

National health accounts: Lessons from the U.S. experience

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The national health accounts (NHA) are the framework within which type of services and sources of funding for health care expenditures are measured. NHA, devised to portray the structure of health care delivery and financing in the United States, provide essential information necessary for the formulation of

public health policy and for international comparison. In this article, the authors describe the importance of the NHA nationally and internationally, and provide a blueprint of the definitions, sources, and methods used to create this system of NHA in the United States.

U.S. national health accounts

Since 1964, the U.S. Department of Health and Human Services has published an annual series of statistics presenting total national health expenditures during each year. The basic aim of these statistics, termed national health accounts (NHA), is to "identify all goods and services that can be characterized as relating to health care in the nation, and determine the amount of money used for the purchase of these goods and services" (Rice, Cooper, and Gibson, 1982).

The essential framework for NHA consists of a matrix of operational categories classifying and defining the sources of health care dollars and services purchased with these funds. NHA are compatible with the national income and product accounts generally, but bring together in one place a picture of the Nation's health economy.

Table 1 provides an example of the accounting matrix used in the United States to classify health care spending. In 1990, \$666.2 billion was spent on health care services and products, more than one-half of which purchased hospital care and physician services.

Thirty-three percent of all expenditures were paid by private health insurance, 20 percent from out-of-pocket, and 5 percent from other private sources such as philanthropy. Private expenditures totaled \$383.6 billion, or 58 percent of all health spending. Government paid for the remaining 42 percent of spending, or \$282.6 billion, through programs such as Medicaid and Medicare. The participation of government in financing health care varies by type of personal health expenditures, ranging from 3 percent of dental expenditures to more than 50 percent of expenditures for hospital, nursing home, home health, and other personal health care services.

Four primary characteristics of NHA flow from this framework. First, they are comprehensive because they contain within a unified structure all of the main components of the health care system, and they are unique among the many types of statistical and administrative data bases because they present the totality of interconnected flows in the health care system. Second, they are multidimensional,

encompassing not only expenditures and services, but also time, geography, and age as analytic dimensions. Third, they are consistent because they apply a common set of definitions that allow comparisons among categories over time. Fourth, the relationships inherent in NHA make them coherent, so that numbers can be cross-checked for accuracy; i.e., estimates must rationally fit into two separate dimensions of the health matrix, thereby controlling both sampling and non-sampling error.

Health accounts and the health economy

Most important, NHA are a representation of the health sector of the national economy. The classifications used are those that are central to the financing and provision of health care. They form a system for understanding movement of the aggregate health economy and can serve as a data base from which hypotheses about the causal factors at work can be formed and tested. They show at a minimum the following important relationships:

- Health care expenditures as a proportion of gross domestic product (GDP). The amount a nation chooses to expend on health care relative to its productive capacity represents an allocative choice that may preclude other societal options. It may be considered too large or too small, based on the amount of "health care" actually purchased for the population, or it may be growing too rapidly or not quickly enough. NHA provide an explicit and quantitative context for discussion of these issues.
- Expenditures by various sources of funds. NHA bring into focus the share and magnitude of public and private financing for various types of health services. This allows consideration of the relative resources that should be spent from public and private sources, given their sources of revenue and competing priorities.
- Changes over time in sources of funds. The availability of a consistent series of accounts over time allows observation of changes in the balance of revenue sources. Many of these changes reflect basic technological, programmatic, and demographic trends. For example, the influence of the Medicare and Medicaid programs, founded in 1965, in shifting

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Table 1

National health expenditures, by source of funds and type of expenditure: Calendar year 1990

Type of expenditure	Total	Private					Government		
		All private funds	Consumer			Other	Total	Federal ¹	State and local ²
			Total	Out of pocket	Private insurance				
Amount in billions									
National health expenditures	\$666.2	\$383.6	\$352.9	\$136.1	\$216.8	\$30.6	\$282.6	\$195.4	\$87.3
Health services and supplies	643.4	374.8	352.9	136.1	216.8	21.8	268.6	184.3	84.3
Personal health care	585.3	343.5	322.2	136.1	186.1	21.3	241.8	177.2	64.6
Hospital care	256.0	116.0	102.2	12.8	89.4	13.8	140.0	104.6	35.3
Physician services	125.7	81.7	81.7	23.5	58.2	0.0	43.9	35.1	8.8
Dental services	34.0	33.1	33.1	18.0	15.1	—	0.9	0.5	0.4
Other professional services	31.6	25.2	21.5	8.8	12.8	3.6	6.4	4.9	1.6
Home health care	6.9	1.8	1.3	0.8	0.5	0.5	5.1	4.1	1.0
Drugs and other medical non-durables	54.6	48.5	48.5	40.2	8.3	—	6.1	3.0	3.1
Vision products and other medical durables	12.1	9.4	9.4	8.2	1.3	—	2.7	2.4	0.3
Nursing home care	53.1	25.5	24.4	23.9	0.6	1.0	27.7	17.2	10.5
Other personal health care	11.3	2.2	—	—	—	2.2	9.1	5.5	3.5
Program administration and net cost of private health insurance	38.7	31.2	30.7	—	30.7	0.6	7.5	4.8	2.7
Government public health activities	19.3	—	—	—	—	—	19.3	2.3	17.0
Research and construction	22.8	8.8	—	—	—	8.8	14.0	11.0	3.0
Research	12.4	0.8	—	—	—	0.8	11.5	10.0	1.5
Construction	10.4	8.0	—	—	—	8.0	2.5	1.0	1.5

¹Detailed Federal Government financing program estimates are made for Medicare, Workers' Compensation, Medicaid, Department of Defense, Maternal and Child Health, Vocational Rehabilitation, Alcohol, Drug Abuse, and Mental Health Administration, Indian Health Service, and miscellaneous general hospital and medical programs.

²Detailed State and local financing program estimates are made for Temporary Disability Program, Workers' Compensation, Medicaid, General Assistance, Maternal and Child Health, Vocational Rehabilitation, hospital subsidies, and school health.

NOTES: 0.0 denotes less than \$50 million. Research and development expenditures of drug companies and other manufacturers and providers of medical equipment and supplies are excluded from research expenditures, but are included in the expenditure class in which the product falls. Numbers may not add to totals because of rounding.

SOURCE: Health Care Financing Administration, Office of the Actuary: Data from the Office of National Health Statistics.

funding to the public sector is discernable. Increases in the role of third-party payment (public or private) over time may inflate medical care costs more quickly by weakening economic incentives associated with direct payment.

- Expenditures for various types of services. This describes the structure of the health care system according to the provider of services and products delivered at a point in time. NHA provide data to evaluate whether there is an effective balance of services for the money spent, or whether there are more efficient alternatives.
- Changes over time in expenditures for types of services. Consideration of the entire matrix over time permits evaluation of policies intended to curb or redirect growth in the health care sector. Because we observe the system as a whole, it is possible to detect substitutions or countervailing effects in other services or funding sources. For example, controls on expansion of the hospital inpatient services have spurred the growth of outpatient care.
- Projections. Historical trends provide a basis for projections of expenditures to the future. These future estimates incorporate assumptions about demographic and economic changes, as well as inflation rates and other variables. By projecting the

likely consequences of current trends, these models alert us to undesirable outcomes and alternative policies to avoid them (Sonnefeld et al., 1991; Waldo et al., 1991).

