Livestock Diseases and Human Health

Two decades ago, the U.S. epidemiologist Calvin Schwabe coined a phrase—"the one medicine"—to focus attention on the commonality of human and veterinary health interests.* The underlying concept is traceable to the late 19th century, in contributions of the German pathologist and architect of social medicine Rudolf Virchow. Recent events have brought the relationship between animal and human health into much sharper focus than even public health and veterinary health specialists might have predicted.

Concern about the risk of infection leading to bovine spongiform encephalopathy (BSE), primarily in the United Kingdom and then in continental Europe, intensified dramatically during the 1990s. Although BSE poses a relatively small risk as compared with other public health hazards, efforts to reduce this risk have been stringent. In Switzerland, for example, after the discovery of BSE in animals born after the ban on the import of ruminant-derived meat and bone meal for animal feeds, authorities also prohibited the use of such animal products in soil fertilizer in November 2000. This has been an expensive policy.

When foot-and-mouth disease (FMD) reemerged in Great Britain in February 2001, the intense reactions of the public and policy-makers reflected a mix of human health concerns, fear of adverse economic impact, and a range of highly complex but less carefully considered consequences for individuals and society. The zoonotic potential of FMD is minimal, as the clinical symptoms in humans are no more than light skin lesions. In contrast, although the disease in animals is rarely fatal, it severely compromises their productivity, and the potential for economic devastation of the livestock industry is recognized as enormous. The response in the United Kingdom has been to cull several million animals on affected and neighboring farms.

Vets from the Irish Department of Agriculture test sheep on a farm near Dundalk, Ireland.

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There are several underappreciated consequences of animal diseases (and their control strategies) on human well-being and livelihood. First, thousands of farmers in the United Kingdom have been asked to sacrifice their healthy herds in the culling operations surrounding outbreak areas. Despite government compensation, the cost to farmers has included the loss of the products of decades of careful breeding. The psychological effects on farmers' well-being and mental health include enough human fatalities by suicide that coroners have recommended suicide prevention measures to farmers' unions. The emotional impact of their losses also compromises the motivation of many farmers to start over.

Second, control measures themselves have had adverse effects on animal health personnel; for example, during the current less-publicized FMD outbreak in Mongolia, at least one veterinarian died and several people needed hospital treatment from handling formaldehyde used for disinfecting vehicles and materials from affected regions. The environmental and health effects of mass incineration of carcasses have not yet been assessed. Third, the general population has endured travel and transport precautions and restrictions. These have affected many aspects of public life. Finally, ethical concerns about animal rights (discussed far less in the context of these control strategies than for the use of animals in medical research) and about killing animals for disease control constitute an insufficiently examined dimension of the crisis. It is reasonable to ask, however, how questions about the dignity of animals should be considered in formulating policy, deciding on the extent of culling to weed out susceptible animals, or pursuing alternative strategies such as vaccination.

The relationship between people and animals is highly complex and reflects deep-seated cultural values. Different segments of various societies at the extremes may humanize pets or reduce domestic livestock to economic commodities with deep conviction and inattention to alternative values. Experience with BSE and FMD brings into focus the conflicts between a strong animal protection movement and a livestock production system. It also highlights the need for better appreciation of how domestic animals, their role in society, and related policy all affect human health. Livestock production itself is far more than an economic issue; it requires attention to a much broader range of ecological, ethological, social, psychological, and ethical considerations. Recent animal disease epidemics have sensitized Europe and the world to the need for an overarching social approach to livestock production and disease control. An appreciation of "the one medicine" validates century-old ideas and shows how policy-makers should address closely linked questions of human and animal health.

Jakob Zinsstag and Mitchell G. Weiss

Jakob Zinsstag and Mitchell G. Weiss are in the Department of Public Health and Epidemiology at the Swiss Tropical Institute, CH-4002 Basel, Switzerland. E-mail: Jakob.Zinsstag@unibas.ch

*C. Schwabe, *Veterinary Medicine and Human Health* (Williams and Wilkins, ed. 3, Baltimore, MD, 1984).