REPORT OF THE
CENTER FOR PEDIATRIC RESEARCH

STUDY OF PEDIATRIC HEALTH CARE IN VIRGINIA PURSUANT TO SJR 127/HJR 180

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

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Preface

The authority for this study was granted by 1998 Virginia General Assembly with the adoption of House Joint Resolution 180 and Senate Joint Resolution 127. This resolution requested the Center for Pediatric Research to continue its research on pediatric care in Virginia, specifically, to determine (a) the factors that influence differences in pediatric discharge rates by geographic area, (b) the effects those differences may have on the quality and outcomes of pediatric care, and (c) the best way of continuing to disseminate these findings to the public.

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Acknowledgments:

The Center for Pediatric Research expresses its thanks to the study participants and members of the expert panel:

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Executive Summary

Policy makers, health care professionals, and concerned citizens are continuing to grapple with ways to measure and improve the health status of the Commonwealth's children. To do so effectively, timely and accurate information about the health status of children is essential. Unfortunately, in the past such information was not widely available. This study has as its purpose to discover why some of Virginia's localities have higher incidence rates for pediatric hospitalizations than others do, and to explore how the quality of pediatric care should be measured and reported in Virginia.

The study presents findings from an analysis of both quantitative and qualitative factors associated with child and adolescent hospitalizations in Virginia. The study is unique in that it combines three types of data: key informant interviews, quantitative analyses, and expert opinions. This three-tier approach provides a uniquely comprehensive and in-depth method for examining child and adolescent health in the Commonwealth. The following sections summarize major findings from the study.

Quantitative Analysis

Sixteen of the most frequent and expensive reasons for Virginia's children to be admitted to hospitals are: unintentional injuries, depression, vaginal delivery, asthma, manic depression, bronchiolitis/bronchitis, pneumonia, behavior disorders, cesarean delivery, gastroenteritis, dehydration, assault, viral illness, diabetes, self-inflicted injuries, and substance abuse.

These reasons were clustered into five groups: Acute, Chronic, Mental Health, Delivery, and Injury. For each group, the following community characteristics were studied: hospital beds per 1,000 population, per capita income, percent female, percent black, percent uninsured, percent with Medicaid, fiscal stress index, percent population less than 19 years old, extreme prematurity, and percent urban.

The results of this analysis show that the number of hospital beds per 1,000 population and percent of Medicaid users tend to predict the discharge rates in the models. Extreme prematurity was also a consistent predictor of the various discharge rates.

Key Informant Interviews

Key informants reported that the variations in hospitalizations could likely be explained by understanding physicians' admitting practices and the family's care-seeking behavior. There was also consensus that parents may delay care due to

lack of knowledge, denial of mental health and substance abuse problems, frustration or lack of trust in providers. Suggestions for decreasing hospitalization were offered. These included improving access in the community, increasing the availability of community-based mental health services, expanding case management services and educating families and health professionals.

Expert Panel

Participants of the expert panel agreed that information about pediatric healthcare should be regularly reporting within the Commonwealth. The group also agreed that since the reasons for admissions vary, i.e., public health, mental health, and acute health, data for this report should be supplied from state agencies who oversight responsibility. The suggested process is first to define desired outcomes, then to determine what data are needed to measure the outcomes, using existing data if possible. Finally, the expert panel suggested tracking the data over time in order to identify any changes.

Conclusions

This analysis represents a first step in determining the optimal method to measure the quality of care for Virginia's children. The report shows the types of indicators needed to monitor pediatric care in Virginia. These indicators should include information about: (a) pediatric medical and economic access, (b) the quality of pediatric outcomes and (c) the impact that specific interventions may have on enhancing individuals propensity to seek care. Further efforts are needed to develop and test these measurement indicators.

Recommendations

Based on this analysis the following recommendations are made:

- Virginia's Joint Commission on Health Care consider supporting action that will grant an existing state agency or organization the responsibility and funding to regularly report information about the frequency, nature, cause and quality of pediatric hospital admissions in the Commonwealth.

- That the authority granted to discharge these responsibilities span state agency boundaries so that the necessary data may be easily acquired to develop the optimal measurement indicators.

- The information be widely disseminated to consumers and providers of healthcare, advocates and the various oversight bodies.

- A mechanism to evaluate the use and value of the information be developed.

Introduction

Childhood is a period of development and dependence. Aside from minor acute illness and incidence, the majority of children are healthy throughout their childhood (U.S. Congress, Office of Technology, 1988). Such children account for approximately 30% of the population and use approximately 15% of individual health care spending (U.S. Department of Health and Human Services, 1998). Yet, children do become seriously or chronically ill. When they do, they need specialized services that differ from those for adults (Newacheck, 1996; Newacheck, 1998; Ireys, 1996). These sick children comprise about 13% of the pediatric population, but use as many resources as the remaining 87% (Zook, 1980).

Ultimately, children's health and well being depend greatly upon the care they received from their families and communities (Szilagy and Schor, 1998). Ill children rely on a stable environment to guarantee access to effective health care; they rely on substantial public funding for those services; and they rely on families and communities to seek professional care for them when they need it. When those resources are lacking; when physical access to care is difficult; or when those caring for a child do not know about the services available, they often wait until the child's ailment is so serious that it requires expensive emergency room treatment or – worse – hospitalization. (Shukla and Pestian, 1996).

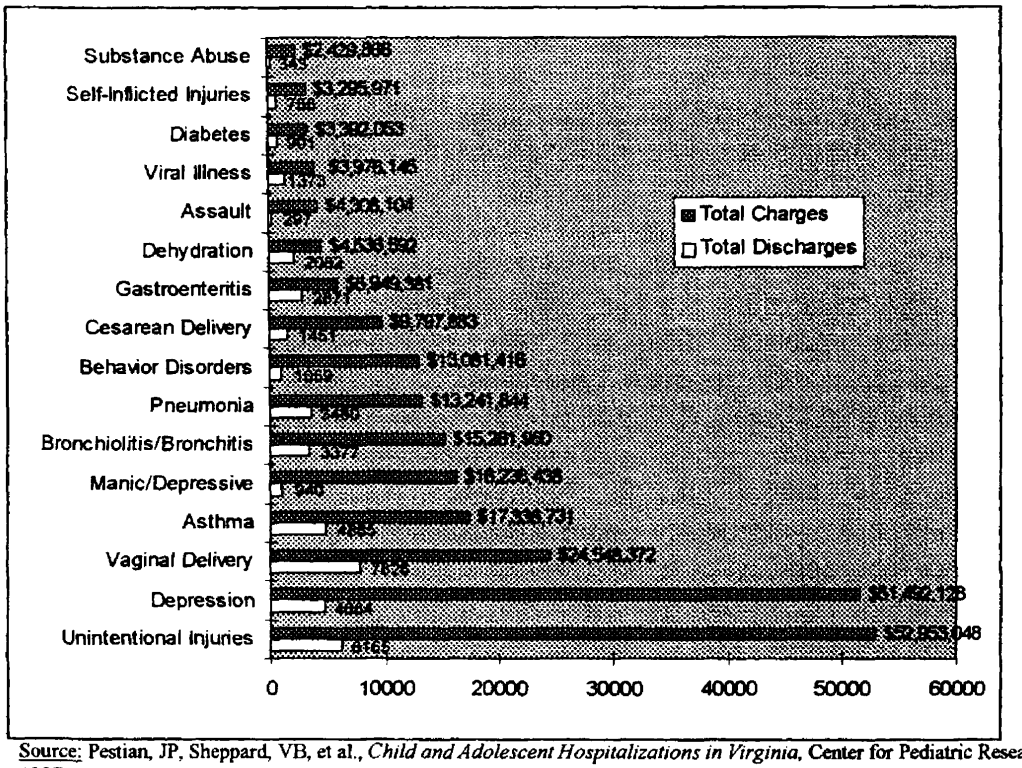
As with the children, so too with those who deliver pediatric health care: certain resources are indispensable. They require appropriate facilities and financing in order to dispense the care; moreover, they also need unbiased information on which to base adequate planning and evaluation. This *Pediatric outcomes* information is essential for a number of reasons.

First, as more children, especially those covered by Medicaid, enroll in managed care plans, an accurate understanding of the costs and quality of pediatric care is essential. Second, *pediatric outcomes* information is indispensable to the ongoing effort to create an evidence-based system of health care delivery. Third, *pediatric outcomes* information delineates the responses to alternative ways of organizing, financing and delivering health services. Finally, once *pediatric outcomes* information is disseminated into everyday practice, it can improve the delivery of health care to children, and allow the systematic measurement of quality.

A study commissioned by the Virginia Department of Health and conducted by the Center for Pediatric Research (Pestian and Sheppard et al., 1997) was the Commonwealth's first attempt to gather information about pediatric (0-19 years old) hospitalizations in Virginia. The study analyzed 16 of the most frequent and expensive reasons for pediatric admissions in the Commonwealth during 1995. The

results provided local, regional and statewide profiles of child and adolescent hospitalizations. The study findings also established baseline information, previously unknown, that is needed to monitor the effectiveness of health planning and policies. Figure 1 summarizes the results of that earlier study.

Figure 1. Child and Adolescent Admission in Virginia, 1995



Source: Pestian, JP, Sheppard, VB, et al., *Child and Adolescent Hospitalizations in Virginia*, Center for Pediatric Research, 1997

Other major findings from that study are:

- In 1995, there were a total of 149,817 resident discharges for youths 0-19 years old, which totaled over $728 million in gross charges. Of this number 80,889 (54%) were newborn discharges, which constituted more than $285 million (39%) in gross charges. Gross charges for the remaining 68,926 non-newborn discharges from Virginia hospitals amounted to over $442 million (61%).

- The discharge conditions highlighted in the report accounted for 41,842 (61%) of the non-newborn cases and $241,857,932 (33%) of the non-newborn total charges in 1995. The most expensive conditions were unintentional injuries ($52,953,048), depression ($51,492,128), and vaginal deliveries ($24,548,372).

- Discharge rates for the conditions highlighted in the study varied by geographic area. For example, the Southwest region of the state had the

highest rates for six conditions: gastroenteritis (8.4 per 1,000), bronchiolitis/bronchitis (7.7 per 1,000), unintentional injuries (5.4 per 1,000), pneumonia (5.0 per 1,000), dehydration (4.0 per 1,000) and viral illness (2.4 per 1,000).

- The Central region had the highest rates for depression (4.0 per 1,000), asthma (4.5 per 1,000), behavior disorders (1.1 per 1,000), diabetes (0.7 per 1,000), and substance abuse (0.3 per 1,000).

- The Hampton Roads region had the highest rates for vaginal deliveries (36.1 per 1,000 of females ages 13-19) and Caesarian deliveries (6.7 per 1,000 females ages 13-19).

