



---

# **PEDIATRIC QUALITY INDICATORS™ v2019**

## **ICD-10-CM BENCHMARK DATA TABLES**

**Prepared for:**

Agency for Healthcare Research and Quality  
U.S. Department of Health and Human Services  
5600 Fishers Lane  
Rockville, MD 20857  
<http://www.qualityindicators.ahrq.gov>

**Contract No.** HHSA290201800003G

**Prepared by:**

Mathematica  
P.O. Box 2393  
Princeton, NJ 08543-2393

**July 2019**

## Contents

Introduction .....	1
Acknowledgments.....	2
Table 1. Pediatric Quality Indicators (PDI) For Overall Population: Provider-Level and Area-Level Indicators .....	3
Table 2. NQI 03 - Neonatal Blood Stream Infection Rate .....	4
Table 3. PDI 01- Accidental Puncture or Laceration Rate .....	4
Table 4. PDI 05 - Iatrogenic Pneumothorax Rate.....	5
Table 5. PDI 08 - Perioperative Hemorrhage or Hematoma Rate .....	5
Table 6. PDI 09 - Postoperative Respiratory Failure Rate .....	6
Table 7. PDI 10 - Postoperative Sepsis Rate.....	6
Table 8. PDI 12 - Central Venous Catheter-Related Blood Stream Infection Rate .....	7
Table 9. PSI 17 - Birth Trauma Rate - Injury to Neonate .....	7
Table 10. PDI 14 - Asthma Admission Rate .....	8
Table 11. PDI 15 - Diabetes Short-Term Complications Admission Rate .....	8
Table 12. PDI 16 - Gastroenteritis Admission Rate .....	8
Table 13. PDI 18 - Urinary Tract Infection Admission Rate.....	9
Table 14. PDI 90 - Pediatric Quality Overall Composite.....	9
Table 15. PDI 91 - Pediatric Quality Acute Composite.....	9
Table 16. PDI 92 - Pediatric Quality Chronic Composite.....	10

## Introduction

The data presented in this document are nationwide comparative rates for Version 2019 of Agency for Healthcare Research and Quality (AHRQ) Quality Indicators™ (QI) Pediatric Quality Indicators (PDI) software. The numerators, denominators and observed rates shown in this document are based on an analysis of discharge data from the 2016 AHRQ Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID).

HCUP is a family of healthcare databases and related software tools and products developed through a Federal-State-industry partnership. HCUP includes the largest collection of longitudinal hospital care data in the United States, with all-payer, encounter-level information beginning in 1988. The SID contains all-payer, encounter-level information on inpatient discharges, including clinical and resource information typically found on a billing record, such as patient demographics, up to 30 *International Classification of Diseases, Tenth Revision, Clinical Modification/Procedural Classification System (ICD-10-CMS/PCS)* diagnoses and procedures, length of stay, expected payer, admission and discharge dates, and discharge disposition. In 2016, the HCUP databases represented more than 97 percent of all annual discharges in the United States.

The analytic dataset used to generate the tables in this document consists of the same hospital discharge records that comprise the reference population for Version 2019 of the AHRQ QI software. This reference population file was limited to community hospitals and also excludes rehabilitation and long-term acute care (LTAC) hospitals. Information on the type of hospital was obtained by the American Hospital Association (AHA) Annual Survey of Hospitals. AHA defines community hospitals as “all non-Federal, short-term, general, and other specialty hospitals, excluding hospital units of institutions.” Included among community hospitals are specialty hospitals such as obstetrics-gynecology, ear-nose-throat, orthopedic, and pediatric institutions. Also included are public hospitals and academic medical centers.

