

Virtual Mentor

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From the Editor

Of Men and Microbes: Physicians and the Ethics of Epidemics

On September 17, 1683, Dutch scientist Antony von Leeuwenhoek wrote a letter to the Royal Society of London describing microscopic observations made of dental plaque donated by a 17th-century gentleman with an aversion to personal hygiene. To his surprise and wonder, von Leeuwenhoek reported seeing, "...an unbelievably great company of living animalcules, a-swimming more nimbly than any I had ever seen up to this time...In such enormous numbers that all the water seemed to be alive" [1]. Von Leeuwenhoek and his contemporaries may have been delighted with their "animalcules," but in the centuries which followed it would become apparent that such organisms were also responsible for many of humankind's greatest woes, the dread specter of infectious diseases from typhus to plague that have ravaged humanity throughout recorded history.

Yet even without a full understanding of the microbial world he was among the first to describe, von Leeuwenhoek helped fuel paradigm shifts in not one but 2 distinct professions: science and medicine. It is easier, perhaps, to recognize the contribution of von Leeuwenhoek's discoveries to the later scientific achievements of such luminaries as Rudolf Virchow and Louis Pasteur, but we must not forget the parallel role of microbes in shaping the development of the modern medical profession. An understanding of the pathophysiology of infectious disease and the concomitant development of pharmaceutical agents with which to treat such infections ushered in a new breed of physician: one who could offer not only comfort, but also—sometimes—an actual cure. Alexander Fleming's penicillin gave way to Jonas Salk and the polio vaccine and then Donald A. Henderson and the WHO-led global eradication of smallpox. The future was bright; with a powerful armamentarium of antibiotic agents and vaccines, diseases that once devastated millions were no longer a threat, if they even existed at all.

And then came HIV/AIDS. And in the wake of a virus which has shattered our conceptions of illness, health, and infectious disease, society in general and physicians in particular have been forced to ask some difficult questions. When the individual autonomy so championed by biomedical ethics directly conflicts with the physician's obligation to protect the public health, which of these competing value systems takes precedence? How does the most universally recognized creed of the physician—*primum non nocere*—change in the face of an epidemic? Can some harm to a few be justified by the prevention of harm for the majority? And how does justice fit into the picture—do infectious diseases simply represent one more way in which the world can be divided into the haves and the have-nots?

At a time in which we find ourselves facing not only the global pandemic of HIV but also the threat of new emerging diseases—severe acute respiratory syndrome (SARS) or avian influenza—as well as re-emerging diseases we thought were gone—drug-resistant tuberculosis or methicillin-resistant *Staphylococcus aureus*—this April 2006 issue of *Virtual Mentor* asks us to consider the ethics of epidemics. In the first case commentary, Dr Parveen Parmar reminds us of physicians' responsibilities to monitor our own health as, like our patients, we too can be vectors of infectious disease. Dr Sarah Sutton, a clinician, and Dr Alison Thompson, a bioethicist, then tackle the thorny dilemma of quarantine and if—and how—the decision to impose it should be made. Next, Drs Feudtner and Wadleigh separately address the physician's dual obligations to patients and to family and self during an epidemic. Finally, Dr Mona Loutfy considers the use of randomized controlled trials in the clinical setting of an unknown infectious outbreak for which therapeutic options have not yet been evaluated.

In the journal discussion, Anya Likhacheva analyzes the lessons learned from SARS and how this emerging epidemic may guide our response to the next one. In a related clinical pearl, Dr Mark Dworkin walks us through the principles of disease surveillance and the steps individual physicians should take to contact local public health authorities with a case of an unknown or reportable infectious disease. And in her health law commentary, Sarah Fujiwara explains the legal basis for mandatory vaccination during a time of epidemic.

After considering some of the questions facing physicians involved with direct patient-physician encounters, we next turn our attention to questions on a social scale raised by infectious disease. In the medicine and society section, Alison Bickford compares the successes and failures of New York City and the states of the former Soviet Union in combating tuberculosis, a disease that was once eminently treatable but is now considered a re-emerging threat due to development of drug resistant strains. Using malaria as an example, Sean Murphy critiques the Western world's response to tropical infectious disease and reminds us of the devastating consequences for humanity when the diseases of the poor are marginalized.

The response to emerging infectious disease must also involve public policy, and so in the policy forum, Dr Maureen Kelley acknowledges that not all outbreaks are naturally occurring in her discussion of balancing bioterrorism preparedness with scientific and medical advancement. Dr Christine Grady contributes her policy analysis of the ethics of conducting clinical research trials in the developing world. Facing a key policy issue for physicians, Dr Martin Strosberg addresses the ethical dilemma of resource allocation in time of epidemic.

In addition, Michael Fumento reminds us that public perception is not always accurate in his op-ed piece arguing that the H5N1 avian influenza is not the looming threat it is often portrayed to be.

To acknowledge the important role infectious disease has played in the past, present, and undoubtedly future of medicine, this issue of *Virtual Mentor* concludes with a view of how far we have come and where we are headed. Jessica Mellinger puts modern

epidemics in perspective by evaluating the response to the much earlier 14th-century outbreak of the plague that decimated much of Europe. Dr Douglas Hamilton traces the development of a modern approach to managing infectious disease in the Center for Disease Control's Epidemiology Intelligence Service. And, continuing in a long tradition of using the visual arts to inform our reflections, Dr Kate Scannell concludes by presenting artist Timothy Grubbs Lowly's unforgettable drawing *Carry Me* as a reminder that as physicians we must choose, both individually and collectively, which patients and which burdens we will carry.

In considering the ethics of epidemics there are no easy answers. Treating infectious disease may have been one of medicine's first real triumphs, but antibiotics notwithstanding, neither the clinical nor the ethical challenges posed by such infections have diminished. Indeed, as the authors in this month's issue point out, the myriad difficulties presented by emerging disease will only continue. As individual physicians, as a profession, and as a society we must constantly evaluate the balance between safeguarding the public and protecting the rights of the patient. In short, physicians must recognize the inherent duality of our professional responsibilities. Furthermore, although the daily activities of most physicians center around patient care and not the legal or policy arena, we cannot afford to forget the broader implications of treating—or not treating—infectious disease. In our roles as individual patient or physician, we remain part of a global community: emerging infections challenge us to remember both.

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Reference Note

1. von Leeuwenhoek A. Excerpt from a letter dated September 17, 1683, to the Royal Society of London, and printed in the Philosophical Transactions of the Royal Society. Available at: <http://www.ucmp.berkeley.edu/history/leeuwenhoek.html>. Accessed March 20, 2006.

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