Article

FREE

Trends in Pediatric Hospitalizations of Children in Washington State by Insurance and Chronic Condition Status, 1991-1998

John M. Neff, MD; Jeanette Valentine, PhD; Alice Park, MPH ;et al

» Author Affiliations |Article Information

Arch Pediatr Adolesc Med
Published Online: July 2002
2002;156;(7):703-709.
doi:10.1001/archpedi.156.7.703

Abstract

Objective To examine the possible impact of changes in the organization and management of the Medicaid program on hospitalization patterns for children with chronic and nonchronic conditions between January 1, 1991, and December 31, 1998.

Design Longitudinal retrospective study of hospitalization patterns of children in 4 strata: Medicaid, non-Medicaid, chronic conditions, and nonchronic conditions.

Setting Washington State.

Patients Hospital discharge abstract records for all children aged 0 to 17 years profiled into those with and without a chronic condition, Medicaid, and non-Medicaid using a diagnosis-based classification system.

Main Outcome Measures Hospitalization and multiple hospitalization rates and length of hospital stay.

Results In 1991, hospitalization and multiple hospitalization rates were higher for all Medicaid vs non-Medicaid children. From 1991 to 1998, there was a decrease in the hospitalization and multiple hospitalization rates for Medicaid children only. By 1998, rates for Medicaid children approximated those for non-Medicaid children. This decrease was greater for nonchronically ill children than for chronically ill children. Total hospitalizations in Medicaid children decreased by 4.5%. The mean length of stay in 1991 for all Medicaid hospitalized children was higher than that for non-Medicaid children (6.1 vs 5.1 days). By 1998, the length of stay decreased for both groups (5.7 vs 4.9 days).

management for this population.

THERE HAVE been rapidly evolving changes in the delivery systems of care and the insurance status of children in the United States during the past decade. The changes in the delivery system have been directed toward improving coverage and access and decreasing costs through better management. The insurance status of children aged 0 to 18 years has improved via expanded Medicaid coverage, with the proportion of children receiving Medicaid increasing from 12.8% in 1987 to 20.5% in 1996.[1] Results of a 2000 study[2] indicate that an additional 3.3 million children have been enrolled in Medicaid owing to the recently enacted State Child Health Insurance Program. There has been an increasing number of Medicaid children served by managed care, as enrollment in managed care now represents nearly 50% of Medicaid enrollees nationwide.[3] Because hospitalizations may account for approximately 30% of all health care expenditures for children, and approximately 50% of expenditures for children with chronic conditions,[4,5] reducing the number of hospitalizations and the length of stay (LOS) have been the focus of efforts to decrease costs while expanding coverage.

How children with special health care needs fare in the rapidly evolving health care system in the United States remains of great concern.[6,7] Approximately 18% of children in the United States have a chronic health condition.[8] Although the range of prevalence estimates varies with alternative measures of chronic conditions, the clinical implications are significant. Compared with children without chronic conditions, those with chronic conditions require more health services, use more compensatory devices and prescription medications, and consume a wide array of nonmedical and community services, including occupational and physical therapy, home health, and respite care. Functional limitations can also accompany chronic health conditions.[9,10]

In 1997, McConnochie et al[11] concluded from their review that the number of hospitalizations in children can be reduced without affecting quality. In 2000, Dafney and Gruber[12] used the National Discharge Survey to assess the impact of Medicaid expansion on avoidable hospitalizations for children younger than 15 years between 1983 and 1996. The survey samples approximately 250 000 hospital discharges annually and collects data on diagnosis, procedure codes, discharge status, LOS, and selected hospital and demographic information. Dafney and Gruber found that for children, Medicaid hospitalizations classified as avoidable decreased by 22%. They also demonstrated an increase of 10% in hospitalization of all Medicaid children and attributed this increase to the expansion in coverage. Dafney and Gruber did not differentiate admissions by chronic illness status, and they did not compare Medicaid and non-Medicaid. Also, their estimates were somewhat imperfect because their small sample size could not correlate the uneven pattern of Medicaid changes that were occurring in different states with the uneven sample of children's hospitalizations.