### Hospital-Level Indicators

In 2016, 45 of the SID include indicators of the diagnoses being present on admission (POA) and included the PRDAY data element. Discharges from these 45 participating States are used to develop hospital-level indicators.<sup>1</sup> Edit checks on POA were developed during an HCUP evaluation of POA coding in the 2011 SID at hospitals that were required to report POA to CMS. The edits identify general patterns of suspect reporting of POA. The edits do not evaluate whether a valid POA value (e.g., Y or N) is appropriate for the specific diagnosis. There are three hospital-level edit checks:

1. Indication that a hospital has POA reported as Y on all diagnoses on all discharges
2. Indication that a hospital has POA reported as missing on all non-Medicare discharges
3. Indication that a hospital reported POA as missing on all nonexempt diagnoses for 15 percent or more of discharges. The cut-point of 15 percent was determined by 2 times the standard deviation plus the mean of the percentage for hospitals that are required to report POA to CMS.

### Area-Level Indicators

---

<sup>1</sup> States in the 2016 reference population for the hospital-level indicators include: AR, AZ, CA, CO, DE, DC, FL, GA, HI, IA, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NJ, NM, NV, NY, OH, OK, OR, PA, RI, SC, SD, TN, TX, UT, VA, VT, WA, WI, and WV.

The 2016 HCUP SID includes information on all inpatient discharges from hospitals in participating States. Discharges from all 48 participating States are used to develop area-level indicators.<sup>2</sup>

Additional information on the reference population and the risk adjustment process may be found in Quality Indicator Empirical Methods, available on the AHRQ QI™ website (<http://www.qualityindicators.ahrq.gov/modules/Default.aspx>).

The QI observed rates for provider-level indicators are scaled to the rate per 1,000 persons at risk and the area-level indicators are per 100,000 population. Cell sizes less than 11 are suppressed due to confidentiality; and are designated by an asterisk (\*). When only one data point in a series must be suppressed due to cell sizes, another data point is provided as a range to disallow calculation of the masked variable. In some cases, numerators, denominators or rates are not applicable for the category due to the exclusion criteria in the specification of the indicator, and are designated by dashes (--).

## Acknowledgments

The AHRQ QI program would like to acknowledge the HCUP Partner organizations that participated in the HCUP SID: **Alaska** State Hospital and Nursing Home Association, **Arizona** Department of Health Services, **Arkansas** Department of Health, **California** Office of Statewide Health Planning and Development, **Colorado** Hospital Association, **Connecticut** Hospital Association, **Delaware** Division of Public Health, **District of Columbia** Hospital Association, **Florida** Agency for Health Care Administration, **Georgia** Hospital Association, **Hawaii** Health Information Corporation, **Illinois** Department of Public Health, **Indiana** Hospital Association, **Iowa** Hospital Association, **Kansas** Hospital Association, **Kentucky** Cabinet for Health and Family Services, **Louisiana** Department of Health and Hospitals, **Maine** Health Data Organization, **Maryland** Health Services Cost Review Commission, **Massachusetts** Center for Health Information and Analysis, **Michigan** Health & Hospital Association, **Minnesota** Hospital Association (provides data for **Minnesota** and **North Dakota**), **Mississippi** Department of Health, **Missouri** Hospital Industry Data Institute, **Montana** MHA - An Association of **Montana** Health Care Providers, **Nebraska** Hospital Association, **Nevada** Department of Health and Human Services, **New Hampshire** Department of Health & Human Services, **New Jersey** Department of Health, **New Mexico** Department of Health, **New York** State Department of Health, **North Carolina** Department of Health and Human Services, **North Dakota** (data provided by the Minnesota Hospital Association), **Ohio** Hospital Association, **Oklahoma** State Department of Health, **Oregon** Association of Hospitals and Health Systems, **Oregon** Office of Health Analytics, **Pennsylvania** Health Care Cost Containment Council, **Rhode Island** Department of Health, **South Carolina** Revenue and Fiscal Affairs Office, **South Dakota** Association of Healthcare Organizations, **Tennessee** Hospital Association, **Texas** Department of State Health Services, **Utah** Department of Health, **Vermont** Association of Hospitals and Health Systems, **Virginia** Health Information, **Washington** State Department of Health, **West Virginia** Health Care Authority, **Wisconsin** Department of Health Services, **Wyoming** Hospital Association.

