Dispose Medicines Wisely

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Green Pharmacy: Preventing Pollution

A Cross Sector Approach

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The recent increase in awareness of environmental issues is creating an opportunity for all constituencies involved with PPCPs to take action and reduce potential harm. A "cross-sector" approach offers a systems perspective that includes all individuals and organizations involved with the production, distribution, consumption, and disposal of pharmaceutical medicine. For pharmaceutical pollution, the solution calls upon all sectors involved in health care—pharmaceutical developers and manufacturers, hospitals, individual physicians and all those involved in the health care system, law enforcement agencies, pharmacies, waste management agencies, consumers, environmental protection organizations, and governmental agencies—to participate in preventing pharmaceutical pollution. This powerful approach provides a comprehensive solution to an issue that has the potential to affect much of life on Earth.

The Manufacturing Sector

The manufacturing of medicine is ripe for leadership. In the past decade "green chemistry," which minimizes the use of toxic chemicals in design and production, has emerged (see side bar on pg 37) as a technological advancement in the research and development of new pharmaceutical treatments. As manufacturers become more responsive to concerns about environmental hazards and sustainability, production techniques that lower the overall impact on the environment are becoming increasingly important. From a product standpoint, this sector is developing a new model of "product stewardship"—a "cradle-to-cradle" strategy for developing a new product. While all those involved in the production, distribution, sale, and use of any drug should be involved with product stewardship, the manufacturing sector is in the best position to reduce the environmental impact of medicines, because a product begins with development and manufacturing. If the process begins with cradle-to-cradle stewardship, it is more cost-effective and environmentally sensitive.

One way manufacturers can exercise healthy product stewardship is to design drugs that are more ecologically sensitive and medicines that biodegrade more

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quickly and yield end products that are less harmful. Innovative drug design can improve delivery systems to require lower doses for efficacy; shifting from the current system of averaging, the practice of refining a medication's expiration date can bring shelf life into closer alignment with real time; recyclable materials can be used for packaging, or package size can be reduced to minimize the unused portion of prescriptions; and more complete and direct information about proper disposal techniques can be added to packaging.

The pharmaceutical industry is in an excellent position to provide more information directly to physicians. The European pharmaceutical industry is currently implementing a system in which medicines are graded for persistence, bioaccumulation, and toxicity (PBT). This information will be available to prescribing physicians, who will be in a position to make healthier environmental choices (see our Spotlight article on the Stockholm County Council on page 45). As is already happening in Canada, Australia, and New Zealand, our pharmaceutical industry could provide funding for the proper disposal of unused or expired medicines. Such initiatives might promote advanced recycling strategies, which would require changes in the current laws for drug handling in America. The pharmaceutical industry could also devote a portion of its huge advertising campaign to educate both physicians and consumers about the environmental and health issues associated with PPCPs.

Health Care Systems

Hospitals

Model solutions already exist for the medical industry. Those involved in hospital medicine are already developing methods for proper disposal. Hospitals for a Healthy Environment (H2E) *(http://www.h2e-online.org/)* is collaborating with many major hospitals in the United States, initiating proper disposal of hospital wastes. In May 2007, H2E's Environmental Excellence Summit focused on pharmaceutical waste management. Since much of medicinal waste is generated by hospital medicine itself, there is no reason why hospitals cannot be regional centers for "take-back" programs, where patients and consumers can easily return unwanted and expired medicines. With a high concentration of physicians and nurses, hospitals also offer an opportunity to expand the educational content required of the medical profession.

Physicians, Veterinarians, and Dentists

Individual physicians must also participate in the solution. Any medical office can offer a take-back program. Physicians, as the first line in any health care strategy, can inform patients about healthy product stewardship. The time when a doctor is prescribing a medication is an ideal moment to educate patients about proper disposal habits. Imagine receiving a phone call from your medical office reminding you not only about your next appointment but also to bring your expired and unused medicines with you. Veterinarians and dentists can take these steps as well. Domestic animals are the object of increasing amounts of PPCPs in medicine. These offices, too, can participate in proper disposal programs.

