

Comparative Hospital Admission Rates in Four Contiguous Rural Areas in a Southern State: Searching for Exemplary Practice Organizations

APPENDIX

<b>Table A: Ambulatory Care Sensitive Conditions Admissions and Corresponding 2006 ICD-9-CM Codes</b>	
Primary Diagnosis	ICD-9-CM Codes for 2006 Included
<b>Chorionic Conditions</b>	
Short-term diabetes complications	25010-25013, 25020-25023, 25030-25033; Age 18 yrs. & older
Uncontrolled diabetes	25002, 25003; Age 18 yrs. and older
Long-term diabetes complications	25040-25043, 25080-25083, 25070-25073, 25080-25083, 25090-25093; Age 18 yrs. & older
Lower-extremity amputations among patients with diabetes	25000 - 25003, 25010 - 25013, 25020 - 25023
Congestive heart failure	39891, 40201, 40211, 40291, 40401, 40403, 40411, 40413, 40491, 40493, 4280, 4281, 42820, 42821, 42822, 42823, 42830, 42831, 42832, 42833, 42840, 42841, 42842, 42843, 4289; Age 18 yrs. & over
Hypertension	4010, 4019, 40200, 40210, 40290, 40300, 40310, 40390, 40400, 40410, 40490; Age 18 yrs. & over; Exclude any patient with a cardiac procedure
Angina without procedure	4111, 41181, 41189, 4130, 4131, 4139; Age 18 yrs. & older; Exclude any patient with a surgical procedure in any field (01.0-86.99)
Adult asthma	49300-49302, 49310-49312, 49320-49322, 49381-49382, 49390-49392; Age 18 & older
Pediatric asthma	49300-49302, 49310-49312, 49320-49322, 49381-49382, 49390-49392; Under age 18 yrs.
Chronic obstructive pulmonary disease	480, 4870, 4910, 4911, 49120, 29121, 49122, 4918, 4919, 4920, 4928, 494, 4940, 4941, 496; Age 18 yrs. & over
<b>Acute Conditions</b>	
Dehydration	22785
Bacterial pneumonia	481, 4822, 48230, 48231, 48232, 48239, 4829, 4836, 485, 486; Exclude any hospitalization with a diagnosis code for sickle cell anemia or HB-S disease (28260-2826, 28269) and patients less than 8 weeks of age
Urinary tract infection	59000, 59001, 59010, 59011, 5902, 5903, 59080, 59081, 5909, 5980, 5989, 5990
Perforated appendix	5400, 5401, 5409, 541
Pediatric gastroenteritis	00861, 00867, 00869, 0090 - 0093, 5589; Under age 18 yrs.
<b>Birth Outcomes</b>	
Low birth weight birth	76400-76408, 76410-76418, 76420-76428, 76490-76498, 76500-76508, 76510-76518

Source: AHRQ Guide to Prevention Quality Indicators: Hospital Admission for Ambulatory Care Sensitive Conditions. AHRQ Pub. No. 02-RO203, Revision 4, November 24, 2004, Appendix A

**Table B: Elective Surgical Procedures & Discretionary Medical Procedures (Separate from Ambulatory Care Sensitive Conditions) 2006 ICD-9-CM Codes**

