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# EXPENDITURES ON HEALTH CARE FOR CHILDREN AND PREGNANT WOMEN

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## ABSTRACT

The chronic health care crisis in the United States is primarily the result of rapidly rising health care costs which leave millions of children and pregnant women without health insurance, with restricted access to health care, and at risk for poor health. A better understanding of the current system is key to any reform effort. The authors analyze estimates of annual expenditures on medical care services for children covering the period from conception through age 18 years, including expenditures on pregnancy and delivery. They focus their attention on the distribution of health care expenditures by type of service and source of payment, on how expenditures differ for children of different ages and for adults, and on the rate of growth in expenditures on health care for children.

The authors suggest that, because there has been a decline in the relative share of expenditures accounted for by children, efforts to expand third-party financing of their health care will be less likely to overwhelm the system than would efforts to expand coverage to other groups. Families who are especially in need of extended health care coverage are those of children with major illnesses who are exposed to catastrophic costs. Efforts at cost containment may be most effective if focused on pregnancy and newborn care, areas in which expenditures have grown extremely rapidly in recent years. Finally, the authors conclude that, if expansion of health insurance coverage for children in the near term were to be incremental, expanded coverage for children 3 to 12 years old would probably have the smallest budgetary impact of any expansion in access to care.

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# EXPENDITURES ON HEALTH CARE FOR CHILDREN AND PREGNANT WOMENT

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Rising health care costs, which have thwarted both public and private efforts to slow their growth, are at the heart of the chronic crisis of the U.S. health care system.[1] These rising costs consume ever greater portions of the budgets of governments, businesses, and households, leaving fewer resources for other activities. Attempts to deal with the burden of rising health care costs have left millions of Americans without health insurance or with insurance that is seriously inadequate.

Children and pregnant women have not escaped the fallout from the rapid increase in health care costs. Despite recent expansion of government programs, more than 1 in 5 children were without health insurance at some time during 1991. As documented by Monheit and Cunningham in this issue, children without health insurance use less preventive care and less care for acute illness. Presumably their health suffers as a consequence of this reduced utilization. Legislation has been introduced at the federal level and in several states to extend health insurance coverage to more children, and public opinion polls indicate that the public is sympathetic to the health care needs of children. Yet there appears to be a reluctance to commit resources to new health care programs in an era of general fiscal austerity. Given the inexorable rise in health care costs, concerns about the wisdom of expanding health care financing without either bringing costs under control or addressing what many feel are the inefficiencies of the current system appear justified.

A better understanding of the current system, however, is key to any effort to reform health care financing for children and pregnant women. Generalizations drawn from the observations of the health care system as a whole may not be totally applicable to children, especially at the level of detail necessary for effective policymaking.[2] Accordingly, this article presents estimates of annual expenditures on medical care services for children covering the period from conception through age 18 years including expenditures on pregnancy and delivery. Among the questions addressed are: How are these health care expenditures distributed among different types of health services and different sources of payment? Is the level and mix of medical care expenditures different for children of different ages and different for children as compared to adults? Are these differences great enough so that an incremental approach to health care financing reform which focuses initially on children makes sense? What about the rate of growth in expenditures on health care for children? Is it as rapid as the rate of growth in aggregate health care expenditures? Is it driven by similar forces, so that developing effective cost control strategies will have to be an integral feature of any effort to expand children's access to health care services?

To be sure, a description of where we are today and some of the trends that got us here will not be sufficient to point the way to effective reforms, and some of the information presented may raise as many questions as are answered. Still, it appears that, in this era of heightened cost-consciousness, knowledge about the nature of U.S. expenditures on health care for children is vital for those who would improve children's health.

## Sources of Data

The 1987 National Medical Expenditure Survey (NMES) Household Survey is the primary source of the expenditure estimates provided in this report.[3] With a total sample of about 35,000 individuals in 14,000 households, this survey is

designed to provide estimates of the health status, use of health services, expenditures, sources of payment, and insurance coverage of the U.S. civilian population for the calendar year 1987. Each family in the survey sample was interviewed five times during 1987 and 1988 to obtain detailed, accurate information about each family member's health and health care utilization during 1987. To verify and supplement the information provided by the household respondents, separate surveys were performed on the medical care and health insurance providers of the households in the sample.[4] Special tabulations of individual NMES data on the utilization, cost, and source of payment for health care aggregated by age groups are the basis of the estimates reported in this article.[5]

Baseline data for explorations of trends in health care costs over the 10-year period 1977–1987 are obtained from the 1977 National Medical Care Expenditure Survey (NMCES). Similar in design to the 1987 NMES, the 1977 NMCES also supplemented multiple interviews of individuals in 14,000 households with information from health care providers, employers, and insurance companies to provide a comprehensive statistical picture of how health care services were used and paid for by the U.S. noninstitutionalized population in 1977.[6]

Both the NMCES and the NMES tabulations used in this analysis follow the NMCES procedure of not treating the stays of newborns delivered in hospitals as separate admissions unless the infant remained in the hospital beyond the day on which the mother was discharged.[7] Thus, in the NMES data, the costs associated with uncomplicated births (typically those in which the infant is discharged at the same time as the mother) are attributed to the mother, and the costs of complicated births (those where the infant remains in the hospital after the mother is discharged) are attributed to the infant and tabulated in the cost of medical care for children less than 2 years old. Because we could not obtain specific data on expenditures for all pregnancies in both

the NMCES and NMES, our estimates of the costs of pregnancy are constructed from a variety of data sources and reported in a separate section.[8] In the analysis that follows, we use the 1987 NMES to analyze health care expenditures for children by type of service, age of child, and sources of payment. We also compare expenditures on children's health care with expenditures on health care for adults and examine the source of growth in expenditures on children's health between 1977 and 1987. We then turn to a separate analysis of expenditures for pregnancy and infant health care.

Personal Health Care Expenditures

Modified personal health care expenditures (MPHCE) as used in this report include expenditures on hospital care, services of physicians, dentists, and other health professionals; prescription drugs; and other personal health care services and products (eyeglasses, hearing aids, and other medical equipment).[9] For children ages 0 to 18 years, MPHC expenditures totaled $49.8 billion in 1987 (see table 1). (Detailed tabulations of expenditure patterns by age, type of service, and source of payment are presented in appendix tables A1-A4.) Per capita expenditures (mean expenditures per child) were $737 and varied considerably by the age of the child.

As shown in table 1, for each age group, aggregate expenditures are the product of the population of the group, the proportion of the population with expenditures on medical care, and the mean expenditure for those with expenses. Although there are more than three times as many children in the 3- to 12-year-old age group as in the 0- to 2-year-old age group, aggregate expenditures for the 0- to 2-year-olds were 12% greater. This difference primarily reflects the fact that mean expenditures among 0- to 2-year-olds were more than three times as large as mean expenditures among 3- to 12-year-olds. Mean expenditures for adolescents (ages 13 to 18) were almost twice as large as mean expenditures for 3- to 12-year-olds but about two-thirds the level of

mean expenditures on 0- to 2-year-olds. We explore some of the sources of these age-specific differences below.

In the aggregate, children 0 to 18 years of age constituted 28.2% of the noninstitutionalized population in 1987 but accounted for only 13.7% of modified personal health care expenditures. Per capita MPHCE for children was only 59% as large as adult per capita expenditures. Per capita expenditures of adults 19 to 64 years of age were slightly less than those of young children (ages 0 to 2) but substantially greater than per capita expenditures of children age 3 to 18. Per capita expenditures among the elderly (those at least 65 years of age) were, at $4,276, almost six times those of children. The elderly, as a group, consumed a disproportionate share of health care: although they accounted for 11.8% of the noninstitutionalized population in 1987, their expenditures accounted for 33.2% of the expenditures on personal health care by the noninstitutionalized population.[10]

Expenditures by Type of Service

For children 0 to 18 years of age, hospital services, both in- and outpatient, accounted for the largest share of modified personal health spending—$24.3 billion in 1987, representing 48.7% of all expenditures (figure 1). Expenditures on physician services for children, both ambulatory and inpatient care, amounted to $11 billion in 1987 while dental care expenditures totaled $8.2 billion. Lesser amounts ($2.4 billion) were spent on nonphysician ambulatory care (including services rendered by home health agencies, optometrists, chiropractors, and podiatrists, among others), $2.1 billion on prescription drugs, and $1.3 billion on a miscellany of other personal health services including eyeglasses, hearing aids, other medical supplies and equipment, and similar items.

MPHCE by Age of Child

The distribution of expenditures among the different types of services varied considerably according to the age of the child (figure 2). Among children 0 to 2 years old, inpatient hospital care accounted for almost 60% of all expenditures, and inpatient care by physicians accounted for another 17%. The high concentration of expenditures on inpatient services in this age group represents principally the care of sick newborns. Ambulatory care in physicians' offices and in hospital clinics and emergency rooms accounts for most of the rest of expenditures (18%) in this group.

In contrast, expenditures on ambulatory care account for a high proportion of MPHCE for those 3 to 12 years old. Expenditures for inpatient hospital care (21%) and physician services (4%) account for only 25% of expenditures in this age group, while ambulatory care, about equally divided between care in physicians' offices and hospital outpatient departments, accounts for almost 36% of all expenditures. For this age group, dental care at 22% of MPHCE is the largest single category of expense of those detailed in figure 2. Prescription drugs and nonphysician ambulatory care are also important sources of expenditures. The relatively small proportion of expenditures for hospital care in this age group is probably responsible for the low per capita expenditures reported for 3- to 12-year-olds (table 1).

As per capita costs increase among those 13 to 18 years of age relative to those 3 to 12 years old, so does the proportion of expenditures which goes to inpatient hospital care (29%) and inpatient physician care (7%). The higher per capita expenditures for inpatient care for 13- to 18-year-olds is in part attributable to pregnancy-related costs. In 1987, there were approximately 320,000 live births to girls less than 19 years old.[11] Based on the estimates of the mean cost of pregnancy-related health care services, we estimate that these births accounted for almost $1.24 billion in hospital-related obstetrical charges and almost $190 million in expenditures for inpatient care of healthy newborns.[12] Together these expenditures amounted to $70 per 13- to 18-year-

old. Although a considerable amount, expenditures on pregnancy account for only about 30% of the difference between 13- to 18-year-olds and 3- to 12-year-olds in per capita expenditures for care in the hospital.

