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Effects of Cost Sharing on Use of Medical Services and Health

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ABSTRACT

The RAND Health Insurance Experiment tested the effects of cost sharing on use of medical services and health. We randomly assigned 5809 people to insurance plans that either had no cost sharing, or 25, 50, or 95% coinsurance rates with a maximum annual family out-of-pocket payment of \$1000 in current dollars. Compared with free care, cost sharing reduced spending consistently, with the stingiest plans spending about 2/3 of free care. Spending was reduced more for outpatient mental health care and less for hospital care than for outpatient medical and dental care. The cost of treatment episodes was no smaller with cost sharing, but people did not seek care as frequently. Cost sharing led to poorer blood pressure control, corrected vision, and oral health but had no other deleterious health effects. In the years after the study, conventional health insurance has increased front-end cost sharing to restrain unnecessary spending.

Key words: Cost sharing, utilization, health effects, insurance.

Cost sharing, requiring users to pay part of their health-care bills, is one strategy for restraining costs. Why not make users pay all the bill, as we do for food? Americans still spend more on food than on personal health-care services, but no one is recommending first dollar coverage for restaurants. Food expenditures are predictable, and everyone has to pay them. By contrast, particularly for the nonaged, medical care bills fall heavily and often unexpectedly on a few people who need protection against financial catastrophe when they are hospitalized. The main value of health insurance is to give that protection, according to economic theory.

The down side of insurance is induced wasteful over-

use. People with generous insurance may buy care that is cheap to them but expensive to produce. Suppose a person would be willing to pay \$20, but no more, for a doctor's help with a mild health problem. Today, a physician may charge \$50 to give that help. If the person has insurance that pays 80% of the bill, he or she has to pay only \$10 out of pocket, and so will visit the doctor. Society will have wasted \$50 (the cost) -20 (the value) = \$30, which is paid in either higher premiums or taxes. Insurance designers trade off the benefits of risk protection against wasteful overuse. This leads them to most fully cover services that are expensive, rare, and not responsive to price, such as unavoidable, expensive hospitalizations.

Health insurance given to the poor poses different issues that will not be addressed here: how much health care society wants to buy for them; and, more generally, how many resources society wants to give the poor; and how much of that should be health care, rather than education or other good uses.

THE RAND HEALTH INSURANCE EXPERIMENT

In the early 1970s, there was much controversy over the effects of cost sharing on spending and health. Some argued it was "penny-wise and pound foolish": that delays in seeking initial care might result in severe illness that would cost more to cure. Some feared the effects of cost sharing on health. In nonexperimental data, it was hard to tell whether people with generous insurance were spending more because it was not as expensive to them or because they bought better coverage knowing they were sicker than most. Also nonexperimental data contained little information on the health of the insured over time.

With an eye to developing a health-care financing policy, the Nixon administration asked RAND to conduct a social experiment to understand the effects of cost sharing and of health maintenance organization (HMO) membership on use of services and health. Under the leadership of Joseph Newhouse, we set up a large study to test the effects. We became the insurance

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company for 5809 nonaged people in six sites around the country. Participants were randomly assigned to either free care or to one of four cost-sharing plans for 3 to 5 years. Minor variations in the four main cost-sharing plan types led to 13 cost-sharing plans in all. All plans had a \$1000 (in current 1975-1981 dollars) limit on annual family out-of-pocket spending for nonpoor families, and an income-related limit for poor families. Three plans had no deductible but a 25, 50, or 95% coinsurance rate on a wide range of services. The fourth cost-sharing plan had a \$150 individual deductible on outpatient services, but inpatient services were free. It was put in to test whether people would substitute expensive hospital care, which was free to the patient, for outpatient care.

To measure health, we gave the participants health questionnaires at the beginning and end, and physical exams at the end for all, and a random 60% at start. Ultimately the study, whose fieldwork ended in 1982, cost \$180 million in 1990 dollars to perform.¹

EFFECTS OF COST-SHARING ON UTILIZATION

1. *Cost sharing reduces spending.* Our stingiest plan, a \$1000 family deductible (in current 1975-1981 dollars) had spending about 66% that of free care. The 25% coinsurance plans had spending about 81% of free care.² We estimate that with no insurance at all, people would have spent about half the cost of free care. Compared with many economic commodities, this is not a big shift. Presumably the shift is small because most health-care services are only desirable when people are sick, and for many illnesses the treatment is standard. How much more would you spend on restaurant fare, if you had insurance to cover it?