<b>Elective Surgical Procedures</b>	
<b>Low Variation Procedures</b>	<b>ICD-9-CM Procedure Codes for 2006</b>
Prostectomy (20)	60.21 - 60.69, 60.96 - 60.99
Cholecystectomy (20)	51.21 - 51.24
Hip Replacement (20)	81.51 - 81.52
Hysterectomy (20)	68.31 - 68.79
Inguinal Hernia Repair (20)	53.0 - 53.17
Mastectomy (20)	85.21 - 85.23, 85.41 - 85.48
Appendectomy (20) (27)	47.01 - 47.09
<b>High Variation Procedures</b>	<b>ICD-9-CM Procedure Codes for 2006</b>
Laminectomy/Spinal Fus. (20)	03.01 - 03.09, 80.51, 81.0 - 81.08
Knee Procedures (20)	81.40 - 81.47, 81.54 - 81.55
Carotid Endarterectomy (20)	38.12
Angiography (7)	88.50, 88.52 - 88.57
Angioplasty (7)	0.45 0.48, 0.66, 36.03 - 36.09
Coronary Bypass (20) (7)	36.10 - 36.19
Pacemaker Insertion (27)	37.7
Mastoidectomy (20)	20.21, 20.41 - 20.49
Septoplasty (20)	21.4 - 21.5
Amputation of Lower Limb (20)	84.10 - 84.17
Rhinoplasty (20)	21.84 - 21.89
Reduction/Augmentation Mammoplasty (20)	85.31 - 85.36, 85.50 - 85.54
Breast Reconstruction(27)	85.7, 85.95 (Women only)
Blebaroplasty (20)	08.31 - 08.74
Tonsillectomy & Adenoidectomy (34)	28.2 - 28.6
Organ and Bone Marrow Transplant Surgeries (27)	37.5, 50.5, 55.6, 41.0
<b>Discretionary Med. Cond.</b>	<b>ICD-9CM Diagnosis Codes for 2006</b>
Viral Pneumonia (31)	480.0 - 480.9
Bronchopneumonia/Pleur. (15)	511
Chronic Dis. Tonsils/Aden.(34)	474.0 - 474.9
Acute Gall Bladder Disease	574.0 - 574.91, 575.0 - 575.9, 576.0 - 576.9
Cystitis	595.0 - 595.9
Influenza	487.0 - 487.8
Gastroenteritis, Acute	9,0
Pancreatitis	577.0, 577.9
Bronchiolitis, (Child< 2 yr.) (32)	466.1, 466.11, 466.19

Source: (20) Gittelsohn & Powe 1995; (27) Billings 2003; (31) Gorton et al 2006; (32) Lind et al 2006; Payne et al 1996

**Table C Composite Modified Comorbidity Index, 2006 ICD-9-CM Codes & Points**

Medical Condition	ICD-9-CM Codes	Points
Myocardial infarction	410.0 - 410.9, 412	1
Congestive heart failure	428.0 - 428.9	1
Deep vein thrombosis	451.1 - 453.9	1
Peripheral vascular disease	441.1 - 441.9, 443.9 785.4, V43.4	1
Cerebrovascular disease	430.0 - 438.0	1
Dementia	290.0 - 290.9	1
Disorientation/confusion/delerium	290.11 - 290.3, 293.1	1
Chronic obstructive pulmonary dis.	490 - 496, 500 - 505, 506.4	1
Rheumatologic disease	710.0 - 710.1, 710.4 714.0 - 714.2, 714.81, 725	1
Gastric ulcer	531.0 - 534.9	1
Cancer	140.0 - 172.9, 174.0 - 195.8 200.0 - 208.9	1
Stroke	342.0 - 342.9, 344.1, 997.02, 853.01 - 853.19	1
Cirrhosis	571.49, 571.5 - 571.6, 572.2 - 572.8 456.0 - 456.21	1
Metastatic solid tumor	196.0 - 199.1	1
AIDS	042 - 044.96	1
Renal Failure	584.6 - 584.8, 585.6, 586	1

**Table D. 2006 Ratio of Staffed Beds in Local Hospital to MSA Population & Ratio of Total Admissions to Local Hospital by MSA Population (Unadjusted Admissions)**

Hospital	No. of Staffed Beds	Population of MSA	Staffed Beds to 1,000 Population of MSA, and Admissions in 2006		Total Admissions per 1,000 Pop.
a	91	21,450	4.24	1,428	65.57
b	95	18,090	5.25	1,517	87.06
c	101	26,889	3.77	2,132	79.29
d	25	20,437	1.22	407	19.91

