Effect of Heavy Medical Expenditures on Low Income Families

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ALTHOUGH a positive relationship exists between a family's income and its health care expenditures, this aggregate relationship is neither proportional nor representative of the intricacies of health expenditures. Over a decade, three surveys by the National Opinion Research Center show that low income families spend a greater portion of their income for health care than do higher income families (*1*). These surveys also establish the fact that the decile of families with highest health care expenditures accounts for more than 40 percent of all expenditures (*1a*, *2*).

It should not be inferred that this group consists of the same families in each survey. Nevertheless, the incidence of such expenditures, especially among low income groups, leads to a strong association between health care expenditures and the state of poverty.

A partial explanation of the reason health care expenditures are disproportionately higher with respect to income among the lowest income groups is not difficult. Persons over 65 are only one-tenth of the population. Concentrated in the lower income categories, they comprise about one-third of the lowest category (family income below $3,000) and barely one-thirtieth of the highest category (family income above $10,000). However, since Medicare has changed the circumstances of the elderly with respect to health care, it is appropriate to discuss their experience as separate from that of the younger groups. Except where noted, this paper deals with the population under 65.

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Persons with Large Health Care Outlays

In studying health care expenditures of individuals as they relate to income, several other factors must be considered. In addition to age and family size, the presence of a means for distributing the risk of high medical cost (insurance) or of having it accepted by others (relatives and welfare) must be considered. In addition, sex, race, place of residence, and education have identifiable effects upon the level of expenditures.

While payments for health services can come from one or any combination of three primary sources (personal funds, insurance, or welfare), there is a fourth consideration: free or reduced-price care. Existence of such methods makes measurement of a purely economic nature, such as the use of resources through consideration of expenditures, a difficult task.

In a survey, a person is most likely to remember (or have records for) expenses for which he paid directly. Additional information—such as payment through health insurance, use of welfare programs, or reduced-price care—makes the discussion more precise, but primary weight still must be given to direct, out-of-pocket expenditures.

Data collected through the National Health Interview Survey from January to June 1966, just prior to the institution of Medicare and

most Medicaid programs provide pertinent information about the nature of large medical expenses by individuals. A survey conducted in 1962 provides another source, especially on family health expenditures.

While primarily concerned with the incidence of expenditures which have a catastrophic impact relative to a family's income and size, it is worthwhile to begin with some notion of the frequency of large absolute expenditures. In most health care budgets the two largest expenditures are for hospital and physicians' services; together, they account for about 70 percent of health expenditures. For measurement purposes, a large outlay is considered to be $250 or more for physicians' services, or $500 or more for hospital expenses.

For the entire population, 48 persons out of 1,000 and 167 out of every 1,000 families reported such physician expenditures, while 18 of every 1,000 individuals and 51 of each 1,000 families reported large hospital outlays. For purposes of comparison, 90 out of each 1,000 persons over 65 reported heavy expenses for physicians' services, and 46 per 1,000 reported large expenses for hospital care. Table 1 gives the incidence of large expenditures by various characteristics for the population under 65.

In relative terms, an outlay greater than 15 percent of reported income less $50 for each member of a family has been selected as large. This formula was not chosen arbitrarily; it provides for a relatively small absolute expenditure for very low income families, while recognizing a larger absolute expenditure for families as income increases or as size diminishes. Fifteen percent less $50 per family member is about twice the average annual expenditures that would be accounted for in the average budget.

For the family of six earning $2,000 a year, any health expenditure would be large. However, for the same family earning $6,000, expenditures exceeding $600 would be necessary to qualify for this category of being excessive.

A Closer Look at High Medical Outlays

Individuals. Respondents in the National Health Interview Survey are selected to be representative of the U.S. population; responses are weighted to reflect the total population. Of the more than 173 million persons under 65 living in the United States in 1966, it is estimated that out of each 1,000 persons, 44 spent more than $250 for physicians' services in the year. In addition, close to 16 in 1,000 persons reported hospital expenditures exceeding $500.