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We did not see any evidence that cost sharing would become less effective over time because of unmet need; after five years the differentials between cost sharing and free care were the same as at the beginning.

2. *The plan with free hospital care but an outpatient deductible had less hospital spending than did the plan where both inpatient and outpatient care were free to the patient.* Thus, on the whole, outpatient and inpatient care were complementary, rather than substitutes. Apparently, additional outpatient contact

has led to finding conditions that were thought to require hospitalization. Recently, for surgery, the story has changed. The growth of outpatient surgery for certain conditions clearly has reduced inpatient surgery.

3. *Cost sharing cut dollars spent and quantity of use equally.* Cost sharing works to reduce the amount of services used, not patients finding lower prices. Indeed, we found no difference in quality of care or choice of provider for those who sought care. What services are given up by those with cost sharing? By looking at treatment episodes, we found that patients decide to get fewer illness episodes diagnosed and treated and presumably give time and home remedies a chance instead. Cost sharing reduces the number of episodes of treatment of all kinds. The costs per treatment episode are the same with free care or with cost sharing. People who get into the system may go along with the physician's recommendation, and physicians apparently rarely cut corners with people with less generous insurance. Everyone in the study had the same private insurance company (RAND), so physicians knew they had at least some insurance.

Cost sharing reduces the number of episodes of treatment of all kinds.

4. *People with cost sharing don't just cut out nonessentials.* Despite the higher rates with free care, the proportion of hospitalizations that are inappropriate is almost identical (23%) for both cost-sharing and free plans, as was inappropriate use of antibiotics.

On all plans, poor people were less likely to seek care in a year, but more likely to be hospitalized...

5. *Rich and poor people had similar reductions from cost sharing in the experiment, but our insurance was income related.* The income relation only affected people for whom 5, 10, or 15% of annual family income was less than \$1000. On all plans, poor people were less likely to seek care in a year, but more likely to be hospitalized, so total expenses were a shallow U-shaped function of income. Childrens' hospitalizations

were somewhat less affected by cost sharing than are adults' hospitalizations, but outpatient reductions were about the same as adults'. People initially in poor health spent much more on all plans, but the sick and the well were affected proportionally by cost sharing.

6. *The response to cost-sharing was similar for dental and medical care*, although dental care showed a big surge at the start of the experiment because fewer people entered the experiment with good dental coverage. Outpatient mental health care is strongly affected by insurance: people with no coverage would only buy about 1/4 as much as if they had full coverage. Hospital admissions were less affected by price, well care slightly more affected by price than were acute and chronic outpatient care.

Outpatient mental health care is strongly affected by insurance . . .

These differences can affect the design of insurance policies. Insurance generates proportionately less wasteful spending on services such as hospital care, which are not very responsive to price, than on services such as outpatient mental health care, which are responsive. Cost sharing works less well for hospital care for another reason: the financial risk involved with hospital cost sharing is larger.

EFFECTS OF COST-SHARING ON HEALTH

We compared those persons given free care with all those given cost sharing because we could not find significant differences in health among people on the different cost-sharing plans. People given free care had better health results at the end of the study on blood pressure control, corrected vision, and oral health (gums and filled cavities), especially for the poor and initially sick. The improved blood pressure translates into about 3-months' increase in life expectancy over a lifetime at a cost in medical spending of \$300 dollars a year.

Better blood pressure control with free care was due to better casefinding. Apparently hypertension was sometimes detected in the extra visits induced by free care. With cost sharing, a few people with high blood pressure never visited the doctor during all the years of the study and others never had their high blood pressure detected. Among those with detected high blood pressure, treatments and spending were very similar. An initial screening exam, given to a random subset of participants gave them more than half the

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benefit of free care on blood pressure control, and, of course, was much cheaper.³

We examined a variety of other outcomes: general self-assessed measures, tracers, health habits. None resulted in significant health differences between those with free care and those with cost sharing. Regular medical screening (Pap smears, breast and rectal exams) was better with free care, but other health habits (exercise, diet, smoking) except for flossing were worse. Those with free care had two more restricted activity days per year than did those with cost sharing, perhaps because of the extra time spent in visiting the doctor. Physicians on the study were disappointed with the modest impact of free care and with the low quality of care observed around the country.

