INTOXICATION DEATHS ASSOCIATED WITH DRUGS OF ABUSE OR ALCOHOL BALTIMORE, MARYLAND

QUARTERLY REPORT: SECOND QUARTER, 2008

A report from the
Office of Epidemiology and Planning
Baltimore City Health Department

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GOAL

To monitor intoxication deaths associated with substance use in Baltimore in the second quarter of 2008 and to compare trends in intoxication deaths for the first half of 2008 to those for previous years.

HIGHLIGHTS

- During the second quarter of 2008, the Maryland Office of the Chief Medical Examiner recorded 36 intoxication deaths associated with drugs of abuse or alcohol among Baltimore City residents and 45 deaths resulting from intoxications that occurred in Baltimore City regardless of residence.

- In comparison to last year, there were more than 20% fewer drug-of-abuse- or alcohol-associated deaths in the first half of 2008 compared to the first half of 2007. In the first half of 2008, there were 79 deaths among residents and 95 deaths resulting from intoxications occurring in Baltimore compared to 104 and 122 deaths, respectively, in the first half of 2007.

- Deaths associated with heroin, cocaine and methadone all decreased by more than 20% in the first half of 2008, compared to the first half of 2007, with the most pronounced drop observed for methadone-associated deaths (51% decrease for resident deaths and 41% for deaths resulting from intoxications occurring in Baltimore). In contrast, alcohol-associated deaths increased in 2008 (by 26% for resident deaths and 13% for deaths resulting from intoxications occurring in Baltimore).

- As in 2007, victims of fatal intoxications during the first half of 2008 were predominantly male, African American and middle-aged.

METHODOLOGY

The methodology used was identical to that used in our previous reports (http://baltimorehealth.org/info/2008_01_24.IntoxicationDeaths.pdf). Briefly, we used records from the Maryland Office of the Chief Medical Examiner (OCME). The OCME reviews all deaths in Maryland caused by violence, suicide, or injury; sudden deaths in apparently healthy individuals; and deaths that are suspicious or unusual. The OCME determines cause of death based on information from the death scene, police records, medical records, autopsy results, and toxicological results. Intoxication deaths were deaths where the OCME-determined cause of death included the word “intoxication” and the manner of death was categorized by the OCME as accidental or undetermined.

Based on recommendations from the OCME, we classified an intoxication death as being associated with a given *drug of abuse* if either of two criteria were met: (1) the drug was mentioned in the OCME-determined cause of death, or (2) the OCME-determined cause of death used non-specific terms such as “drug intoxication” or “narcotic intoxication” and the toxicological analysis indicated the presence of the drug. Drugs of abuse considered in this analysis include opioids (eg. heroin, methadone, fentanyl), cocaine,

benzodiazepines, and amphetamines among others. For a complete list, please refer to our previous report.

Alcohol-associated intoxication deaths were defined as deaths where "alcohol" or "ethanol" was mentioned in the OCME-determined cause of death, regardless of what was in the toxicological results. Substance-specific categories were not mutually exclusive: a death identified as associated with a given substance could have been associated with other substances as well.

As in our previous report, we present results both for deaths among Baltimore City residents and for deaths resulting from intoxications that occurred in Baltimore regardless of residence.

Data presented here were obtained from the OCME on October 1, 2008. We present data for deaths that occurred between January 1, 2008 and June 30, 2008 and compare trends in that period to the same period in previous years. While the quasi-totality of deaths occurring in the first half of 2008 will have been recorded by the OCME by October 1, 2008, it is possible that a few deaths that occurred in that period may be recorded subsequent to that date. Those deaths will be included in future quarterly reports based on updated data obtained from the OCME.

