British Journal of Psychiatry (1988), **153**, 21–29

The Relationship Between Psychiatric Research and Public Policy

LEON EISENBERG

The rationale upon which public policy for the support of psychiatric research has been fashioned and the extent to which the results of that research are used to shape public mental-health policy are examined. Support for research competes with other claims for resource allocation and the decisions made reflect the relative strength of the interested constituencies. When research findings promise cost savings, they are readily adopted (sometimes unwisely so), but when they require substantial new outlays or changes in bureaucratic agencies, they are all too often ignored.

Two separate but interrelated issues are involved in the relationship between psychiatric research and public policy: how public policy for the support and regulation of research is, or should be, formulated; and the ways in which research findings are, or should be, utilised in formulating public policy. The two are obviously closely connected; the extent to which the public in a democratic society is persuaded that research can lead to more effective policy for the control of disease and the promotion of health will obviously influence the funds allocated to, and the latitude afforded for, health research. Drawing primarily on examples from the USA, national policy for the support of research and the extent to which research findings inform the debate on public policy are considered.

Policy governing research support

Although a National Institute of Health (NIH) was first created in 1930 (as successor to the Hygienic Laboratory established at the US Marine Hospital on Staten Island in 1887), its funding was quite modest. Not until the years following the Second World War did support for medical research in the federal budget begin to become substantial. The visible success of the wartime Office of Scientific Research and Development had persuaded the US Congress that investment in basic and applied research would lead to tangible results for public health. Between 1956, when federal appropriations for NIH were $98 million, and 1959, they tripled, in response to a new health-science coalition (Shannon, 1987); by the late 1960s, funding passed the unprecedented $1 billion mark. Year after year, Senator Lester Hill and Representative John Fogarty, chairing the relevant Congressional committees, provided the leadership for an almost exponential increase in the commitment of public funds to health research; the Congress authorised larger sums than successive Presidents proposed in all but eight of the annual budgets between 1933 and 1987 (Marshall, 1987)!

Obviously such a rate of increase could not continue for long. The rate began to slow in the late 1960s and appropriations actually fell (in dollars, corrected for inflation) during some budget years in the 1970s and again in the early 1980s. Allocations for health research and development from all sources in the US remained about level in constant dollars between 1975 and 1983 (Office of Program Planning and Evaluation, 1986, p. 4). Fortunately, over 1982–1987, NIH funding once again attained sustained growth amounting to 70% in dollars appropriated and 28% in real terms; it reached $6.2 billion for the fiscal year 1987 (Wyngaarden, 1987).

The National Institute of Mental Health (NIMH), a component of NIH from its founding in 1946 until it was split off in 1974 together with the National Institutes for Alcoholism and Alcohol Abuse (NIAAA) and for Drug Addiction (NIDA) to form a separate Alcohol, Drug Abuse and Mental Health Administration (ADAMHA), began more modestly, and its research budget did not reach $100 million until 1966. Had the NIMH research budget kept pace with inflation, or had it paralleled the growth at NIH during the 1970s and 1980s, it would have exceeded $300 million by 1983 (Institute of Medicine, 1984); however, because of the lower priority assigned to mental health by the Congress, the actual allocation was $158 million, 1/6 of the amount awarded to the National Cancer Institute, and 1/4 of that awarded to the National Heart, Lung and Blood Institute in that year.

To be published in *Scientific Approaches in Epidemiological and Social Psychiatry: Essays in Honour of Michael Shepherd* (eds P. Williams, G. Wilkinson & K. Rawnsley). London: Tavistock Publications.

There was thus remarkable national commitment to the support of health research, unparalleled elsewhere, although it has not fully satisfied the scientific community and has at times proceeded by fits and starts. As the President's Biomedical Research Panel noted (Murphy & Ebert, 1976, p. 3):

> "The scientific enterprise needs stability and predictability. It does not require growth and expansion at the rate achieved in the 1950's and 1960's, but it cannot survive being turned on and off, nor will it succeed if held at a standstill without any opportunity for growth. . . ."

Concerns about stability, costs, and cost-effectiveness in health research led Joseph Califano, the then Secretary of the Department of Health, Education and Welfare, to convene a National Conference on Health Research Principles in January 1979 to help develop "a multi-year research strategy to guide the allocation of limited government health research dollars" (Office of the Director, NIH 1979, p. 99). Many in the academic community were concerned that the Conference was convened with a greater emphasis on "limited government health research dollars" than on a "multi-year research strategy"; yet it was clear that "public funds . . . will be made available to us only insofar as we are able to make a persuasive case for their utility" (Eisenberg, 1979, p. 97).

What are the grounds that justify government support of health research? Are there guide-lines for the total amount that should be committed? And how should priorities be set for allocating monies to particular health problems within the total?

