

## **SUPPLEMENTAL DOCUMENT**

### **Alcohol withdrawal severity measures for identifying patients requiring high-intensity care**

Daniel C. To MD<sup>1</sup>, Tessa L. Steel MD, MPH<sup>2</sup>, Kyle A. Carey MPH<sup>3</sup>, Cara J. Joyce PhD<sup>4</sup>, Elizabeth M. Salisbury-Afshar MD, MPH<sup>5</sup>, Dana P. Edelson MD<sup>3</sup>, Anoop Mayampurath PhD<sup>1,6</sup>, Matthew M. Churpek MD, MPH, PhD<sup>1,6</sup>, Majid Afshar MD, MSCR<sup>1,6</sup>

<sup>1</sup>Department of Medicine, University of Wisconsin-Madison

<sup>2</sup>Department of Medicine, University of Washington

<sup>3</sup>Department of Medicine, University of Chicago

<sup>4</sup>Department of Public Health Sciences, Loyola University Chicago

<sup>5</sup>Department of Family Medicine and Community Health, University of Wisconsin-Madison

<sup>6</sup>Department of Bioinformatics and Medical Informatics, University of Wisconsin-Madison

Corresponding Author: Daniel To, [dto@uwhealth.org](mailto:dto@uwhealth.org)

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<b>Medication Name</b>	<b>Lorazepam milligram equivalent (LME)</b>
Lorazepam (IV/Oral)	1
Diazepam (IV/Oral)	5
Midazolam (IV)	2
Chlordiazepoxide (Oral)	12.5
Oxazepam (Oral)	5
Phenobarbital (IV/Oral)	15

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**Appendix 1.** Conversion of benzodiazepine and phenobarbital to Lorazepam milligram equivalent

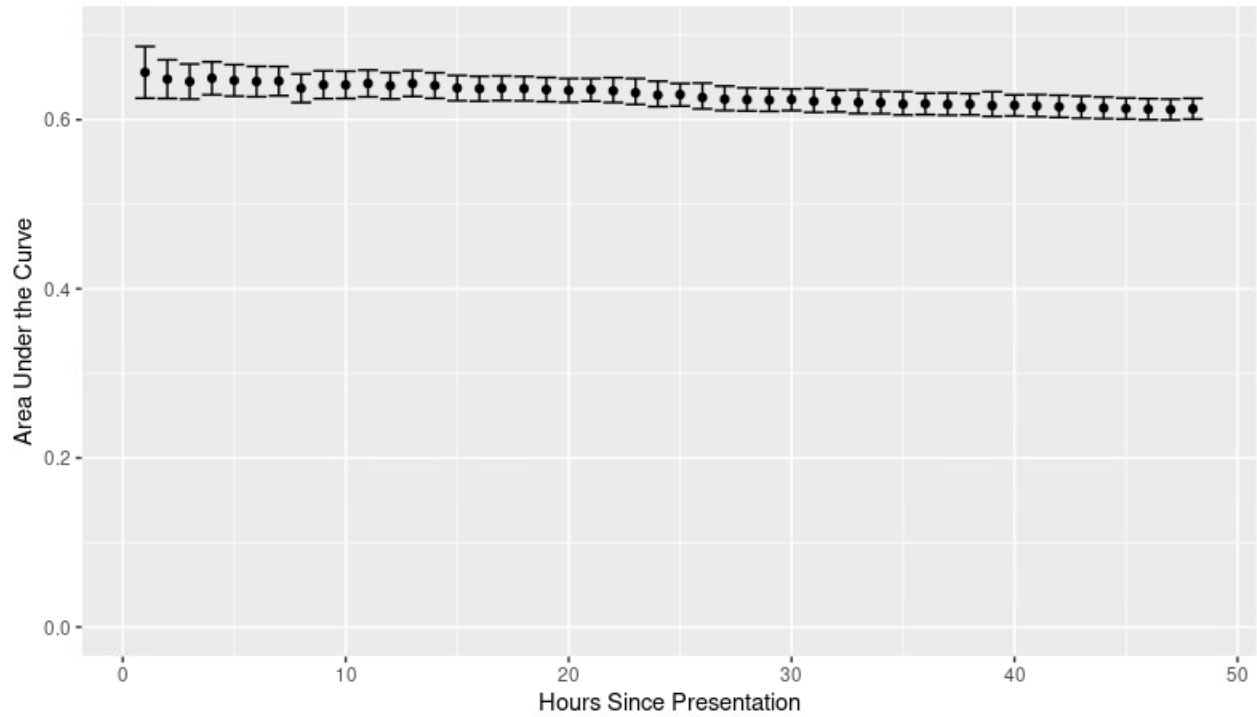
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**Percentile**