A hypothesis which requires further investigation is that the relatively high incidence of trauma associated with accidental injuries and violence in the 13- to 18-year-old group accounts for much of the increase in expenditures on their hospitalization. (See the article by Perrin, Guyer, and Lawrence in this journal issue.) In addition, as is true for 3- to 12-year-olds, 13- to 18-year-olds incur large expenditures for dental care. On average, 13- to 18-year-olds spend one and a half times as much on dental care as they do on ambulatory physician and ambulatory hospital care combined.

Comparison of Children's MPHCE with Adult Health Care Expenditures

The distribution of MPHCE by type of service for adults (19 years and older) is also presented in figure 1. A somewhat larger proportion of adult than child health care expenditures go to hospital care (54% versus 49%), while a somewhat higher proportion of children's expenditures go to physicians as compared with adults (22% versus 20%). These small differences between children and adults in the proportion of modified personal health expenditures that go to physicians and hospitals are almost entirely a result of the increase in inpatient hospital care by those 65 years of age and over. The shares of health expenditures going to physicians (22%) and hospitals (50%) among adults 19 to 64 years (not shown) are almost identical to the relative shares of expenditures on these types of services in the health care expenditures of children. Perhaps the most striking difference in the health care expenditure patterns of adults as compared to those of children is the much larger share of dental care expenditures in the health care budget of children. The most extreme difference exists between children ages 6 to 18, for whom dental care

represents almost 30% of expenditures, and those 65 years of age and older (not shown), for whom dental care represents less than 3% of expenditures.

Sources of Payment for Children's Health Care

In 1987, approximately two thirds of total modified personal health care expenditures for children were paid for by third-party payers, private health insurance and government programs (figure 3). Direct patient payments (typically by adult family members for children) including insurance co-payments and deductibles, as well as out-of-pocket payments for uninsured services, financed 27% of expenditures on children's health care. Other private sources, including philanthropy and services provided free from provider (uncompensated care), accounted for the remaining 6%.

Hospital Care

The share of health care expenditures funded by third parties varied considerably by type of service. For hospital care, which accounted for almost 49% ($24.3 billion) of expenditures for children, third-party payments accounted for 81% of all expenditures in 1987 (table A1). Out-of-pocket expenditures financed about 11% of hospital care for this group. As compared with inpatient care, a somewhat higher percent of outpatient hospital care was paid for out-of-pocket (15% versus 10%). The proportion of hospital care paid for by government programs (about 33%) differed little by type of service.

Physician Services

On a per capita basis, out-of-pocket expenditures for physician services totaled about $53 (table A1). Altogether, more than 32% of the $11 billion expended on physician services for children 0 to 18 years old was paid for directly out-of-pocket. This was three times the proportion of hospital services paid for out-of-pocket. Moreover, the proportion of physician charges paid directly by

families for their children varied considerably with the kind of service: almost 43% of charges for ambulatory physician services were paid out-of-pocket as compared with 19% of charges for inpatient care.

Private insurance paid for approximately 41% of physician services regardless of where the service was delivered, but there was considerable difference in the proportion of these services financed by public programs. Public programs paid for 37% of inpatient physician expenditures; 9% of these expenditures were financed by Medicaid and 28% by other public programs(including state and local programs and hospitals which provide services directly and the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS—the health insurance program for dependents of military personnel). In contrast, public programs paid for only 15% of expenditures for ambulatory physician visits: 11% was paid by Medicaid, and more than 3% was paid by other public programs.

Nonphysician Ambulatory Care

Families spent $788 million out-of-pocket for nonphysician ambulatory care (home health care, optometric care, and the like) for children in 1987. This amount represented almost 33% of all expenditures on these services. Out-of-pocket payments financed a smaller proportion of nonphysician ambulatory services (33%) as compared with ambulatory physician services (43%) because a larger proportion of expenditures on nonphysician services were paid for by Medicaid and other government programs (16% and 10%, respectively, of expenditures on nonphysician services versus 11% and 3% of expenditures on ambulatory physician services).

Prescription Drugs and Dental Care

Out-of-pocket payments accounted for more than 50% of all expenditures on prescription drugs and dental care for children in 1987. However, there were

considerable differences in the distribution of sources of payment for these services among the other payers. Private health insurance paid more than 37% of expenditures on dental care but only 28% of expenditures on prescription medications. Public programs paid more than 14% of prescription drug costs but less than 5% of dental expenditures. On a per capita basis, annual expenditures on dental care for children are large, $129 or 17.5% of all modified personal health care expenditures. Because almost 53% of dental care expenditures are paid out-of-pocket, out-of-pocket expenditures on dental care ($68 per child per year) are the largest service-specific component of direct family expenditures on health for children, accounting for more than one third of all out-of-pocket expenditures for children's health care. Out-of-pocket expenditures on dental care were 28% larger than out-of-pocket expenditures for physician care and 74% greater than out-of-pocket expenditures on hospital care.

Variation in Source of Payment Among Children of Different Ages

There is considerable variation in the distribution of sources of payment for children's health care according to the age of the child (figure 4 and tables A2–A4). The proportion of health care expenditures financed out-of-pocket is twice as large for children 13 to 18 years old (34%) as it is for 0- to 2-year-olds (17%). Conversely, Medicaid and other public programs paid for 42% of health care costs in the 0- to 2-year-old age group, but for only 12% of the expenses of those 13 to 18 years old. The distribution of expenditures for 3- to 12-year-old children among the various payers generally falls between the distributions for older and younger groups with the exception that Medicaid accounts for a slightly higher proportion of expenditures in this group than it does in the 0- to 2-year-old age group.

Variation in the sources of payment for health care by age reflect (1) variation in the sources of payment for different health care services and (2) age-specific

differences in the utilization of different health care services. For example, for all children 0 to 18 years old, government programs pay for more than 33% of expenditures on hospital care, but less than 5% of expenditures on dental care. Expenditures for hospital care account for almost 68% of all expenditures for 0- to 2-year-olds but only 39% of expenditures for 13- to 18-year-olds, while dental care accounts for 30% of expenditures for 13- to 18-year-olds but is not a factor in expenditures for 0- to 2-year-olds. Thus, government programs pay for a larger proportion of the total health care expenditures for 0- to 2-year-olds than for 13- to 18-year-olds. Similarly, government programs that target particular age groups, such as the 1989 expansion of Medicaid eligibility for children under 6 years old will affect health care providers differently depending on the utilization of different health care services by children of different ages.

Differences in Sources of Payment Between Children and Adults

The distribution of sources of payment for health care services for adults (19 years and older) differs from the distribution of sources of payment for children in several ways (figure 3). Approximately 37% of adult modified personal health care expenditures are paid for by government programs including the 21% of expenditures financed by Medicare.[13] The balance of public expenditures is divided almost equally between Medicaid and other public programs. Including Medicare, public programs paid for 62% of expenditures for those 65 and over (not shown). For those 19 to 64 years old, the 22% share of MPHCE paid for by public programs is shared approximately equally by Medicaid and other public programs with almost 4% of funding coming from Medicare. While the proportion of MPHCE for 19- to 64-year-olds financed through public programs was quite similar to the proportion of children's health care financed publicly, the $42 billion public expenditure on adults 19 to 64 years old was almost 3.5 times the size of aggregate public

expenditures on children in 1987. In the aggregate, expenditures on modified personal health care for adults are more than five times as great as expenditures on children. Because the share of adult health care financed by public programs is much greater than the share of children's health care financed by public programs, public expenditures on adult health care ($116.7 billion) were almost 10 times as great as the public expenditures on children's health care ($12.2 billion).

Within the population aged 0 to 18 years, the proportion of health care expenditures financed by public programs tends to fall and the proportion financed privately, both out-of-pocket and through private insurance, tends to rise with advancing age (figure 4). This tendency is reversed after early adulthood with the result that the proportion of health care expenditures paid directly out-of-pocket is highest for school-age children, teenagers, and young adults (not shown). It is not unreasonable to speculate that policies designed to increase access by expanding health insurance coverage could substantially increase the utilization and cost of health care in these age groups.

Burden of Children's Health Care Expenditures

Analysis of the distribution of medical care expenditures among the various sources of payment for services can conceal the magnitude of the financial burden some families face in trying to pay for their children's medical care. Each year a small proportion of the population accounts for the majority of health care costs. Five percent of the population of children (0 to 18 years old) accounted for more than 59% of all MPHCE in 1987. One percent of the child population accounts for 37% of MPHCE. These statistics also suggest that little is spent on health care for the majority of the population of children. These patterns of health care expenditures being concentrated among a small percent of the population hold also among the elderly in the United States and in other countries.[1,14] Given per capita MPHCE of $737 for children in 1987, these

ratios imply that per capita expenditures for the most costly 1% of the child population averaged $27,502 in 1982. MPHCE averaged $8,641 for the most costly 5% of the population and only $316 for the least costly 95%.

The concentration of health care outlays can have an enormous financial impact on a family, even on those with fairly typical health insurance having various cost-sharing features. For example, among children who were hospitalized in 1987, out-of-pocket expenditures for inpatient physician services averaged $349. In addition, mean out-of-pocket expenditures for inpatient hospital care were $502 for children who incurred hospital expenses in 1987. Overall, for children hospitalized in 1987, out-of-pocket expenditures for hospital and physician care while in the hospital exceeded $850 on average compared with a mean expenditure of only $39 when out-of-pocket expenditures on inpatient care are averaged over all children.[15]

The concentration of medical outlays also provides an incentive for private insurance companies and employers to identify children likely to be heavy users of medical care. If they can identify potentially expensive patients or medical conditions in advance, payers may be able to reduce their exposure to the financial risk of paying for health care for these expensive patients.[1]

Growth in Expenditures

Rapidly rising health care costs have precipitated a health care financing crisis for the nation. In this section, we compare baseline data from the 1977 NMCES with expenditure data from the 1987 NMES to explore changes in medical care spending for children and adults between 1977 and 1987. During this 10-year period, aggregate modified personal health care expenditures for children (unadjusted for inflation) increased by 234%, from $14.9 billion in 1977 to $49.8 billion in 1987. Per capita expenditures on children increased by a slightly more rapid 240%, from $217 in 1977 to $737 in 1987. The rate of increase in aggregate expenditures was slightly less than the rate of increase in

per capita expenditures because the population of children declined by 1.2 million (1.7%) over the decade.