**Table E. Unadjusted outpatient elective surgical procedures by MSA**

<b>Out - Patient Low Variation Elective Procedures by MSA</b>		
MSA	Number of Procedures	Rate per 1,000 Pop.
A	104	4.85
B	112	6.19
C	256	9.52
D	107	4.99
Total	579	6.67
<b>Out - Patient High Variation Elective Procedures by MSA</b>		
MSA	Number of Procedures	Rate per 1,000 Pop.
A	122	5.69
B	115	6.36
C	163	6.06
D	116	5.68
Total	516	5.94
<b>Out - Patient Total Elective Procedures by MSA</b>		
MSA	Number of Procedures	Rate per 1,000 Pop.
A	226	10.54
B	227	12.54
C	419	15.58
D	223	10.91
Total	1,095	12.61

**Table F. Total Admission Rates to Anywhere from All Four MSAs - Corresponding Weights**

Population, All Four MSAs	Total Admissions	Admissions per 1,000 Population		
86,866	13,569	156.11		
Gender	Female Admissions per 1,000 Females	Male Admissions per 1,000 Males		
Rate	182.11	128.79		
% of Admissions	59.94	40.06		
Weight	1	1.6		
Racial Grouping	White Admissions per 1,000 Whites	Black Admissions per 1,000 Blacks	Hispanic Admissions per 1,000 Hispanics	Unknown Group Admissions per 1,000 Unknowns
Rate	151.48	215.61	304.71	142.75
% of Admissions	87.85	8.96	1.1	1.43
Weight	1	9.8	80	61.44
Age Grouping	0-17 yr. Admissions per 1,000 0-17 yr.	18-64 yr. Admissions per 1,000 18-64 yr.	65 + yr. Admissions per 1,000 65 + yr.	
Rate	90.26	103.32	357.39	
% of Admissions	0.13560321	0.402093	0.372982534	
Weight	2.75	0.93	1	
Type of Payer	TennCare Admissions per 1,000 TennCare	Commercial Admissions per 1,000 Commercial	Uninsured Admissions per 1,000 Uninsured	Medicare Admissions per 1,000 Medicare
Rate	100.56	51.61	25.17	280.43
% of Admissions	0.1947822	0.236347557	0.034932567	0.44159481
Weight	2.27	1.87	12.64	1
Co-Morbidity	Had a Co-Morbidity	Had No Co-Morbidity		
Number of Admissions	12407	1154		
% of Admissions	91.5	8.5		
Weight	1	10.76		

**Table G Total ACSC Admission Rates to Anywhere from All MSAs by Gender, Age, Race, Payer**

Population, All Four MSAs	Total ACSC Admissions	ACSC Admissions per 1,000 Pop.		
86,866	2,715	31.26		
<b>Gender</b>	Female ACSC Admissions per 1,000 Females	Male ACSC Admissions per 1,000 Males		
Unadjusted Rate	35.92	26.32		
<b>Racial Grouping</b>	White ACSC Admissions per 1,000 Whites	Black ACSC Admissions per 1,000 Blacks	Hispanic ACSC Admissions per 1,000 Hispanics	Unknown Group ACSC Admissions per 1,000 Unknown
Unadjusted Rate	32.72	50.35	14.31	7.36
<b>Age Grouping</b>	01-17 yr. ACSC Admissions per 1,000 0-17 yr.	18-64 yr. ACSC Admissions per 1,000 18-64 yr.	65 + yr. ACSC Admissions per 1,000 65 + yr.	
Unadjusted Rate	11.42	17.54	102.36	
<b>Type of Payer</b>	TennCare ACSC Admissions per 1,000 TennCare	Commercial ACSC Admissions per 1,000 Commercial	Uninsured ACSC Admissions per 1,000 Uninsured	Medicare ACSC Admissions per 1,000 Medicare
Unadjusted Rate	20.42	11.31	8.29	119.51

