

PREVENTION AND PUBLIC HEALTH

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On October 26, the Director-General of the World Health Organization announced from Nairobi, Kenya: "I am confident in stating that as of today, smallpox has been eradicated throughout the world - that for the first time in history, a disease has been eradicated from the earth. So far as is known, the only remaining smallpox virus is now confined in glass vials in seven laboratories under conditions of high security." The deliberate elimination of a disease, notably one so devastating as this, is a unique event in medical history - the ultimate triumph of preventive medicine. Credit for this achievement properly belongs to a public health team of field staff, scientists, and administrators of the World Health Organization and of countries on every continent.

The achievement of smallpox eradication has given a new impetus to the World Health Organization and to countries throughout the developing world to undertake more aggressive and far-reaching programs in disease

prevention. A direct outgrowth is the Expanded Program on Immunization. Its goal, a decade hence, is vaccination annually of 90% of the world's 100 million newborns against six diseases - diphtheria, pertussis, tetanus, measles, poliomyelitis and tuberculosis. Meanwhile, a promising cooperative global program of research has begun, coordinated by WHO, to discover improved methods for prevention and treatment of the principal tropical parasitic diseases, leprosy and diarrhea. These programs, as well as other efforts, give priority to prevention and, as a less favored alternative, inexpensive therapies, self-administered or dispensed by health auxiliaries. For countries with limited resources, recognition has come, too often belatedly, that their delivery of health services cannot be patterned after those of the industrialized world. A health service foundation based on hospitals and curative medicine, offering even modest levels of service, requires enormous resources. Illustrative is the experience of one African country which was provided a magnificent 500-bed hospital for its capital city. It was opened with fanfare and fulsome expressions of gratitude to the donor country. Today it sits empty. To operate the hospital to serve a comparative handful of patients required virtually all the country's trained health manpower and one-half of its total budget for health. It would have served less than one percent of the population.

The industrialized countries have not been faced with stark options such as the developing world. Money and manpower have been plentiful and steadily increasing resources have been able to be allocated for the development of progressively more sophisticated curative services.

Billions have been expended for the construction of hospitals, in the development of drugs and diagnostic devices, in the training of clinicians and support staff. The past decade has witnessed the development of countless brilliant new interventions in curative medicine - in organ transplantation, cancer chemotherapy, intensive care units, CAT scanners, and renal dialysis, to note but a few. More are on the drawing boards. The faltering human machine is now serviced by a magnificently skilled and equipped industry prepared to effect miracles in repair and restoration. An increasing constituency argues, however, that all defective human machines should have partial if not full access to this industry without experiencing bankruptcy. The necessity of some system of national health insurance providing some degree of universal coverage is acknowledged to be both a societal and political priority. That we do not now have such a plan recognizes, in part, the harsh reality of Powell's law, a law which is implicitly appreciated but seldom bluntly expressed. Enoch Powell's law states simply that the demand for "free" (that is insurance-paid or tax-paid) health care is infinite and can never be met. Or, as stated another way by a recent British Royal Commission: "Whatever the expenditures on health care, demand is likely to rise to meet and exceed it. To believe that one can satisfy the demand for health care is illusory...." The bitter realization of finite resources and infinite demand is a fact with which we have only tentatively begun to grapple. And the hour is late. For the developing world, the problems are comparable but the options more obvious. Perhaps from them, there is a greater truth to be learned. Their only possible course of action is to direct their energies toward prevention and the application of inexpensive

therapies, inexpensively dispensed. Should there be a similar redirection of our own future strategy - to increase substantially the resources we allocate for manpower development, for research and for program implementation to those activities which will keep the human machines out of costly repair shops or, at least, to minimize the use of these repair shops? Certainly, neither this nor any other strategy will negate Powell's law. But have we any real choice but to make a far more substantial, deliberate investment in disease prevention and health promotion if we are even to begin to meet rising expectations?

Progress through disease prevention and health promotion is less visible, less newsworthy than the drama associated with such as a heart transplant or the reattachment of a severed limb. To develop and sustain support for successful measures in prevention requires vision, intelligence, imagination and maturity.