In contrast, per capita expenditures for adults ages 19 to 64 increased by only 158% during the same period, but the population aged 19 to 64 years grew by 22.5 million or 18.5%. Accordingly, aggregate expenditures on the noninstitutionalized population 19 to 64 years old grew by 207% from 1977 to 1987.

Aggregate MPHCE of the noninstitutionalized population 65 years of age and older grew even more rapidly, by 383%, from $25 billion in 1977 to $121 billion in 1987. The high rate of growth in this age group resulted from the combination of rapid growth (281%) in per capita expenditures, from $1,124 in 1977 to $4,277 in 1987, and an increase in population of 6 million, or 27%. Overall, per capita expenditures on children increased 20% more rapidly than per capita expenditures on adults; however, because the number of children declined slightly while the number of adults increased by 28.5 million, children's MPHCE declined to 13.7% of total expenditures in 1987 from 14.5% in 1977.

Sources of Growth in Children's Health Care Expenditure

It is useful to examine separately factors that contribute to growth in health care costs. Although such analyses may not explain why costs increase, they can help in assessing the relative contributions of the various factors which fuel growth. A frequently performed analysis allocates the change in health care expenditures among four factors: general price inflation, industry-specific price inflation, population growth, and all other factors.[3,16]

The results of decomposing the growth in per capita MPHCE for children between 1977 and 1987 are presented in figure 5. General and medical price inflation have been found to account for a substantial part of the growth in personal health care expenditures for the general population.[3] They appear to

account for almost half of the overall increase in per capita expenditures for children between 1977 and 1987. In addition, an increase of almost 4 percentage points in the proportion of children in the 0- to 2-year-old age group—the group with the highest per capita expenditures—resulted in a 3% increase in per capita expenditures for children 0 to 18 years old.

Once price and population changes are explicitly represented, the "all other factors" in this analysis is a measure of the increase in the average "intensity" of health care services delivered on a per child basis (more health services per child). This residual term, which also includes measurement error, accounted for 48% of the increase in MPHCE for children during the 1977–1987 period.

Further analyses indicate that increased expenditures on both inpatient and outpatient hospital services accounted for more than 75% of the increase in the resource intensity of children's MPHCE. Per capita expenditures on hospital care for children increased by 379% between 1977 and 1987, while per capita expenditures on all other personal health care services for children increased by 167%. Hospital expenditures increased most rapidly for those 0 to 2 years old, by more than 650% between 1977 and 1987. As a result of this rapid growth, the proportion of hospital expenditures accounted for by this age group grew to 47% of all expenditures on hospital care for children in 1987 from 29% in 1977. Overall, close to 40% of the increase in intensity of all medical care for children of all ages over the period was the result of an increase in the intensity of hospital care for children in the 0- to 2-year-old age group.

It is tempting to speculate that increased expenditures for this age group reflected the rapid rate of technological advance in the care of high-risk, very low birth weight babies in neonatal intensive care units and the proliferation of these units throughout the hospital system. The increase in the level of real medical care services received by these infants and young children may also

reflect the increased health care needs of high-risk infants who survive the neonatal period. At this point in time, however, we do not have access to NMES data at a level of detail which would allow investigation of this conjecture.

Expenditures for Pregnancy and Infant Care

Medical care during pregnancy, childbirth, and infancy (the first year of life) not only has a significant impact on the health and survival of young children, but also is a major source of health care expenditures. However, despite several surveys that examine pregnancy and childbirth specifically[17] and others that detail health care expenditures generally, an overall expenditures data set from which a comprehensive estimate of the costs of pregnancy and infant care can be calculated is not available. Accordingly, we follow the lead of several previous investigators[18] in drawing on data from a variety of sources—some large national surveys, some smaller specialized studies—to obtain estimates of both the volume of services provided to pregnant women and infants in 1987 and the prices of these various services. All prices and quantities presented are for 1987 unless otherwise stated. The estimates are detailed in tables 2 and 3. The sources, methods, and assumptions underlying these estimates are presented either in the text or in notes to the tables to enable the reader to assess the quality of the estimates and place them within the context of the other analyses presented in this article.

Medical Care for Infants

Estimated health care expenditures for children in their first year of life totaled $12.6 billion, or $3,271 per infant in 1987 (table 2). Approximately 18% of the total was spent on care in the hospital for normal newborns. Another 72% was spent for the initial hospitalization and inpatient physician care of newborns suffering some complication of birth and for the care of infants requiring

rehospitalization during their first year of life. Only 10% of the total, or $312 per child, was spent on health care not requiring hospitalization, including well-child and preventive care.

Approximately 80% to 85% of newborns are discharged from the hospital with their mothers after a routine nursery stay and normal well-infant care.[19] Because information on the cost of care for these "normal" infants was not tabulated separately in the 1987 NMES data used elsewhere in this report, we use estimates of the mean cost of care for these infants developed by the Health Insurance Association of America.[20,21] In 1987, the mean hospital charge for these infants was $609, and well-infant pediatric care cost $134 on average.

Information on expenditures for infants born with some complication which resulted in their being discharged at a time other than that at which their mothers were discharged is available in the 1987 NMES. Information on expenditures for all infants after their initial hospitalization is also available in the 1987 NMES, although for this analysis it is not possible to distinguish between expenditures on the initial hospitalizations for infants with complications and expenditures on rehospitalizations. Details of these costs are presented in table 2 as are estimates of total costs which are the sum of total expenditure estimates from NMES and the extraneous estimates of expenditures on normal newborns.

When estimated expenditures on normal infant care—$2.2 billion from table 2—are added to the estimate of total MPHCE for all children and for those 0 to 2 years old (table 1), total MPHCE for children is increased to $52.0 billion and MPHCE for those 0 to 2 years old is increased to $19.0 billion. Despite the fact that infants accounted for less than 6% of the population of children, expenditures on health care for infants accounted for almost 25% of aggregate health care expenditures on all children 0 to 18 years old in 1987. On a per capita basis, health care expenditures on infants (less than 1 year old)

were greater than those of any other age group except those 65 years of age and older.

Obstetrical Care

Using data from several sources (table 3), we estimate that total charges for obstetrical care in 1987 were $15.2 billion or $3,983 per live birth. Obstetrical care includes prenatal, delivery, and postnatal care for pregnant women including those whose pregnancies terminate spontaneously in a miscarriage or stillbirth but not contraception, abortion, or infertility services. Hospital charges for delivery account for 54% of expenditures on obstetrical care; professional fees (including those of midwives), about 35% of costs, and the balance is largely expenditures for separately billed tests and diagnostic services.

Almost 99% of births in 1987 occurred in hospitals with a small number occurring in free-standing birthing centers. Mean hospital charges were $1,766 for a normal delivery. Total charges including practitioners' fees at free-standing birthing centers for a normal delivery with a 1-day stay were about 33% less than hospital charges for the same service, but only 19,047 births occurred in such centers in 1987. Hospital charges averaged $3,460 for a cesarean delivery. The number of cesarean deliveries has increased steadily in the United States since 1980, and they accounted for more than 25% of deliveries in 1987.[20] A cesarean delivery adds about two thirds to the cost of obstetrical care because of longer hospital stays for both mother and baby, increased physicians' fees, and higher hospital charges for labor and delivery rooms, anesthesia, and various ancillary services, including laboratory and supplies.[21]

Both the hospital and the physician's charges used in the estimates are based on data collected by the HIAA.[22] The mean charge for a complete package of obstetrical care including prenatal visits, the physician's services at

a normal delivery, and one postpartum visit was $1,313. A complete package of care from a midwife costs $874 on average for a normal delivery, and physicians' fees for complete care including a cesarean delivery are about one-third higher than the charge for complete care with a normal delivery.

A variety of relatively new but nonetheless frequently performed diagnostic procedures add to the cost of pregnancy. These tests include amniocentesis to detect chromosomal abnormalities, electronic monitoring of the fetal heart rate during labor, ultrasound imaging to monitor the developing fetus, and fetal oxytocin stress testing to evaluate fetal response to uterine contractions. As reported in table 3, information on the costs and frequency of performance of a number of these expensive diagnostic procedures is available from several sources. We have not, however, been able to obtain an estimate of the frequency of performance of oxytocin stress tests which we estimate to have cost $71 each in 1987.[20] Accordingly, we have not included the cost of that test in our estimates.

Expenditures on Miscarriages and Stillbirths

Data from the National Survey of Family Growth[17] indicate that approximately 17.3% of pregnancies terminate spontaneously in stillbirths and miscarriages which can sometimes be as costly as live births. Applying this proportion to the 3,809,394 live births for 1987 suggests that there were 802,000 miscarriages and stillbirths in that year. Following Fuchs and Perreault,[18] we assume that stillbirths occurring after 28 weeks of pregnancy are as costly on average as live births, that stillbirths occurring between 20 and 28 weeks cost 75% as much as live births, and that miscarriages prior to 20 weeks result in a physician charge equal to one-third the fee for a normal delivery. Our estimate of the relative proportion of miscarriages and stillbirths which occurred at different stages of pregnancy are reflected in the average

cost estimate reported in table 3. Accordingly, the total cost of spontaneous pregnancy termination in 1987 is estimated to have been $527 million.[23]

Comparison with Previous Estimates of Expenditures on Obstetrical Care

Our estimate of total obstetrical care expenditures—$15.2 billion in 1987—is approximately 85% higher than the estimate of $8.2 billion reported by Fuchs and Perreault for 1982.[18,24] The increase in the number of live births (128,000) can account for only 4% of the increase in total costs over the 5-year period. In addition, the increase in the frequency of cesarean deliveries to 25% of live births in 1987 from almost 18% in 1982 appears to have increased total obstetrical costs by more than one-half billion dollars or 3.4% in 1987.