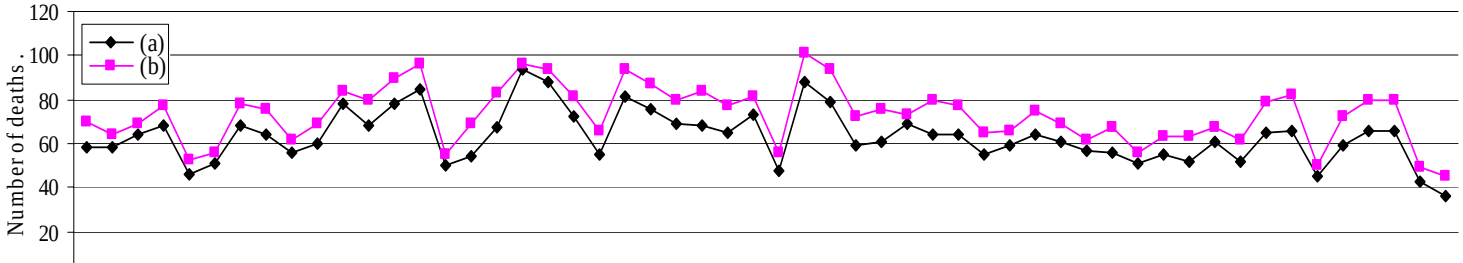
Further details about our methodology can be found at http://baltimorehealth.org/info/2008_01_24.IntoxicationDeaths.pdf.

RESULTS

❖ *Deaths associated with drugs of abuse or alcohol*

Figure 1 displays deaths among residents and resulting from intoxications in Baltimore by quarter from 1995 through the second quarter of 2008.

Figure 1: Intoxication deaths associated with drugs of abuse or alcohol (a) among Baltimore City residents and (b) resulting from intoxications occurring in Baltimore, according to medical examiner records, by year and quarter, 1995 to 2008



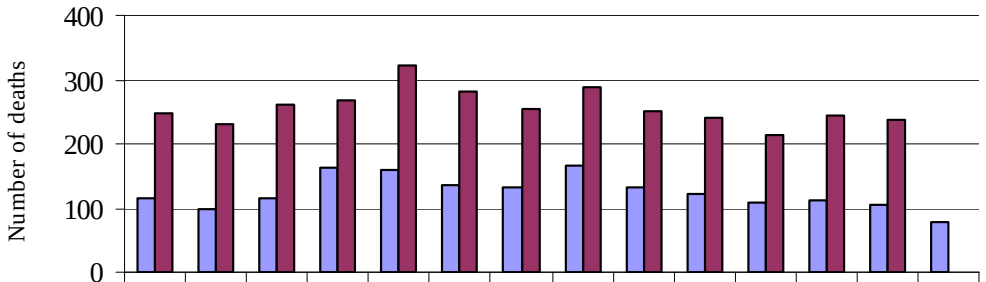
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
	1995				1996				1997				1998				1999				2000				2001				2002				2003				2004				2005				2006				2007				2008	
(a)	58	58	64	68	46	51	68	64	56	60	78	68	78	85	50	54	67	94	88	72	55	81	76	69	68	65	73	48	88	79	59	61	69	64	64	55	59	64	61	57	56	51	55	52	61	52	65	66	45	59	66	66	43	36		
(b)	70	64	69	77	53	56	78	76	62	69	84	80	90	96	55	69	83	96	94	81	66	94	87	80	84	77	81	56	10	94	72	76	73	80	77	65	66	75	69	62	67	56	63	63	67	62	79	82	50	72	80	80	49	45		

As of October 1, 2008, 36 intoxication deaths associated with drugs of abuse or alcohol had been recorded among Baltimore City residents during the second quarter of 2008. This represented seven fewer deaths compared to the first quarter of 2008 and 23 fewer

deaths compared to the second quarter of 2007. Considering deaths resulting from intoxications occurring in Baltimore regardless of residence, the OCME recorded 49 such deaths for the second quarter of 2008. This is four fewer than in the first quarter of 2008 and 27 fewer than the second quarter of 2007.

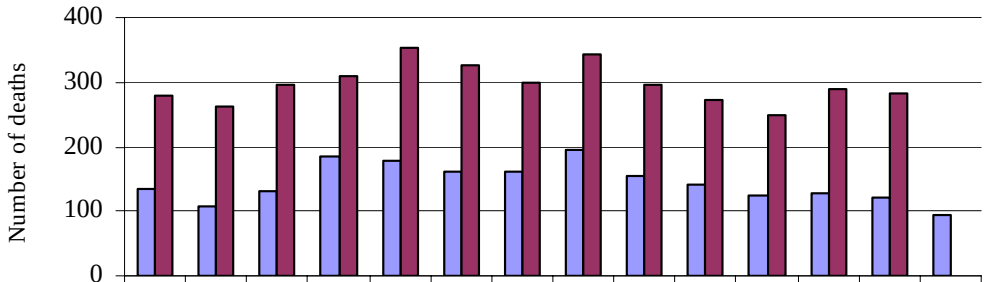
Overall, between January 1st 2008 and June 30th 2008, the OCME recorded 79 drug of abuse or alcohol associated deaths among residents and 95 deaths resulting from drug of abuse- or alcohol-intoxications occurring in Baltimore City regardless of residence (Figures 2 and 3). This represents a 25 death (24%) drop in resident deaths compared to the same period in 2007 and a 27 death (22%) drop in deaths resulting from Baltimore intoxications.