- Specialized estimates. NHA (Levit et al., 1991) provide an "anchor" to which a variety of disaggregated subestimates can be linked. Specialized accounts fulfill a variety of urgent informational needs. Health accounts by age (Waldo et al., 1989) let policymakers focus on the differential expenditure, use, access, and financing mechanisms available to various age groups. Health accounts by final payer array the burden of national health care costs by their ultimate sources of payment: government, business, or households (Levit and Cowan, 1991). State level health accounts (Levit, 1985) highlight regional differences in expenditures, service mix, and financing sources, and how these change over time. As more health care reforms are implemented by the States, monitoring their consequences at the State level becomes increasingly important.

Issues in health accounting

The structure of the health care system is not static, but constantly changing and evolving to incorporate

advances in medicine and to meet the needs of a diverse population. These changes require identification of variables that will best define and measure the current system and meet the data demands of policymakers. Therefore, we periodically re-examine the structure of the NHA and the methods and data sources used to produce estimates within that structure.

This periodic re-examination is also necessitated by changes in available data sources. Because NHA estimates typically rely on information collected by public and private organizations for other purposes, access to accurate information sometimes changes: Surveys can deteriorate in sample size, producing less reliable statistics; questions used to solicit data may be altered; or new, more reliable sources of information may emerge.

In the NHA, this re-examination process is formalized in periodic conferences. These provide a forum where data experts and major users of the NHA review the advances in the accounts, discuss alternatives, and help to formulate future directions (Lindsey and Newhouse, 1986; Haber and Newhouse, 1991).

Maintaining a system of accounts that evolves with health care delivery and with current data sources creates problems of comparability over time. Crosswalks must be created to map one system onto another for comparison. Such comparisons can thus become complex and time-consuming.

The same issues apply to cross-national comparisons of NHA. Each system of health accounts is likely to be adapted to its own national system of health care delivery and financing in order to be most useful domestically. Thus, categories of payer and service and even the boundaries of health care may differ. Converting national and health accounts to comparable monetary values is fraught with problems that confound international comparisons. Nevertheless, the utility of cross-national comparisons is great and will be enhanced as the sophistication of countries' statistical systems develops. Some of the simplest indicators are already well-known: health spending per capita and percent of GDP for health. More sophisticated analyses will compare the effects of contrasting financing and delivery systems and facilitate learning from one nation to another of what works in the health sector.

Definitions, sources, and methods

Whenever an accounting construct is designed, it is important to thoroughly define the concepts to be measured and the data sources and methods to be used in creating estimates. The remaining portion of this article presents the blueprint for creating NHA estimates in the United States,¹ and may be useful as a guide for other nations in the creation of their own health accounting frameworks.

¹A version of this article was published at the culmination of the last NHA benchmark completed in 1990 (Office of National Cost Estimates, 1990).

National health expenditures

The NHA constitute the framework in which estimates of spending for health care are constructed. The framework can be considered as a two-dimension matrix: Along one dimension are types of providers or services, and along the other dimension are sources of funds.

The NHA recognize several types of spending. Personal health care comprises therapeutic goods or services rendered to treat or prevent a specific disease or condition in a specific person. Government public health activity involves spending to organize and deliver health services and to prevent or control health problems. Program administration covers spending for the cost of running various government health care programs, plus the net cost of private health insurance (the difference between premiums earned by insurers and the claims or losses for which insurers become liable). Finally, research and construction spending includes non-commercial biomedical research and the construction of health care facilities.

In addition to these types of expenditures, two layers of aggregation are shown. Health services and supplies, which represents spending for care rendered during the year, is the sum of personal health care expenditures, government public health activity, and program administration. It is distinguished from research and construction expenditures, which represent an investment in the future health care system. The combined value of health services and supplies, research, and construction in the NHA is known as national health expenditures (NHE).

The NHA attempt to show how much is spent on the health of U.S. citizens. Thus, estimates shown in this article cover the United States and its outlying territories (Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Marshall Islands). Medical services provided by the U.S. Department of Defense to military and civilian personnel overseas are included as well. However, no attempt has been made to increase expenditures by the value of health care "imports" (care rendered to U.S. citizens by providers in foreign countries) nor to reduce expenditures by the value of "exports" (care rendered to foreign citizens by U.S. providers).

As is any construct, the NHA are of necessity arbitrary in their boundaries. Under the NHA definitions, a considerable amount of spending is excluded that many feel to be part of expenditure for health. For example, nutrition programs such as the Women, Infants, and Children program are excluded. So, too, are programs designed to improve environmental and sanitation conditions. Carried to an extreme, however, one could argue for the inclusion of spending for groceries and housing on the grounds that they, too, add to one's health. Such inclusions or exclusions are neither right nor wrong, but depend solely on the purpose to which the results are to be put.

Types of service

In the NHA, the type of product consumed or, in the case of services, the type of establishment providing the service, determines what is included or excluded. In the case of both goods and services, the taxonomies used are provided by the Federal Government. Goods are classified according to the product codes used by the U.S. Bureau of the Census. Services are recognized when they are provided through establishments that fall into Standard Industrial Classification (SIC) 80 or through government operations that mimic that classification. The SIC is a scheme that groups together businesses producing like products. Each business is assigned a code that identifies the broad and specific nature of its operation. The detailed categories of health care establishments listed under SIC 80 are described in Table 2. Until very recently, the 1972 version of the SIC was used for data-gathering purposes. Revisions to the SIC made in 1987 refine and clarify the distinctions between various types of health providers (Executive Office of the President, 1987). Information on the 1987 SIC basis is being incorporated into the NHA as it becomes available.

Hospital care

In the NHA, hospital care is defined to cover all services provided by hospitals to patients. Thus, expenditures include room and board charges, ancillary charges such as operating room fees, charges for the services of resident physicians, inpatient pharmacy charges, charges for hospital-based nursing home care, and fees for any other services billed by the hospital.

All hospitals in the United States and its outlying territories are included in the scope of the NHA. Expenditures are estimated separately for community hospitals and non-community hospitals. (Community hospitals are those non-Federal acute care hospitals whose average length of stay is less than 30 days and whose facilities and services are open to the general public.)

The value of hospital output is measured by total net revenue. This includes gross patient revenues (charges)

less contractual adjustments, bad debts, and charity care. It also includes government tax appropriations, non-patient operating revenue (gift shop and parking lot receipts, for example), and non-operating revenues, such as interest income, contributions, and grants. Thus, although revenue is measured in accrued terms rather than cash terms, the value is expressed as what the hospital intends to receive, rather than what it charged. Non-patient revenues are included in the value of NHE because, by tradition, hospitals take anticipated levels of these revenues into account when setting patient revenue targets or charges.