Comparison of hospitalization rates for children with special health care needs in a region where Medicaid expansion and reform have occurred uniformly could contribute to our understanding of the impact of Medicaid expansion and management on a highly vulnerable population of children. The ability of states to conduct ongoing monitoring of vulnerable children in a rapidly changing health care environment poses significant challenges because of limitations in data and methods. Routinely and uniformly collected data on hospitalizations, available through hospital abstract reporting systems mandated in every state, can provide a data set useful for these purposes. In 1999, Friedman et al[13] proposed using hospital data from the Nationwide Inpatient Sample of the Health Care Cost and Utilization Project to track the impact of states' State Children's Health Insurance Program. Individual states' hospital abstract reporting systems data can be useful in monitoring children with special health

In the state of Washington, Medicaid expansion and improved management of care occurred during the 1990s as part of a planned system for Medicaid health care reform. The nature of the reforms included increases in enrollment eligibility, increases in reimbursement for physician and nonphysician primary care services, and mandatory capitated managed care. The purpose of this study is to assess the potential impact of these changes on a specific group of vulnerable children by examining trends in hospitalizations among children with chronic health conditions during this time of reform. The methodological approach consists of using a chronic condition classification grouper designed to identify children with special health care needs to classify hospital discharges in Washington State between January 1, 1991, and December 31, 1998. Using Washington's Comprehensive Hospital Abstract Reporting System (CHARS) data, trends in inpatient utilization are compared for Medicaid and non-Medicaid children with and without chronic illnesses. This article provides information that can contribute to understanding the impact of health system changes on children with chronic health conditions in general, and Medicaid-eligible children in particular. This article also illustrates a methodological approach to monitoring inpatient utilization among populations of children receiving Medicaid.

Participants and methods

Study design

Temporal trends in inpatient utilization for children aged 0 to 17 years were measured during 1991-1998, comparing chronic condition hospitalizations with nonchronic condition hospitalizations. Inpatient utilization measures were compared for discharges in which Medicaid was the expected primary payer vs all other payers.

Chronic condition classification

The chronic condition status of each hospital discharge was determined by grouping *International Classification of Diseases, Ninth Revision, Clinical Modification* (*ICD-9-CM*) diagnostic codes appearing in the diagnostic coding fields of the UB-92 form, which represents an abstract of every hospitalization episode occurring throughout the state. Classification by the *ICD-9-CM* is based on the chronic condition codes identified by the National Association of Children's Hospitals and Related Institutions Classification of Chronic and Congenital Health Conditions (NACHRI-CCCHC) system (1996 version).[14] Occurrence of a chronic condition *ICD-9-CM* code, as identified in the 1996 NACHRI-CCCHC system in any of the 9 diagnostic fields of the UB-92, constituted the basis for classification of the hospital discharge as either chronic or nonchronic. Both principal and secondary diagnoses were considered in the classification of each discharge as either a chronic or nonchronic condition. The 1996 version of the NACHRI-CCCHC contains more than 3500 individual *ICD-9-CM* codes and 49 major diagnostic groups. For this study, the major diagnostic group for newborn risk is included in the nonchronic condition group because newborn risk is no longer considered a chronic condition category under the NACHRI-CCCHC system. Newborn risk diagnostic conditions include low-birth-weight, very low-birth-weight, and drug- and alcohol-involved births.

Payer classification

Medicaid payer status was identified from the payer identification field of the UB-92 form, with the code "002" representing "Medicaid-Washington State Department of Social and Health Services and/or Healthy Options." Healthy Options is the state of Washington's managed care program for Medicaid beneficiaries. Payer identification classified as non-Medicaid represented all payers not classified as Medicaid, including commercial insurance, workers compensation, health care service contractors, other sponsored patients (such as the Civilian Health and

