

RECENT TRENDS IN PEDIATRIC HOSPITALIZATION IN NEW YORK STATE

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Objective To describe changing rates of disorders associated with child hospitalization.

Study design Trends for the 100 diagnosis related groups (DRGs) with the largest number of hospitalizations (0-14 years) were analyzed.

Results Children were hospitalized at an average annual rate of 35 per 1000 age-specific population during 1996 to 2002. The hospitalization rate decreased by 2.3% per year. The top 100 DRGs accounted for 90% of all 949,376 child hospitalizations. Hospitalization for mental illness increased by 5.5% per year, accounting for more than 4% of all child hospitalizations in 2002. Ambulatory care-sensitive medical conditions (asthma, gastrointestinal disorders, pneumonia, seizures) continue to be leading causes of hospitalization, and they are declining no faster than the overall rate. DRGs with a significantly faster rate of decline than the overall trend included surgical procedures for which inpatient care is often unnecessary (-12.3%/year, accounting for 11% of the overall decline) trauma-related diagnoses (-4.4%/year, accounting for 7% of the overall decline), and HIV-related conditions (-31.7%/year, accounting for 3% of the overall decline).

Conclusions The rising rate of hospitalization associated with child mental illness may represent a clinically important trend. Rates of hospitalization for ambulatory care-sensitive conditions have not declined substantially despite the availability of evidence-based strategies to avoid serious illness. (*J Pediatr* 2006;148:637-41)

Hospitalization is one marker identifying severe child health conditions. However, little information has been published on recent changes in the causes of child hospitalization, or the impact of changes for individual disorders relative to the overall trends in pediatric hospital activity.

A retrospective analysis of pediatric hospitalizations in New York State was performed to describe recent trends. The findings suggest priorities for prevention and care of serious child health problems.

METHODS

Pediatric patients were defined as children 0 to 14 years of age, inclusive, but excluding neonatal Diagnosis Related Groups (DRGs; numbers 385-391). Newborns and older adolescents were excluded from analysis because their disorders often involve causes, preventive approaches, and systems of care that differ from infants and younger children. Each hospitalization was analyzed independently. Persons with repeated admissions could not be identified in the publicly available data.

Disorders were identified by the Centers for Medicare and Medicaid Services (CMS) basic DRG or by groups of DRGs. Groups of related DRGs were adapted from published categories for ambulatory care-sensitive conditions,^{1,2} surgical procedures for which inpatient care is often discretionary,³ mental illness,⁴ and traumatic injuries.⁵ DRGs classified in each group of related conditions were indicated by number at the end of the Table.

Data were obtained from the New York Statewide Planning and Research Cooperative System (SPARCS) for the years 1996 to 2002.⁶ Child hospitalizations at all acute care hospitals were analyzed. Data from rehabilitation and psychiatric facilities were not available. Age-specific population data were obtained from the U.S. Census for the year 2000.⁷ All data were obtained from publicly available sources, and individual patients were not identifiable. Therefore, the study was considered exempt from Institutional Review Board for the Protection of Human Subjects (IRBPHS) review at SUNY Upstate Medical University.

The study design was a retrospective analysis of yearly pediatric hospitalizations. Trends were analyzed for the individual 100 DRGs with the highest child hospitalization rates over the entire 7 years, as well as for groups of DRGs selected from the top 100

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DRGs	Diagnosis related groups	NHDS	National Hospital Discharge Survey
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Table. DRGs ranked by annual rate of change 1996–2002