- The Northern region of the state had the lowest hospitalization rates for bronchiolitis/bronchitis (1.1 per 1,000), pneumonia (1.1 per 1,000), asthma (2.0 per 1,000), diabetes (0.3 per 1,000), vaginal deliveries (19.6 per 1,000 of females 13-19 years), Caesarian deliveries (2.9 per 1,000 for females 13-19) and unintentional injuries (2.6 per 1,000). All of these rates were lower than the state rate.

Although the earlier study demonstrated significant differences in hospitalizations by demographic characteristics and geographical region, it was not possible to draw conclusions from it about why the variations exist. Consequently, the 1998 Virginia General Assembly adopted House Joint Resolution 180 and Senate Joint Resolution 127, directing the Center for Pediatric Research to continue its study of children's hospitalizations. Further, the Assembly directed the study to examine (a) factors that influence the differences in pediatric discharge rates, (b) the effects of those differences on the quality of outcomes in pediatric care, and (c) the optimal method for disseminating these results to the public. This report presents findings from the HJR180/SJR127 legislative study.

The report is divided into the following sections:

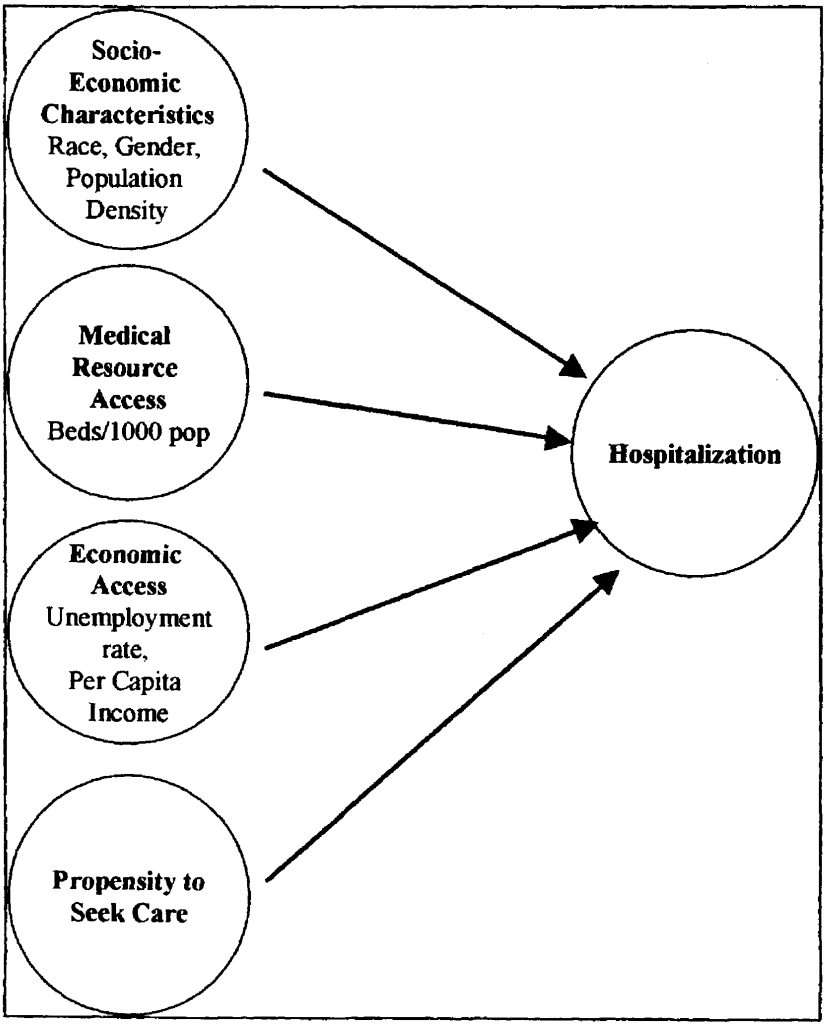
1. Previous Research
2. Methodology
3. Results of quantitative analysis
4. Results of qualitative analysis
5. Conclusion and Recommendations
6. Appendix

Previous Research

A number of studies have identified community correlates that may affect the frequency of hospitalizations. Figure 2 summarizes the conceptual framework for these previous studies.

These studies often compare hospitalization rates to what they would be if an optimally functioning primary care system made certain admissions avoidable. Factors associated with hospitalization, such as socioeconomic level, demographic composition, physical access to medical resources, economic access to medical resources, and propensity to seek care have been analyzed. This section briefly highlights the important findings of research in this area.

Figure 2. Hospitalization Conceptual Framework



Socioeconomic Status

During 1993, Billings studied the effect of socioeconomic status on hospital use in New York City. The objectives of the study were a) to examine how variation in hospital use is associated with income levels of area residents, b) to assess the usefulness of small-area analysis in evaluating access to outpatient care, and c) to assess the effectiveness of programs to improve access to care. Hospital utilization rates were calculated at the ZIP code level for 164 residential zip codes in New York City. Low-income zip codes were defined as areas with more than 60% of the households having incomes below $15,000, and high-income zip codes were defined as areas with less than 17.5% of households having incomes below $15,000.

Using a Delphi approach, a panel of physicians grouped the reasons for hospital admissions into three categories: a) market conditions — i.e., diagnoses for which providing prompt and effective outpatient care has little effect on the likelihood of hospital admission, and there is substantial agreement on the clinical criteria for admission; b) ambulatory-care-sensitive conditions (ACS) — those for which prompt and effective outpatient care can reduce the risks of hospitalization (e.g., prevent the onset of illness, control an acute episode, or manage a chronic disease); and c) referral-sensitive surgeries — severity of illness was measured by using automated disease staging and TOTSCALE (a computerized system developed by SysteMetrics).

Billing's study looked at a number of different characteristics, such as age, race, lifestyle factors, and physician decision-making. The results showed that for ACS conditions, hospital admission rates are negatively correlated with area income. The results also showed access to ambulatory care and the performance of the primary care system as substantially affecting admission rates for ACS conditions. Young adult and middle-aged populations were shown to be those most likely to have difficulty in gaining access to care; these age cohorts also had the largest differences between the low- and the high-income areas. The study also demonstrated that small area analysis is a valuable tool for comparing different populations and for planning.

This study has limitations — principally, its use of that only descriptive statistics, without rigorous testing. To examine the effects of multiple factors, multivariate analysis is needed.

In Michigan, MacMahon and others (1993) examined the possible associations between socioeconomic characteristics and the geographic variation in hospital discharge rates. The researchers examined five socioeconomic variables: education, number of physicians, poverty level, unemployment rate, and whether the area was rural. The multiple regression showed that those five variables explained 48% of the variance in medical

admissions and 19% of the variance in surgical admissions. The authors concluded that the socioeconomic characteristics examined were significantly associated with the variation in hospital admissions. In other words, their study showed that socioeconomic status affects hospital use.

Propensity to Seek Care

In 1994, Billings conducted the Hospitalized Patient Interview Survey (HPIS) to identify reasons why the poor did not seek primary care. The HPIS study sample consisted of 1,123 non-elderly hospitalized patients with admitting diagnoses of asthma, diabetes, or pneumonia. These patients, who were in nine hospitals, were interviewed between January and March of 1992. Interviews, consisting of 80+ survey questions, were conducted on the patient floor after admission and lasted between 30 and 40 minutes. Table 1presents the HPIS findings.

Table 1. Low-Income Patients' Reasons for Not Using Primary Care

Reason for Problem	Age 6 months - 17 yrs. (%)	Age 18 - 64 yrs. (%)	All Ages (%)
Not up to going	5.1	36.1	29.2
Too nervous or afraid	10.2	33.8	28.6
Unable to free time to get care	8.1	27.2	22.9
Had to wait too long to get appointment	20.3	20.4	20.4
Problems with child care	32.8	14.3	18.2
Costs too much	13.8	18.1	17.2
Unable to keep medical appointment	7.4	20.2	17.1
Couldn't fill prescription	16.4	16.9	16.8
Transportation difficulties	19.3	15.8	16.5
Didn't know where to go to get care	8.6	13.8	12.7
Not sure provider would understand needs	22.4	9.1	12.2
Care not available when needed it	11.3	12.1	12.0
Denied care	13.4	9.7	10.6
Didn't like place usually get care	17.2	7.9	9.9
Lose pay/trouble getting off work	12.1	6.0	7.3
Language problem	1.8	4.7	4.3

Note: Percentages total more than 100% because some patients indicated multiple reasons.
Source: Hospitalized Patient Interview Survey, United Hospital Fund.

Availability of Primary Care Physicians

Parchman and Culler (1994) studied the relationship between the availability of primary care physicians and the rate of avoidable hospitalizations. They asked, "Does having more primary care physicians in a population improve access to health care as measured by the Avoidable Hospital Conditions (AHC) rate?"

The authors used data from the Pennsylvania Health Care Cost Containment Council for the year 1989, in a cross-sectional, correlational study. The unit of analysis was the health services area, defined as either one or two counties relatively self-contained with regard to provision of health care. The 67 counties of Pennsylvania were divided into 26 health services areas (HSA) (Makuc et al. 1991). The numbers and types of primary care physicians (general internists (GPs), pediatricians, and family practice (FP) physicians) were obtained from the Area Resource File.

The HSA of residence, rather than the HSA of hospitalization, was used to calculate AHC rates. Only conditions that previous studies had found to be significantly related to financial or insurance status were selected: six adult conditions (angina, congestive heart failure, hypertension, pneumonia, asthma, and diabetes mellitus) and two pediatric conditions (diabetes mellitus and pneumonia).

The results of the study indicated that the Available Hospital Conditions (AHC) rate per 100,000 population was highest for congestive heart failure (mean 3.8), followed by angina (3.72), adult pneumonia (3.14), adult asthma (2.76), and diabetes (1.37), and was lowest for hypertension (mean 0.4). A low AHC rate was significantly correlated with higher per capita income and higher numbers of available family physicians and general practitioners, but not with the number of available general pediatricians or internists. Higher mean per capita income and larger populations are both significantly associated with more general internists and pediatricians per 10,000 population. The variations in the numbers of FPs and GPs explained 14.6% of the variation in AHC rates after controlling for income, and both together explained 56% of the total variation in AHC rates. The authors concluded that the availability of primary care physicians is related to lower admission rates for AHCs.

One limitation of this study is that its cross-sectional nature cannot provide direct evidence on the possible contributing effect of physician availability on hospitalization for AHCs. The study also did not examine other factors that might affect the AHC rates, such as the quality of ambulatory care, the availability of non-physician providers (e.g., nurse practitioners or physician assistants), or the prevalence of a given AHC in each HSR.

Medicaid Policy

Hadley and Steinberg (1995) studied whether measures of avoidable hospitalizations based on patient hospital discharges can be used to assess the effects of specific Medicaid policies and of resource availability on access to care. The authors used Medicaid data from 11 states at different periods of time between 1986 and 1991. They developed logistic models that included measures of specific Medicaid policies (maximum income for AFDC, absence of eligibility restrictions, copayments for ambulatory care, physician and hospital generosity, and OBRA eligibility standards) and resource availability (physicians per capita and public hospital beds, by 3-digit zip code area). The basic hypothesis the study tested is that more generous Medicaid policies and greater resource availability reduce the likelihood of avoidable hospitalizations.

