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## **Opioid Use Disorder at Delivery Hospitalization in Maine: Prevalence and characteristics (2009-2017)**

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# Opioid Use Disorder at Delivery Hospitalization in Maine: Prevalence and characteristics (2009-2017)

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## Introduction

A recent multistate analysis found Maine had the second highest average annual increase in opioid use disorder at delivery hospitalization since 1999, with 34.1 per 1,000 deliveries with opioid use disorder in 2012<sup>1</sup>

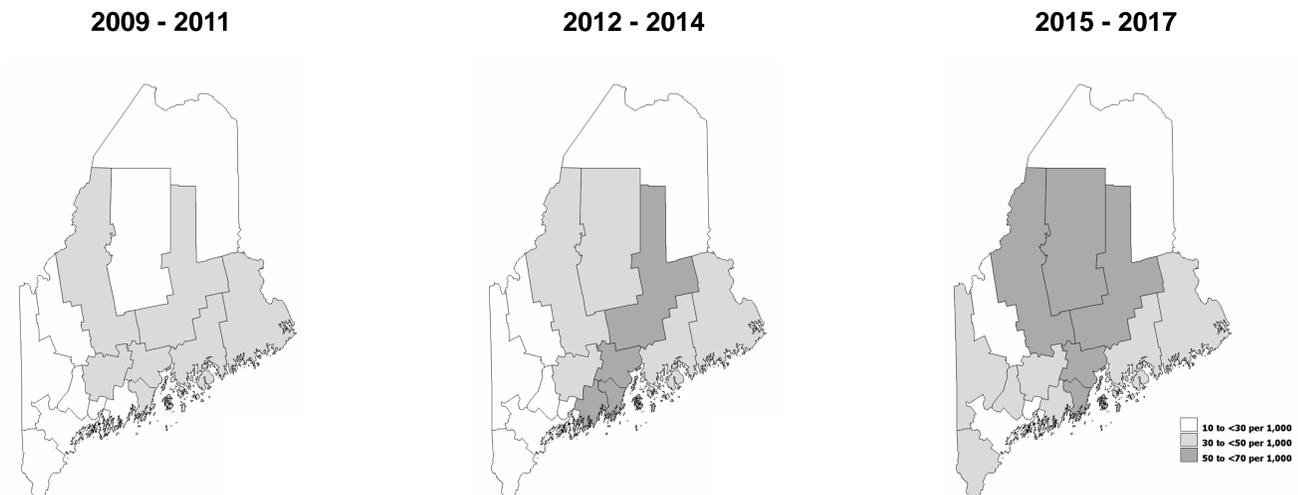
## Purpose

To estimate the prevalence, characteristics, and geographic distribution of delivery hospitalizations with opioid use disorder (OUD) among women delivering in Maine using more recent state-level data

## Methods

- Used *International Statistical Classification of Diseases and Related Health Problems (ICD)* diagnosis and procedure codes to identify deliveries among all hospital discharges in Maine, 2009-2017
- Categorized deliveries according to prevalence of OUD and other substance use, mental health diagnoses, and medical conditions - according to maternal characteristics and geographic distribution
- Because our analysis spanned the transition from ICD-9 to ICD-10 (October 1<sup>st</sup>, 2015), we used codes from both revisions in this analysis
- Ran log-binomial regressions to assess the trends in prevalence of OUD at delivery hospitalization over the study period
- Calculated prevalence ratios (PR) and 95% confidence intervals (CI) for the co-occurrence of other substance use disorders, mental health diagnoses and medical conditions among women with OUD as compared with women without OUD
- Examined trends in prevalence of OUD at delivery hospitalization by county over time, comparing deliveries by rural-urban designation of county

## Results



- 4 out of 5 of the counties with the highest rates of opioid use disorder at delivery (>50 per 1,000 deliveries) during the 2015 - 2017 period were rural counties: Knox, Piscataquis, Somerset, Waldo
- Penobscot was the only urban county (containing the metropolitan area of Bangor) with a prevalence of OUD at delivery  $\geq 50$  per 1,000 during the study period

- 109,004 delivery hospitalizations in Maine from 2009-2017
- The prevalence of OUD per 1,000 increased from 21.6 in 2009 to 38.0 per 1,000 in 2017 (linear trend  $p < .01$ )
- Average annual increase of 5.8% [95% CI: 4.5%, 7.2%]

