

# Healthcare's role in environmental sustainability

RNs are needed to guide efforts.

By Deborah A. Saber, PhD, RN, CCRN-K



**WASTE REDUCTION** in the U.S. healthcare industry is challenging; 931,203 staffed hospital beds produce over 5.9 million tons of waste every year. The effects of mismanaged waste are far reaching and include misspent money, depleted natural resources, toxic chemicals placed in trash and landfills, prolonged plastic degradation, and harmed wildlife.

In support of environmental sustainability, the federally managed Healthy People 2020 initiative focuses on promoting health with objectives that include advancing environmental health. Internationally, the nongovernmental organization Health Care Without Harm

(HCWH) aims to reduce healthcare organizations' environmental footprint through goals that include "responsible consumption and production." A 2019 position statement from the International Council of Nurses concluded that RNs are well positioned to take a pivotal role in reducing waste, and that the profession has a duty to reduce greenhouse gases and become an advocate for environmental sustainability. In addition, Standard 17 of the Standards of Professional Nursing Practice found in the American Nurses Association's *Nursing: Scope and Standards of Practice, 3rd Ed.*, charges RNs to practice in an environmentally safe and healthy manner.

RNs' role as environmental advocates who help monitor and reduce waste continues to grow in response to current disposal processes, advancing technology, and increasing use of disposable patient care items.

## Solid waste disposal in healthcare

Healthcare solid waste disposal in the United States has changed over the past 40 years, driven in part by bloodborne infections such as HIV and hepatitis C. In the 1980s, solid waste separation in healthcare organizations became strictly regulated with the Medical Waste Tracking Act (MWTa), which resulted when medical waste (including needles) washed up on the east coast at a time when bloodborne pathogens (specifically HIV) were of particular concern. The MWTa led to state and federal regulations for separating solid waste into two categories: medical (infectious) waste (also called red bag waste) and regular waste (broadly referred to as municipal solid waste [MSW]).

## Medical waste

Medical waste is regulated through state gov-

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## Safe disposal

Healthcare waste typically is placed in one of two containers

- **Red bags** are used to dispose of waste (such as blood products, secretion- or blood-saturated bandages, and human tissue) that may contain human pathogens with sufficient virulence that disease could result. Urine, feces, and blood-spotted bandages aren't considered medical waste. To meet state-specific standards, red bags are
  - constructed of thickened plastic
  - impervious to moisture
  - strong enough to resist tearing or bursting under normal handling
  - imprinted with the international biohazard symbol and the words "biomedical" or "infectious waste"
  - stored separately from other waste.
- **Sharps containers** are constructed of thick, rigid material and are used to dispose of waste that can penetrate the skin (such as scalpels and needles).

ernmental agencies such as the departments of health and environmental protection. However, commonalities exist among states. For example, most medical waste is discarded in two containers: red bags and sharps containers. (See *Safe disposal*.)

Terminal medical waste disposal is state regulated, and every healthcare facility must have a plan for red bag and sharps container disposal that renders microbes innocuous. One process is incineration, which is linked to increased cost, atmospheric emission release that may contribute to health problems, and residue ash that's disposed of in landfills. To limit red bag use and disposal, the bags should be reserved for infectious waste as defined by each state.

## MSW

MSW from healthcare settings is deposited in white, clear, or black bags and disposed of in landfills or incinerated and then placed in landfills. According to the U.S. Environmental Protection Agency (EPA), paper and plastics account for 40% of all MSW generated in the United States. In hospitals, this waste includes disposable patient care items and packages, cleaning wipes, paper and plastic waste (cups, forks, paper towels), and personal protective equipment (PPE; gowns, gloves, masks, caps) used in most isolation precaution rooms to reduce the spread of infection. Some PPE, however, may be considered red bag waste if used when caring for patients who are highly infectious (for example, those with Ebola virus disease or filovirus hemorrhagic fever).

