

## Preventable Death: Accidental Drug Overdose in Rhode Island

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### RHODE ISLAND IS IN THE MIDST OF A DRUG POISONING EPIDEMIC.

Since 2005, the number of drug poisoning deaths has exceeded the number of motor vehicle accidents, falls, firearms, and fire death among adults <85 years of age.<sup>1</sup> However, Rhode Island is not alone: 20 states now report similar statistics where drug poisonings dominate adult injury deaths.<sup>1</sup> National survey data find that Rhode Island has the nation's highest rate of past month illicit drug use<sup>2</sup>, and nonmedical use of prescription pain pills ranks 3<sup>rd</sup> in the country, behind Oklahoma and Oregon.<sup>3</sup>

The mechanism of death from overdose is respiratory depression, which deprives the victim's brain of oxygen, causing death over a period of one to three hours.<sup>4</sup> Proximal causal mechanisms and risk factors for accidental overdose include: (a) change in tolerance (i.e. due to voluntary or forced abstinence such as hospitalization, imprisonment, detoxification, self-imposed abstinence); (b) mixing opioids with other substances, especially central nervous system depressants like alcohol or benzodiazepines which worsen respiratory depression; (c) presence of illness, especially diseases that may affect drug metabolism such as hepatitis C or HIV, and breathing conditions like pneumonia or sleep apnea; and (d) using opioids alone, in the absence of others who may recognize a victim's symptoms and act to intervene.

Like all injuries, the majority of drug poisoning deaths are preventable. This surveillance brief provides an overview of state-level statistics describing the extent and nature of the drug poisoning epidemic in Rhode Island and will conclude with a summary of the local prevention initiatives being undertaken or considered.

### METHODS

This report draws from data collected from 2005 to 2009 by the Rhode Island Department of Health (HEALTH) in its annual census of emergency department (ED) visits and hospitalizations, as well as from the Drug Abuse Warning Network (DAWN) medical examiner report, in which Rhode Island participated for the year 2008.<sup>5</sup> Unintentional poisonings—or overdoses—were identified using the following ICD-9 CM Codes: 960-979 and E Codes: E860-E869, E980. We employ a surveillance-oriented definition of drug overdose, which includes events

of unintentional and undetermined intent. Here we report, but do not focus on, intentional poisoning events—or suicides by poisonings—as their etiology is both well described in the literature (c.f.,<sup>6</sup>) and markedly different from poisonings that are accidental in manner. Summary data are reported (count, proportion) for all poisonings. Demographics of the injury victims (age, sex, and race/ethnicity) are reported for unintentional/undetermined poisoning ED visits and hospitalizations.

### RESULTS

From 2005 to 2009, there were 19,733 ED visits for drug poisonings. Of these 10,404 (52.7%) were unintentional intent, another 2,047 (10.4%) were undetermined intents, and the remainder were determined to be either self-inflicted (i.e., intentional 36.6%, n=7,216) or due to assault or legal intervention (less than 1%, n=65).

The number and proportion of poison visits of unintentional/undetermined intents remained constant over the 2005-2009 time period (Figure 1). With unintentional visits hovering

**Table 1: Unintentional and undetermined poisoning emergency department visits and hospitalization discharges, 2005-2009, Rhode Island**

		Emergency Department Visits		Hospitalization Discharges	
		#	%	#	%
RACE	White	9735	78.2	2109	83.1
	Black	944	7.6	169	6.7
	American Indian*	21	0.2	3	0.1
	Asian	119	1.0	20	0.8
	Hispanic	1192	9.6	162	6.4
	Other	153	1.2	31	1.2
	Unknown	280	2.3	44	1.7
TOTAL		12444	100.0	2538	100.0
SEX	Male	6335	50.9	1322	52.1
	Female	6111	49.1	1216	47.9
TOTAL		12446	1.0	2538	1.0
AGE GROUP	<15	2742	22.0	194	7.6
	15-24	1999	16.1	285	11.2
	25-34	1718	13.8	259	10.2
	35-44	1891	15.2	410	16.2
	45-54	1849	14.9	523	20.6
	55-64	1026	8.2	325	12.8
	65+	1221	9.8	542	21.4
TOTAL		12446	100	2538	100

\*No data available for American Indian undetermined discharges.

Note, denominators may represent multiple visits by the same individual. Total counts may differ slightly based on availability of demographic data.

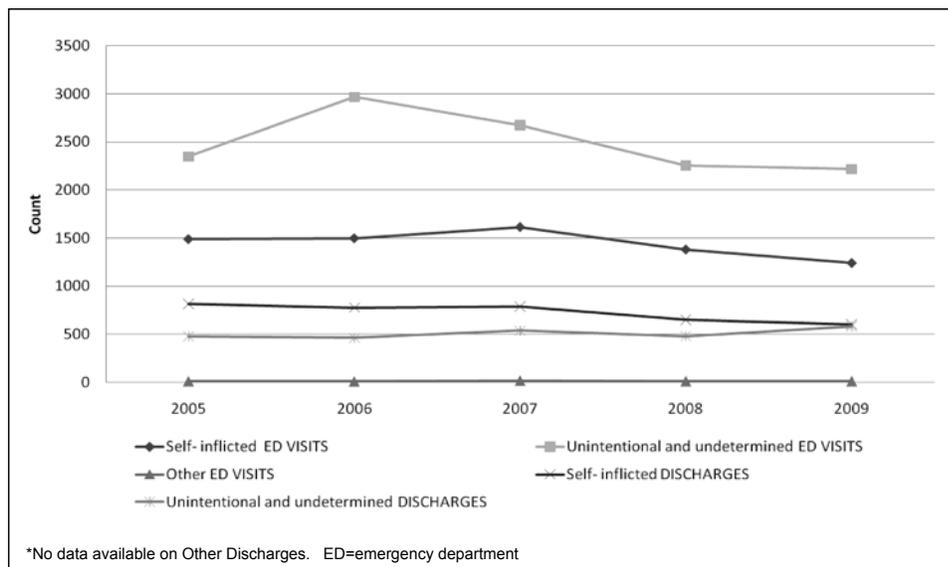


Figure 1. ED Visits and Hospital Discharges by Intent of Admission by Year, Rhode Island, 2005–2009.\*