Table 1. Incidence per 1,000 persons under 65 years of large expenses for physicians' services and hospital care, January–June 1966

Characteristic	More than $250 for physicians' services	More than $500 for hospital care
All persons	44	16
Education (years):		
0–8	39	15
9–12	43	16
13 or more	52	17
Income (per annum):		
Under $3,000	35	12
$3,000–$4,999	36	14
$5,000–$9,999	43	17
$10,000 or more	53	15
Race:		
White	46	16
Other racial groups	26	6
Number in family:		
1	61	22
2	73	28
3	52	21
4	40	12
5 or more	41	10
Sex:		
Male	32	13
Female	43	18. 5
Residence:		
Standard metropolitan statistical areas	48	18
Nonfarm	36	13
Farm	31	10
Age (years):		
Under 6	15. 5	6
6–16	12. 5	3
17–24	47	12
25–44	61	21
45–64	74	32
Region:		
Northeast	44	17
North central	39	18. 6
South	39	14
West	56. 5	17

SOURCE: Unpublished results from the National Health Interview Survey, January–June 1966, furnished to the President's Commission on Income Maintenance Programs.

With the many combinations of education, income, sex, age, race, and family size needed to make specific comments about the relationship of expenditures to any one group, no definitive statements about this relationship can be justified at this time. Recognizing that the expendi-

ture of $X is not the same for a family earning $3,000 as it is for a family of equal size earning $10,000 or more and that those with large incomes tend to be covered by more comprehensive insurance, the following characteristics about the health expenditures of those under 65 can be stated.

1. A greater incidence of heavy expenditures for physicians' services is associated with persons who are in households in which the head has higher than average educational attainment. However, hospital expenditures do not follow the same pattern. Instead, they tend to be fairly equally distributed throughout the educational classes.

2. Expenditures for physicians' services follow a similar pattern with respect to income and education. Expenditures for hospital care manifest a positive relationship with income, barely apparent with education.

3. Females tend to be a greater proportion of the high expenditure persons than males (the result, in part, of the average cost of maternal care).

4. High outlays are most dramatically associated with age. Children under 16 years old have an incidence of 14 in 1,000 of high outlays for physician's services, compared with 74 per 1,000 for adults age 45 to 64. Slightly more than four children in 1,000, compared with 32 in 1,000 of the older group, had hospital expenses greater than $500 in 1965.

5. Compared with white persons, those respondents in other racial groups collectively reported fewer occurrences of large medical outlays. The incidence of high outlays for nonwhite persons was 26 per 1,000 for physicians' services and six per 1,000 for hospital care. The overall incidence for the population under 65 was 44 per 1,000 for physicians' services and 16 per 1,000 for hospital care. However, white persons receive proportionally less free care than persons from minority races, partially offsetting this finding when it is related to actual use of services.

6. Persons in families of two had the highest incidence of heavy expenditures for physicians' services outlays (73 per 1,000) and for hospital care (28 per 1,000). The incidence falls to 41 per 1,000 for physicians' services and 10 for hospital care in families of five or more. The larger the family, the larger the number of children which comprise average incidence. Thus, it is to be expected that since children have a lower incidence of heavy medical costs, all persons in large families would demonstrate a lower average figure than would all persons in single or two-person groupings. The important question is whether the large family serves as a substitute for professional care.

No conclusion can be reached on this question from the data examined here. However, the question is important. To the extent that the large family refrains from using professional services because they are a more severe burden on the budget than such services are for a smaller family with the same income, needs are not being met.

Families. Thus far, focus has been on individual expenditures; only mention has been made of the key economic unit, the family. From special tabulations the National Health Interview Survey, July–December 1962, a clearer picture of the outlays of families can be obtained. Table 2 summarizes the percentage of families with large expenditures for hospital care and physicians' services.

While the 1966 survey indicates that only 15 out of every 1,000 persons had a hospital bill exceeding $500, the incidence of such expenditures among families in the 1962 survey was 51 per 1,000. The incidence of such high expenditures was 40 per 1,000 for families with incomes less than $5,000, 45 percent higher for incomes of $5,000–$9,999, and more than 80 percent higher for the highest income category.