It appears, therefore, that the differences in average cost figures we used for 1987 as compared to the Fuchs and Perreault estimates for 1982 account for most of the difference in the estimates of total obstetrical costs. One reason for a difference in the average cost figures may be a change in the procedure the Health Insurance Association of America (HIAA) followed in estimating mean hospital costs from responses to its survey of the cost of hospital care for maternity and newborns.[25] We estimate, however, that this change in reporting only increased reported hospital costs by 2% for normal deliveries and 3% for cesarean deliveries over what would have been reported under the previous methodology.

Another reason for the substantial increase in the cost of obstetric services between 1982 and 1987 is the increase in physician fees. Physician fees in general increased rapidly between 1982 and 1987—by over 40% as measured by the physician component of the Consumer Price Index.[26] Increases in the cost of medical malpractice insurance appear to have been a factor in the general increase in physician fees between 1982 and 1987 and an important factor in the escalation in obstetrical fees. In 1987, mean malpractice insurance

premiums for obstetricians were over $37,000, an increase of 238% over the 5-year period.[20]

The substantial increase in malpractice insurance costs does not appear, by itself, to account for the near doubling of physician fees for obstetrical services. Even under the extreme assumptions that the premium cost increase was incurred by all practicing obstetrician-gynecologists and that these specialists accounted for all obstetrical care, the increased cost of malpractice insurance of slightly under $170 per pregnancy would account for less than a quarter of the increase in physician fees over the 5-year period.[27]

Summary and Conclusions

Our estimates show that expenditures on modified personal health care for children amounted to $49.8 billion in 1987, only 13.7% of expenditures on personal health care for the entire noninstitutionalized population in that year. Moreover, the data show that, although per capita expenditures on health care for children increased 20% more rapidly than per capita expenditures for adults, the share of MPHCE that went to children declined by almost one percentage point between 1977 and 1987 because of a fairly substantial increase in the adult population and a slight decline in the number of children. The proportion of health care expenditures going to children's health care is likely to continue to decline as the dynamics of demographic change cause children's share of total population to decline from 26% in 1989 to a projected 22% in 2010, while the share of the population accounted for by those at least 65 years old (the group with the highest per capita MPHCE) is projected to increase from 12.5% to 13.9% over the same period.[26] For those concerned about the problems of financing health care for children, the decline in the relative share of expenditures accounted for by children means that, compared to other age groups, children's health care will in the aggregate be more affordable. Therefore, efforts to expand access to health care for children by

expanding third-party financing will be less likely to overwhelm the system than will similar efforts targeted to other groups.

Knowledge that expenditures on health care for children are relatively modest on average should not engender a false sense of complacency regarding the financial burden children's health care presents for some families. The data indicate that a small number of families face very high levels of expenditure for health care for their children each year. It is likely, but not documented in the data analyzed here, that for many, high levels of expenditure are the result of chronic conditions which may persist over many years creating a severe financial burden on families.

The very skewed nature of the distribution of children's health care expenditures means that efforts to expand health insurance coverage for children by offering limited coverage for low intensity, ambulatory care for prevention and limited acute illness will, by itself, leave most families exposed to the catastrophic costs of serious illness. Moreover, the high concentration of expenditures creates incentives for traditional insurance companies and employers who self-insure to identify children who are likely to be heavy users of care in order to invoke procedures which may reduce the insurer's responsibility for their high health care expenditures. Although special government programs exist to underwrite the extraordinary medical care expenditures of some children with major illnesses, coverage is far from comprehensive and costs may mount rapidly for a family with a moderately ill child who is not enrolled in these special programs.[28] Effective reform of health care financing will require that true health insurance benefits be available for children when needed to help underwrite the costs of infrequent but expensive illnesses.

For those concerned with cost containment, special attention needs to be paid to the costs of pregnancy and newborn care. In 1987, expenditures on infants (less than 1 year old) accounted for more than 24% of children's

MPHCE despite the fact that infants make up less than 6% of the population of children. Equally sobering is our estimate that obstetrical care, a crucial factor in the health of infants and young children, cost an additional $15.2 billion in 1987. Altogether, expenditures on pregnant women and infants consumed more than 40% of combined expenditures on obstetrical and child health care for the noninstitutionalized population in 1987. Moreover, expenditures in this area have grown extremely rapidly in recent years.

A comparison of our 1987 estimates with estimates for 1982 suggests that the costs of obstetrical care increased by 88% and of infant care by 95% over the 5-year period as the result of a combination of factors including a very substantial increase in physician charges for obstetrical services and a substantial increase in the resource intensity of hospital care for newborns with complications.[29] Additional research is needed to better understand the factors behind the dynamic increase in expenditures on both obstetric and infant care. Even before these inquiries are completed, however, implementation of known cost-effective strategies to the delivery of obstetric and infant care could help control costs without substantially lowering the quality of care received by pregnant women and infants.

Because of its budgetary implications, any expansion of health insurance coverage for children in the near term may be incremental. Our analysis suggests that expanded coverage for children 3 to 12 years old, whose per capita MPHCE ($426) is the lowest among all population groups, would probably have the smallest budgetary impact of any expansion in access to care. Even if a universal health insurance system had been made mandatory in 1987, health care expenditures would have expanded only modestly for the 8 million children 3 to 12 years of age who were uninsured at some time during that year. We estimate that health care expenditures for this age group would have totaled only $16.4 billion, or $1.1 billion more than actual expenditures.[30] Consequently, expanded insurance coverage for this age group

has the potential to improve their access to health care with minimal budgetary impact. At the same time, it would relieve the families of such children from the uncertain financial burden and stress associated with expenditures for children's health care.

ENDNOTES

1. Aaron, H.J. *Serious and unstable condition: Financing America's health care.* Washington, DC: The Brookings Institution, 1991.

2. Waldo, D.R., Sonnefeld, S.T., McKusick, D.R., and Arnett III, R.A. Health expenditures by age group, 1977 and 1987. *Health Care Financing Review* (Summer 1989) 10,4:111–20; also, Fisher, C.R. Differences by age group in health care spending. *Health Care Financing Review* (Spring 1980) 1,4:65–90.

3. The usual source of data for the published annual estimates of the cost of health care in the United States is the National Health Accounts (NHA). Maintained by the Office of the Actuary of the Health Care Financing Administration, the NHA constitutes a framework in which data from a number of different sources are combined to construct estimates of aggregate U.S. health care spending. Because NHA data are based largely on provider reports of total revenue, the NHA is not ordinarily used to make estimates of health care expenditures for children or other demographic subgroups of the population. The NHA has been used however to analyze expenditure levels and trends for the 65-years-and-older population and by Waldo and others (see note no. 2, above) for crude estimates of expenditures for three age groups. Office of National Cost Estimates. National health expenditures, 1988. *Health Care Financing Review* (Summer 1990):1–41; Office of National Cost Estimates. Revisions to the National Health Accounts and methodology. *Health Care Financing Review* (Summer 1990) 7,4:42–54.

4. A detailed description of the NMES Household Survey is contained in Edwards, W., and Berlin, M. *Questionnaires and data collection methods for the Household Survey and the Survey of American Indians and Alaska Natives* (DHHS Publication No. PHS-89-3450), National Medical Expenditure Survey Methods 2, National Center for Health Services Research and Health Care

Technology Assessment. Rockville, MD: Public Health Service, September 1989.

5. National health care expenditures were estimated to total $492.5 billion in 1987. This total includes cost items not measured in the NMES, such as research and construction, government public health activities and private administrative expenses, nursing home care, and nonprescription drugs. Expenditures on these items exceeded $115 billion in 1987. Lazenby, H.C., and Letsch, S.W. National Health Expenditures, 1989. *Health Care Financing Review* (Winter 1990) 12,2:1–26.

6. Detailed information on the design and data collection instruments of the 1977 National Medical Care Expenditure Survey is contained in Bonham, G.S. and Corder, L.S. *NMCES household interview instruments: Instruments and procedures 1* (DHHS Publication No. PHS-81-3280), National Health Care Expenditure Study, National Center for Health Services Research and Health Care Technology Assessment. Rockville, MD: Public Health Service, April 1981.

7. At the time of this analysis, NMES data files, which reported on the hospital costs of newborns who were discharged with their mothers, were not available to us. In addition, following the NMCES coding procedures in the NMES facilitated the analysis of the growth in expenditures between 1977 and 1987.

8. Because the NMCES and NMES Household Surveys do not include nursing home and other institutionalized populations, they provide representative estimates of aggregate personal health care expenditures for the civilian, noninstitutionalized population. This is not a significant problem for estimates developed for children as expenditures for nursing home care are less than 2% of total expenditures for those under 19 years of age. In contrast, nursing home care accounted for more than 20% of personal health care expenditures among those over 65 years of age. (See Waldo and others in note no. 2, above.)

9. The NMES is designed to measure both service utilization and expenditures. Hence, services provided through many special programs such as maternal and child health and crippled children's programs are included. WIC and other programs which provide services not traditionally defined as health care are not included. Also, because information about utilization is obtained from parents, services such as routine screenings in schools, which parents may not be aware of, are probably underreported. Also excluded are nursing home care, nonprescription drugs, and expenditures on newborn care when the specific costs of the care of the infant could not be disaggregated from the total cost of the delivery.

10. The elderly are the primary users of nursing home care, the largest category of health care expenditures not included in MPHCE. Accordingly, the share of personal health care expenditures, including nursing home care, attributable to the elderly probably exceeds 40% of all personal health care expenditures in the United States. See references in note no. 3, above.

11. National Center for Health Statistics. *Advance Report of Final Natality Statistics, 1987.* Monthly vital statistics report. Washington, DC: U.S. Government Printing Office, supplement (June 29, 1989) 38,3:1–47.

12. In the NMES data used in the analysis, expenditures on hospital care for "healthy" newborns discharged with their mothers are attributed to health care expenditures for the mother. Calculations based on our estimates of the cost of care for normal newborns (table 2) suggest that this increased estimates of expenditures in the 13- to 18-year-old group by at most $190 million or 1%.

13. The Medicare program was the most significant factor in differentiating the distribution of sources of payment for adult health services from the distribution for children. An entitlement enjoyed by most of the population 65 years of age and older, Medicare accounted for more than 48% of MPHCE for this age group. Even for those 19 to 64 years of age, Medicare accounted for

4% of expenditures, principally through special Medicare programs directed toward the permanently disabled and those with end stage renal disease.

