



## Poisoning Deaths Involving Opioid Analgesics in New York State, 2003 - 2012

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### Introduction

A large body of research documents prescription drug abuse as one of the most pressing public health problems facing the U.S.<sup>1,2</sup> Likewise, studies of mortality trends on the national level have shown a marked increase in deaths due to drug poisoning over the last decade with the most rapid increases being among those deaths that involve opioid analgesics.<sup>3,4</sup> Some evidence has suggested that the increase in opioid-related mortality has been most pronounced among women.<sup>5</sup> A factor that may be contributing to the increase in deaths involving opioid-analgesics is an overall increase in the prescribing of these medications in response to concern about the under treatment of pain.<sup>6</sup> Additionally, concerns have been raised about inappropriate prescribing and inadequate monitoring of patients receiving these medications.<sup>7</sup>

While deaths involving opioid analgesics appear to be increasing nationally, this paper reports the trend in poisoning deaths involving opioid analgesics in New York State over a ten year period from 2003 – 2012 and examines these trends with respect to Medicaid program participation. (Codes used to define poisoning deaths involving these medications can be found in the Methods.)

### Findings

**Deaths involving opioid analgesics in New York increased between 2003 and 2012, both in number and as a percentage of drug poisoning deaths.**

From 2003 to 2012, the number of poisoning deaths involving any drug more than doubled, from 777 deaths in 2003 to 1,950 in 2012. During the same time period, deaths involving opioid analgesics showed a more than four-fold increase, from 186 deaths in 2003 to 914 in 2012 (Figure 1, Table 1). The greatest number of opioid-related deaths, 940, occurred in 2011. Over this 10-year period, the percentage of drug poisoning deaths that involved opioid analgesics increased from 23.9% in 2003 to 46.9% in 2012, reaching a high of 53.5% in 2010 (Figure 2). Since 2006, opioid analgesic-related deaths as a percent of poisoning deaths have been lower for New York City than for the Rest of State.

**Death rates for poisonings involving opioid analgesics are highest for males, whites, those 45-64 years of age, and New York State residents outside of New York City.**

Table 1 displays crude death rates for poisonings involving opioid analgesics. Rates were consistently highest among New York State residents who are male, White, 45-64 years of age, and residing outside of New York City. Rate ratios (RR) comparing death rates from 2003 to 2012 indicate that the largest increase for opioid-involved poisonings were among those 65-84 years of age (RR=6.9), individuals in the Other race category (RR=6.5), and those residing in New York City (RR=8.9). Though the death rates

were considerably higher for males across years, there was no difference in rate of increase between males and females from 2003 to 2012.

### **Most poisoning deaths involving opioid analgesics involved more than one drug type.**

In 2012, of the 914 fatalities in New York that involved opioid analgesics, 674 (73.4%) had at least one other drug documented on the death certificate as having contributed to the death. Benzodiazepines were the most frequently involved drugs in addition to opioid analgesics (318 deaths, or 49.2% of opioid-related deaths involving at least one other drug), followed by 155 (24.0%) deaths involving cocaine (24.0%) and 114 (17.7%) involving heroin.

### **Throughout the period from 2003-2012, New York State Medicaid enrollees had higher deaths rates for poisonings involving opioid analgesics than did those not enrolled in Medicaid, and the differences increased over time.**

Figure 3 shows the trends in death rates between Medicaid enrollees and non-enrollees. Deaths per 100,000 among New York State residents not enrolled in Medicaid increased from 0.8 in 2003 to 3.14 in 2012, while among Medicaid enrollees, the rates increased from 1.48 to 8.05 over the same period. For both groups, the death rates reached their highest point in 2011 (Table 1). Rate ratios indicate a more rapid increase in opioid-involved deaths among Medicaid recipients from 2003 to 2012 (RR=5.4) as compared to those not enrolled in Medicaid (RR=3.9).

Though differing demographic composition between Medicaid and non-Medicaid populations could underlie differences in the observed death rates between the two groups, results in Table 2 appear to discount age and sex in this regard. For 2012, death rates are generally higher for Medicaid recipients across age groups, as well as sex.