around 2,000 per year and undetermined around 375 per year, together ED visits for accidental overdose comprise approximately 63% of all ED visits for poisonings. In contrast, during this same time period, hospitalizations for poisonings were more frequently for self-inflicted poisonings (58.8%, n=3,629) than for unintentional/undetermined poisonings (41%, n=2,538).

There were 193 drug-related deaths in Rhode Island in 2008; the vast majority of which were accidental overdoses. Accidental overdoses tended to involve opioids such as prescription opioid analgesics or heroin. For the year 2008, the ratio of ED accidental poisoning visits to fatal overdoses was 12:1. This ratio stands in sharp contrast to ED visits and deaths for intentional poisoning injuries. The ratio of intentional poisoning ED visits to deaths was 41:1. The very high proportion of deaths resulting from accidental poisoning-when compared to self-inflicted poisoning injuries-reflects the extreme lethality of overdose. In 2008, there were nearly twice as many accidental overdose events admitted to the ED (n=2251) than intentional poisoning events admitted to the ED (n=1380) but there were more than five times the number of deaths due to accidental overdose than due to intentional poisoning (193 vs. 34).

Table 1 presents the demographics of victims admitted to the ED or hospitalized for accidental overdose. The predominant demographic of the accidental overdose victim presenting to the ED is that of a White male or female. Similar proportions of men and women appear to present to the ED for care for accidental overdose events and Whites represent more than three-quarters of unintentional poison visits. A notable minority of victims are Hispanic (9.6%) or Black (7.6%). Hospitalizations for accidental overdose events reflect largely comparable demographic patterns. Age distinguishes nonfatal from fatal overdose victims. Thirty-eight percent (38%) of ED visits for accidental overdose events are among those under age 25; another 43.4% are age 25-54, with the remaining 18% aged 55 or older. In contrast, decedents of accidental overdose are predominantly aged 35-54.<sup>5</sup> The difference in age may reflect lack of comorbidities, less severe addiction, a more social orientation of drug use, or some

other explanation differentiating younger from older users.

## DISCUSSION

State-level data indicate consistently high counts of ED visits and hospitalizations due to accidental overdose. Demographically, these poor health outcomes afflict adults at the prime of their life, causing premature death.

Injury epidemiology has expanded public health science by conceptualizing injuries as preventable and controllable. Over the past 50 years, concerted efforts by industry, government, citizens action groups, and individuals have made driving a car a much safer, more common, and

more enjoyable experience. Today, the reduction of motor vehicle accident fatalities is regarded as one of the great 20<sup>th</sup> Century public health accomplishments. Currently we are at a similar crossroads of epidemic overdose deaths, with a complicated and complex set of factors and competing health interests.

In Rhode Island, recent efforts may provide some promise in changing the course of this epidemic. Because national and local statistics indicate that opioid analgesics are driving the increase in overdose deaths, many approaches focus on safer prescribing and altering the accessibility of medications. HEALTH maintains a **prescription monitoring program (PMP)** containing information on patients prescribed controlled substances such as opioid analgesics. Data are accessible to registered health professionals and law enforcement only. Health professionals may also use the report as an opportunity to discuss with the patient how to reduce the risk of adverse events, such as overdose, and other prevention education such as proper medication storage and disposal. By early 2012, the PMP will offer real-time electronic access. HEALTH is also considering requiring two hours of continuing medical education for controlled substance license holders. In the community, the Miriam Hospital's **PONI (Preventing Overdose and Naloxone Intervention)** program provides training in overdose recognition and naloxone (Narcan), the standard antidote for reversing opioid overdoses, to

**Table 2: PONI overdose prevention and response training components**

### Training Component

- Identification of an opioid overdose
- Checking for response and breathing
- Calling 911 with the report that the victim is not breathing
- Conducting rescue breathing
- Administering naloxone (Narcan) and monitoring victim's response

people who may experience or witness an overdose.<sup>7</sup> PONI curriculum components are given in Table 2. Over 150 people in the community and, due to their extreme fatal overdose risk,<sup>8</sup> over 1,500 prisoners, have been trained through PONI. The statistics presented in this surveillance report suggest that health-care institutions may also be important targets for expanding prevention interventions. Finally, two current research studies involve overdose prevention. In a Centers for Disease Control and Prevention-funded study, Rhode Island Hospital researchers are exploring how PMPs can reduce prescription opioid overdose death. At the Miriam and Rhode Island Hospitals, a National Institute on Drug Abuse-funded study will test the feasibility of providing a prison-specific overdose prevention and response video and prescribed naloxone at release for prisoners.

In conclusion, accidental poisonings exact far-reaching, costly, and lethal consequences in Rhode Island. This epidemic rages unabated, and will continue to grow absent a concerted, comprehensive public health response. Preventive measures are needed and existing, effective interventions need to be scaled-up to better control the outcome of these preventable injuries. A state-wide, multiagency, and multipronged approach is indicated to effectively address Rhode Island's drug poisoning epidemic.

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## Disclosure of Financial Interests

The authors and/or spouses/significant others have no financial interests to disclose.

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