
SCHIP Structure and Children's Use of Care

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This study explores the impact of program structure on children's use of care by comparing care use in State Children's Health Insurance Program (SCHIP) and Medicaid covered populations in a State where children share the same provider network and are both in a primary care case management system with the same Medicaid fee structure. We then compare care use in this system to care use in an SCHIP structured as a fee-for-service (FFS) system using a private insurance provider network and fee schedule. Where SCHIP and Medicaid Programs share a primary care case management (PCCM) system, we find more use of well-child care among Medicaid covered children, but more use of office-based physician care among SCHIP covered children. Across the Medicaid PCCM-based and the private insurance FFS-based system, we find more use of primary and specialty care in the FFS system, and more use of well-child care and less use of emergency departments for non-urgent care in the PCCM-based system.

BACKGROUND

SCHIP is a Federal matching grant program begun in 1997 that supports States in the operation of health insurance programs for low-income children. Research conduct-

ed to date has established four important points. First, coverage has been associated with both a reduction in the number of uninsured children in the U.S. and with some substitution of SCHIP for private insurance coverage (Cunningham, Reschovsky, and Hadley, 2002; Kenney and Chang, 2004; LoSasso and Buchmiller, 2004). Second, many SCHIP enrollees have a history of previous Medicaid coverage, many others transition into Medicaid from SCHIP over time, and Medicaid and SCHIP children do not differ dramatically from each other in terms of their health care needs (Dick et al., 2002; Brach et al., 2003). Third, outreach for SCHIP enrollment, enrollment simplification within States, and the statutory requirement that Medicaid eligible children who apply for SCHIP must be enrolled in Medicaid Programs have been associated with increased enrollment of eligible children into Medicaid Programs (Rosenbach et al., 2003; Selden, Hudson, and Banthin, 2004). Fourth, coverage of previously uninsured children by SCHIP is associated with improvements in access to and use of health care by these children (Dick et al., 2004; Szylagi et al., 2004; Feinberg et al., 2002; Guendelman and Pearl, 2001).

The terms of the SCHIP allow States considerable flexibility in use of the funds. Fifteen States and the District of Columbia have used the funds simply to expand eligibility for their Medicaid Programs to children with higher family incomes. The other States operate separate insurance programs whose covered benefits must be equivalent to coverage under the insurance plan offered to State employees,

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coverage in the largest commercial health maintenance organization (HMO), or coverage in the BlueCross® BlueShield® plan available to Federal employees. Some of these stand-alone programs use the State Medicaid provider network, managed care format and fee schedule, but use different names and enrollment mechanisms from the State's Medicaid Program. Other stand-alone programs operate under various arrangements with private insurance providers, and use a variety of insurance mechanisms and delivery systems (Kenney and Chang, 2004; Centers for Medicare & Medicaid Services, 2006).

Research to date has not examined the impact of different SCHIP structures on health care utilization. There are reasons to expect that differences might occur across State programs with a variety of managed care arrangements (Zuckerman et al., 2002; Garrett et al., 2003), but it is not clear how much care utilization will differ across SCHIP and Medicaid enrollees insured in plans that are structurally the same. This study addresses two questions regarding the impact of SCHIP structure on health care utilization:

- In what ways does care utilization differ between Medicaid and SCHIP covered children in a State where SCHIP uses the same provider network and primary care case management system as the Medicaid Program?
- In what ways does care utilization differ across SCHIP programs in two States that use very different SCHIP structures?

To address these questions, we compare utilization for SCHIP covered children in Georgia to that of the highest income eligibility group of Medicaid covered children in Georgia where the SCHIP and Medicaid Programs use the same delivery system, and to SCHIP children in Alabama, where the program is based in the Public

Health Department and administered by BlueCross® BlueShield®, as an FFS plan, using the BlueCross® fee schedule and provider network.

PROGRAM CHARACTERISTICS

Alabama's SCHIP, ALLKids, began enrolling children in October 1998, while Georgia's SCHIP, PeachCare, began in January 1999. This study covers the period 1999-2000 for both programs. By the end of 2000, Alabama's ALLKids enrollment was about 30,000, or about 2 percent of the children under age 19. Georgia's PeachCare enrollment was about 103,000, or about 5 percent of the children. In this same time period, about 30 percent of Alabama children and 25 percent of Georgia children were covered by Medicaid. As of 2005, Alabama's program covered about 5 percent of all children, Georgia's program covered about 10 percent of all children, and Medicaid covered about 41 percent of children in Alabama and in Georgia.

