have not been any. At present, according to Ernest Lowe, who is chief resident in obstetrics and gynecology, most of the abortions at BCH are for "medical" reasons only. Women seeking an "abortion on demand" are referred to private clinics.

The "right-to-lifers" have succeeded not only in blocking abortions at BCH; they also have managed to put a stop to the kind of experiment that Sabath and his colleagues were doing. A new Massachusetts law, unrelated to the BCH situation but also initiated by "right-to-life" groups, bans all research on live fetuses.

The grave-robbing case raises many of the same legal and social questions that are brought up by the manslaughter case against Kenneth Edelin, another BCH doctor (*Science*, 25 October). The Edelin case is a by-product of the district attorney's investigation of BCH that followed the city council hearings. Edelin is accused of killing a fetus during the course of a legal second-trimester abortion. In each case, the question of whether a fetus is a "legal person" entitled to the protection of the 14th Amendment to the Constitution is at issue.

Assistant District Attorney Flanagan contends that a dead fetus is not just a hunk of tissue but is a human body that must be treated like any other. In the grave-robbing case, that means the researchers should have had permission from the next of kin to perform their analyses. (The new state law on fetal research requires maternal consent for any experimentation on a dead fetus.)

Neil Chayet, one of the attorneys for the defense, maintains that a fetus is not a person until at least the third trimester and, therefore, the defendants must be acquitted. Chayet believes, as do the lawyers defending Edelin against the manslaughter charge, that the Supreme Court answered the question of fetal personhood in Roe *v.* Wade, its historic 1973 ruling legalizing abortion. Some legal experts argue that the court effectively resolved the question in that case, saying that a fetus is not a person. Other legal authorities reply that the court's ruling is subject to interpretation on that point.

Chayet has argued successfully in court that a fetus is not a person. In Doe *v.* Doe, a case in which an estranged husband tried to prevent his wife from having an abortion, the court appointed Chayet to represent the unborn fetus. Drawing support from Roe *v.* Wade, and other cases, Chayet concluded that the fetus is not a "legal person" and that he, therefore, had no client. The court was persuaded by his reasoning and the woman had the abortion. Whether this approach will prevail in the grave-robbing case, which has not yet gone to trial, is not at all certain.

What is certain is that the unprecedented BCH cases are already putting restraints on research. And scientists are intimidated. If one asks researchers here whether they or their colleagues have abandoned or modified experiments as a result of what is happening in the statehouse and the courthouse, a majority will answer, "Yes." But when it comes to specifics, they clam up. As one of them said, "In the current climate, we're all afraid we may have committed an indictable offense."

—BARBARA J. CULLITON

A third article will discuss the Massachusetts fetal research law and the way the Boston research community reacted to its passage.

National Health Insurance: Will It Promote Costly Technology?

Like a perennial flower, discussion of national health insurance has kept cropping up in Congress year after year. But, despite varying approaches to the problem among the legislators, a consensus of sorts seems to be emerging that Congress will pass some form of health insurance legislation in the next year or so—perhaps even before the end of 1974. Such passage would revolutionize the financing of health care for the 220 million Americans now benefiting from private health insurance and the 50 million people now covered by the Medicare and Medicaid programs. But there is an important, little-discussed question of side effects: What impact would national health insurance have on medical practice and medical research? Indeed, a number of experts are afraid that the side effects of a national plan may be highly undesirable.

Some university economists, and some medical analysts at the Institute of Medicine (IOM) of the National Academy of Sciences, have been predicting that national health insurance will induce more and more people to opt for highly expensive and elaborate forms of treatment such as extra tests, unnecessary surgery, and elaborate terminal care. In time, this would create more demand for such services and encourage doctors and hospital administrators to construct facilities, train specialists, and conduct related research. The trend, in the long run, would be to bias medical care in favor of technology-intensive procedures. And, since resources are finite, these activities would drain away funds and manpower from lower-cost care.

This discussion has been going on for some time as a sideshow to the center-ring debate in Congress over national health insurance. In that debate, the most publicized issues have been what benefits should be made available to the average citizen, whether the program should be administered by the private insurance industry or the federal government, and how to finance it—the last being especially troublesome since estimates of the ultimate annual cost of the program range from $30 billion to $100 billion!

