

Examination of the Comorbidity of Mental Illness and Somatic Conditions in Hospitalized Children in the United States Using the Kids' Inpatient Database, 2009

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OBJECTIVE: To examine the associations between mental and physical illness in hospitalized children.

METHODS: The data for this analysis came from the 2009 Kids' Inpatient Database (KID). Any child with an International Classification of Diseases, Ninth Revision code indicative of depressive, anxiety, or bipolar disorders or a diagnosis of sickle cell disease, diabetes mellitus type 1 or 2, asthma, or attention-deficit/hyperactivity disorder (ADHD) were included. Using SAS software, we performed χ^2 tests and multivariable logistic regression to determine degrees of association.

RESULTS: Children discharged with sickle cell disease, asthma, diabetes mellitus type 1, diabetes mellitus type 2, and ADHD were 0.94, 2.76, 3.50, 6.37, and 38.39 times more likely to have a comorbid anxiety, depression, or bipolar disorder diagnosis than other hospitalized children, respectively.

CONCLUSIONS: Children with several chronic physical illnesses (asthma, diabetes mellitus type 1, diabetes mellitus type 2) and mental illnesses (ADHD) have higher odds of being discharged from the hospital with a comorbid mood or anxiety disorder compared with other children discharged from the hospital. It is therefore important to screen children hospitalized with chronic medical conditions for comorbid mental illness to ensure optimal clinical care, to improve overall health and long-term outcomes for these children.

ABSTRACT

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Dr Szein conceptualized and designed the study, conducted the analyses, did the initial data evaluation, drafted the initial manuscript, and reviewed and revised the manuscript; Dr Lane assisted with the conceptualization and design of the study, participated in data evaluation, and reviewed and revised the manuscript; and both authors approved the final manuscript as submitted.

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Chronic childhood illnesses are becoming ever more common in the United States, with an estimated 7% of people <18 years old having a chronic medical condition in 2004, compared with 1.8% in 1960.¹ As with adults, mental health conditions often co-occur with somatic health problems in children. However, although the literature examining the relationship between mental and somatic illnesses in adults is abundant, there are few studies looking at this issue in children. In the adult population, studies have shown that people with mental illness have higher rates of existing physical health problems, are at higher risk of developing physical health problems, and have a shorter life expectancy than those without mental illness.²⁻⁴ Adults who have comorbid mental illness are also less likely to seek and obtain appropriate care for their physical conditions or adhere to treatment regimens, which often leads to worsening of the condition.⁵ Similar large-scale studies examining health of children with comorbid mental and somatic illnesses are limited.

This is a large gap in the literature, because mental illness is prevalent among children. According to the Centers for Disease Control, in any given year 13% to 20% of children meet criteria for a mental illness.⁶ Most of the studies that do exist are limited to specific populations. For example, previous studies have examined rates of comorbid physical illness among youth entering residential treatment programs and among children with anxiety disorders.⁷⁻⁹ Some studies have also assessed the rates of mental health conditions among children with physical and other health problems such as sickle cell disease, diabetes, and attention-deficit/hyperactivity disorder (ADHD) in the outpatient setting.^{5,10-13}

One group that is underrepresented in the literature is hospitalized pediatric patients. In 2009, >3.1 million US children ages 1 to 21 years (3.6 hospitalizations per 100 children) had an inpatient hospital stay. Respiratory illnesses such as asthma and pneumonia were the most common reason for hospitalization among children age 1 to 9 years, and mental illness was the most common primary diagnosis among children

age 10 to 14 years and the second most common primary diagnosis among those 15 to 21 years of age.¹⁴ Given the high proportion of mental health hospitalizations among older children and the strong connection between mental illness and some physical conditions found in adults, we thought an examination of mental and physical health comorbidity among hospitalized children was warranted. We hypothesized that children hospitalized for chronic physical ailments would have high rates of comorbid mental illness.

METHODS

This is a cross-sectional study of comorbid mental (depression, anxiety, or bipolar disorder) and somatic illness among US children hospitalized in 2009. Data came from the Kids' Inpatient Database (KID), created by the Agency for Healthcare Research and Quality (AHRQ) as part of the Healthcare Cost and Utilization Project (HCUP).¹⁵ Subjects are drawn from a sampling of discharges from community nonrehabilitation hospitals (4121 hospitals in 44 states) in the United States that participate in HCUP. Eighty percent of pediatric discharges are randomly drawn from each frame hospital to build the database. The American Hospital Association universe is used as the standard to develop discharge weights so that the data can be used to determine national estimates. The database contains ~3.4 million unweighted discharges, representing a weighted total of 7 370 203 discharges for children ages 0 to 20 years.