Three utilization measures are the subject of this study: (1) hospitalization rate, (2) average LOS, and (3) multiple hospitalizations rate. Hospitalization rates were calculated as the number of hospitalization events for the specific condition in persons aged 0 to 17 years per 100 000 population. The population aged 0 to 17 years was classified as either enrolled in Medicaid (as estimated by the Department of Social and Health Services administrative data on monthly estimates of children receiving Medicaid, regardless of whether they had an encounter or a billable service) or not enrolled in Medicaid. These population estimates were used as denominators to calculate population-based hospitalization rates. The LOS was calculated as the mean number of days per inpatient stay for the specific condition in persons aged 0 to 17 years. Multiple hospitalization rates were calculated as the number of persons with more than 1 hospitalization during a calendar year divided by the population estimates for each of 3 groups—Medicaid enrolled, non-Medicaid, and total population aged 0 to 17 years. The rate was then calculated by multiplying by 100 000. Thus, the multiple hospitalizations rate represents the number of children with multiple hospitalizations per 100 000 population aged 0 to 17 years.

Data sources

Hospital Discharges

All hospital discharge abstract records for children aged 0 to 17 years, as reported in the CHARS for the state of Washington for 1991-1998, are included in this study. Excluded from this set are hospitalizations from US military, US veterans, and state psychiatric hospitals; birthing centers; and private alcoholism and rehabilitation facilities. The CHARS is composed of abstracts of every hospitalization and was used to calculate the hospitalization rates and LOS. Insurance status is assigned only at the time of discharge. The state of Washington's Episode of Illness files were available for analysis for 1991-1996 only. These files contain a unique and confidential patient identifier that allows tracking of multiple hospitalizations for the same individual over time by linking discharge records with the same identifier. Both data sets are derived from the UB-92 forms, submitted by all reporting hospitals on all patient discharges throughout the state. The 9-year CHARS data set was provided by the Washington State Department of Health Office of Hospital and Patient Data Systems. The following categories were excluded from the database for the analysis of inpatient utilization for pediatric chronic conditions: (1) all normal births with birth weights greater than 2499 g, (2) all teenagers hospitalized for childbirth only, and (3) non–Washington State residents. Normal live births were excluded because normal birth-related hospitalizations do not accurately reflect a hospitalization event for the child and can skew the information on frequency and cause of childhood hospitalizations. Application of exclusion criteria resulted in a total of 372 406 discharges among Washington State residents aged 0 to 17 years during 1991-1998. Of these, 132 516 discharges had Medicaid as the expected primary payer, and 239 890 were non-Medicaid–expected payer discharges. Analysis of unique patient identifiers indicated that during the 6-year period for which data are available, 28 937 individual pediatric patients had more than 1 hospitalization. Table 1 presents the number of discharges each year by expected primary payer.

Table 1.

Number of Hospital Discharges in Children Aged 0 to 17 Years, by Expected Primary Payer, Washington State, 1991-1998

Go to Figure in Article

Number of Hospital Discharges in Children Aged 0 to 17 Years, by Expected Primary Payer, Washington State, 1991-1998

Population Data

Annual estimates of the total population aged 0 to 17 years for 1991-1998 were provided by the Washington State Office of Financial Management and the Washington State Adjusted Population Estimates (April 1999) of the Department of Social and Health Services. Estimates of the number of children enrolled in Medicaid during 1991-1998 were provided by the Medical Assistance Administration of the Department of Social and Health Services and were based on monthly averages of enrolled children from the Medicaid eligibility data files. An "enrolled" status designates a child who has been determined eligible for Medicaid, regardless of whether he or she had a billable service.

Analysis

Trends in the 3 inpatient utilization measures were examined during the 8-year period for chronic and nonchronic condition hospitalizations, stratified by the 2 categories of expected primary payer: Medicaid vs non-Medicaid (all discharges after excluding Medicaid). The χ^2 test for trend was used to determine the statistical significance level of the observed trends. All analyses were conducted using SPSS software version 8.0 (SPSS Inc, Chicago, Ill).

Results

Rate of hospitalization

Figure 1 indicates that the overall rate of hospitalization in all children aged 0 to 17 years declined from 3685 per 100 000 population in 1991 to 3041 per 100 000 population in 1998 ($P<.001$, χ^2 test for trend). Statistically significant declines occurred for chronic condition (from 1465 in 1991 to 1354 in 1998) and nonchronic condition (from 2220 in 1991 to 1686 in 1998) hospitalizations ($P<.001$), but the amount of decline was greater in the nonchronic group.

