MEDICAL WASTE AND HEALTHCARE ETHICS

By Adding to Environmental Pollution,
Some Healthcare Organizations Increase Health Risks

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In June 1998 the American Hospital Association (AHA) and the U.S. Environmental Protection Agency (EPA) signed a memorandum of understanding, agreeing to the virtual elimination of mercury from the healthcare waste stream by 2005 and to a 50 percent reduction in the total waste generated by U.S. healthcare by 2010.

In addition, a coalition of environmental and healthcare organizations is engaged in a major campaign (Health Care Without Harm) to eliminate pollution in healthcare practices. The campaign focuses on the use of mercury and polyvinyl chloride (PVC) plastics and on incineration as a method of waste disposal. The goal is that healthcare organizations will phase out the use of toxic products and adopt alternative disposal technologies.

How important are such efforts, given the many problems facing healthcare today? The problem of medical waste may not yet be at the top of the agenda for many busy healthcare leaders, but there are very good reasons for recognizing that ethical responsibility regarding environmental risks is central to the mission of healthcare organizations.

MERCURY AND DIOXIN

The risk to human health from exposure to mercury is well known (and is acknowledged in the memorandum of understanding between the EPA and the AHA). Mercury affects the central nervous system and can also harm the brain, kidneys, and lungs. The public has become aware of the risks of mercury, especially through health advisories warning against the consumption of fish from mercury-contaminated lakes and rivers.

Mercury is not destroyed through incineration. Instead, it is released into the atmosphere and deposited on the land and surface water. As it gets passed up the food chain, it becomes concentrated in the bodies of animals and, ultimately, in human bodies.

In healthcare, mercury is often used in thermometers, blood pressure gauges, feeding tubes, dilators, batteries, and fluorescent lights. It is estimated that medical waste may account for 20 percent of the mercury in the solid waste stream.[1]

Dioxin is considered one of the most toxic chemicals on earth. Dioxin has no commercial use and is not intentionally produced. It is a byproduct formed in the manufacture of chlorine-containing products and in the incineration of chlorine-containing trash.

"In the world of synthetic chemicals, dioxin has enjoyed the reputation of being the worst of the trouble makers—the most deadly, the most feared, and the most elusive to scientists seeking to unravel the secrets of its toxicity."[2] Although it has been difficult for researchers to fully document the manner in which dioxin causes damage to human health, its reputation as a dangerous and potent toxin is well established. It can cause cancer, affect both male and female reproductive ability, and damage the immune system. Dioxin is passed from mother to child during pregnancy and in breast milk and can affect the normal development of the brain.

Dioxin does not break down readily in the environment. It accumulates in the fatty tissue of animals and, like mercury, gets concentrated as it is passed up the food chain. The primary exposure to humans is through the food we eat.

Healthcare is a major contributor of dioxin to the environment through the incineration of chlorine-containing waste.[3] PVC plastic, used widely in healthcare in intravenous bags and tubing, mattress covers, and packaging, is the primary source of chlorine in medical waste.

Alternatives are available for most medical uses

of mercury and PVC. In addition, there are alternative methods to incineration available for the treatment of most potentially infectious waste. It is clear, also, that what is disposed of as waste could be reduced considerably without risk to the safety of patients and employees.

One of the reasons that this issue deserves special attention by healthcare leaders is that the healthcare organization is part of the problem; it is contributing to serious environmental health risks. This is a major challenge, one that should be addressed within a framework of the mission and ethics of healthcare.

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ENVIRONMENTAL RISKS AND HEALTHCARE ETHICS

Healthcare ethics has two traditional principles that are relevant here. The first, found in clinical and research ethics, stresses healthcare professionals' obligation to avoid causing harm. The second, developed in management ethics and public health ethics, obliges the professional to meet the needs of the community. These principles impose on healthcare organizations an ethical responsibility to avoid producing hazardous pollution.

The Harm Principle The Latin maxim *Primum non nocere* ("First [or "above all"] do no harm") is familiar to many who work in healthcare. It reminds them that the vulnerable patient trusts the healthcare professional to use his or her powerful interventions in the patient's best interests. The professional must take care not to harm patients or put them at risk of harm.

The continuing significance of this principle is exemplified by the stress put on a professional's obligation to refuse a potentially harmful intervention. For example, the professional is not to prescribe contraindicated drugs even when the patient, knowing the likely consequences, requests them.

The principle's continuing strength can also be seen in the work of committees (sometimes called "institutional review boards") established to protect the human subjects of medical research. Such groups have a clear responsibility to protect the subject even when others might benefit from the research. In most circumstances, the good of the

many does not justify placing the one at significant risk of harm.