Justifying a national commitment to health research

To many, the justification for basic science is the pursuit of knowledge for its own sake. Although this intellectual position does not carry much cachet in political debates, it remains the case that science enriches human understanding; science is a way of knowing. In the words of Adam Smith (1790, p. 45), it introduces order into the:

> "chaos of jarring and discordant appearances . . . and [restores the imagination], when it surveys the grand revolutions of the universe, to that tone of tranquility and composure, which is most agreeable in itself, and most suitable to its nature. . . ."

The gratification of man's aesthetic sensibilities is not often persuasive to the public as a rationale for expending tax funds; the body politic is much more likely to respond to the substantial practical benefits scientific discovery brings with it. As Francis Bacon (1620, p. 259) put the matter in his Third Aphorism "concerning the interpretation of nature and the kingdom of man" in the *Novum Organum*:

> "Human knowledge and human power meet in one; for where the cause is not known the effect cannot be produced. Nature to be commanded must be obeyed. . . ."

Bacon's proposition that knowledge is power was borne out in Julius Comroe's (1976) analysis of the scientific patrimony of ideas which proved ultimately of great benefit to patient care; 41% of the work essential for later clinical advance was not clinically orientated at the time it was undertaken (Comroe & Dripps, 1976). Although the chemist, von Baeyer, synthesised barbituric acid as early as 1864, it was not until Fischer and von Mering produced barbital in 1903 that barbiturates were employed as sedatives. Even when scientists pursue health-related ends, the applicability of their findings may not be apparent. Michael Heidelberger and Walter Jacobs synthesised sulfanilamide in the laboratory in 1915, but it was 20 years before sulfonamides were first used against infectious diseases; the concept that inhibiting the uptake of metabolites would produce bacteriostasis had not been conceived. In 1970, David Baltimore and Howard Temin independently found evidence for an enzyme in RNA viruses capable of constructing double-stranded DNA from single-stranded RNA templates. The discovery of reverse transcriptase was acknowledged as a scientific landmark by the award of a Nobel Prize 5 years later. That work was to provide the foundation for understanding the pathophysiology of the Acquired Immune Deficiency Syndrome (AIDS), a disease not identified until 1981 (Centers for Disease Control, 1981*a*,*b*); its cause, the HIV retrovirus employing reverse transcriptase to integrate itself into the host cell genome, was not identified until 1983 (Barre-Sinoussi *et al*, 1983; Gallo *et al*, 1983). The pursuit of basic knowledge in the laboratory yielded a concept and a methodology essential for the understanding of an unprecedented epidemic (Eisenberg, 1986); it provides major insights into the evolutionary origins of genetic information (Varmus, 1987).

The most common rationale for research support is its direct benefit for health. The goals of health research have been epitomised as: advancing the fundamental knowledge base; translating that knowledge into improved diagnostic, treatment, and preventive interventions in order to alleviate suffering, improve the quality of life, and enhance survival; providing the basis for regulatory actions to promote safety and health; and providing the basis for informed decision-making on health policy (Institute of Medicine, 1979, p. 11). The Presidential Panel Report (Murphy & Ebert, 1976, p. 2) stated:

> "Human beings have within reach the capacity to control or prevent human disease. Although this may seem an overly optimistic forecast, it is, in fact, a realistic, practical appraisal of the long term future . . . There do not appear to be any impenetrable, incomprehensible diseases . . ."

A decade later, it was not likely that the promise of biomedical science for creating a disease-free society would be stated in such self-confident terms. The capabilities of the scientific enterprise did not diminish in the interim; indeed, they increased. But awareness of the complexity of disease virulence, the multiple determinants of host resistance, and the ecological consequences that follow technological advances (Eisenberg, unpublished) also increased. Consider Rene Dubos (1959, pp. 22–25):

> "There is no reason to doubt . . . the ability of the scientific method to solve each of the specific problems of disease by discovering causes and remedial procedures . . . But solving problems of disease is not the same thing as creating health . . . In the world of reality, places change and man also changes . . . Health and happiness cannot be absolute and permanent values . . . Biological success in all its manifestations is a measure of fitness, and fitness requires never-ending efforts of adaptation to the total environment, which is ever changing."

The goal of interdisciplinary research in the health sciences must become a more complete understanding of the interactions between human populations and their salient physical, biological, and social environments.

The final, and least credible, argument for supporting research is a promise of reduction in health-care costs. Advocates cite as a prototype the spectacular success of the World Health Organization (WHO) campaign against smallpox, which, by eliminating the virus, even removed the need for continuing vaccination costs. But that example has limited relevance. The biology of smallpox is unique: no animal reservoir, virtual lifelong immunity after infection or vaccination, visible evidence of the immune state through scarification, transmissibility only while the vesicular eruption lasts, and no carrier state (Breman & Arita, 1980). Other disease-prevention measures are much less efficient and none has yet sufficed to eliminate the causal agent. Vaccinating those 65 and over against influenza costs an additional $2000 for each year of life gained, even though the vaccine is cheap and hospital care for the complications of influenza dear, because the economic calculus takes into account the additional costs for medical care from other causes among those who survive (Office of Technology Assessment, 1981).