Figure 1.

Rate of hospitalization in children aged 0 to 17 years, by chronic condition status, Washington State, 1991-1998.

Go to Figure in Article

Rate of hospitalization in children aged 0 to 17 years, by chronic condition status, Washington State, 1991-1998.

Figure 2 shows the trends in the rate of hospitalization in children aged 0 to 17 years for chronic and nonchronic conditions, comparing hospitalizations for which Medicaid was the expected primary payer vs all other payers. The largest decline occurred in Medicaid hospitalizations for nonchronic conditions, from 4729 per 100 000 Medicaid population in 1991, to 1991 in 1998, representing a decline of nearly 60%. The hospitalization rate for chronic conditions for which Medicaid was the expected payer showed the second highest rate of decline, from 3216 in 1991 to 1684 in 1998 ($P<.001$, χ^2 test for trend). There was a slight increase in hospitalization rates for non-Medicaid children with chronic conditions (1102 in 1991 to 1224 in 1998; $P<.001$) and a slight decrease in hospitalization rates for nonchronic non-Medicaid children (1700 per 100 000 non-Medicaid population in 1991 to

trend). The rate of hospitalization for non-Medicaid children had a modest but statistically significant decline in this same period, from 2802 to 2794.

Figure 2.

Rate of hospitalization in children aged 0 to 17 years, by expected payer and chronic condition status, Washington State, 1991-1998.

Go to Figure in Article

Rate of hospitalization in children aged 0 to 17 years, by expected payer and chronic condition status, Washington State, 1991-1998.

Mean los

In 1991, the mean LOS for all pediatric hospitalizations with vs without Medicaid as an expected primary payer was 6.1 vs 5.1 days (**Figure 3**). In 1998, the mean LOS declined to 5.7 for the Medicaid group ($P<.001$) and 4.9 for the non-Medicaid group ($P = .02$). The mean LOS for Medicaid hospitalizations is significantly higher in every year compared with that for non-Medicaid hospitalizations ($P<.001$ for each year). For Medicaid chronic condition hospitalizations, the mean LOS was 8.7 days in 1991, declined to a low of 7.8 days in 1997, and increased to 8.1 days in 1998 ($P<.001$) (**Figure 4**). For non-Medicaid chronic condition hospitalizations, the mean LOS was 7.3 days in 1991, 6.2 days in 1995, and 6.7 days in 1998 ($P<.001$). For Medicaid nonchronic condition hospitalizations, the mean LOS was 4.4 days in 1991, 3.6 days in 1994 and 1995, and 3.7 days in 1998 ($P<.001$). There was a slight decline in mean LOS for non-Medicaid nonchronic condition hospitalizations ($P = .01$). The mean LOS for chronic condition hospitalizations is higher than that for nonchronic condition hospitalizations.

Figure 3.

Mean length of stay for all pediatric hospitalizations, by expected primary payer, Washington State, 1991-1998.

Go to Figure in Article

Mean length of stay for all pediatric hospitalizations, by expected primary payer, Washington State, 1991-1998.

Figure 4.

Mean length of stay for all pediatric hospitalizations, by expected primary payer and chronic condition status, Washington State, 1991-1998.

Go to Figure in Article

Rate of multiple hospitalizations

Overall, the rate of multiple hospitalizations in Medicaid children was significantly higher than for non-Medicaid children from 1991 to 1996 (**Figure 5**). The Medicaid multiple hospitalizations rate for children with chronic conditions declined significantly between 1991 and 1996, from 689 to 367 per 100 000 population ($P<.001$). The multiple hospitalizations rate for nonchronic Medicaid children decreased from 426 in 1991 to 200 in 1996 per 100 000 population ($P<.001$). The rate of multiple hospitalizations for nonchronic non-Medicaid children declined at a lower rate, from 95 in 1991 to 79 in 1996 per 100 000 population, whereas the rate for chronic non-Medicaid children increased slightly from 1991 to 1996, from 161 to 175 per 100 000 population.

Figure 5.

Rate of multiple hospitalizations in children aged 0 to 17 years, by expected primary payer and chronic condition status, Washington State, 1991-1996.