As with persons with low incomes, consideration must be given to free or reduced-price care received by members of a family. Conversely, persons with greater resources are likely to choose more elaborate modes of treatment (such as private rooms) which adds little to the quality of the basic care required.

The 133 percent difference in the average incidence of large expenditures for hospital care and physicians' services between the lowest and the highest income categories is partially explained by free or reduced-price care and the demand for better accommodations. However, to some extent, as yet unmeasured, this difference represents a real difference in financial access of families to needed services. Medical care, like

food and housing, is a necessity subject to the budgetary decisions of individuals and families; unlike these items, health care cannot be foreseen completely.

Incidence of Catastrophic Expenditures

By using the formula suggested for calculating catastrophic expenditures relative to a family's income and size, table 3 was constructed to indicate the level of expenditures above which costs are considered catastrophic. Using the July 1962–June 1963 National Health Interview Survey results on expenditures by families, the following percentage distribution of families and unrelated individuals with expenditures more than those shown in table 3 can be presented.

Unfortunately, one out of six families is not represented in table 4 mainly because their income was not reported. In all probability, this reduced representation will tend to increase percentages of excessive health expenditures observed among the respondents, since it is the family with large outlays which has the best recollection of recent health expenses.

Nevertheless, these percentages demonstrate the prostrating effect of large health expenditures on low income families. For instance, among families of four at the 1964 poverty line of $3,000, four in 10 spent over $300 on health care. For the family of four just out of poverty in that period, one in three had relatively large expenditures. Close to half of the families of five just above the 1964 poverty line had crippling health charges.

Source of Payment

Today, most families partially anticipate their needs for hospital and physicians' services through insurance. However, even with insurance, most of the medical bill is still paid directly. Size given, the larger a family's income, the more able it is to meet unforeseen costs directly.

While a low income family might be able to rely on free or reduced-price care when its budgeted resources are exhausted, a family with moderate means might be tightly squeezed by the necessity to pay for extraordinary amounts of medical services. Table 2 supports this statement. The lowest income families always have a lower incidence of expenditures greater than $750 than the moderate income group with income $5,000–$9,999.

Table 2. Incidence per 1,000 families, including persons over 65, of heavy expenditures for hospital care and physicians' services, by number in family and income, July–December 1962

Number in family	Percentage in survey	Less than $5,000	$5,000–$9,999	$10,000 or more
	$750 or more for hospital care and physicians' services			
1	31	29	31	68
2	69	57	81	96
3	79	58	92	100
4	89	68	88	124
5	88	71	74	157
6 or more	120	92	136	155
Average	74	54	88	118
	$500 or more for hospital care			
1	26	26	21	39
2	53	46	61	70
3	55	46	59	60
4	56	43	55	74
5	51	43	42	90
6 or more	78	60	92	94
Average	51	40	58	73
	$250 or more physicians' services			
1	56	49	73	146
2	142	122	158	189
3	187	143	201	267
4	207	153	207	316
5	222	174	220	313
6 or more	281	206	327	361
Average	167	116	203	270

However, as the number of persons in the family increases from two to five, the incidence of high expenditures among moderate income families decreases while the expected increase occurs in the lowest group. At five members, the incidence is almost equal.

The Medicaid program may aid some low income families with high medical expenditures by paying their medical bills. Yet, most of these families are not now eligible for this program. At this time, the Federal share is limited to aiding recipients of public assistance and persons who would be such recipients if their income were not 33 percent more than the

maximum allowable income under their State program of Aid to Families with Dependent Children.

On their own initiative several States have extended some of the Medicaid benefits to noncategorical clients. However, in these situations, the State or local government or both together pay the full bill.

Consider the situation of the near-poor family with an income of $3,000–$4,999. While proportionately less of its income is used for health than an equivalent poor family, those families with heavy medical bills are likely to be financially embarrassed as well. The incidence of relatively high health outlays is just as great for this group; more than one-third of the families in this group report expenditures of 15 percent or more of their income for health services.