Except for Federal hospitals, the basic data source used to prepare the hospital estimates is the American Hospital Association (AHA) Annual Survey. This survey elicits information from each hospital in the United States and its outlying territories, and experiences a response rate of about 90 percent (American Hospital Association, 1960-91). Data for non-responding hospitals are imputed by AHA analysts. Federal hospital estimates are based on data from the Federal agencies that administer them.

The AHA data must be modified for the purposes of the NHA. These modifications fall into four parts. First, the AHA Annual Survey is designed to be cross-sectional rather than longitudinal. Thus, these cross-sectional survey reports must be combined into one longitudinal file, creating one record for each hospital. During this process, a certain amount of editing is performed on classification codes to assure consistent reporting across time by individual hospitals. Second, revenues are imputed to each hospital on the basis of reported (or estimated) expenses. Expenses are inflated to revenues using aggregate revenue-to-expense ratios provided by the AHA. Community hospitals are differentiated by State and by broad type of control (non-profit or other), and non-community hospitals are differentiated by type of service and by type of control. Third, individual hospitals' imputed accounting year revenues are apportioned among calendar years. For community hospitals, expenditure patterns from the AHA's National Hospital Panel Survey are used to make that split; non-community hospitals are assumed

Table 2
Standard Industrial Classification (SIC) for health care establishments: 1972 and 1987

SIC	1972 classification	1987 classification
801	Offices of physicians	Offices and clinics of medical doctors
802	Offices of dentists	Offices and clinics of dentists
803	Offices of osteopathic physicians	Offices and clinics of doctors of osteopathy
804	Offices of other health practitioners	Offices and clinics of other health practitioners
805	Nursing and personal care facilities	Nursing and personal care facilities
806	Hospitals	Hospitals
807	Medical and dental laboratories	Medical and dental laboratories
808	Outpatient clinics	Home health agencies
809	Home and allied services, not elsewhere classified	Miscellaneous health and allied services, not elsewhere classified ¹

¹Includes kidney dialysis centers and specialty outpatient facilities not classified as clinics under SIC 801-804.

SOURCE: Executive Office of the President, Office of Management and Budget: Data from the Standard Industrial Classification Manual, 1972 and 1987.

to spend one-twelfth of accounting year revenues in each month of that year (American Hospital Association, 1963-90). At this stage, imputations are made to account for missing periods or overlapping periods in a hospital's report stream. Finally, data are extrapolated through the most recent calendar year, using patterns of acceleration and deceleration observed in the panel survey data previously mentioned.

Physician, dental, other professional services

The expenditures reported in these categories are for service rendered in establishments of health professionals. The category into which such expenditure falls is determined broadly by the SIC of the establishment in which service is provided. Thus, using the 1987 SIC, physicians comprise the offices and clinics of medical doctors (SIC 801) and of doctors of osteopathy (SIC 803), plus independently billing medical laboratories (a portion of SIC 8071). Dentists comprise offices and clinics of dentists (doctors of dental surgery or dental medicine) (SIC 802). Other professional services comprise services provided by establishments falling into SIC 804 and part of SIC 809. Exceptions to this rule, principally treatment of staff-model health maintenance organizations (HMOs), are discussed later.

The services of professionals working under salary for a hospital, nursing home, or some other type of health care establishment are reported with expenditures for the service offered by the establishment. For example, care rendered by hospital residents and interns is defined to be hospital care; services provided by nursing home staff nurses are included with nursing home care. In addition, some physicians receive professional fees from arrangements with hospitals, including minimum guaranteed income, percentage of departmental billing, and bonuses. These fees are counted with hospital expenditures, rather than with expenditures for physician services. If the medical professionals are serving in the field services of the Armed Forces, their professional salaries are included with other health services.

Through the estimates for the late 1970s, expenditures for professional services were based primarily on statistics compiled and published by the Internal Revenue Service (IRS). Business receipts (which exclude non-practice income) were summed for sole proprietorships, partnerships, and incorporated practices to form the bulk of the estimate. However, the gradual deterioration of the timeliness and statistical variance of the IRS data in the late 1970s prompted a modification of the estimation techniques used to compile NHE. As a result of budget cuts, the IRS was forced to reduce the size of the sample of income tax returns used to prepare its *Statistics of Income* (SOI). The reduced sample size resulted in erratic estimates of year-to-year growth that severely limited the usefulness of the SOI to make time-series estimates of health spending.

Fortunately, new data sources emerged to supplement and replace data formerly received from the IRS. The Services Annual Survey (SAS) provides estimates of the year-to-year change in business receipts (U.S. Bureau of the Census, 1984-90a).

Also available is the quinquennial Census of Service Industries (U.S. Bureau of the Census, 1977, 1982, and 1987). This 5-year census gathers business receipt information from all service establishments, providing benchmarks for the SAS, which only surveys a sample of service establishments. In addition, the quinquennial census provides more detailed data than the SAS.

The last quinquennial census, completed for 1987, used the 1987 SIC codes. A crosswalk between the 1987 and the 1972 SICs was provided to enable users to compare the results with historical quinquennial censuses and with the SAS. (Until 1992, data for the SAS was collected on a 1972 SIC basis.) The crosswalk allows analysts to compare the two data series, adjust the SAS levels to the quinquennial census levels at census years, and interpolate the levels between quinquennial census years.

In addition, the following are used to verify the physician services expenditures: figures on employment, hours, and earnings in non-government health establishments, provided by the U.S. Bureau of Labor Statistics (1972-91); estimates of price inflation provided by the Consumer Price Index (CPI) (U.S. Bureau of Labor Statistics, 1960-90); and indirect measures of professional services, such as hospital admissions, inpatient days, and so on.

The physician services estimates contain some modifications to the raw figures for SICs 801, 803, and 8071. For example, an adjustment is made for the portion of independent laboratory services billed through the physician (and thus appearing in the receipts of both establishments). An estimate of salaried physician services provided through staff-model prepaid health plans such as HMOs is added, because those establishments do not fall into SICs 801 or 803.

As is the case for physician services, spending for dental services was estimated using IRS data (Internal Revenue Service, 1960-89), supplemented with the U.S. Bureau of the Census SAS in later years. Additional information from the American Dental Association (ADA) (1980-89) on dental office expenditures, figures on employment from both the employment and earnings statistics and the Current Population Survey (U.S. Bureau of Labor Statistics, 1979-88), the CPI for dental expenses, and dental visits from the Health Interview Survey conducted by the National Center for Health Statistics (1966-89) are considered as the final estimates are prepared.

The receipts of dental laboratories (SIC 8072) are not included explicitly, because all billings are assumed to be made through dental offices and thus to be already included in expenditure estimates.

Other professional services covers spending for services of licensed health practitioners other than physicians and dentists and expenditures for services rendered in freestanding outpatient clinics such as kidney dialysis centers (SIC 8092) and specialty outpatient facilities (SIC 8093).