With regard to the generosity of Medicaid polices Hadley and Steinberg (1995) found that the generosity of Medicaid policies has no significant effect on the occurrence rate of avoidable hospital conditions. On the other hand, their study found that resource availability does have a marginal effect on the occurrence rate of avoidable hospital conditions.

Insurance Status

Billings and Teicholz (1990) reviewed the influence of insurance status on access to primary care. They interviewed all patients who were uninsured (N=955) when admitted to the hospital in Washington, DC during a four-week period between March and April 1988. A control group of 354 insured patients was also selected, but not interviewed. The survey was designed to discover how many hospital admissions of uninsured patients would have been avoidable if the patients had received prompt and appropriate ambulatory care.

The results showed that the uninsured patients in the study were significantly different from the total insured population. They were poorer and less likely to be employed. Thirty-two percent of their admissions were directly related to chronic medical conditions. Among the group with chronic conditions, 44.7% reported contending with at least one problem about access to care. The most common barrier to access was its cost: 62% of the uninsured patients named cost as at least one reason for not obtaining care. Over 70% of the uninsured patients had been admitted from the emergency room, as compared to 30% of other patients. Even more of the uninsured patients – 83% – were classified as emergencies, as compared to 40% of other patients.

Almost 25% of all uninsured admissions were judged to have been avoidable if appropriate ambulatory care had been promptly obtained. With trauma and obstetric admissions excluded, the rate of avoidable admissions increased to 36% (to over 45% for chronic conditions). Having a "usual source" of care did not affect the rate of avoidable admissions; however, those patients

whose source was a single individual in charge of their care were only half as likely as the rest of those surveyed to be admitted for avoidable conditions.

In another insurance-related study, Weissman, Gatsonis, and Epstein (1992) investigated whether uninsured and Medicaid patients have higher rates of avoidable hospital conditions than insured patients do. Using data from Massachusetts and Maryland, they studied the following 12 sentinel events: ruptured appendix, asthma, cellulitis, congestive heart failure, diabetes, gangrene, hypokalemia, immunizable conditions, malignant hypertension, pneumonia, pyelonephritis, perforated or bleeding ulcer. The results of their analysis show that uninsured and Medicaid patients are in fact more likely than insured patients to be hospitalized for sentinel events.

A number of limitations, however, mark the Weissman study. First, the authors did not examine other factors that might affect the sentinel event rates, such as quality of ambulatory care, availability of non-physician providers (e.g., nurse practitioners, physician assistants), or prevalence of a given sentinel event in a small area. Among other questions that also remain unanswered was what proportion of the persons admitted with sentinel events had usual sources of care.

Access to Medical Resources

Weisman and colleagues (1991) have shown that the availability of prompt and effective outpatient care influences the timing and use of health care services. The researchers found that when outpatient care is accessible, patients seek treatment within hours of symptomatic onset; otherwise, however, patients may wait as long as a week before seeking treatment.

The availability of primary care physicians has also been found associated with the rate of avoidable hospitalizations. Parchman and Culver (1994) found that the availability of primary care physicians is related to lower admission rates for avoidable health conditions.

Increasingly, hospitalization data are being used to measure access to care, along with morbidity and the quality of primary care. In Boston, New York, Massachusetts, and Connecticut, these data have been used to provide information on potentially unnecessary hospitalizations, as well as, on correlates of asthma hospitalizations, childhood injury, and hospitalization rates for children enrolled in Medicaid (Butler et al, 1995; Connell et al., 1981; Kwan-Gett et al., 1997; Perrin et al. 1989).

Literature Review Summary

In summary, the studies that have examined the correlates of variation in care have focused on demographic characteristics, socioeconomic status, medical resources, regulatory stringency, and so forth. Little attention has been given, however, to whether the study results can be generalized to the pediatric population. Recently, the Association of Health Services Researchers, in conjunction with pediatric researchers, developed an agenda for the study of pediatric health care delivery that focuses on the following areas: the health of children, the efficacy and effectiveness of health services for children, the quality of children's care, improvement to the quality of care at the community level, identifying effective financial incentives, and disseminating the results of research investigations that have developed effective research strategies (McGlynn and Halfon, 1998).

Methodology

This study uses qualitative, quantitative, and expert panel methods. The qualitative method data come from important informant interviews with nine providers, from the six HMO service areas. The quantitative section develops a series of linear regression models based on our understanding of factors that may influence the frequency of pediatric health services use. To pursue further insights about the quantitative results, the qualitative section discusses how important stakeholders were interviewed. Finally, the expert panel's recommendations are discussed.

Qualitative Methods

The study used unstructured interviews with key informants, asking these three major questions: (1) What was your response to the material contained within the report An Assessment of Child and Adolescent Hospitalizations in Virginia? (2) Were you surprised by any of the data about hospitalizations within your region? (3) What is your understanding of why children and adolescents are hospitalized in your region for these major reasons? In situations where the responses about certain factors were not provided spontaneously, probes (See Appendix A) were also used.

The nine tape-recorded telephone interviews conducted with study participants representing, in all, the six HMO marketing regions: Central Virginia, Hampton Roads, Southwest, Blue Ridge, Roanoke, Northern Virginia. The interviews elicited reasons for pediatric admissions in each of the regions. Participants' responses were transcribed by the researcher and analyzed by the constant comparative method in which simultaneous coding and analysis of the data develops concepts. It must be noted that because of the small size and non-random sample of the study, the findings, presented in the Results section, cannot be generalized. However, they should begin an understanding of these issues and guide further research.

Quantitative Methods

Data Source

Data for this study are from the following three sources (1) the 1995 Virginia Patient Level Database, (2) Indicators of Healthy Communities 1997, and (3) the 1990 Census. The database for the quantitative analysis was constructed from these three sources by aggregating variables by county/city. Thus the database comprised county/city discharge rates for various conditions and county/city characteristics.

The Virginia Patient Level Database, compiled by Virginia Health Information, Inc. (VHI), contains information found on the Uniform Billing Form

(UB92). Since 1993, all non-military, acute, long-term, psychiatric and children's hospitals have been required to submit discharge data to Virginia Health Information, Inc. Submitted data include the following elements: admission date; age; sex; race; payer; zip code; county of residence; discharge date; diagnoses (according to the International Classification of Diseases, Ninth Revision, Clinical Modification); procedures (according to the International Classification of Diseases code); diagnosis-related-group number and charges by service units.

Indicators of Healthy Communities 1997 was compiled by the Virginia Hospital and Healthcare Association (VHHA), to describe the "healthiness" of Virginia cities and counties. The VHHA Task Force on Community Health and Accountability includes representatives from business, insurers, local government, health departments, community foundations and advocacy groups, and health system executives and trustees. The task force surveyed the members' specifications for improving their communities' health, recognizing that people's health and their quality of life depend on many community systems and factors. The produced database consists of city and county characteristics for specific years depending on the latest information available. In fact, certain variables from the 1990 Census database were included in this database.

Data Quality

Numerous quality checks are performed by VHI to ascertain the accuracy and completeness of data that hospitals submit. The primary method used to "clean" the data is to exclude any individual discharge that has a "fatal error." Fatal errors are errors or omissions in any field required to ascertain an All Patient Refined Diagnostic Category (APR-DRG). Those fields are admission date, discharge date, date of birth, principal diagnosis, patient status at discharge, and principal procedure. Since errors in those fields make it impossible assign patients to an APR-DRG, these records with one or more such errors are rejected by VHI.

Selection of Conditions

First, all hospitalizations for children 0-19 years of age were examined and divided according to APR-DRG. Discharges were then selected according to four criteria: (1) the frequency of a particular APR-DRG, (2) the gross charges for a particular APR-DRG, (3) whether the International Classification of Disease-9-Code Modification (ICD-9-CM) codes used to constitute the APR-DRG were clinically consistent, and (4) whether public health efforts could influence the occurrence rate of the illness.

The ICD-9-CM coding classifications are used to assign APR-DRGs to specific patients. The ICD-9-CM codings, which classify mortality and morbidity data, serve as a method of indexing medical records and reviewing medical

care, as well as providing basic health statistics. The Center for Pediatric Research along with the Virginia Department of Health assessed child and adolescent hospitalizations in Virginia and included in their report the ICD-9-CM and APR-DRG Codes used for the specific diagnoses.

Ultimately, the following 16 conditions were selected: bronchiolitis/bronchitis, gastroenteritis, dehydration, viral illness, asthma, diabetes, behavior disorders, depression, manic-depressive disorders, substance abuse, deliveries, unintentional injuries, self-inflicted injuries, and injuries due to assault. For this report the conditions were grouped into five categories as seen in Table 2.

Table 2. Selected Hospital Discharge Conditions

Acute	Chronic	Mental Health	All Deliveries	Injury
Bronchiolitis/ Bronchitis	Asthma	Behavior Disorders	Vaginal Deliveries	Unintentional Injuries
Gastroenteritis	Diabetes	Depression	Caesarian Deliveries	Self-inflicted Injuries
Pneumonia		Manic-Depressive Disorders		Injuries due to Assault
Dehydration		Substance Abuse		
Viral Illness				

Measures

The outcome measured in this study was the discharge rate per locality for each of the specified condition groupings (i.e., acute, chronic, mental health, deliveries, and injury). To identify factors that predict differences in these rates, several locality characteristics were considered as independent variables. These measures are as follows:

- number of hospital beds per 1,000 population
- per capita income
- percent females in the locality
- percent black in the locality
- percent uninsured in the locality
- percent on Medicaid in the locality
- fiscal stress index, as measured by six financial resources: real estate property tax, public service corporation tax, motor vehicle license tax, local-option sales tax, and other source income
- percent of population <= 18 years old in the locality
- extreme prematurity/RDS (respiratory distress syndrome) per 1,000 population
- percent of population in the locality residing in an urban area.

Rate Calculations and Age and Sex Adjustments

The rate of hospitalizations per condition was calculated using the number of hospitalizations/discharges as numerator and the estimated population at risk as denominator. The estimates were based on data from the public-use summary of the 1990 Census. To control for regional population differences in age and sex distributions, rates were age- and sex-adjusted according to 1990 Census data. The direct standardization method was used: a region's observed occurrence rates were calculated by applying its observed rates to a standard population, namely the state population in each gender and age category. This method allowed regions whose population distributions differ to be compared.

The study cohort was divided into four age groups: 0-4, 5-9, 10-14 and 15-19 years of age. Most of the conditions in this report refer to the entire 0 - 19 year-old cohort for males and females. The deliveries categories, however, refer only to females aged 13-19 years old, since virtually all (99.93%) births were to females in that age interval.

Statistical Analysis

Using a significance level of alpha = 0.05, the following statistical analyses were performed. Correlation tests were run among the independent variables that were candidates for analysis. If two independent variables were strongly correlated, one of the two variables was eliminated. In the end, the independent variables were narrowed down to the ten previously mentioned.