---

<sup>2</sup> States in the 2016 reference population for the area-level indicators include: AK, AR, AZ, CA, CO, CT, DE, DC, FL, GA, HI, IA, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NJ, NM, NV, NY, OH, OK, OR, PA, RI, SC, SD, TN, TX, UT, VA, VT, WA, WI, WV, and WY.

**Table 1. Pediatric Quality Indicators (PDI) For Overall Population: Provider-Level and Area-Level Indicators**

INDICATOR	LABEL	NUMERATOR	DENOMINATOR	OBSERVED RATE PER 1000 (=OBSERVED RATEx1,000)
<b>Provider-Level Indicators</b>				
NQI 03	Neonatal Blood Stream Infection Rate	1,437	92,024	15.62
PDI 01	Accidental Puncture or Laceration Rate	967	2,832,260	0.34
PDI 05	Iatrogenic Pneumothorax Rate	287	2,564,346	0.11
PDI 08	Perioperative Hemorrhage or Hematoma Rate	273	107,577	2.54
PDI 09	Postoperative Respiratory Failure Rate	987	79,951	12.35
PDI 10	Postoperative Sepsis Rate	1,470	190,787	7.7
PDI 12	Central Venous Catheter-Related Blood Stream Infection Rate	1,136	2,281,248	0.5
PSI 17	Birth Trauma Rate - Injury to Neonate	16,248	3,508,640	4.63
<b>Area-Level Indicators</b>				
		<b>Numerator</b>	<b>Denominator</b>	<b>Observed Rate per 100,000 (=Observed Rate*100,000)</b>
PDI 14	Asthma Admission Rate	56,057	65,674,228	85.36
PDI 15	Diabetes Short-Term Complications Admission Rate	12,725	49,635,771	25.64
PDI 16	Gastroenteritis Admission Rate	25,160	72,646,433	34.63
PDI 18	Urinary Tract Infection Admission Rate	15,568	72,646,428	21.43
PDI 90	Pediatric Quality Overall Composite	57,275	49,635,785	115.39
PDI 91	Pediatric Quality Acute Composite	14,793	49,635,763	29.8
PDI 92	Pediatric Quality Chronic Composite	42,482	49,635,781	85.59

\*\*\* Obscured due to small sample size

† Range provided to preserve small sample size masking

**Table 2. NQI 03 - Neonatal Blood Stream Infection Rate**

GROUP	NUMERATOR	DENOMINATOR	OBSERVED RATE PER 1,000 (=OBSERVED RATE*1,000)
Overall	1,437	92,024	15.62
Females	669	41,044	16.3
Males	768	50,980	15.06
<1 year	1,437	92,024	15.62
Private	499 – 508	35,997	13.86 -- 14.11
Medicare	*****	229	*****
Medicaid	849	49,453	17.17
Other	65	4,397	14.78
Uninsured (self-pay/no charge)	16	1,948	8.21

\*\*\*\* Obscured due to small sample size

**Table 3. PDI 01- Accidental Puncture or Laceration Rate**

GROUP	NUMERATOR	DENOMINATOR	OBSERVED RATE PER 1,000 (=OBSERVED RATE*1,000)
Overall	967	2,832,260	0.34
Females	381	1,316,634	0.29
Males	586	1,515,626	0.39
<1 year	410	1,733,352	0.24
1 to 2 years	81	212,069	0.38
3 to 5 years	78	173,788	0.45
6 to 12 years	178	327,080	0.54
13 to 17 years	220	385,971	0.57
Private	392 -- 401	1,179,495	0.33 -- 0.34
Medicare	*****	10,133	*****
Medicaid	481	1,447,193	0.33
Other	68	100,104	0.68
Uninsured (self-pay/no charge)	23	95,335	0.24

\*\*\*\* Obscured due to small sample size

**Table 4. PDI 05 - Iatrogenic Pneumothorax Rate**

GROUP	NUMERATOR	DENOMINATOR	OBSERVED RATE PER 1,000 (=OBSERVED RATE*1,000)
Overall	287	2,564,346	0.11
Females	117	1,188,455	0.1
Males	170	1,375,891	0.12
<1 year	44	1,488,260	0.03
1 to 2 years	18	206,522	0.09
3 to 5 years	24	168,262	0.14
6 to 12 years	41	321,059	0.13
13 to 17 years	160	380,243	0.42
Private	153	1,074,378	0.14
Medicare	*****	9,279	*****
Medicaid	107	1,304,163	0.08
Other	21	89,639	0.23
Uninsured (self-pay/no charge)	*****	86,887	*****