Professional services include those provided by private-duty nurses, chiropractors, podiatrists, and optometrists, among others. These estimates are made using data from the IRS, the U.S. Bureau of the Census, and the U.S. Bureau of Labor Statistics. A portion of optometrist receipts presumed to represent the dispensing of eyeglasses is deducted, as that money is reported under spending for eyeglasses and appliances.

Expenditures in clinics (SIC 809) are estimated in two parts. Figures for community health centers, which are federally funded clinics that provide outpatient care for the poor, are prepared using information from Federal budget documents and data from the Health Resources and Services Administration (1983-90). (Before the 1988 revisions, spending for these services was included in the other personal health care category.)

The rest of outpatient clinic expenditures are estimated using the U.S. Bureau of the Census SAS. Prior to the 1988 revisions, the clinic estimate was based primarily on statistics from the IRS for SIC 809.

Home health care

The home health component of the NHA measures annual expenditures for medical care services delivered in the home by non-facility-based home health agencies (HHAs). The 1987 SIC defines home health care providers (SIC 8082) to be establishments primarily engaged in providing skilled nursing or medical care in the home, under supervision of a physician.

Data used to prepare the estimates of spending for home health care in the NHA are based on information obtained from cost reports submitted to Health Care Financing Administration (HCFA) (1974-76, 1981-84) by Medicare-certified HHAs. Information covering the full scope of medical services provided by certified and non-certified HHAs is not yet available. A specific code was established for HHAs in the 1987 SIC. Although a limited amount of data for SIC 8082 is currently being collected, it may be several years before reliable data become available. Prior to the 1987 revisions to the SIC that established SIC 8082, home health services were provided by organizations in the 1972 SIC 809, as well as agencies operating through establishments outside SIC 80 (usually through temporary help agencies). Information on the industry will also become available from the National Center for Health Statistics (NCHS), when they survey a sample of approximately 10,000 HHAs they have identified.

As defined in the NHA, home health excludes services provided by facility-based HHAs; medical equipment sales or rentals not billed through Medicare

HHAs; and services provided by agencies not certified by the Medicare program. Services traditionally considered home health care that are not included in this component or in any other component of the NHA include: non-medical types of care such as Meals on Wheels, chore-worker services, friendly visits, or other social or custodial services; and nursing services provided by nurse registries (those that fall outside SIC 80, such as temporary help agencies that are not separately measurable for NHA purposes).

Total HHA costs and the share attributable to Medicare are available from unaudited cost reports submitted to Medicare by HHAs. Analyses of cost report data from agencies that were not part of a hospital or nursing home indicate that agency costs for services, medical equipment, and supplies provided to Medicare patients represent approximately 50 percent of total agency costs. This share was observed in data extracted from cost report files in the mid-1970s and the examination of annual data for 1981-84 verified Medicare's 50-percent share (Health Care Financing Administration, 1974-76, 1981-84).

Estimates of national spending for Medicare-provider home health care in each year from 1967 through 1984 were obtained by doubling Medicare spending for non-facility-based HHA services, then adding an estimate of beneficiary liability for Medicare Part B copayments from 1967 through 1981. (Medicare dropped beneficiary copayment requirements from home health services in 1982.)

Estimated Medicare-provider home health spending for each year after 1984 was inflated to reflect higher levels of spending for home health care by Medicaid. In fiscal year 1984, Medicaid funded almost 32 percent of the estimated spending for home health care. The fiscal year 1984 share of total spending was applied to estimates for each year after 1984. The additional amount of Medicaid spending obtained was then added to the Medicare-provider estimate to produce new levels of total spending for home health care.

Medicaid's share of total spending for home health care grew rapidly in 1985 and later because of a new category of service called personal care. Medicaid-covered services delivered in the home by qualified professionals are classified as personal care. The care provided must be prescribed by a physician as is the case when care is provided by HHA personnel.

Estimates of spending for home health care from 1960 through 1966 were obtained from information reported by a sample of voluntary public health nursing agencies. Data on voluntary public health nursing agency income and expenditures were collected in surveys conducted by the National League for Nursing in 1958, 1963, and 1967. Survey data on total agency income and income from patient fees were weighted to estimate income of all voluntary public health nursing agencies, and then estimated for each non-survey year between 1958 and 1968 (Freeman, 1969).

Drugs and other non-durable products

This class of expenditure is limited to spending for products purchased from retail outlets. The value of drugs and other products provided to patients by hospitals (on an inpatient or outpatient basis) and nursing homes, and by health care practitioners as part of a provider contact, are implicit in estimates of spending for those providers' services.

The category of prescription drugs includes retail sales of human-use dosage-form drugs, biologicals, and diagnostic products. These transactions can occur in community or HMO pharmacies, grocery store pharmacies, mail-order establishments, etc. Using a methodology originally developed by the Actuarial Research Corporation (Trapnell and Genuardi, 1987), manufacturers' domestic drug sales were augmented by wholesale and retail markups and by inventory changes to arrive at final consumption by various classes of end users (hospitals, pharmacies, etc.). Those classes of users that are included in the NHA were aggregated to the NHE figure.

Non-prescription drugs and medical sundries comprise a long list of products. The estimate is based on personal consumption expenditures (PCE) for non-durable goods, which constitute a category of the GDP. PCE includes spending for such items as rubber medical sundries, heating pads, bandages, and non-prescription drugs and analgesics. That portion of the PCE category that matches the NHA definition was established in each of several GNP benchmark years, using detailed PCE tables for 1963, 1967, 1972, 1977, and 1982. Published PCE estimates and data from the Census of Retail Trade, Merchandise Line Sales were used to interpolate and extrapolate those benchmarked figures (U.S. Bureau of the Census, 1982).

Vision products and other medical durables

These expenditures are for such items as eyeglasses, hearing aids, surgical appliances and supplies, bulk and cylinder oxygen, and equipment rental. As in the case of non-durables, estimates of durable goods expenditures are based upon PCE. To accommodate the NHA definitions, adjustments were made to the PCE categories for ophthalmic and orthopedic appliances and other professional services in the GNP benchmark years as previously mentioned. An additional benchmark was set in 1987 using economic census data. Published PCE estimates were used to interpolate and then extrapolate the adjusted benchmark levels.

Nursing home care

The nursing home care component of the NHA measures the Nation's annual expenditures for inpatient nursing care. In the 1972 and 1987 SIC, nursing and personal care facilities (SIC 805) are establishments primarily engaged in providing inpatient nursing and health-related personal care through active treatment programs for medical and health-related conditions. In addition to skilled nursing facilities (SNFs) and intermediate care facilities (ICFs), the estimates

presented here include government outlays for care provided in nursing facilities operated by the U.S. Department of Veterans Affairs (DVA), and for nursing home services in intermediate care facilities for the mentally retarded financed by the Medicaid program. DVA outlays are adjusted to exclude outlays for domiciliary care, which is not medical in nature.

