

The Science of Social Diseases

The misery of life for many inhabitants of the former Soviet Union has been made shockingly plain by a grim succession of health statistics. One of the most thoroughly documented phenomena is the high death rate of young and middle-aged Russian men, linked to poor nutrition, alcoholism, cardiovascular disease, the resurgence of syphilis and tuberculosis (TB), and the spread of AIDS. This catalog of ill health is not merely a list of different ailments with separate causes, it is symptomatic of large-scale social disruption, with elements including poor education, psychological stress, rising crime and violence, high rates of unemployment, and a very unequal distribution of income among those employed.

Among these “social diseases,” TB plays a leading role as the ubiquitous indicator of failing health and health services. Remarkably, Soviet health reporting systems remained intact through the turmoil of the 1990s. As a result, we know that the TB incidence rate roughly trebled in Russia between 1990 and 2000, approaching 0.1% annually by the turn of the millennium (see www.who.int/tb). A similar thing happened in all the ex-Soviet states, but not in central Europe. No one has dared to forecast how much worse the resurgent TB epidemic will get. However, as a key indicator of population health at the European Union’s eastwardly mobile frontier, TB trends are being closely watched.

Against this dark background, a few bright spots are visible in the latest surveillance statistics. The 2003 data confirm that TB incidence rates in Belarus, Estonia, Latvia, Lithuania, and Russia have been falling for the past 3 to 4 years. Although this is reassuring, there will be some hesitation in accepting that the worst is over as long as the data cannot explain why. Was it because revitalized TB control programs stopped disease transmission? Or because a general recovery in population health lowered susceptibility to TB? Or did the new epidemic exhaust the supply of susceptible people to infect? Russia had actually taken steps to contain TB by 1994, when reviving treatment programs cut patient death rates. The downturn in incidence since 2000 could be the delayed effect of preventing transmission. On the other hand, the same epidemiological pattern is seen in several newly independent states, indicating that wider epidemiological processes are at work. Wealth appears to be relevant, because the fall in incidence is more conspicuous in the richer states of Soviet Europe than in the poorer countries of central Asia.

The general problem is that we often cannot know to what extent large-scale interventions contribute to observed improvements in health, because these interventions are not carried out as controlled experiments. In this context, a blueprint for reaching the UN Millennium Development Goals, to be submitted to the United Nations Secretary General on 17 January this month, will recommend a battery of specific actions to alleviate poverty. The scientific hitch is that we may never be able to prove that they succeeded, even if they are all implemented. The same difficulty faces those who will evaluate the success of the \$150 million World Bank loan to Russia for TB and AIDS control and the large-scale projects now supported by the Global Fund to Fight AIDS, Tuberculosis and Malaria. The strength of the link between cause and effect will depend, in part, on how convincingly we can generalize from the original experimental proof.

Despite the complex interactions between TB and various social, biological, and economic factors, there is at least one simple message for those who are devising new health technologies. It is that without effective systems for delivery, new tools will be of little value. For instance, a new kind of drug to treat TB, such as the one reported by Andries *et al.* in this issue (see also the Perspective by Cole), would undoubtedly be a huge step forward, especially in the treatment of drug-resistant disease. But patients must want it and health services must be able to provide it. From Vilnius to Vladivostock, the typical TB sufferer is, in some combination, male, unemployed, alcoholic, HIV-positive, or in prison. The science required to make technology work in this and other social settings is tractable and could be hugely beneficial. But scientists, like patients and physicians, need incentives, and operational research remains an undervalued, and therefore underexploited, discipline.

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