Inclusion Criteria

All nonnewborn hospitalizations from the 2009 KID were included in the analysis. Then, any hospitalization with an International Classification of Diseases, Ninth Revision (ICD-9) primary or secondary diagnostic code indicative of depression, anxiety, or bipolar disorder was included in the analysis as a mental health diagnosis. Additionally, all hospitalizations for physical illnesses as indicated by the following primary or secondary ICD-9 diagnostic codes were identified: sickle cell disease, diabetes mellitus types 1 and 2 (DM1, DM2), asthma, and ADHD. These diagnoses were

specifically chosen because they are common, they affect children of all races, ages, and socioeconomic statuses, and when severe they often lead to hospitalization. A complete list of all ICD-9 codes used can be found in the Appendix.

Data Analysis

We determined the proportion of children hospitalized for physical health diagnoses who had comorbid mental health diagnoses and the number of children hospitalized primarily for mental health diagnoses who had comorbid physical health diagnoses. The primary diagnosis was the one listed first among all the ICD-9 codes attached to a discharge. Our denominator for both of these calculations was the total number of discharges with both a physical and a mental health diagnosis. These results were weighted to the US population of hospitalized children according to KID specifications.

All statistical analyses were conducted in SAS (SAS Institute, Inc, Cary, NC) software with the weighting system devised by HCUP and distributed with the data set.¹⁶ A *P* value of $\leq .05$ was used to determine statistical significance. The research was exempted from full institutional review board review by the University of Maryland Human Protections Research Office based on the exclusive use of deidentified data.

RESULTS

Male children made up 47.4% of all 2009 hospital discharges. White children made up 51.1% of hospitalizations, black children made up 16.0%, and Hispanic children 21.8%. Medicaid was the primary payer for 48.5% of discharges, and private insurance (including health maintenance organizations) covered 42.5% of children (Table 1). The total number of discharges including both mental and somatic illness ICD-9 codes was 109 058. This was the primary cohort from which the following entries were identified for the analysis.

Several different chronic childhood illnesses were examined in relationship with mental illness; these were sickle cell disease, DM1, DM2, asthma, and ADHD (Table 2, percentages of comorbid diagnoses, Table 3, odds ratios [ORs]). Children with sickle cell

TABLE 1 Demographic Characteristics of Children Age 0–20 Years With Mental Health Discharge Diagnoses, by Diagnosis

	All KID Hospitalizations		Anxiety, Depression, or Bipolar Disorder Diagnosis		Anxiety Diagnosis Only		Depression Diagnosis Only		Bipolar Disorder Diagnosis Only	
	N (SD)	%	N (SD)	%	N (SD)	%	N (SD)	%	N (SD)	%
Gender										
Female	3 846 380 (3879)	52.6	169 971 (324)	58.2	20 195 (113)	57.6	70 777 (197)	63.0	43 294 (180)	48.9
Male	3 466 231 (3897)	47.4	122 299 (323)	41.8	14 852 (113)	42.4	41 514 (196)	37.0	45 340 (180)	51.2
Race										
White	3 158 226 (3624)	51.1	157 149 (279)	66.4	19 690 (96)	68.6	58 731 (177)	63.6	48 107 (155)	66.2
Hispanic	1 423 563 (2589)	23.0	28 165 (189)	11.9	3609 (68)	12.6	12 657 (126)	13.7	7557 (99)	10.4
Black	986 825 (2029)	16.0	34 648 (208)	14.6	3562 (68)	12.4	13 854 (132)	15.0	12 401 (122)	17.1
Other ^a	617 549	10.0	16 719	7.1	1854	6.5	7087	7.7	4645	6.4
Payer										
Private	3 197 997 (3799)	42.5	130 071 (323)	44.5	17 280 (113)	49.3	52 163 (201)	46.4	34 208 (174)	38.6
Medicaid	3 566 754 (3778)	48.5	129 850 (327)	43.8	14 040 (112)	40.0	45 451 (201)	40.5	44 867 (181)	50.6
Other ^b	583 575	8.1	34 073	11.7	3748	10.7	14 760	13.1	9518	10.7
Total	7 370 203 (4742)	—	293 232 (634)	—	35 157 (22)	—	112 833 (38)	—	88 911 (33)	—

^a Other race includes Asian or Pacific Islander, Native American, and other.