Go to Figure in Article

Rate of multiple hospitalizations in children aged 0 to 17 years, by expected primary payer and chronic condition status, Washington State, 1991-1996.

Comment

Total hospitalization and multiple hospitalizations rates for Medicaid-enrolled children aged 0 to 17 years in Washington State show a pronounced decrease from 1991 to 1998. This trend is not as great for non-Medicaid children. Within the Medicaid population, this decrease in rates is more pronounced for nonchronically ill compared with chronically ill children, although the downward trends for both groups are statistically significant. There also is an observed decrease in hospital LOS for chronically and nonchronically ill children in the Medicaid and non-Medicaid admissions.

The state of Washington made major efforts between 1989 and 1995 to improve access to the medical care system for uninsured and Medicaid-eligible children (**Table 2**). These efforts can be summarized as 3 major policy initiatives: (1) increase in enrollment to Medicaid for more children by increasing the income eligibility from less than 100% to 200% of the Federal Poverty Level, (2) increase in reimbursement to physicians, midwives, advanced registered nurses, and nurse practitioners for fee-for-service primary care visits, and (3) enhanced management through statewide mandatory enrollment of Medicaid recipients aged 0 to 17 years into capitated managed care (the Healthy Options program). As a result of these policy initiatives, the number of 0- to 17-year-old Medicaid enrollees nearly doubled, from 225 790 in 1991 to 429 971 in 1998.

Table 2.

Initiatives to Improve Access to Primary Care in Children Aged 0 to 17 Years, Washington State, 1989-1995*

Most Medicaid enrollees were assigned, for the first time, to a primary care provider through a Healthy Options plan. In Healthy Options, care was provided by state contracts through several area-wide health plans. By 1994, two years after the initiation of mandatory managed care, approximately 50% of the children receiving Medicaid were assigned to a Healthy Options plan. This percentage increased to 70% in 1995 and 80% in 1998. Those excluded from mandatory enrollment were Supplemental Security Income, Foster Care, and institutionalized children, and a few with special exemptions. During the 1990s, most local health departments and schools in the state entered into intergovernmental agreements with Medical Assistance to provide outreach and linkage for pregnant women and children in their communities. These activities increased enrollment in Medicaid and, through Healthy Options, linked children to a primary care provider. The temporal association of decreased utilization of hospitals by Medicaid enrollees and the state initiatives suggests a cause-and-effect relationship. Unlike the observation of Dafny and Gruber[12] of an increase in child hospitalizations with increased Medicaid enrollment nationwide, the absolute number of childhood Medicaid hospitalizations in Washington State decreased from 17 940 to 15 763 as the number of children enrolled in Medicaid increased by 90%. This decrease suggests that increased access to insurance and medical care of the uninsured and underinsured, coupled with improved management, may decrease the total hospital burden carried by the state. In relatively recent supportive studies,[15-17] data indicate that the provision of, and access to, primary care services among Medicaid beneficiaries reduces the use of emergency department services and hospitalization.

The more pronounced decrease in hospital use by nonchronically ill compared with chronically ill children suggests that these actions had a greater impact on the nonchronically ill than on the chronically ill. The decrease in LOS is likely the result of many different management efforts. The slight increase in LOS since 1996 might be explained by a change in severity mix or a change in some of the management efforts.

Although the actions taken by the state may be the major factor responsible for these trends, we must acknowledge that there could be other external changes that we do not have data on that could have affected hospitalizations in the Medicaid population more than those in the non-Medicaid group. These changes could include, among others, an improved economy, better home health, and certain advances in technology. There are other limitations to this study. The database is limited to utilization measures, and we do not have precise information on specific factors that could explain these findings. We are relying on the suggestion that certain changes in the health care system have had a causal association. These changes in the health care system, however, have been designed to have exactly the effect on utilization measures that is observed in this study.

We have limited precision in determining hospitalization rates in chronically ill children because we do not have a denominator for chronically ill children. It is not likely, however, that the number of chronically ill children has changed dramatically in the past decade, and we can presume that the denominator is the same. We also have limited information on Medicaid children who have been out of the managed care initiatives, the Supplemental Security Income, foster children, and others. This group, however, makes up approximately 20% of the children receiving Medicaid. Improved management of this group might have resulted in an even more dramatic decline in the observed total Medicaid hospitalization rates.