Two separate theories are being advanced as to how a needlessly high technology–oriented medical establishment could emerge on the future American health scene. One theory, put forward by an IOM panel chaired by Princeton economist Herman M. Somers, holds that the automatic inclusion of some highly expensive types of treatment, such as kidney dialysis, under national health insurance could, without proper restraints, encourage more

and more such treatment and drain funds away from low-cost care. Another, more sweeping theory, principally put forward by Martin S. Feldstein, professor of economics at Harvard, is that any national health insurance plan in which most individuals make very low out-of-pocket payments will have this same effect.

Feldstein's view, which is questioned by some, is that the kind of medical care a person gets should be governed to some extent by what he is willing to pay for it.* Today's hospital patient with private insurance coverage pays, he says, on the average 20 cents for every dollar of care he receives. His doctor is sensitive to his ability to pay and will prescribe treatment the patient can afford in terms of these 20-cent dollars. The patient's pocketbook, then, is a brake on the demand for extremely expensive care in much the same way that a housewife's limited budget will force her to start buying chicken when the price of beef becomes too high.

Feldstein favors plans that require income-related payments of up to 10 or 12 percent of a family's total annual income. Some pending bills meet this requirement, others do not. The Administration bill would have most middle-income families stop paying for care after they have paid out $1500 in medical bills for the year; a bill cosponsored by Representative Wilbur Mills (D–Ark.) and Senator Edward M. Kennedy (D–Mass.) has these families stop paying after they have chalked up $1000 in yearly medical bills. But the AFL-CIO–backed Health Security Act, to which Feldstein is opposed, would not require any out-of-pocket payments at all. "Once you take the price [to the patient] down to zero," Feldstein says, "the top just blows off."

The one measure that may stand the best chance of passing before the end of the year would help people pay for only high medical expenses. Sponsored by Senators Russell Long (D–La.) and Abraham Ribicoff (D–Conn.), it would cover so-called "catastrophic" illnesses—that is, the automobile accident, terminal cancer case, or kidney disease for which the cost of care can ruin a middle-income family. Feldstein favors catastrophic coverage generally of this type on the grounds of social justice; moreover, the payments a patient would make under this particular bill are suitably high. Complete coverage would start only after a patient had had 60 days of hospitalization or had incurred $2000 in bills.

Other analysts besides Feldstein concur that the possible impact of low deductibles and low copayments by individuals is a real unknown. "The problem always gets back to what determines what technology is available to the patient and the true nature of informed consumer choice," says Karl D. Yordy, a senior program officer at the IOM. "Why do you choose a $60- versus a $100-a-day hospital bed for your sick mother?

"It is rational to let consumers choose between Pintos and Cadillacs; the average guy knows that a Cadillac won't suit his needs. But in a hospital situation, it could work in reverse; the average consumer would assume that the $100-a-day hospital bed is better."

Max W. Fine, executive director of the labor-backed Committee for National Health Insurance, which is lobbying for passage of the Health Security Act, disagrees with Feldstein's view that a no-deductible plan will bring about the biasing of treatment in favor of expensive, high technology care. The act has controls built into it, Fine argues. These include specific provisions encouraging people to join prepaid group practices in which there is a lower incidence of hospitalization and of surgery and other elaborate procedures.

Somers, the Princeton economist who has written and testified in Congress extensively on the economics of health insurance, agrees with Feldstein's view

* M. S. Feldstein, *The Rising Cost of Hospital Care* (Information Resources Press, Washington, D.C., 1971); "A new approach to national health insurance," *Public Interest* **23** (Spring 1971).

IOM Elects New Members

The following new members have been elected to the Institute of Medicine of the National Academy of Sciences, bringing the institute's active membership to 269 out of a projected total of 400.

Kenneth J. Arrow, Harvard; W. Gerald Austen, Massachusetts General Hospital; Robert M. Ball, Institute of Medicine; A. Clifford Barger, Harvard Medical School; Paul Berg, Stanford University Medical Center; Eugene Braunwald, Harvard Medical School; William D. Carey, Arthur D. Little, Inc.; Thomas C. Chalmers, Mt. Sinai School of Medicine; Jewel P. Cobb, Connecticut College; Anna L. B. Coles, Howard University School of Nursing; Theodore Cooper, Department of Health, Education, and Welfare; Arlene K. Daniels, Center for the Study of Women in Society; David K. Detweiler, University of Pennsylvania School of Veterinary Medicine; James D. Ebert, Carnegie Institution of Washington.