Upper income thresholds for Medicaid coverage for children under age 6 and for SCHIP overall are higher in Georgia (185 and 235 percent of the Federal poverty level) than in Alabama (133 and 200 percent). Additionally, in Georgia, both SCHIP and Medicaid covered children are enrolled in PCCM which means they must identify a Medicaid participating primary care provider as a gatekeeper who preapproves referrals to specialists and other providers. Participants may use emergency departments for conditions they perceive to be urgent. In Alabama, a similar management system applies in the Medicaid Program, but SCHIP covered children are enrolled in an FFS system using the BlueCross® BlueShield® preferred provider network without gatekeeper requirements. This network is much larger than the network of physicians accepting Medicaid covered children in the State's PCCM pro-

gram, and includes almost all of the primary care physicians in the State. Both Alabama and Georgia SCHIP applicants enroll in a program with a separate name and enrollment process from the Medicaid Program. Well-child care is a covered service in all programs. In Georgia, well-child care is only reimbursed when billed through the Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) program by enrolled providers. During this period, not all primary care providers were enrolled as EPSDT providers, but some specialized providers, including health departments, could provide well-child care even if they were not primary care providers under the PCCM system.

METHODS

Data

This study comparing care utilization in SCHIP and Medicaid in Georgia and Alabama was part of a larger research effort conducted as part of CHIRI™ (Brach et al., 2003). Our larger research effort included focus groups with care providers and SCHIP and Medicaid enrollees in the two States, as well as claims data analysis. Details on the methodology for the focus group studies are presented in Bronstein, Adams, and Florence (2005). Findings from the enrollee focus groups are used for this study to help interpret some of the findings from the claims data analysis. For this study, we used enrollment files for calendar year 1999 to identify the children enrolled in the SCHIP and Medicaid Programs in the two States in 1999 who continued to be enrolled through 2000. Data were available for 14,061 children in Alabama enrolled in SCHIP at some point during the year, and 62,199 children in Georgia. We compiled paid claims data on these children through 2000, and aggregated these claims to the visit level (one record for each provider

seen by a single child on a single day). Each child's visit experience was summarized by quarters for the 2 years.

We used the diagnostic and procedure codes on the claims to characterize the content of the visit in four ways. First, if any claims for the visit had a diagnostic or procedure code for well-child care, or an indication that an EPSDT screening was performed, the visit was flagged as including well-child care. Second, if any claims for the visit indicated that a medical evaluation was conducted, but the diagnoses on the claim indicated an illness rather than a well-care exam, the visit was flagged as including primary care. Third, if any claims for the visit had a procedure code indicating that a surgical or medical diagnostic procedure (e.g. hernia repair or allergy testing) was provided, the visit was flagged as including specialty care. Finally, if any claims included procedure codes for an emergency department exam, the visit was coded as an emergency visit. Emergency visits were further flagged as urgent if the diagnosis codes included on the claims were also included in a list of diagnoses used in the Georgia Medicaid Program to indicate urgent care allowable without a physician referral. (All coding is available from the authors on request.)

We included five additional individual characteristics for each child based on data from the insurance enrollment files. Child's race/ethnicity was categorized as Black, White, Hispanic and other. Sex, age of the child in each quarter, whether or not the child was a new enrollee in their insurance coverage in the quarter, and the cumulative number of quarters the child was enrolled in coverage as of the quarter of observation were also included.

For SCHIP covered children in both States, we distinguished between children with and without a history of Medicaid coverage in their respective States. Such

a history does not indicate that the child currently is from a family at a lower income level than SCHIP covered children without a Medicaid history, but does suggest previous lower income levels as well as familiarity with Medicaid coverage. For Medicaid covered children, we distinguished across four eligibility categories: (1) due to enrollment in income support programs such as Temporary Aid to Needy Families (TANF), (2) due to family income above TANF eligibility levels, but below the State's Medicaid eligibility threshold, (3) due to enrollment in the Supplemental Social Security program (low income children with disabilities), and (4) due to placement in foster care. In the presentation of findings for this study, we will focus on the comparison of SCHIP covered children with and without a history of Medicaid coverage and Medicaid covered children eligible due to family income.