Another group of correlation tests was run between independent and dependent variables (conditions/diagnoses and community characteristics, respectively). These tests gave a first look at the characteristics associated with the hospital discharge rates for the conditions.

Multiple linear regression was then used to discover which characteristics of the localities that predict hospital discharge rates in Virginia. Six models were analyzed, using the following variables as the dependent variable: all non-newborn discharge rates, acute discharge rates, chronic discharge rates, mental health discharge rates, all delivery discharge rates, and injury discharge rates.

Expert Panel/Consensus

The final analysis that was conducted presented the qualitative and the quantitative results to a group of pediatric experts. The intent was to seek additional information from a group who had a more comprehensive perspective than would have emerged from only the qualitative and quantitative analyses. Members of the group are listed in Table 3.

Three major questions that accorded with the purpose outlined in HJR180 were presented to the group. The questions were: (1) Should further efforts be made to report pediatric healthcare information regularly? (2) If so, what information should be reported – e.g., quality, costs, etc.? (3) How should this information be disseminated?

Table 3. Expert Panel Members

Member	Organization	Role
Cecilia Barbosa, MPH, MCRP,	Virginia Department of Health	Director Division of Child and Matemal Health
Barbara Brown, Ph.D.	Virginia Hospital and Healthcare Association	Director of Research
Sue Cantrell, MD	Virginia Department of Health	Medical Director, Lenowisco Health District
Robert Chevalier, MD	University of Virginia	Professor, Chair Department of Pediatrics
Diane Downing	Virginia Department of Health	Alexandria Health District
Angie Francis	CHIP of Virginia	Director
Michael Lundberg	Virginia Health Information	Executive Director
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John P. Pestian, Ph.D.	Eastern Virginia Medical School	Principal Investigator
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Results

The following section is divided into two subsections: qualitative results and quantitative results.

Qualitative Results

Responses from key informant health care providers in Virginia identified several factors that may affect variation in hospitalization rates. These included the physician's decision to hospitalize, parent's lack of education or recognition of symptoms and the availability of community-based services. In addition, respondents suggested interventions that may reduce the need to hospitalize some children. For example, it was suggested that physician's decision to hospitalize might be influenced by the level of adequate case management available. Consequently, there may be opportunities where proper case management could help families in areas with few health care resources to care for their children. In addition, proper education of parents about their children's illness was offered as an intervention that would possibly decrease the number of hospitalizations for pediatric ambulatory sensitive conditions. Key informants indicated that this could be accomplished with telephone call-in numbers, case management, and public service announcements.

Health care providers also raised issues related to primary healthcare access, which may affect variation in hospitalization rates. They indicated that in areas with limited facilities, attaining adequate health care without using a hospital is impractical. In these instances, the emergency room is the best alternative. For example, the 24-hour, seven days a week nature of the emergency room creates convenience that is not found elsewhere. Moreover, the lack of an insurance gatekeeper is important when an illness had become acute. Other concerns were stated as well. For example, presenting a child in the emergency room when their has been no continuity of care may lead to hospitalization because the is physician concerned with the quality of follow-up care.

A final important point by the key informants is the void of mental health services and mental health information. The informants indicated that a needs-assessment would be useful in identifying how pediatric mental health services could be improved. See the Appendix for a detailed presentation of the qualitative component.

Quantitative Results

Descriptive Statistics

Table 4 lists descriptive statistics of the independent variables that were used in the predictive models. This table shows the mean, standard deviation, minimum, maximum and number of localities that had available data. For example, number of hospital beds per 1,000 population ranged from zero to 35.4. While premature births ranged from 2.5 to 99.8 per 1,000 population.

Table 4. Descriptive Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum	N
Hospital Beds per 1,000	4	6.9	0	35.4	136
Per Capita Income	12953	3552	7837	26709	130
Percent Female	51	2	42	56	130
Percent Black	20	17	0	72	130
Percent Uninsured	14	1	12	15	136
Percent with Medicaid	10	5	1	23	130
Fiscal Stress Index	164.96	9.71	126.79	184.67	136
Percent Population <= 18 years old	23.2	2.6	16.5	31.1	136
Extreme Prematurity/ RDS per 1,000	20.7	17.1	2.5	99.8	117
Percent Urban	25	40	0	100	130

Regression Results

Six independent multiple regression models were developed to examine factors that predict the variation in hospital discharge rates. Table 5 displays the models using the reasons for discharge (i.e. acute chronic, mental health, delivery, and injury) as the dependent variables and locality characteristics as independent variables. Table 6 shows the regression model results when all independent variable were included. Similarly, Table 7 shows the regression models with only the *significant* independent variables. Comparing these two tables shows that by only including the significant variables there were minor changes in the amount of variation explained (R^2).

Focusing on the significant variables that cross models, there are no independent variables that are significant for all conditions. Variables related to access, however, cross models frequently. For example, hospital beds per 1,000 population, a measure of physical access, is significant in four of the six models. Likewise, this is true for the percent of population on Medicaid, a measure of economic access.

Table 5. Multiple Regression Models

Model #	Dependent Variable	Independent Variable
1	All Non-Newborn Discharges	Hospital Beds per 1,000 population Percent Blacks Percent Medicaid Extreme prematurity/RDS per 1,000
2	Acute Discharges	Hospital Beds per 1,000 population Percent Blacks Percent Medicaid Percent population <= 18 years of age
3	Chronic Discharges	Hospital Beds per 1,000 population Percent Medicaid Percent population <= 18 years of age
4	Mental Health Discharges	Hospital Beds per 1,000 population Extreme prematurity/RDS per 1,000 Percent Urban
5	All Delivery Discharges	Per Capita Income Percent Females Percent Medicaid Fiscal Stress Index Percent population <= 18 years of age Extreme prematurity/RDS per 1,000
6	Injury Discharges	Percent Females Percent Uninsured Extreme prematurity/RDS per 1,000

Table 6. Regression Model Results. Standardized Beta Coefficients (All Variables)

		Independent Variables									
Dependent Variable	R^2	Hospital Beds per 1,000 pop.	Per Capita Income	Percent Females	Percent Blacks	Percent Uninsured	Percent Medicaid	Fiscal Stress Index	Percent pop. <= 18 years	Extreme Prematurity	Percent Urban
All Non-Newborn	0.475	0.247**	0.201	-0.005	-0.196*	0.098	0.269*	0.287	0.125	0.406**	-0.167
Acute	0.42	0.22*	0.164	0.012	-0.266**	0.16	0.513**	0.088	0.136	0.243**	-0.153
Chronic	0.593	0.494**	0.205	0.0006	0.078	0.1	0.259*	0.023	0.217**	0.319**	-0.094
Mental Health	0.599	0.108	0.142	0.049	0.08	0.201*	-0.07	0.097	0.185*	0.59**	0.21*
All Delivery	0.514	-0.039	0.476**	0.203*	-0.102	0.001	0.279*	0.482**	0.246**	0.419**	-0.214*
Injury	0.362	0.509**	0.016	0.136	0.057	0.208*	-0.003	-0.006	0.065	0.509**	0.025

* .01 p<= .05

** p <= .01

Table 7. Regression Model Results. Standardized Beta Coefficients. (Significant Variables)

		Independent Variables									
Dependent Variable	R^2	Hospital Beds per 1,000 pop.	Per Capita Income	Percent Females	Percent Blacks	Percent Uninsured	Percent Medicaid	Fiscal Stress Index	Percent pop. <= 18 years	Extreme Prematurity	Percent Urban
All Non-Newborn	0.441	0.297**			-0.213*		0.365**			0.401**	
Acute	0.434	0.363**			-0.297**		0.495**		0.139*		
Chronic	0.382	0.481**					0.187*		0.253**		
Mental Health	0.555	0.127*								0.6**	0.259**
All Delivery	0.486		0.249*	0.195*			0.228*	0.298**	0.176*	0.405**	
Injury	0.332			0.189*		0.188*				0.541**	

* .01 <p<= .05

** p <= .01

Conclusion and Recommendations

The sixteen most frequent and expensive reasons for Virginia's children to be admitted to hospitals are: unintentional injuries, depression, vaginal delivery, asthma, manic depression, bronchiolitis/bronchitis, pneumonia, behavior disorders, caesarian delivery, gastroenteritis, dehydration, assault, viral illness, diabetes, self-inflicted injuries, and substance abuse. Some of these admissions need not occur. For example, asthma is an ambulatory sensitive condition. That is, had the primary system been functioning optimally many of these admissions need not occur (Shukla and Pestian, 1996). While little research is available, it is reasonable to consider that other types of admissions, such as depression need not occur at the present level.

These hospitalizations were clustered into five groups: acute, chronic, mental health, delivery, and injury. For each group, the following community characteristics were studied: hospital beds per 1,000 population, per capita income, percent female, percent black, percent uninsured, percent with Medicaid, fiscal stress index, percent population less than 19 years old, extreme prematurity, and percent urban.

The results of the quantitative analysis show that the number of hospital beds per 1,000 population and percent of Medicaid users tend to predict the discharge rates in most models. These variables traditionally represent both physical and economic access to care. What cannot be determined from this analysis is whether the variation is due to overuse or insufficient resources.

The qualitative analysis included responses from key stakeholders. Respondents identified several factors that may affect variation in hospitalization rates. These included the physician's decision to hospitalize, parent's lack of education, recognition or denial of symptoms and the availability of community-based health services. In addition, respondents suggested interventions that may reduce the need to hospitalize some children. For example, case management, parental education, and increased access to mental health services were suggested interventions.

Finally, an expert panel was convened to help synthesize the quantitative and qualitative results. Participants agreed that information about pediatric healthcare should be regularly reporting within the Commonwealth. This information is essential for adequate policy and resource allocation decisions. The group also agreed that since the reasons for admissions vary, i.e., public health, mental health, and acute health, data for this report should be supplied from the Commonwealth's existing data sources. The expert panel also suggested tracking the data over time in order to identify any changes.

This analysis represents a first step in determining the optimal method to measure the quality of care for Virginia's children. The report shows the types of

indicators needed to monitor pediatric care in Virginia. These indicators should include information about: (a) pediatric medical and economic access, (b) the quality of pediatric outcomes and (c) the impact that specific interventions may have on enhancing individuals propensity to seek care. Further efforts are needed to develop and test these measurement indicators.

Recommendations

Based on this analysis the following recommendations are made:

- Virginia's Joint Commission on Health Care consider supporting action that will grant an existing state agency or organization the responsibility and funding to regularly report information about the frequency, nature, cause and quality of pediatric hospital admissions in the Commonwealth.

- That the authority granted to discharge these responsibilities span state agency boundaries so that the necessary data may be easily acquired to develop the optimal measurement indicators.

- The information be widely disseminated to consumers and providers of healthcare, advocates and the various oversight bodies

- A mechanism to evaluate the use and value of the information be developed.