^b Other payer includes Medicare, self-pay, no charge, and other.

disease were less likely to receive a diagnosis of anxiety, depression, or bipolar disorder compared with children hospitalized for other reasons (OR = 0.94; 95% confidence interval [CI], 0.8–1.0; $P = .012$). More specifically, these children had lower odds than the general hospitalized population of receiving a diagnosis of anxiety and bipolar disorder (for anxiety, OR = 0.87; 95% CI, 0.79–0.95; $P = .0038$; for bipolar disorder, OR = 0.34; 95% CI, 0.30–0.39; $P \leq .0001$) and higher odds of receiving a diagnosis of depression (OR = 1.21; 95% CI, 1.13–1.29; $P \leq .0001$).

Children discharged with a diagnosis of asthma were more likely to be discharged

with a comorbid diagnosis of depression, anxiety, or bipolar disorder compared with their hospitalized counterparts who did not have asthma (OR = 2.76; 95% CI, 2.73–2.79; $P \leq .0001$). This difference was also seen in children who were discharged with a diagnosis of DM1 compared with children without this childhood illness (OR = 3.50; 95% CI, 3.42–3.59; $P \leq .0001$). Children discharged with a diagnosis of DM2 had even higher odds of being discharged with a diagnosis of anxiety, depression, or bipolar disorder compared with those with DM1 (OR = 6.37; 95% CI, 6.13–6.62; $P \leq .0001$). Finally, the odds of being discharged with a diagnosis of ADHD and depression, anxiety, or bipolar disorder were significantly

higher than for any of the other diagnoses (OR = 38.39; 95% CI, 37.89–38.89; $P \leq .0001$).

DISCUSSION

Children with DM1, DM2, asthma, or ADHD had higher odds of receiving a diagnosis of comorbid anxiety, depression, or bipolar disorders compared with children without these childhood illnesses. Children with sickle cell disease had lower odds of receiving a diagnosis of anxiety or bipolar disorder than children without sickle cell disease and higher odds of receiving a diagnosis of depression. These findings are in general agreement with previous studies that have shown a relationship between chronic childhood illness and mental illness.^{17–19} However, 2 findings stand out.

First, children with ADHD have much higher odds of receiving a diagnosis of mental illness compared with children with any of the other childhood illnesses examined.

Previous studies have suggested ADHD is comorbid with other mental illnesses in children at the following rates: depression between 9% and 38%, anxiety between 5% and 15%, and bipolar disorder 16%.^{20,21} The very high rates of comorbid ADHD and mental illness are probably the result of at least 3 phenomena. First, ADHD is a behavioral and emotional disorder, as are mental illnesses; therefore, there may be some

TABLE 2 Number and Percentage of Primary Childhood Illness Discharges With Comorbid Mental Illness

Childhood Illness	Number and Percentage of Primary Childhood Illness Discharges With Comorbid Mental Illness							
	All KID Hospitalizations		Anxiety Diagnosis Only		Depression Diagnosis Only		Bipolar Disorder Diagnosis Only	
	N	%	N	%	N	%	N	%
Sickle cell disease	40 753	0.6	290	0.7	749	1.8	127	0.3
DM1	57 122	0.8	811	1.4	2944	5.1	1297	2.3
DM2	15 771	0.2	52	0.3	155	1.0	93	0.6
Asthma	421 874	5.7	957	0.2	693	0.2	486	0.1
ADHD	101 621	1.4	16 523	16.3	19 885	19.6	33 719	33.2

TABLE 3 ORs for Childhood Diseases and Mental Illness, Children Ages 0–20

Childhood Illness	Anxiety, Depression, or Bipolar Disorder Diagnosis		Anxiety Diagnosis Only		Depression Diagnosis Only		Bipolar Disorder Diagnosis Only	
	OR	CI	OR	CI	OR	CI	OR	CI
Sickle cell disease	0.94*	0.89–0.99	0.87**	0.79–0.95	1.21	1.13–1.29	0.34	0.30–0.39
DM1	3.50	3.42–3.59	2.08	1.97–2.20	4.17	4.05–4.30	2.46	2.35–2.57
DM2	6.37	6.13–6.62	4.52	4.20–4.85	5.72	5.44–6.03	6.23	5.97–6.65
Asthma	2.76	2.73–2.79	3.05	2.99–3.10	2.40	2.37–2.44	2.87	2.82–2.91
ADHD	38.39	37.89–38.89	20.36	19.99–20.73	13.41	13.19–13.63	42.76	42.13–43.39