Figure 2: Intoxication deaths associated with drugs of abuse or alcohol among Baltimore city residents, according to medical examiner records, first two quarters and yearly totals, 1995-2008



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Q1+Q2	116	97	116	163	161	136	133	167	133	123	107	113	104	79
Yearly Total	248	229	262	267	321	281	254	287	252	241	214	244	236	

Figure 3: Intoxication deaths associated with drugs of abuse or alcohol resulting from intoxications that occurred in Baltimore, according to medical examiner records, first two quarters and yearly totals, 1995-2008



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Q1+Q2	134	109	131	186	179	160	161	195	153	141	123	129	122	95
Yearly Total	280	263	295	310	354	327	298	343	295	272	249	290	282	

❖ *Substances associated with drug of abuse- and alcohol-associated intoxication deaths*
As in previous years, the quasi-totality of intoxication deaths involved at least one drug of abuse, with heroin being the most common drug of abuse associated with these deaths (Table 1). Deaths associated with multiple substances remained prevalent.

Table 1: Number and percentage of intoxication deaths associated with drugs of abuse or alcohol according to medical examiner records, by substance(s) involved, comparing the first two quarters of 2007 to the first two quarters of 2008

	Baltimore resident deaths				Deaths resulting from intoxications in Baltimore			
	Q1+Q2 2007		Q1+Q2 2008		Q1+Q2 2007		Q1+Q2 2008	
Intoxication death involves:[1]	#	%	#	%	#	%	#	%
Alcohol or at least one drug of abuse	104	100%	79	100%	122	100%	94	100%
At least one drug of abuse	101	97%	75	95%	116	95%	90	96%
Opioids	94	90%	65	82%	108	89%	78	83%
Opioids and cocaine	37	36%	19	24%	43	35%	24	26%
Opioids and alcohol	16	15%	18	23%	18	15%	20	21%
Opioids without other drugs of abuse or alcohol	43	41%	34	43%	48	39%	39	41%
Heroin	66	63%	50	63%	76	62%	58	62%
Heroin and cocaine	25	24%	16	20%	30	25%	19	20%
Heroin and alcohol	13	13%	13	16%	15	12%	14	15%
Heroin without other drugs of abuse or alcohol	22	21%	20	25%	24	20%	23	24%
Methadone	35	34%	17	22%	41	34%	24	26%
Methadone and heroin	12	12%	5	6%	15	12%	7	7%
Methadone and cocaine	12	12%	2	3%	15	12%	5	5%
Methadone and alcohol	3	3%	5	6%	3	2%	6	6%
Methadone without other drugs of abuse or alcohol	12	12%	6	8%	14	11%	7	7%
Buprenorphine[2]	1	1%	0	0%	1	1%	0	0%
Fentanyl	3	3%	0	0%	3	2%	0	0%
Codeine, Oxycodone or Hydrocodone	4	4%	3	4%	5	4%	3	3%
Cocaine	44	42%	29	37%	51	42%	36	38%
Cocaine and alcohol	3	3%	8	10%	3	2%	9	10%
Cocaine without other drugs of abuse or alcohol	7	7%	8	10%	8	7%	9	10%
Benzodiazepines	3	3%	0	0%	5	4%	1	1%
Alcohol	19	18%	24	30%	24	20%	27	29%
Alcohol without other drugs of abuse	3	3%	4	5%	6	5%	4	4%

[1] Except where noted, involvement of one substance does not preclude the possibility that other substances are involved as well.
[2] In contrast with the other substances in this table, samples are not routinely tested for buprenorphine, only when there it is deemed indicated by the OCME.