Appendix: Detailed Results of Qualitative Analysis

In 1998 the Center for Pediatric Research published An Assessment of Child and Adolescent Hospitalizations in Virginia, which identified frequent and expensive hospitalizations that are amenable to change through public health initiatives. To gain information about the factors that might affect the variations in such pediatric hospitalization, the present study conducted interviews with key informants among health providers across the state. These detailed emphases from experts "on the ground" can often pinpoint the exact nature of the gaps that produce frustrating results in healthcare delivery.

Methodology

The constant comparative method of analysis applied to the interview data derived the follow list, by HMO marketing region, of significant reasons for pediatric hospital admissions.

Region	Significant Reasons for Admission
Central Virginia	Asthma, Diabetes, Substance Abuse, Behavior Disorders, Depression
Hampton Roads	Deliveries, Injuries due to Assault, Manic Depression
Southwest	Bronchiolitis and Bronchitis, Gastroenteritis, Dehydration, Viral Illness, Unintentional Injuries
Blue Ridge	Viral Illness, Behavior Disorders, Unintentional Injuries
Roanoke	Substance Abuse, Diabetes
Northern Virginia	Self-inflicted Injuries, Depression, Manic Depression

Reactions to the Earlier Report

Participants seemed to have varying degrees of familiarity with the report. Some seemed to have studied it thoroughly; others had looked at it briefly; and one had not seen it at all. Individuals were "pleased to see the material presented like this," described it as worthwhile, and commented that hospital discharge data had always been an "enigma" and that this was the first time it has been presented in a condensed form. Informants also suggested that more data was needed; their

particular recommendations appear throughout this results section. The general recommendations for additional data included pairing them with outpatient data and including data from government hospitals.

Coding and Diagnosing. Informants voiced some concerns about the quality of the data from 1995. The informants from one region suggested that the high rate of unintentional injuries in that area was due to mistakes in coding the data. Another informant thought that the rate might be influenced by differences in reporting. Others said that ambiguity in diagnosing conditions such as asthma, bronchiolitis, and respiratory problems of premature infants also made it difficult to pinpoint what exactly was going on.

Transfers. Informants from several areas wondered whether the report could account for individuals who were admitted to a smaller hospital and then transferred to a larger one. Another asked if it was possible to decipher whether the admission rates reflected the same people being admitted again and again, or only one-time admissions.

Centers and Borders. Practitioners working in the larger hospitals raised the possibility that their regions have more hospitalizations because they are referral centers to which people come from long distances, or because they handle more indigent patients than others do. Others suggested the possibility that large mental health facilities in their region attract children from outside the region, which may contribute to the region's high rate of psychiatric discharges.

Conversely, providers from areas where clients often seek treatment in other regions, or even other states, wondered whether low rates in those areas might reflect a lack of data that hides more significant problems.

Surprises

Participants in one region were surprised by the number of hospitalizations there were for mental health. Participants from another area questioned the rate found for the diagnosis of Manic Depression.

Understanding the Doctor's Decision to Admit

Participants described several factors that they perceived to affect the decision by a doctor in the community or in the Emergency Room to admit a child or adolescent to the hospital. There are several factors that participants described as having an impact on the decision to admit.

Filling Beds. The participants from one region suggested that some admissions had occurred because hospitals need to fill beds. However,

informants from other regions said that explanation would not make sense in their areas, because pediatric units are so costly for hospitals to run.

"Admitting Docs" Participants from one region pointed out that there are "admitting docs and outpatient docs." "There are some pediatricians who are more willing to educate mom and provide her with what she needs to take the kid home and others that stick them in the hospital." These participants believed that "just a few doctors are responsible for over-admission of a lot of patients." A respondent from another area agreed with that explanation, but said it would be difficult to prove.

Participants from other regions did not agree with the opinion just cited, saying, for example, "I don't have that sense at all. I have not heard that here." Several participants from regions with managed care indicated that such probably was not the case in their region, either, "because HMOs are very quick to know if you are hospitalizing too many patients." The participants who had referred to the "admitting docs" in their region asserted that though managed care may have reduced the numbers of doctors their patients can see, it has had little effect on the amount of hospitalization in their area.

Fudging with the Diagnosis Codes. A participant from another region commented that now it is difficult to admit children with anything less than severe illnesses, but that it can be accomplished by "fudging with the diagnosis codes." The participant had discussed the report with another provider who admits to the hospital. This provider had commented that the numbers did not match her experience at the hospital, and so she wondered whether a diagnosis code might sometimes be given that allows the child to be hospitalized, rather than the one that accurately coded the child's illness.

Holding for Observation. The decision to hospitalize a child may depend on the capabilities of a doctor or clinic to "hold" children at their locations for treatment and observation. Participants from some regions know that physicians gave fluids and asthma treatments in their offices; in other regions, this may not be common. According to one participant, "Most clinics don't have a place to keep clients – [they] either go home or go to the hospital." Another noted, "We have observed some asthmatic kids and we might have given an antibiotic, we might have the person wait around. For the most part, if someone looks acute, we try and get them to an emergency room right away."

Whether or not children can be treated and observed also depends a great deal upon their time of arrival. "If you came to the clinic at 9 in the morning with asthma, you could kind of hang out all day, if you needed to, getting care and whatever, but if you came at 5:30 p.m., you would probably be transferred to the emergency room."

The Emergency Room (ER). Several participants were interested in obtaining data by physicians in the community and comparing this information to emergency room admissions. Other regions' participants reported that sometimes ERs do manage children if their condition is not "too extreme." The child is sent home "with the reminder to see their doctor the next day for another checkup."

However, a participant did indicate that the emergency room might be more likely to hospitalize if the "family drove for six hours and it's 2 o'clock in the morning. . . ." Another participant echoed this position by saying, "These people have to travel some great distance to get to a hospital, and because of that factor, there's some doubt as to whether they could get back if the kid got worse."

Trust in Parents. Another factor that impacts the doctors' decision to admit in several regions is "the doctors don't trust some parents to care for the children at home." Physicians may be uncomfortable with the family "because of education level, because of resources, because of poverty."

One participant said that she was "a real advocate of treating in the community, because you then know the family; and some poor, uneducated families are very capable of doing sophisticated care, but you have to know them."

Practitioners' Knowledge about Community Services. A more distant facility may not know what services are available in the patient's own community. "We might try to get a treatment going in the hospital with the family, [because we know] that once they leave they may not have a facility in the community that can help there. That may be true with the unintentional injuries, say a burned patient. Perhaps there are not the facilities close by in terms of wound care, nursing care."

One participant thought that decisions to admit for viral illness might be fewer if caregivers could see the child again the next day. "Because I think ER follow-up doesn't happen very much, and it's too expensive."

Family Preference. Often, the doctor's decision to admit is reinforced by the family because it's "easier for a mom to accept the fact that her kid is admitted for the kid's benefit, than [that] the kid is sent home for her to take care of. She may accept these admissions as being indicative of good medical care and is satisfied with the outcome."

Hospital Policy. Hospital policy was suggested as a reason for hospitalization for certain conditions. "Most children with depression or some manifestation of self-inflicted harm or injury - 99.9% of them are admitted. They have to have psychiatric clearance before they can be discharged, and that's not always available to the emergency department."

Insurance and Affluence. One region's participant pointed out that more affluent areas had more hospitals, and that private insurance would pay for hospitalization, particularly for mental health, so that they would be utilized.

Understanding Families' Decisions about Seeking Care

Before the doctor can make a decision and even before children arrive at the doctor's office, the clinic or the ER, families must decide when and how to seek care. The degree to which a family's decision meets the child's need for health care contributes to whether or not the child is found to need hospitalization.

Lack of Awareness. All participants agreed that lack of awareness is a problem. "Teenage parents," "ignorance" and lack of education were identified as factors that cause parents not to "recognize a problem" and/or not to "understand the significance of the illness." Even older, better-educated parents at higher socioeconomic levels may lack the knowledge to manage a child's illness or injury so that unnecessary hospitalization is avoided. Parent's "focus elsewhere" may result in their "missing little signs and symptoms." This can be particularly important if the child's condition is not relatively visible - i.e. dehydration, as compared to a high fever. In behavioral issues and substance abuse, "even attentive parents may not pick up on some signs." Denial may also play a role: "I think there is a tendency to think [behavior disorders; substance abuse] doesn't happen as much around here; but I think obviously it does."

Hotlines. One region's participant suggested that the "Ask a Nurse" hotlines offered by some hospitals and managed care programs and available 24 hours a day could help parents make good decisions about their children's needs for care. It was also strongly suggested, however, that some advice might serve the hospital's marketing plan rather than the needs of the child and family. "They are trying to get everybody in. They have a fixed overhead for the ER, and there's not enough true ER visits to take care of the overhead; and so they rely on a certain number of those non-emergency room type of visits after hours to help cover fixed expenses."

Other participants knew little about hotlines or how they might help parents decide. "We've never directly used any of those or had any control over them, so I don't know." "There are hotlines here for teens, adults, but I haven't had a lot of experience with them, or with patients who have used them."

Work. Work place policies and pressures not to miss a day's work for parental responsibilities were implicated by several participants as responsible for deferring attention to children's health care. "Sometimes parents now have to work or go back to school and other people are keeping [the children]." "The pressure of trying to stay on the job is a big one. Most of us folks that have been moms and had jobs, we send our child to day care even though we identify something going on."

"If parents have to work, they can't take off work to take the child to the doctor, or they will lose their jobs." "More welfare moms are involved in training programs or go back to work, and they have to work around their job schedules. We try to understand that; plus they probably don't have a job where their employer is real agreeable to them taking off. And we tend to forget that, because we have jobs where we can do that."

Poverty. The accumulated pressures of poverty may also be a cause of another lack of awareness: "They may not recognize it as a serious problem or threat; but, again, when you don't have a car, when you don't have a way to get here and you have 50 other problems that seem more urgent, it's probably not your top priority until your child genuinely gets in trouble."

Parents who are fearful of incurring its high cost may defer care and instead "wait and see." The "cost and inconvenience of doing it" can affect the decision to seek early treatment. This may lead to costly inpatient care - especially with "these viral respiratory things. 'I don't have the money to pay the doctor. We'll ride it out.'"

Third Party Payers. Medical coverage or its lack was a factor identified for every region. The fact that some children can't get Medicaid and also that some families do not get Medicaid for their eligible children was recognized as a problem that can delay treatment. Some participants believed that families may not want to apply to social services because of stories that "they'll take my kid away from me." Or they are "very proud and they don't want to be seen going into social services." In some areas this dilemma has been partly resolved by having somebody from the social services agency to another agency such as Head Start to register children.

Some families may be "unaware that those resources are available." They would have to "run into the system and have a problem for someone to let them know, like the eligibility person in the hospital."

Although pride may affect where people are willing to go to sign up for Medicaid, it does not seem to inhibit them from subsequently using the coverage. "If they have it, they use it." " Embarrassed? I have heard that, but not lately. Many people are appreciative just to have a health service available to them."