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Pharmacies and Law Enforcement Agencies

To date, many of the proposed solutions for proper disposal of PPCPs are focused on two sectors, pharmacies and law enforcement. Pharmacies seem a natural fit for proper disposal of medication, and in fact some pharmacies serve as take-back sites for proper pharmaceutical disposal. In British Columbia, 95% of all pharmacies have recycle bins, which allow consumers to bring their unused/expired medicines back whenever they shop. Because certain medications find their way into an illicit drug market, law enforcement agencies sometimes participate in take-back programs to ensure that these substances are handled only by a pharmacist, physician, or police officer. Take-back events and selected programs at police stations are helpful, but are less accessible.

Hospice

One sector of the health care system that relies most heavily on medication is hospice. Researchers estimated in 2003 that at least $1 billion worth of unused drugs are flushed down the toilet each year.[1] Senior centers and home hospice care should consider several types of disposal systems. Current hospice protocol is to have families dispose of medicine; unfortunately, it is often disposed of improperly. These medicines are typically good quality medicines that could easily be reused for others in need. While regulations prevent hospice workers from reverse handling of medicine, families could return unused medicines to proper disposal facilities, or investigate if long term care facilities in your area accept unused dispensed medications. Senior centers, too, can offer educational outreach and take-back services.

Waste Management Agencies and Environmental Organizations

Waste management agencies have an interest in seeing that PPCPs are disposed of properly. Municipal water agencies in particular are developing policies that maintain proper water quality. Some agencies are proposing regulations that would prevent hospitals from disposing medicines directly into the municipal water system. Solid waste organizations too, have a similar interest, though unused medicines make up a relatively small percentage of solid waste. Most solid waste systems in the U.S. request that unwanted medicines be returned to hazardous waste facilities. However, only a very small percentage of household medicines are hazardous wastes (see page 39), and pound for pound, hazardous waste is much more expensive to handle. Since many medications are not hazardous, significant money can be saved by separating most drugs out of the hazardous waste stream.

Other approaches to drug recycling do exist. For manufacturers, "reverse-distribution," which allows pharmacists to return unsold drugs back to the manufacturer, could be enlarged to include unused medication and expired medication.

While human health is very important, water quality needs to be preserved for nonhuman life as well. Many environmental organizations that support wildlife and aquatic ecosystems are supporting take-back programs. In Oakland, California, for example, Save the Bay is actively involved in preventing PPCP pollution.

Consumers

Finally, consumers need to participate in keeping our environment clean. Each of us has a responsibility for healthy product stewardship of all consumer goods. Rather than throwing medicine down the toilet or in the garbage, bring non-controlled drugs to a take-back site or hazardous waste facility. Buy smaller containers of medicines. Buy products with recyclable packaging. Ask your doctor about environmental impacts of your medication and whether a more sustainable alternative exists. Always choose the smallest prescription amount or refill option unless the medication is for a chronic condition. Encourage your physician or primary care provider to take back unused/expired, non-controlled medicines. Most importantly, commit to health promotion strategies that reduce your need for medication in the first place. When given a choice, always choose sustainable medical treatments first, reserving more problematic choices for more difficult situations.

Unused medications may be donated to nonprofit organizations that redistribute medicines to charitable organizations in non-industrial countries that need basic medications. Green funeral practices are emerging as an alternative to traditional practices that release significant chemicals into the environment.

