

Accidental Drug Overdose Deaths in Rhode Island: January 1, 2016–July 31, 2020

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INTRODUCTION

Over the past 20 years, overdose deaths have been increasing nationally and particularly in Rhode Island.^{1,2} To address this epidemic, the Rhode Island Department of Health (RIDOH), in collaboration with state and community partners, has implemented a comprehensive portfolio of interventions to prevent drug-related harms in Rhode Island. Presumably due to these efforts, from 2016 to 2019, Rhode Island overdose deaths began to decline. However, due to increasing rates of overdose deaths in 2020, Rhode Island is on track to have the highest number of accidental overdose deaths ever recorded in the Ocean State.

Causes for the rise of overdose deaths in 2020 are currently unknown. Although factors related to the COVID-19 pandemic likely contribute, deaths began to increase in December 2019, months before the first case of COVID-19 in Rhode Island. In order to successfully address the worsening overdose crisis, it is crucial to identify and understand factors contributing to rising deaths, how 2020 fatal overdoses may be different from fatal overdoses in prior years, and changes in affected populations over time. This information can be used to develop more informed and targeted interventions to prevent future overdose deaths.

METHODS

We analyzed data on accidental overdose deaths from the Rhode Island Office of the State Medical Examiners from January 1, 2016 to July 31, 2020. Rhode Island Medical Examiners determine an individual's cause and manner of death based on an autopsy, toxicology panels, scene investigation notes, and medical history.

Drugs contributing to the cause of death were extracted from the cause of death fields and categorized into a drug class variable. Drug class categories were not mutually exclusive, and individuals who were not positive for any of the six pre-selected drug classes were categorized as other. All categories with small cell counts (<5) were suppressed. Demographic and overdose characteristics (location, drug class, drug type) were compared by year of death using chi-square tests. Additionally, deaths occurring in 2020 were

compared pre/post COVID-19 (January–March 2020 to April–June 2020) using chi-square tests. When comparing overdose deaths over time, data were limited to the first 7 months of each year to improve comparability. All analyses were performed in SAS (Version 9.4).

FINDINGS

Between January 1, 2016 and July 31, 2020, 1,515 individuals died of an accidental drug overdose in Rhode Island. Overall, most accidental overdose deaths occurred in males (73.5%), non-Hispanic whites (80.5%), and individuals 25–54 years of age (73.6%; **Table 1**). Additionally, the location of overdose exhibited little variation over time with 69.6% of individuals passing in private locations, 4.2% in public areas, 4.4% in semi-public areas, and 21.9% with location unknown.

When looking at drug classes that contributed to the cause of death, opioids (86.3%), cocaine (43.8%), and alcohol (30.4%) were the most common. More than 75% of the opioid-related deaths involved fentanyl (67.4% overall, 78.1% among opioid-related deaths). When comparing fatal overdoses over time, the proportion involving fentanyl (2016: 58.6%; 2020: 76%) and cocaine (2016: 38.4%; 2020: 49.4%) are increasing, while the proportion involving benzodiazepines has declined (2016: 23.2%; 2020: 11.2%; **Table 1**). From 2016 to 2020, the proportion of overdoses that involved amphetamines more than doubled (2016: 3.0%; 2020: 6.9%). Most fatal overdoses were due to illicit drugs alone (64.2%), with 23.0% of fatal overdoses involving illicit and prescription medications, and 12.8% involving exclusively prescription medications. From 2016 to 2020, the proportion of fatal overdoses involving exclusively illicit drugs increased from 63.7% to 72.1%, while the proportion involving exclusively prescription drugs decreased from 16.7% to 8.2%.

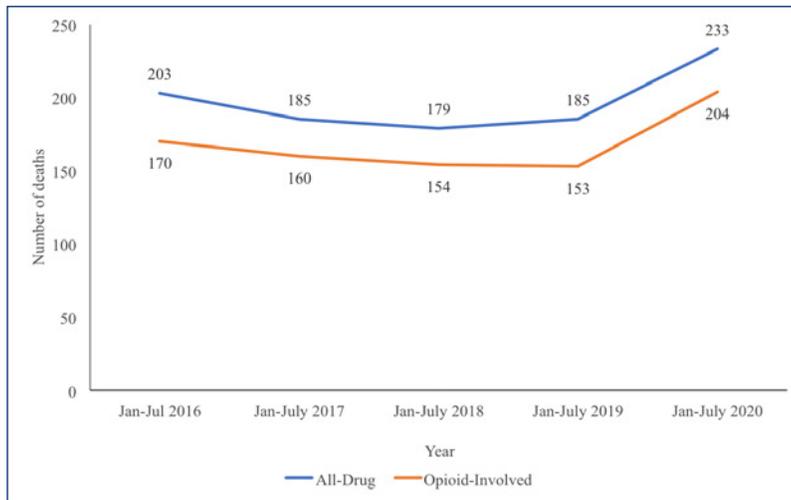
When comparing fatal overdoses occurring in January–March of 2020 to April–June of 2020, no significant differences were observed (results not shown).