Compared to the first two quarters of 2007, during the first two quarters of 2008 deaths associated with heroin among residents dropped by 24% (from 66 to 50), deaths associated with methadone by 51% (from 35 to 17), and deaths associated with cocaine by 34% (from 44 to 29). In contrast, deaths associated with alcohol increased by 26%

(from 19 to 24). The number of deaths are relatively small however, therefore the observed changes may reflect random fluctuations.

Among deaths resulting from intoxications occurring in Baltimore, the pattern was similar. Heroin-associated deaths decreased by 24% (from 76 to 58), methadone associated deaths by 41% (from 41 to 24), cocaine-associated deaths by 29% (from 51 to 36), while alcohol-associated deaths increased by 13% from (24 to 27). Again, these changes may reflect random fluctuations rather than trends that will persist in time.

No buprenorphine-associated deaths were observed for the first half of 2008, compared to one in the first half of 2007.

Figures 4 and 5 present the number of deaths associated with specific substances for the first two quarters of each year from 1995 to 2008 among resident deaths (Figure 4) and among deaths resulting from intoxications in Baltimore (Figure 5).

Figure 4: Intoxication deaths associated with drugs of abuse or alcohol among Baltimore City residents by substances involved, according to medical examiner records, first two quarters 1995 to 2008

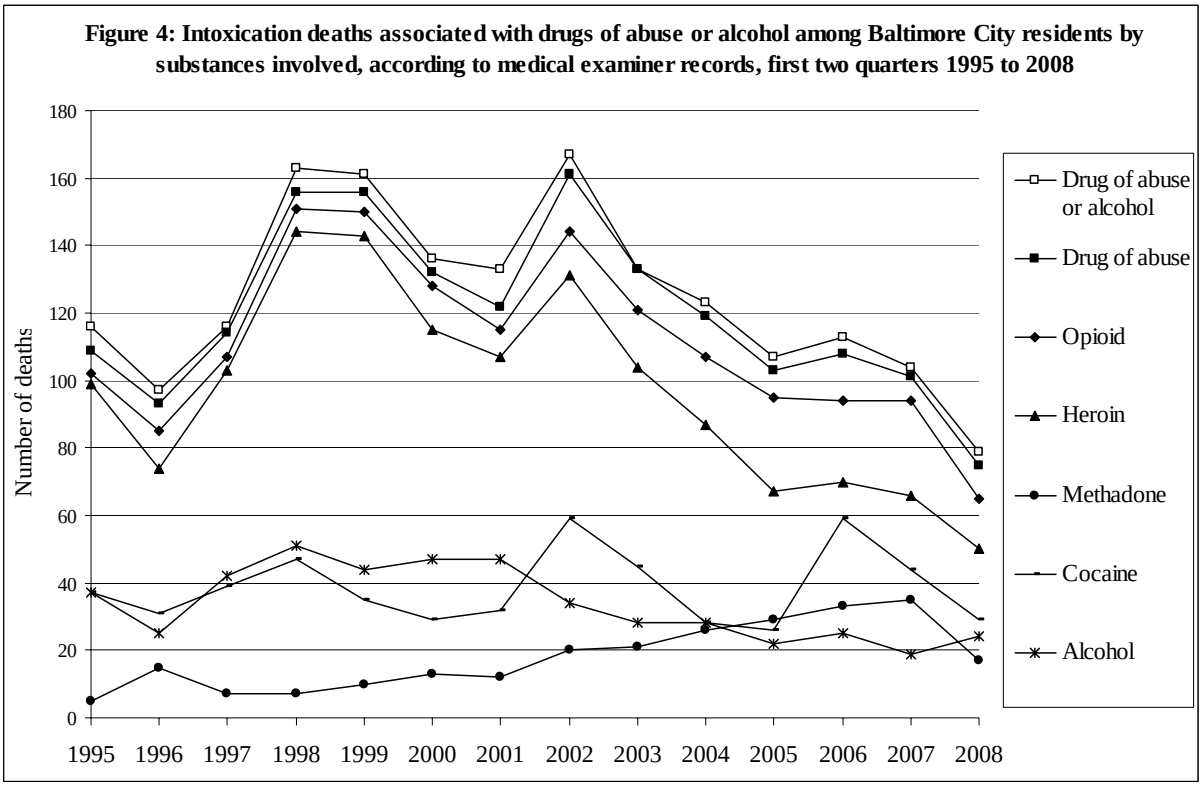
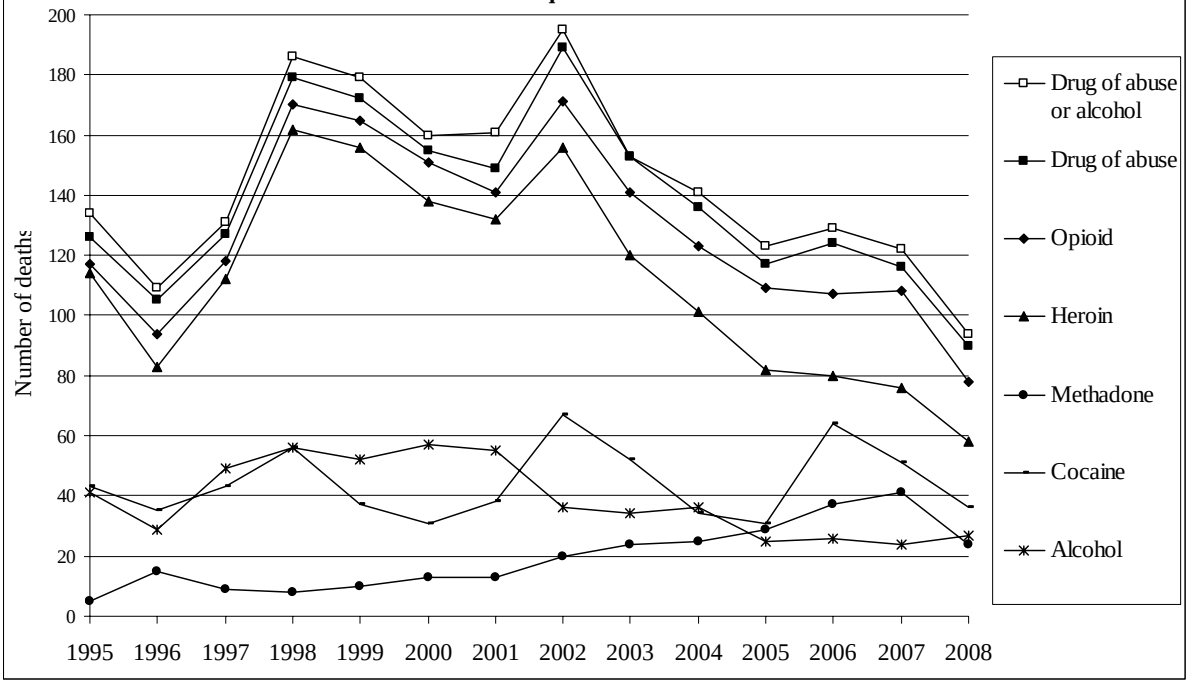


