

LAH: Oberlin Alimni Reunion, May 26-28 1990

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THE INTERNATIONAL REVOLUTION IN CHILD HEALTH

OBERLIN COLLEGE

1990 REUNION

D.A. Henderson, M.D., M.P.H.

Dean

Johns Hopkins University

School of Hygiene and Public Health

May I express to you my pleasure in having been selected to present this alumni lecture. I have to salute the class of 1950, as it is unquestionably the best to have ever graduated from Oberlin. Most remarkable of all is the fact that none of us look a day older than we did 40 years ago. Whatever, I acknowledge a profound debt to all of you who shared the years with me at Oberlin and to a remarkable faculty for with you, they made the four years at Oberlin the most important years of my life.

My career path since leaving Oberlin and the Rochester School of Medicine has been anything but orderly. I was launched as a specialist in internal medicine, but very soon entered involuntarily into the field of public health because of compulsory military service. Subsequently, I was ordered by the Surgeon General to go to Geneva and to the World Health Organization as director of the smallpox eradication campaign. Eleven years later, having acquired some stature as an international authority on smallpox, I suddenly found myself without a disease. My expertise was of little interest to anyone. Faced with impending unemployment, I became a dean - what else was I equipped to do? Now, as a dean, I find one's most important skills, at least as others gauge them, is the ability to raise money and to deal with insoluble parking problems. However, in September, after nearly 14 years of deaning, I intend to again enter the real world although exactly as what is not yet certain. I know only that it will not be as a fund raiser or parking expert. Whatever, in all my incarnations, the foundation provided me by Oberlin has been the bedrock which has served me well.

Over recent months, we have been startled by the revolutionary changes in process in Eastern Europe - changes which are reverberating across the world - to Latin America, to Africa and to Asia. These events bear still unforeseen implications for change for our own country as we seek new policies and programs to assure international security and stability so vital to global growth and development. But what is the nature of the security we seek and how do we foster it? As we ask these questions and assess what we are now doing, some of our existing programs and policies look strangely antiquated/grotesque even by yesterday's standards - for example, the stationing of more than 300,000 U.S. troops in a prosperous Europe at a price tag of \$130 billion per year and the maintenance of 10,000 nuclear warheads.

Whatever the past, it is difficult to escape the premise that the foundation of a secure and stable world must ultimately rest on a healthy population of a size which the world can support. There are few examples of economically productive, stable nations with high rates of illness and infant mortality. The process must begin with wanted children who can grow in health to be productive adults. Such a simplistic goal seems all too obvious. Some would regard it as utopian - idealistic - but, surprisingly, the last decade has witnessed a dramatic but still little appreciated revolution in child survival which has begun and now extends throughout the Third World. The revolution is quite as remarkable as that in Eastern Europe but, in contrast, almost unknown. Its momentum is accelerating and now scheduled for late September of this year, is a special conference of heads of state - a conference on child health. Today, I should like to

tell you something about the child survival revolution - its successes, its problems and its opportunities.

To many, the Third World is seen even today as a poverty-stricken, sickly place - an unchanging morass of illness and early mortality. In terms of disease and death, however, it is overall a healthier place than the world my parents knew. I wonder how many of you know that in the U.S. in the first decade of this century, 18 of every 100 children did not live beyond 5 years; that life expectancy was only 47 years; and that 26 of our 96 largest cities had no sewerage system whatsoever. And yet, at the turn of the century, the United States was comparatively prosperous, with a per capita income equivalent to that of Hungary or Portugal today. And the U.S. census of 1900 revealed that nearly 90% of all adults were literate. Thus, neither poverty nor illiteracy could explain our plight. Our transformation began not as a result of more doctors to treat sick patients nor in more effective treatments. It occurred when we began programs to improve the health of the community as a whole - through clean water, immunization, a balanced diet, pasteurization of milk, sanitation. We began to apply science to health.

Thirty years ago, half of the nations in the world had infant death rates as high as those in the U.S. in 1900 and a life expectancy below 50. Today only one country in five has such high infant mortality rates and in only 12 is life expectancy less than 50 years.

Today, we are at last beginning to deal scientifically and practically with health conditions in the developing world. It is a response to Mahatma Ghandi's lament near the end of his life when he said: "I am hard-hearted enough to let the sick die if you could only show me how to prevent others from becoming sick." It is a universal effort in which nations throughout the world are participating, joined by such disparate groups as the World Health Organization, the World Bank and by Rotary International which itself, has raised \$250 million for the effort.