### **Summary**

Though rates of opioid-related mortality in New York are lower than some reported nationally, they are consistent with national data in showing a marked increase in the last decade.<sup>3</sup> While poisoning deaths involving any drugs have generally increased, opioid analgesics have accounted for an increasing share, nearly doubling over the ten year period. Rates of deaths involving opioid analgesics are consistently higher among people ages 45-64, White, male, and outside of New York City, though the largest increases from 2003 to 2012 appear to be among those aged 65-85, in the Other racial category, and in New York City. Contrary to some reported national trends showing more rapid increases in opioid-related deaths among women, the rate of increase, as indicated by the rate ratios, is the same in New York between men and women.

Also consistent with national data is the finding that the majority of poisoning deaths involving opioid analgesics involve at least one additional type of drug, the most common being benzodiazepines. While national data from 2006 show 17% of opioid-related deaths that involve another drug to be a benzodiazepine,<sup>3</sup> New York 2012 data show benzodiazepines to be involved in 49.2% of these opioid-related deaths. The involvement of multiple drugs in such a high percentage of opioid-related deaths highlights the need for careful medication monitoring of patients to whom opioid analgesics are prescribed, as well as education on the dangers of using multiple drugs for those prone to prescription drug abuse.

Comparison of opioid-related mortality between those enrolled or not enrolled in Medicaid shows considerably higher deaths rates, as well as more a more rapid increase in mortality, among Medicaid

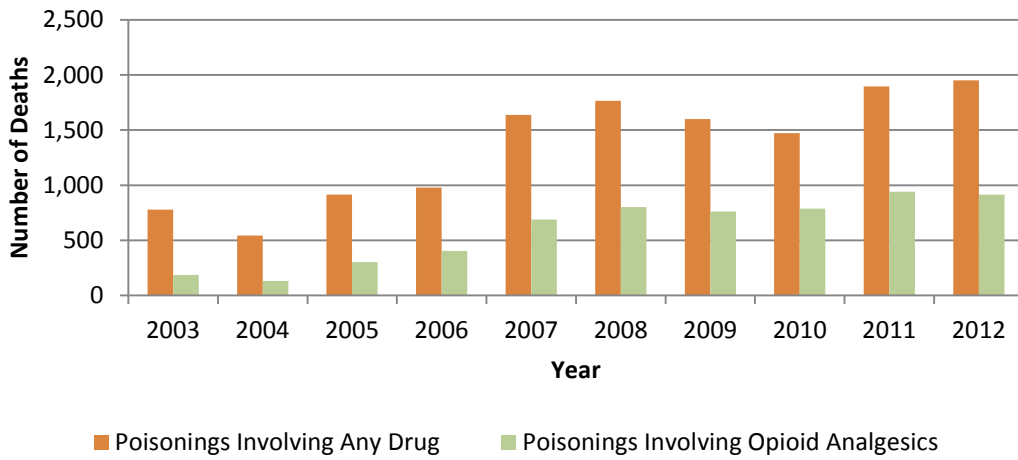
enrollees. The consistently higher death rates for poisonings involving opioid analgesics among Medicaid enrollees across age and sex strata using 2012 data suggest that these two demographic factors do not underlie these Medicaid/non-Medicaid differences. Other factors, such as the greater prevalence of mental illness and substance abuse in the Medicaid population, may contribute to the observed differences.

