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Environmentally Friendly Disposal of Pharmaceuticals in the Hospital Setting



Kate Sobanik BSN, RN, MOT, OTR/L

Background

The Environmental Protection Agency and Department of Drug Enforcement have regulations on the safe handling of narcotics as well as guidelines for environmental sustainability with the disposal of all pharmaceuticals. Federal, state and local regulations can vary but hospitals are required to dispose of pharmaceuticals in specific ways to prevent injury to the environment and living organisms.

Disposing of antibiotics down the drain leads to the pollution of drinking water and consequently the development of antibiotic resistance and super bugs. Unfortunately, disposal of medications down the drain is a common practice in many hospitals due to lack of education of best disposal practices or lack of appropriate disposal receptacles. Incineration of drugs can release harmful fumes into the atmosphere, and encapsulating medications takes up large amounts of land and is therefore not sustainable.

Special containers are provided in every medication room at SMHC for the disposal of narcotics to prevent trafficking of controlled substances. An additional bin is also supplied that is black with a yellow lid for the proper disposal of hazardous drugs. Many staff are unfamiliar with this hazardous drug bin and will pour medications down the drain or put them in the trash. A one-page sign to direct on proper disposal methods hangs nearby the bin but this can be easily overlooked in busy situations. A glance into the bin displays papers and other items that are not disposed of correctly, indicating misunderstanding on the purpose of the bin.

Problem

In acute hospital settings how are pharmaceuticals disposed of in environmentally safe ways?

Review of Literature

How should responsibility of proper medication disposal be shared?

Purpose: The disposal of pharmaceutical waste is both financially and environmentally damaging when done incorrectly. The authors wanted to identify what causes incorrect disposal of drugs to occur.

Population: Multiple acute care hospitals in the USA.

Methods: This is a meta-analysis of multiple journal articles.

Results: This article exposes a gap in stakeholder knowledge as the cause of incorrect disposal of unneeded drugs.

Conclusions: The authors identify acute-care pharmacists as ideally positioned to educate on the proper disposal of pharmaceuticals due to their extensive knowledge on the matter.

Article Level/Quality of Evidence: Meta-analysis, level 1.

Pharmaceutical waste management system – Are the current techniques sustainable, eco-friendly, and circular? A review

Purpose: To compare the various methods of pharmaceutical waste (PW) disposal globally and identify the best methods for the preservation of the environment and health of living organisms.

Population: Global review of producers of pharmaceutical waste, both small and large scale.

Methods: A comprehensive review of peer reviewed qualitative and quantitative articles published in English with no start date specified and an end publication December of 2022 was completed. 77 studies met inclusion criteria and were analyzed.

Results: There are pros and cons of various methods of PW disposal. Methods like incineration are sustainable but can release harmful fumes if certain hazardous PW are incinerated. Disposal personnel need to be mindful of the disposal requirements of individual PW.

Conclusions: It was concluded that the WHO identifies that incineration is a sustainable method for the disposal of solid and semi-solid wastes. Encapsulation, and inertization, Promotion of medicine take back programs, extended producer responsibility, and further research into methods to decrease PW impact is needed going forward.

Article Level/Quality of Evidence: Meta-analysis, level 1.

Medication disposal practices: Increasing patient and clinician education on safe methods

Purpose: The purpose of this study is to provide a summary on pharmaceutical waste contamination in the water supply, investigate statistics on the improper methods of PW disposal, and recommend the current proper methods of disposal.

Population: PW take back events, outpatient clinics, hospice houses, households, LTC/SNF facilities, and pharmacist interview.

Methods: Twelve peer reviewed articles were analyzed.

Results: Wastewater has large amounts of PW in it leading to damage to the environment, life, and resources. Lack of knowledge on proper disposal of PW is the leading cause of wastewater pollution.

Conclusions: Education to caregivers and patients is key in preventing the pollution of wastewater with pharmaceutical wastes.

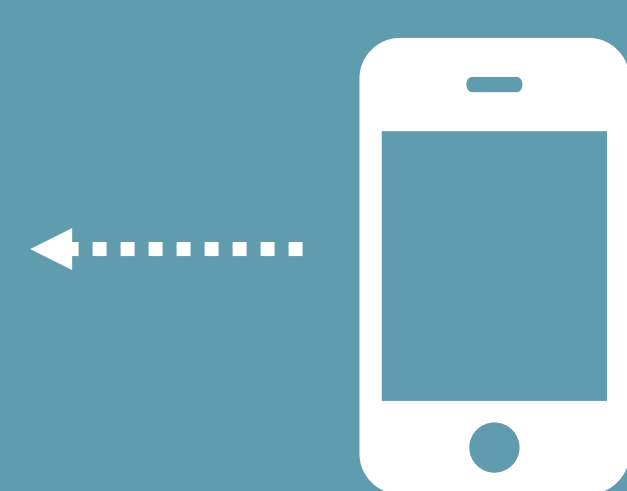
Article Level/Quality of Evidence: Meta-analysis, level 1.

Future Implications

Drug stewardship is the job of everyone in the hospital, from environmental management staff to direct patient caregivers. Steps can be taken to improve the process of pharmaceutical disposal. Education on proper disposal was identified by Karim-Nejad and Pangilinan and Kinrys et al., as a key facet of reducing environmental pollution. Pharmacists are ideally positioned to provide education on the correct disposal of various drugs. With the participation of all staff environmental sustainability and protection of our finite natural resources can be achieved. SMHC staff could benefit from education on the disposal of hazardous PW and what qualifies a drug to be disposed of in the hazardous PW bin in the medication rooms on units.

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