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PREVENTIVE CHILD HEALTH IN THE COMING DECADES

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I greatly appreciate the opportunity to participate in this very timely World Congress on Child Health. The conveners and, in particular, its energetic, far-sighted chairman, Dr. Tze, are to be congratulated for bringing together such a remarkable group of scientists, practitioners and, indeed, even politicians to review where we have been, to assess what we know and to look to the future. And where better to do this than in one of the world's most beautiful cities.

As Jim Grant has so eloquently described, the World Summit for Children was a unique, an unprecedented event -- a clarion call for action on the part of the world's leadership and it brought a resounding affirmative response. What will the coming decades bring?

The vision, the courage, indeed, the genesis of the World Summit for Children was buoyed by the remarkable progress in child health made during the decade of the '80s. Indicators, both of morbidity and mortality, improved dramatically in all countries. UNICEF launched its Child Survival Program; immunization levels against the six major diseases of the Program on Immunization rose from 20% to 80%; the use of oral rehydration solutions for diarrhea increased from negligible in 1980 to being operative in virtually all countries and universal in many; widespread Vitamin A supplementation began in many countries; polio hovered at the brink of eradication throughout the Western Hemisphere; and Guinea worm eradication could be foreseen within a few years. By 1990 an estimated 3.5 million lives each year were being saved

and countless cases of mental retardation, blindness and paralysis were being prevented. No decade in history has witnessed such change.

The decade of the '90s is but two years old but, if the pace of change of the remaining 8 years in any way resembles its first two years, this could be a remarkable decade indeed -- a decade when the inconceivable becomes possible and then is as quickly transformed into reality. It is a decade in which we have begun to realize at last, the potential of a United Nations system. Hopefully, we may soon witness the salutary benefits of transforming swords to plowshares -- from budgets for armaments to budgets for combatting disease, illiteracy and hunger. A foundation for this effort is well-laid by the World Declaration on the Survival, Protection and Development of Children.

In setting forth the specific goals which the Declaration does, we are sensibly reminded that however much progress has been made to date, far more remains to be done. Given the dramatic progress now being made in biomedicine and the behavioral sciences, the possibilities, the potentials for change are no less in the industrialized countries than in those less economically prosperous. The program for this conference comprehensively takes these up.

My attention this morning, however, is directed to the special challenges posed for the developing countries which bear the heaviest burdens of avoidable morbidity and

made. This would appear to be obvious and straightforward but already one hears murmurs from countries and development agencies alike with respect to immunization, for example -- "the job is done; let us turn our attention to something else". Our ability to sustain the achievements already made cannot be taken for granted. We must accept the challenge of building on top of that which we have begun in order to undertake other tasks, to incorporate added interventions and to institutionalize creative, more broad-based programs.

From the perspective now of nearly a quarter of a century of experience in creating and building global health programs, I perceive four fundamental challenges for the coming decade which have not, as yet, received the attention which they must if the goals of the Declaration are to be met. They can be best summarized in terms of: 1) how services are to be delivered; 2) how success is to be measured; 3) what tools are required; and 4) how best we can assure a continuing supply of needed commodities of acceptable standards. Each of these areas has an important bearing on the prospects for improved child health during the coming decades. To the extent that they are satisfactorily addressed, I would foresee achievements which could exceed even the lofty goals of the Declaration. Let me comment briefly on each.

The most successful programs of the 1980s were characterized by the active involvement of health and community groups -- be they public, private, educational, social, religious or whatever -- both in promotion of interventions and in the delivery of

services. The phrase "social marketing" was born. Indeed, marketing and merchandising became acceptable and highly relevant words. Like Coca-Cola and McDonald's in selling their products, we have begun to learn that preventive interventions can be attractively packaged and efficiently delivered, reaching all segments of communities. We are learning that traditional approaches in which services are provided entirely by Government agents or in established curative care settings simply do not achieve comparable results -- and this has been demonstrated time and again.

Each of the many different interventions have specific target populations -- e.g., prevention of neonatal tetanus requires the immunization of women in the child-bearing years, while measles vaccination is required to be administered to the child as early in life as feasible. This mandates different types of approaches and different types of programs which complement each other and which may serve to strengthen each other but which unquestionable require different tactics to be effective.