**Lorazepam Milligram Equivalent (LME)**

	University of Chicago	University of Wisconsin Madison
0.25	1.0	1.5
0.5	2.0	3.5
0.75	4.0	8.0
0.90	8.0	16.0
0.99	39.4	81.7
1.0	108.7	434.0

**Appendix 2.** Distribution of lorazepam milligram equivalent (LME)



**Appendix 3.** Learning curve of a univariable logistic regression examining the total dose of Lorazepam milligram equivalent (LME) for every hour up to 48 hours and its association with the primary outcome

**Appendix 4.** Cohort patient characteristics by center

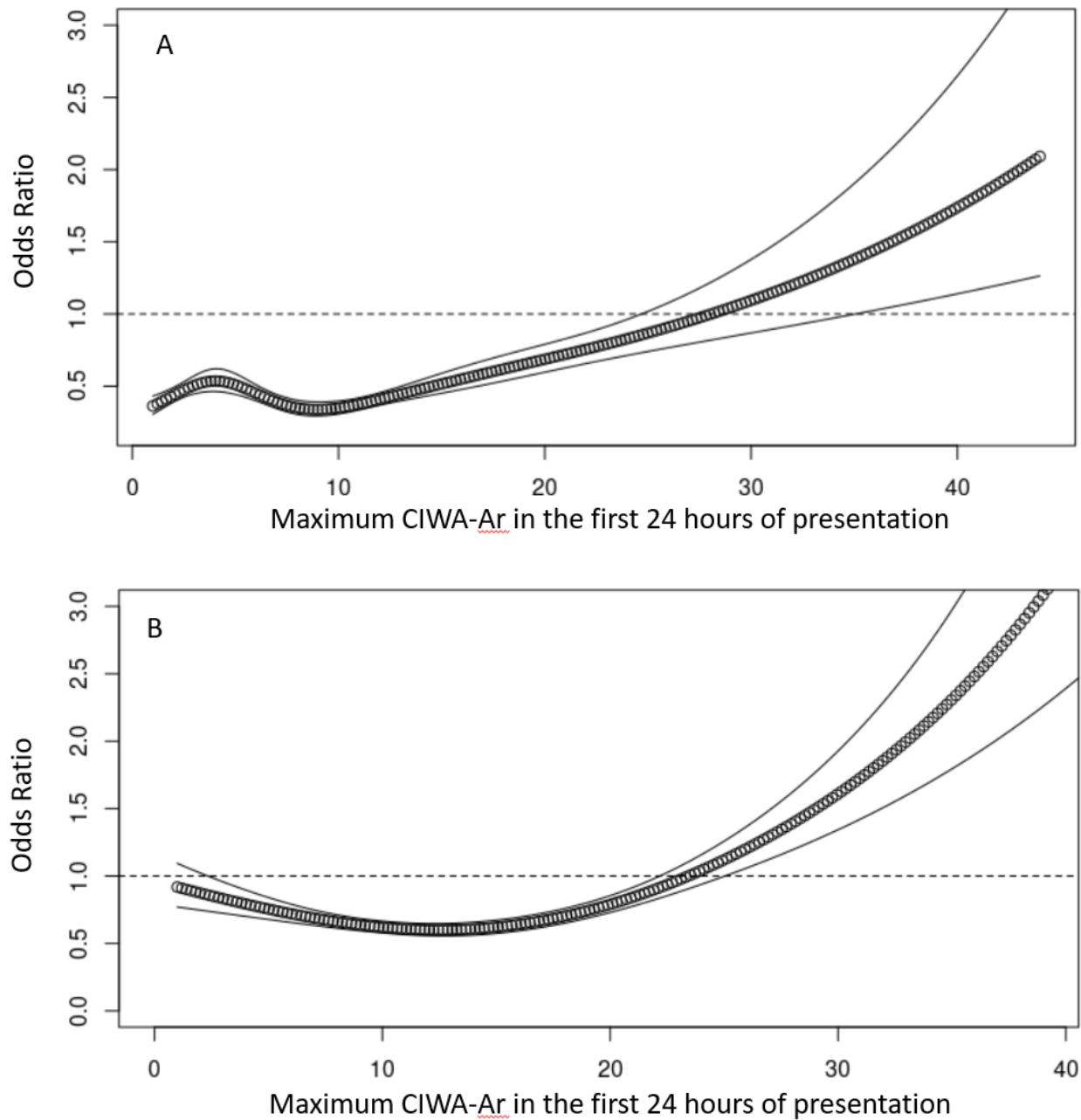
Characteristic	Total (n=8,742)	University of Chicago (n=4147)	University of Wisconsin (n=4595)	p
Age, median (IQR)	51 [40, 59]	53 [41, 61]	50 [39, 58]	<0.001
Male, n (%)	5,854 (67.0)	2,701 (65.1)	3,153 (68.6)	0.001
<b>Race, n (%)</b>				<0.001 <sup>a</sup>
American Indian or Alaska Native	73 (0.8)	11 (0.3)	62 (1.3)	
Asian/Mideast Indian	54 (0.6)	36 (0.9)	18 (0.4)	
Black/African American	3,296 (37.7)	3,029 (73.0)	267 (5.8)	
Pacific Islander/Hawaiian Native	18 (0.2)	5 (0.1)	13 (0.3)	
White/Caucasian	5,021 (57.4)	857 (20.7)	4,164 (90.6)	
Other	280 (3.2)	209 (5.1)	71 (1.5)	