None of this argues against research to diminish morbidity and mortality (Eisenberg, 1987*a*). But claims for cost reduction are illusory. They are likely to discredit the research enterprise when it does not yield the vaunted benefits. As Gori & Richter (1979) and Russell (1986) have pointed out, prevention delays death but does not eliminate cumulative morbidity. Increased survival into later years means higher costs (unless one clings to the fantasy of eliminating all chronic diseases). Americans of 65 and over, some 11% of the population in 1980, 'consumed' 29% of personal health-care expenditures; by 2020, when they will constitute 26% of the population, the figure for expenditures will rise to 40% (Rice & Feldman, 1983). Success in prolonging meaningful life is a cause for celebration, but it does not come cheap. To claim that health research will lower overall health costs is to issue an unredeemable promissory note.

How much is enough?

Are there guide-lines governments might usefully employ to determine appropriate resource allocations for medical research? In the heady years of the 1950s and early 1960s in the USA, with the Gross National Product (GNP) increasing each year, little thought was given to the sustainable limits to expansion in the research enterprise. In the late 1970s and 1980s, at a time of budget deficits, a slowdown in growth of the GNP, and an unfavourable trade balance, the question of limits became prominent in policy debates. In 1976, the President's Panel (Murphy & Ebert, 1976, A 22) stated:

> "In other fields of technological endeavor . . . it is customary to invest between 5 and 10 percent of the total budget on research and development . . . At the present time the health industry as a whole invests a considerably smaller percentage in research . . . While 5% would represent an abruptly large increase if committed overnight, it seems to us a rational percentage to head toward as a long-range goal."

In 1976, total health research and development costs were 3.6% of total health costs; the estimate for 1985 was 3.1% (Office of Program Planning and Evaluation, 1986, p. 2).

US health-care expenditures for 1987 might total more than $500 billion. If the Panel's recommendation for a 5% set aside for health research had been in effect, an allocation of some $25 billion would have been justified. What are the actual figures likely to be? Over the previous decade, the NIH budget provided 35–40% of all national support for health research and development, with other federal sources providing 15–20% and industry about 30–39%

(Office of Program Planning and Evaluation, 1986, p. 4). If 1987 ratios were similar (an uncertain assumption) with an NIH budget of $6.2 billion, total support would equal some $16 billion, about 3.2% rather than 5% of 'industry' costs. Moreover, what is listed under 'research and development' in the national total might reflect expenditures for development far more than basic research.

The relative generosity of research funding in the USA is in stark contrast to that in the UK, where only 1.5% of the National Health Service (NHS) budget is invested in medical research, according to Sir Walter Bodmer, Director of the Imperial Cancer Fund (Dixon, 1987). The most recent commentary in *Nature* (Editorial, 1987, p. 745) remarked bitterly:

> "For want of sufficient renewal over 15 years, the research community is aging. The depth and variety of its pattern of work, already constrained by the lack of funds, will be further restricted by the reorganizations now in the cards. There are good reasons to fear that the permanent loss of able people is potentially another undermining influence. The flight of able young people into fields other than science, made possible and even necessary by the British educational system, is a greater if more distant worry. Bankruptcy tomorrow is a threat."

From the USA the state of affairs in the UK can only be described as appalling. Without detailed knowledge of the British 'scene', no insights are offered into the reason for the meanness of government policy toward scientific research, but there is acute awareness of the loss to the USA when British scientists are 'handcuffed'. Science is an international enterprise; its fruits are shared by all. When its future is in jeopardy in any country, that must be a matter of concern to scientists and citizens everywhere.

Setting priorities within the research budget

Within the health-research budget, how are priorities to be assigned for allocations to particular disease problems? A rationalist might argue that decisions should be based on a close analysis: (a) of the scientific opportunity for discovery in a given area (the existence of exciting new concepts and the availability of reliable methods); and (b) of the health burden produced by the diseases under consideration. For example, a cogent argument can be made on both grounds for a much increased investment in research on Alzheimer's disease (AD). Localisation of the gene controlling the production of amyloid on chromosome 21 (Goldgaber *et al*, 1987; St George-Hyslop *et al*, 1987; Tanzi *et al*, 1987) in familial AD offers a major insight into the molecular biology of the disease. Aggregate net social costs over their remaining lifetimes for all cases of AD diagnosed in a single year have been estimated at some $30 billion (Hay & Ernst, 1987). Further, a substantial increase in the incidence and prevalence of AD is inevitable because of the gains in longevity among those over 75, the most striking demographic phenomenon in our era.