In addition to the data already presented on the amount of funds spent by various categories of individuals and families, data on the source of payment can be presented. Three sources predominate in all income categories, but there are very significant variations.

Among the population under 65 years old with income less than $3,000, 15.7 percent of hospital dischargees paid for their care almost totally by health insurance (table 5). In addition, 22.2 percent of the dischargees in this age and income group supplemented health insurance with personal payment. Thus, less than 50 percent of the hospital dischargees who were poor were covered in part by insurance.

The situation is greatly improved for the near-poor group in which 59.5 percent of all dischargees paid their hospital bills totally or partially by health insurance. Yet, in both the poor and near-poor categories, more than 20 percent of all dischargees paid their hospital bill from personal funds, as compared with 9 percent for the rest of the population. Finally, Federal, State, or local welfare agencies paid for the care of more than one-third of the dischargees in the lowest income group in contrast to 11 percent for the next to lowest group and 8 percent for the entire population. For the most part, these figures relate to a period just as Medicaid was being instituted. The full implications of this program are consequently not reflected in this survey which took place from July 1966 through June 1967.

Table 3. Expenditure that must be exceeded to qualify as excessively high, by number in family and income

Number in family	Less than $1,000	$1,000–$1,999	$2,000–$2,999	$3,000–$3,999	$4,000–$4,999	$5,000–$6,999
1	$25	$175	$325	$475	$625	$775
2	0	125	275	425	575	725
3	0	75	225	375	525	675
4	0	25	175	325	475	625
5	0	0	125	275	425	575
6 or more	0	0	75	225	375	525

Table 4. Incidence per 1,000 of low income families with health expenditures exceeding 15 percent of income less $50 per family member, by number in family and range of income, July 1962–June 1963

Number in family	Less than $1,000	$1,000–$1,999	$2,000–$2,999	$3,000–$3,999	$4,000–$4,999	$5,000–$6,999
1	592	243	147	109	---	---
2	862	548	389	247	186	---
3	905	693	478	302	231	239
4	878	837	526	338	331	247
5	740	857	646	483	360	269
6 or more	905	815	682	582	441	369

It is also important to note that what is being discussed here is the number of patients discharged from hospitals. Hospital discharges must be coupled with length of stay to obtain an accurate measure of the actual contribution of the three major forms of payment to the payment of expenditures.

What is known about length of stay, income, and insurance coverage is fragmentary, but revealing. The poor tend to have more complex needs and stay longer in hospitals. Hospital insurance is more likely to cover short-term stays the best, intermediate-term less, and long stays of over 60 days usually are poorly covered, especially in the nongroup contracts frequently held by the poor. Thus, indications are that the hospital insurance poor persons have is not well suited for meeting their greater needs. Poor persons are consequently worse off than the figures on source of payment for hospital dischargees show.

Use of Service and Reported Outlay

This analysis of the relationship between outlays for health and ability to pay has several drawbacks when viewed from the real sense of use of economic resources. One way large medical costs can be avoided is for the individual to elect not to obtain medical services. Some available evidence suggests that families without adequate insurance coverage take this route.

Reporting on the 1963 National Opinion Research Center Survey, Andersen and Anderson state that insured families spend more absolutely and relatively than the uninsured (*1b*). As a percent of family income, insured families with incomes less than $2,000 spent an amount equivalent to 23.7 percent of their aggregate incomes; uninsured families in this class spent an average of 10 percent—a proportion which would be burdensome for a family of modest means.

This relationship between the level of expenditures and the presence of insurance holds consistently throughout all income levels, although the relative difference is never quite as large as it is in the example given in the preceding paragraph. Even for families with an income of $7,500 or more, mean expenditures differed by almost $200 ($501 in contrast to $317), depending on whether or not some health insurance was held. Median expenditures were 67 percent larger ($333 as compared with $201) (*1c*).