<b>Ethnicity, n (%)</b>				<0.001 <sup>a</sup>
Declined/Unknown	124 (1.4)	65 (1.6)	59 (1.3)	
Hispanic/Latino	343 (3.9)	218 (5.3)	125 (2.7)	
Non-Hispanic/Latino	8,475 (94.7)	3,864 (93.2)	4,411 (96.0)	
BAC <sup>b</sup> > 0	2,896 (50.6)	978 (35.8)	1918 (64.2)	<0.001
Maximum CIWA-Ar <sup>c</sup> Score in the first 24 hours of admission, median (IQR)	11 [5, 16]	8 [3, 13]	13 [9, 18]	<0.001
Total LME <sup>d</sup> in the first 24 hours of admission, median (IQR)	2.5 [1, 6]	2 [1, 4]	3.5 [1.5, 8]	<0.001
<b>Elixhauser Comorbidities, n (%)</b>				
Alcohol use disorder	6,747 (77.2)	2,522 (60.8)	4,225 (91.9)	<0.001
Fluid and electrolyte disorders	5,183 (59.3)	2,188 (52.8)	2,995 (65.2)	<0.001
Hypertension	4,423 (50.6)	1,805 (43.5)	2,618 (57.0)	<0.001
Depression	3,323 (38.0)	671 (16.2)	2,652 (57.7)	<0.001
Arrhythmia	3,297 (37.7)	1,119 (27.0)	2,178 (47.4)	<0.001
Liver disease	2,874 (32.9)	743 (17.9)	2,131 (46.4)	<0.001
Drug use disorder	2,529 (28.9)	746 (18.0)	1,783 (38.8)	<0.001
Chronic pulmonary disease	2,518 (28.8)	1,039 (25.1)	1,479 (32.2)	<0.001
Neurological disorders	2,418 (27.7)	1,013 (24.4)	1,405 (30.6)	<0.001
Coagulopathy	1,952 (22.3)	551 (13.3)	1,401 (30.5)	<0.001