We included a set of variables in children's records describing the child's residential location (ZIP Code) relative to Medicaid/SCHIP participating health care providers. These were calculated as the straight line distance between the center of the child's residential ZIP Code and the center of the ZIP Code of the nearest physician, hospital, and community health center that participated in the children's insurance program. We also included bivariate measures of whether a health department provider or a hospital-based physician practice was located in the child's ZIP Code (Adams, Bronstein, and Florence 2003, 2005).

Finally, we used estimates from the 2000 census to measure three characteristics of the child's residential ZIP Code: (1) median household income, (2) the portion of the population below \$15,000 in household income, and (3) the portion of residents of the ZIP Code who are Black persons. Since we do not have direct measures of

family income, identifying children from low-income and high-poverty ZIP Codes serves as a proxy measure. In the regression analysis, the portion of the ZIP Code residents who are low income and the portion who are Black persons are interacted, to capture any additional effects of residing in an area that has both low-income and high-minority population. All of these community-level features are included to distinguish the impact of type of insurance coverage and other individual child characteristics from any impact of residential location on use of care.

For ease of computation in the claims data analysis, we drew random samples from our claims data file that contained one record per child per enrolled quarter for the period 1999-2000 in such a way that each Medicaid and SCHIP group in each State was approximately of equal size. We used descriptive statistical techniques to compare age, race/ethnicity, and residence outside of a metropolitan area for children in the SCHIP and Medicaid Programs in the two States. Descriptive statistics were also used to compare rates for the four care utilization measures across Medicaid and SCHIP enrollees with and without Medicaid histories across the two States.

To measure the effects of demographics, access to providers and insurance category we then estimated multivariate logit models on any use of: (1) primary care, (2) well-child care, (3) non-urgent emergency department care, and (4) specialty care, as previously defined. Care use was modeled separately for urban and rural residing children because previous research with Medicaid covered children in these States indicated different utilization patterns across urban and rural areas (Bronstein, Adams, and Florence, 2005). The regressions also included a State dummy indicating the location of the child in Alabama or Georgia.

Table 1
SCHIP and Income Eligible Medicaid Covered Children: Georgia and Alabama

Demographics	Georgia			Alabama		
	SCHIP		Income Eligible Medicaid	SCHIP		Income Eligible Medicaid
	Only	With Medicaid History		Only	With Medicaid History	
	Percent					
S-CHIP Medicaid	56 (n=14,197)	44 (n=11,043)	64 (n=14,867)	82 (n=18,967)	18 (n=4,088)	69 (n=17,373)
Age						
0-2 Years	10	10	29	7	1	27
3-5 Years	16	22	20	10	4	21
6-12 Years	47	49	34	45	55	34
13-18 Years	27	19	17	38	41	18
White	60	55	35	67	61	44
Black	27	33	54	28	35	53
Hispanic	0	0	4	0	0	2
Other or Missing	13	12	7	5	5	1
Female	49	50	51	51	50	52
Rural Residence	41	45	43	40	41	42

NOTE: SCHIP is State Children's Health Insurance Program.

SOURCE: Georgia and Alabama Medicaid and SCHIP claims data, 1999.

In order to interpret logit models, researchers often use the equations to derive predicted probabilities. We present differences in the predicted probabilities of using each type of service for children with each of the types of SCHIP coverage relative to children in the income eligible Medicaid covered group in the respective States. We also estimate the difference in predicted probabilities of care use among SCHIP children (with and without a Medicaid history) in Georgia compared to Alabama. Determining statistical significance from logit models with interaction terms is not possible by merely examining statistical significance of the interaction coefficients (Ai and Norton, 2003). We tested for the statistical significance of the difference in predicted probabilities of using different types of care across our comparison groups by using a bootstrap method to estimate the standard errors for the predicted probabilities in each group (Efron, 1979). Bootstrapping involves taking repeated samples with replacement from the study sample and calculating the distribution of the variable of interest.