Information on nursing homes was obtained primarily from surveys conducted by NCHS (1972, 1977, and 1985). Estimates of spending for nursing home care in 1972 and 1976 were derived from NCHS's estimated average revenue per day for all facilities providing some nursing care. (National average revenue per day in 1985 was not benchmarked because of the relatively low response rate by nursing facilities to revenue questions in the 1985 National Nursing Home Survey.)

Data on growth in the number of nursing home employee work hours and in input prices were used to extrapolate 1972 revenue data to earlier years and 1976 revenue to later years. Estimates of average weekly work hours are derived from data reported by employers and published monthly by the U.S. Bureau of Labor Statistics (1972-91) for nursing and personal care facilities (SIC 805). Growth in costs of nursing home industry goods and services (labor and non-labor expenses) are maintained by HCFA (1991) in the national nursing home input price index.

Other personal health care

This category of spending covers two types of expenditure. One is industrial inplant services, and the other is government expenditure for care not specified by kind.

Industrial inplant services are facilities or supplies provided by employers for the health care needs of their employees. The services may be offered either onsite or offsite.

The industrial inplant estimates were derived from various data sources. A 1984 survey of employer-sponsored health plans (McDonnell et al., 1986) produced an estimated cost per employee with access to covered services in 1984; that cost was extrapolated backward and forward in time using the medical care component of the CPI.

The U.S. Bureau of Labor Statistics reports the number of people in the employed civilian labor force. The cost per covered employee was multiplied by the number of employed civilians to produce the estimated cost of inplant health services. Government budget data provide the basis of most of the estimates of government spending in this category.

For government expenditure, other personal health care is a catchall for funds that are known to be spent for health care but for which the object is unknown or not classifiable elsewhere. For example, expenses for shipboard facilities and field stations operated by the U.S. Department of Defense are in this category, as are non-hospital expenditures by the Alcohol, Drug Abuse and Mental Health Administration. School health programs constitute a large portion of the State and

local expenditures in this category. Government budget data provide the basis of most of the estimates of government spending for personal health care services.

Administration and net cost of insurance

This category of expenditure can be broken into three parts. The largest part comprises the difference between earned premiums and incurred benefits of private health insurers. This difference, which accounts for administrative costs, net additions to reserves, rate credits and dividends, premium taxes, and profits or losses, is estimated separately for the various types of insurers. Data from the National Association of Blue Cross and Blue Shield (1960-90) plans are used to estimate the net cost of plans marketed by its members. Annual data on premiums and benefits published by the National Underwriter Company (1960-91) are used to develop estimates for commercial carriers. Data for self-insured and prepaid plans come from a variety of sources, primarily the Survey of Health Insurance Plans conducted by HCFA (McDonnell et al., 1986). These estimates are cross-checked using unpublished survey data from the Employer Cost Index Survey and the Consumer Expenditure Survey (CE) (U.S. Bureau of Labor Statistics, 1980-90 and 1984-89).

The next largest part comprises the administrative expenses of government programs. Although all programs incur administrative expenses, not all report them as an identifiable item. Typically, those that do report administration are the bigger programs, accounting for 98 percent of Federal personal health care expenditures in 1990, and for 72 percent of State and local personal health care expenditures.

The smallest part comprises the administrative expenses associated with health activities of philanthropic organizations. Specifically, these are the overhead expenses incurred by donor organizations—those that channel money to providers or researchers. Estimates of the level of administrative expense were made for philanthropic foundations, for voluntary health agencies, and for United Way campaigns, based on published and unpublished data from national associations of the various groups.

Government public health activity

In addition to funding the care of individual citizens, governments are involved in organizing and delivering health care in general, in the prevention and control of clinical health problems in the population, and in other such functions. In the NHA, spending for these activities is reported as government public health activity. Funding for health research and for construction of facilities is reported in their respective categories; spending for environmental functions (air and water pollution abatement, sanitation and sewage treatment, water supplies, and so on) is excluded.

Most Federal Government public health activity emanates from the U.S. Department of Health and Human Services. The Food and Drug Administration and the Centers for Disease Control account for an overwhelming majority of Federal spending in the area.

State and local expenditures are principally those made by State and local health departments. Federal payments to State public health organizations are deducted to avoid double counting, as are expenditures made through the Maternal and Child Health Program and the Crippled Children's Program. State and local government departments for environmental functions (sewer authorities, for example) are excluded from the NHA.

There are two basic data sources used in estimation of government public health activity. Federal spending is taken from annual budget documents prepared by the various agencies and summarized in *The Budget of the United States Government* (Executive Office of the President, 1960-91). State and local government spending is estimated using data from the quinquennial (5-year) Compendium of Government Finances (U.S. Bureau of the Census, 1957, 1962, 1967, 1972, 1977, 1982, and 1987) and from its annual survey of State government and local government finances. (The latter survey is made of all State governments and a random sample of local government units drawn from the 5-year census [U.S. Bureau of the Census, 1960-90b].)

Research

Research shown separately in the NHA is that activity carried out by non-profit or government entities. Research and development expenditures by drug manufacturers are not shown in this line, as those expenditures are treated as intermediate purchases under the definitions of national income accounting; that is, the value of that research is deemed to be recouped in the same year through the companies' sales.

Estimates in the NHA were provided by the National Institutes of Health (1990), which accounts for about two-thirds of the total expended. Training and construction are excluded, but general support is included. Figures are reported by source of funds and by performer, although the latter disaggregation is not shown here. The data are reported by the National Institutes of Health on a variety of timeframes (Federal fiscal years, June fiscal years, and calendar years) and are converted to calendar years where necessary by non-linear interpolation.

Construction

The construction component of the NHA is limited to the value of new construction put in place for hospitals and nursing homes. Estimates are taken from the C-30 survey of new construction (U.S. Bureau of the Census, 1960-90a). The measure includes new buildings; additions, alterations, major replacements, and so on; mechanical and electric installations; and site preparation. Maintenance and repairs are excluded, as are non-structural equipment such as X-ray machines and beds. The value of new construction put in place includes the cost of materials and labor, contractor profit, the cost of architectural and engineering work, those overhead and administrative costs chargeable to

the project on the owner's books, and interest and taxes paid during construction.

According to the U.S. Bureau of the Census, the figures reported include "health care and institutional facilities except housing for nurses and doctors. Also included are sanatoria, convalescent and rest homes, nursing homes, orphanages, and similar establishments for prolonged care" (U.S. Bureau of the Census, 1960-90a). Surgical or outpatient clinics are also covered, but buildings that are used primarily for providers' offices are excluded.

The value of new construction put in place is divided among the various sources of construction funds on the basis of periodic surveys conducted by the American Hospital Association (Mullner et al., 1981).

At this point of the NHA, NHEs still does not include purchases of producers' durable equipment (PDE). PDE in the health sector includes beds, X-ray equipment, computers, and so on. The exclusion has been forced by lack of data: There is no consistent source of time series information on spending by the health sector for movable equipment. HCFA analysts are working on estimates and hope to include PDE in the accounts with the next benchmark.