\*\*\*\* Obscured due to small sample size

**Table 5. PDI 08 - Perioperative Hemorrhage or Hematoma Rate**

GROUP	NUMERATOR	DENOMINATOR	OBSERVED RATE PER 1,000 (=OBSERVED RATE*1,000)
Overall	273	107,577	2.54
Females	102	51,700	1.97
Males	171	55,877	3.06
<1 year	53	18,988	2.79
1 to 2 years	50	14,436	3.46
3 to 5 years	48	12,882	3.73
6 to 12 years	61	27,938	2.18
13 to 17 years	61	33,333	1.83
Private	115	52,292	2.2
Medicare	*****	400	*****
Medicaid	130	46,519	2.79
Other	21	6,461	3.25
Uninsured (self-pay/no charge)	*****	1,905	*****

\*\*\*\* Obscured due to small sample size

**Table 6. PDI 09 - Postoperative Respiratory Failure Rate**

GROUP	NUMERATOR	DENOMINATOR	OBSERVED RATE PER 1,000 (=OBSERVED RATE*1,000)
Overall	987	79,951	12.35
Females	451	40,128	11.24
Males	536	39,823	13.46
<1 year	228	9,277	24.58
1 to 2 years	160	9,579	16.7
3 to 5 years	106	9,240	11.47
6 to 12 years	268	23,419	11.44
13 to 17 years	225	28,436	7.91
Private	401 -- 410	39,398	10.18 -- 10.41
Medicare	*****	356	*****
Medicaid	488	34,074	14.32
Other	64	4,668	13.71
Uninsured (self-pay/no charge)	18	1,455	12.37

\*\*\*\* Obscured due to small sample size

**Table 7. PDI 10 - Postoperative Sepsis Rate**

GROUP	NUMERATOR	DENOMINATOR	OBSERVED RATE PER 1,000 (=OBSERVED RATE*1,000)
Overall	1,470	190,787	7.7
Females	657	84,233	7.8
Males	813	106,554	7.63
<1 year	525	33,300	15.77
1 to 2 years	222	22,476	9.88
3 to 5 years	160	22,938	6.98
6 to 12 years	233	50,118	4.65
13 to 17 years	330	61,955	5.33
Private	541 -- 550	88,153	6.14 -- 6.24
Medicare	*****	730	*****
Medicaid	800	86,942	9.2
Other	99	10,750	9.21
Uninsured (self-pay/no charge)	17	4,212	4.04

\*\*\*\* Obscured due to small sample size



**Table 8. PDI 12 - Central Venous Catheter-Related Blood Stream Infection Rate**

GROUP	NUMERATOR	DENOMINATOR	OBSERVED RATE PER 1,000 (=OBSERVED RATE*1,000)
Overall	1,136	2,281,248	0.5
Females	500	1,069,581	0.47
Males	636	1,211,667	0.52
<1 year	517	1,476,107	0.35
1 to 2 years	180	141,177	1.27
3 to 5 years	118	116,527	1.01
6 to 12 years	175	238,084	0.74
13 to 17 years	146	309,353	0.47
Private	400 -- 409	950,341	0.42 -- 0.43
Medicare	*****	8,145	*****
Medicaid	623	1,169,905	0.53
Other	85	79,509	1.07
Uninsured (self-pay/no charge)	22	73,348	0.3

**Table 9. PSI 17 - Birth Trauma Rate - Injury to Neonate**

GROUP	NUMERATOR	DENOMINATOR	OBSERVED RATE PER 1,000 (=OBSERVED RATE*1,000)
Overall	16,248	3,508,640	4.63
Females	7,000	1,712,457	4.09
Males	9,248	1,796,183	5.15
<1 year	16,248	3,508,640	4.63
Private	7,339	1,647,992	4.45
Medicare	63	12,943	4.87
Medicaid	7,608	1,585,788	4.8
Other	503	100,913	4.98
Uninsured (self-pay/no charge)	735	161,004	4.57

