

Online Supplement**Supplemental Methods. Propensity analysis**

Only pediatric hospitalizations for patients $6 \leq \text{age} \leq 18$ with home discharge disposition and primary physical diagnoses and BMH comorbidity were included in this analysis. Total number of hospitalizations for $6 \leq \text{age} \leq 18$ patients was 1009295, among them 109626 had psychiatric comorbidity and (10.86%). Among those with comorbidity, 95436 (87%) were discharged home. The control group used for propensity analysis included 846745 hospitalizations for patients' age 6-18 years old without psychiatric discharged home. Hospitalizations with maternal diagnoses or procedure were excluded. The propensity score was calculated with logistic regression where the dependent variable was psychiatric comorbidity and independent variables included: hospitalization level characteristics (patient age, sex, race, type of admission (elective), admission from emergency department, transfer from another institution, operative room procedure and clinical classification diagnoses categories) and hospital characteristics including region, rural location) and survey weights. Inclusion of survey weights as a co-variate in the propensity model was recommended by Dugoff EH1, Schuler M, Stuart EA(15) (Generalizing observational study results: applying propensity score methods to complex surveys. Health Serv Res. 2014 Feb;49(1):284-303). Hospitalizations were matched on 1:1 basis using a greedy algorithm.(12) We identified 84945 pairs that we used for analysis of outcomes. After the matching, we used standard techniques to assure a good match, including paired t-test for normally distributed continuous variables, McNemar test for categorical variables, and standardized differences.(16) We control for survey design when we estimated cost and length of stay for propensity matched groups. The costs and length of stay for propensity matched hospitalizations with and without psychiatric comorbidity were compared using non-parametric Wilcoxon signed rank test.

Supplemental Table 1. ICD9 codes for identification of pediatric hospitalizations with mental disorders.

Mental disorder category	ICD9-CM codes
ADD/hyperkinetic	314, 314.0, 314.01, 314.1, 314.2, 314.8, 314.9
Mood Disorder	293.83, 296, 296.00, 296.01, 296.02, 296.03, 296.04, 296.05, 296.06, 296.10, 296.11, 296.12, 296.13, 296.14, 296.15, 296.16, 296.40, 296.41, 296.42, 296.43, 296.44, 296.45, 296.46, 296.50, 296.51, 296.52, 296.53, 296.54, 296.55, 296.56, 296.60, 296.61, 296.62, 296.63, 296.64, 296.65, 296.66, 296.7, 296.80, 296.81, 296.82, 296.89, 296.90, 296.99, 301.1, 301.10, 301.11, 301.12, 301.13, 309.0, 309.1, 313.1
Depression	296.2, 296.20, 296.21, 296.22, 296.23, 296.24, 296.25, 296.26, 296.3, 296.30, 296.31, 206.32, 296.33, 296.34, 296.35, 296.36, 300.4, 311
Post-traumatic stress	309.81
Anxiety	300.0, 300.00, 300.01, 300.02, 300.09, 300.1, 300.10, 300.11, 300.12, 300.13, 300.14, 300.15, 300.16, 300.19, 300.2, 300.20, 300.21, 300.22, 300.23, 300.29, 300.3, 300.7, 313.0, 313.2, 313.21, 313.22, 313.23, 309.4, 309.82, 309.83, 309.89, 309.9
Oppositional	313.81, 309.3