14. Berk, M.L., Monheit, A.C., and Hagan, M.M. How the U.S. spent its health care dollar: 1929–1980. *Health Affairs* (Fall 1988):47–60.

15. Information on expenditures for specific health care services by children who used those services is available from the authors.

16. The following procedures are used to identify various components of the growth in per capita MPHCE for children over the 1977–1987 period: (1) the medical care price inflation component of growth is measured by a fixed-weight price index where the weights are the relative proportions of 1977 children's MPHCE expenditures attributable to hospital care, physician care, dental care, nonphysician ambulatory care, prescription drugs, and other personal health care services. Price changes for each service category are measured by service-specific components of the Consumer Price Index for all services except hospital care and by the HCFA hospital input price index for hospital care (see Office of National Cost Estimates, Summer 1990, in note no. 3, above); (2) general price inflation is measured by the GNP fixed-weight price index. Using this GNP deflator, it is possible to remove the effects of general inflation from the MPHCE price index, leaving a measure of "excess" medical care price inflation; (3) information from the 1977 NMCES on age-group-specific expenditures per capita and population size are used to measure the increase in expenditures that may have resulted from a change in the age distribution wihin the child population.

17. Public Health Service, Centers for Disease Control, National Center for Health Statistics. *Vital and health statistics: Health aspects of pregnancy and childbirth, U.S., 1982.* Data from the National Survey of Family Growth, Series 23, No. 16. Hyattsville, MD: U.S. Department of Health and Human Services (DHHS/PHS-89), 1989. Keppel, K.G., Heuser, R.L., Placek, P.G., et al. National Center for Health Statistics. *Methods and Response*

*Characteristics, 1980 National Natality and Fetal Mortality Survey.* Vital and Health Statistics. Series 2, No. 100. Washington, DC: U.S. Government Printing Office (DHHS/PHS-861374), September 1986. Placek, P.G. 1980 National Natality and Fetal Mortality Survey: Survey Methods Used and Public Health Service Agency Participation. *Public Health Reports* (1984) 99:111–16.

18. Fuchs, V.R., and Perreault, L. Expenditures for reproduction-related health care. *Journal of the American Medical Association* (1986) 255,1:76–81; also, Alan Guttmacher Institute. *The Financing of Maternity Care in the U.S.* New York, 1989.

19. We assume in our analysis that 80% of infants are discharged with their mothers based on the data from several major national surveys reported in Gold, R.B., Kenney, A.M., and Singh, S. *Financing maternity care in the U.S.* New York: Alan Guttmacher Institute, 1987. Information on the precise number of infants discharged with their mothers is not readily available because separate billing records are not typically maintained for infants. Moreover, even the condition of an infant at birth may not be a totally reliable indicator of its status as maternal hospital stays may in practice be lengthened to correspond better to the stay of a sicker infant, and healthy infants delivered by cesarean section may have longer than average hospital stays while waiting for their mothers to be discharged.

20. Minor, A.F. *The cost of maternity care and childbirth in the U.S., 1989.* Health Insurance Association of America, research bulletin. Washington, DC: HIAA, December 1989.

21. Previous estimates of the cost of obstetrical care by Fuchs and Perreault (see note no. 18, above) and by the Alan Guttmacher Institute (*Blessed events and the bottom line: Financing maternity care in the U.S.* New York: Alan Guttmacher Institute, 1987) include a separate line item in their estimates to

reflect charges for anesthesia. These charges are now included in the hospital charges reported by HIAA (personal correspondence with A.F. Minor).

22. The HIAA estimated costs for 1989. To obtain estimates for 1987 we have deflated these 1989 estimates by appropriate components of the Medical Care Price Index from *Health Care Financing Review* (Winter 1990)12,2:157.

23. Because most states do not require the reporting of miscarriages which occur prior to 20 weeks gestation, miscarriages are substantially underreported. To obtain the average cost of a miscarriage/stillbirth, we use information on the number of spontaneous pregnancy terminations between 20 and 28 weeks, and after 28 weeks gestation as reported in Public Health Service, Centers for Disease Control, National Center for Health Statistics. *Vital Statistics of the U.S., 1987: Volume II—Morality, Part A*. Hyattsville, MD: U.S. Department of Health and Human Services, 1990. We assume that miscarriages not accounted for in the Vital Statistics occurred prior to 20 weeks gestation. We do not count, however, miscarriages which occur very soon after conception. They are not likely to be recognized and therefore require no treatment. Wilcox, A.J., Weinberg, C.R., O'Connor, J.F., et al. Incidence of early loss of pregnancy. *New England Journal of Medicine* (1988) 319:189–94.

24. Researchers at the Alan Guttmacher Institute (see note no. 22, above) estimated that almost $16 billion was spent for maternity care of mothers and newborns in 1985. This included $4.7 billion on physician care and laboratory procedures for both mothers and infants, $6.3 billion on hospital care for mothers, and $5 billion on hospital care for newborns. These estimates are appropriately mid-range between those of Fuchs and Perreault and those presented in the text. Comparing the estimates for 1982 and 1985 with each other and with those for 1989 does suggest an acceleration in the rate of increase in costs between 1985 and 1987.

25. In reporting estimates of mean hospital costs, data from hospitals in the 1989 HIAA survey were weighted by the number of births in each hospital.

Thus in determining average costs each birth counts equally, but charges reported by large institutions carry more weight than those reported by small institutions. In calculating mean costs from previous surveys, each hospital's charges received the same weight regardless of the number of births. Because births in larger hospitals tend to be more expensive than births in smaller hospitals, this change in the method of calculating average costs will increase reported 1989 costs as compared with reported costs in 1982 and 1985. This methodologic change should, however, have little impact on reported physician fees, which are obtained from a different data base.

26. U.S. Bureau of the Census. *Statistical Abstract of the U.S.: 1991.* Washington, DC: U.S. Government Printing Office, 1991.

27. It is likely, however, that concern for malpractice litigation has increased the costs of maternity care indirectly by encouraging the practice of "defensive" medicine resulting in an increase in the frequency of prenatal testing and imaging procedures and cesarean deliveries. There is also evidence to suggest that concerns regarding malpractice litigation and increases in the cost of malpractice insurance led to a reduction in the number of physicians delivering obstetrical services. This reduction in the supply of physicians could have led to an increase in fees for maternity services.

28. Kolata, S. New insurance practice: Dividing sick from well. *New York Times,* March 4, 1992, at A1.

29. Of course, the primary reason expenditures on obstetrical care, childbirth, and infancy are so high is because infants, on average, are more vulnerable (less healthy) than older children and adolescents. Therefore, one would expect that per capita health care expenditures on infants would exceed expenditures on older children. Yet it appears that in recent years growth in expenditures on health care for infants and pregnant women has far outstripped improvements in their health status.

30. We assume that expenditures on health care will increase by about 67% for those uninsured all year and by 33% for those insured for part of the year. These estimates are based on data presented by Monheit and Cunningham in this journal issue which suggest that, compared with children insured all year, those insured part of the year have 25% fewer ambulatory health care contacts per year and those uninsured all year have 40% fewer contacts. They are also consistent with the observation that on average the uninsured consume about 60% as much medical care as the insured. Pauly, M.V., Danzon, P., Feldstein, P., and Hoff, J. A plan for "responsible national health insurance." *Health Affairs* (Spring 1991):5–25.

of children age 3 to 18. Per capita expenditures among the elderly (those at least 65 years of age) were, at $4,276, almost six times those of children. The elderly, as a group, consumed a disproportionate share of health care: although they accounted for 11.8% of the noninstitutionalized population in 1987, their expenditures accounted for 33.2% of the expenditures on personal health care by the noninstitutionalized population.[10]

### Expenditures by Type of Service

For children 0 to 18 years of age, hospital services, both in- and outpatient, accounted for the largest share of modified personal health spending—$24.3 billion in 1987, representing 48.7% of all expenditures (figure 1). Expenditures on physician services for children, both ambulatory and inpatient care, amounted to $11 billion in 1987 while dental care expenditures totaled $8.2 billion. Lesser amounts ($2.4 billion) were spent on nonphysician ambulatory care (including services rendered by home health agencies, optometrists, chiropractors, and podiatrists, among others), $2.1 billion on prescription drugs, and $1.3 billion on a miscellany of other personal health services including eyeglasses, hearing aids, other medical supplies and equipment, and similar items.

### MPHCE by Age of Child

The distribution of expenditures among the different types of services varied considerably according to the age of the child (figure 2). Among children 0 to 2 years old, inpatient hospital care accounted for almost 60% of all expenditures, and inpatient care by physicians accounted for another 17%. The high concentration of expenditures on inpatient services in this age group represents principally the care of sick newborns. Ambulatory care in physicians' offices and in hospital clinics and emergency rooms accounts for most of the rest of expenditures (18%) in this group.

In contrast, expenditures on ambulatory care account for a high proportion of MPHCE for those 3 to 12 years old. Expenditures for inpatient hospital care (21%) and physician services (4%) account for only 25% of expenditures in this age group, while ambulatory care, about equally divided between care in physicians' offices and hospital outpatient departments, accounts for almost 36% of all expenditures. For this age group, dental care at 22% of MPHCE is the largest single category of expense of those detailed in figure 2. Prescription drugs and nonphysician ambulatory care are also important sources of expenditures. The relatively small proportion of

**Table 1. Modified Personal Health Care Expenditures by Age, NMES 1987**

| Age Group (years) | Total MPHCE * (billions) | Total Population (millions) | Percent of Population with Expenditures | Per Capita Expenditures | Expenditures per Individual with Expenditures |
|---|---|---|---|---|---|
| **All children (0 to 18)** | $49.8 | 68 | 83 | $737 | $893 |
| 0 to 2 | 16.8** | 11 | 92 | 1,524** | 1,660** |
| 3 to 12 | 14.9 | 35 | 81 | 426 | 525 |
| 13 to 18 | 18.2 | 22 | 80 | 843 | 1,053 |
| **Adults** | | | | | |
| 19 to 64 | 193.2 | 144 | 83 | 1,347 | 1,616 |
| 65+ | 121.0 | 28 | 94 | 4,276 | 4,566 |

* Modified personal health care expenditures (MPHCE) equal expenditures on hospital care, services of physicians, dentists and other health care professionals, prescription drugs, and other personal health care services and products including eyeglasses, hearing aids, and other medical equipment.