**Table H Total Low Variation Elective Surgery Rates to Anywhere from All MSAs by Gender, Age, Race, Payer**

Population, All Four MSAs	Total Low Var. Elective Surg	Low Var. Elective Surg per 1,000 Pop		
86,866	503	5.79		
Gender	Female Low Var. Elective Surg per 1,000 Females	Male Low Var. Elective Surg per 1,000 Males		
Unadjusted Rate	6.85	4.67		
Racial Grouping	White Low Var. Elective Surg per 1,000 Whites	Black Low Var. Elective Surg per 1,000 Blacks	Hispanic Low var. Elective Surg per 1,000 Hispanics	Unknown Group Low Var. Surg per 1,000 Unknown
Unadjusted Rate	5.74	6.74	8.18	6.62
Age Grouping	0-17 yr. Low Var. Elective Surg per 1,000 0-17 yr.	18-64 yr. Low Var. Elective Surg per 1,000 18-64 yr.	65 + yr. Low var. Elective Surg per 1,000 65 + yr.	
Unadjusted Rate	1.35	5.67	12.11	
Type of Payer	TennCare Low Var. Elective Surg per 1,000 TennCare	Commercial Low var. Elective Surg per 1,000 Commercial	Uninsured Low Var. Elective Surg per 1,000 Uninsured	Medicare Low Var. Elective Surg per 1,000 Medicare
Unadjusted Rate	1.94	2.11	3.08	13.64

**Table I Total High Variation Elective Surgical Rates to Anywhere from All MSAs by Gender, Age, Race, Payer**

Population, All Four MSAs	Total High Var. Elective Surg Admissions	High Var. Elective Surg Admissions per 1,000 Pop		
86,866	1,164	13.39		
Gender	Female High Var. Elective Surg per 1,000 Females	Male High Var. Elective Surg per 1,000 Males		
Unadjusted Rate	12.41	14.45		
Racial Grouping	White High Var. Elective Surg per 1,000 Whites	Black High Var. Elective Surg per 1,000 Blacks	Hispanic High Var. Elective Surg per 1,000 Hispanics	Unknown Group High Var. Elective Surg per 1,000 Unknown
Unadjusted Rate	13.72	11.35	8.18	11.77
Age Grouping	0-17 yr. High Var. Elective Surg per 1,000 0-17 yr.	18-64 yr. High Var. Elective Surg per 1,000 18-64 yr.	65 + High Var. Elective Surg per 1,000 5 + yr.	
Unadjusted Rate	0.25	8.83	30.37	
Type of Payer	TennCare High Var. Elective Surg per 1,000 TennCare	Commercial High Var. Elective Surg per 1,000 Commercial	Uninsured High Var. Elective Surg per 1,000 Uninsured	Medicare High var. Elective Surg per 1,000 Medicare
Unadjusted Rate	2.13	4.39	2.07	24.34



**Table J Total Discretionary Medical Condition Admission Rates to Anywhere from All MSAs by Gender, Adew, Race, Payer**

Population, All Four MSAs	Discretionary Medical Condition Admissions	Discretionary Medical Admissions per 1,000 Population		
86,866	1,139	13.12		
Gender	Female Discretionary Medical Admissions per 1,000 Females	Male Discretionary Medical Admissions per 1,000 Males		
Unadjusted Rate	14.73	11.25		
Racial Grouping	White Discretionary Medical Admissions per 1,000 Whites	Black Discretionary Medical Admissions per 1,000 Blacks	Hispanic Discretionary Admissions per 1,000 Hispanics	Unknown Group Discretionary Medical Admissions per 1,000 Unknown
Unadjusted Rate	11.34	11.25	8.18	3.68
Age Grouping	1-17 yr. Discretionary Medical Admissions per 1,000 0-17 yr.	18-64 yr. Discretionary Medical Admissions per 1,000 18-64 yr.	65 + yr. Discretionary Medical Admissions per 1,000 65 + yr.	
Unadjusted Rate	8.38	7.58	36.53	
Type of Payer	TennCare Discretionary Medical Admissions per 1,000 TennCare	Commercial Discretionary Medical Admissions per 1,000 Commercial	Uninsured Discretionary Medical Admissions per 1,000 Uninsured	Medicare Discretionary Medical Admissions per 1,000 Medicare
Unadjusted Rate	14.12	3.71	2.44	26.91