Knowing Where to Seek Help. When families are aware of a problem, they do sometimes know where to seek help. "It's fairly straightforward. Maybe." Participants mentioned local doctors, the health department, or an emergency room as recognized sources of care. One participant added, "I'm not sure where they would go for behavioral problems except to start in the same place." Whether or not social service employees tell families who have Medicaid what is available to them, or give them written information, was question.

In regions with immigrant or transient populations, "sometimes people are not familiar with where they can get care, or they've not developed a relationship with a primary source of care, because they are coming in and out of the population."

Confusion Caused by Medicaid HMOs, versus Successful "Navigating." "I think it's all the transition everywhere. You know there's 50 different plans and its very confusing, and people can't just choose their doctor and walk in any more." The Medicaid system may also contribute to the confusion by assigning families to one doctor for some of their kids and to another doctor for the rest. "And then if you go, the doctor's not going to see you because his name is not on the Medicaid card."

Participants reported that sometimes people are confronted with the unnecessary obstacle of being switched from one HMO to another. "It certainly is difficult for people who have a hard time, have transportation problems, have socioeconomic problems, finally get a ride and show up - and find out that they've been switched to another HMO. We can't see them, or we have to try to get it straight for them."

In some regions, certain Medicaid HMOs have prevented families from using health departments that may have provided care for them for years. "I think, overall, patients are very confused. It's difficult to get referrals. It's very difficult wading through the system, even if you have someone helping you. It's doubly hard if you don't know what you're doing."

"My sense is it's a hard thing to navigate these days." "I would suspect that it's very, very hard to move through the system, unless you are highly motivated to do it." "A lot of people don't know how to access the system at all. A lot of people (8%) don't have phones."

Participants' views varied, however, about whether people had difficulty navigating the system: "No. It's a very educated population and I think they get what they want." "I have been impressed with how well people can navigate the heath care system, more than I've been impressed with the fact that there are a few that probably can't."

Sociocultural Factors. Some sociocultural factors may contribute to peoples' unwillingness to seek care. In one area, "Distrust of doctors and medical people [is] inherent in [the local] culture." Another participant suggested that "religion, fundamentalist churches, faith healing and a fatalistic view" may undermine confidence in the medical profession. In another region there is some distrust "especially [of] the more highly technical things. The idea that's common is [that] we're trying to make somebody's child a guinea pig."

Unfamiliarity with language may also inhibit people from seeking health care. "We have the Spanish, but we don't have a whole lot, but I would expect that they may not be reluctant as much as they just don't understand."

One participant suggested that certain parts of the population "don't deem [health care] a priority. They make it to other things. Come age four, when they want into Head Start or five, when they want into kindergarten . . . that is the incentive." "Many people just don't do anything until they have to; and, again, for this population that we serve, many times it's a function of so many other problems that are just overwhelming."

Weekends and Evenings. According to a survey done in one region in the Fall of 1997, people "would like evening hours and Saturday hours. I think they are available if you have money. I think you can go into the quick care places . . . to be seen if you are sick." Different regions seem to have had levels of success with these. "Interestingly, we have a once-a-month Saturday morning immunization clinic that's rotated around the area. [They] are not particularly well attended." In contrast: "We have begun to have evening hours for both immunization clinics and peds clinics, . . . until 7 o'clock, and they have been quite well attended." "I think that for somebody like me, the working parent of three children, to me that sounds GREAT! I could take the kids at 6:00 or 7:00."

Evening and weekend hours were seen to be particularly useful for adolescents who wind up seeking care in the ER for mental health problems. "Most of the admissions are in the evening. That's when they get out of school. That's when they have their run-ins with their parents and their friends. Lots of them come in on the weekends- weekend evenings."

Relationships with Providers. Most of the regions' participants felt that their health care professionals had good relationships with their patients, and that patients had confidence in the services provided. People have "confidence in the providers in this area" and "do trust what the physician or health care professional advises them." "Those that have used the care are happy with it. Even when it fails, they're happy with it." One individual said "Most of the families, if they don't [have confidence], they'll try to get another doctor."

However, the outcomes of care were seen as affecting future use: "If they've gotten into service and have a positive experience, I think they're much more apt to go back again quicker." "If they've had a treatment failure maybe, or they don't get the response they expected, that might be different."

However, if families seek most of their care from the emergency room, it's hard to establish a relationship when the care is episodic and emergent, "even if during that time you provide well child care . . . I think it is problematic if people don't have an ongoing relationship."

A few participants voiced some negative assessments of their region's pediatric care delivery: "If you have something really bad wrong with you, you go to the big city." "There are some that just put up with the system, as long as they can get treated and get better. . . ." "It's the attitude of the docs - they know best. Patients don't ask questions. The diabetes docs don't have time to counsel. . . ."

Foreign Physicians. Participants from one region discussed foreign physicians. "There was a time when a language barrier [existed], and it still may be to some extent. The guys have been here for so long now that it's probably less of a problem than it was 15 years ago when they first came. They've kind of learned and the people have learned." AHEC is trying to develop home-grown practitioners – "send kids who have grown up here off to medical school and bring them back so they'll practice here." Recently there have been a few American-born pediatricians in the region who have returned to practice.

Culturally Acceptable. Most participants believed that the care provided was personally and culturally acceptable to the clients. "I think they work very hard to be culturally sensitive to the people down there that attend the clinic."

Getting an Appointment. Several individuals said that they did not know how long it takes to get an appointment at an outpatient facility. "We certainly have had people complain that they can't get in to see their doctor." "I'm aware of our own outpatient clinic. It does take some time." Screening also takes place. "If they call in the morning, the nurse calls back to get information and then makes a decision about whether they need to be seen that day or can be put off a day or two."

The outpatient mental health services were viewed as particularly hard to get in several areas - even by physicians! "They are harder to get if the physician calls individually, but if you have a social worker call or another person along those lines, they can usually push their way in. But if I were a parent trying to call I might have a small delay." "If we want (children) to be seen by the psychiatrist in mental health, there may be 3 or 4 weeks. . . ."

Some children face a long wait for care "because some of the physicians will not even fool with Medicaid." "Medicaid kids . . . they call and want to make an appointment and they may be told that there's two weeks before they can be seen."

Pediatric Policies. The difficulty noted in getting appointments is somewhat at odds with the pediatric philosophies described by some regions' participants. "Pediatricians in particular are sensitive to the acuity in children such that sometimes illnesses in children can't wait." Other participants' remarks were: "Most pediatric practices certainly try to see sick kids." "We never turn a sick child away. If someone calls with a pretty acute kind of thing, they are able to work them in within a day or two." "They are seen right away."

Some consideration for people with transportation problems also was mentioned. If somebody shows up an hour and a half late because of their ride, they will probably be seen. "We give people leeway: . . . an hour for a sick appointment."

Assertiveness. Even when pediatric services see sick kids immediately, parents may feel they have difficulty in getting their child seen. One reason may be the parents' reticence to stress the urgency of the situation or assert that an appointment in a day or two is not good treatment. "They're not sophisticated enough to say 'I need to be seen now.' I think just sometimes, if they've gotten worse, then somebody else will call for them or say that this child needs to be seen now." "I know of some families that are very assertive, very tuned in and they know, they're very educated. I know other families who are very trusting and say 'well, I called the doctor but. . . .' They're not informed enough . . . I do believe that assertiveness is an important quality that we would do better to promote in our families." Private patients, on the other hand, may be more assertive. They will call before bringing the child over "even if it is in the next hour."

Walk-ins. Most interviewees said that walk-ins are "not encouraged anywhere." Some places will see them. Some places might do "standby kinds of things." "But they try not to have a big brawl there with a bunch of walk-ins . . . they work on an appointment basis."

Several participants cited urgent care facilities as places that take walk-ins, and one participant believed that a public health clinic did. One region had "a walk-in clinic and a way to schedule. In the community, there's a free clinic as well that's open in the evenings, but there's not an evening walk in clinic." Obviously, if the family cannot come in during the day, and the doctor's office closes in the evening, such a family will turn to the emergency room for care.

The Emergency Room. The "underinsured, the uninsured and the less well educated" use the ER for primary care and call 911 more than do people with "more education, more insurance, more options, better transportation." The underadvantaged group goes to the ER instead of to the doctor, where they might be asked to pay." One participant wondered whether, in fact, patients still can be seen in the emergency room, or if they are turned away. They may "just call the doctor and say 'Hey, this is an emergency' and they'll meet them at the hospital."

One participant mentioned a free clinic that "works closely with the hospitals to try and move people out of the ERs and into that setting." "I think we need more of that. We have some available services for people who have no insurance or no money, but we probably need to make those maybe more accessible."

Transportation. "A lot of families may not be able to get the care they need because they don't have the transportation readily available." "If your neighbor comes and says 'my child is sick' and you look at the child and you think 'oh, he's not that sick. I'm not going to be bothered to drive two hours.' But when he gets to be wheezing and turning blue you might do more." Most parents "ask for a ride in an emergency, but not for a routine check." In some cases, transportation is a severe problem: "If you live in [this area] to go anyplace, you've got to have a transportation source. You hear more of the young wife whose husband is [away] and she's stranded, that kind of thing; and they do have to develop their contacts to get around. . . . if their problems aren't so overwhelming that they can think and problem solve, they can find a way." One participant said that she "had no feeling that more transportation would help."

Several interviewees from regions where public transportation is available downplayed transportation as an issue. "Just because of where the outpatient clinics are located, I think the public transportation is adequate." "If they are right around [the city], there are buses and . . . things like that." Others pointed out the inconvenience: "We had families who had to make their appointments based on the bus schedule in order to get there and then in order to take the bus [home] before the bus reduced hours in the evening." "Having to depend on public transportation is always a barrier."

Special transportation services such as a van service were also mentioned. "You have to call, and they prefer 24 hours notice, and it's door to door. Under 55 it's a buck each way no matter how far it is, and they will write that off if the person says they can't afford to pay it." According to another participant, however, the van "doesn't reach everybody and it's not that well used. Many people don't know about it."

Medicaid cabs were also mentioned, some of which seemed to be used to cover long distances for specialty care. That service, too, has it's limitations: "You have to let them know 24 - 48 hours in advance, which, if you have a sick child, you don't know how to do." Ambulances may also be used: "If we had a child in acute distress that they felt needed to be transported to [the hospital] you could get ambulance services."

The CHIP program was praised for "making sure the children have been assigned to a primary care provider and . . . provide transportation."

Waiting to Be Seen. The waiting for services varies. "There are some offices that you can go in and be seen for your appointment within 15 minutes. There are others that you have to sit there for an hour or two hours." "It could be longer in the ER -- 3 to 4 hours. Urgent care centers and physician offices were a problem a while ago, and it's a little bit less of a problem now. My guess would be maybe an hour or an hour and a half."