\*\*\*\* Obscured due to small sample size

**Table 10. PDI 14 - Asthma Admission Rate**

GROUP	NUMERATOR	DENOMINATOR	OBSERVED RATE PER 100,000 (=OBSERVED RATE*100,000)
Overall	56,057	65,674,228	85.36
Females	22,350	32,133,806	69.55
Males	33,707	33,540,422	100.5
0 to 4 years	20,593	11,952,373	172.29
5 to 9 years	22,432	20,430,429	109.8
10 to 14 years	9,688	20,618,593	46.99
15 to 17 years	3,344	12,672,833	26.39

**Table 11. PDI 15 - Diabetes Short-Term Complications Admission Rate**

GROUP	NUMERATOR	DENOMINATOR	OBSERVED RATE PER 100,000 (=OBSERVED RATE*100,000)
Overall	12,725	49,635,771	25.64
Females	6,867	24,293,463	28.27
Males	5,858	25,342,309	23.12
5 to 9 years	2,038	16,344,339	12.47
10 to 14 years	5,908	20,618,593	28.65
15 to 17 years	4,779	12,672,839	37.71

**Table 12. PDI 16 - Gastroenteritis Admission Rate**

GROUP	NUMERATOR	DENOMINATOR	OBSERVED RATE PER 100,000 (=OBSERVED RATE*100,000)
Overall	25,160	72,646,433	34.63
Females	11,561	35,540,817	32.53
Males	13,599	37,105,615	36.65
0 to 4 years	15,961	18,924,586	84.34
5 to 9 years	4,710	20,430,425	23.05
10 to 14 years	2,634	20,618,588	12.77
15 to 17 years	1,855	12,672,834	14.64

**Table 13. PDI 18 - Urinary Tract Infection Admission Rate**

GROUP	NUMERATOR	DENOMINATOR	OBSERVED RATE PER 100,000 (=OBSERVED RATE*100,000)
Overall	15,568	72,646,428	21.43
Females	12,784	35,540,814	35.97
Males	2,784	37,105,613	7.5
0 to 4 years	7,942	18,924,583	41.97
5 to 9 years	3,315	20,430,425	16.23
10 to 14 years	1,741	20,618,588	8.44
15 to 17 years	2,570	12,672,832	20.28

**Table 14. PDI 90 - Pediatric Quality Overall Composite**

GROUP	NUMERATOR	DENOMINATOR	OBSERVED RATE PER 100,000 (=OBSERVED RATE*100,000)
Overall	57,275	49,635,785	115.39
Females	29,049	24,293,469	119.58
Males	28,226	25,342,316	111.38
5 to 9 years	24,756	16,344,344	151.47
10 to 14 years	19,971	20,618,598	96.86
15 to 17 years	12,548	12,672,843	99.01

**Table 15. PDI 91 - Pediatric Quality Acute Composite**

GROUP	NUMERATOR	DENOMINATOR	OBSERVED RATE PER 100,000 (=OBSERVED RATE*100,000)
Overall	14,793	49,635,763	29.8
Females	9,764	24,293,460	40.19
Males	5,029	25,342,304	19.84
5 to 9 years	5,993	16,344,340	36.67
10 to 14 years	4,375	20,618,588	21.22
15 to 17 years	4,425	12,672,835	34.92

**Table 16. PDI 92 - Pediatric Quality Chronic Composite**

GROUP	NUMERATOR	DENOMINATOR	OBSERVED RATE PER 100,000 (=OBSERVED RATE*100,000)
Overall	42,482	49,635,781	85.59
Females	19,285	24,293,465	79.38
Males	23,197	25,342,316	91.53
5 to 9 years	18,763	16,344,343	114.8
10 to 14 years	15,596	20,618,598	75.64
15 to 17 years	8,123	12,672,840	64.1