Herman N. Eisen, Massachusetts Institute of Technology; Paul M. Ellwood, Jr., Interstudy; Scott Fleming, Kaiser Foundation Health Plan of Oregon; Daniel X. Freedman, University of Chicago; Donald J. Galagan, American Association of Dental Schools; John R. Gamble, Pacific Medical Center; Murray Gell-Mann, California Institute of Technology; Melvin A. Glasser, United Auto Workers; Maureen Henderson, University of Maryland School of Medicine; Arthur E. Hess, Deputy Commissioner of Social Security, Baltimore, Maryland; James G. Hirsch, Rockefeller University; Nicholas Hobbs, Vanderbilt University; Kurt J. Isselbacher, Massachusetts General Hospital; Jean E. Johnson, Wayne State University.

James F. Kelly, State University of New York; David M. Kipnis, Washington University School of Medicine; Albert L. Lehninger, Johns Hopkins University School of Medicine; Cyrus Levinthal, Columbia; Abraham Lilienfeld, Johns Hopkins University School of Hygiene and Public Health; Robert C. Long, private practitioner, Kentucky; Gordon McLachlan, Nuffield Provincial Hospitals Trust, England; John A. McMahon, American Hospital Association; Clement L. Markert, Yale; Sherman M. Mellinkoff, University of California, Los Angeles; Matthew S. Meselson, Harvard; Arno G. Motulsky, University of Washington School of Medicine; Selma J. Mushkin, Georgetown; Russell A. Nelson, Johns Hopkins Hospital.

Lloyd J. Old, Sloan-Kettering Institute for Cancer Research; George E. Palade, Yale School of Medicine; Arthur B. Pardee, Princeton; Edward B. Perrin, Department of Health, Education, and Welfare; Daniel W. Pettengill, Aetna Life and Casualty Insurance Co.; Theodore T. Puck, University of Colorado Medical Center; Frederick C. Redlich, Yale University School of Medicine; Milton I. Roemer, University of California School of Public Health, Los Angeles; Max H. Schoen, State University of New York, Stony Brook; Charles W. Scott, Peninsula Surgical Associates, Inc.; Donald W. Seldin, University of Texas Southwestern Medical School; Sam Shapiro, Johns Hopkins Medical Institutions; Robert L. Sinsheimer, California Institute of Technology.

Stephen M. Tenney, Dartmouth Medical School; P. Roy Vagelos, Washington; L. Emerson Ward, Mayo Clinic; Charles D. Watts, practicing surgeon, North Carolina; Carroll M. Williams, Harvard; Marjorie P. Wilson, Association of American Medical Colleges; Geraldine P. Woods, National Institutes of Health; Paul C. Zamecnik, Massachusetts General Hospital.

that when you lower the cost of care to the individual through insurance the demand for care will go up. But, he said, Feldstein is "in confusion" about what the purpose of national health insurance is—to remove barriers to health care.

Somers' IOM panel last year put forward the principal alternative theory about how medical practice could become needlessly biased toward expensive, high technology care.† The group examined the implications of a 1972 congressional decision to insure under Medicare renal dialysis—the treatment with the well-known "kidney machine," which prolongs the life of end-stage kidney disease sufferers at a cost of from $10,000 to $40,000 per patient. Pointing out that this provision alone was expected to cost $135 million in the first year and could cost $1 billion by 1983, by which time it would be aiding 60,000 people per year, the panel issued a terse warning that this "disease by disease" approach to national health insurance could, if continued, prove a serious mistake.

Hemophilia, Hearts, Too

Citing pressure (which still is being put on Congress) by hemophilia groups to have treatment for severe and moderate hemophilia covered at a possible annual cost of $150 million, and the possible advent of coverage for artificial hearts, at a cost of $35,000 apiece or $1.75 billion per year, the panel warned:

> The committee believes that an immense skewing of medical resources may result, along with the creation of incentives for the development of even more technologies that would be highly expensive. . . .
>
> The trade-offs would be such that money funneled into the development of these technologies would not be available for important areas of research that would get at the causes of these diseases and that would result in medical intervention that both would be less expensive and avert any long-term disability.
>
> One wonders how many billions of dollars the nation would now be spending on iron lungs if research for the cure of polio had not been done.