Overall, fatal overdoses have increased 25.9% in January–July of 2020 when compared to the same time period in 2019, while opioid-involved fatal overdoses have increased 33.3% over the same period (**Figure 1**).

Table 1. Demographics and overdose characteristics for individuals who died of an accidental overdose in Rhode Island: January 1, 2016–July 31, 2020¹

	Overall n=1,515 n (%)	2016 n=336 n (%)	2017 n=324 n (%)	2018 n=314 n (%)	2019 n=308 n (%)	2020 ² n=233 n (%)	p-value ³
Demographic Characteristics							
Age							
0–18	<5	<5	<5	<5	<5	<5	0.0416
18–24	85 (5.6)	24 (7.1)	18 (5.6)	16 (5.1)	18 (5.8)	9 (3.9)	
25–34	381 (25.2)	96 (28.6)	84 (25.9)	69 (22.0)	78 (25.3)	54 (23.2)	
35–44	379 (25.0)	64 (19.1)	83 (25.6)	92 (29.3)	82 (26.6)	58 (24.9)	
45–54	355 (23.4)	97 (28.9)	77 (23.8)	59 (18.8)	65 (21.1)	57 (24.5)	
55–64	261 (17.2)	49 (14.6)	49 (15.1)	60 (19.1)	55 (17.9)	48 (20.6)	
65+	53 (3.5)	6 (1.8)	12 (3.7)	18 (5.7)	10 (3.3)	7 (3.0)	
Sex							
Female	401 (26.5)	91 (27.1)	106 (32.7)	66 (21.0)	84 (27.3)	54 (23.2)	0.0125
Male	1,114 (73.5)	245 (72.9)	218 (67.3)	248 (79.0)	224 (72.7)	179 (76.8)	
Race/Ethnicity							
Non-Hispanic White	1,219 (80.5)	292 (86.9)	257 (79.3)	253 (80.6)	234 (76.0)	183 (78.5)	0.1655
Non-Hispanic Black	111 (7.3)	13 (3.9)	27 (8.3)	22 (7.0)	30 (9.7)	19 (8.2)	
Hispanic	169 (11.2)	28 (8.3)	37 (11.4)	37 (11.8)	40 (13.0)	27 (11.6)	
Other	16 (1.1)	<5	<5	<5	<5	<5	
Overdose Characteristics							
Drug Type							
Illicit	972 (64.2)	214 (63.7)	180 (55.6)	213 (67.8)	197 (64.0)	168 (72.1)	<0.0001
Illicit and Prescription	349 (23.0)	66 (19.6)	86 (26.5)	66 (21.0)	85 (27.6)	46 (19.7)	
Prescription	194 (12.8)	56 (16.7)	58 (17.9)	35 (11.2)	26 (8.4)	19 (8.2)	
Drug Class							
Opioid	1,308 (86.3)	290 (86.3)	286 (88.3)	272 (86.6)	256 (83.1)	204 (87.6)	0.3993
Fentanyl	1,021 (67.4)	197 (58.6)	207 (63.9)	226 (72.0)	214 (69.5)	177 (76.0)	<0.0001
Cocaine	663 (43.8)	129 (38.4)	119 (36.7)	143 (45.5)	157 (51.0)	115 (49.4)	0.0004
Alcohol	461 (30.4)	85 (25.3)	88 (27.2)	102 (32.5)	106 (34.4)	80 (34.3)	0.0337
Benzodiazepine	267 (17.6)	78 (23.2)	78 (24.1)	44 (14.0)	41 (13.3)	26 (11.2)	<0.0001
Amphetamines	74 (4.9)	10 (3.0)	14 (4.3)	13 (4.1)	21(6.8)	16 (6.9)	0.1040
Other ⁴	21 (1.4)	6 (1.8)	6 (1.9)	7 (2.2)	<5	<5	0.1339
Location of overdose⁵							
Private	1,054 (69.6)	237 (70.5)	210 (64.8)	228 (72.6)	213 (69.2)	166 (71.2)	0.2190
Public	64 (4.2)	16 (4.8)	10 (3.1)	16 (5.1)	12 (3.9)	10 (4.3)	
Semi-private	66 (4.4)	9 (2.7)	17 (5.3)	15 (4.8)	18 (5.8)	7 (3.0)	
Unknown/Missing	331 (21.9)	74 (22.0)	87 (26.9)	55 (17.5)	65 (21.1)	50 (21.5)	

¹ Source: Office of the State Medical Examiners.² January–July.³ Chi-square test.⁴ Individuals who had none of the pre-selected drug categories contributing to their cause of death were classified as other.⁵ Private included apartment or residence, semi-public included hotel, motel, shelter, nursing home, hospital, prison, group home, assisted living, or treatment facility, while public included theater, concert, show, office, park, school, bar/restaurant, roadway, or cemetery.