## Data Source and Method

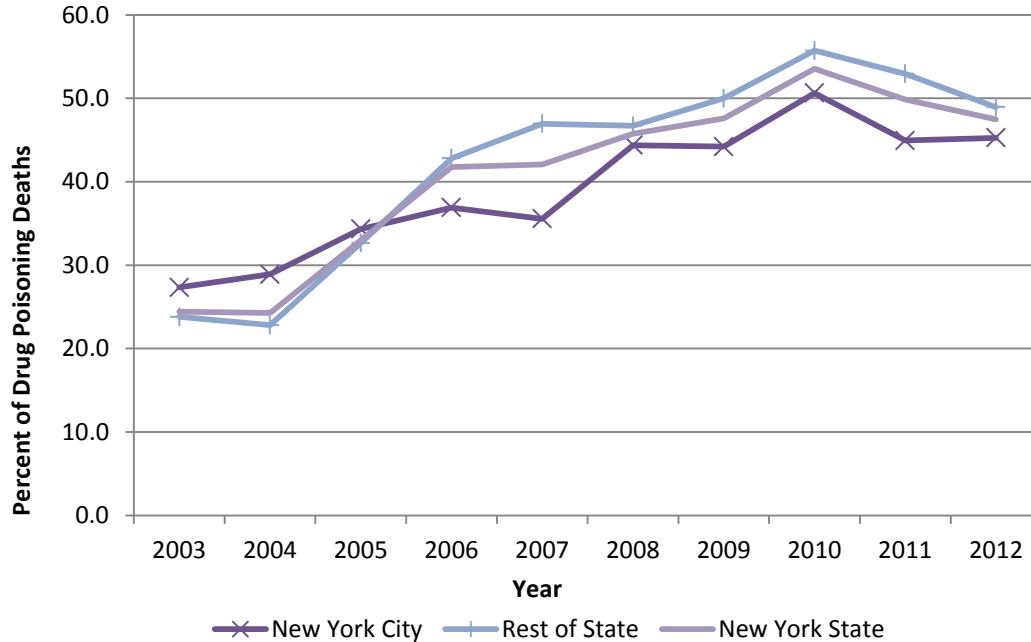
Data used for this investigation were the New York State Vital Statistics multiple cause of death mortality files. All reported rates are crude rates using U.S. Census Bureau bridged-race postcensal population estimates for New York State for each year included in this report. Medicaid enrollment figures were used in comparison of rates between Medicaid recipients and non-recipients. In these analyses, decedents were classified as Medicaid recipients if there was any record of Medicaid enrollment in Medicaid claims data in the year of death. Adopting National Center for Health Statistics coding methodology, poisonings involving any drug, and those involving opioid analgesics, were defined as having an underlying cause of death as a poisoning death of any intent as documented on the death certificate using International Classification of Diseases, Tenth Revision (ICD-10).<sup>3</sup> The ICD-10 codes used for identifying deaths with poisoning as an underlying cause were X40-49, X60-X69, X85-X90, Y10-Y19, and Y35.2. Among these poisoning deaths, those involving any drug were identified in the multiple cause of death on the basis of ICD-10 codes T36-T50.9, those involving opioid analgesics on the basis of codes T40.2-T40.4, benzodiazepines using code T42.2, cocaine (T40.5) and heroin (T40.1).

Some limitations of this investigation should be noted. Increased attention to the issue of opioid analgesic poisoning may have resulted in changes to reporting practices over time, increasing the likelihood of opioid involvement being reported on the death certificate. Geographic variation in cause of death determination and/or reporting could influence observed regional differences in opioid-related mortality. Finally, though results show an overall increase in poisoning deaths involving opioid analgesics over the ten-year period, incompleteness of data due to unresolved cause of death determinations that were pending further investigation may contribute to year-to-year fluctuation.

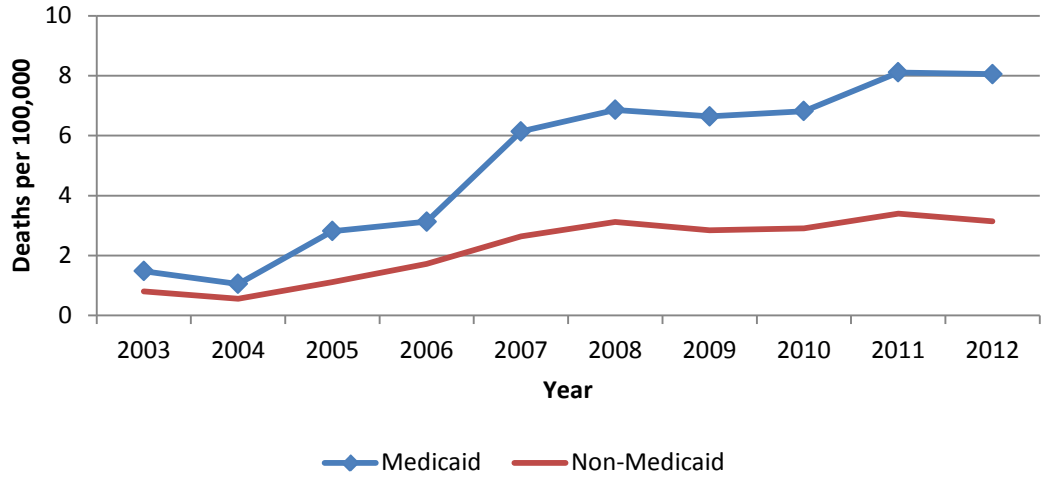
**Figure 1. Number of Poisoning Deaths Involving Any Drug, and Poisoning Deaths Involving Opioid Analgesics: New York State 2003-2012**