There are those who continue to protest each targeted program on ideological grounds, arguing that all health programs must somehow be integrated into something called the basic health services. What exactly this means is seldom defined, although it has generated some wondrously arcane debates. Some would call for all services to be provided in the equivalent of a doctor's office -- an approach which has seldom succeeded in reaching more than 60 to 70 percent of the community in any country.

Others would argue the case for a multi-purpose health worker performing all functions. Such ideology, if logically pursued, would call for the integration of such as door-to-door mail service and garbage collection.

The challenge for the '90s is to break out of traditional ideological molds which have thus far served preventive interventions so poorly in order to examine each problem on its merits and to devise the best possible strategy and tactics for dealing with the problem. Such programs, now beginning to mature, require imagination and innovation and clearly a break with past practices. Inevitably, such change makes traditionalists uncomfortable and the expected tensions are present even today. However, we must persevere in institutionalizing approaches rooted in practicality and results.

The second challenge is to find methods which continually measure progress in community programs and which use this information to guide program implementation. The operative word is surveillance, surveillance for disease throughout the community. This was the essential engine which drove smallpox eradication, which is now key to Guinea worm eradication, and which in the Americas is powering programs for polio and tetanus, for example. The concept, however, is new and it is alien to medicine. Consider how many hospitals, health centers or physicians delivering curative care could today tell you anything about the numbers of cases of disease within the neighborhood in which they are located -- or in their town or city? The answer, of course, is few or

none. But these care providers can tell you about the number of patient visits, numbers of cases of different diseases seen, numbers of injections given, etc., etc. Not surprisingly, they measure factors relative to curative care for which they bear responsibility. These are very different measurements than those which are required where the primary concern is the health of the community.

The need now is to develop systems which give us a current, on-going picture of health and disease throughout the community itself so that we can learn whether or not progress is being made in programs designed to prevent disease and if progress is not satisfactory, to devise other systems which might be more effective. When we in health care begin to take surveillance seriously -- and most countries have not yet done so -- progress could be very rapid indeed.

The third area which commands more serious attention is that of research and development. The 1980s brought profound developments in our understanding of biomedical mechanisms and of the molecular specificity of the immune response -- developments which now permit us to design an array of interventions to prevent disease or to totally abort its progress. With the new biotechnology, we now have a unique and developing capacity to expeditiously engineer all manner of new drugs and vaccines, specifically targeted to selected stages of the disease or immune process. Through the new techniques of biotechnology, we can foresee more nutritious foods, as well as pest-resistant crops and plants which can grow in hostile environments and with higher

yields. We can foresee new approaches for dealing with hitherto intractable environmental problems.

Even a cursory review of research planned and in progress makes it all too apparent that we are on the verge of an era in which definitive interventions could replace a substantial segment of the costly and unsatisfactory half-way technologies which have so long characterized medical practice. The word for the future is indeed prevention.

All of this is both exciting and encouraging but there is a dark side which, to date, we have largely ignored. It is important to note that the significant accomplishments of the 1980s in Child Survival relied almost wholly on technologies which evolved in the 1970s or before. All of the vaccines which were -- and are being used -- are essentially unchanged from those used 25 years ago. None are fully satisfactory with respect to either antigenicity or stability but none have been changed in any way. Indeed, until very recently, little research was being conducted to improve them. Certainly, the vaccines are good enough for industrialized countries where there is ample refrigeration and transportation but they are inadequate for the very countries where the problems are the greatest. Also a product of the '70s is oral rehydration therapy for the prevention of deaths due to diarrhea -- unquestionably improved through research during the 1980s but not fundamentally changed. The '80s did bring us a new application in the form of routine Vitamin A supplementation for widely prevalent

micronutrient deficiency problems; but do recall that Vitamin A had been widely used during the '70s to prevent xerophthalmia.

The litany of all assistance agencies during the 1980s can be best summarized in the oft-repeated phrase: "The tools are available; it is only a matter of applying them." Few foresaw the utility of supporting research or the infrastructure for research. Third World problems in health, the most important of all to our global well-being, have been of little interest to the private commercial sector who see little hope of recouping research investments; research centers in the Third World have received little support; while industrialized countries have devoted most of their resources to technologies most appropriate for dealing with illnesses of their own citizens -- organ transplantation, gene therapy, diagnostic imaging and the like.