* $P = .0123$; ** $P = .0038$; all other odds ratios have $P < .0001$.

common pathways that exist for both diseases. Family and population studies have shown that there is a familial link between ADHD and depression and between ADHD and bipolar disorder.²⁰ Also, there have been several studies examining the shared pathologic pathways between ADHD and anxiety disorders; for example, 1 study examining ADHD and obsessive-compulsive disorder found that there were subtle abnormalities in the basal ganglia common to both illnesses.²¹ Second, patients with ADHD often have difficulty with academic performance, social relationships, and family interactions that could contribute to the patient developing depression or anxiety. However, the majority of studies conclude that it is a combination of increased heritability and social stressors that makes children more likely to have comorbid ADHD and depression or anxiety.^{20,21} Finally, children with a diagnosis of ADHD are often treated by a pediatric mental health specialist, and these practitioners may be more sensitive to identification of other mental illness and therefore more likely to diagnose them.

The second finding of interest is related to sickle cell disease, in which the odds of receiving a diagnosis of anxiety or bipolar disorder is lower than for children without the disease, and the odds of receiving a diagnosis of comorbid depression are higher. Despite having a higher odds of receiving a diagnosis of depression in the study presented here, it was significantly less than the odds of receiving a diagnosis of depression if a child had 1 of the other illnesses examined. One possible explanation for the lower odds of receiving

a diagnosis of anxiety or bipolar disorder, as well as the only slightly elevated risk of receiving a diagnosis of depression, if a child has sickle cell disease is that most children with sickle cell disease are black. Because many studies have demonstrated that black children are less likely to receive a diagnosis of a mental health condition or use mental health services than white children, race may be a confounding variable in the relationship between sickle cell and the diagnosis of mental illness, with mental health diagnoses being missed in more black children than in children of another race or ethnicity.²²

STRENGTHS AND LIMITATIONS

The studies included in this report have several strengths, many of which were related to the KID. First, the KID is a large database with >3 million individual discharges. Additionally, HCUP has created a weighting system so that these discharges could be used to estimate all discharges of children ages 0 to 20 years in the United States in general inpatient settings. This large size allows focused statistical analysis with small P values and confidence intervals. Data for inclusion in the KID were acquired through probability-based sampling, thus minimizing bias.

Despite the many positive aspects of the KID, there are also some limitations. One of the major drawbacks is that it is not possible to know whether each of the discharges represents a different patient or whether they represent the same patient who was discharged from the hospital more than once in the course of the year. Thus, the estimates of prevalence, especially those

relating to relationships between childhood illness and mental illness, could be overstated. Additionally, there could be some misclassifications of discharge diagnoses, because of either human error or hospital coding, which may lead to inaccurate prevalence data. The database also did not include inpatient stays that occurred in psychiatric hospitals or rehabilitation hospitals and centers. The latter could lead to an underestimate of the frequency of mental health hospitalizations. Also, there were some hospitals that did not report race; this limitation could lead to bias if there was a relationship between this demographic factor and mental illness in these particular hospitals. However, given the extremely large size of the KID, it is unlikely that this lack of data had a significant impact on the validity of the findings. Finally, the cross-sectional nature of the database makes it impossible to determine the temporal relationship between the childhood illnesses and the mental illnesses. This would be valuable information for creation of screening programs. Because we know so little about comorbid physical and mental health in children, it is necessary to first look at frequency in an analysis such as described in this article; then, cohort or case-control studies can follow to examine temporality.

CONCLUSIONS

Overall, investigations relating to chronic childhood illnesses and their relationship to mental illness are important because they can inform clinicians that certain groups of children are more at risk for having or developing mental illness than others. Through these findings, new screening programs or changes in the way care is delivered can be explored, and eventually screening for all children may become standard practice in hospital settings. Identifying mental illness in children who come to the hospital for physical illnesses can lead to lowering the morbidity from both diseases in the long run, because patients who receive appropriate care for their mental illness tend to take better care of their physical illnesses. Additionally, it could lead to improved health in adulthood.