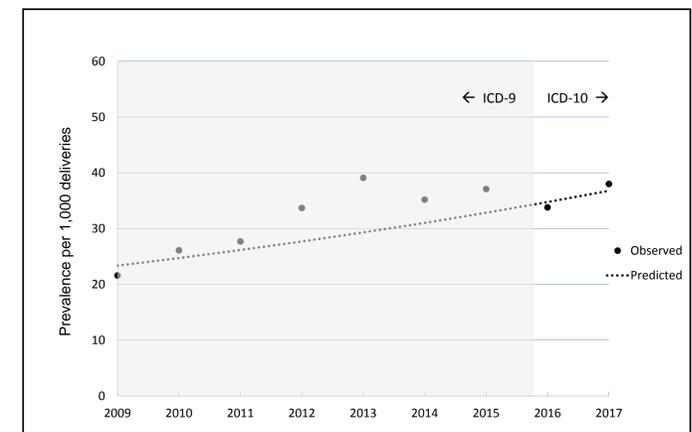


Figure 2. Prevalence of opioid use disorder among delivery hospitalizations in Maine (n=109,004)

- All of the selected mental health diagnoses, other substance use, and medical conditions examined were more common ( $p < .01$ ) among women delivering with OUD compared to women delivering without OUD

Table 1. Selected maternal conditions among delivery hospitalizations in Maine, 2009-2017

	Deliveries among Women with Opioid Use Disorder		Deliveries among Women without Opioid Use Disorder		PR	95% CI	p-value <sup>a</sup>
	n=3,523	%=3.2	n=105,481	%=96.8			
Anxiety	181	5.1	1,999	1.9	2.7	(2.3, 3.1)	<.01
Major Depression	142	4.0	1,486	1.4	2.9	(2.4, 3.4)	<.01
Alcohol abuse or dependence	30	0.9	92	0.1	9.8	(6.5, 14.7)	<.01
Other drug abuse or dependence <sup>b</sup>	93	2.6	171	0.2	16.3	(12.7, 20.9)	<.01
Cannabis use	208	5.9	1,132	1.1	5.5	(4.8, 6.4)	<.01
Nicotine use	2,256	64.0	11,277	10.7	6.0	(5.8, 6.2)	<.01
Hepatitis C	268	7.6	228	0.2	35.2	(29.6, 41.9)	<.01

Abbreviations: PR, Prevalence ratio; CI, Confidence interval  
<sup>a</sup> Chi-square test p-value comparing deliveries of women with opioid use disorder to deliveries of women without opioid use disorder  
<sup>b</sup> Non-opioid and non-alcohol abuse or dependence

## Conclusions

- Opioid use disorder among deliveries in Maine has increased since 2009, accounting for 1 out of every 30 deliveries in 2017
- Women with OUD at delivery were more likely to experience mental health disorders, other substance use, and complications of their substance use than women without OUD
- The majority of counties with the highest rates of OUD at delivery (5 to <7%) are rural counties in midcoast, central and northern Maine

## Limitations

- ICD-9 to ICD-10 change at the 3<sup>rd</sup> quarter of 2015
- Relies on the accuracy of the coding practices of medical coders at the inpatient facilities in Maine
- Unable to confirm the presence of the diagnoses and procedures examined in this study with chart review

## Implications

Continued prevention and treatment of OUD among reproductive age women, particularly in rural areas of Maine, is needed

Further examination of OUD at delivery hospitalization in Maine using linked maternal and infant data is needed to inform policy decisions and services provided to women with OUD during pregnancy

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All analyses were performed using SAS version 9.9 (SAS Institute, Cary, NC) between December 2018 and April 2019.

Data Source: Maine hospital inpatient discharge data provided by the Maine Health Data Organization, a state agency that maintains a comprehensive health information database for every hospital inpatient encounter in the state.

## Reference:

<sup>1</sup> Haight SC, Ko JY, Tong VT, Bohm MK, Callaghan WM. Opioid Use Disorder at Delivery Hospitalization – United States, 1999-2014. *MMWR Morb Mortal Wkly Rep.* 2018;76(31):845-849.