Paradoxically, the saga of smallpox eradication may itself have been unfortunate in encouraging among some the belief that somewhere, sometime, "magic bullets" - vaccines, drugs, procedures - can be found or applied which will dramatically eliminate the naturally occurring insults to the human machine. It is evident that there are only a few disease problems in this country for which one can anticipate such breakthroughs. And, global eradication of any other disease, in my opinion, is out of the question in the 20th century. Constructively, I would propose that we eradicate the beguiling word "eradication" and focus our energies on the development of necessarily multi-faceted, long-term programs for disease prevention and control.

I believe that if we are to make real progress in programs of disease prevention, we badly need specific objectives, clearly stated, and specified time frames for achievement. We then can assess how well or how poorly the programs are functioning and adapt and modify them accordingly. During the past decades in which curative medicine has been dominant, we have identified few such goals. This is not surprising. Practically and philosophically, preventive medicine functions differently than curative medicine. Curative medicine has as its clients sick patients who present themselves seeking repair. Success is basically measured in terms of the proportion who are improved or cured - measurements which are comparatively simple. Preventive medicine, however, is concerned with a total population, among whom some seek better health but most are passive or indifferent until they become ill. Success in prevention must be measured in terms of a reduction in the numbers within a total population who die or become sick or disabled. To measure the degree of success of programs and which of several possible factors may have been responsible is far more difficult than in curative medicine. Because interest and concern for programs in prevention has been vestigial at best, efforts to establish goals, to assess progress have likewise been vestigial. Symptomatic of this is the formulation of objectives in terms of meaningless slogans rather than practicable objectives which might serve to guide the direction and management of the programs. A classic example is the World Health Organization's recent, pretentious "Health for all by the year 2000".

The goals, to be useful, must be clear in identifying achievement, not simply activity. For the smallpox program, the goal was '0' cases, not the performance of 'X' number of vaccinations. Health officials and the public press alike had surprising difficulty in accepting this. A report that so many million people had been vaccinated was more impressive, more tangible. This phenomenon is not unique to the international scene. The United States Childhood Immunization Program until just a few years ago focused almost exclusively on the millions who were being vaccinated, almost to the point of ignoring whether or not there were fewer cases of disease. Once it was clear to all that the ultimate objective was a reduction in cases of disease, the focus of activity changed. Investigations began to determine the cause of the program's failures - i.e., the cases which were still occurring. Were they concentrated in one age group? in a section of a state or county? among a particular economic group? Were they individuals who had failed to be vaccinated or could it be that the vaccine was of diminished efficacy? In the smallpox eradication campaign, when we sought answers for each of these questions, it quickly became apparent that program strategy required change. The answers differed from country to country and within different parts of the same country. Accordingly, the programs themselves were continually modified so that as time went on, national programs assumed quite different forms and, even within a given country, the programs varied in character from area to area.

Guidance of program planning and management through a surveillance system which monitors disease incidence would seem obvious. And yet, as

recently as 1967, we determined that not more than one percent of all smallpox cases were being reported - that we had that year, not 131,000 cases but some 10 to 15 million cases. Data in regard to vaccinations performed that year were far more complete. To develop an effective and useful disease surveillance system took years and considerable work. In the end, it proved to be the key to success in the program.

National goals in prevention, stated in terms of reasonable expectations and a reasonable time frame, have been non-existent. Assessment of progress and measurement of achievement has been all but ignored. It is assumed, for example, that our costly, far-flung nutrition programs must be conferring benefit. After all, calories, vitamins and minerals are being ingested by the needy in great quantities through the medium of school lunch programs, food stamp programs, "Meals on Wheels" and many others. All this must be "doing good." But data to support this assumption are sparse. Studies which compare programs as to relative cost and effectiveness are lacking. Lest we assume that the benefits are intrinsically too obvious to warrant the need for monitoring effectiveness and cost, we need only refer to the experience we have had with routine physical examinations. These were, and in some quarters still are, lauded as the cornerstone of a comprehensive program in prevention. Only recently, a study in England was reported in which two comparable groups were evaluated as to health status - one group which had had comprehensive routine physical examinations and a second group which had not. The investigators, over time, were unable to identify any difference in the health status of the two.