** Excludes expenditures associated with the initial newborn hospitalization of infants discharged at the same time as their mothers. These expenditures are attributed to the mother in the NMES. When estimates of these expenditures from table 2 are included in total MPHCE estimates for the 0- to 2-year-old group, total expenditures for this age group increase to $19.0 billion and per capita expenditures increase to $1,727.

Source: Agency for Health Care Policy and Research, 1987 National Medical Expenditure Survey - Child Health Questionnaire and Household Survey.

expenditures for hospital care in this age group is probably responsible for the low per capita expenditures reported for 3- to 12-year-olds (table 1).

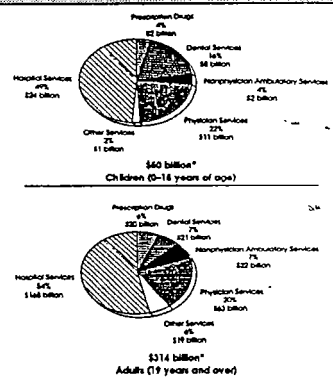
As per capita costs increase among those 13 to 18 years of age relative to those 3 to 12 years old, so does the proportion of expenditures which goes to inpatient hospital care (29%) and inpatient physician care (7%). The higher per capita expenditures for inpatient care for 13- to 18-year-olds is in part attributable to pregnancy-related costs. In 1987, there were approximately 320,000 live births to girls less than 19 years old.[11] Based on the estimates of the mean cost of pregnancy-related health care services, we estimate that these births accounted for almost $1.24 billion in hospital-related obstetrical charges and almost $190 million in expenditures for inpatient care of healthy newborns.[12] Together these expenditures amounted to $70 per 13- to 18-year-old. Although a considerable amount, expenditures on pregnancy account for only about 30% of the difference between 13- to 18-year-olds and 3- to 12-year-olds in per capita expenditures for care in the hospital.

A hypothesis which requires further investigation is that the relatively high incidence of trauma associated with accidental injuries and violence in the 13- to 18-year-old group accounts for much of the increase in expenditures on their hospitalization. (See the article by Perrin, Guyer, and Lawrence in this journal issue.) In addition, as is true for 3- to 12-year-olds, 13- to 18-year-olds incur large expenditures for dental care. On average, 13- to 18-year-olds spend one and a half times as much on dental care as they do on ambulatory physician and ambulatory hospital care combined.

### Comparison of Children's MPHCE with Adult Health Care Expenditures

The distribution of MPHCE by type of service for adults (19 years and older) is also presented in figure 1. A somewhat larger proportion of adult than child health care expenditures go to hospital care (54% versus 49%), while a somewhat higher proportion of children's expenditures go to physicians as compared with adults (22% versus 20%). These small differences between children and adults in the proportion of modified personal health expenditures that go to physicians and hospitals are almost entirely a result of

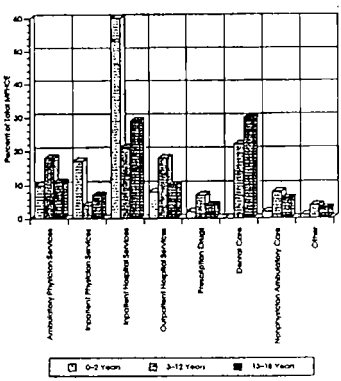
**Figure 1. Health Care Expenditures by Type of Service and Age, NMES 1987**




*Items in figures may not sum to totals for each age group because of rounding.

Source: Agency for Health Care Policy and Research, 1987 National Medical Expenditure Survey – Household Survey

**Figure 2. Distribution of Health Care Expenditures for Children of Different Ages by Type of Service, NMES 1987**




Source: Agency for Health Care Policy and Research, 1987 National Medical Expenditure Survey – Household Survey

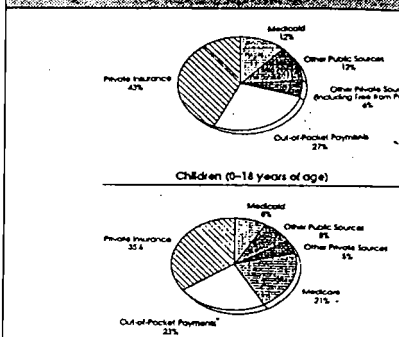
tions. Public programs paid more than 14% of prescription drug costs but less than 5% of dental expenditures. On a per capita basis, annual expenditures on dental care for children are large, $129 or 17.5% of all modified personal health care expenditures. Because almost 55% of dental care expenditures are paid out-of-pocket, out-of-pocket expenditures on dental care ($68 per child per year) are the largest service-specific component of direct family expenditures on health for children, accounting for more than one third of all out-of-pocket expenditures for children's health care. Out-of-pocket expenditures on dental care were 28% larger than out-of-pocket expenditures for physician care and 74% greater than out-of-pocket expenditures on hospital care.

### Variation in Source of Payment Among Children of Different Ages

There is considerable variation in the distribution of sources of payment for children's health care according to the age of the child (figure 4 and tables A2–A4). The proportion of health care expenditures financed out-of-pocket is twice as large for children 13 to 18 years old (34%) as it is for 0- to 2-year-olds (17%). Conversely, Medicaid and other public programs paid for 42% of health care costs in the 0- to 2-year-old age group, but for only 12% of the expenses of those 13 to 18 years old. The distribution of expenditures for 3- to 12-year-old children among the various payers generally falls between the distributions for older and younger groups with the exception that Medicaid accounts for a slightly higher proportion of expenditures in this group than it does in the 0- to 2-year-old age group.

Variation in the sources of payment for health care by age reflect (1) variation in the sources of payment for different health care services and (2) age-specific differences in the utilization of different health care services. For example, for all children 0 to 18 years old, government programs pay for more than 33% of expenditures on hospital care, but less than 5% of expenditures on dental care. Expenditures for hospital care account for almost 68% of all expenditures for 0- to 2-year-olds but only 39% of expenditures for 13- to 18-year-olds, while dental care accounts for 30% of expenditures for 13- to 18-year-olds but is not a factor in expenditures for 0- to 2-year-olds. Thus, government programs pay for a larger proportion

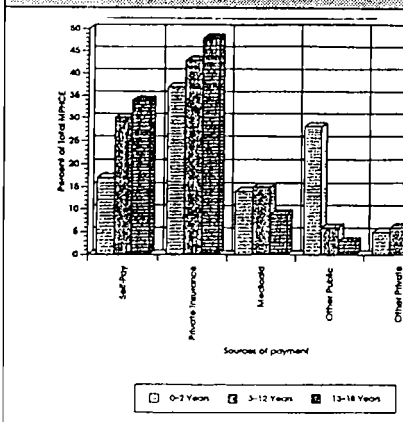
**Figure 3. Expenditures on Health Care for Children and Adults by Source of Payment, NMES 1987**




*Out-of-pocket payments include copayments and deductibles for services partially covered by insurance as well as other direct expendi-

Source: Agency for Health Care Policy and Research, 1987 National Medical Expenditure Survey – Household Survey

**Figure 4. Distribution of Payment for Children's Health Care by Age, NMES 1987**




Source: Agency for Health Care Policy and Research, 1987 National Medical Expenditure Survey – Household Survey

tion, mean out-of-pocket expenditures for inpatient hospital care were $502 for children who incurred hospital expenses in 1987. Overall, for children hospitalized in 1987, out-of-pocket expenditures for hospital and physician care while in the hospital exceeded $850 on average compared with a mean expenditure of only $39 when out-of-pocket expenditures on inpatient care are averaged over all children.[15]

The concentration of medical outlays also provides an incentive for private insurance companies and employers to identify children likely to be heavy users of medical care. If they can identify potentially expensive patients or medical conditions in advance, payers may be able to reduce their exposure to the financial risk of paying for health care for these expensive patients.[1] (See the article by Sheils and Wolfe in this journal issue.)

## Growth in Expenditures

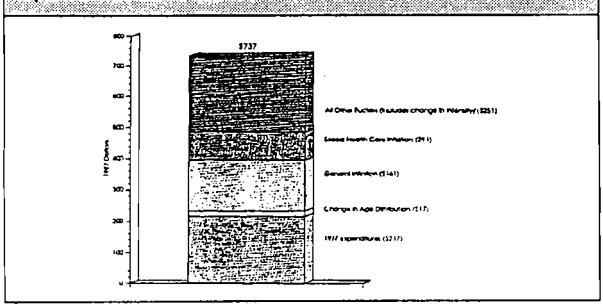
Rapidly rising health care costs have precipitated a health care financing crisis for the nation. In this section, we compare baseline data from the 1977 NMCES with expenditure data from the 1987 NMES to explore changes in medical care spending for children and adults between 1977 and 1987. During this 10-year period, aggregate modified personal health care expenditures for children (unadjusted for inflation) increased by 234%, from $14.9 billion in 1977 to $49.8 billion in 1987. Per capita expenditures on children increased by a slightly more rapid 240%, from $217 in 1977 to $737 in 1987. The rate of increase in aggregate expenditures was slightly less than the rate of increase in per capita expenditures because the population of children declined by 1.2 million (1.7%) over the decade.

In contrast, per capita expenditures for adults ages 19 to 64 increased by only 158% during the same period, but the population aged 19 to 64 years grew by 22.5 million or 18.5%. Accordingly, aggregate expenditures on the noninstitutionalized population 19 to 64 years old grew by 207% from 1977 to 1987.

Aggregate MPHCE of the noninstitutionalized population 65 years of age and older grew even more rapidly, by 383%, from $25 billion in 1977 to $121 billion in 1987. The high rate of growth in this age group resulted from the combination of rapid growth (281%) in per capita expenditures, from $1,124 in 1977 to $4,277 in 1987, and an increase in population of 6 million, or 27%.