The Board on Mental Health and Behavioral Medicine (Institute of Medicine, 1984) has argued that psychiatric research is grossly underfunded in relation both to progress in neuroscience and to the health burden produced by mental disorders. In 1980, mental disorders entailed direct health-care costs of $20 billion (without taking into account their contributions to morbidity from cirrhosis, drunk-driving accidents, chronic pain syndromes, etc.), exceeded in aggregate expense only by costs resulting from circulatory and digestive diseases. A 5% set-aside rule would have warranted $1 billion for ADAMHA research; the actual figure did not reach half that amount for all three institutes under its aegis until 1987. When indirect costs secondary to lost productivity, restricted activity, welfare transfer payments, and other social liabilities (i.e. losses from crime and the costs of law enforcement because of opiate addiction) are added, the overall fiscal impact of major mental disorders and addictive states was estimated by the Board to total $185 billion a year (Institute of Medicine, 1984, p. 7). The Board called for annual expenditures of $300 million for NIMH and $100 million for each of the other two Institutes (in 1983 dollars). In 1987, ADAMHA research budgets, converted into 1983 dollars by means of the NIH Biomedical Research and Development Price Index, were the equivalent in 1983 dollars of $198 million for NIMH, $107 million for NIDA, and $57 million for NIAAA, not quite ¾ of the total recommended 4 years earlier.

The politics of the budgetary process reflect the power of constituencies extending well beyond the scientific establishment. The National **Institute** of Health became the National **Institutes** with the proliferation of disease-oriented institutes at the insistence of patient groups and their lobbyists, the most recent being the splitting of the National Institute for Arthritis, Diabetes, and Digestive and Kidney Disease into new Institutes for Arthritis and Musculoskeletal and Skin Diseases and for Diabetes and Digestive and Kidney Diseases, because of legislative lobbying for sports medicine (Booth, 1987). The National Cancer Institute (NCI), founded in 1944, became the best-endowed component of the entire complex with the passage of the National Cancer Act in 1971 for a "war against cancer". Although academic purists opposed each of the new

Institutes in turn (at the same time that academics who foresaw greater funding for their own research lobbied for the change), it is probable that the overall research budget grew as rapidly as it did because more citizens had a tangible reason to support budgets targeted against diseases which had a personal meaning for them.

The uses of research in the formulation of public policy

Through Thatcherism and Reaganism in the UK and USA respectively, *laissez-faire* has become the ideal of public policy. Conservative politicians call for a return to Adam Smith's "invisible hand", which ensures that individuals, motivated solely by self-interest, "without intending it, without knowing it, advance the interests of the society, and afford means to the multiplication of the species" (Smith, 1759, p. 304). In this view, the discipline of the market leads to self-regulating order; without conscious plan, regulation or enforcement, the marketplace co-ordinates the individual types of behaviour of the multitude of vendors and buyers for the common good. In the debate between those who believe that government to be best that governs least, and those who opt for the planned use of the taxing and regulatory powers of the state, conviction rests on philosophical rather than empirical grounds. There are no 'controlled clinical trials' on such questions (think for a moment about the meaning of 'informed consent' for such trials!).

Whatever the virtues of the market for the exchange of material goods, 'the invisible hand' clearly does not suffice for the provision of services unaffordable to those in the greatest need of them. Psychiatric services for the chronically impaired stand as a compelling instance. Curiously enough, the most convinced advocates of *laissez-faire* are quite prepared to support laws to enforce monogamy, to ban abortion, or to uphold the sovereignty of private property. Moreover, every modern state since the time of Bismarck's Prussia transfers funds from those who work to those who are retired rather than leaving it to individuals to provide for their security in old age. Every Western state, save the US, entitles its citizens to health care by insurance or a national system; the Thatcher government, although progressively depleting the NHS of resources, professes allegiance to it.

Highlighting the follies that he supposed to result from interference with the marketplace, Smith (1759, pp. 380–381) had this to say about planners:

> "The man of system . . . is apt to be very wise in his own conceit, and is often so enamoured with the supposed beauty of his own ideal plan of government, that he cannot suffer the smallest deviation from any part of it. He goes on to establish it completely and in all its parts, without any regard either to the great interests or to the strong prejudices which may oppose it: he seems to imagine that he can arrange the different members of a great society with as much ease as the hand arranges the different pieces upon a chess-board; he does not consider that the pieces on the chess board have no other principle of motion besides that which the hand imposes on them; but that, in the great chess-board of human society, every single piece has a principle of motion of its own, altogether different from that which the legislature might choose to impress upon it."

The notion that the "man of system . . . wise in his own conceit" is able to establish his "ideal plan of government . . . completely and in all its parts" corresponds as little with the reality of the planning process as does his free market with today's international market. Rudolf Klein (1972), in a fascinating essay, contrasted the "optimising, rationalising" model of the decision-making process with the "satisfying" model. The latter is based on a course of action that is good enough: cautious, incremental, and based on compromises dictated by the conflicting claims of competing constituencies. In the case of the NHS, those constituencies include the Department of Health and Social Security (DHSS) and the Treasury, civil servants in the bureaucracy, physicians (themselves divided among competing specialty groups), regional health authorities, and public opinion (or what is judged to be public opinion). Klein (1972, p. 420) concluded his article with these words:

> "The problem for policy makers – and those who try to assess the outcome of the process – is to know whether the right balance has been struck between overestimating the frictional costs, and thus missing an opportunity for improvement, and underestimating the frictional costs, and thus creating a situation of opposition to evolving change."

