



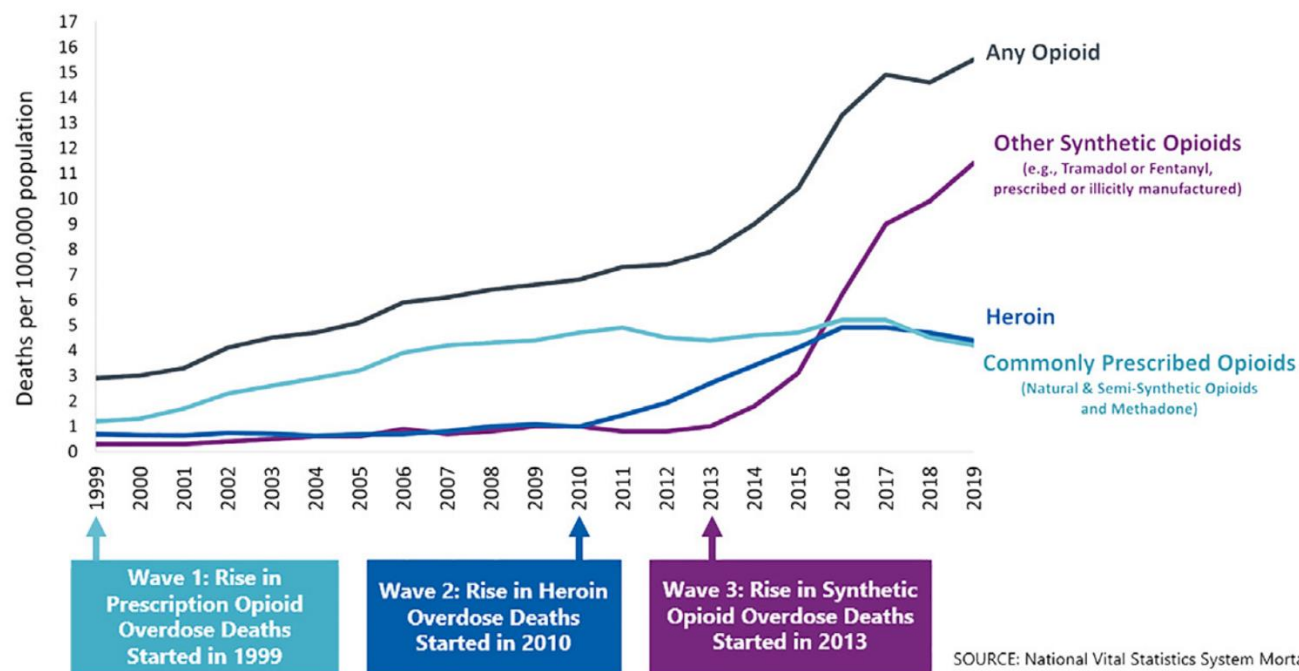
Association between opiate use disorder and physician provided epidural boluses for labor analgesia

Beth Israel Lahey Health
Beth Israel Deaconess
Medical Center

Amnon A. Berger¹, MD, PhD; Kelly Li¹, Yunping Li^{1,2}, MD; Philip E. Hess^{1,2}, MD

¹Department of Anesthesia, Critical Care and Pain Medicine, Beth Israel Deaconess Medical Center, Harvard Medical School

²Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center, Harvard Medical School



Introduction

- Opioid use disorder is prevalent and increasing in incidence in the US
- 700,000 US drug overdoses 1999-2017; one third opioids
- Significant cause for maternal morbidity
- Some evidence suggest increase labor analgesia requirements

Methods

- Retrospective, single-center trial
- 29,075 deliveries, compared 132 patients with OUD compared with matched and unmatched cohorts
- Similar neuraxial analgesia utilization and failure rates

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FROM DISCOVERY TO DELIVERY: BRIDGING RESEARCH AND CLINICAL CARE IN OBSTETRIC ANESTHESIA