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APPENDIX: ICD-9 CODES USED

Depression ICD-9 Codes

- 293.83: Organic Affective Syndrome
- 296.20: Depressive Affective Disorders—Unspecified
- 296.21: Depressive Affective Disorder—Mild
- 296.22: Depressive Affective Disorder—Moderate
- 296.23: Depressive Affective Disorder—Severe Without Psychotic Behavior
- 296.24: Depressive Affective Disorder—Severe With Psychotic Behavior
- 296.25: Depressive Affective Disorder—Partial Remission
- 296.26: Depressive Affective Disorder—Full Remission
- 296.30: Recurrent Depressive Disorder—Unspecified
- 296.31: Recurrent Depressive Disorder—Mild
- 296.32: Recurrent Depressive Disorder—Moderate
- 296.33: Recurrent Depressive Disorder—Severe
- 296.34: Recurrent Depressive Disorder—Severe With Psychotic Behavior
- 296.35: Recurrent Depressive Disorder—Partial Remission
- 296.36: Recurrent Depressive Disorder—Full Remission
- 311: Depressive Disorder Not Elsewhere Classified
- 300.4: Dysthymic Disorder

Anxiety ICD-9 Codes

- 300.00: Anxiety State—Unspecified
- 300.01: Panic Disorder—No Agoraphobia
- 300.02: Generalized Anxiety Disorder
- 300.09: Other Anxiety States
- 300.10: Hysteria—Unspecified
- 300.11: Conversion Disorder
- 300.12: Dissociative Amnesia
- 300.13: Dissociative Fugue
- 300.14: Dissociative Identity Disorder
- 300.15: Dissociative Disorder or Reaction—Unspecified
- 300.20: Phobia—Unspecified
- 300.21: Agoraphobia With Panic
- 300.22: Agoraphobia Without Mention of Panic Attacks
- 300.23: Social Phobia
- 300.29: Other Isolated or Specific Phobias
- 300.3: Obsessive Compulsive Disorder
- 309.81: Posttraumatic Stress Disorder

Bipolar Disorder

- 296.00: Bipolar I Disorder, Single Manic Episode, Unspecified
- 296.01: Bipolar I Disorder, Single Manic Episode, Mild
- 296.02: Bipolar I Disorder, Single Manic Episode, Moderate
- 296.03: Bipolar I Disorder, Single Manic Episode, Severe, Without Mention of Psychotic Behavior
- 296.04: Bipolar I Disorder, Single manic Episode, Severe, Specified as With Psychotic Behavior

