

# RADARS<sup>®</sup>

## SYSTEM



Researched Abuse, Diversion and Addiction-Related Surveillance System



## Fourth Quarter 2014 Technical Report

### *Prescription Opioid Death Rates by Gender using Data from The RADARS<sup>®</sup> System Poison Center Program*

#### Key Points:

1. Opioid death rates are 45% greater for females when adjusting for population and 10% greater when adjusting for prescriptions dispensed.
2. Trends in prescription opioid deaths are parallel for females and males, when adjusting for population and prescriptions dispensed.
3. This discrepancy may be due to a greater number of opioid prescriptions being dispensed to females compared to males.

#### Background

In July 2013, the Centers for Disease Control and Prevention (CDC) reported that, although there have historically been more deaths for men, prescription painkiller overdose deaths are increasing faster for females than males. Their results state that these deaths have increased 400% for females compared to 265% for males between 1999 and 2010<sup>1</sup>. We examined whether this pattern was observed using data from the RADARS<sup>®</sup> System Poison Center Program.

#### Methods

Data from the RADARS<sup>®</sup> Poison Center program were used in this analysis. All adult exposures (age 12 years and greater) between January 1, 2006 and June 30, 2014 mentioning oxycodone, hydrocodone, fentanyl, hydromorphone, morphine, oxymorphone, tapentadol, or tramadol associated with death were included. There were 1,449 unique individuals who died in the time period of interest. A generalized linear model using a Poisson distribution was used to analyze death rates, adjusting for gender specific population and prescriptions dispensed. Polynomial regression was used to determine the average quarterly change in the prescriptions and population rates by gender. Linear, quadratic, and cubic trends were fit and assessed for significance in each model. The trend in the number of prescriptions per population (log transformed) was also examined by gender in the same time period.

#### Results

Results are presented in the figure and table below. Quadratic models were significant for population and prescriptions rates and a cubic model was significant for the prescriptions per population model. For all three models, trends were similar, but intercepts differed by gender. Population adjusted death rates increased for both genders until about July 2010, when they started to decline. Prescription adjusted death rates increased until October 2009, after which they started to decline. In any given quarter, the average quarterly population adjusted death rate was approximately 45.2% higher for females compared to males ( $p$ -value<0.001) and the average quarterly prescription adjusted death rate was 10.5% higher for females compared to males ( $p$ -value=0.069).

## Results (cont.)

Prescriptions per population saw a gradual increase for both genders from January 2006 to January 2011. After January 2011, prescriptions per population leveled out for females and males. On average, females were dispensed about 31.5% more opioid prescriptions per population than their male counterparts in each quarter (p-value<0.001).

Figure: The RADARS® System Poison Center Program  
Rates by gender and quarter  
from January 1, 2006 to June 30, 2014