Psychotic	295, 295.0, 295.00, 295.01, 295.02, 295.03, 295.04, 295.05, 295.1, 295.10, 295.11, 295.12, 295.13, 295.14, 295.15, 295.2, 295.20, 295.21, 295.22, 295.23, 295.24, 295.25, 295.3, 295.30, 295.31, 295.32, 295.33, 295.34, 295.35, 295.4, 295.40, 295.41, 295.42, 295.43, 295.44, 295.45, 295.5, 295.50, 295.51, 295.52, 295.53, 295.54, 295.55, 295.6, 295.60, 295.61, 295.62, 295.63, 295.64, 295.65, 295.7, 295.70, 295.71, 295.72, 295.73, 295.74, 295.75, 295.8, 295.80, 295.81, 295.82, 295.83, 295.84, 295.85, 295.9, 295.90, 295.91, 295.92, 295.93, 295.94, 295.95, 297, 297.0, 297.1, 297.2, 297.3, 297.8, 297.9, 298, 298.1, 298.2, 298.3, 298.4, 298.8, 298.9
Pervasive developmental disorders	299, 299.0, 299.01, 299.02, 299.1, 299.10, 299.12, 299.8, 299.81, 299.82, 299.9, 299.91, 299.92
Somatoform	300.8, 300.81, 300.82, 300.89, 307.8, 307.80, 307.81, 307.89
Eating disorders	307.1, 307.5, 307.50, 307.51, 307.52, 307.53, 307.54, 207.59
Tic disorders	307.2, 307.20, 307.21, 307.22, 307.23, 333.3
Substance/alcohol use*	291.0, 291.1, 291.2, 291.3, 291.4, 291.5, 291.8, 291.81, 291.82, 291.89, 291.9, 303.00, 303.01, 303.02, 303.03, 303.90, 303.91, 303.92, 303.93, 305.00, 305.01, 305.02, 305.03, 760.71, 980.0, 357.5, 425.5, 535.30, 535.31, 571.0, 571.1, 571.2, 571.3, 292.0, 292.11, 292.12, 292.2, 292.81, 292.82, 292.83, 292.84, 292.85, 292.89, 292.9, 304.00, 304.01, 304.02, 304.03, 304.10, 304.11, 304.12, 304.13, 304.20, 304.21, 304.22, 304.23, 304.30, 304.31, 304.32, 304.33, 304.40, 304.41, 304.42, 304.43, 304.50, 304.51, 304.52, 304.53, 304.60, 304.61, 304.62, 304.63, 304.70, 304.71, 304.72, 304.73, 304.80, 304.81, 304.82, 304.83, 304.90, 304.91, 304.92, 304.93, 305.20, 305.21, 305.22, 305.23, 305.30, 305.31, 305.32, 305.33, 305.40, 305.41, 305.42, 305.43, 305.50, 305.51, 305.52, 305.53, 305.60, 305.61, 305.62, 305.63, 305.70, 305.71, 305.72, 305.73, 305.80, 305.81, 305.82, 305.83, 305.90, 305.91, 305.92, 305.93, 648.30, 648.31, 648.32, 648.33, 648.34, 655.50, 655.51, 655.53, 760.72, 760.73, 760.75, 779.5, 965.00, 965.01, 965.02, 965.09, V65.42
Suicide/self-injury**	E95.00, E95.01, E95.02, E95.03, E95.04, E95.05, E95.06, E95.07, E95.08, E95.09, E95.10, E95.11, E95.18, E95.20, E95.21, E95.28, E95.29, E95.30, E95.31, E95.38, E95.39, E95.4, E95.50, E95.51, E95.52, E95.53, E95.54, E95.55, E95.56, E95.57, E95.59, E95.6, E95.70, E95.71, E95.72, E95.79, E95.80, E95.81, E95.82, E95.83, E95.84, E95.85, E95.86, E95.87, E95.88, E95.89, E95.9, V62.84
Peripartum mental disorders	648.4, 648.40, 648.41, 648.42, 648.43, 648.44
Other disorders	290, 290.0, 290.1, 290.10, 290.11, 290.12, 290.13, 290.2, 290.20, 290.21, 290.3, 290.4, 290.40, 290.41, 290.42, 290.43, 290.8, 293, 293.0, 293.1, 293.8, 293.81, 293.82, 293.83, 293.84, 293.89, 293.9, 294, 294.0, 294.1, 294.10, 294.11, 294.8, 294.9, 300.6, 300.9, 301.0, 301.2, 301.20, 301.21, 301.22, 301.3, 301.4, 301.5, 301.50, 301.51, 301.59, 301.6, 301.7, 301.8, 301.81, 301.82, 301.83, 301.84, 301.89, 301.9, 302, 302.0, 302.1, 302.2, 302.4, 302.4, 306, 306.0, 306.1, 306.2, 306.3, 306.4, 306.5, 306.6, 306.7, 306.8, 306.9, 307.0, 307.3, 307.4, 307.40, 307.41, 307.42, 307.43, 307.44, 307.45, 307.46, 307.47, 307.48, 307.49, 307.6, 307.7, 310, 310.0, 310.1,

	310.2, 310.8, 310.9, 312, 312.0, 312.00, 312.01, 312.02, 312.03, 312.1, 312.10, 312.11, 312.12, 312.13, 312.30, 312.31, 312.32, 312.33, 312.34, 312.35, 312.39, 312.4, 312.8, 312.81, 312.82, 312.89, 312.9
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* Based on clinical classification software (CCS) 660, 661

** Based on clinical classification software (CCS) 662

Supplemental Table 2. Comorbid psychiatric diagnoses for children age 0-20. Diagonal represents number of hospitalizations with primary psychiatric diagnoses. Percentages represent the associated psychiatric disorders for hospitalizations with the primary psychiatric diagnoses. The bottom line represents percentage of hospitalizations with the solitary primary psychiatric diagnosis.