Contributing somewhat to the differences in expenditures is the amount of free care received by the uninsured. Twelve percent of uninsured families received substantial amounts of free care compared with 4 percent of the insured. However, a greater proportion of the uninsured are in the lowest income groups than in the highest group (55 percent in contrast to 18 percent) (*1d*). Thus, differences in the level of expenditure remain substantial and indicative of significant differences in use.

Table 5. Source of payment for persons under 65 discharged from short-stay hospitals, by family income, July 1966–June 1967

Source of payment	Total		Less than $3,000		$3,000–$4,999		$5,000 or more	
	Number (millions)	Percent	Number (millions)	Percent	Number (millions)	Percent	Number (millions)	Percent
All sources	20. 3	[1] 100. 0	2. 67	100. 0	3. 49	100. 0	14. 1	100. 0
Hospital insurance	6. 6	32. 3	0. 42	15. 7	0. 88	25. 2	5. 3	37. 5
Personal funds	2. 6	13. 0	. 55	20. 5	. 72	20. 8	1. 3	9. 2
Hospital insurance and personal funds	8. 3	40. 6	. 59	22. 2	1. 20	34. 3	6. 5	46. 0
Welfare (Federal, State, local, or any combination)	1. 7	8. 1	. 92	34. 4	. 38	10. 8	. 4	2. 8
Other	1. 2	6. 1	. 19	7. 2	. 31	8. 9	. 6	4. 5

[1] Exceeds 100 because of rounding.

SOURCE: Preliminary results from the regular National Health Interview Survey, July 1966–June 1967 (to be published shortly).

Summary and Conclusion

The severe impact of health expenditures on low income, nonelderly families is apparent in all of the data available to date. Even using the relatively large deductible of 15 percent of income less $50 per family member, more than 45 percent of all families of three or more with less than $3,000 annual income had expenditures in excess of this amount in the 1962–1963 National Health Interview Survey.

For the elderly poor, combined Medicare and Medicaid programs have relieved the impact of burdensome medical costs. Middle and higher income families, covered increasingly by combined general health and catastrophe insurance, still must pay a large portion of their medical expenses directly. Lower to middle income families can afford a castastrophic illness even less. To a varying extent Medicaid is providing for the financing of health services for recipients of public assistance and some medically indigent, that is, persons whose incomes are above State categorical assistance levels, but whose heavy medical expenditures qualify them for program coverage.

The information presented in this paper indicates the breadth and depth of the impact of heavy medical expenses. The recent excessive inflation in health care cost has probably exacerbated the pre-existing situation, or alternatively has turned many of those in need of medical attention away from health care resources.

REFERENCES

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(*2*) Falk, I. S., Klem, M. C., and Sinai, N.: The incidence of illness and the receipt and cost of medical care among representative families: Experiences in 12 consecutive months during 1928–1931. Publications of the Committee on the Cost of Medical Care. No. 26. University of Chicago Press, Chicago, 1933, p. 211, fig. 38.

Tearsheet Requests

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Health Hazards of Microwave Ovens

Some microwave cooking ovens now used in homes and commercial establishments leak radiation which can present a health hazard to users. Radiation levels in excess of the industry's voluntary standard of 10 milliwatts per square centimeter were detected in 51 of the 155 microwave ovens tested in a survey conducted by the Bureau of Radiological Health of DHEW's Consumer Protection and Environmental Health Service in cooperation with health agencies in the States of New York, Massachusetts, Mississippi, and New Jersey. There have been no reports of injuries from the ovens, however.

Representatives from the microwave oven industries, Federal and State government, and consumers' representatives met in Washington, D.C., on January 12, 1970, to discuss proposals for remedial action. A committee was appointed to write a protocol to conduct a national survey of all microwave cooking ovens in use.

Microwave ovens cook foods much faster than any other ovens, often in seconds. As many as 100,000 of the ovens are in use in the United States—about 40,000 of them in homes and 60,000 in hospitals, restaurants, and other establishments.

Until ovens now in use are checked and deficiencies corrected, users should follow these precautions: (*a*) stay at least an arm's length away from the front of oven while it is on, (*b*) switch the oven off before opening the door, and (*c*) do not allow children to use the viewport to watch the food cooking.