Preventing Hospitalization of a Child with a Chronic Disease

The previous section focused on situational and logistical problems in obtaining health care. Chronic diseases, however, greatly increase the duration and frequency of care needed. "The chronic disease problems such as asthma and some of the behavioral disorders, . . . require consistent ongoing care . . . that's not provided, because the care is inconvenient, or too hard or too expensive. I think people then don't follow through. . . ." Such a childhood disease "creates additional needs for resources that families over a prolonged period of time may or may not be able to provide, and sometimes that takes its toll."

Lack of Involvement. If parents "are unable to provide the support the child needs" because of "dysfunctional situations," instead of getting real involved in understanding the disease process and treating the disease and managing it that way, they seek help with the flareups that the child might have." One participant identified "depression that's not been diagnosed in the parents" as accounting for their "lack of involvement . . . You can go and knock on the door. I've even offered them transportation to come to my clinic, and you know they just won't come. Some of them are so depressed that they can hardly talk to you, and our recommendation is to send the whole family to counseling, especially the parents. Or if they're not depressed, they're on alcohol."

Follow-up. Some participants suggested that returning for follow-up appointments may be contrary to human nature. "Most people don't go back if they feel better - across all socioeconomic groups." "We don't have very many people come back for rechecks. If it costs a lot of money for someone to come back, I would think that human behavior might postpone that." "A lot of them don't come back. No matter how you preach to them to take all the antibiotics, once they feel better, they stop." Others related opposite phenomena: "Most of the children, because they are not admitted to the hospital, their parents are following up."

In chronic conditions, clearly, parents and providers face repeated challenges, which are described below by diagnosis.

Asthma. "I think when you get into asthma,. . . that's one of the chronic diseases of children where better outpatient care can certainly reduce hospitalization. . . . Is the issue access or lack of compliance? . . . It may be understanding, education, what to do." "Asthma is a very difficult disease. . . . It can be managed, and more HMOs and doctors are doing some case management and asthma education and all, but it's very difficult to manage. It takes planning and certainly education, and the right equipment, medication and peak flows. Peak flows are about 20 bucks. Nebulizers are over 100. They can't afford them. That's the group that probably falls through the cracks."

An alternate analysis was: "Because asthma is something that they can perceive, and you don't want your child to get into serious trouble, that may be the type of population that tends to be little more compliant."

Several regions' participants reported success in their work with children with asthma and their families. One region uses a research-verified protocol in the hospital and supports it with more frequent outpatient treatments in a pediatric asthma clinic. The clinic is run by a pediatric pulmonologist and a pediatric nurse practitioner, and parent and patient education are "important components." The protocol has resulted in a "decline in our number of admissions regarding asthma." Another region also has had success. "We've reduced our asthma ER visits by a great deal. We give them a peak flow, we give them a chart. . . . The kids, from the time they're six or seven, they can write their numbers down, and we give them something to follow - and when you get into this zone, you take this medication, and when you get into this zone, you take this medicine. And you don't want to get into the red zone, but if you do, this is what you do."

Diabetes. The enduring nature of diabetes was emphasized. "If you have a child that comes in and needs heart surgery, and they get it and they're fixed, . . . but that takes very little in terms of the hard behavioral modification (maintaining a diet for the next 10 years)." Developmental factors may add to the problem in diabetes. "Adolescents. . .often go through a period of trying to deny that they have something that's different from everybody else. [They] may do some acting out, and may not comply with their medication or follow with their diet. I know that there have been [support group] efforts attempted in this area. . . ." Support groups were suggested as a positive intervention for adolescents with diabetes.

Earlier case finding for diabetes was urged by several participants. Knowledge about this aspect varied. "I don't know if there is the genetic thing with diabetes and we just haven't got a handle on it with the parents." "We are aware that there are some familial roles with diabetes, in particular in terms of it being more prevalent in [families where other] members have diabetes."

Behavioral Disorders and Substance Abuse. Behavioral disorders and substance abuse conditions are also more difficult to manage. Even professionals admitted not knowing what to do for these conditions. "I don't know what to do about substance abuse in particular. I think everybody would like to know the answer to that question." "Certainly, as far as the depression, mental health issues [go], none of us know how to handle teenagers. We could all use all the help we could get there."

Parents, too, exhibit a "great deal of denial." This may explain why these conditions tend to be "more episodic and emergency." "If you've got, on the one hand, family members who can't recognize, and you've got, on the other hand, physicians who may not be as familiar with how to help. . . . I know some physicians

who feel very comfortable talking about these issues and I think that there are others, just as there are parents who are reluctant to acknowledge that their child might be into something." Participants suggested that the obstacles may be lack of recognition of the problem, or of knowledge about where to go for help; they suggested parental education to overcome them. "I think it's a lot of parenting education, starting when [the children are] little and moving on up, depending on what the problems are." "Parents are hungry for information. If they can be linked to providers and resources in the area, they can be taught appropriate expectations of children."

Even after a child is diagnosed with a mental health problem, parents may not follow through with treatment. One explanation might be the insurmountable difficulties of continuing it: "I couldn't imagine [having] a child with a chronic mental problem and how to keep going through a [Medicaid] system with that." Another might be cultural variation. "The group that is probably most resistant to intervention is the Asian population. They think as a family they can work it out. They'll go through the process of having psychiatric evaluation because they know that's the only way they're going to get out the door, but as far as . . . planning follow-up [goes], they're not interested. Many of them have Asian physicians, and they just want to go back to their primary care physician and they'll work it out from there." "I've even had some black physicians say to me that they won't okay their child to go to counseling, that labels them for life that they're crazy, and they're not." Another participant said that she did not think African American or Latino populations resisted treatment.

The environment of mental health service delivery also may not be acceptable to children's families. "When some of the parents went in to have counseling, they were seeing some of the discharged patients from [the state hospital] that were coming down for medication -- the whole gamut of kinds of things, and that turned some families off."

Acute Conditions

Not all conditions can be "diverted from hospital care to outpatient care." For example, if an adolescent is pregnant, or a child sustains a severe injury, that child will be hospitalized. For these acute conditions, participants saw primary prevention as the chief way to keep children out of the hospital.

Normal Childbirth. One region's participants would have liked to have data showing whether most of the pregnancies are in the group of 18- and 19-year-olds, because these participants were "not sure that that's the group we have any business trying to prevent, anyway. People talk about teens and they think we have millions of 15-year-olds; and its 18- and 19-year-olds by and large." "[There] could be not a very significant risk involved there for [that age group]."

From another region, a consistently high teenage pregnancy rate was noted. "We've brought it down a very little, but no matter how hard we work, we don't seem to be able to get it down so it makes sense." "I don't think we have a really good ability to know how to prevent the teen pregnancies. . . ." "Even though the data is showing it's getting less and less of a problem, it's still very significant."

Primary prevention was praised. "We have a very active teen pregnancy prevention coalition here, with lots of support from the community. The rate has declined across the state. How much is due to TPPC is hard to know, but at least it's raised the issue, gotten some visibility . . . and been responsible for introducing some good educational material into the schools and into the community."

No one was willing to consider shifting to outpatient settings for normal deliveries. "I certainly don't want to move the deliveries to nonhospitals."

Unintentional Injuries. "Some people are unaware of the potential . . . for things like unintentional injury." Hospitals, HMOs, clinics, and "places like that" were seen as appropriately undertaking the primary prevention of injuries. One clinic provides ways for families to get child safety seats and helmets, hands out literature, and discusses safety issues with parents. Wearing seat belts, and bike safety and helmets were cited as points to stress. Major concerns were "farm equipment injuries" in rural areas and "traffic-related problems" in more densely populated areas. More parenting education urged either "tied to schools, which are big as far as safety goes, or from people's personal medical providers."

The Parents as Teachers Program was seen as a useful resource. The program is funded by a child abuse prevention grant through social services. It conducts group parent meetings and home visits to first-time parents of children three years old or younger. "It includes tips on health care, health screenings. . . . If you get first-time parents off to a good start and get them involved in their child's health and life, they are apt to catch something early, and take [their children] for their well child checkups." Head Start was also seen as facilitating parent education. "A lot of kids in Head Start get better health care and have parents that are better educated in taking care of their children and in advocating for their children. We have just done a big parent education program on mosquito control through the spring, through public schools and PTAs. You reach some of them that way. You don't reach everyone." Participants pointed out that more families could be reached through the media.

On the other hand, as several participants stressed, not every child is in a day care setting as aware of safety as Head Start is. One participant voiced concern about the children aged 0-3, "because we have little child care available; unregulated day care is the majority. Kids are left on their own. There's not supervision where there should be." "While we need more available, cheap, quality day care, we probably need more regulation as far as the 'home day cares', too.

Many times, these are the kids that seem to fall into the injury category." Another participant suggested that unintentional injuries might be "a cover for abuse."

Solutions

Case Management. Since managed care has reduced the care given by public health agencies for patients' chronic diseases, participants from several regions worry that when there are "no shows" or problems that families are "not really working on," no one is doing the follow-up. "Private offices aren't used to doing that." "I know, in our public health model, we have nurses out there trying to work with that family. I don't know that that goes on." Participants also said that even in public health programs, staff cuts mean that there may no longer be "people to do the follow-up."

However, for conditions where continuity of care is an inescapable necessity, at least one region's participant described its systems to support the family. "I think a lot of HMOs have gone to some kind of case management for their severe asthmatics. I know that [one] HMO has a case management program that will either manage it by phone, or if it seems even more critical, they will make home visits."

Home Care. Physicians "don't usually prescribe home care for patients." "Home health - you know, you have to be home bound and . . . payment source is a big issue." There are "lots of home health agencies, but they are for acute problems [such as] unintentional injury which required ongoing dressing changes."

Home care was seen as having only limited usefulness with chronic diseases. "I know we have a higher use of home care for some of the babies who have apnea, and some of our respiratory situations, [and for] chronically ill kids who might be getting antibiotics at home. I don't know that the diabetic patient or the substance abuse patient uses [home care]. . . . I don't know of many people that would want to manage an acute diabetic episode at home."

Need for Additional Services. Many participants stressed how inadequate mental health services are. "Mental Health is the hardest area to find care for." There is "a great need in that area and a tremendous shortage of available sources of care." We need "more care opportunities available in the community as an outpatient and more people who provide those services accepting patients who are on Medicaid"; "more parental education, more readily available mental health services." "There are so many kids . . . that really need counseling and families that need counseling." "We could use five times more counselors than we have there. For children who do not have Medicaid or private insurance, it's very difficult."

Even in regions where "there are very good facilities, . . . they have their limits because of numbers." "There's not [enough services], especially with experience with children. There's a few here and there that have had experience

with children." Participants from another region suggested "having more facilities, having more people trained in child and adolescent psychology and psychiatry, having after hours centers. I think those things would help a lot." Even schools were suggested as providers of mental health services for children, either by "screening to identify children who are at high risk" or employing "people who can offer real counseling, especially for children who don't have insurance."