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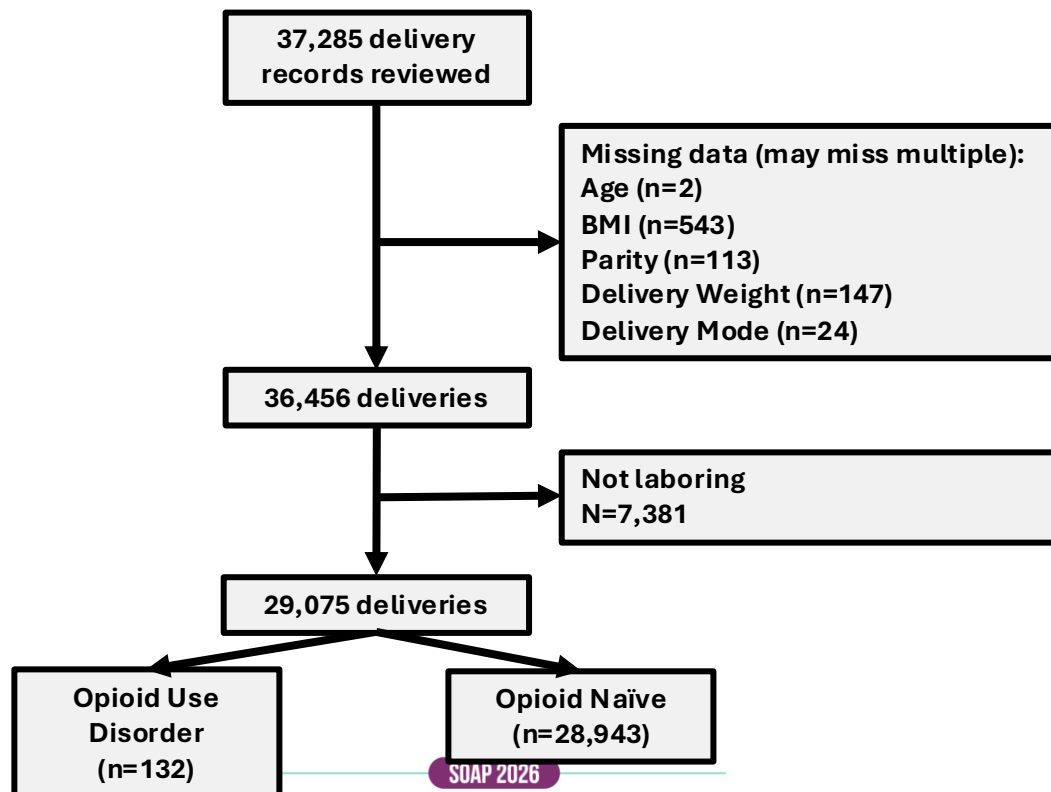
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Figure 1: STROBE diagram

Table 1: Population



Characteristic	No OUD (N=28,943)	OUD (N=132)	P-value	Labor Initiation			<0.001
Age (years)	32.9 ± 4.77	32.5 ± 4.90	0.38	Spontaneous	16,013 (55%)	54 (41%)	
Age>35 years	8,466 (29%)	41 (31%)	0.65	Induced	12,930 (45%)	78 (59%)	
Body Mass Index (BMI, kg/m ²)	30.5 ± 6.17	31.5 ± 6.53	0.07	First Cervical Dilation	3.10 ± 2.37	2.53 ± 2.17	0.007
BMI>35kg/m ²	5,304 (18%)	33 (25%)	0.048	Preeclampsia	2,347 (8.1%)	26 (20%)	<0.001
Nulliparity	15,324 (53%)	61 (46%)	0.12	Smoking	233 (0.8%)	60 (45%)	<0.001
Race			<0.001	Diabetes Mellitus	2,613 (9.0%)	11 (8.3%)	0.78
White	12,112 (42%)	89 (67%)		Epidural Analgesia	24,090 (83%)	111 (84%)	0.79
Asian/Pacific Islander	4,071 (14%)	0 (0%)		Epidural Failure	1,003 (3.5%)	7 (5.3%)	0.23
Black	3,138 (11%)	8 (6.1%)		Epidural Bolus (physician administered)			
Hispanic/Latino	1,728 (6.0%)	6 (4.5%)		≥1	8,809 (30%)	53 (40%)	0.016
Other/Unknown	7,894 (27%)	29 (22%)		≥2	3,042 (11%)	24 (18%)	0.004
Gestational Age (weeks)	38.5 ± 2.29	37.0 ± 3.31	<0.001	≥3	1,249 (4.3%)	10 (7.6%)	0.066
Delivery Weight (grams)	3,247 ± 591	2,832 ± 748	<0.001	Number of epidural bolus	0.48 ± 0.94	0.73 ± 1.19	0.006
Living neonate	28,758 (99%)	128 (97%)	0.007				
Mode of Delivery			0.20				
Cesarean (Intrapartum)	5,127 (18%)	29 (22%)					
Vaginal	23,816 (82%)	103 (78%)					



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Table 2: Matched Univariate by *Exposure*