Overall, per capita expenditures on children increased 20% more rapidly than per capita expenditures on adults; however, because the number of children declined slightly while the number of adults increased by 28.5 million, children's MPHCE declined to 13.7% of total expenditures in 1987 from 14.5% in 1977.

**Figure 5. Factors Accounting for Growth in Per Capita Expenditures for Health Care for Children, 1977 to 1987**




Source: Agency for Health Care Policy and Research, 1977 National Medical Care Expenditure Survey – Household Survey; Agency for Health Care Policy and Research, 1987 National Medical Expenditure Survey – Household Survey.

**Table 2. Estimated Expenditures on Health Care for Infants, 1987**

| Type of Expenditure | Number of Infants (thousands) | Average Cost | Total Cost (millions) |
|---|---|---|---|
| **Normal newborn care**[a] | | | |
| Hospitals | 3,007 | $609 | $1,831 |
| Physicians* | 3,007 | 134 | 401 |
| **Other infant care (including NICU and rehospitalizations)**[b] | | | |
| Hospitalizations | | | |
| Hospitals | 939 | 7,107 | 6,671 |
| Physicians | 740 | 3,421 | 2,531 |
| Ambulatory care | | | |
| Hospital clinics and ERs | 747 | 544 | 407 |
| Physicians | 3,068 | 179 | 551 |
| Nonphysician ambulatory care | 683 | 162 | 111 |
| Drugs, dental, other** | 3,865 | 36 | 138 |
| **Total expenditures on infant care** | 3,865 | $3,271 | $12,641 |

*Includes a pediatrician's visit for all infants and circumcision charge for 50% of all infants.

**Total population in less than 1-year-old age group and per capita charges for indicated services.

Sources:
[a]Minor, A.F. *The cost of maternity care and childbirth in the United States, 1989.* Health Insurance Association of America, research bulletin. HIAA, December 1989.
[b]Agency for Health Care Policy and Research. 1987 National Medical Expenditure Survey – Child Health Questionnaire and Household Survey.

### Medical Care for Infants

Estimated health care expenditures for children in their first year of life totaled $12.6 billion, or $3,271 per infant in 1987 (table 2). Approximately 18% of the total was spent on care in the hospital for normal newborns. Another 72% was spent for the initial hospitalization and inpatient physician care of newborns suffering some complication of birth and for the care of infants requiring rehospitalization during their first year of life. Only 10% of the total, or $312 per child, was spent on health care not requiring hospitalization, including well-child and preventive care.

Approximately 80% to 85% of newborns are discharged from the hospital with their mothers after a routine nursery stay and normal well-infant care.[19] Because information on the cost of care for these "normal" infants was not tabulated separately in the 1987 NMES data used elsewhere in this report, we use estimates of the mean cost of care for these infants developed by the Health Insurance Association of America.[20,21] In 1987, the mean hospital charge for these infants was $609, and well-infant pediatric care cost $134 on average.

Information on expenditures for infants born with some complication which resulted in their being discharged at a time other than that at which their mothers were discharged is available in the 1987 NMES. Information on expenditures for all infants after their initial hospitalization is also available in the 1987 NMES, although for this analysis it is not possible to distinguish between expenditures on the initial hospitalizations for infants with complications and expenditures on rehospitalizations. Details of these costs are presented in table 2 as are estimates of total costs which are the sum of total expenditure estimates from NMES and the extraneous estimates of expenditures on normal newborns.

When estimated expenditures on normal infant care—$2.2 billion from table 2—are added to the estimate of total

**Table 3. Estimated Expenditures on Obstetrical Care, 1987**

| Type of Expenditure | Number (thousands) | Average Cost | Total Costs (millions) |
|---|---|---|---|
| LIVE BIRTHS | | | |
| **Hospital charges** | | | |
| Normal delivery | 2,821 | $1,766 | $4,982 |
| Cesarean delivery | 953 | 3,460 | 3,297 |
| **Professional charges** | | | |
| Normal delivery | 2,723 | 1,313 | 3,575 |
| Cesarean delivery | 953 | 1,806 | 1,721 |
| Midwife | 98 | 874 | 86 |
| **Out of hospital delivery charges (including practitioners' fees)** | 19 | 1,840 | 35 |
| **Prenatal Tests**[a] | | | |
| Electronic fetal monitoring | 2,842 | 57 | 162 |
| Amniocentesis | 198 | 148 | 29 |
| Ultrasound | 3,001 | 287 | 861 |
| ALL LIVE BIRTHS | 3,809[b] | 3,872 | 14,748 |
| MISCARRIAGES AND STILLBIRTHS[c] | 802 | 527 | 424 |
| ALL OBSTETRICAL CARE | 4,611 | $3,290 | $15,172 |

[a] Estimates of the frequency of performance of electronic monitoring and ultrasound are based on data reported in Moore, Jr., M., Jeng, L.L., Kaczmarek, R.G., and Placek, P.J. Use of diagnostic imaging procedures and fetal monitoring devices in the care of pregnant women. *Public Health Reports* (September–October 1990) 105,5:471–75. Estimates of the frequency of amniocentesis are from preliminary tabulations of the 1987–1988 National Maternal and Infant Health Survey provided by Stella Yu, ScD of the National Center for Health Statistics.

Estimates of the costs of electronic fetal monitoring and amniocentesis are from A.F. Minor. Estimates of the costs of ultrasound are based on data reported in Hillman, B.J., Joseph, C.A., Mabry, M.R., et al. Frequency and costs of diagnostic imaging in office practice: A comparison of self-referring and radiologist-referring physicians. *New England Journal of Medicine* (December 1990) 323,23:1604–1608. The cost per pregnancy reported in the table is the weighted average of charges per pregnancy for patients tested by either self-referring obstetricians and family practitioners or radiologists in 1986 to 1988 where the weights are the share of procedures performed by each specialty.

[b] Includes 16,000 births where place of birth is unknown. National Center for Health Statistics. *Advance Report of Final Natality Statistics* (June 29, 1989) 38,3:24.

[c] See text and note 23 for discussion of procedures followed and data used to estimate cost of miscarriages and stillbirths.

Sources: Minor, A.F. *The cost of maternity care and childbirth in the United States, 1989.* Health Insurance Association of America, research bulletin. HIAA, December 1989, except as noted.

MPHCE for all children and for those 0 to 2 years old (table 1), total MPHCE for children is increased to $52.0 billion and MPHCE for those 0 to 2 years old is increased to $19.0 billion. Despite the fact that infants accounted for less than 6% of the population of children, expenditures on health care for infants accounted for almost 25% of aggregate health care expenditures on all children 0 to 18 years old in 1987. On a per capita basis, health care expenditures on infants (less than 1 year old) were greater than those of any other age group except those 65 years of age and older.

### Obstetrical Care

Using data from several sources (table 3), we estimate that total charges for obstetrical care in 1987 were $15.2 billion or

**Table A1. Modified Personal Health Care Expenditures for 0- to 18-year-olds: Aggregate and Per Capita Expenditures and Percent Distribution, by Type of Expenditure and Source of Funds for Calender Year 1987, (Total population 67.7 million 0- to 18-year-olds.)**

| | | Source of Funds | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Private | | | | Government | | |
| Type of Expenditure | Total Expenditures (Billion $) | All Private Funds | Out-of-Pocket | Private Insurance | Other | All Public Funds | Medicaid | Other |
| | | percent distribution | | | | | | |
| Total | $49.8 | 75.5 | 26.9 | 42.6 | 5.9 | 24.5 | 12.3 | 12.2 |
| Hospital | 24.3 | 66.7 | 10.9 | 47.7 | 8.1 | 33.3 | 16.2 | 17.1 |
| Inpatient | 18.4 | 67.3 | 9.5 | 49.3 | 8.5 | 32.7 | 16.1 | 16.6 |
| Ambulatory | 5.9 | 64.8 | 15.3 | 43.0 | 6.6 | 35.2 | 16.5 | 18.7 |
| Physicians | 11.0 | 75.7 | 32.3 | 40.6 | 2.7 | 24.3 | 10.2 | 14.1 |
| Inpatient | 4.7 | 62.6 | 18.7 | 40.5 | 3.4 | 37.4 | 9.0 | 28.4 |
| Ambulatory | 6.2 | 85.5 | 42.7 | 40.7 | 2.1 | 14.5 | 11.1 | 3.3 |
| Nonphysician Ambulatory | 2.4 | 74.7 | 32.7 | 37.5 | 4.6 | 25.3 | 16.7 | 9.5 |
| Prescription Drugs | 2.1 | 85.7 | 57.5 | 27.5 | 0.7 | 14.3 | 11.3 | 3.0 |
| Dental Services | 8.7 | 95.4 | 52.9 | 36.5 | 6.0 | 4.6 | 3.5 | 1.1 |
| Other | 1.3 | 88.9 | 45.3 | 39.2 | 4.4 | 11.1 | 10.1 | 1.0 |
| | Total Per Capita Expenditures | per capita expenditures (1987 $) | | | | | | |
| Total | $737 | $557 | $199 | $314 | $44 | $181 | $90 | $90 |
| Hospital | 359 | 240 | 39 | 171 | 29 | 120 | 58 | 61 |
| Inpatient | 272 | 183 | 26 | 134 | 23 | 89 | 44 | 45 |
| Ambulatory | 87 | 56 | 13 | 37 | 6 | 31 | 14 | 16 |
| Physicians | 163 | 123 | 53 | 66 | 4 | 40 | 17 | 23 |
| Inpatient | 70 | 44 | 13 | 28 | 2 | 26 | 6 | 20 |
| Ambulatory | 92 | 79 | 39 | 38 | 2 | 13 | 10 | 3 |
| Nonphysician Ambulatory | 36 | 27 | 12 | 13 | 2 | 9 | 6 | 3 |
| Prescription Drugs | 32 | 27 | 18 | 9 | 0 | 5 | 4 | 1 |
| Dental Services | 129 | 123 | 68 | 47 | 8 | 6 | 4 | 1 |
| Other | 19 | 17 | 9 | 8 | 1 | 2 | 2 | 0 |

Note: Items in tables may not sum to totals because of rounding.

Source: Agency for Health Care Policy and Research, 1987 National Medical Expenditure Survey – Household Survey.