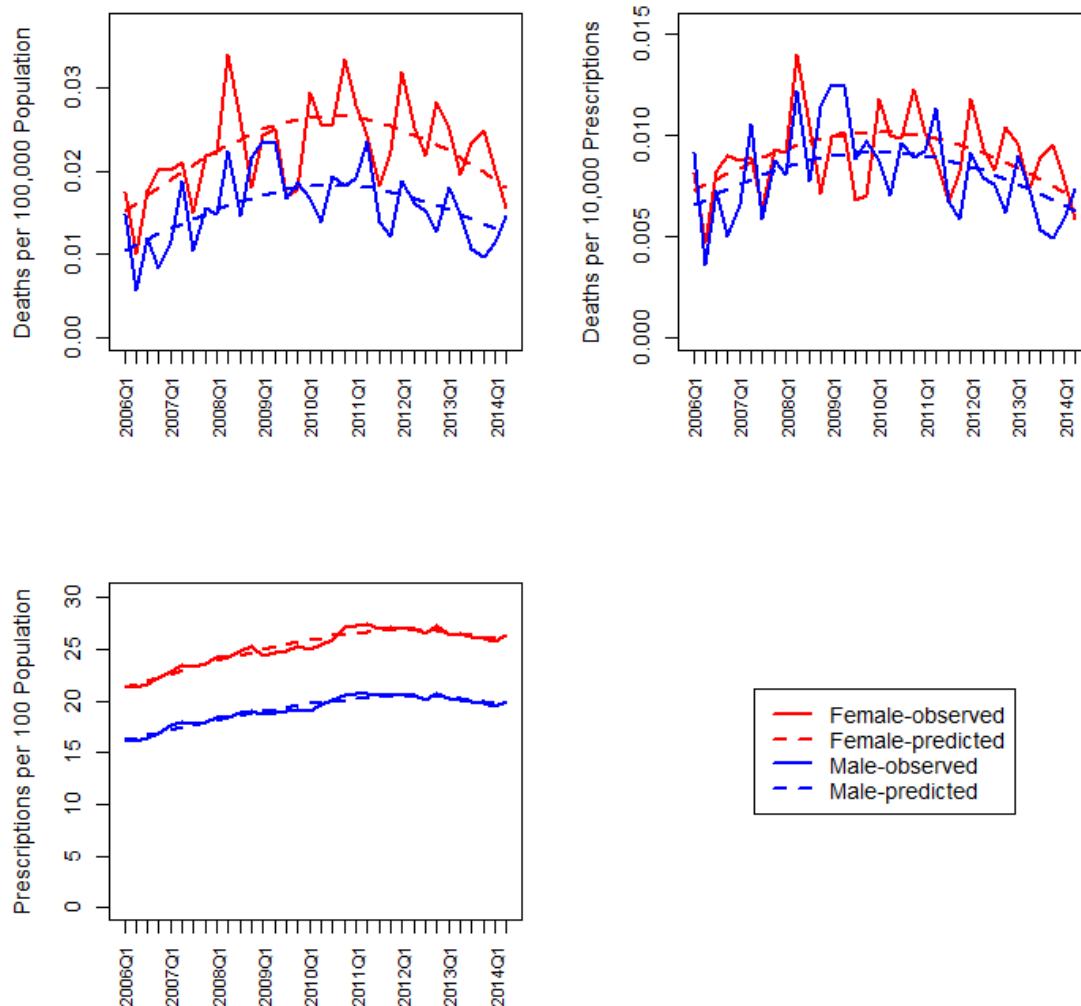


Table: The RADARS® System Poison Center Program  
Rates by gender and quarter  
from January 1, 2006 to June 30, 2014

Rate	Female to Male Rate Ratio (95% CI)	p-value
Deaths per 100,000 Population	1.452(1.304,1.616)	<.001
Deaths per 10,000 Prescriptions	1.105(0.992,1.230)	0.069
Prescriptions per 100 Population	1.315(1.304,1.326)	<.001

## Conclusions

Our results suggest that there have been more prescription opioid deaths called into poison centers for females compared to males since January 2006, when adjusting for population and prescriptions dispensed. The trends in these rates are similar for females and males. Specifically, death rates have shown increases until recent quarters when rates have begun to decline. The higher death rates in females may be attributed to greater drug availability since they are prescribed significantly more opioids per population compared to males. These trends are consistent with other findings using RADARS® data<sup>2, 3</sup>. Similar to CDC findings, there appears to be a linear increase in prescription opioid deaths prior to 2010. However, data from the RADARS system suggests that death rates have historically been higher for females than males.

## Suggested citation

Le Lait MC, Severtson SG, Bucher-Bartelson B, Dart RC (2014). Prescription Opioid Death Rates by Gender using Data from the RADARS® System Poison Center Program. RADARS® System Technical Report, 2014Q4.

## References

- 1) "Prescription Painkiller Overdoses". CDC Vital signs. July 2013.  
<http://www.cdc.gov/vitalsigns/pdf/2013-07-vitalsigns.pdf>
- 2) West NA, Severtson SG, Green JL, Dart RC. Trends in Prescription Opioid Abuse and Misuse among Older Adults. *Clinical Toxicology*. 2014;52(7):750-750.
- 3) Dart RC, et al. Trends in Opioid Analgesic Abuse and Mortality in the United States (in press). *New England Journal of Medicine*.

