BRIEF: WASTE MANAGEMENT CONSIDERATIONS FOR ORAL HEALTH PROFESSIONALS – IT'S ABOUT EQUITY

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Background:

Climate change and pollution are among the most pressing global issues today. Through the degradation of food, water, and air quality, these environmental issues pose a serious and imminent risk to human health, especially for most vulnerable populations globally. Every industry must actively work to reduce its environmental harm.

A surprising and overlooked source of this pollution is the international dental community, which pollutes the environment through plastic, mercury, lead, and silver waste. These pollutants threaten the health of organisms and humans, especially the developing young, as well as the stability of various economies. This policy brief will investigate these pollutants and offer ways to reduce dental waste.

Types of Dental Waste:

Plastic

Consumer dental products, such as toothbrushes and toothpaste, are usually made of plastic. Toothbrushes are typically not recyclable because they become entangled in machinery. Globally, 23 billion toothbrushes and their wrappings are discarded every year, and in the U.S. alone, the number of discarded toothbrushes is enough to circle the earth four times. Toothpaste tubes are also not recyclable, as they typically contain an interior layer of aluminum. Toothpaste itself contains harmful plastic microbeads, and 8 trillion microbeads are released into aquatic environments daily from the U.S., enough to cover over 300 tennis courts. In addition to consumer waste, dental offices produce unnecessary plastic waste, including patient bibs, headrest covers, syringes, pouches, suction tips, saliva ejectors, and "goodie" bags in which products are sent home.

Mercury

Mercury is a major component of dental amalgam. When amalgam is placed and removed, mercury waste is generated. Patient chairs can generate up to 4.5 grams of mercury daily, and

the improper disposal of the mercury is a major concern. Through landfill, wastewater, or incineration disposal methods, mercury can pollute the land, water, and air, respectively. Indeed, in some U.S. wastewater treatment facilities, dental wastewater streams contribute up to 70% of the total daily mercury load.

Lead and Silver

In the dental office, lead and silver products are found in x-ray products such as films, solutions, and aprons. For example, x-ray films contain up to 77% lead by weight. Similar to mercury, the improper disposal of these products poses an enormous threat to the environment.

Recommendations:

Dental waste is a critical global issue, and oral health professionals must urgently take steps to reduce it. Here we propose three major categories of recommendations: waste prevention, proper waste handling, and educational reforms.

Waste Prevention

Every dental office should conduct a dental waste environmental audit. These audits will allow offices to estimate total waste, create waste reduction goals, and monitor progress. Audit steps may include weighing the total amount of waste produced in a day, domestic and medical, sorting this waste into different categories and weighing it, and calculating the proportion of each waste category. Oral health professionals can consult the Green Healthcare Programme for further details.

To reduce plastic waste, offices can purchase alternatives to common plastic products, such as biodegradable cups, biodegradable toothbrushes, microbead-free toothpaste, washable cloth patient bibs, washable cloth headrest covers, and sterilizable metal suction tips. For products such as plastic masks and gloves that must be disposable for sanitary reasons, offices should buy these items in bulk and request that supply companies combine orders to reduce packaging. Through these steps, dental offices can minimize environmental impact, as well as supply and waste management costs. To reduce mercury waste, offices should consider mercury-free restorative materials, such as resin composites and glass ionomer, as well as atraumatic restorative treatment techniques. To reduce lead and silver waste, offices should conisder digital imaging, as digital images have been found equal in quality to x-ray films.

Waste Handling

For mercury, lead, and silver waste, improper disposal is a primary concern. Proper disposal techniques must be implemented to prevent this waste from entering the environment through landfills, wastewater, and incineration. Dental offices should collect this waste and ship it to recycling companies or manufacturers/distributors with the means to properly handle it.

To reduce plastic waste, recycling is an effective technique. To encourage dental staff and patients to recycle, offices should install recycling bins in commonly-visited locations, including

in the patient waiting room, at the receptionist desk, and near patient chairs. If plastic and other recyclable waste (paper, cardboard, glass) are recycled, not only will there be a positive environmental impact, but there will be an immediate reduction in waste management costs.

Educational Reforms

Educational reforms must be initiated. Dental schools should increase environment-focused curricula that detail out the negative impacts of dental waste and ways to reduce it. For already-licensed dentists, policymakers can disseminate proper waste disposal guidelines, and dental organizations can offer healthcare conferences centered around waste. Environmental reforms must extend outside of dental schools as well. In their offices, oral health professionals should actively promote environmentally-friendly dentistry. For example, they can encourage their patients to purchase biodegradable dental products or participate in toothbrush recycling programs. At the commercial and industrial level, the global community can hold companies accountable to create biodegradable and recyclable products with minimal packaging.

Conclusion:

The international dental community must commit to preventing and reducing dental waste. Any adverse environmental impact resulting from our professional activities disproportionately affects the most vulnerable populations globally. This is about equity. Thoughtful waste management is no longer just a nice idea, but a moral and ethical imperative to protect the environment and every organism living in it.

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