Unintentional Drug Poisoning Deaths, Michigan Residents, 1999-2009

Kim Hekman, MPH, Su Min Oh, PhD, Lorraine Cameron, MPH, PhD
Michigan Department of Community Health

Background

- In 2008, unintentional poisonings were the second leading cause of injury death in the United States, following behind motor vehicle crashes [1].
- Increase in unintentional poisonings has mainly been driven by opioid analgesics [2].
- Opioid analgesics are narcotic drugs that are usually prescribed to relieve pain (ex. oxycodone, hydrocodone, methadone) [3].
- From 1999 to 2002, the number of unintentional drug poisoning deaths in the U.S. with opioid analgesic involvement increased by 91.2%, while deaths involving cocaine or heroin increased by 22.8% and 12.4%, respectively [4].
- The national pattern has also been seen in Michigan, with unintentional poisonings becoming the leading cause of injury death in 2009 [5].
- The purpose of this study was to examine unintentional drug poisoning deaths due to opioid analgesics, heroin, and cocaine between 1999 and 2009 in Michigan.

Methods

- Data from 1999-2009 Michigan death certificate files were used for trend analysis.
- Analysis was limited to deaths with an underlying cause of death as unintentional drug poisoning, defined by an ICD-10 code of X40-X44.
- Types of drugs involved were identified using the following ICD-10 codes: opioid analgesics (T40.2-T40.4), heroin (T40.1), cocaine (T40.5), other specified (T36-T50.8), and unspecified (T50.9).
- Unintentional drug poisoning death rates were calculated per 100,000 population based on yearly U.S. Census state estimates and rates were age-adjusted according to the 2000 U.S. Census population.
- Differences in unintentional drug poisoning death rates were examined by geographic region.

Acknowledgments

This evaluation was led by an appointee to the Applied Epidemiology Fellowship Program administered by the Council of State and Territorial Epidemiologists (CSTE) and funded by the Center for Disease Control and Prevention (CDC) Cooperative Agreement 5U38HM000414.

Results

- The total number of unintentional drug poisoning deaths rose from 238 to 1,000 from 1999-2009.
- The age-adjusted unintentional drug poisoning death rate increased from 2.4 to 10.0 per 100,000 population in Michigan between 1999 and 2009.
- From 1999 to 2009, the unintentional drug poisoning death rate increased across all demographic categories (Table 1).
- In 2009, the unintentional drug poisoning death rate was almost two times higher among men (13.2 per 100,000) than women (6.8 per 100,000).
- Although the unintentional death rate in 2009 was higher among blacks than whites, the rate change during 1999-2009 was largest among whites.
- Adults aged 45 to 54 years had the highest death rate in 2009, however the greatest rate change occurred among adolescents and young adults aged 15 to 24 years during 1999-2009.
- The unintentional drug poisoning death rate for opioid analgesics increased 734.6% during 1999-2009, while the death rate for heroin and cocaine increased by 487.8% and 203.9%, respectively (Figure 1).
- Unintentional drug poisoning death rates varied across the state, with the southeast portion of the metropolitan Detroit area having the highest rate (12.9) and Mid-Michigan having the lowest rate (6.3) in 2009 (Figure 2).

Table 1. Unintentional drug poisoning death rates by demographics, Michigan residents, 1999-2009

	Age-adjusted rate*			*Rate Change*
	1999	2004	2009	*'99-'09*
Overall	2.4	4.9	10.0	**4.2**
Sex				
Men	3.4	6.3	13.2	***3.9***
Women	1.5	3.5	6.8	***4.5***
Race†				
White	2.1	4.7	9.9	***4.7***
Black	4.7	6.3	11.3	***2.4***
Age group (years)				
0-14	—§	—§	—§	-
15-24	0.4	3.8	7.0	***17.5***
25-34	3.2	7.1	16.8	***5.3***
35-44	5.7	10.0	17.5	***3.1***
45-54	4.8	9.8	20.9	***4.4***
55-64	2.0	2.5	8.8	***4.4***
≥65	1.3	1.7	2.7	***2.1***

* Rate per 100,000 population age-adjusted to the 2000 U.S. standard population.
† American Indian and Asian/Pacific Islander results not presented due to small number of deaths and unstable rate change.
§ Rate is not presented when the estimate is unstable because the number of deaths is less than 5.

