



Availability of Prescription Opioid Disposal Bins at United States Children's Hospitals

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This descriptive study examined availability of prescription opioid disposal bins at US children's hospitals and assessed pharmacy-provided information on safe disposal. Only 44.2% reported a bin on site and among those without, advice varied. These findings highlight the need for improved prescription opioid disposal education and infrastructure at children's hospitals. (*J Pediatr* 2024;14:200133).

The opioid epidemic continues to impact families in the US, with drug overdose now the third leading cause of death in children.¹ Notably, up to 70% of prescribed opioid pills for patients undergoing surgery may be left unused.² Among adolescents reporting nonmedical prescription opioid use, the primary source is typically leftover opioid pills from their own prescription or that of a friend or family member.³ Thus, access to safe prescription opioid disposal is crucial to minimize harm from unused opioid pills in the home or community. Some pharmacies and health care facilities provide Drug Enforcement Agency (DEA)-approved prescription opioid disposal bins to accommodate safe disposal practices. Notably, DEA approval is federally mandated and independent of state requirements.⁴ Patients and families can access the DEA website and use their zip code to find a nearby DEA-registered opioid disposal bin. In a recent ecological study, opioid disposal bins were found to be effective in removing controlled substances from community settings.⁵ The objective of this present study was to determine how many US children's hospitals provide an opioid disposal bin on site and what information is provided to patients regarding safe prescription opioid disposal.

Methods

Overall, 52 Children's Hospital Association (CHA)-member hospitals were identified. The hospital zip code for each facility was utilized to query the DEA search function to determine if a DEA-registered prescription opioid disposal bin was indicated as present according to their website. Additionally, the hospital's outpatient pharmacy was contacted by phone to confirm the presence or absence of a bin. None of the hospitals included had greater than one affiliated main outpatient pharmacy. The types of outpatient pharmacies in this study included: the children's hos-

pital pharmacy, and if that was not available—either the main hospital pharmacy or an affiliated commercial pharmacy. The goal was to include the main outpatient pharmacy that pediatric patients utilized upon discharge from the hospital. To minimize bias in response, the pharmacy staff were only informed that data was being collected for research purposes if they inquired about who was calling. If the outpatient pharmacy staff indicated the absence of a disposal bin, they were asked¹ where the nearest disposal bin was located and² for alternative safe opioid disposal options. Data were collected in December of 2023. Of note, health care providers were not contacted for the purposes of this present study.

Results

According to the DEA website, 18 (34.6%) CHA hospitals had a prescription opioid disposal bin on campus (Figure). Of the 34 hospitals that did not have a DEA-registered opioid disposal bin per the DEA website, staff at 7 (13.6%) hospitals reported an opioid disposal bin. All staff providing alternative safe opioid disposal advice provided information consistent with Food and Drug Administration (FDA) guidelines but lacked consistent messaging between sites (Table). Of 29 pharmacies that did not have a disposal bin present, only 6 (20.7%) pharmacies provided information regarding the specific location of the nearest disposal bin. Therefore, 23 (79.3%) pharmacies did not provide information regarding the specific location of the nearest disposal bin. Only 2 pharmacies recommended checking the DEA website to find additional disposal bins. Finally, a DEA-registered

CHA	Children's Hospital Association
DEA	Drug Enforcement Agency
FDA	Food and Drug Administration

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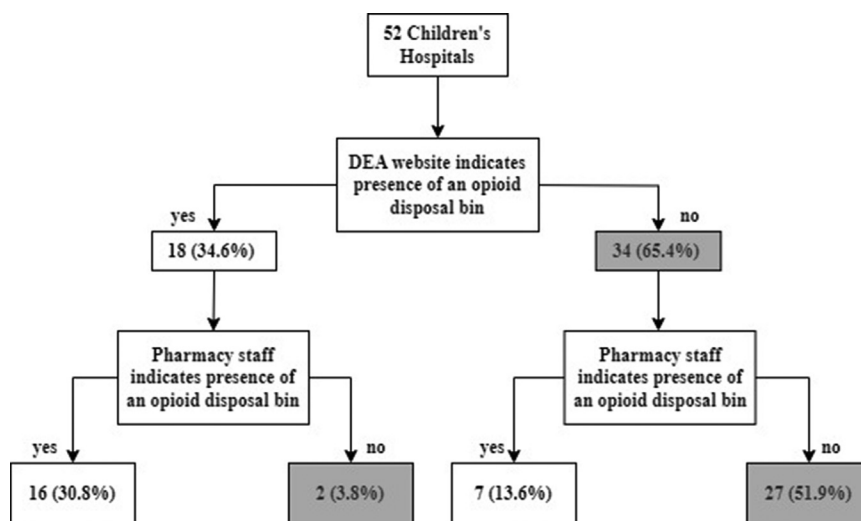


Figure. Study flow chart outlining prescription opioid disposal bin information between the DEA website and direct pharmacy calls.

disposal bin was registered within every zip code evaluated for this study.