Sources of funds

Out-of-pocket expenditure

Out-of-pocket spending for health care includes direct spending by consumers for all health care goods and services. Included in this estimate is the amount paid out of pocket for services not covered by insurance, the amount of coinsurance and deductibles required by private health insurance and by public programs such as Medicare and Medicaid (and not paid by some other third party), and the payment to providers for services and goods that exceed the usual, customary, or reasonable charges paid by third parties.

To avoid double counting, premium payments to insurers are not included in the NHA out-of-pocket category of funds. The intent of these source of funds disaggregation is to track payments from the bill payer to providers of care. Part of the premiums paid to private insurers (and all of the premiums paid to Medicare's SMI) are subsequently distributed to providers, and are measured as a source of funds as they pass through the third parties' hands. For the same reason, Medicare coinsurance and deductible amounts paid by medigap insurers are included as insurance benefits rather than out-of-pocket spending.

For most services, out-of-pocket spending estimates for 1980 through 1989 are based on information from the CE conducted by the U.S. Bureau of Labor Statistics (1984-89). This survey tracks the spending patterns of the non-institutional population for all goods and services purchased during the year. In the CE, out-of-pocket spending is reduced by the amount of insurance payment received by individuals.

Sources other than the CE form the basis for out-of-pocket spending in two categories. Because the majority of nursing home care services is delivered to

institutionalized people, out-of-pocket spending for this service is not adequately represented in the CE. In this case, information from the periodic nursing home surveys mentioned earlier was used to make the estimates. Out-of-pocket spending for home health care in the CE is included within a spending category that covers all licensed professionals except physicians and dentists. For that reason, out-of-pocket spending estimates for home health care were based on historical and current surveys conducted by the Visiting Nurse Association (1988) and its predecessor, Voluntary Public Health Nurses Association.

For several categories of spending, other information from trade associations and government surveys is used to supplement the CE. The AHA (1980-89), the AMA (1984-90), and the ADA (1980-89) survey their respective memberships for sources of revenue received by these providers. In addition, the Health Resources and Services Administration for Community Health Centers and the U.S. Bureau of the Census' SAS for outpatient clinics supply sources of funding information.

Surveys of the non-institutional population's health care use and financing patterns have been conducted periodically over the past three decades. For 1963 and 1970, the Center for Health Administration Studies and the National Opinion Research Center, both at the University of Chicago, surveyed individuals for the purpose of providing "reliable and valid statistics of medical care use and expenditures for . . . public policy and research activities" (Research Triangle Institute, 1987). These studies were followed in 1977 by the National Medical Care Expenditure Survey (National Center for Health Services Research, 1977) and in 1980 by the National Medical Care and Utilization Survey (National Center for Health Statistics, 1980). (Expenditure information from the National Medical Expenditure Survey covering 1987 recently became available. Data from this source will be integrated into the NHA during the next benchmark revision.) These surveys have provided information used to determine the amount of out-of-pocket spending in historic periods.

Private health insurance

At the NHE level, private health insurance expenditures equal the premiums earned by private health insurers. This figure is decomposed to benefits incurred (personal health care expenditures) and net cost, the difference between premiums and benefits.

By showing total premiums as the measure of private health insurance, the NHA give the user an idea of the size of the industry. The actual distinction between out-of-pocket spending and private insurance becomes blurred, however, to the extent that other entities, including the enrollee, are responsible for payment of the premiums. To understand who pays private health insurance premiums, analysts estimate, in a separate satellite account, private insurance premiums according to payer: employer-paid, individually paid, and government-paid (Levit and Cowan, 1991).

In addition to the traditional insurers such as commercial carriers and Blue Cross and Blue Shield, the NHA category for private health insurance includes a number of other plans. Health maintenance organizations are included here, as are self-insured plans. The latter are composed of employers and other groups who directly assume the major cost of health insurance for their employees or members. Some self-insured plans bear the entire risk. Others purchase stop-loss insurance or look to traditional carriers for minimum-premium plans furnishing administrative services and insurance against large claims. Some self-insured plans contract with traditional carriers or third-party administrators for claims processing and other administrative services; others are self-administered.

Estimates of private health insurance benefits by type of service were developed in conjunction with out-of-pocket spending. Both relied on periodic historical surveys to determine the relative share of private health insurance and out-of-pocket spending. Surveys by medical trade associations, the Visiting Nurse Association, and the Federal Government augmented the person survey data.

Estimates of total premiums earned by private health insurers are derived from the data series on the financial experience of private health insurance organizations compiled and analyzed by HCFA (Arnett and Trapnell, 1984). Data for these estimates are furnished by the Health Insurance Association of America, the National Underwriter Company, Blue Cross and Blue Shield Association, Group Health Association of America, and a survey of self-insured and prepaid health plans conducted by HCFA. These estimates are verified using the Employment Cost Index Survey and the CE (U.S. Bureau of Labor Statistics, 1980-90).

Non-patient revenue and philanthropy

Non-patient revenues are those revenues received for which no direct patient care services are rendered. The most widely recognized source of non-patient revenues is philanthropy. Philanthropic support may be direct from individuals or may be obtained through philanthropic fundraising organizations such as the United Way. Support may also be obtained from foundations or corporations. Philanthropic revenues may be spent directly for patient care or may be held in an endowment fund to produce income to cover current expenses.

For institutions such as hospitals, nursing homes, and HHAs, non-patient revenues also include income from the operation of gift shops, cafeterias, parking lots, and educational programs, as well as investment income.

For hospitals, estimates of non-patient revenue are based on data gathered by the AHA in its annual survey of all hospitals and in its National Hospital Panel Survey of community hospitals. For physicians, estimates are based on historical percentages of philanthropic funding supporting these services. The U.S. Bureau of the Census (1984-90b), in unpublished data from its Services Annual Survey, provides information on philanthropic source of funds for other

professional services. Non-patient revenue information for home health care comes from historical surveys by the Voluntary Public Health Nurses Association (Freeman, 1969) and current surveys by the Visiting Nurse Association. For nursing home care, non-patient revenues are based on data supplied in the periodic national nursing home surveys.

Current fundraising expenses of philanthropic organizations, carried in the NHA as part of administration, are derived from estimates of administrative expense of philanthropic foundations, voluntary health agencies, and the United Way (Applied Systems Technologies, Inc., 1990). Estimates of philanthropic support of research are based on data from NIH (National Institutes of Health, 1990). Philanthropic funds used in the construction of hospitals are estimated using periodic survey reports on hospital construction as reported by the AHA (Mullner et al., 1981).

Medicare

Estimates of Medicare spending for health services and supplies are based on information received from Medicare actuaries, reports submitted by Medicare contractors, and administrative and statistical records.

Medicare actuaries prepare cash-flow and incurred-benefit estimates by type of benefit based on program information from the Medicare reporting system. A series of adjustments to the actuarial estimates of incurred benefits are necessary to achieve consistency between estimates of Medicare spending and the definitions and concepts of the NHA.