FINDINGS

SCHIP and income eligible Medicaid covered children differed demographically in the two States (Table 1). Medicaid covered children tended to be younger and include more Black children than SCHIP covered children. The portion of rural residing children was similar across Medicaid and SCHIP programs in both States. In Georgia, the 56 percent of SCHIP children with no previous Medicaid coverage enrolled in the program tended to be older and include more White and urban residing children than the 44 percent of SCHIP children with previous Medicaid coverage. In Alabama, the 82 percent of SCHIP children with no previous Medicaid coverage enrolled in the program tended to be a little younger and include more White children than the 18 percent of SCHIP children with previous Medicaid coverage.

Without controlling for individual, provider availability, and community differences across individuals, in Alabama, primary and specialty care use was much higher on average in FFS SCHIP than in

Table 2
Unadjusted Quarterly Rates of Care Use for Medicaid and SCHIP Covered Children:
Georgia and Alabama

Visit	Georgia			Alabama		
	SCHIP		Income Eligible Medicaid	SCHIP		Income Eligible Medicaid
	Only	With Medicaid History		Only	With Medicaid History	
	Percent					
Any Primary Care	38	41	37	64	64	30
Any Well Child Care	11	11	19	9	8	20
Any Non-Urgent Emergency	2	3	5	7	8	10
Any Specialty Care	12	12	11	20	21	12

NOTE: SCHIP is State Children's Health Insurance Program.

SOURCE: Georgia and Alabama Medicaid and S-CHIP claims data, 1999-2000.

the Medicaid Program with PCCM (Table 2). In contrast, in Georgia, where the two programs shared the same provider network and PCCM system, primary and specialty care use was similar across the two groups. In both States, use of well-child visits was considerably higher and use of emergency departments for non-urgent care was slightly higher among Medicaid than among SCHIP covered children.

Multivariate analysis of care use per quarter, modeling use of each type of visit, and use by rural and urban children separately, indicated that several individual, provider availability, and community features were significantly associated with care use, taking type of insurance coverage into account. In general, non-White children were less likely to use all types of care except well-child care, while younger children and females tended to use more care. Care use was lower in low-income communities. Use of hospital emergency departments for non-urgent care and use of specialty care was more common for children who lived closer to hospitals.

When these other factors are taken into account, in Georgia where SCHIP and Medicaid-covered children used the same provider network and PCCM structure, the probability of primary care use was 3 percent greater per quarter for SCHIP covered children with a history of Medicaid cover-

age, compared to income eligible Medicaid covered children (Table 3). Primary care use rates were not significantly different between SCHIP only children and income eligible Medicaid covered children. In contrast, the probability of well-child care use was between 7 and 13 percent lower for both groups of SCHIP covered children than for Medicaid covered children. Use of hospital emergency departments was slightly lower for all SCHIP covered children compared to income eligible Medicaid covered children, and specialty care use was not different between the SCHIP and Medicaid covered groups.

Comparing SCHIP programs across the two States and controlling for individual, provider and community characteristics, there was less use of primary care, non-urgent emergency department care, and specialty care across all subgroups of children in Georgia, with the PCCM program using the Medicaid provider network, compared to those in Alabama with the FFS system using the BlueCross®BlueShield® provider network (Table 4). There was somewhat less use of preventive care among urban Georgia SCHIP covered children compared to urban Alabama children, but more use of preventive care among rural Georgia children compared to rural Alabama SCHIP covered children.

Table 3
Differences in Predicted Probabilities of Use of Care by SCHIP Versus Medicaid Covered Children in Georgia, Adjusted for Individual, Community, and Provider Characteristics

Visit	SCHIP			
	Rural		Urban	
	With Medicaid History Versus Income Eligible Medicaid	Only Versus Income Eligible Medicaid	With Medicaid History Versus Income Eligible Medicaid	Only Versus Income Eligible Medicaid
Any Primary Care	*+0.036	0.010	*+0.034	0.015
Any Well Care	*-0.112	*-0.023	*-0.086	*-0.068
Any Non-Urgent Emergency	*-0.018	*-0.023	*-0.026	*-0.028
Any Specialty Care	-0.009	-0.010	0.003	0.003

* $p < 0.05$.