Discussion

Prescription opioid availability within a child's home poses a serious risk for accidental poisoning in young children and could serve as a source for diversion for nonmedical use among family members or friends.³ Currently, there is a paucity of literature examining availability of prescription opioid disposal bins within children's and adult hospitals. A report released by the US Government Accountability Office revealed that in 2017 only 3% of pharmacies and other eligible entities elected to participate as DEA collectors for the disposal of unused prescription drugs.⁶ Our study highlights that most US children's hospitals providing opioids to patients and families did not have an opioid disposal bin on campus. In addition, pharmacy personnel provided inconsistent information regarding safe prescription opioid

disposal. It is important to note that for all CHA hospitals that did not have an opioid disposal bin on campus, there was a nearby DEA-registered opioid disposal bin within the same zip code as the hospital. However, for most hospitals without an opioid disposal bin on site, pharmacy staff was not aware of the presence or location of the nearby disposal bin. While the results of this study may underreport the true availability of opioid disposal bins within the community surrounding the children's hospitals, it underscores a general lack of accessibility and knowledge of safe opioid disposal options provided to families.

Expanding principles of opioid stewardship within institutions caring for children requires education and infrastructure to support safe prescription opioid disposal.⁷ To increase accessibility to safe opioid disposal, the FDA recently announced a future mandate that companies producing prescription opioids for outpatient settings must provide prepaid mail-back envelopes and education materials to outpatient pharmacies.⁸ Hospitals and pharmacies that prescribe opioids are thus encouraged to utilize this mandate to promote safe prescription opioid disposal in their communities. The FDA anticipates that approval and implementation of this mandate will occur sometime in 2024, and therefore, at the time of study interviews, the mandate had not taken effect. Health care entities prescribing opioids and contributing to the influx of opioids into the community and child's home play an important role in delivering accurate education and providing a convenient method for disposing of excess opioid pills. Notably, a study examining overprescription of opioids and disposal practices among adults undergoing head and neck surgery highlighted that only 8% of their cohort returned their excess opioid pills to the pharmacy.⁹ Therefore, installation of opioid disposal bins needs to be paired with education and marketing aligned between providers, pharmacists, patients, and families to ensure that these bins are being utilized. This study highlights

Table. Narrative responses of pharmacy staff for safe prescription opioid disposal, corroborated by the FDA

Responses	*n = 29 (100%)
Disposal bin at another pharmacy	16 (55.2)
Take extra pills to a police station	13 (44.8)
Take extra pills to the fire station	7 (24.1)
Disposal "packets" (sold by the pharmacy)	4 (13.8)
Mix with coffee grounds	3 (10.3)
Dispose in cat litter	3 (10.3)
Take back program	2 (6.9)
Mix with rubbing alcohol and dispose	1 (3.4)

NB: Some pharmacies provided multiple pieces of advice which were counted multiple times, therefore percentages will not equal to 100%. FDA website indicates that it is acceptable to mix opioids with an "unappealing substance."

*n = 28/29 pharmacies that did not have a disposal bin on sight provided advice for alternative opioid disposal strategies; percentages are calculated out of the 29 pharmacies that were asked.

the need for national expansion of education and infrastructure to support safe prescription opioid disposal for children cared for at US children's hospitals.

Several limitations to this study exist. First, this present study focused exclusively on outpatient pharmacies affiliated with children's hospitals and did not specifically assess disposal options or bin availability in the broader community or at other facilities. The evaluation was limited to pharmacy staff and excluded other health care providers. Second, the job title of pharmacy staff who answered the phone were not recorded (ie, clerk, pharmacy tech, pharmacist, etc.), which may have impacted the responses recorded for the study. Additionally, this present study did not include parent or caregiver surveys to assess actual utilization of disposal bins or explore motivational factors for utilization of a disposal bin. However, patient and caregiver reported factors associated with safe prescription opioid disposal have been previously published by our group, underscoring patient age and prescription size as drivers of safe opioid disposal practices.¹⁰ Future quality improvement initiatives aimed at expanding opioid stewardship should consider engaging pharmacists, hospital providers, and families to ensure that uniform messaging regarding safe opioid disposal is used. ■

CRedit authorship contribution statement

Rabab M. Barq: Writing – review & editing, Writing – original draft, Validation, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Laura Houshmand:** Writing – review & editing, Methodology, Investigation, Conceptualization. **Olivia A. Keane:** Writing – review & editing, Methodology, Conceptualization. **Shadassa Ourshalimian:** Writing – review & editing, Software, Project administration, Methodology, Investigation, Conceptualization. **Lorraine I. Kelley-Quon:** Writing – review & editing, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Data curation, Conceptualization.

Declaration of Competing Interest

The authors declare no conflicts of interest.

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