These prefatory remarks may help to clarify some of the reasons for the divergence between the views of the planning process held by government officials, on the one hand, and physicians and scientists, on the other. The political agenda is such that decisions must be made in the face of limited (and sometimes absent) data. The policy-maker wants answers immediately and is impatient with the scientist's reiteration of the need for more research. Moreover, politicians operate within a time-frame set by the next election; yet the impact of policy changes (or failures to change) should be assessed over much longer

https://doi.org/10.1192/bjp.153.1.21 Published online by Cambridge University Press

periods. Scientists complain that research findings are ignored, that debates proceed without data, and that politicians are unwilling to submit proposals to empirical trial, i.e. comparing alternative policies in separate geographical areas. All too often, they feel that research findings are cited when they seem to support politically palatable alternatives and ignored when they do not (a phenomenon not unknown in medical debates).

Research findings are indeed often ignored, in part because they are themselves debatable, in part because larger political considerations come into play. An example may be informative. In 1965, as part of the War on Poverty, a national Head Start Program was established to provide preschool education for economically disadvantaged children in order to improve their chances for successful performance when they enter elementary school. As program costs mounted, the Westinghouse Learning Corporation (1969) was given a contract to evaluate effectiveness. Its report concluded that the increases in IQ for disadvantaged children observed early in the program were not sustained after the children entered primary grades. The report diminished enthusiasm for the programme in the Nixon White House and reinforced efforts to reduce funding. Yet, despite the negative Westinghouse evaluation, funding continued to grow.

Head Start had, and continues to have, a large political constituency in local communities. Its emphasis on the children of the poor draws support even from those who oppose other welfare transfer payments. The Westinghouse study was heavily criticised because it amalgamated data from programmes of very different quality and used IQ as the proxy for outcome rather than school progress. If its results were grist for the mill for Head Start opponents, they were roundly criticised as flawed by Head Start proponents. It was not until the 1970s and 80s (Lazar *et al*, 1982; Berrueta-Clement *et al*, 1984) that longitudinal studies provided persuasive evidence of program effectiveness: better school progress, fewer drop-outs, less delinquency, and an improved record of employment after high school. In the event, such research 'findings' as were available had little impact on a political process set in motion as part of a much larger national agenda.

Even when clinical and research data are solid, they may be unwelcome if they lead to social policy implications that contravene deeply held beliefs defined as 'moral'. Consider the prevalence of teenage pregnancy and of low-birth-weight infants, two strongly interconnected public-health problems with high risk for maternal and neonatal mortality, and neuropsychiatric morbidity in both mothers and infants (Eisenberg, 1987*b*). Among industrialised countries, the US has the highest teenage pregnancy, abortion, and birth rates, because US teenagers have the lowest rate of contraceptive use (Jones *et al*, 1985). Although the percentage of unmarried adolescent women having had intercourse is higher by half in Sweden than in the US, pregnancy rates are only half as high, because Sweden provides a compulsory sex education curriculum in its schools, closely linked to contraceptive-clinic services. Evidence from US studies that school clinics lead to lower birth rates among secondary-school students (Kenney, 1986), and that they are associated with a delay in the age at which coitus is initiated (Zabin *et al*, 1986), has not deterred the Reagan administration, and the 'moral majority' it speaks for, from opposing public-health measures of demonstrated effectiveness.

Low birth weight is a major determinant of neonatal mortality, total infant mortality, and developmental retardation among the infants who survive (McCormick, 1985). The Institute of Medicine (1985) estimated that the then rates of low birth weight in the USA could be reduced by 15% among Whites and 12% among Blacks if all women began prenatal care in the first trimester of pregnancy and continued to receive care up to delivery. Yet, since 1978, the proportion of women in the USA not receiving care until the third trimester, or receiving no care at all, has remained unchanged. What has been missing is a national commitment to abolishing the barriers to care. The problem persists, not because of a lack of knowledge, but because of a lack of social will. The issue is not further research, although much more remains to be done to improve on present performance, but the creation of a political coalition to press for universal access to the medical and social measures already available.

An impediment of a different kind arises when research yields strong, replicated, and important findings, but the policy measures to change concurrent practices are not readily implemented. Shepherd *et al* (1966) demonstrated the crucial role of general practitioners in the provision of mental health care. They concluded that:

> "The cardinal requirement for improvement of the mental health services in this country [the UK] is not a large expansion and proliferation of psychiatric agencies, but rather a strengthening of the family doctor in his therapeutic role" (p. 176).

Goldberg *et al* (1978) and Regier *et al* (1978) obtained comparable data for the USA and came to similar conclusions. Moreover, Hankin *et al* (1982) and Williams *et al* (1986), for example, showed that patients with mental disorder use general medical services at a disproportionate rate. Yet there has

been little progress in upgrading psychiatric training for family doctors and less in creating the conditions necessary in the USA for changing practice patterns (i.e. for providing adequate reimbursement for time spent in delivering mental-health care). Shepherd (1987) suggested that psychiatric protectionism may be an additional major obstruction.