From one region, the participants knew of some efforts that "have been made in the past to try to keep some . . . children with mental health diagnoses out of the hospital and strengthening an outpatient resource for them, but I don't know how far that's gone, and I'm not aware of a real strong support in that area." The participant group asked that statistics be obtained and disseminated that would show whether more outpatient services in mental health and more specialists in the field of addictions are needed.

As far as services other than in mental health were concerned, one participant said, "Although parts of the area are medically underserved, for the most part you can find somewhere to be treated." Another stated "In regard to diabetics, I'm not sure that there would be a great need for additional outpatient services focused on that."

At the same time, another participant warned against "reinventing the wheel" with health programs, and gave a typical example: funding was deleted for a program that had been successful for 4 or 5 years, so that a new program could be implemented to do something similar. The new program would have to start from scratch and would take years to build up to a similar patient load. Another problem raised was that the new Medicaid system has reduced the care that health departments and other services give in rural areas, by requiring new provider credentialling and that physicians treating Medicaid patients be on call 24 hours.

Participant Summary. This is the summary one participant offered: "[We need] good preventive care up front. Whenever a situation is early identified, making it easy for that family or that child to get in for preventive maintenance, for rechecks, making them at a time that's easy for the family and not costly to them. If [the condition's] not getting better, having some sort of way to assess why it's not getting better and work with the family on how to make a difference, how to get the preventive care that they need or the medicines or whatever the interventions might be."

Environmental Factors

Asthma. Most participants implicated environmental factors in asthma hospitalizations. Smoking was seen as a major factor. "In this area smoking is simply a cultural norm. They smoke while they are pregnant. We try to get them not to. Little kids are constantly surrounded by smoke and they have more respiratory

infection." The high percentage of smokers continues "in spite of all the education and all the media." One participant expressed a belief that it is more prominent in the "lower socioeconomic category."

"Poverty issues" were also pointed to as environmental factors for asthma. "The houses are crowded, they're dirty. . . ." Other participants said that middle class children, too, may have environmental factors present: "Pets in the home, dust mites, allergy to cockroaches, wood-burning stoves. . . ."

Pollen was also implicated by the participant from a rural region with a national forest, where "no 'official pollen counts' are done like they do in big cities." But another participant thought there might be more cases in urban areas because there is more pollution there. Industry was also named as a contributor to the rise in asthma: "Coal trucks rumbling up and down [and coal dust] in the air . . . [Factories] produce stinky air that nobody says anything about because they are major employers, major bucks in the economy."

Behavioral Disorders. Participants blame the social and economic environment for behavioral disorders. The participants from several regions viewed the stresses on children as contributing factors. "You have a higher income population in this area. There are great expectations for children. It's a high pressure, high stress area." "Children have so many stressors on them right now, and unstable families and such."

One respondent commented on the absence of extended family and neighbors. "The support system for the family is missing. When I was growing up, the neighborhood watched out for everybody. To be honest with you, if the neighbors that live two doors from me walked into my house, I wouldn't recognize them. Adolescents and preteens in this area are probably not supervised as much as they should be because you have two working parents. Children have more time to think about their depression. A lot of them are depressed because they don't have parental involvement."

However, behavioral disorders were not seen as characteristic of mostly middle-income or high-income families. "Behavioral disorders are often maldistributed to poorer socioeconomic categories." "In some of the inner cities, those kids have other mental health issues I'm sure."

The role of cultural conflicts was also raised. "[In] your immigrant populations . . . the parents came from other countries, but the children are totally Americanized. There is a conflict there, where the kids want to be all American and do everything that they see their peers doing, and their parents are trying to hold on to the old ways."

Congenital and Genetic Factors. Several participants from one region mentioned the "high rate of congenital anomalies" in their region and that "genetics probably plays a part in it." They wondered if there was "some factor related to congenital anomaly [so] that kids wind up being hospitalized more, or repeatedly."

Congenital or genetic factors were also implicated in other areas. "We are seeing a lot of children . . . that have been exposed to drugs in utero, to parents with substance abuse, and that we don't really know because they don't come forth with it . . . We do see a lot of depressed children, but the family is just like a perpetual cycle, and it just keeps getting worse each generation." Several participants disagreed with the previous statement. "Occasionally you'll see depressed kids have depressed parents, but it's not the rule. It's more the exception." "As far as substance abuse [goes], I am aware that if there are role models in the environment, there may be children who follow that example."

Future Research

One participant suggested looking at the data on the duration of hospitalizations, as well as the readmission rates, and "using that information to help educate practitioners, health professionals as well as parents." If the same children are being readmitted, case management targeting those children would be useful. If most are one-time admissions "educating practitioners and parents to care for some of these things at home" might help.

Two participants volunteered the information that they either were "skeptics about using peoples' opinions" or felt that the present study "is not useful" because the wrong people are being interviewed. "Instead of asking for opinions from people who are providers, we need to ask the citizens, either *why* they're ending up in these situations or what the factors are."

Conclusions

From the responses of the key informants among health care providers in Virginia, several areas stand out where interventions might prevent children from being hospitalized. One such point is the physician's decision of whether or not to hospitalize. There may be ways in which case management could help families from areas with few health care resources to care for their children in their community, rather than turning to a hospital.

It is also important to improve parents' awareness that they should have their children seen before a condition is at crisis level, and also to remove obstacles to their ability to do that. In that regard, providing adequate health services in families' own communities, rather than leaving them little choice but the Emergency Room, is

clearly important. Could this be accomplished by hotlines, case management, the media? To be successful, such approaches would need to ensure parents of care for their child that equals the care available in the Emergency Room.

Attaining adequate health care without turning to a hospital is not easy for many people, because in their circumstances the Emergency Room is the most effective treatment facility. You can be seen without making an appointment and waiting days or even weeks. They are open during the hours when you have transportation and you are not working. It may take a while to be seen, but you will be seen, and provisions will be made if you cannot pay for a sick child's care. When your child is ill, bringing the child there avoids the hassles inflicted in other treatment settings, which also seem to offer less of what parents of a sick child want.

The managers of health care costs have other worries, however: presenting in the emergency room or even in a doctor's office where nobody knows the family or their community's resources may lead to hospitalization because of the physician's concern for the child. Avoiding legal liability also enters into such hospitalization decisions.

Of considerable importance, also, is primary prevention. Unfortunately, that is an area where it is difficult to define and measure the effectiveness of interventions. A final important point made very clear by the key informants is the great need for mental health services and information. A needs-assessment might be useful to identify what is lacking in mental health services across the Commonwealth.

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APPENDIX A

Appendix A

SENATE JOINT RESOLUTION NO. 127

Requesting the Center for Pediatric Research to continue its research regarding pediatric care in Virginia.

Agreed to by the Senate, February 16, 1998
Agreed to by the House of Delegates, March 12, 1998

WHEREAS, the Commonwealth of Virginia desires quality health care services and optimal health care outcomes for its children; and

WHEREAS, the Center for Pediatric Research (CPR), a joint venture of Eastern Virginia Medical School and Children's Hospital of The King's Daughters, has published a report regarding children's health under a grant from the Virginia Department of Health; and

WHEREAS, the CPR study found in 1995 that 149,817 children, ages newborn to 19 years, were discharged from hospitals in the Commonwealth and of that number, 68,926 were non-newborns; and

WHEREAS, for the non-newborn discharges the most frequent discharge conditions were bronchiolitis/bronchitis, asthma, pneumonia, and gastroenteritis for the children 0 to 4 years old; asthma, unintentional injuries, pneumonia, and gastroenteritis for 5-year-olds to 9-year-olds; depression, unintentional injuries, asthma, and behavior disorders for 10-year-olds to 14-year-olds; deliveries, depression, unintentional injuries, and manic depression for 15-year-olds to 19-year-olds; and

WHEREAS, discharge rates normalized for the population at risk for these conditions varied by geographic area; and

WHEREAS, with the information that currently exists, it cannot be determined if the geographic differences are due to access to health care, economic backgrounds, hospital type, or cultural or other factors; and

WHEREAS, further analysis is needed to determine the cause of these significant variations in the care delivered to children in the Commonwealth and to determine the optimal type of hospital care; now, therefore, be it

RESOLVED by the Senate, the House of Delegates concurring, That the Center for Pediatric Research be requested to continue its research regarding pediatric care. Optimally, the work will determine (i) what factors influence differences in the pediatric discharge rates by geographic area, (ii) what impact these differences may have on the quality and outcomes of pediatric care, and (iii) the optimal way to publicly disseminate these findings on an ongoing basis.

The Center for Pediatric Research shall complete its work in time to present its findings and recommendations to the Joint Commission on Health Care by October 1, 1998, and shall submit its final report to the Governor and the 1999 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

An estimated $75,000 is allocated for the Center for Pediatric Research for the completion of this study. Such expenses shall be funded by a separate appropriation by the General Assembly.

HOUSE JOINT RESOLUTION NO. 180

Requesting the Center for Pediatric Research to continue its research regarding pediatric care in Virginia.

Agreed to by the House of Delegates, February 17, 1998
Agreed to by the Senate, March 10, 1998

WHEREAS, the Commonwealth of Virginia desires quality health care services and optimal health care outcomes for its children; and

WHEREAS, the Center for Pediatric Research (CPR), a joint venture of Eastern Virginia Medical School and Children's Hospital of The King's Daughters, has published a report regarding children's health under a grant from the Department of Health; and

WHEREAS, the CPR study found in 1995 that 149,817 children, ages newborn to 19 years, were discharged from hospitals in the Commonwealth, and of that number, 68,926 were non-newborns; and

WHEREAS, for the non-newborn discharges the most frequent discharge conditions were bronchiolitis/bronchitis, asthma, pneumonia, and gastroenteritis for the children 0 to 4 years old; asthma, unintentional injuries, pneumonia, and gastroenteritis for 5 to 9 year olds; depression, unintentional injuries, asthma, and behavior disorders for 10 to 14 year olds; deliveries, depression, unintentional injuries, and manic depression for 15 to 19 year olds; and

WHEREAS, discharge rates normalized for the population at risk for these conditions varied by geographic area; and

WHEREAS, with the information that currently exists, it cannot be determined if the geographic differences are due to access to health care, economic backgrounds, hospital type, or cultural or other factors; and

WHEREAS, further analysis is needed to determine the cause of these significant variations in the care delivered to children in the Commonwealth and to determine the optimal type of hospital care; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Center for Pediatric Research be requested to continue its research regarding pediatric care. Optimally, the work will determine (i) what factors influence differences in the pediatric discharge rates by geographic area, (ii) what impact these differences may have on the quality and outcomes of pediatric care, and (iii) the optimal way to publicly disseminate these findings on an ongoing basis.

The Center for Pediatric Research shall complete its work in time to present its findings and recommendations to the Joint Commission on Health Care by October 1, 1998, and shall submit its final report to the Governor and the 1999 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

An estimated $75,000 is allocated for the Center for Pediatric Research for the completion of this study. Such expenses shall be funded by a separate appropriation by the General Assembly.