Prim	ADD	Depression	Other Mood d/o	Post-traumatic stress	Anxiety	Oppositional	Psychotic	Pervasive	Somatoform	Eating	Tic	Substance alcohol	Self Injury	Peripartum (Maternal)	Other
2º Dx															
ADD	5659														
Depression	13.3%	86853													
Other Mood d/o	27.1%	5.8%	78246												
Post-traum. stress	7.8%	4.5%	11.1%	3888											
Anxiety	13.6%	24.4%	13.8%	15.3%	11183										
Oppositional	42.6%	8.2%	16.2%	12.1%	9.5%	4369									
Psychotic	2.6%	1.6%	4.0%	4.5%	2.5%	1.6%	23108								
Pervasive	7.8%	1.9%	5.5%	2.7%	4.1%	4.8%	3.7%	2371							
Somatoform	0.02%	0.09%	0.05%	0.1%	0.6%	0%	0.1%	0.0%	167						
Eating d/o	0.4%	3.4%	1.4%	2.3%	1.7%	0.4%	0.7%	0.4%	2.6%	3355					
Tic d/o	1.4%	0.4%	0.7%	0.5%	1.0%	0.8%	0.5%	2.4%	0.0%	0.3%	422				
Substance alcohol use	7.7%	24.2%	26.4%	14.6%	19.0%	16.6%	37.4%	3.2%	9.9%	6.5%	1.0%	17751			
Suicide/self Inj	14.8%	52.8%	35.4%	39.5%	28.6%	22.5%	19.9%	13.6%	4.1%	8.4%	1.8%	14.6%	363		
Peripartum	0%	0.08%	0.07%	0.1%	0.2%	0.0%	0.1%	0.0%	0.0%	0%	0%	0.9%	0.0%	4479	
Other d/o	25.9%	18.4%	24.8%	21.4%	16.8%	24.3%	12.5%	29.4%	9.9%	6.9%	9.2%	9.9%	14.0%	9.9%	11770
Solitary	10.6%	14.4%	14.2%	8.8%	25.1%	11.2%	27.9%	21.8%	38.3%	28.6%	48.4%	44.4%	13.2%	4.0%	22.3%

2º Dx - Secondary diagnosis

Supplemental Table 3. The most frequent physical diagnoses for hospitalizations of children 6-18 years of age and associated psychiatric comorbidities

Order	Primary DX	N (%)	N (% of hosp with psychiatric comorbidities)	Most frequent secondary psychiatric Dx	%
1	Acute Appendicitis	68112 (6.5)	3741 (5.5)	ADD	3.5
2	Asthma	54913 (5.3)	4694 (8.5)	ADD	5.0
3	Trauma during delivery	34459 (3.3)	1253 (3.6)	Peripartum	3.3
4	Diabetes	33235 (3.2)	5878 (17.7)	ADD Depression	6.4 6.2
5	Chemotherapy	29572(2.8)	3458 (11.7)	Anxiety	4.7
6	Pneumonia	27926(2.7)	2273 (8.1)	ADD	4.0
7	Epilepsy	26974(2.6)	7712 (28.6)	ADD Pervasive	11.4 10.3
8	Cellulitis and abscess	23687 (2.3)	2903 (12.3)	ADD	6.5
9	General Symptoms	18747 (1.8)	5703 (30.4)	ADD Depression	11.7 5.6
10	Other mother condition complicating pregnancy	18646 (1.8)	1259 (6.8)	Peripartum	5.5

11	Other indication for care related to labor and delivery	18140 (1.7)	892 (4.9)	Peripartum	4.4
12	Hereditary hemolytic anemias	16996 (1.6)	1592 (9.4)	Depression	3.1
13	Late pregnancy	15892 (1.5)	886 (5.6)	Peripartum	5.0
14	Complications of surgical and medical care	14910 (1.4)	1825 (12.2)	ADD Anxiety	4.4 3.0
15	Disorder of fluid electrolyte	13586 (1.3)	2000 (14.7)	ADD Anxiety	4.7 3.7