The Child Survival Revolution represents a new recognition of the potential of simple, inexpensive interventions to prevent disease and death and to promote the well-being of children. No less important has been a growing appreciation by political leaders that improved health plays a vital role in national development, that healthy children offer a better hope for achieving their country's aspirations.

The genesis of this Child Survival Revolution has its origin in not one but several developments. To identify the most important helps to characterize it. An important component and its foundation, is the objective of providing well-established vaccines against six of the major diseases to all of the world's children - the diseases being poliomyelitis, measles, tetanus, whooping cough, diphtheria and tuberculosis. This initiative followed logically from our experience in smallpox eradication. That program, coordinated by WHO, succeeded in only 10 years, and at a total cost of less than \$8 million per year in international support, in eliminating from the earth one of the most feared diseases known to man. When that program began, smallpox

annually claimed more than 10 million victims despite the fact that an effective vaccine had been known and available for more than 150 years. However, an intensified program eradicated the disease in a little over 10 years. Vaccination has been stopped in the U.S. and indeed throughout the world. What accounted for this abrupt change? First was the observation that in most countries, adequately trained health personnel were in surprisingly plentiful supply and that with the needed resources of vaccine and needles and effective supervision, they were capable of a remarkably high standard of performance. The numbers needed were really very small. Competent, motivated leadership, even though few in number, made the difference. Second was the discovery that villagers, when properly approached, were usually willing, in fact eager, to cooperate in the program and often could serve as volunteer workers. Third, but most important, was the finding that a system for the routine reporting and investigation of outbreaks of disease could be easily established and that when we discovered where the problems were and what they were, we could stop the spread of disease.

It seemed only logical to us that other vaccines might similarly be applied with good effect and, in the course of doing so, might strengthen national health systems. Thus, as the smallpox eradication program was concluding, an Expanded Program of Immunization was launched - at a time when less than 5% of all children in developing countries were receiving any of the vaccines which were in common use in the industrialized countries - at a time when whole wards were full of children with measles, whooping cough and polio.

In retrospect, it seems paradoxical that so little attention had been given to providing vaccination, the single most cost-effective, most innocuous medical procedure and the simplest to administer. Viewed from another perspective, one has to ask the question - If a health service cannot effectively perform the simplest and most effective of all procedures, what does it suggest about other aspects of a health care system? What it says is that throughout the world what we had were sickness-care systems to treat the sick not health systems to prevent disease. Gradually, the immunization program gained momentum. Today, more than two-thirds of all children in the developing world are being vaccinated. As a result of this program, poliomyelitis cases in the Western Hemisphere, in particular, fell so rapidly and to such low levels that in 1985 an eradication program began. An extensive system for reporting and investigation of cases is now in place. For the past 5 months however - since December 1989 - no case has been able to be confirmed anywhere in the Western Hemisphere. And now, a global eradication effort has begun.

The second and more recent development contributing to the Child Survival Revolution was the discovery that deaths from diarrhea could be sharply reduced with a simple oral rehydration solution comprised of salt and sugar. Mothers could be trained to use it. The first 1,000,000 packets of the salt and sugar mixture were purchased by UNICEF in 1975 - they lasted 18 months. Today, more than 1,000,000 packets are used daily. National programs are in progress in more than 100 countries. Indeed, even in this country, pediatricians are now finding that effective oral rehydration, provided early, decreases the need for

hospitalization. Last year, even Johns Hopkins Hospital began to use it routinely. The irony of that observation is that it was Johns Hopkins faculty, working in India, who developed the technique.

A third and more recent development has been the discovery by a Johns Hopkins team that the administration of vitamin A once every six months can dramatically decrease childhood deaths in many parts of the world, largely deaths due to respiratory disease and diarrhea. The discovery came in Indonesia where vitamin A was given in standard capsules costing about seven cents and, once every six months to children under six years of age. They were given in one group of Indonesian villages; a second group of villages served as a control. Death rates among children in the control villages were found to be 50% greater than those receiving vitamin A. Vitamin A has now been accepted by WHO and UNICEF for widespread use throughout the developing world.