Improvements in health in the Third World during the '80s -- although impressive -- drew on the research and development of previous decades, primarily conducted by and for the industrialized countries for problems then of importance to them. We enter the '90s with a magnificent and growing understanding of molecular biology and a new biotechnology with all but unlimited horizons. Paradoxically, there is an appalling dearth of both research centers and scientists with interest and knowledge of the major health concerns of the Third World. Unless this problem is addressed, we can do no more than utilize the now inadequate tools we presently have and such added measures which may be of coincident interest to industrialized countries.

One hopeful ray of light is the Children's Vaccine Initiative which was decided upon at the World Summit -- an effort to develop one, or at most a very few, multi-valent vaccines which would confer long-lasting protection against 20 or more diseases with only one or two doses administered at or soon after birth. At first review, such an achievement appeared to be utopian but, in fact, when carefully studied, experts agreed that much of the science to accomplish this was already well-advanced. Developmental research, more than basic science, was seen to be required. This effort is very slowly gathering momentum, albeit still regrettably burdened by a labyrinthine bureaucracy.

But other obvious challenges deserve aggressive action -- other micronutrient deficiencies, large-scale chemotherapy for helminthic infections, prevention of malaria and other parasitic diseases and, most important of all -- a vaccine against HIV. With additional resources for research and development, these challenges and others could rapidly translate into practical solutions. This will not occur, I fear, without the development of capacity for both research and training in countries where the problems are greatest.

Finally, I should like to turn to what may be the most neglected, difficult and pressing of all the challenges -- the development and implementation of global, long-term strategies and mechanisms to assure the supply of such as vaccines, drugs, micronutrients and diagnostic measures; long-term plans which assure that adequate funding is available for their purchase; and methods for quality control which assure

that the products fully meet accepted standards. Until now, most of the commodities used in the Child Survival Program have been purchased and provided by development agencies, and, in this regard, UNICEF's procurement and distribution programs have performed in exemplary fashion. But, as preventive programs have spread across the world, the increasing demand for resources has taxed and sometimes exceeded perceived capacity. The result is that, even now, two new vaccines -- hepatitis B and hemophilus influenzae -- which should be routinely provided to all children, cannot yet be incorporated into most programs. In fact, present constraints are now limiting the availability of even measles and polio vaccine. What will we do if an HIV vaccine becomes available? Meanwhile, it is known that a number of locally-produced vaccines do not meet accepted standards of either potency or safety and no program yet exists to systematically address this problem.

If preventive programs are to be extended beyond the present, still narrow limits - indeed, if existing programs are to be sustained -- internationally coordinated plans must be developed to assure supply, purchase and testing of a wider range of preventive commodities. For the larger countries, it would seem logical to foster indigenous production but how much capacity and where? What role should or can private sector providers play? National health budgets need to be redirected to increasingly provide for purchase of the commodities required for preventive, community-based programs. Although the funds needed are far less than what most countries now expend for therapeutic agents, sudden shifts in budget allocations are neither politically nor

practically feasible. Planning and transition are required. Likewise, some sort of definitive plan and program is needed to assure that satisfactory quality control measures are applied to indigenously produced products.

To undertake the broad consultation and planning necessary for this most critical of all activities will require exceptional scientific and management skills, and an organizational locus which permits effective functioning at the sensitive intersection between the public and private sector, between international organizations and governments. Only the most tentative exploration of such a mechanism has yet been broached.

In summary, as I assess the prospects for improved child health over the coming decades, I see every reason for the highest optimism if I look to the emerging science and to the now demonstrated ability of countries throughout the world to deliver preventive measures throughout communities, however remote or economically disadvantaged. Two factors could deter us from realizing this emerging potential. First, the challenge of global long-term planning for the production, funding and quality control of the large quantities of commodities needed for community-based programs has scarcely begun to be discussed, let alone resolved. It is a realm in which collectively we have had little international experience. Second, the conservative traditions of curative sickness care will exert enormous pressures, as they do now, to restrict services

to those attending curative care facilities and to expand resources preferentially for care of the sick, whatever the cost-benefit analyses of preventive interventions may reveal.

In my opinion, these two problems are soluble. Rare qualities of insightful, persuasive, professional scientific leadership as well as the firm, long-term commitment and administrative support by agencies and countries will be needed. Quantum changes will be required. Are they possible? Bear in mind that only a decade ago the Child Survival Program had not even been conceived; and a proposal for a World Summit on Child Health would have been dismissed out of hand. The decade of the '90s must and can continue as the decade when the inconceivable becomes reality. You are the key to that effort.