**Figure 2. Poisoning Deaths Involving Opioid Analgesics as a Percentage of Poisoning Deaths Involving Any Drug by Region: New York State 2003-2012**



**Figure 3. Death Rates for Poisonings Involving Opioid Analgesics  
by Year and Medicaid Enrollment Status:  
New York State 2003-2012**



**Table 1. Death Rates for Poisonings Involving Opioid Analgesics by Year and Demographic Characteristics: New York State, 2003-2012**

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Ratio 2012:2003
<b>Number of Deaths</b>											
	186	132	302	406	689	801	762	788	940	914	4.9
<b>Deaths per 100,000</b>											
<b>Total</b>	0.97	0.69	1.57	2.1	3.57	4.11	3.89	4.07	4.83	4.67	4.8
<b>Age</b>											
<15	0	0.03	0.05	0.03	0.06	0.06	0.08	0.06	0.09	0.11	-
15-19	0.23	0.39	0.68	0.94	0.64	1.92	1.39	1.39	1.36	1.15	5.0
20-44	1.3	0.92	2.08	2.8	5.15	5.42	5.33	5.64	6.99	6.48	5.0
45-64	1.88	1.21	2.86	3.79	6.4	7.42	6.95	7.14	8.15	8.07	4.3
65-84	0.19	0.19	0.42	0.74	0.32	1.09	0.81	0.85	0.88	1.32	6.9
85+	0.29	0.28	0.27	0	0.78	0.5	0.26	0.26	0.49	0.72	2.5
<b>Sex</b>											
Females	0.7	0.51	0.94	1.38	2.35	2.68	2.74	2.67	3.48	3.32	4.7
Males	1.26	0.87	2.24	2.88	4.86	5.62	5.12	5.56	6.27	5.94	4.7
<b>Race</b>											
Black	0.45	0.26	0.61	1.01	1.94	1.81	2.13	2.24	2.45	2.54	5.6
White	1.17	0.82	1.9	2.52	4.24	5.01	4.62	4.94	5.86	5.59	4.8
Other	0.28	0.35	0.55	0.66	0.98	0.96	1.14	0.79	1.49	1.82	6.5
<b>Region</b>											
New York City	0.47	0.46	0.7	0.75	2.95	3.73	3.5	3.85	3.93	4.19	8.9
Rest of State	1.33	0.85	2.2	3.1	4.04	4.39	4.19	4.22	5.49	5.03	3.8
<b>Medicaid Status</b>											
Medicaid	1.48	1.05	2.81	3.13	6.14	6.86	6.64	6.82	8.11	8.05	5.4
Non-Medicaid	0.8	0.56	1.11	1.72	2.64	3.12	2.84	2.91	3.4	3.14	3.9

**Table 2. Death Rates for Poisoning Involving Opioid Analgesics by Age, Sex, and Medicaid Enrollment Status: New York State, 2012**

	Deaths per 100,000	
	Non-Medicaid	Medicaid
<b>Total</b>	3.14	8.05
<b>Age Group</b>		
<15	0.06	0.16
15-19	1.54	0.43
20-44	4.53	12.10
45-64	4.19	20.69
65-84	1.21	1.69
85+	1.12	0
<b>Sex</b>		
Females	2.04	5.66
Males	4.04	11.17

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