NOTE: SCHIP is State Children's Health Insurance Program.

SOURCE: Georgia and Alabama Medicaid and SCHIP claims data, 1999-2000.

Table 4
Differences in Predicted Probabilities of Use of Care by Georgia Versus Alabama SCHIP Covered Children, Adjusted for Individual, Community, and Provider Characteristics

Visit	SCHIP			
	Rural Georgia		Urban Georgia	
	With No Medicaid History Compared to Alabama	With Medicaid History Compared to Alabama	With No Medicaid History Compared to Alabama	With Medicaid History Compared to Alabama
Any Primary Care	*-0.259	*-0.239	*-0.277	*-0.274
Any Well Child Care	*0.066	*0.044	*-0.016	*-0.020
Any Non-Urgent Emergency	*-0.034	*-0.037	*-0.047	*-0.055
Any Specialty Care	*-0.082	*-0.085	*-0.059	*-0.073

* $p < 0.05$.

NOTE: SCHIP is State Children's Health Insurance Program.

SOURCE: Georgia and Alabama Medicaid and SCHIP claims data, 1999-2000.

DISCUSSION

One of the innovations of the SCHIP matching grant program is the degree of flexibility that States were allowed to design unique insurance programs. This study examined the impact of two different SCHIP structures on use of care. The first research question we asked was how care utilization differed between Medicaid and SCHIP covered children in a State where SCHIP uses the same provider network and PCCM system as the Medicaid Program. The most notable difference we observed across these two groups in Georgia was the greater use of visits identified as being for well-child care for Medicaid than for SCHIP covered children. SCHIP covered children with previous Medicaid enrollment did not dif-

fer from SCHIP covered children without such a history in this regard, which suggests that the Medicaid-SCHIP difference was not due to differences in family background or previous Medicaid experience between the two groups. One reason for this difference may be that SCHIP covered children who are assigned to primary care providers not enrolled as EPSDT providers are less likely to followup on referrals to specialized EPSDT providers such as health departments. Health departments have traditionally been the high volume EPSDT providers in Georgia (Adams and Graver, 1998).

Another difference we observed between children in Georgia covered by the two programs was slightly lower use of emergency departments for non-urgent care among SCHIP covered children compared

to income eligible Medicaid covered children. This was also consistent between SCHIP covered children with and without a Medicaid history, suggesting the difference was again not related to family background or previous Medicaid experience.

The focus groups conducted for our CHIRI™ supported project shed some light on these issues. Parents in the SCHIP focus groups uniformly noted that they felt more accepted and less stigmatized in health care settings as SCHIP clients than they would have been as Medicaid clients; those who had experience as enrollees in both programs were particularly vocal about this. In addition, SCHIP covered families more frequently discussed the value of seeing a family physician that is familiar with their child, while Medicaid covered families expressed more concerns about the restrictiveness of having an assigned physician in the PCCM program. It may be that this higher comfort level in the physician setting on the part of SCHIP covered children accounts for lower use of non-urgent care in emergency departments, as well as less use of specialized EPSDT providers.

In Georgia, SCHIP covered children with a Medicaid history did differ from SCHIP covered children without a Medicaid history in their greater likelihood of use of primary care in a given quarter, compared to income-eligible Medicaid children. It is possible that this subgroup of SCHIP enrollees has higher medical needs or more proclivity to use care than the general Medicaid enrolled population and the previously uninsured children who are the other component of the SCHIP population. These may be children who age out of Medicaid and choose to enroll in SCHIP due to ongoing health care needs. It is also possible, as focus group data seem to suggest, that this is a subgroup that is sensitive to the lessened stigma of SCHIP

compared to Medicaid enrollment, and this is somehow reflected in their greater probability of care use.

The second research question this study addressed was how SCHIP care utilization differed in the two States. We found that use of emergency departments for non-urgent care was less frequent in the SCHIP program that incorporated PCCM than in the FFS program. This finding is consistent with other studies of PCCM in the Medicaid context (Zuckerman, Brennan, and Yemane, 2002; Garrett, Davidoff, and Yemane, 2003). Some studies also suggest that greater use of well-child care is more characteristic of programs with PCCM (Zuckerman, Brennan, and Yemane, 2002) than FFS programs. We observed this in the comparison of rural residents of the two States, but not in the comparison of urban residents.