The harm principle is not absolute. It does not insist that *all* harm be avoided at all times, or that *any* risk of harm is too great. The principle (and the moral rules flowing from it) is a "presumptive" obligation—one that "must be fulfilled unless it conflicts on a particular occasion with an equal or stronger obligation."[4]

It may at times be appropriate to act in a way that puts others at risk of harm—if, for example, the action avoids a greater harm or provides a significant benefit—but the burden of proof is on those who advocate taking the risk. Supporters of such actions should provide both substantive justification (i.e., good reason to conclude that the risk of harm is outweighed by other considerations) and procedural safeguards (i.e., methods of ensuring that those most likely to be harmed have their interests considered in the decision-making process).

As we will see, the harm principle (and the accompanying burden-of-proof standard for putting people at risk of harm) is similar to the perspective today advocated in environmental ethics.

The Community Health Principle Healthcare has long recognized its public health mission: to establish the conditions in which people can achieve the highest attainable state of health[5] (or, putting it negatively, to eliminate or ameliorate unhealthy conditions).

Like physicians and nurses, healthcare administrators see themselves as professionals, and hence different from other business managers. Healthcare administrators must be dedicated to the well-being of the patients their organizations serve. To serve those patients best, administrators must also serve the community in which the patients live. As the code of ethics of the American College of Healthcare Executives puts it, administrators have a responsibility to "work to identify and meet the healthcare needs of the community."

This sense of responsibility may well lead administrators to see that some currently accepted social, business, and governmental practices are detrimental to public health and should according-

ly be changed. Thus, in its public health aspect, healthcare sometimes needs to assume an activist and reformist role.

Financial and other pressures often make it difficult for healthcare organizations to focus their resources on the community. Nevertheless, improving the community's health status clearly remains the mission of such organizations. Healthcare ignores this responsibility only at the risk of losing part of its essential identity. In biomedical ethics, the focus is on the individual patient; in community health ethics, the focus is on society. Together, they constitute healthcare ethics.

THE PRECAUTIONARY PRINCIPLE

If we are to be environmentally responsible, we must think in terms of the realities of ecological systems. Using resources and creating waste put pressure on environmental stability. It is a basic environmental insight that waste is not neutral. "Whenever we pollute or degrade . . . [the natural environment] with toxins or waste, we are destroying our natural capital and reducing our ability to sustain our civilization. It is that simple."[6]

In ecosystems, everything is related. We cannot release toxic pollutants and expect them to have no deleterious impact on the system. Nor is it enough to release them in a manner expected to cause no short-term harm; we do not always know the long-term impact. Like mercury and chlorine, many toxins are persistent.

Polluting natural systems is risky. Caution is therefore a basic principle in environmental ethics. It is not enough to have good intentions. Because of pollution's great potential for unintended negative consequences, environmental ethicists have long been concerned with the burden-of-proof issue. Modern industrial society tends to assume that environmental change is usually harmless and that it should not be halted until there is evidence of its harmfulness. Environmentalists, on the other hand, argue the contrary. They say that the burden of proof should rest on those who believe hazardous waste is harmless.

Given the risks involved in hazardous pollution, the "precautionary principle" should govern

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decision making. As one environmentalist manifesto has argued, "When an activity raises threats to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context, the proponents of an activity, rather than the public, should bear the burden of proof."[7]

Sandra Steingraber has articulated two corollaries to the precautionary principle. The first, which she calls the "principle of reverse onus," says "it is safety, rather than harm, that should necessitate demonstration." The second, which she calls the "principle of the least toxic alternative," says that toxic substances will not be used to accomplish a task as long as there are safer alternatives.[8] The latter corollary is sometimes described in terms of prevention: It is better to prevent environmental pollution than to try to control it.

It is interesting to note that the precautionary principle in environmental ethics is similar to the harm principle in healthcare ethics. Both put the burden of proof on those who seek to justify the risk of harm. And, in fact, given the serious risks to health posed by toxic substances like mercury and dioxin, both the precautionary principle and the harm principle require that a substantial burden of proof be met before such substances are released into the environment.

RESPONSIBILITIES OF HEALTHCARE ORGANIZATIONS

The conclusion seems clear: Ethical considerations require that healthcare organizations recognize and act on a responsibility to avoid the potentially harmful effects of the hazardous waste that is generated in the provision of healthcare services.

The first step in recognizing the importance of toxic pollution is to make a commitment to act on the issue in a systematic and conscientious way. This may mean establishing a task force with a deadline to make recommendations, or contacting the AHA or a group such as Health Care Without Harm for assistance in identifying ways of proceeding.