Somers told *Science* that Congress does not really want to insure against every medical treatment which emerges from the research stage regardless of cost. But in the case of the renal dialysis provision, he said, it did so because the politicians knew there was not likely to be any movement on any other form of national insurance that year and they wanted to do something.

While Somers favors coverage of expensive medical treatments through national health insurance, he stresses that, ultimately, trade-offs are going to have to be made and coverage somehow limited. "Getting people to accept the fact of limited resources for health care has been hard because you end up defending the inhumane position of saying that someone has to be allowed to die," Somers says. "But every other country in the world with national health insurance has found that unless they control costs, their medical bills can take up their entire GNP [gross national product]. It's a lesson they've all learned and eventually, we'll learn it too." One Capitol Hill staffer working on the current insurance legislation admitted that in all likelihood Congress will go on insuring any new treatment mode that comes along. "Where the research money goes, insurance will tie in; if we plunge ahead with the development of the artificial heart then there's no way you're going to wind up not covering artificial hearts under national health insurance."

The advent of national health insurance, and its high cost, could ultimately force the biomedical research community to decide which advances are actually needed, according to Ruth Hanft, a political scientist at the IOM. Hanft, a former Health, Education, and Welfare (HEW) official, says that, in HEW, the people drawing up health insurance projections and the people outlining the future of medical research rarely communicate. "I don't think there's a close enough correlation between what we need in terms of service and what we spend on research. So we develop an artificial liver. What is it going to do in terms of facilities and services and manpower? Research and the service sector work apart. They're two separate worlds!"

In a study released last June,‡ some economists at the Rand Corporation called for trade-offs among biomedical research goals in the interests of weighing what new forms of treatment should make their debut on the medical scene. "New modes of therapy, as yet not developed, could have important effects on our estimates of demand," the health insurance report said. "It is clear that decisions on investment in biomedical research, and the specific research goals to be pursued, will have important implications for seemingly independent decisions concerning investment in a national health insurance program. Such cross-linkages deserve more attention than has been given to them in the past."

Somers thinks that the inevitable trend toward more elaborate and technological forms of medical treatment will be controlled, ultimately, not by juggling insurance policies but by direct government planning and control, such as the "certificates of need" now required by law in some states before their medical facilities can expand. Toward this end, one effort at the federal level is the Health Policy, Planning, and Resource Development Act, which is advancing in the House and the Senate. The act sets up regional planning groups that would, in theory anyway, look after new medical facilities and manpower needs. But the act is viewed by several informed observers as a beginning without many teeth; moreover, the plans to have the bureaucracy it would create tie in with a future national health insurance bureaucracy are vague.

Obviously none of these experts in medical economics really knows whether or how national health insurance will skew the future availability of medical services. Hence, their fears could be dismissed as unprovable and unjustified.

However, the history of the Medicaid and Medicare programs, which are the country's closest analogs to a plan of national health insurance, is sufficiently disquieting for such warnings to at least be listened to. Medicaid, the state-run program of medical insurance for the poor, was originally to cost the government $258 million in a single year; but the estimates of demand proved woefully wrong—in 1974 the federal government paid half of the total cost of the $10.5 billion program. Similarly, Medicare, which offers benefits to the nation's elderly, cost much more than expected and brought some rise in the expense of treatment. Medicare and Medicaid, then, which together cover 50 million people, have produced their share of jolts and shock waves. Who knows what surprises are in store once national health insurance starts covering all 200 million Americans?—DEBORAH SHAPLEY

† *Disease by Disease toward National Health Insurance*? (Institute of Medicine–National Academy of Sciences, Washington, D.C., 1973).

‡ J. P. Newhouse, C. E. Phelps, W. B. Schwartz, *Policy Options and the Impact of National Health Insurance* (Rand, Santa Monica, Calif., 1974); also published in the *New England Journal of Medicine* (13 June 1974).