However significant these changes have been, more is promised. Just over the horizon are a whole gamut of new and improved vaccines - and hopefully one against AIDS. As one speaker at a recent conference observed, there are few important diseases for which vaccines are not now moving through the development process. With the new techniques available to modern science, the time required for their development has been greatly shortened.

Gradually, this silent revolution is beginning to gain recognition. In consequence, funds for health programs have increased and the commitment of politicians is greater than it has ever been. Far more is needed but

change is there. Note, however, that each of the new initiatives are only a decade old and indeed, most progress has been made within the past five years.

It is characteristic of revolutions, however, that in the excitement of the moment, critical deficits are often overlooked - deficits which potentially could frustrate the primary goal - in this case - healthy children who realize their full potential. This is no less the case with the Child Survival Revolution. I perceive two areas of special importance.

The first is the need for an ongoing, far-reaching and far-better funded program of research directed toward the prevention and solution of Third World problems. Today, 95% of medical research dollars are spent in the solution of problems of the industrialized countries - but overall, these problems account for only 5% of the world's total of preventable deaths. But why should we spend money on "their" problems? There are many reasons, among these security obtained through health rather than weapons. More directly, let me point out that in a shrinking world and in one where disease knows no boundaries, diseases which today are problems of Africa or Asia can soon become America's problems. HIV, the cause of AIDS, arose in Africa - there is clear evidence of its presence 20 years before we discovered our first cases. What if it had been discovered then and we had begun work on this dread virus two decades earlier than we did? Another disease, dengue, called break-bone fever, has moved from Asia to the Caribbean and a hemorrhagic, often fatal form is increasing in frequency. Cases have been found in Brazil as far

south as Rio de Janeiro and increasing numbers of cases are being found in Mexico and Central America. It is transmitted by the Aedes mosquito which is found throughout the southern U.S. What are we doing about it? In candor, almost nothing. Serious work awaits a major outbreak in Miami or New Orleans. Can we expect other viruses to emerge in the developing countries? Unquestionably.

At this time, however, we have few research scientists looking at these problems and no plan to develop needed laboratories where the diseases occur. There are other research needs. In the Child Survival Revolution, we need simpler, more effective instruments and far better means for applying them. For example, none of the vaccines now in use are fully satisfactory. All could be better but none have been improved for more than 25 years. Meanwhile, candidate vaccines against major disease problems are beginning to emerge from the laboratory but little support is yet being provided for testing them in the field; for the development of simpler preparations for administration; for the evaluation of different types of programs; for the application of surveillance systems to monitor their occurrence.

A second issue of equal or greater importance is our need to bear in mind that our ultimate goal is for each newborn to realize the potential inherent within him at birth. To assure healthy children but to fail to educate them and to provide an economy which fails to employ them is the ultimate exercise in futility. The numbers of children to be educated and employed is a critical part of this equation. Child spacing and breastfeeding are directly important to the health of the child and no

less are smaller families which can be adequately fed and cared for. Family planning services are still woefully inadequate; methods of contraception leave a lot to be desired; and support for these programs by some governments, notably our own, remains seriously deficient. While a revolution in child survival is in progress, it would be futile indeed if we didn't at the same time, address with comparable vigor the question of numbers of children.

We now have a remarkable opportunity to reconsider the basic question of security. Security through armaments has been the dominant theme for the past four decades, but can we really have security with malnutrition, disease and poverty still so rampant throughout the world. Whether or not a primary reliance for security through armaments has or has not been the right policy, it has been purchased at exorbitant cost. Eisenhower recognized this in 1953 when he said: "This world in arms is not spending money alone, it is spending the sweat of its labors, the genius of its scientists, the hopes of its children."

In seeking security through health, James Grant, director of UNICEF, has estimated a global need for \$2-3 billion per year - an enormous sum - perhaps. It is roughly equivalent to what the U.S. spends each year in advertising tobacco; what the USSR spends each month for alcohol; what the world now spends each day on armaments.

But time is of the essence. Children being born today represent the basic capital and the future aspirations of our own and other countries

for the 21st century. And in the words of the Chilean poet, Gabriela Mistral:

Many of the things we need can wait

The Child cannot.

Right now is the time his bones are being formed, his blood being
made and his senses are being developed.

To him we cannot answer "Tomorrow."

His name is "Today."