Editorial & Letters

EDITORIAL

It's Not Rocket Science–But It Can Save Lives

Science normally focuses on basic research discoveries and the breaking of technological barriers that can pave the way for medical advances. However, another approach exists for combating disease that generally gets few headlines. This alternative can thwart an enormous number of illnesses and save lives by finding new ways to translate current scientific understanding into practice. The alternative is called prevention. In the developing world, there are many formidable hurdles to improving public health, beginning with the provision of sufficient quantities of safe food and water, sanitation, and basic health care. However, the fact that thousands of lives in the United States and the rest of the developed world will be lost because of the failure to recognize and implement well-known and scientifically documented principles of preventive medicine should be an embarrassment to its citizens.

AIDS prevention is only the latest example of scientifically compelling evidence ignored in favor of political expediency. Approximately a third of new AIDS cases in the United States today can be linked to contaminated hypodermic needles, either by direct use or as a result of indirect exposure of partners or children. Study after study has shown that needle-exchange programs will reduce the incidence of AIDS, a fact acknowledged by the Clinton administration. However, despite expressions of support for science and technology, the president and Congress have recently decided that the federal government will not fund such needle-exchange programs. Peter Lurie, at the University of Michigan, has estimated that with federal support, needle-exchange programs could prevent up to 17,000 infections during President Clinton's term of office. Similar shortsighted, moralistic, and psychosocial arguments as were used to block needle-exchange funding continue to interfere with more aggressive targeting of effective sex education and condoms to our adolescent population so that they can achieve safer sex practices.

As another example of preventive medicine with the potential to save many lives, the development of a new vaccine is rightfully an occasion for great celebration. However, because of missed opportunities by physicians and ineffective education, populations at risk are not getting the vaccines that are already available. A survey of physicians in Massachusetts found that most thought that 85 to 100 percent of their patients were fully vaccinated, but in reality the average was only 61 percent. Despite the existence of an effective vaccine against pneumococcus, which is the most common cause of bacterial pneumonia and middle-ear infections in the United States, implementation is inadequate. It has been estimated that only 15 to 30 percent of the targeted populations, such as the elderly, immunocompromised individuals, and individuals with pulmonary or cardiac conditions, are protected. Surveys of university students indicate similarly inadequate employment of the existing vaccine against hepatitis B.

The rates of infection and death from hospital-related (nosocomial) infection and the fact that antibiotic resistance is spreading in environments where the public expects vigilance to be at its best are further indicators that preventive medicine is underutilized. Roughly 88,000 people in the United States alone die each year as a result of complications from nosocomial infections, a third of which are estimated to be preventable. Vancomycin-resistant enterococci are spreading like wildfire through hospitals in the United States, after first being detected in 1989. There are already standards for reducing the risk of acquisition of a nosocomial infection and the spread of antibiotic resistance that include screening for carriers, isolation of patients who are culture-positive regardless of whether they show symptoms, appropriate use of antimicrobials, hand washing by health care providers before and after all patient contacts, and sterilization of equipment. These seem like no-brainers, yet concerns over discrimination against carriers, the unwillingness of hospitals to establish special isolation rooms for infected populations, and the inability of hospital personnel to maintain the levels of hand washing needed have resulted in steady increases in infections. The spread of antibiotic resistance in hospitals is part of a larger picture in which overuse and misuse of antibiotics threaten to overturn the progress of the last 50 years.

These examples are all ominous warning signs for the future. In the next millennium we must not only strive to open new avenues of scientific knowledge and insight but also to translate this knowledge into concrete results. To have invested in science, achieved understanding of the steps that need to be taken, and then failed to act on that knowledge would be folly of the highest order.

Barbara R. Jasny and Floyd E. Bloom

LETTERS

Conflicts

In the wake of David Western's dismissal as director of the Kenya Wildlife Service on 21 May and subsequent reinstatement on 28 May, Western and sympathetic colleagues express their concerns about an article that appeared in *Science*'s 24 April issue. These letter writers would have liked more quotes from indigenous Kenyans, more information about the author of the article, more criticism of former director Richard Leakey, and more discussion of the science of conservation biology.

A. & M. SHAH/ANIMALS ANIMALS

Wildlife Conservation in Kenya

As Michael McRae points out in his News & Comment article of 24 April (p. 510), the rising conflict over space does indeed pose the biggest threat to wildlife in Kenya, as human populations expand around and beyond parks. However, the example he quotes of a conflict between elephants and Maasai tribesmen around Amboseli National Park arose as a result of the very success of local community involvement beginning in the 1970s. Elephants subsequently increased from some 480 to nearly 950, reducing the biodiversity of the park and spilling over onto Maasai ranches. To curtail the conflict, the Kenya Wildlife Service (KWS) is building electric fences around Maasai farms and has established a conflict resolution committee, which speedily dealt with the last elephant to kill a Maasai. The African Wildlife Foundation, which supports Cynthia Moss's work, commended KWS's action. During Joyce Poole's time as head of KWS's elephant program, her apparent reluctance to deal with elephant attacks saw human deaths rise from 9 a year to more than 40. Pragmatic controls have since reduced that figure to around 15 a year.

Protecting parks alone, as the World Bank would have KWS do, carries a high cost. My predecessor at KWS, Richard Leakey, said he intended to fence off all parks to the tune of $100 million. The exercise would have consumed most of KWS's income and written off the three-quarters of Kenya's wildlife living outside parks. Although still KWS's top priority, protected