Characteristic	No OUD (N=282)	OUD (N=94)	P-value
BMI>35kg/m ²	61 (22%)	22 (23%)	0.72
Nulliparity	145 (51%)	45 (49%)	0.68
Race			0.26
White	206 (73%)	62 (66%)	
Asian/Pacific Islander	0 (0%)	0 (0%)	
Black	7 (2.5%)	6 (6.4%)	
Hispanic/Latino	15 (5.3%)	5 (5.3%)	
Other/Unknown	54 (19%)	21 (22%)	
Gestational Age (weeks)	37.5 ± 2.94	37.1 ± 3.26	0.31
Delivery Weight (grams)	2,927 ± 690	2,848 ± 683	0.35
Labor Initiation			0.32
Spontaneous	98 (35%)	38 (40%)	
Induced	184 (65%)	56 (60%)	
First Cervical Dilation	2.22 ± 2.15	2.49 ± 2.03	0.086
Preeclampsia	47 (17%)	16 (17%)	0.94
Smoking	2 (0.7%)	45 (48%)	<0.001
Epidural Bolus (physician administered)			
≥1	114 (40%)	45 (48%)	0.21
≥2	35 (12%)	22 (23%)	0.010
≥3	13 (4.6%)	10 (11%)	0.035

Table 3: Matched Univariate by *Outcome*

Characteristic	Epidural Bolus ≤ 2 (N=27,816)	Epidural Bolus ≥ 3 (N=1,259)	P-value
Opioid Use Disorder (OUD)	84 (24%)	10 (43%)	0.035
BMI>35kg/m ²	75 (21%)	8 (35%)	0.13
Nulliparity	177 (50%)	14 (61%)	0.32
Race			0.93
White	251 (71%)	17 (74%)	
Asian/Pacific Islander	0 (0%)	0 (0%)	
Black	12 (3.4%)	1 (4.3%)	
Hispanic/Latino	19 (5.4%)	1 (4.3%)	
Other/Unknown	71 (20%)	4 (17%)	
Gestational Age (weeks)	37.4 ± 3.04	37.8 ± 2.83	0.38
Delivery Weight (grams)	2,910 ± 695	3,008 ± 589	0.63
Labor Initiation			0.55
Spontaneous	129 (37%)	7 (30%)	
Induced	224 (63%)	16 (70%)	
First Cervical Dilation	2.34 ± 2.15	1.48 ± 1.45	0.061
Preeclampsia	56 (16%)	7 (30%)	0.083

Matching

- Optimal 3:1 matching
Naïve:OUD
- Well balanced groups, all matched variables not significantly different after matching (left)
- Univariate analyses only significantly associate OUD with increased analgesia requirements





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Table 4: Matched Multivariate

Characteristic	OR	95% CI	P
Opioid Use Disorder	2.64	1.10-6.10	0.025
Age>35 years	0.69	0.33-1.37	0.30
BMI>35kg/m ²	1.68	0.83-3.31	0.14
Nulliparity	1.29	0.66-2.55	0.47
Race			
White			
Black	0.33	0.02-2.08	0.33
Hispanic/Latino	0.65	0.09-2.80	0.61
Other/Unknown	1.24	0.55-2.65	0.59
Pregnancy Term			
Term			
Late Preterm	0.97	0.29-3.01	0.95
Early Preterm	9.80	1.71-55.2	0.009
Labor Initiation			
Spontaneous			
Induced	1.29	0.66-2.55	0.47
First Cervical Dilation	0.62	0.46-0.81	<0.001
Delivery Weight (grams)	1.001	1.000-1.002	<0.001
Preeclampsia	2.82	1.23-6.44	0.014
Smoking	1.12	0.37-3.34	0.84
Diabetes Mellitus	0.82	0.24-2.35	0.72

Table 5: Unmatched Multivariate

Characteristic	OR	95% CI	P
Opioid Use Disorder	2.30	1.31-3.91	0.003
Age>35 years	0.98	0.89-1.07	0.62
BMI>35kg/m ²	1.42	1.28-1.57	<0.001
Nulliparity	2.20	2.00-2.42	<0.001
Race			<0.001
White			
Asian/Pacific Islander	0.59	0.51-0.68	<0.001
Black	0.77	0.66-0.89	<0.001
Hispanic/Latino	1.12	0.94-1.32	0.20
Other/Unknown	0.88	0.80-0.97	0.013
Pregnancy Term			
Term			
Late Preterm	1.32	1.08-1.60	0.005
Early Preterm	1.73	1.17-2.49	0.005
Labor Initiation			
Spontaneous			
Induced	0.90	0.81-0.99	0.030
First Cervical Dilation	0.82	0.80-0.85	<0.001
Delivery Weight (grams)	1.00	1.00-1.00	<0.001
Preeclampsia	1.54	1.34-1.77	<0.001
Smoking	1.00	0.63-1.53	>0.99
Diabetes Mellitus	0.89	0.76-1.03	0.13

Multivariable Analysis

- Multivariable analysis of the matched (left) and unmatched (right) population
- Clearly significant association between OUD and analgesia requirements (physician administered boluses) in both groups

Conclusion

- Labor analgesia is safe and effective in OUD
- Patient with OUD required a higher number of physician-provided epidural boluses
- Closer monitoring and adequate titration of analgesia is recommended
- Further studies are required to understand the underlying mechanism

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