The fact that many healthcare workers and

EVALUATING A SYSTEM CEO

But a truly first-rate CEO will want the system to prosper not simply to attain market leverage, but to be in a position to use that leverage to increase access to high-quality, cost-effective healthcare in the region.

Has the CEO Been Skillful in Developing an Executive Staff and Mentoring the System's Future Leaders? A genuinely successful CEO will spend time on leadership development. First, the CEO will recruit a strong executive staff to carry out the system's current operations. Second, he or she will mentor junior executives, sharing expertise and wisdom with them, preparing them to lead the system in the future.

Unfortunately, many healthcare CEOs today are so caught up in the daily demands of running a competitive organization that they think they have little time for building staff and training future leaders. They are mistaken. Indeed, in failing to prepare new leaders they endanger their system's future.

THE QUALITIES OF TRUE LEADERS

Although the current "merger mania" is often disconcerting, in the long run it should result in stronger healthcare systems. Those strengthened systems will be in a better position to meet their regions' health needs.

Such systems will need true leaders—men and women who speak from the heart; solicit ideas, opinions, and criticisms from all layers of the organization; are candid, respectful, and responsible even in difficult circumstances; and are team players when choosing among competing options and strategies. The challenge for trustees lies in finding—and keeping—CEOs with these qualities. □

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many members of the public are not yet focused on the health risks associated with the disposal of medical waste is not a reason to be hesitant. Much recent research is available, and the principles discussed above are helpful for thinking about environmental responsibility when the evidence is not yet fully understood by everyone.

Addressing this issue well (including the reduction of waste that needs to be disposed of as hazardous waste) might be one of those win-win situations in which the institution saves money at the same time it reduces risks to health. Although this might be the case, the decision to proceed should not be made on the basis of cost reduction alone. The issue is how to reduce waste and find healthier ways of disposing of hazardous materials in a cost-effective manner.

Safe alternatives exist for many medical uses of PVC and mercury. One of the most important responses to the health risks caused by healthcare is to begin to move as quickly as possible to these alternatives and to put pressure, if necessary, on suppliers and producers for a full range of alternatives. This is an example of addressing the problem as much "upstream" as possible.

In the process of addressing this issue, attention may need to be paid to issues of institutional culture. It may be important, for example, to resist an organization's temptation to do the least amount of change and preserve the status quo as much as possible in responding to the need for new ways of dealing with waste. Although making the least possible change is understandable because it is the least disruptive of work patterns, it may also be the least effective and the least cost-effective in achieving health-protection goals.

Another danger to be avoided is minimizing the nature of the problem. It may be tempting to present a public image of not contributing to toxic pollution, but this is likely to be counter-productive in a public relations sense. As the public becomes increasingly

aware of the problem, the institutions that will be looked upon most favorably may well be those which involve the public in finding solutions, not those which minimize the problem or the need to address it.

Medical waste raises concerns that need to be taken seriously as concerns central to the work of healthcare. They are not luxury considerations that can be put off until other, more pressing issues in the organization are attended to. What makes this concern so central is that the healthcare organization is part of the problem; it is contributing to the undermining of public health—and will continue to do so until it has reduced the use of mercury and PVC to the greatest extent possible and is using the most environmentally safe technologies for the treatment of infectious waste. □

NOTES

1. "Health Care Without Harm: The Campaign for Environmentally Responsible Health Care," Health Care Without Harm, Falls Church, VA, 1998.
2. T. Colborn, D. Dumanoski, and J. P. Myers, *Our Stolen Future*, Dutton, New York City, 1996, p. 113.
3. U.S. Environmental Protection Agency, *The Inventory of Sources of Dioxin in the United States*, USEPA Office of Research and Development, Washington, DC, 1998.
4. T. L. Beauchamp and J. F. Childress, *Principles of Biomedical Ethics*, 4th ed., Oxford University Press, New York City, 1994, p. 33.
5. J. M. Mann, "Society and Public Health: Crisis and Rebirth," *Western Journal of Medicine*, no. 169, p. 119.
6. P. Hawken, *The Ecology of Commerce*, Harper, New York City, 1994, p. 38.
7. "The Wingspread Statement," quoted in S. Steingraber, *Living Downstream*, Vintage, New York City, 1998, p. 284. The statement was the result of deliberations by an international group of scientists, urban planners, farmers, union leaders, physicians, politicians, and others that gathered in Wisconsin in 1998 to discuss the precautionary principle.
8. Steingraber, pp. 270-271.