

Healthy Mothers, Healthy Babies: A Goal We Can All Help Attain

Demographers speak of the infant mortality rate as a "sensitive barometer" of our country's well-being. To the extent that that is true, we have reason to be concerned.

Although infant mortality rates in the United States have been dropping steadily for a decade, the overall rate for 1982 (provisional data) is 11.3 per 1,000 live births. But the rate for black infants is almost double that figure. Moreover, our infant mortality rates vary from city to city: some cities have rates as high as 27 deaths per 1,000 live births.

It has been said that the first day is the most dangerous day of anyone's life. For some babies, the first day—even the first month—is perilous indeed. Our neonatal mortality rate is 9.5 per 1,000 live births. Some 45,000 infants die each year—literally before they have had a chance to live.

We know that infants with low birth weights are in particular danger: two-thirds of infants who die weigh less than 5 pounds 7 ounces at birth. Low birth weight is also associated with increased occurrence of mental retardation, developmental difficulties such as slowness in walking or talking, growth problems, and central nervous system disorders.

Each year some 240,000 American babies are born with defects. Many of these problems are extremely hard to ameliorate—but might be prevented by special efforts to get prenatal information to those women at highest risk of bearing low-birth-weight babies. We have learned that such women include those with low income, those who are teenagers or over 40, members of minority groups, women who use cigarettes or alcohol, and those who do not receive professional prenatal care.

The Healthy Mothers, Healthy Babies Coalition, a network of more than 60 organizations (Federal, professional, and voluntary), is working to reach *all* women in the childbearing years with prenatal information—but particularly those at highest risk.

In September I participated in the second national meeting of the Coalition, attended by health professionals and community leaders from every part of

the United States. The participants had a common purpose: a concern for maternal and infant health. At that meeting a critically important aspect of the Coalition was discussed, the formation of Coalition chapters in every State. I am pleased that many of these chapters are currently in formation. They will continue, and strengthen, the educational activities begun by the national Coalition.

As part of a national strategy for achieving better health for all Americans, we have set ourselves a goal to reduce the U.S. infant mortality rate—for *all* groups and in *all* our cities—to 9 per 1,000 live births by 1990. By working together—Federal agencies, private organizations, and professional groups—we can pool resources, information, and facilities to reach pregnant women at particular risk. Public health measures and educational campaigns have proven their value in the past, but we have a new challenge before us. Let us work together to save our children—our future.

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Dialog on the Issues of Prevention Research: a Response to Dr. Krause

This issue of *Public Health Reports* contains an article by Dr. Richard Krause, the Director of the National Institute of Allergy and Infectious Diseases, which raises some interesting questions about prevention research policy. As Dr. Krause indicates in "The Beginning of Health Is to Know the Disease," we are being challenged to review research policy with the purpose of redirecting priorities and resources to prevention research. This challenge has stimulated discussion of a number of questions: What research activities constitute prevention research? At what point in our knowledge about disease should preventive interventions be tested and applied? How should a finite Federal research budget be allocated between basic biomedical research and research designed to be specifically applicable to prevention? There are no simple answers to these questions. However, in the spirit of the debate, I would like to offer some thoughts on these questions.

We need to be clear about what research endeavors constitute prevention research. Many argue

that much of basic biomedical research is in reality prevention research. There are numerous examples of basic research efforts which have ultimately had a large payoff in disease prevention. The current application of recombinant DNA technology to vaccine development is only one example. However, the issue here is not really whether basic research contributes to prevention, which it certainly does, but rather distinguishing the research which is designed to provide answers that are immediately useful to prevention from research that only ultimately may have relevance for prevention.

If we think of prevention research in these terms, it is clear that it encompasses elements of both basic and clinical research. Although it may be impossible to develop a completely comprehensive schema for prevention research activities, I suggest that we consider one that includes these five major categories:

1. Risk factor identification—Risk factors are the characteristics of a host which are known to antedate disease and can be used to estimate the probability of that host acquiring the disease. These factors can be broadly classed as biological, behavioral, and environmental characteristics. Their identification and the strength of their association with disease provides clues to disease causation and suggests plausible interventions to prevent disease.

2. Development of biological interventions — These interventions alter the biologic characteristics of an individual to reduce the likelihood of acquiring a disease. Two excellent examples are vaccines which improve resistance to disease and drugs which control hypertension, a major risk factor for vascular morbidity and mortality.

3. Development of behavioral interventions—Behavioral or lifestyle characteristics have a clear role in the etiology of certain diseases. Smoking and alcohol abuse are two striking examples. Behavioral interventions assist individuals to modify or eliminate lifestyle factors that may predispose to disease.

4. Development of environmental interventions —Strategies to control environmental factors in disease such as unsanitary drinking water and toxic agent exposure continue to be important maneuvers in disease prevention.

5. Field trials of interventions—Scientific rigor requires that the efficacy of all interventions, both preventive and therapeutic, be established through trials in targeted populations. Hence, trials to establish the efficacy of biologic, behavioral, and environmental interventions are an integral part of prevention research.

Because of the large gaps in our knowledge of many diseases—Dr. Krause reminds us of a number of them—there is a need for basic biomedical research to increase our understanding of disease mechanisms. A crucial question is when in the development of knowledge about disease mechanisms should promising leads for preventive interventions be explored? This question is especially difficult when exploration of applied preventive interventions may mean diverting resources from basic science research. Although we must continue to support the unraveling of disease mechanisms through basic science research, we must also be increasingly sensitive to exploring those avenues of research which show promise of resulting in early initiation of prevention—even before the disease mechanisms are completely clear. Dr. Krause's example of scurvy is illustrative of this point. Although the monumental research activity which ultimately identified the vitamin defect in scurvy was a major contribution to our knowledge of disease, the prevention of scurvy did not require waiting until the molecular structure of vitamin C was known. Indeed, the prevention of scurvy was possible in the mid-1800s through a relatively simple intervention that was based on practical observations of the behavior of the disease.

I welcome the dialog on research issues which Dr. Krause urges us as a society to undertake. As he indicates, there are no simple formulae to determine how research resources should be distributed. We have a responsibility to future generations to support vigorous basic research which will provide those assets that will be ultimately useful to prevention. We also are obliged to nurture those efforts which may have more immediate utility in applying what we already know about disease to preventive interventions. We must approach this dialog with open minds and seek to avoid preconceptions about differing points of view. In this way, we can examine our research priorities objectively and thus develop rational policies for the allocation of resources.

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