**Table A2. Modified Personal Health Care Expenditures for 0- to 2-year-olds: Aggregate and Per Capita Expenditures and Percent Distribution, by Type of Expenditure and Source of Funds for Calender Year 1987, (Total population 11.0 million 0- to 2-year-olds.)**

| | | Source of Funds | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Private | | | | Government | | |
| Type of Expenditure | Total Expenditures (Billion $) | All Private Funds | Out-of-Pocket | Private Insurance | Other | All Public Funds | Medicaid | Other |
| | | percent distribution | | | | | | |
| Total | $16.8 | 58.4 | 16.8 | 36.5 | 5.1 | 41.6 | 13.7 | 27.9 |
| Hospital | 11.4 | 56.3 | 10.1 | 39.5 | 6.8 | 43.7 | 15.3 | 28.4 |
| Inpatient | 10.0 | 57.4 | 9.4 | 41.2 | 6.8 | 42.6 | 14.8 | 27.8 |
| Ambulatory | 1.4 | 46.6 | 14.7 | 27.1 | 6.8 | 51.4 | 19.1 | 32.3 |
| Physicians | 4.5 | 61.7 | 30.3 | 30.0 | 1.4 | 38.3 | 9.3 | 29.1 |
| Inpatient | 2.9 | 49.6 | 23.1 | 25.1 | 1.4 | 50.4 | 7.9 | 42.5 |
| Ambulatory | 1.7 | 82.3 | 42.5 | 38.2 | 1.5 | 17.7 | 11.5 | 6.2 |
| Nonphysician Ambulatory | 0.3 | 53.5 | 20.3 | 29.1 | 4.1 | 46.5 | 16.8 | 29.7 |
| Prescription Drugs | 0.3 | 80.8 | 54.9 | 25.6 | 0.3 | 19.2 | 13.7 | 5.5 |
| Dental Services | 0.0 | 80.7 | 36.0 | 33.5 | 11.2 | 19.3 | 6.8 | 12.6 |
| Other | 0.2 | 73.2 | 25.7 | 44.6 | 2.9 | 26.8 | 23.7 | 3.1 |
| | Total Per Capita Expenditures | per capita expenditures (1987 $) | | | | | | |
| Total | $1,521 | $888 | $255 | $555 | $78 | $632 | $209 | $424 |
| Hospital | 1,037 | 584 | 105 | 409 | 70 | 453 | 159 | 294 |
| Inpatient | 910 | 522 | 86 | 375 | 61 | 387 | 134 | 253 |
| Ambulatory | 127 | 62 | 19 | 34 | 9 | 65 | 24 | 41 |
| Physicians | 411 | 253 | 124 | 123 | 6 | 158 | 38 | 120 |
| Inpatient | 259 | 129 | 60 | 65 | 4 | 131 | 21 | 110 |
| Ambulatory | 152 | 125 | 64 | 58 | 2 | 27 | 17 | 9 |
| Nonphysician Ambulatory | 26 | 14 | 5 | 8 | 1 | 12 | 4 | 8 |
| Prescription Drugs | 30 | 24 | 17 | 8 | 0 | 6 | 4 | 2 |
| Dental Services | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 |
| Other | 15 | 11 | 4 | 7 | 0 | 4 | 3 | 0 |

Note: Items in tables may not sum to totals because of rounding.

Source: Agency for Health Care Policy and Research, 1987 National Medical Expenditure Survey – Household Survey.

**Table A3. Modified Personal Health Care Expenditures for 3- to 12-year-olds: Aggregate and Per Capita Expenditures and Percent Distribution, by Type of Expenditure and Source of Funds for Calender Year 1987. (Total population 35.0 million 3- to 12-year-olds.)**

| | | Source of Funds | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Private | | | | Government | | |
| | | All Private Funds | Out-of-Pocket | Private Insurance | Other | All Public Funds | Medicaid | Other |
| Type of Expenditure | Total Expenditures (billion $) | percent distribution | | | | | | |
| Total | $14.8 | 79.4 | 29.7 | 43.3 | 6.4 | 20.6 | 15.1 | 5.5 |
| Hospital | 5.8 | 70.9 | 10.8 | 50.3 | 9.7 | 29.1 | 20.3 | 8.8 |
| Inpatient | 3.1 | 76.1 | 7.7 | 56.1 | 12.2 | 23.9 | 21.6 | 2.4 |
| Ambulatory | 2.7 | 64.9 | 14.4 | 43.6 | 6.9 | 35.1 | 18.9 | 16.2 |
| Physicians | 3.2 | 82.4 | 35.9 | 43.1 | 3.4 | 17.6 | 14.0 | 3.6 |
| Inpatient | 0.6 | 73.6 | 11.1 | 49.1 | 13.4 | 26.4 | 19.6 | 6.8 |
| Ambulatory | 2.6 | 84.3 | 41.1 | 41.9 | 1.3 | 15.7 | 12.8 | 2.9 |
| Nonphysician Ambulatory | 1.1 | 67.2 | 30.9 | 31.7 | 4.5 | 32.8 | 24.0 | 8.8 |
| Prescription Drugs | 1.0 | 84.9 | 56.8 | 28.8 | 0.3 | 15.1 | 12.5 | 2.7 |
| Dental Services | 3.2 | 92.7 | 47.9 | 38.9 | 5.9 | 7.3 | 5.1 | 2.2 |
| Other | 0.6 | 88.6 | 37.5 | 45.6 | 5.5 | 11.4 | 10.5 | 0.9 |
| | Total Per Capita Expenditures | per capita expenditures (1987 $) | | | | | | |
| Total | $424 | $337 | $126 | $184 | $27 | $87 | $64 | $23 |
| Hospital | 166 | 117 | 18 | 83 | 16 | 48 | 34 | 14 |
| Inpatient | 89 | 67 | 7 | 50 | 11 | 21 | 19 | 2 |
| Ambulatory | 76 | 49 | 11 | 33 | 5 | 27 | 15 | 12 |
| Physicians | 91 | 75 | 33 | 39 | 3 | 16 | 13 | 3 |
| Inpatient | 16 | 12 | 2 | 8 | 2 | 4 | 3 | 1 |
| Ambulatory | 75 | 63 | 31 | 31 | 1 | 12 | 10 | 2 |
| Nonphysician Ambulatory | 32 | 22 | 10 | 10 | 1 | 11 | 8 | 3 |
| Prescription Drugs | 28 | 24 | 16 | 8 | 0 | 4 | 4 | 1 |
| Dental Services | 92 | 85 | 44 | 36 | 5 | 7 | 5 | 2 |
| Other | 17 | 15 | 6 | 8 | 1 | 2 | 2 | 0 |

Note: Items in tables may not sum to totals because of rounding.

Source: Agency for Health Care Policy and Research, 1987 National Medical Expenditure Survey – Household Survey.

**Table A4. Modified Personal Health Care Expenditures for 13- to 18-year-olds: Aggregate and Per Capita Expenditures and Percent Distribution, by Type of Expenditure and Source of Funds for Calender Year 1987. (Total population 21.6 million 13- to 18-year-olds.)**

| | | Source of Funds | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Private | | | | Government | | |
| | | All Private Funds | Out-of-Pocket | Private Insurance | Other | All Public Funds | Medicaid | Other |
| Type of Expenditure | Total Expenditures (billion $) | percent distribution | | | | | | |
| Total | $18.2 | 88.0 | 34.0 | 47.7 | 6.3 | 12.0 | 8.6 | 3.4 |
| Hospital | 7.1 | 80.1 | 12.3 | 59.0 | 8.8 | 19.9 | 14.3 | 5.7 |
| Inpatient | 5.3 | 81.0 | 10.7 | 60.6 | 9.7 | 19.0 | 15.4 | 3.6 |
| Ambulatory | 1.8 | 77.3 | 16.9 | 54.3 | 6.1 | 22.7 | 10.9 | 11.8 |
| Physicians | 3.3 | 88.4 | 31.8 | 53.0 | 3.7 | 11.6 | 7.9 | 3.7 |
| Inpatient | 1.3 | 86.2 | 12.3 | 70.2 | 3.7 | 13.8 | 6.8 | 7.0 |
| Ambulatory | 2.0 | 90.0 | 45.0 | 41.3 | 3.7 | 10.0 | 8.6 | 1.4 |
| Nonphysician Ambulatory | 1.0 | 89.4 | 38.3 | 46.4 | 4.7 | 10.6 | 6.1 | 4.5 |
| Prescription Drugs | 0.8 | 88.7 | 60.6 | 26.8 | 1.3 | 11.3 | 8.9 | 2.4 |
| Dental Services | 5.5 | 97.1 | 55.9 | 35.1 | 6.1 | 2.9 | 2.5 | 0.4 |
| Other | 0.6 | 93.9 | 59.5 | 30.8 | 3.6 | 6.1 | 5.6 | 0.5 |
| | Total Per Capita Expenditures | per capita expenditures (1987 $) | | | | | | |
| Total | $844 | $743 | $287 | $403 | $54 | $101 | $73 | $28 |
| Hospital | 328 | 263 | 40 | 193 | 29 | 65 | 47 | 19 |
| Inpatient | 244 | 197 | 26 | 148 | 24 | 46 | 38 | 9 |
| Ambulatory | 84 | 65 | 14 | 46 | 5 | 19 | 9 | 10 |
| Physicians | 152 | 134 | 48 | 81 | 6 | 18 | 12 | 6 |
| Inpatient | 61 | 53 | 8 | 43 | 2 | 9 | 4 | 4 |
| Ambulatory | 91 | 81 | 41 | 37 | 3 | 9 | 8 | 1 |
| Nonphysician Ambulatory | 46 | 41 | 18 | 21 | 2 | 5 | 3 | 2 |
| Prescription Drugs | 37 | 33 | 23 | 10 | 0 | 4 | 3 | 1 |
| Dental Services | 255 | 248 | 143 | 89 | 16 | 7 | 6 | 1 |
| Other | 26 | 24 | 15 | 8 | 1 | 2 | 1 | 0 |

Note: Items in tables may not sum to totals because of rounding.

Source: Agency for Health Care Policy and Research, 1987 National Medical Expenditure Survey – Household Survey.