Figure 1. Fatal Overdoses in Rhode Island, January-July 2016-2020¹

DISCUSSION

Consistent with national trends, Rhode Island has experienced an increase in accidental overdose fatalities in 2020 when compared to prior years.³ Individuals who died of a fatal overdose in 2020 appear to be similar in demographic characteristics and overdose location when compared to prior years. Notably, we have seen an increase in fatal overdoses which involved illicit drugs, fentanyl, cocaine, and alcohol over time; however, 2020 is not unique in this regard.

Unfortunately, these data do not explain the increase in overdose deaths in Rhode Island that began in December of 2019. Though we are not sure why the number of overdose deaths increased, this could be due to a variety of factors, including increased potency of illicit drugs, increased polysubstance use, or factors exacerbated by COVID-19, such as reduced access to treatment, harm-reduction, and recovery support services. Additionally, it is possible that the COVID-19 pandemic simultaneously exacerbated existing stressors and isolation, which might lead to increased drug use and reduced individual's willingness to use drugs with others and/or call emergency medical services for fear of exposure.⁴

In this study, the breakdown of overdose deaths exhibited a similar demographic profile by age, sex, race/ethnicity, and overdose location to what is observed in national trends.^{5,6} When comparing substances that contributed to the cause of death, Rhode Island overdose deaths had a slightly higher proportion of cases in which illicit (64.2% vs 58.7%) or a combination of illicit and prescription medications were used (23.0% vs 18.5%) when compared to national numbers.⁶ By substance, opioids (86.3% vs 81.5%), fentanyl (67.4% vs 61.5%) and cocaine (43.8% vs 28.3%) were slightly higher in Rhode Island than observed nationally.⁵ While our analysis shows an increase in overall deaths in 2020, it does not appear that any demographic group is disproportionately impacted when compared to prior years.

The Drug Overdose Prevention Program at RIDOH, in collaboration with sister state agencies, community-based organizations, and the Drug Overdose Surveillance Program, continues to implement various interventions aimed at preventing drug-related harm in Rhode Island. On July 28, 2020 RIDOH convened a meeting with key stakeholders and community partners in overdose hotspots to discuss how to address rising overdose deaths during COVID-19. Key strategies identified included expanding and improving coordination of targeted street outreach efforts to vulnerable populations in overdose hotspots and the establishment of overdose prevention centers. Other strategies currently supported by RIDOH include: increasing availability of harm-reduction services such as naloxone and fentanyl test strips; expansion of office-based medication for opioid use disorder; establishment of the Buprenorphine

Hotline and BH Link to connect individuals to treatment 24/7; provision of buprenorphine for treatment initiation in emergency departments (EDs); embedding peer recovery specialists in the ED to connect patients to treatment, recovery and basic needs; expanding use of peer recovery and community health worker services; addressing social determinants of substance use and recovery; decriminalization of buprenorphine; one-on-one, targeted prescriber education on responsible prescribing, including the co-prescription of naloxone, and provider reimbursement for the use of non-opioid pain management strategies; supporting overdose hotspots to develop, implement, and evaluate community-level, data-driven needs assessments and overdose-prevention plans; using overdose data to develop messaging for communications campaigns to reach at-risk populations; and developing the Rhode Island Heroin Opioid Prevention Effort (HOPE) Initiative where law enforcement officers partner with peer recovery specialists to reach out to individuals after an overdose to connect them with treatment and recovery resources.

To further understand who is contributing to the increase in overdose deaths, future analyses should utilize other data sources such as the Rhode Island Prescription Drug Monitoring Program and Behavioral Healthcare, Developmental Disabilities and Hospitals treatment data to analyze buprenorphine and methadone treatment history for this population. Though we were unable to determine the prevalence of polysubstance use with these data, information from the State Unintentional Overdose Death Reporting System (SUDORS) dataset should be used in future analyses to provide insight into its role in overdose deaths in Rhode Island. Additionally, this dataset could be used to ascertain if individuals were more likely to use alone at the time of death when compared to prior years.

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