<sup>a</sup>p-values assessed the significance of the differences across all groups

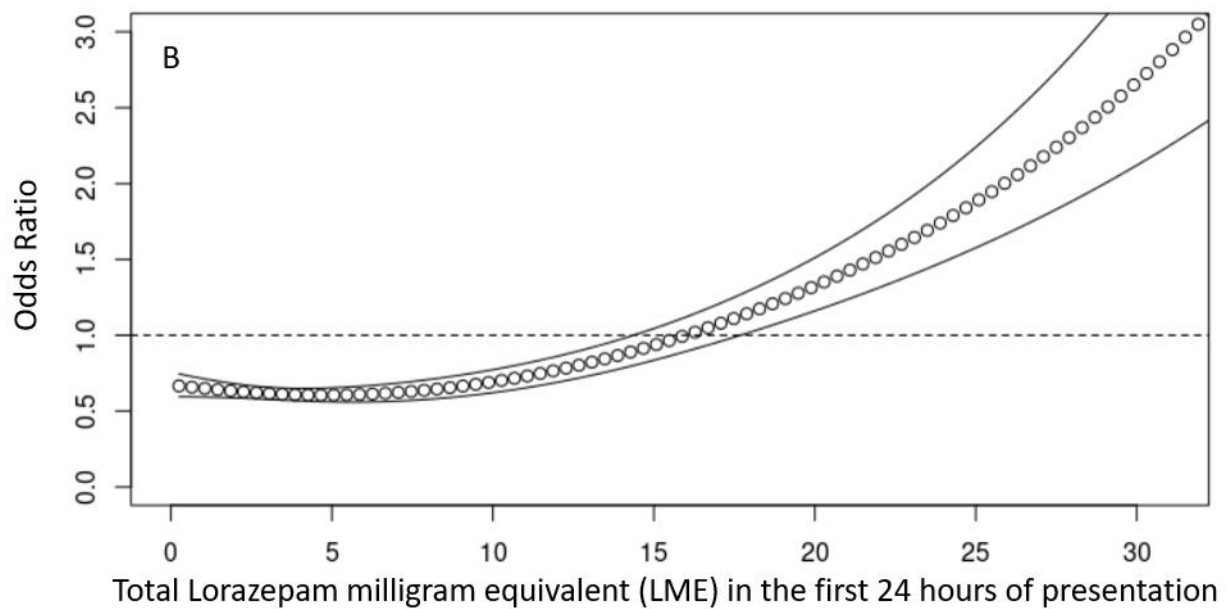
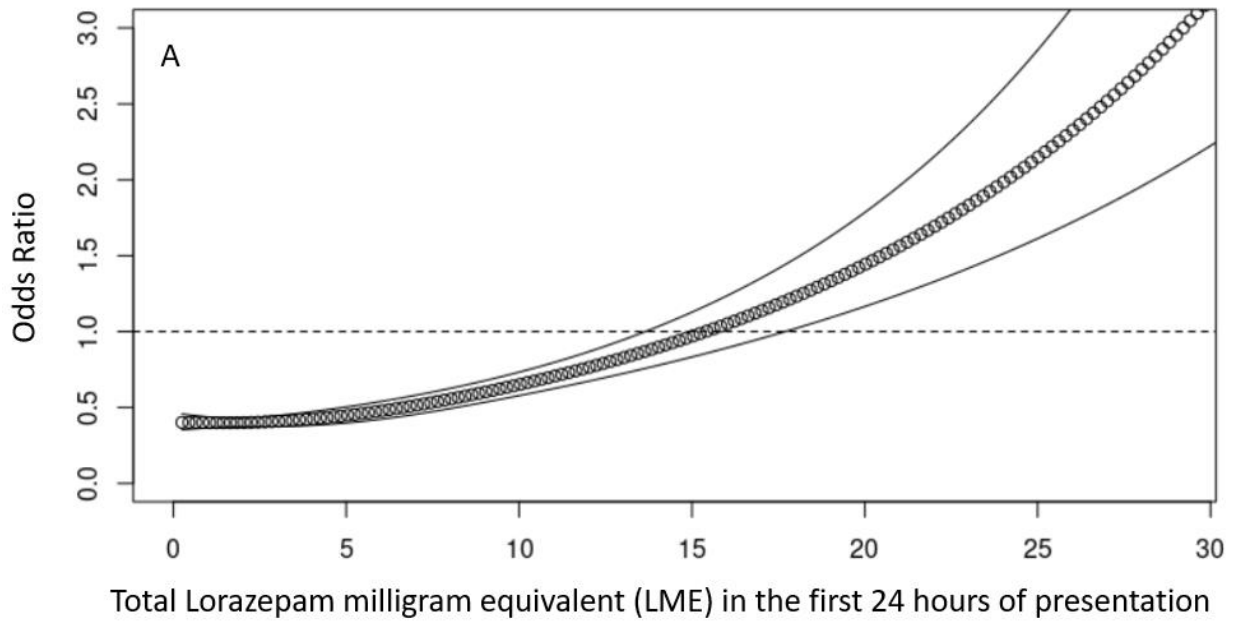
<sup>b</sup>BAC: Blood alcohol content

<sup>c</sup>CIWA-Ar: Clinical Institute Withdrawal Assessment

<sup>d</sup>LME: Lorazepam milligram equivalent



**Appendix 5.** Restricted cubic spline (RCS) regression of the odds ratio of the maximum Clinical Institute Withdrawal Assessment (CIWA-Ar) score in the first 24 hours of admission and Severe Alcohol Withdrawal Syndrome (SAWS) at (1) University of Chicago and (B) University of Wisconsin



**Appendix 6.** Restricted cubic spline (RCS) regression of the odds ratio of the total Lorazepam milligram equivalent (LME) in the first 24 hours of admission and Severe Alcohol Withdrawal Syndrome (SAWS) at (1) University of Chicago and (B) University of Wisconsin