What are the policy implications of these findings? Medical curricula are controlled locally rather than nationally; they are constructed by faculty committees on which psychiatrists have little representation. Proposals to increase funding for mental-health services in primary care will be coldly received in a climate of cost control unless they include mechanisms to reduce payments in other sectors of the health service. As rational as that would be for improving primary care, it faces bitter opposition from procedure-based specialties whose incomes would fall. Such a change would provide a more powerful stimulus to needed curriculum reform than purely internal educational forces are able to muster (Eisenberg, 1988).

The failure of research to inform policy for the care of psychotic patients is clearly evident in the number of homeless mentally ill persons in the USA, estimated as hundreds of thousands. Massive release of former hospital patients followed upon policy decisions undertaken without systematic evaluation of the consequences. Wyatt & DeRenzo (1986) contrast the stringent demands established by the Food and Drug Administration before drugs are allowed on the market with the absence of any requirement for trials of efficacy and toxicity for social policy innovations. Thoughtful scholars warned against the danger of substituting good intention for evidence. Freedman (1967) had cautioned that a tradition in America of:

> "veneration for change leads some to envision abandonment of all state hospitals immediately without thought to feasibility or consequences . . . [There is a danger that] in paying increased attention to the socially deviant and the neurotic in the community, the traditional responsibility of psychiatry for caring for the severely disturbed or psychotic will be minimized or abandoned."

When short-term studies seemed to demonstrate the feasibility of caring for acutely psychotic patients in the community with psychotropic drugs **and** appropriate social support, the second part of the message (the costly part) was lost in the stampede to deinstitutionalisation in hope of transferring costs from state to federal budgets. Moreover, no provision was made for care in the long run for patients with chronic disorders marked by periodic exacerbations. The fate of the research by Pasamanick *et al* (1967) provides a distressing instance of the way in which good results can be transformed into tragedy when the long-term needs of patients are not met. The authors tried to determine whether actively psychotic patients could be treated more effectively at home than in hospital. Patients eligible for entry into the trial were those diagnosed as schizophrenic, between 18 and 60 years of age, neither homicidal nor suicidal, resident within a defined geographical area and with a family able and willing to provide supervision in the home. Note the age limitations, the exclusion of violent patients, and the requirement for a supportive family. Those eligible were assigned at random to conventional state hospital care or to home care on drug or placebo. The outcome was unequivocal. Those cared for at home with psychotropic drugs (but not placebos), visiting public-health nurses, and psychiatric and social-work back-up available as needed, did better on all of the outcome measures than the hospital control cases. Even after an initial hospital stay averaging 3 months and remission of gross symptoms, the hospital patients were judged as treatment failures more often than were the home-care patients at the termination of the study. Despite its clear success, funding for the home-care programme was not continued by state authorities after the NIMH-supported research ended. What was the fate of the patients over the next 5 years? The investigators set out to determine the facts. To their distress, although not to their surprise, they found no significant differences between groups on any of the indices of outcome; worst of all, the majority of patients, whatever their initial treatment assignment, showed evidence of major psychiatric and social impairment. Davis *et al* (1974, p. xii) concluded bitterly:

> "We must raise questions about the social implications of science, the expenditure of funds and personnel on research whose results are not utilized, and all the personal frustrations of investigators who must feel the tremendous anger of what are, fundamentally, wasted professional lives."

The situation is not quite so grim as it was when those words were written. Public policy is beginning to move toward a recognition of responsibility for chronically mentally ill patients. There is great promise in the current joint effort by the Robert Wood Johnson Foundation and the US Department of Housing and Urban Development to establish model urban programs for the care of such patients, with equal emphasis on the provision of social services and clinical care. The lesson still to be learned is that the effectiveness of the best-designed model must be measured, not only when it is new

and is under carefully chosen leadership, but also when it becomes the basis for routine and inevitably bureaucratised services. What is needed is the equivalent of post-marketing surveillance after the introduction of new drugs. Only by setting up a system sensitive to toxicity and insuring the feedback and use of data obtained can we be confident that what works in a demonstration project continues to perform as expected when it becomes the basis of routine care.

Summary

Public policy for the support of psychiatric research is influenced mainly by evidence that the results of research improve the health of the population. When discoveries come in the form of more effective new drugs and procedures, they are readily introduced into practice. When they come in the form of remedies which counter deeply held beliefs, or are costly and manpower-intensive, they compete in the political arena with other social values.

Although this account is limited to issues internal to health policy, the fight for medical research and the application of its findings demands attention for broader questions of resource distribution. What is spent for 'defence' is not available for the improvement of health care. Advocates of public health must be prepared to challenge the disproportionate allocations of tax monies to military expenditures, themselves the greatest threat to the health of populations.

References

BACON, F. (1620) *Novum Organum*. Republished *The Philosophical Works of Francis Bacon* (1905) (ed. J. M. Robertson). London: George Routledge and Sons, Ltd.

