This observation, probably never published, may encourage further (and, I hope, successful) attempts to raise these appropriate animals beyond the second generation (*1*).

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Prevention of Long-Term and Disabling Diseases

Gio B. Gori and Brian J. Richter, in "Macroeconomics of disease prevention in the United States" (9 June, p. 1124), ignore some crucial economic effects of disease prevention. Their calculations focus entirely on the effects of preventing "five major causes of death." This leads to their conclusion that "a successful policy of disease prevention has a regressive economic potential."

If that is true, then the sicker the population the healthier the economy! That is hard to believe. We do not have the training needed to unravel their macroeconomic model, but we are sufficiently expert in epidemiology and biostatistics to point to a bias in their work which partly accounts for their unbelievable conclusion, a conclusion which can impede disease prevention initiatives.

Identifying the main causes of mortality is not, and never will be, unimportant, but morbidity is now the central problem, largely as a result of victories over yesterday's great killers. Preventing lifelong illnesses and disabilities has positive effects which do not enter into Gori and Richter's accounting (*1*). So they give disease prevention a dismal appearance.

We have tried to persuade public health professionals to assign an appropriate high priority to the prevention of long-term illness and disability. The mental disorders are a case in point. They produce many cases of severe disabling illness at every age with a total annual cost close to $40 billion (*2*). Mortality statistics would never reveal the extent of this burden. Only a small proportion of all deaths are ever reported with mental disorder as the underlying cause (*3*). Surely, success in preventing mental disorders would not have a regressive effect on the economy.

If no prevention occurs, this burden will increase by two mechanisms.

First, current trends in the age-sex-race distribution of the population be-

tween 1970 and 1985 will produce disproportionately large increases in groups whose members are at the highest risk of being patients in psychiatric facilities, of being cases of schizophrenia, of being inmates of correctional institutions or training schools for juvenile delinquents, or of being in homes for the aged and dependent. If the 1970 age- and race-specific rates for these major social problems continue unchanged, the percentage of increases that will occur in the numbers of persons with such problems between 1970 and 1985 will far exceed the 15.2 percent increase expected in the total population of the United States in the same period. The annual admissions to psychiatric facilities will increase by 24 percent, the annual number of cases of schizophrenia under care by 28 percent, residents of homes for the aged and dependent by 30 percent, and inmates of correctional institutions by 42 percent (*4*).

Second, the conquest of major killing diseases frequently eliminates killers that selectively precipitate death in people who are either already developmentally damaged or are already chronically ill (*5*). Survivorship rates of people with senile dementia increased so much faster between 1947 and 1957 than that of their age-mates that the age-specific prevalence rate of this debilitating disease doubled. The life expectancy of mongoloid newborns has risen so fast as compared to that of all newborns that prevalence rates of mongolism at age 10 have more than doubled. If future preventive efforts concentrate on the killing diseases and neglect the disabling diseases, the prevalence of disability will increase, and that will place a burden on the economy. But if the search for effective preventives concentrates on the causes of disabling diseases, the economic effect will be positive.

For example, two significant causes of lifelong brain damage are now totally preventable—measles and rubella. The two viruses responsible for these infections could be exterminated in a single campaign. If the search for other preventable causes of long-term disease and disability are given top priority, then an ounce of prevention will still be worth a pound of cure.

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It is unfortunate that Kramer and Gruenberg do not quote completely from our conclusion that "if current social, legislative, and economic rules remain unchanged, a successful policy of disease prevention has a recessive economic potential, as more people will reach and live well beyond retirement age."

The point of our article was not anti-prevention—far from it. We were attempting to point out that changes in social, legislative, and economic policies are necessary to successfully face the challenge of an older and longer living population.

We have no quarrel with Kramer and Gruenberg's emphasis on mental disorders. Cooper and Rice (*1*) have estimated mental disorders to be the third most costly group of diseases, both in direct and indirect morbidity costs, behind diseases of the respiratory system and diseases of the circulatory system, and the eleventh most expensive in terms of indirect mortality costs.

Our study was a mortality study, and we did include the caveat that "prevention would also alter a variety of factors of economic significance, in ways that are not easily analyzed," and which our model could not incorporate at that time. These stated factors included the "patterns of morbidity and disability." We are presently developing methods whereby morbidity considerations can be incorporated within our overall modeling system.

Because of our interest in prevention, we were excited about Kramer and Gruenberg's conclusion that "if the search for effective preventives concentrates on the causes of disabling diseases, the economic effect will be positive" and would be most interested in seeing the analysis supporting that statement.

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