describe a hospital visit from a real bill and recording the reimbursed amount as the price, represent major improvements. Previously, data furnished by the hospital chargemaster were used as the reported price for CPI purposes. (As always, BLS continues in its strong commitment to confidentiality of all collected information.)

Health insurance pricing

To measure changes in the price of medical insurance, the CPI must exclude changes resulting from modifications in policy benefits and increased (or decreased) use of medical insurance. Changes in benefits are changes to the quality of insurance; increased use is a higher quantity of medical insurance consumed. These are not changes in price, and the price index must isolate these factors from real price change.

Prior to the 1964 CPI revision, health insurance premiums were directly priced as a fixed amount of protection for the individual consumer, by pricing the most widely held Blue Cross/Blue Shield family policy sold to consumers. Using this method led to a number of problems involving quality and quantity changes over time. In pricing premiums directly, the Bureau found it impossible to account for quality differences, due to changes in both the benefits provided by policies and in use of the provided benefits. These problems led BLS to switch to the current indirect method of pricing health insurance, effective with the 1964 revision.

The Bureau has been unable to develop methods to factor the effect of changed levels of coverage and use out of premium changes. Until this can be done, constant quality policy premium changes cannot be accurately measured directly from the pricing of health insurance policies. The feasibility of directly pricing health insurance policies was tested during 1984 and 1985. At that time, test results identified problems obtaining data from insurers on quality and use changes in benefit packages. Further research on directly pricing health insurance is planned.

BLS does not publish indexes for health insurance premiums, because the CPI employs an indirect method to measure price change for health insurance. This indirect approach factors medical insurance into three parts:

1) changes in the prices of medical care items covered by health insurance policies
2) changes in the cost of administering policies
3) changes in the cost of maintaining reserves and, as appropriate, profits

Most expenditure for health insurance goes for the first item—the part that reflects insurers' payments for medical treatment. The CPI allocates this part of health insurance spending to the indexes for those treatments. The remaining weight, for the overhead of the insurers, is all that remains in the unpublished health insurance index.

Price movement over time for each month's unpublished health insurance indexes in the CPI is calculated by multiplying the previous month's index by a relative of change. (These indexes become part of the higher level indexes that BLS publishes.)

The relative of change for each health insurance stratum is estimated, using the product of two relatives of change. The first relative is the change in the retained earnings ratio, item number 3 above. The second relative is the change in the cost of medical items from elsewhere in the CPI medical care major group. These two relatives are both required, because retained earnings levels change with both the change in benefits paid and the change in the unit cost of administering these benefits. This process yields a measure of price change for insurance of constant coverage and use. That is, changes in benefit coverage and use levels will generally be offset by compensating premium charges, and thus, not significantly affect retention rates. Also implicit in the process is the assumption that the level of service from individual carriers is strictly a function of benefits paid. Other changes in the amount of service provided for policy holders, such as more convenient claims handling, will affect the index; but these effects are probably small.

Retained earnings ratio. The Bureau obtains calendar year data for premium income, benefit payments, and retained earnings. Blue Cross/Blue Shield supplies data directly to BLS, while BLS gets data for commercial carriers from Bests Insurance.[1] For each year, the ratio of retained earnings to benefit payments is calculated, yielding a retained earnings ratio. Then, the latest year's ratio is divided by the previous year's ratio, to obtain the relative of change in the ratios. Finally, this annual relative of change is converted to a monthly relative (by taking its twelfth root), so

[1] BC/BS and commercial carriers are treated as two different entities.

the CPI reflects the change month by month over the calendar year.[2] Spread evenly over the year, change in price caused by changing retention margins is preferable to reflecting the entire annual change in a single month.

Insurance price relatives. The second relative reflects the price change for each of the CPI items to which benefits are separately allocated for Blue Cross/Blue Shield and commercial carriers. For example, within Blue Cross/Blue Shield, the physician services category is moved by the product of relatives for physicians' services and Blue Cross/Blue Shield retained earnings.

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) 606-6985.

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[2] 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) $\frac{\text{Year 2 ratio}}{\text{Year 1 ratio}}$ = .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: $\sqrt[12]{1.253329}$ = 1.018995 =1.9 percent per month

Definitions of published medical care indexes and the number of unique price observations (quotes) as of February 1998

Item	*Definition*	*Quotes*
Medical care	Medical care commodities and medical care services.	7,675
Medical care commodities	Prescription drugs, nonprescription over-the-counter-drugs, and other medical equipment and supplies.	1,369
Prescription drugs	All drugs and medical supplies dispensed by prescription. Mail order outlets are included. Prices reported represent transaction prices between the pharmacy, patient, and third party payor, if applicable.	694
Nonprescription drugs and medical supplies	All nonprescription medicines, vitamins, dressings, equipment, and supplies.	675
Internal and respiratory over-the-counter drugs	Nonprescription medicines taken by swallowing, inhaling, as suppositories, enemas, i.e. aspirin, cough medicine, vitamins.	423
Nonprescription medical equipment and supplies	Nonprescription medicines and dressings used externally, contraceptives, and general supportive and convalescent medical equipment, i.e. adhesive strips, heating pads, athletic supporters, wheelchairs.	252
Medical care services	Professional medical services, hospital services, nursing home services, and health insurance imputation.	6,306
Professional medical services	Physicians, dentists, eye care providers, and other medical professionals.	2,632
Physicians' services	Includes services by medical physicians in private practice, including osteopaths, that are billed by the physician. Includes house, office, clinic, and hospital visits. (Excludes ophthalmologists. See Eye care.)	1,050
Dental services	Includes 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.	927
Eye care	Includes 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.	290
Services by other medical professionals	Includes services performed by other professionals such as psychologists, chiropractors, physical therapists, podiatrists, social workers, and nurse practitioners in or out of the office.	365
Hospital and related services	Includes services provided to inpatients, outpatients, emergency room visits, nursing home care and adult day care. Includes transaction and chargemaster prices.	3,674
Hospital services	Includes services provided to patients during visits to hospitals or ambulatory surgical centers or other similar settings.	3,236
Inpatient hospital	Services for inpatients. Includes a mixture of individual services, DRG-based services[3] services, per diems, packages, or other bundled services.	NA
Outpatient hospital	Services provided to patients classified as outpatients in hospitals, free standing services[3] facilities, ambulatory, and urgent care centers.	NA
Nursing home services	Includes charges for care at nursing homes, nursing home units of retirement homes, and convalescent or rest homes. Adult day care data will be included in this index beginning in 1998.	438

NA Data not adequate for publication.

[3] Substratum index