Hospital care is a summation of incurred benefits for inpatient hospital care, outpatient hospital care, home health care furnished by hospital-based HHAs, and estimated "combined billing" amounts for services of hospital-based physicians (combined billing was allowed by Medicare for inpatient expenses incurred through fiscal year 1983). Outpatient benefits were adjusted to exclude estimated payments to freestanding end stage renal disease (FS/ESRD) facilities.

Estimates of spending for physician services and for supplier services are extracted from actuarial estimates of incurred benefits for physician and Medicare Part B supplier services. Categorizations were based on proportional distributions of provider specialty designations coded on various administrative and statistical records.

Physician services include the estimated physician portion of incurred benefits for physicians and Medicare Part B supplier services, and laboratory services furnished by independently billing laboratories. Payments to group practice prepayment plans (which include HMOs, competitive medical plans, and health care prepayment plans) are also included.

The supplier share of incurred benefits for physician and Part B supplier services is subdivided into other health professionals, ambulance services, and durable medical equipment (DME). Again, categorizations were based on provider specialty designations.

The category of other professional services includes payments for the services of other health professionals, ambulance services, and FS/ESRD facilities. Incurred benefits for home health care are adjusted to exclude the share of spending accounted for by hospital-based HHAs. Medical durable expenditures include payments for the purchase or rental of DME from Medicare Part B suppliers and payments for oxygen and oxygen-related equipment.

No adjustments are made to incurred-benefit estimates for SNF services.

Medicare outlays for administrative expenses are obtained from U.S. Department of the Treasury reports submitted to Medicare actuaries.

Medicaid

Medicaid estimates are based primarily on financial information reports filed by the State Medicaid agencies on Form HCFA-64. These reports provide total program expenditures and service distributions. Prior to the availability of the Form HCFA-64 in 1979, State statistical reports (Form HCFA-2082) were used to develop service distributions. The Federal share of Medicaid spending was taken from Federal budget outlay data (Executive Office of the President, 1960-91; U.S. Department of the Treasury, 1991).

Several adjustments to reported program data are necessary to fit the estimates into the framework of the NHA. An estimate of Medicaid buy-ins to Medicare is deducted to avoid double counting when the programs are presented together. An estimate of hospital-based home health care spending is added to hospital care expenditures and subtracted from home health care expenditures. That portion of reported program expenditures for intermediate care facilities for the mentally retarded estimated to cover services in hospital-based facilities (40 percent of the total) is counted as hospital care rather than nursing home care.

State and local government hospital subsidy

State and local governments subsidize the operation of hospitals through tax appropriations. These revenues assist hospitals in meeting the revenue shortfall between patient revenues received and the expense of operation.

Estimates for 1960-82 tax subsidies to non-Federal hospitals were generated from the quinquennial Census of Governments and the annual survey of government finances (U.S. Bureau of the Census, 1960-90b). Information on State and local expenditures to hospitals was adjusted to exclude State and local expenditures counted elsewhere in the NHA, such as maternal and child health, medical vocational rehabilitation, general assistance, and Medicaid payments to State and local hospitals.

From 1983 through 1990, tax subsidies were estimated using American Hospital Association (1980-89) information on revenue sources collected as part of their annual survey of hospitals.

Other government programs

All health care expenditures that are channeled through any program established by public law are treated as a public expenditure in the NHA. For example, expenditures under workers' compensation programs are included with government expenditures, even though they involve benefits paid by insurers from premiums that have been collected from private sources. Similarly, premiums paid by enrollees for Medicare SMI are treated as public, rather than private, expenditure, because payment of benefits is made by a public program.

To be included in the NHA, a program must have provision of care or treatment of disease as its primary focus. For this reason, nutrition, sanitation, and antipollution programs are excluded. Another example of this is "Meals on Wheels," which is excluded from the NHA because it is viewed as a nutrition program rather than a health service program.

Statistics on Federal program expenditures are based, in part, on data reported by the budget offices of Federal agencies. Several differences exist from spending reported in the Federal budget because of the conceptual framework on which the NHA are based. Expenditures for education and training of health professionals (including direct support of health professional schools and student assistance through loans and scholarships) are excluded from NHE. Payments made by government agencies for employee health insurance are included with private health insurance expenditures, rather than government expenditures. Breakdowns by type of goods or services are based on information obtained from the agencies that administer each program.

In particular, data on direct health care costs for the U.S. Department of Defense are taken from annual budget documents. Adjustments are made to remove items outside the scope of the NHA (payroll of patients, for example) and to convert data to a calendar-year basis. Unpublished data provided by the U.S. Department of Defense (1984-86) are used to separate hospital care from other services. Data for the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) are provided directly by the program administrators, including data to separate hospital care from other services (U.S. Department of Defense, 1980-90).

Estimates of health expenditures by the DVA are prepared using data from annual Federal budget documents, monthly data from the U.S. Department of the Treasury on receipts and outlays of the U.S. Government, and the U.S. Department of Veterans Affairs (1960-90) *Annual Report*. In addition, administrators of the Civilian Health and Medical Program of the Veterans Administration (CHAMPVA) provide unpublished information on that program (U.S. Department of Veterans Affairs, 1960-90).

In general, all spending by State and local government units that is not reimbursed by the Federal Government (through benefit payments or grants-in-aid) nor by patients or their agents is treated as State

and local expenditures. State and local spending is net of Federal reimbursements and grants-in-aid for various programs. As with Federal expenditures, payment for employee health insurance by State and local governments is included under private health insurance expenditures.

Data covering State and local programs come from a variety of sources. Reports to HCFA from State Medicaid agencies provide data on that program. State agencies handling general assistance programs supply information on State-specific programs; this information replaces data formerly reported to HCFA via Medicaid reports. The U.S. Bureau of the Census collects data on State and local health and hospital expenditures, through its quinquennial census and intercensal sample surveys. The National Center for Educational Statistics (1991) furnishes data used to estimate school health program expenditures. There are non-Federal sources of information, as well: the Public Health Foundation (1977-90) (established by the Association of State and Territorial Health Officials) reporting system furnishes data on State and local spending under the Maternal and Child Health and Crippled Childrens' programs.

Deflating personal health care expenditures

Health care spending has grown more rapidly than other sectors of the economy. This is not necessarily a problem, if the value obtained for the expenditure meets societal priorities in terms of additional quantity and quality of services purchased. In health care, price inflation plays a major role in rapidly increasing costs. Deflating health care spending separates the effects of price growth from growth attributable to all other factors. However, the index used to deflate health expenditures will determine the growth attributable to all other factors, and its meaning.