The amount of waste from isolation rooms in individual hospitals depends on infection rates and isolation screening and precaution policies. PPE waste disposed of as MSW can be voluminous. Saber and colleagues (2017) conducted a descriptive study that examined solid waste generated from two stable medical patients with methicillin-resistant *Staphylococcus aureus* infections who were in contact isolation for 1 week. The researchers found that 93% of waste produced was MSW (white, black, or clear bags), 43% (nearly 61 pounds) of which was PPE (gloves, gowns, packaging). Only 8% (11 pounds) of the waste resulted from sharps containers and red bags. This indicates that a tremendous amount of waste can be generated from PPE worn while caring for isolated patients. In fact, caring for one stable patient using contact isolation precautions can produce over 3,700 pounds of solid waste in 1 year.

## RNs and environmental sustainability efforts

Both the EPA and World Health Organization promote waste reduction, product reuse, and recycling to limit the amount of waste that goes to landfills and negatively impacts the environment. Support programs are promoted in homes, work places, communities, and schools; they also should be promoted in healthcare organizations. As environmental stewards, RNs can add valuable information and recommendations to reduce, reuse, and recycle MSW and decrease red bag and

## Environmental stewardship action plan

Take the following steps to develop and implement an environmental stewardship plan at your organization.

### Establish a team.

Start by establishing an interprofessional environmental stewardship team that includes nurses, environmental service personnel, leaders or managers, and an infection control expert to discuss how to reduce waste, implement reuse strategies, and increase recycling efforts.

- Gather data about your organization's medical waste and municipal solid waste (MSW), including
  - amount and type of waste generated
  - average monthly and yearly number of patients requiring isolation precaution
  - waste disposal process
  - hospital cost for disposal (MSW removal, incineration)
  - regional or local recycling process (for example, zero sort in which all recyclable items are placed in one container)
  - current active waste reduction and recycling efforts implemented and encouraged in your organization.
- Present your findings to nursing colleagues, unit leaders, and nursing and hospital administration to gain support for the program.

### Reduce red bag and sharps waste.

- Educate staff, visitors, and patients

that red bags and sharps containers are dedicated for disposal of medical waste (define the types of waste for each container).

- Post signs in high-visibility areas that list appropriate red bag and sharps container waste.

### Reduce MSW.

- Start a reduce, reuse, and recycle campaign.
  - Create an institutional "Stop Waste" logo to promote your campaign. Include it on posters displayed throughout the hospital.
  - Consider implementing a horizontal isolation approach to determine which patients meet contact isolation precautions criteria and require personal protective equipment (PPE). Horizontal isolation evaluates individual patients to establish the need for isolation precautions based on the likelihood that they might contribute to microbial spread (for example, isolating patients with methicillin-resistant *Staphylococcus aureus* within an open wound rather than isolating all patients with known multidrug-resistant organism infections). This approach emphasizes universal environmental cleaning, hand hygiene, and special hygiene practices (such as universal decolonization with

chlorhexidine baths), and microbial spread risk reduction.

- Bundle tasks when entering isolation rooms to reduce the number of visits and decrease the amount of PPE used each shift.
- Explore the possibility of replacing disposable gowns with cloth isolation gowns that are washed and re-used.
- Develop policies that remove patients from isolation precautions when microbial spread is no longer a threat.
- Consider purchasing equipment that can be sterilized for reuse.
- Begin a comprehensive hospital-wide recycling program to include patient care units, administrative offices, and cafeterias.
- Engage nursing colleagues, healthcare professionals, patients, and family members to promote waste reduction and recycling.
- Consider replacing products made with polystyrene (Styrofoam), which degrades slowly in MSW and may not be accepted for recycling.
- Create educational booklets to outline actions that promote waste reduction and recycling.
- Offer educational sessions about environmental sustainability and waste reduction for healthcare workers, visitors, and patients.

sharps container waste in healthcare environments. (See *Environmental stewardship action plan*.)

### Take responsibility

Responsibility for environmental sustainability belongs to communities, individuals, families, industries, and policymakers. Healthcare, including nursing, is obligated to ensure patient safety and optimal well-being while also practicing environmental stewardship because an unhealthy environment affects overall health and well-being. RNs are knowledgeable about these issues and well positioned to recommend and guide change.

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