Figure 1. Unintentional drug poisoning deaths by major drug type, Michigan residents, 1999-2009

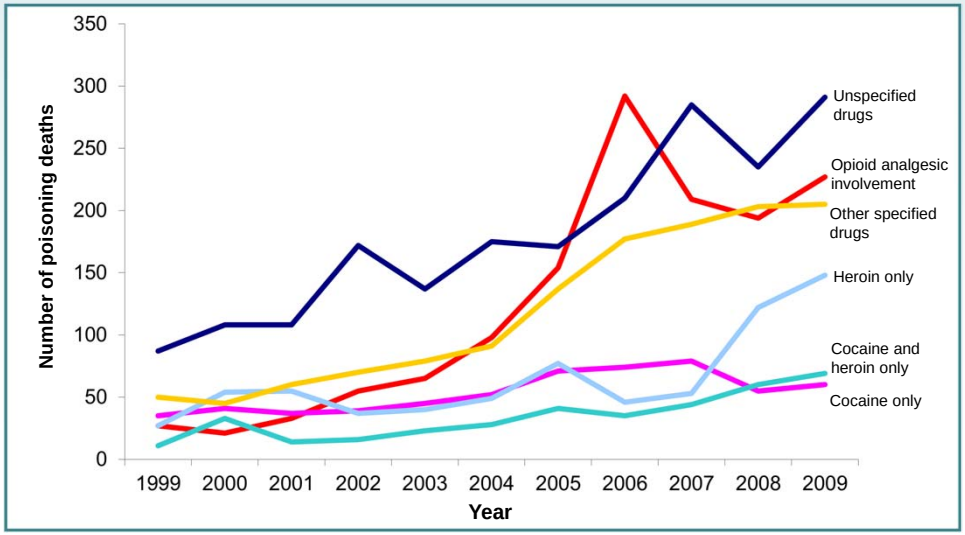
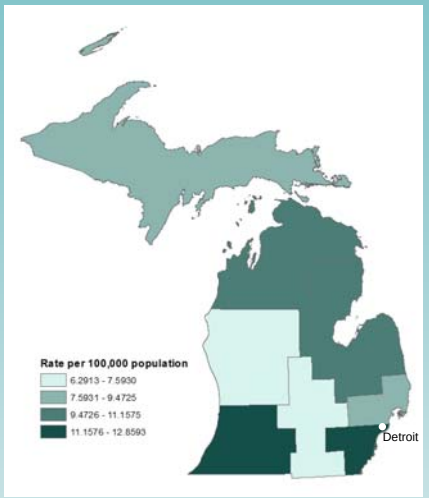


Figure 2. Unintentional drug poisoning deaths by region, Michigan residents, 2009



Discussion

- Unintentional drug poisoning death rates increased over the past decade in Michigan, similar to national reports [6].
- The rate of unintentional drug poisoning deaths due to opioid analgesics increased more than heroin and cocaine.
- The increase in unintentional drug poisoning deaths closely paralleled the increased availability of opioid analgesics statewide [7].
- Michigan does not have a centralized statewide medical examiner system, thus a limitation of the findings is that drug testing varies based on county.
- Prevention and treatment providers should be aware of the increasing risk of unintentional drug poisoning among 15-24 year olds and implement targeted interventions such as education and awareness of proper use of prescription drugs.

References

1. CDC: National Center for Injury Prevention Control. Web-based Injury Statistics Query and Reporting System (WISQARS) Vol. 2008. Atlanta, GA, 2008.
2. CDC Grand Rounds: Prescription Drug Overdoses - a U.S. Epidemic. MMWR Morb Mortal Wkly Rep 2012;61:10.
3. Warner M, Chen LH, Makuc DM. Increase in fatal poisonings involving opioid analgesics in the United States 1999–2006. NCHS data brief. Vol. no 22. Hyattsville, MD: National Center for Health Statistics, 2009.
4. Paulozzi LJ, Budnitz DS, Xi Y. Increasing deaths from opioid analgesics in the United States. Pharmacoepidemiol Drug Saf 2006;15(9):618-27.
5. Michigan Department of Community Health Division for Vital Records and Health Statistics. Unintentional Fatal Injuries, 2004-2009. In: Division for Vital Records and Health Statistics, ed, 2011.
6. Warner M, Chen LH, Makuc DM, Anderson RN, Minino AM. Drug poisoning deaths in the United States, 1980-2008. In: NCHS data brief, ed. Vol. no 81. Hyattsville, MD: National Center for Health Statistics, 2011.
7. US Department of Justice. Automation of Reports and Consolidated Orders System (ARCOS). In: US Department of Justice DEA, ed. Springfiled, VA, 2011.