One approach to removing the effects of price growth from health spending is to deflate health care expenditures by a measure of medical specific price inflation.² The resulting measure of "real" growth gauges growth in quantity of health services delivered per capita devoid of medical care price changes. Quantity changes are generated by technological developments, changes in the age and sex composition of the population, or any changes in the intensity and quantity of health care services delivered per person. Also, this residual would include the net effect of any error in the measurement of medical prices or medical expenditures. The Office of the Actuary develops a personal health care expenditure fixed-weight price index (PHCE-FWPI) as a tool to deflate personal health care expenditures per capita (construction of PHCE-FWPI is discussed later).

An alternate approach to deflating health spending is to remove the effects of economywide inflation alone. The most appropriate deflator for economywide prices

Table 3
Derivation of the personal health care expenditure fixed-weight price index

Commodity or service	Price proxy	1982 weight
All personal health care	—	100.0
Hospital care	Hospital Input Price Index ¹	47.4
Physician services	CPI ² , physician services	18.8
Dental services	CPI ² , dental services	6.4
Other professional services and home health care ³	CPI ² , professional services	4.9
Drugs and other medical non-durables	CPI ² , medical care commodities	9.6
Vision products and other medical durables	CPI ² , eye care	1.8
Nursing home care	National Nursing Home Input Price Index	9.1
Other personal care	CPI ² , medical care	1.9

¹The specific hospital input price index is All Hospitals with Capital and Medical Fees (Wages = AHE806NS, Fringes = PanelFB).

²Consumer Price Index for all urban consumers, U.S. Department of Labor, Bureau of Labor Statistics. Indexes are scaled so that the 1982 value is 100.0.

³Two categories combined because no price proxy is available for home health care for the entire time period.

NOTE: CPI is Consumer Price Index.

SOURCE: Health Care Financing Administration, Office of the Actuary: Data from the Office of National Health Statistics.

for our purpose is the GNP fixed-weight price index (GNP-FWPI).³ The GNP-FWPI is the most comprehensive measure of pure price inflation for the economy as a whole. Personal health care expenditures per capita deflated by the GNP-FWPI can be interpreted as the opportunity cost of health care. These constant dollar health care costs per capita measure the value of the other goods and services that society could have purchased instead of health care. This measure eliminates the cause of growth over which the health sector has little control—economywide inflation. The remainder measures changes in medical specific price inflation in excess of economywide inflation, and intensity and use per capita of health care services. These are factors over which the health sector has at least some control.

The PHCE-FWPI is a Laspeyres index with 1982 as a base year. Table 3 lists price proxies assigned to each component of PHCE, along with a weight that is equal to the proportion of PHCE that component represented in the base year 1982. For each year, PHCE-FWPI is the summation of each index multiplied by its 1982 weight.

In our judgment, this PHCE-FWPI is a more appropriate measure of medical price inflation associated with PHCE than two other available indexes—CPI or personal consumption fixed-weight price index. First, the medical care component of the CPI is weighted based on consumer out-of-pocket expenditures. Because a large proportion of health care is paid for by third parties, certain health care services are assigned weights that under- or over-represent their

²Growth in population has remained fairly constant at about 1 percent per year since 1960. Therefore, per capita spending has been used to simplify this discussion.

³Beginning with the 1991 update to the NHA, GDP fixed-weight price index will be used as a measure of economywide prices.

Table 4

**Personal health care expenditures in current and constant dollars and associated price indexes,
by type of spending: Selected years 1960-90**

Type of spending	1960	1970	1980	1982	1990
	Current dollars in billions				
Personal health care	\$23.9	\$64.9	\$219.4	\$286.4	\$585.3
Hospital care	9.3	27.9	102.4	135.9	256.0
Physician services	5.3	13.6	41.9	53.8	125.7
Dental services	2.0	4.7	14.4	18.4	34.0
Other professional services and home health care	0.6	1.7	10.0	14.0	38.5
Drugs and other medical non-durables	4.2	8.8	21.6	27.6	54.8
Vision products and other medical durables	0.8	2.0	4.6	5.1	12.1
Nursing home care	1.0	4.9	20.0	26.1	53.1
Other personal health care	0.7	1.4	4.6	5.6	11.3
	Price indexes				
Hospital care	22.7	36.2	81.7	100.0	153.8
Physician services	23.5	37.1	82.3	100.0	173.2
Dental services	29.0	42.1	84.7	100.0	167.2
Other professional services and home health care	25.5	39.7	83.6	100.0	167.4
Drugs and other medical non-durables	50.8	50.3	81.7	100.0	177.2
Vision products and other medical durables	34.8	46.4	86.7	100.0	143.6
Nursing home care	24.8	39.7	83.9	100.0	147.3
Other personal health care	24.1	36.7	80.9	100.0	176.0
	Constant 1982 dollars in billions				
Personal health care	90.1	166.9	266.3	286.4	364.1
Hospital care	40.8	77.2	125.3	135.9	166.5
Physician services	22.4	36.6	50.9	53.8	72.6
Dental services	6.8	11.1	17.0	18.4	20.3
Other professional services and home health care	2.5	4.2	12.0	14.0	23.0
Drugs and other medical non-durables	8.4	17.5	26.5	27.6	30.8
Vision products and other medical durables	2.3	4.4	5.3	5.1	8.5
Nursing home care	4.0	12.3	23.8	26.1	36.1
Other personal health care	2.9	3.7	5.6	5.6	6.4

SOURCE: Health Care Financing Administration, Office of the Actuary: Data from the Office of National Health Statistics.

share if all payers were considered. For example, hospital care, accounting for only 9 percent of all out-of-pocket expenditures, is under-valued in the CPI, because hospital care spending comprises 39 percent of PHCE. Second, the medical care component of the personal consumption fixed-weight price index, estimated and published as part of the national income and product accounts, includes only portions of public expenditures when its weights are determined. Expenses of government-owned-and-operated facilities are not included in the personal consumption portion of the GNP, but in government purchases of goods and services.

Each component of PHCE can be deflated by its assigned price index to produce a constant dollar estimate of that component (Table 4). Summing all of the deflated components yields a constant dollar estimate of PHCE. This constant dollar PHCE estimate differs from PHCE deflated by FWPI-PHCE in that it reflects any change in quantity purchased of each of the components.

Summary

This article identifies the importance of NHA in understanding the structure and trends in health expenditures. Such information plays a pivotal role in national health care policy. It also serves as a base from which subaccounts of expenditures useful to decisionmakers can be crafted. These subaccounts may

present spending data by population age group, by geographic location, or by final payers such as business. In addition, health accounts serve as a base from which projections of health expenditures can be modelled.

On occasion, other countries may look to the lessons learned in the United States in creating the NHA. The concepts, data sources, and methods used may serve as one model nations might consult in developing statistical systems to monitor health care expenditures. The concepts are driven by the structure of the health care system, the policy needs of government and private industry, and available data. The data sources, including both public and private surveys, are often developed for reasons unrelated to health accounts. As such, methods must be developed to modify data to match concepts useful for analyzing the health care system. Because the health care system changes over time, NHA must be periodically re-examined to determine the extent or scope of health care, and to insure that the best concepts, data sources, and methods are being captured.

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