. . . [of] general self-assessed measures, none resulted in significant health differences between those with free care and those with cost sharing.

Why were there no more health effects? Even the stingiest plans got a lot of care by world or historic US standards (about \$800 per year on average, in 1990 dollars). The additional care with free care may have had little marginal value besides relief of temporary anxiety and symptoms. In fact, free care led to more self-reported diseases and worry, especially among the initially well and rich. Is ignorance of illness bliss?⁵

TRENDS IN COST SHARING IN EMPLOYER HEALTH INSURANCE

Have these results had any effect on insurance design? Their message was that cost sharing as provided in health insurance experiment plans: deductibles and coinsurance with income-related limits on annual out-of-pocket costs could restrain spending with little apparent health impact on the kind of people who typi-

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cally are covered under employer health insurance. Immediately after the initial publication of findings in the early 1980s, there were substantial increases in just that kind of insurance. As medical expenditures have continued to rise, cost sharing has been combined with other forms of cost containment.

Attempts to increase cost sharing in Medicare largely have been countered by MediGap insurance, and, despite some success in shifting costs away from the government, they have not had much effect on overall spending by the elderly. The major influences slowing the rise of Medicare expenditures have been the reductions in hospital admissions caused by professional review organization monitoring of appropriateness and the reductions in length of stay brought on by prospective payment.⁶

Attempts to increase cost sharing in Medicare largely have been countered by MediGap insurance . . .

Conventional private insurance has become more like the experimental plans with higher deductibles, and limits on out-of-pocket spending are becoming much more common. In 1982, only 30% of private conventional insurance plans had a deductible for hospital services but by 1984 63% did and by 1987 over 90% did. In 1982, only 4% had an individual deductible greater than \$200 but by 1984 21% did. By 1988, the median deductible was \$300.

Recent developments have shown some convergence of cost-containment measures within workers group insurance, with all plans tending to use both cost sharing and utilization management. Within health maintenance organizations (HMOs), most employees now pay a visit fee, typically \$5 or \$10. In 1990, 83% of those in independent practice association-style HMOs paid some fee for visits, as did 58% in group/staff HMOs. Conventional plans have focussed more on restraining spending directly through utilization management. By

1990, 62% of workers with employer group insurance had conventional plans, but 92% of these had utilization management in addition to whatever cost sharing applied. These activities included:

- preadmission certification (79%)
- concurrent utilization review (68%)
- mandatory second opinions (52%)
- case management for large claims (67%) and
- mental health (50%).⁷

The resolution of the Pittston Coal strike in February

. . . all plans [are] tending to use both cost sharing and utilization management.

1990 had an eerie echo of the Health Insurance Experiment. Our stingiest plan was a \$1000 annual family deductible, with all expenses over \$1000 covered. We paid those people who, like the miners, had had free care before the experiment, \$1000 in cash each year to accept that plan and to participate. The Pittston miners had bitterly opposed company attempts to introduce cost sharing in line with today's typical policies. In the final agreement, the company was not able to get the workers to budge from free care but did put in terms that made the incentives to hold down costs the same as in our stingiest plan. Workers whose family medical expenses are zero get \$1000 each year as an incentive payment. If expenses are under \$1000, the company pays the remaining portion of \$1000 to the miner.⁸

. . . there seems to be little cost to increasing cost sharing within the range studied by the experiment and enormous potential savings.

It is hard to know what part of these trends in increased front-end cost sharing are due to the experiment. In any event, they have been a good idea. Although big health differences have been noted between people with and without insurance, there seems to be little cost to increasing cost sharing within the range studied by the experiment and enormous potential savings. The policies observed today in the market are very similar to the ones we have computed to be optimal in terms of limiting financial risk and of reducing overuse

from insurance. In today's terms, these are individual policies with modest deductibles of \$100-300, 25 to 50% coinsurance and limits of \$1000 to \$3000 on annual out-of-pocket spending.⁹ ☐

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