So long as we persist in vaguely defined, ill-assessed preventive enthusiasms which, uncritically, appear to be the right thing to do, comparatively little will be achieved at great expense.

I welcome the July 1979 Surgeon General's Report on Health Promotion and Disease Prevention for its courage in setting specific, quantitative, measurable goals to be achieved within a defined time frame. Undoubtedly, these will be debated as to relevance and magnitude by different interested groups but they do represent a definitive point of departure. More needs to be done in setting explicit subgoals which can be used to monitor and to guide specific interventions. Even as they stand, each of the stated goals implies action and a measurable endpoint. As such, they stand in stark contrast to such as WHO's stated mission of assuring "the complete physical, social and mental well-being of all peoples."

The Surgeon General's Report states goals in terms of mortality and disability to be achieved by 1990. They are defined for each of five age groups:

1. Infants - to reduce infant mortality by at least 35%, to fewer than 9 per 1,000 live births.
2. Children - 1 to 14 years - To reduce deaths by at least 20%, to fewer than 34 per 100,000.

3. Adolescents and Young Adults - To reduce deaths among people ages 15 to 24 by at least 20%.
4. Adults - To reduce deaths among people 25 to 64 by at least 25%.
5. Older Adults - To reduce the average annual number of days of restricted activity due to acute and chronic conditions by 20% to fewer than 30 days per year for people aged 65 and older.

The overall objectives represent readily measurable death and disability indicators but each is prefaced in terms of improvement of health so that, ultimately, death and disability will be less. Here, for the first time, are federally proposed national benchmarks against which state and local progress can be continually monitored, problem areas identified and resources more rationally allocated.

The report expands at length on preventable and potentially preventable health problems, specific possible types of intervention, research needs, etc., but it does not prescribe a federally-designed blueprint. Indeed, the country is not a homogeneous political, economic and social community. Needs and possible solutions to problems could and should be different as are such contrasting areas, for example, as Washington, D.C., Reno, Nevada, and Aroostook County, Maine. Blue-Cross/Blue Shield knows this well - and in any initiative it would seem prudent and appropriate to build on that structure and that base of experience.

The Secretary, in his preface to the Report, states its purpose to be that of encouraging a "second public health revolution." The first he characterizes as being the struggle against infectious diseases - its principal strategies being improved sanitation and immunization. The second revolution is directed toward the less etiologically discrete entities of such as cardiovascular disease, cancer and accidents. Their causes are more extensively rooted in a variety of social problems, life-styles and environmental hazards. To deal effectively with these problems requires a new generation of health professionals, with a disciplinary education and experience which far transcends the conventional boundaries of contemporary curative medicine. The best of behavioral science and health education will be needed to effect changes in life style. But important contributions, too, will be made by those engaged in public information, marketing and merchandising - the promotion of less hazardous activity and practice being ultimately more effective than moralistic injunction. From those who market Coca-Cola, McDonald's hamburgers and Fuller Brushes, we have a lot to learn. Environmental problems increasingly require physical scientists - toxicologists, physicists and chemists. Changes in public policy - whether in the area of synthetic fuel development or pesticide use - have major implications to health and to the economy. Economists, political scientists, experts in public policy and lawyers inevitably will play a more central role. With its expanded horizons, the practice of preventive medicine and public health over the coming decades will inevitably assume a character quite different from the past and will increasingly extend its boundaries far beyond the traditional confines of curative medicine. The major

advances will be pioneered and the soundest judgments rendered by those with a multidisciplinary background of education and experience.

The Surgeon General's report focuses on the developing stages of a "second revolution" - of the need for more focused specific programs in disease prevention and health promotion. It is timely and cogent. Implicit is the evolution of preventive medicine and public health from its past role as essentially a medical subspecialty into a unique field of endeavor, which embraces medical specialists, but many others as well. But the hour is late and action is imperative.