What you can do

- Dispose of unused or unwanted medications at take-back sites or events only
- Do NOT dispose of any medication down the toilet or in the trash
- Purchase drugs in small amounts, limiting expired medications
- Ask for medications with low environmental impact
- Encourage your provider to take-back non-controlled unused/expired drugs.
- Commit to health prevention strategies to reduce your reliance on medications

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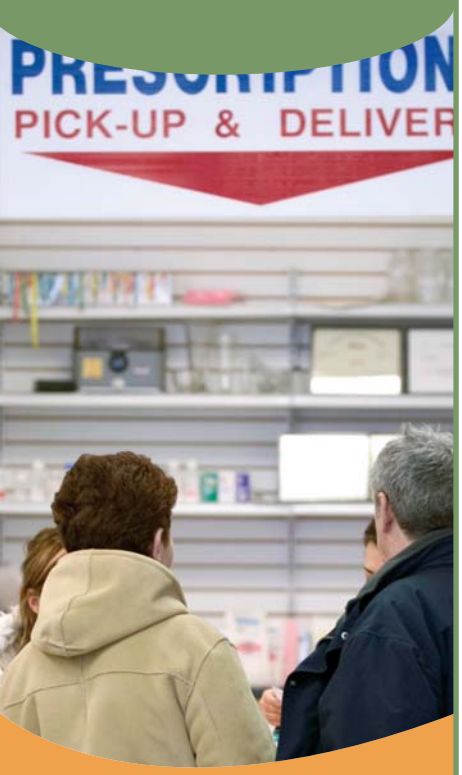

Commit to health promotion strategies that reduce your need for medication in the first place—if there is a choice, always choose sustainable medical treatments first, reserving more problematic choices for more difficult situations.

Who Pays?

Perhaps the most contentious aspect of proper disposal of PPCPs is cost: Who should pay? No one wants to pay the additional cost for proper product disposal. In many sectors of durable goods or consumer goods, particularly electronics, the cost of disposal is beginning to be included in the cost of the product. For consumers, this is the preferred method, although a fee added at time of purchase, called an "advanced recycling fee" (such as the system for beverage bottles and cans), allows users to pay as they go. When this is mandatory, however, it feels like a tax. Many of us remember the struggle to get "bottle bills"—an added fee on bottles—passed in state legislatures. Perhaps medications can be handled that way, although experience shows that the public is not easily persuaded to mandate such fees.

The product stewardship model suggests that the cost be spread throughout the life cycle of the product and that the proportion of cost be distributed by the ability of the party to have a significant impact.[2] Applying this model, pharmaceutical companies would provide the largest proportion of investment. To date, this is how Europe and other industrialized countries are building capacity.

But healthy product stewardship requires everyone's participation. In addition to manufacturer involvement, we need to shift our focus to actions and processes that reduce the need for disposal, thereby reducing household accumulation of unwanted drugs. Currently our focus is on prudent disposal options, but we need to address this problem at the source rather than further downstream at the consumer/patient level. We need to aim for a healthcare-consumer system that results in fewer medications needing disposal. Each one of us can contribute to a healthier home for all of us on planet Earth—just by making the better choice.

Everyone Participates

Green Pharmacy offers an opportunity for social action that will greatly benefit our environment at all levels of our society. With relatively simple yet firm commitments to change our habits, becoming stewards of medicine rather then consumers of medicine we effectively become part of the solution. Ideally, there would be no drugs to return. Until that time, all prescribed medicines would be brought back in subsequent visits to a physician, veterinarian and dentist. Manufacturers and pharmaceutical distributors would facilitate medical, dental and veterinarian offices in disposing of these medicines wisely. Consumers willingly participate by returning unused medication. Green Pharmacy is a commitment we undertake today. Our vision is zero waste. Our simple actions have a positive effect of the health and vitality of our world. It requires a commitment to restore that each of us carries in our hearts a vision of a sustainable healthy future.

REFERENCES

1 Van Eijken M, Tsang S, Wensing M, De Smet PAGM, Grol RPTM. Interventions to improve medication compliance in older patients living in the community: A systematic review of the literature. *Drugs & Aging*. 2003;20(3); 229-240.
2 Product Stewardship Institute. Available at *http://www.productstewardship.us/*. Accessed April 16, 2007.