The reliability of Medicaid entries in the hospital record is unknown. It is possible that when Medicaid entered into contractual agreements with private health care plans, Medicaid patients were recorded as non-Medicaid in the hospital database. Analysis of the data does not support this possibility. The absolute number of hospital

Medicaid-classified discharges and a comparable increase in the non-Medicaid-classified discharges, but this is not the case.

An alternative explanation for these results, that is, a dramatic decline in inpatient utilization among pediatric chronic condition discharges, is the possibility that the increased enrollment of Medicaid beneficiaries may have changed the severity composition of that population into a healthier group, and thus we would expect less need for hospitalizations. However, this possibility seems unlikely because we did not observe a corresponding increase in hospitalization rates in the non-Medicaid population during this time of rapid enrollment. It is still possible that misclassification of discharges and a change of severity composition could have affected these findings to some degree.

Uninsured children are included in the non-Medicaid population, and the database does not allow separate identification of that population. This is a group of children who might be expected to have high utilization of hospital services but who, combined with the non-Medicaid population, demonstrate low hospital admission rates. A factor that might explain this is that children without insurance do not interact with the health care system until they have a serious condition. When hospitalization occurs, the child is likely to be enrolled and discharged on Medicaid and some type of managed care. The discharge status is the information that is recorded in the CHARS data set. The child will show up in the denominator as non-Medicaid but in the numerator, on discharge from the hospital, as receiving Medicaid. Once the child is in some type of managed care, the chance for further hospitalizations may be reduced.

We do not have reliable data on the hospitalization patterns for children in Washington State before 1991. The trends observed in this study might be long-term trends because the state had made some efforts, but not as intense, in previous years to improve primary care and discharge planning for all children. The period of this study, however, demonstrates striking changes, with hospitalization rates in the Medicaid population decreasing by nearly 50%, and, by 1997, closely approximating the rates in the non-Medicaid population.

A strength of this study is the comprehensiveness of the database. The CHARS data from the state of Washington represent nearly 100% of discharges for all children since 1991, excluding information from military and psychiatric hospitals only, and there is good information from the state agencies on the total Medicaid population. These data have allowed us to calculate hospitalization rates for the Medicaid and non-Medicaid population groups during the time of statewide health care reform for Medicaid children.

These results may be generalizable to other regions of the country. Washington State is not atypical regarding initiation of mandatory capitated managed care or initiatives directed toward increasing access of Medicaid children to primary care providers. This method can be replicated in other states that have these data sets available and can be refined to monitor long-term trends in hospital use.

Although it is not clear what has led to this decrease in the number of Medicaid hospitalizations, it seems that the combination of some type of collective action has had a significant effect on hospitalization patterns. It also seems that in the next decade there may not be such reductions in hospital utilization but, at best, stabilization. The observations from this study are that by 1998, there are little differences between the Medicaid and the non-Medicaid hospitalization rates. These rates seem to be stabilizing—a higher percentage of those admitted have chronic conditions, and LOS is increasing slightly toward the end of the study. Ongoing analysis of these trends

legislative or administrative efforts that could directly or indirectly change the health care reform measures of the 1990s must be approached carefully to avoid returning to high hospital utilization.

Accepted for publication March 14, 2002.

This study was supported by grant 5 H16 MC 00040-03 from Health Resources Services Administration of the US Department of Health and Human Services, Bethesda, Md, and by a contract with the Washington State Department of Health Children With Special Needs Program.

Hospital inpatient data were made available by the Washington Department of Health's Office of Hospital Data Systems. Estimates of children enrolled in Washington's Medicaid program were provided by the Washington Department of Social and Health Services. Population data were provided by the Office of Financial Management of the State of Washington, Olympia.

We thank Sherilynn Casey, MPA, of the Department of Health and Roger Gantz, MUP, of the Medical Assistance Administration of the Washington State Government for providing information on Washington State health initiatives and Patty Centioli for her patient preparation of this manuscript.