Figure 5: Intoxication deaths associated with drugs of abuse or alcohol by substances involved among deaths resulting from intoxications occurring in Baltimore, according to medical examiner records, first two quarters 1995 to 2008



❖ *Demographic characteristics of victims*

As in 2007, victims of fatal drug of abuse- or alcohol-associated intoxications in the first half of 2008 were predominantly male, African American and were on average in their mid-forties (Table 2).

Table 2: Sex, race, and age victims of fatal intoxications associated with drugs of abuse or alcohol according to medical examiner records, 2007 and first quarter 2008

	Baltimore resident deaths		Deaths resulting from intoxications in Baltimore	
	2007	Q1+Q2 2008	2007	Q1+Q2 2008
	%	%	%	%
Sex				
% Male	67%	67%	71%	67%
Race				
% African American	67%	73%	61%	66%
% White	33%	27%	39%	33%
Age				
Mean (SD)	45.6 (8.7)	47.3 (10.3)	44.9 (9.3)	46.4 (10.1)
Min-Max	18.3-76.7	19.7-69.6	17.8-76.7	19.7-69.6

CONCLUSIONS

The decrease in intoxication deaths associated with drugs of abuse or alcohol observed for the first quarter of 2008 has persisted during the second quarter of 2008. As a result, the number of deaths that occurred during the first half of 2008 was more than 20% lower than the number of deaths observed in the first half of 2007. Deaths associated with heroin, methadone and cocaine all decreased by more than 20%, only alcohol-associated deaths increased in the first half of 2008. However, these decreases may represent random fluctuations. Additional quarters of data are necessary before definitive conclusions can be drawn about 2008 trends.