BARRE-SINOUSSI, F., CHERMANN, J. C., REY, F., NUGEYRE, M. T., CHAMARET, S., GRUEST, J., DAUGUET, C., AXLER-BLIN, C., VEZINET-BRUN, F., ROUZIOUX, C., ROZENBAUM, W. & MONTAGNIER, L. (1983) Isolation of a T-lymphotrophic virus from a patient at risk from Acquired Immune Deficiency Syndrome. *Science*, **220**, 868–871.

BERRUETA-CLEMENT, J. R., SCHWEINHART, L. J., BARNETT, W. S., EPSTEIN, A. S. & WEIKART, D. P. (1984) *Changed Lives: The Effects of the Perry Preschool Program on Youths Through Age 19*. Ypsilanti, Michigan: The High/Scope Press.

BOOTH, W. (1987) Arthritis Institute tackles sports. *Science*, **237**, 846–847.

BREMAN, J. G. & ARITA, I. (1980) The confirmation and maintenance of smallpox eradication. *Science*, **164**, 262–270.

CENTERS FOR DISEASE CONTROL (1981*a*) Pneumocystis pneumonia – Los Angeles. *Morbidity and Mortality Weekly Report*, **30**, 250–252.

—— (1981*b*) Kaposi's sarcoma and pneumocystis pneumonia among homosexual men – New York City and California. *Morbidity and Mortality Weekly Report*, **30**, 305–308.

COMROE, J. H. (1976) Lags between initial discovery and clinical application to cardiovascular and pulmonary surgery. In *Report of the President's Biomedical Research Panel* (eds F. D. Murphy & R. H. Ebert). Appendix B, pp. 1–33. Washington, DC: DHEW Publication No. (05)76–500.

—— & DRIPPS, R. D. (1976) Scientific basis for the support of biomedical science. *Science*, **192**, 105–111.

DAVIS, A. E., DINITZ, S. & PASAMANICK, B. (1974) *Schizophrenics in the New Custodial Community: Five Years After the Experiment*. Columbus, Ohio: Ohio State University Press.

DIXON, B. (1987) BA lobby asks Thatcher to do more for research. *The Scientist*, 21 September, **1**, 1.

DUBOS, R. (1959) *Mirage of Health: Utopias, Progress and Biological Change*. New York: Harper and Brothers.

EDITORIAL (1987) Formative turbulent months ahead. *Nature*, **328**, 745–746.

EISENBERG, L. (1979) The National Conference on Health Research Principles: bread and circuses or the great debate? *Clinical Research*, **27**, 95–97.

—— (1986) The genesis of fear: AIDS and the public's response to science. *Law, Medicine and Health Care*, **14**, 243–249.

—— (1987*a*) Preventing mental, neurological and psychosocial disorders. *World Health Forum*, **8**, 245–253.

—— (1987*b*) Preventive pediatrics: The promise and the peril. Pediatrics, **80**, 415–422.

—— (1988) Science in medicine: too much or too little and too limited in scope? *American Journal of Medicine*, **84**, 483–491.

FREEDMAN, A. M. (1967) Historical and political roots of the Community Mental Health Centers Act. *American Journal of Orthopsychiatry*, **37**, 487–494.

GALLO, R. C., SARIN, P. S., GELMANN, E. P. *et al* (1983) Isolation of a human T-cell leukemia virus in Acquired Immune Deficiency Syndrome. *Science*, **220**, 865–867.

GOLDBERG, I. D., BABIGIAN, H. M., LOCKE, B. Z. & ROSEN, B. M. (1978) Role of non-psychiatrist physicians in the delivery of mental health services: implications from three studies. *Public Health Reports*, **93**, 240–245.

GOLDGABER, D., LERMAN, M. I., MCBRIDE, O. W., SAFFIOTTI, U. & GAJDUSKER, D. C. (1987) Characterization and chromosomal localization of a cDNA encoding amyloid of Alzheimer's disease. *Science*, **235**, 877–880.

GORI, G. B. & RICHTER, B. J. (1979) Macroeconomics of disease prevention in the United States. *Science*, **200**, 1124–1130.

HANKIN, J. R., STEINWACHS, D. M., REGIER, D. A., BURNS, B. J., GOLDBERG, I. D. & HOEPER, E. W. (1982) Use of general medical care by persons with mental disorders. *Archives of General Psychiatry*, **39**, 225–231.

HAY, J. W. & ERNST, R. L. (1987) The economic costs of Alzheimer's disease. *American Journal of Public Health*, **77**, 1169–1175.

INSTITUTE OF MEDICINE (1979) *DHEW's Research Planning Principles*. Washington, DC: National Academy of Sciences.

—— (1984) *Research on Mental Illness and Addictive Disorder: Progress and Prospects*. Washington, DC: National Academy Press.

—— (1985) *Preventing Low Birth Weight*. Washington, DC: National Academy Press.