DRG #	Name of DRG	Annual average number of hospitalizations	Annual average hospitalizations/ 1000 age-specific pop.	Trend (Expressed as % change per year)			P value to compare trend each DRG vs all the others	
				Mean	95% CI		NS: P ≥ .05	*P < .05
	All Patients	135625	34.6	-2.3%	-3.3%	-1.3%		
	Individual DRGs							
489	HIV w major related condition	310	0.1	-31.7%	-38.0%	-25.5%	<.001	*
60	Tonsillectomy adenoidectomy	933	0.2	-14.5%	-20.4%	-8.6%	<.001	*
62	Myringotomy w tube insertion	567	0.1	-13.8%	-17.1%	-10.5%	<.001	*
125	Circulatory disorders w card cath	323	0.1	-13.1%	-18.0%	-8.2%	<.001	*
55	Miscellaneous ent procedures	220	0.1	-12.6%	-16.4%	-8.9%	<.001	*
340	Testes procedures, non-malignancy	260	0.1	-12.6%	-18.4%	-6.7%	0.001	*
451	Poisoning & toxic effects of drugs	1166	0.3	-12.3%	-16.0%	-8.7%	<.001	*
341	Penis procedures	197	0.1	-12.0%	-15.6%	-8.4%	<.001	*
225	Foot procedures	278	0.1	-9.4%	-13.8%	-4.9%	0.003	*
163	Hernia procedures	553	0.1	-8.5%	-12.6%	-4.5%	0.003	*
235	Fractures of femur	378	0.1	-8.1%	-11.9%	-4.3%	0.003	*
417	Septicemia, age 0–17	1426	0.4	-7.9%	-12.5%	-3.4%	0.011	*
252	Fx, sprn, strn, disl forearm, hand, foot	487	0.1	-7.6%	-9.7%	-5.5%	<.001	*
30	Traumatic stupor & coma	845	0.2	-7.2%	-11.4%	-3.1%	0.014	*
33	Concussion	727	0.2	-6.9%	-9.7%	-4.2%	0.002	*
81	Respiratory infections	491	0.1	-6.4%	-10.5%	-2.4%	0.028	*
20	Nervous system infection, not viral meningitis	362	0.1	-6.2%	-8.6%	-3.7%	0.004	*
70	Otitis media & uri	4236	1.1	-6.1%	-8.7%	-3.5%	0.004	*
137	Cardiac congenital & valvular disorders	274	0.1	-5.8%	-9.5%	-2.0%	0.047	*
98	Bronchitis & asthma	25252	6.4	-4.8%	-8.5%	-1.0%	NS	
255	Fx, sprn, strn, disl uparm, lowleg ex foot	795	0.2	-4.7%	-6.5%	-2.8%	0.015	*
455	Other injury, poisoning w/o CC	327	0.1	-4.6%	-7.2%	-2.0%	NS	
91	Simple pneumonia & pleurisy	8747	2.2	-4.3%	-7.4%	-1.1%	NS	
282	Trauma skin, subcut tiss & breast	644	0.2	-2.5%	-6.3%	1.3%	NS	
220	Lower extrem & humer proc except hip, foot, femur	1335	0.3	-0.1%	-1.8%	1.5%	0.014	*
156	Stomach, esophageal & duodenal procedures	893	0.2	0.1%	-2.3%	2.5%	0.038	*
418	Postoperative & post-traumatic infections	215	0.1	0.6%	-1.0%	2.2%	0.003	*
184	Esophagitis, gastroent & misc digest disorders	10198	2.6	1.3%	-0.2%	2.7%	<.001	*
26	Seizure & headache	5691	1.5	1.6%	-0.5%	3.7%	0.001	*
427	Neuroses except depressive	469	0.1	1.8%	-1.1%	4.7%	<.001	*
431	Childhood mental disorders	2053	0.5	1.9%	-2.3%	6.1%	0.030	*
443	Other O.R. procedures for injuries w/o CC	203	0.1	2.6%	-0.4%	5.5%	0.002	*
426	Depressive neuroses	574	0.1	3.0%	-0.1%	6.1%	0.002	*
398	Reticuloendothelial & immunity disorders w CC	622	0.2	3.1%	-0.6%	6.9%	0.005	*
295	Diabetes	1241	0.3	3.5%	0.5%	6.5%	0.001	*

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