296.05: Bipolar I Disorder, Single manic Episode, in Partial or Unspecified Remission
 296.06: Bipolar I Disorder, Single manic Episode, in Full Remission
 296.10: Manic Affective Disorder, Recurrent Episode, Unspecified
 296.11: Manic Affective Disorder, Recurrent Episode, Mild
 296.12: Manic Affective Disorder, Recurrent Episode, Moderate
 296.13: Manic Affective Disorder, Recurrent Episode, Severe, Without Mention of Psychotic Behavior
 296.14: Manic Affective Disorder, Recurrent Episode, Severe, Specified as With Psychotic Behavior
 296.15: Manic Affective Disorder, Recurrent Episode, in Partial or Unspecified Remission
 296.16: Manic Affective Disorder, Recurrent Episode, in Full Remission
 296.40: Bipolar I Disorder, Most Recent Episode (or Current) Manic, Unspecified
 296.41: Bipolar I Disorder, Most Recent Episode (or Current) Manic, Mild
 296.42: Bipolar I Disorder, Most Recent Episode (or Current) Manic, Moderate
 296.43: Bipolar I Disorder, Most Recent Episode (or Current) Manic, Severe, Without Mention of Psychotic Behavior
 296.44: Bipolar I Disorder, Most Recent Episode (or Current) Manic, Severe, Specified as With Psychotic Behavior
 296.45: Bipolar I Disorder, Most Recent Episode (or Current) Manic, in Partial or Unspecified Remission
 296.46: Bipolar I Disorder, Most Recent Episode (or Current) Manic, in Full Remission
 296.50: Bipolar I Disorder, Most Recent Episode (or Current) Depressed, Unspecified
 296.51: Bipolar I Disorder, Most Recent Episode (or Current) Depressed, Mild
 296.52: Bipolar I Disorder, Most Recent Episode (or Current) Depressed, Moderate
 296.53: Bipolar I Disorder, Most Recent Episode (or Current) Depressed, Severe, Without Mention of Psychotic Behavior
 296.54: Bipolar I Disorder, Most Recent Episode (or Current) Depressed, Severe, Specified as With Psychotic Behavior
 296.55: Bipolar I Disorder, Most Recent Episode (or Current) Depressed, in Partial or Unspecified Remission
 296.56: Bipolar I Disorder, Most Recent Episode (or Current) Depressed, in Full Remission
 296.60: Bipolar I Disorder, Most Recent Episode (or Current) Mixed, Unspecified
 296.61: Bipolar I Disorder, Most Recent Episode (or Current) Mixed, Mild
 296.62: Bipolar I Disorder, Most Recent Episode (or Current) Mixed, Moderate
 296.63: Bipolar I Disorder, Most Recent Episode (or Current) Mixed, Severe, Without Mention of Psychotic Behavior
 296.64: Bipolar I Disorder, Most Recent Episode (or Current) Mixed, Severe, Specified as With Psychotic Behavior
 296.65: Bipolar I Disorder, Most Recent Episode (or Current) Mixed, in Partial or Unspecified Remission
 296.66: Bipolar I Disorder, Most Recent Episode (or Current) Mixed, in Full Remission
 296.7: Bipolar I Disorder, Most Recent Episode (or Current) Unspecified
 296.80: Bipolar Disorder, Unspecified
 296.81: Atypical Manic Disorder
 296.82: Atypical Depressive Disorder
 296.89: Other Bipolar Disorders
 296.90: Unspecified Episodic Mood Disorder
 296.99: Other Specified Episodic Mood Disorder

Juvenile Arthritis ICD-9 Codes

714.30: Polyarticular Juvenile Rheumatoid Arthritis, Chronic or Unspecified
 714.31: Polyarticular Juvenile Rheumatoid Arthritis, Acute
 714.32: Pauciarticular Juvenile Rheumatoid Arthritis
 714.33: Monoarticular Juvenile Rheumatoid Arthritis

Sickle Cell Disease ICD-9 Codes

- 282.60: Sickle-Cell Disease Unspecified
- 282.61: Sickle-Cell Disease Hb-SS Disease Without Crisis
- 282.62: Sickle-Cell Disease Hb-SS Disease With Crisis
- 282.63: Sickle-Cell/Hb-C Disease Without Crisis
- 282.64: Sickle-Cell/Hb-C Disease With Crisis
- 282.68: Other Sickle-Cell Disease Without Crisis
- 282.69: Other Sickle-Cell Disease With Crisis

Diabetes Mellitus Type I ICD-9 Codes

- 250.01: Diabetes Mellitus Without Mention of Complication—Type I [Juvenile Type], Not Stated as Uncontrolled
- 250.03: Diabetes Mellitus Without Mention of Complication—Type I [Juvenile Type], Uncontrolled
- 250.11: Diabetes With Ketoacidosis—Type I [Juvenile Type], Not Stated as Uncontrolled
- 250.13: Diabetes With Ketoacidosis—Type I [Juvenile Type], Uncontrolled
- 250.21: Diabetes With Hyperosmolarity—Type I [Juvenile Type], Not Stated as Uncontrolled
- 250.23: Diabetes With Hyperosmolarity—Type I [Juvenile Type], Uncontrolled
- 250.31: Diabetes With Other Coma—Type I [Juvenile Type], Not Stated as Uncontrolled
- 250.33: Diabetes With Other Coma—Type I [Juvenile Type], Uncontrolled
- 250.41: Diabetes With Renal Manifestations—Type I [Juvenile Type], Not Stated as Uncontrolled
- 250.43: Diabetes With Renal Manifestations—Type I [Juvenile Type], Uncontrolled
- 250.51: Diabetes With Ophthalmic Manifestations—Type I [Juvenile Type], Not Stated as Uncontrolled
- 250.53: Diabetes With Ophthalmic Manifestations—Type I [Juvenile Type], Uncontrolled
- 250.61: Diabetes With Neurologic Manifestations—Type I [Juvenile Type], Not Stated as Uncontrolled
- 250.63: Diabetes With Neurologic Manifestations—Type I [Juvenile Type], Uncontrolled
- 250.71: Diabetes With Peripheral Circulatory Disorders—Type I [Juvenile Type], Not Stated as Uncontrolled
- 250.73: Diabetes With Peripheral Circulatory Disorders—Type I [Juvenile Type], Uncontrolled
- 250.81: Diabetes With Other Specified Manifestations—Type I [Juvenile Type], Not Stated as Uncontrolled
- 250.83: Diabetes With Other Specified Manifestations—Type I [Juvenile Type], Uncontrolled
- 250.91: Diabetes With Unspecified Complication—Type I [Juvenile Type], Not Stated as Uncontrolled
- 250.93: Diabetes With Unspecified Complication—Type I [Juvenile Type], Uncontrolled