What This Study Adds

There have been dynamic changes in enrollment to Medicaid programs and in management of health care during the past decade. These changes have been designed to increase access to primary care and to decrease hospital utilization. There is limited information about concurrent and subsequent patterns of hospitalization.

In the state of Washington during a time of increased enrollment of children into Medicaid and improved management of care, there have been marked decreases in Medicaid hospitalization rates and total hospitalizations for children with chronic and nonchronic conditions.

Corresponding author and reprints: John M. Neff, MD, Center for Children With Special Needs, Children's Hospital and Regional Medical Center, 4800 Sand Point Way NE, CM-09, Seattle, WA 98105-0371 (e-mail: jneff@chmc.org).

References

1. Banthin JSCohen JW *Changes in the Medicaid Community Population: 1987-96.* Rockville, Md Agency for Health Care Policy and Research1999;MEPS Research Findings No. 9, AHCPR publication 99-0042

2. Levit KSmith CCowan CLazenby HMartin A Inflation spurs health spending in 2000. *Health Aff (Millwood).* 2002;21172- 181
Google Scholar | Crossref

3. Fox HBMcManus MAAlmeida RA *Current Policies and Future Directions in State Medicaid Managed Care Arrangements for Children.* Washington, DC Fox Health Policy Consultants1997;

4. Ireys HTAnderson GFShaffert TJNeff JM Expenditures for care of children with chronic illnesses enrolled in the Washington State Medicaid program, fiscal year 1993. *Pediatrics.* 1997;100197- 204

5. Neff JMSharp VL Profile of charges for children with chronic conditions in a Washington State health plan, fiscal year 1999. Paper presented at: Third Annual Meeting of Child Health Services Researchers June 9, 2001 Atlanta, GaAvailable athttp://academyhealth.org/childhealth/2001/Accessed April 18, 2002

6. Neff JMAnderson G Protecting children with chronic illness in a competitive marketplace. *JAMA.* 1995;2741866- 1869
Google Scholar | Crossref

7. McPherson MArango PFox H et al. A new definition of children with special health care needs. *Pediatrics.* 1998;102137- 140
Google Scholar | Crossref

8. Newacheck PWStrickland BShankoff JP et al. An epidemiologic profile of children with special health care needs. *Pediatrics.* 1998;102117- 123
Google Scholar | Crossref

9. Newachek PWTaylor WR Childhood chronic illness: prevalence, severity, and impact. *Am J Public Health.* 1992;82364- 371
Google Scholar | Crossref

10. Westbrook LSilver EStein R Implications of estimates of disability in children: a comparison of definitional components. *Pediatrics.* 1998;1011025- 1030
Google Scholar | Crossref

11. McConnochie KMRoghmann KJKitzman HJLiptak GSMcBride JT Insuring high-quality alternatives while ending pediatric inpatient care as we know it. *Arch Pediatr Adolesc Med.* 1997;151341- 349
Google Scholar | Crossref

12. Dafney LGruber J Does public insurance improve the efficiency of medical care? Medicaid expansions and child hospitalizations [National Bureau of Economic Research Web site]. National Bureau of Economic Research Working Paper No. w7555. Available athttp://www.nber.org/papers/w7555Accessed April 18, 2002

13. Friedman BJee JSteiner CBierman A Tracking the State Children's Health Insurance Program with hospital data: national baselines, state variations, and some cautions. *Med Care Res Rev.* 1999;56440- 455
Google Scholar | Crossref

14. Muldoon JHNeff JMGay JC Profiling the health service needs of populations using diagnosis-based classification systems. *J Ambul Care Manage.* 1997;201- 18
Google Scholar | Crossref

15. Hakim RBBye BV Effectiveness of compliance with pediatric preventive care guidelines among Medicaid beneficiaries. *Pediatrics.* 2001;10890- 97
Google Scholar | Crossref

16. Christakis DAMell LKoepsell TDZimmerman FJConnell FA Association of lower continuity of care with greater risk of emergency department use and hospitalization in children. *Pediatrics.* 2001;107524- 552
Google Scholar | Crossref

Google Scholar

View Full Text | Download PDF

Sections PDF Share