

Analysis: The Impact of Needle, Syringe, and Lancet Disposal on the Community

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Abstract

There are over 75 billion needles and syringes used outside of the health care system each year by individuals with diabetes, migraines, allergies, infertility, arthritis, HIV, hepatitis, multiple sclerosis, osteoporosis, psoriasis, or other conditions. Disposal of needles, syringes, lancets, and other medical products are not regulated in the home, while these same products used in health care facilities are strictly regulated. Home-generated medical waste is routinely placed into curbside trash, placing sanitation workers and custodial personnel at personal risk of a needle-stick injury. The Coalition for Safe Community Needle Disposal is working to establish a solution that is satisfactory to all stakeholders, sharing the burden of these programs with the pharmaceutical industry, medical device industry, waste management industry, recycling companies, and local and state governments.

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The potential impact of pharmaceuticals and personal care products on the environment is raising concern. Discussions about cradle-to-grave responsibility for new products and their impact on the environment are gaining attention in all areas of manufacturing, not only pharmaceutical and medical device companies. As the incidence of diabetes grows, it is not too soon to develop a sustainable plan to address these issues. In this issue of *Journal of Diabetes Science and Technology*, the article by Pfutzner and colleagues entitled, *Analysis of the Environmental Impact of Insulin Infusion Sets Based on Loss of Resources with Waste*¹ considers the impact of insulin pump infusion sets and a tubing-free infusion set on the environment, based on the loss of resources that occurred during the incineration process of this product. The comparison was made with the resource consumption required by the

daily use of a disposable coffee cup and an aluminum soft drink can. The results showed that insulin pump tubing and a pod pump that did not require tubing had less of an impact than the coffee cup and soda can.

However, according to the insulin pump management consensus statement released by the American Association of Clinical Endocrinologists, insulin pumps are used by approximately 375,000 Americans.² There are approximately 26 million Americans with diabetes, and it is estimated that about 26% (6.5 million Americans) are taking 1–4 insulin injections per day using over 13 million needles and syringes per day. This extremely high number demonstrates the importance of researching the impact on the environment of needles, syringes, and lancets generated by this population.

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Abbreviations: (EPA) Environmental Protection Agency, (MRF) materials recovery facility

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It is of interest that Becton, Dickinson, and Company and Waste Management announced in April 2011 an agreement to recycle medical sharps waste from hospitals and other health care facilities. The companies are jointly launching the BD ecoFinity™ Life Cycle Solution, an innovative service that will recycle medical sharps waste and utilize the material to manufacture new products.

Medical waste from hospitals and health care organizations is highly regulated in the United States. Medical waste is hauled only by certified medical waste hauling and disposal companies; the waste is then autoclaved and placed in a landfill (in some regions it is incinerated). Pfutzner and colleagues¹ describe the process used in Germany, where incineration of these products is the standard.

In this analysis, discussion is focused on home-generated medical waste—syringes, lancets, needles, insulin pump tubing, continuous glucose monitor tubing, and insertion devices—which is not regulated in the United States. Because of the very high numbers of individuals with diabetes using these products as compared with an insulin pump, it would be of value to understand the impact that this volume of household medical waste has on the environment and, of greater concern, the impact of unregulated medical waste disposal on the community.

Standard practice in the United States is for patients to deposit their needles, syringes, and other medical waste products with their curbside trash. The trash is taken to a materials recovery facility (MRF). The MRF then begins a sorting process to separate designated recyclable material (this is different than the voluntary recycling in which households participate) from the solid waste. Materials are sorted either manually or through a mechanical sorting process. What is not recyclable is then transported to a landfill.

Used syringes, lancets, needles, insulin pump tubing, continuous glucose monitor tubing, and insertion devices are included in this sorting process and, as a result, may expose sanitation workers to needle-stick injuries. In fact, needle-stick injuries are one of the top three injuries reported at MRFs according to data tracked by waste management companies. The custodial staffs at any public venue are also at risk of injury from used needles, syringes, lancets, and insertion devices. Presently, no system is in place to track these needle-stick injuries or to identify the source of the injury or the complications that may occur as a result of these injuries.

According to data collected by the Coalition for Safe Community Needle Disposal, it is estimated that there are over 7.5 billion syringes used in households yearly, and the numbers are increasing. Individuals with diabetes are the largest user group, and this number does not reflect the number of lancets used by 25 million individuals with diabetes. It is estimated that 1 in 12 households in the United States are using a syringe for treatment of diabetes, migraines, allergies, infertility, arthritis, HIV, hepatitis, multiple sclerosis, osteoporosis, psoriasis, or other conditions. In addition, the development and prescribing of biologics or designer drugs is on the rise. Many of these medications are injectable, therefore increasing the usage of needles and syringes in the home.³

As there is no established national program for safe needle disposal, individuals deposit their needles, syringes, and lancets in the trash or flush them down the toilet. The most common instructions given to individuals in most regions across the country are to place their needles and syringes in a heavy plastic container and deposit it at the curbside trash. A limited number of regions in the United States offer a safe community disposal program.

The Coalition for Safe Community Needle Disposal, established in August 2002, is a collaboration of businesses, community groups, nonprofit organizations, and governments that promotes public awareness and solutions for safe disposal of needles, syringes, and other sharps in the community. The coalition has gathered what data are available in trying to track the incidence of needle-stick injuries, but due to lack of uniform reporting mechanisms, consistent data are not presently available.

Sanitation workers and housekeeping staffs at hotels, motels, large entertainment centers, airports, train stations, and other public venues are exposed daily to syringes used by the public, which are generally placed in the trash or flushed down the toilet. In an effort to protect employees, some venues have begun to provide needle disposal receptacles in restrooms.

In 2004, the Environmental Protection Agency (EPA) published *Community Options for Safe Needle Disposal*.⁴ This document outlines the dangers of improper needle disposal and offers a variety of program options:

- Drop-off collection sites
- Syringe exchange programs
- Mail-back programs

- Home needle destruction devices
- Household hazardous waste collection sites
- Residential waste special pick-up programs

These programs recommended by the EPA are not mandatory. However, states and municipalities are beginning to look at this issue and recognize the need to offer safe alternatives. The Coalition for Safe Community Needle Disposal is working nationally with stakeholders to establish a solution that is satisfactory to all stakeholders by sharing the burden of these programs with pharmaceutical companies, medical device companies, waste management companies, recycling companies, and local and state governments.

Why, one may ask, are we not doing something to correct the problem? The answer is money. Disposal of medical waste is expensive. Who is going to bear the burden? The patient who already has very high expenses? The local municipalities that will have to develop, implement, publicize, and enforce regulations? Waste management companies that must provide for the safety of their employees? Or should the manufacturers and pharmaceutical companies provide a cradle-to-grave solution?

Why are workers not demanding protection? Is this a population of employees who have enough power? Do they recognize the risk that they are being asked to take? Are they educated to know they may need to demand protection? These jobs are filled by low-paid employees.

The Coalition for Safe Community Needle Disposal supports

- federal policies that encourage safe disposal of sharps by individuals;
- state and local laws that provide safe community disposal programs for sharps;
- community-based disposal solutions that are available, affordable, and discreet; and
- effective public education about safe needle disposal for all “at-home” users of sharps.

Their Web site, www.safeneedledisposal.org, provides a current listing of programs available by state. They are also working closely with the stakeholders to come to

an agreeable solution before state governments begin to mandate programs. For more information about safe needle disposal and programs available in your community, contact the Coalition for Safe Community Needle Disposal at (800) 643-1643 or online at www.safeneedledisposal.org.

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