Diabetes Mellitus Type II ICD-9 Codes

- 250.00: Diabetes Mellitus Without Mention of Complication—Type II or Unspecified Type, Not Stated as Uncontrolled
- 250.02: Diabetes Mellitus Without Mention of Complication—Type II or Unspecified Type, Uncontrolled
- 250.10: Diabetes With Ketoacidosis—Type II or Unspecified Type, Not Stated as Uncontrolled
- 250.12: Diabetes With Ketoacidosis—Type II or Unspecified Type, Uncontrolled
- 250.20: Diabetes With Hyperosmolarity—Type II or Unspecified Type, Not Stated as Uncontrolled
- 250.22: Diabetes With Hyperosmolarity—Type II or Unspecified Type, Uncontrolled
- 250.30: Diabetes With Other Coma—Type II or Unspecified Type, Not Stated as Uncontrolled
- 250.32: Diabetes With Other Coma—Type II or Unspecified Type, Uncontrolled
- 250.40: Diabetes With Renal Manifestations—Type II or Unspecified Type, Not Stated as Uncontrolled
- 250.42: Diabetes With Renal Manifestations—Type II or Unspecified Type, Uncontrolled
- 250.50: Diabetes With Ophthalmic Manifestations—Type II or Unspecified Type, Not Stated as Uncontrolled
- 250.52: Diabetes With Ophthalmic Manifestations—Type II or Unspecified Type, Uncontrolled
- 250.60: Diabetes With Neurologic Manifestations—Type II or Unspecified Type, Not Stated as Uncontrolled

250.62: Diabetes With Neurologic Manifestations—Type II or Unspecified Type, Uncontrolled
250.70: Diabetes With Peripheral Circulatory Disorders—Type II or Unspecified Type, Not Stated as Uncontrolled
250.72: Diabetes With Peripheral Circulatory Disorders—Type II or Unspecified Type, Uncontrolled
250.80: Diabetes With Other Specified Manifestations—Type II or Unspecified Type, Not Stated as Uncontrolled
250.82: Diabetes With Other Specified Manifestations—Type II or Unspecified Type, Uncontrolled
250.90: Diabetes With Unspecified Complication—Type II or Unspecified Type, Not Stated as Uncontrolled
250.92: Diabetes With Unspecified Complication—Type II or Unspecified Type, Uncontrolled

Asthma ICD-9 Codes

493.00: Extrinsic Asthma Unspecified
493.01: Extrinsic Asthma With Status Asthmaticus
493.02: Extrinsic Asthma With (Acute) Exacerbation
493.10: Intrinsic Asthma Unspecified
493.11: Intrinsic Asthma With Status Asthmaticus Convert
493.12: Intrinsic Asthma With (Acute) Exacerbation Convert
493.20: Chronic Obstructive Asthma Unspecified Convert
493.21: Chronic Obstructive Asthma With Status Asthmaticus
493.22: Chronic Obstructive Asthma With (Acute) Exacerbation
493.81: Exercise Induced Bronchospasm
493.82: Cough Variant Asthma
493.90: Asthma, Unspecified Type, Unspecified
493.91: Asthma, Unspecified Type, With Status Asthmaticus
493.92: Asthma, Unspecified Type, With (Acute) Exacerbation

Attention Deficit Disorder of Childhood

314.00: Attention Deficit Disorder Without Mention of Hyperactivity
314.01: Attention Deficit Disorder With Hyperactivity

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