JONES, E. F., FORREST, J. D., GOLDMAN, N., HENSHAW, S. K., LINCOLN, R., ROSOFF, J. I., WESTOFF, C. F. & WULF, D. (1985) Teenage pregnancy in developed countries: determinants and policy implications. *Family Planning Perspectives*, **17**, 53–63.

KENNEY, A. M. (1986) School-based clinics: a national conference. *Family Planning Perspectives*, **18**, 44–46.

KLEIN, R. (1972) NHS reorganization: the politics of the second best. *The Lancet*, *ii*, 418–420.

LAZAR, I., DARLINGTON, R., MURRAY, H., ROYCE, J. & SNIPPER, A. (1982). *Lasting Effects of Early Education*. Monographs of the Society for Research in Child Development 47 (1–2, Serial No. 194).

MARSHALL, E. (1987) OMB stalks the "burgeoning growth of biomedicine". *Science*, **237**, 847–848.

MCCORMICK, M. C. (1985) The contribution of low birth weight to infant mortality and childhood morbidity. *New England Journal of Medicine*, **312**, 82–90.

MURPHY, F. D. & EBERT, R. H. (1976) *Report of the President's Biomedical Research Panel*. Washington, DC: DHEW Publication No. (OS)76-500.

OFFICE OF THE DIRECTOR, NIH (1979) *DHEW Health Research Principles*, vol. I. Washington: DHEW(NIH).

OFFICE OF PROGRAM PLANNING AND EVALUATION (1986) *NIH Data Book*. Washington, DC: US Department of Health and Human Services.

OFFICE OF TECHNOLOGY ASSESSMENT (1981) *Cost Effectiveness of Influenza Vaccination*. Washington, DC: US Government Printing Office.

PASAMANICK, B., SCARPITTI, F. & DINITZ, S. (1967) *Schizophrenics in the Community: An Experimental Study in the Prevention of Hospitalization*. New York: Appleton-Century-Crofts.

REGIER, D. A., GOLDBERG, I. D. & TAUBE, C. A. (1978) The de facto US mental health services system: a public health perspective. *Archives of General Psychiatry*, **35**, 685-693.

RICE, D. P. & FELDMAN, J. J. (1983) Living longer in the United States: demographic changes and health needs of the elderly. *Milbank Memorial Fund Quarterly/Health and Society*, **61**, 362-396.

RUSSELL, L. B. (1986) *Is Prevention Better than Cure?* Washington, DC: The Brookings Institution.

ST GEORGE-HYSLOP, P. H., TANZI, R. E., POLINSKY, R. J. *et al* (1987) The genetic defect causing familial Alzheimer's disease maps on chromosome 21. *Science*, **235**, 885-890.

SHANNON, J. A. (1987) The National Institutes of Health: some critical years, 1955-1957. *Science*, **237**, 865-868.

SHEPHERD, M. (1987) Mental illness and primary care. *American Journal of Public Health*, **77**, 12-13.

——, COOPER, B., BROWN, A. C. & KALTON, G. W. (1966) *Psychiatric Illness in General Practice*. Oxford: Oxford University Press.

SMITH, A. (1759) *The Theory of Moral Sentiments*. Republished 1976. Indianapolis: Liberty Classics.

—— (1790) *The History of Astronomy*. Reprinted (1980) in *Essays on Philosophical Subjects* (eds W. P. D. Wightman & J. C. Bryce). Oxford: Clarendon Press.

TANZI, R. E., GUSELLA, J. F., WATKINS, P. C., BRUNS, G. A. P., ST. GEORGE-HYSLOP, P., VAN KEUREN, M. L., PATTERSON, D., PAGAN, S., KURNIT, D. M. & NEVE, R. L. (1987) Amyloid beta-protein gene: cDNA, mRNA distribution, and genetic linkage near the Alzheimer locus. *Science*, **235**, 880-884.

VARMUS, H. (1987) Reverse transcription. *Scientific American*, **257**, 56-64.

WESTINGHOUSE LEARNING CORPORATION (1969) *The Impact of Head Start: An Evaluation of Head Start on Children's Affective and Cognitive Development*, vols I and II. Athens, Ohio: Ohio University.

WILLIAMS, P., TARNOPOLSKY, A., HAND, D. & SHEPHERD, M. (1986) Minor psychiatric morbidity and general practice consultations: The West London Survey. *Psychological Medicine*, Monograph Supplement 9.

WYATT, R. J. & DERENZO, E. G. (1986) Scienceless to homeless. *Science*, **234**, 1309.

WYNGAARDEN, J. B. (1987) The National Institutes of Health in its Centennial year. *Science*, **237**, 869-874.

ZABIN, L. S., HIRSCH, M. B., SMITH, E. A. *et al* (1986) Evaluation of a pregnancy prevention program for urban teenagers. *Family Planning Perspectives*, **18**, 119-126.

Leon Eisenberg, MD, *Maude and Lillian Presley Professor and Chairman, Department of Social Medicine and Health Policy and Professor of Psychiatry, Harvard Medical School, 25 Shattuck Street, Boston, MA 02115, USA*