We found that specialty use was less common in the SCHIP program that included PCCM and also used the Medicaid provider system and fee structure. Some studies have suggested that, taking health status into account, specialty care use tends to be lower for Medicaid covered than privately insured covered children (Shatin et al., 1998; Clancy and Franks, 1997). Access to specialty care is frequently reported to be a problem for Medicaid covered children (Mitchell, Khatutsky, and Swigonski, 2001) and to be less common under Medicaid managed care than FFS arrangements (Davidson et al., 1992). Lower use of specialty care in Georgia's program compared to the Alabama program may reflect a smaller network of participating physicians and lower fee levels paid in Georgia than in the BlueCross® BlueShield® administered SCHIP in Alabama.

Finally, although comparisons across Medicaid FFS and PCCM programs in different locations suggest a somewhat greater use of general physician visits in

PCCM programs (Zuckerman et al., 2002), our own study of the impact of shifting from an FFS to a PCCM structure in the Medicaid Programs of these two States over time showed a marked reduction in primary care use under PCCM (Bronstein, Adams, and Florence, 2004). We also documented elsewhere that physician Medicaid visit volumes declined in Georgia when SCHIP was introduced, suggesting capacity constraints in the provider network used by both Medicaid and SCHIP covered children (Bronstein, Adams, and Florence, 2004). Comparing the programs of these two States, a key result was that primary care use in the Alabama program was about 25 percent greater than primary care use in the Georgia program. It may be that greater availability of physicians in Alabama's SCHIP, perhaps combined with the absence of restrictions on choice of primary care provider through a PCCM program, explains the greater use of primary care under that structure.

LIMITATIONS

This study is limited by the use of Medicaid and SCHIP claims data to infer utilization of care. Claims data create records only for services that are billed and paid, so any informal contact between covered children and care providers, and any differences in the rate of informal contact between SCHIP and Medicaid covered children and/or between Georgia and Alabama residents cannot be documented. In addition, the designation of a visit as well child, primary, or specialty care, and the designation of visits to the emergency department as non-urgent, are contingent on diagnosis and procedure codes intended for reimbursement rather than documentation of clinical care. If providers have actually included well child care services with visits that are designated as primary care

because they include illness diagnoses and do not include specific preventive care procedure codes, then well child care use has been undercounted in this study. Similarly, the listing of non-urgent codes used here to designate hospital emergency department visits as non-urgent were used at one point by the Georgia Medicaid Program to identify hospital visits that would not be reimbursed. It is possible that the use of emergency departments for routine care is higher in Georgia than indicated here, but that different clinical codes are included on the claims to ensure that they will be reimbursed. Although this coding issue has an equivalent effect on the Georgia SCHIP and Medicaid Programs and thus does not threaten the validity of the comparison between them, it may result in an undercounting of the non-urgent visits made in Georgia compared to Alabama.

CONCLUSIONS

The SCHIP programs introduced in 1997 have had a positive effect on access to health care for previously uninsured children. Various features of different SCHIPs, and SCHIP covered populations compared to Medicaid Programs and covered populations, are significantly associated with differences in patterns of care use. In particular, we observed that SCHIP covered children in a State where the care delivery system of the program paralleled that of the Medicaid Program were less likely to use well child care, but more likely to use physician office settings for primary care than Medicaid covered children. We also observed, as expected from previous research on managed care arrangements, that an SCHIP with open access to a large private insurance-based provider network had higher use of primary care, specialty care and non-urgent emergency department care than an SCHIP using a Medicaid

managed care structure. On the other hand, well child care use for covered children (as documented in insurance claims data) was higher in the program with the assigned primary care provider in rural settings.

Finally, it should be noted, as other studies have shown (Zuvekas and Taliaferro, 2003), insurance coverage is not the only determinant of access or use of health care. Multivariate analysis conducted here indicates that personal characteristics, particularly race, ethnicity, age, and sex, community level poverty and health care provider proximity, all have an independent influence on children's use of health care no matter what type of health insurance they have. Health insurance is critical to ensure access to health care, but is not sufficient for ensuring equivalent usage of care across the covered populations.

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