Factors Affecting Plan Choice and Unmet Need among Supplemental Security Income Eligible Children with Disabilities

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Objective. To evaluate factors affecting plan choice (partially capitated managed care [MC] option versus the fee-for-service [FFS] system) and unmet needs for health care services among children who qualified for supplemental security income (SSI) because of a disability.

Data Sources. We conducted telephone interviews during the summer and fall of 2002 with a random sample of close to 1,088 caregivers of SSI eligible children who resided in the District of Columbia.

Research Design. We employed a two-step procedure where we first estimated plan choice and then constructed a selectivity correction to control for the potential selection bias associated with plan choice. We included the selectivity correction, the dummy variable indicating plan choice and other exogenous regressors in the second stage equations predicting unmet need. The dependent variables in the second stage equations include: (1) having an unmet need for any service or equipment; (2) having an unmet need for physician or hospital services; (3) having an unmet need for medical equipment; (4) having an unmet need for prescription drugs; (5) having an unmet need for dental care.

Principal Findings. More disabled children (those with birth defects, chronic conditions, and/or more limitations in activities of daily living) were more likely to enroll in FFS. Children of caregivers with some college education were more likely to opt for FFS, whereas children from higher income households were more prone to enroll in the partially capitated MC plan. Children in FFS were 9.9 percentage points more likely than children enrolled in partially capitated MC to experience an unmet need for any type of health care services ($p < .01$), while FFS children were 4.5 percentage points more likely than partially capitated MC enrollees to incur a medical equipment unmet need ($p < .05$). FFS children were also more likely than partially capitated MC enrollees to experience unmet needs for prescription drugs and dental care, however these differences were only marginally significant.

Conclusions. We speculate that the case management services available under the MC option, low Medicaid FFS reimbursements and provider availability account for some of the differences in unmet need that exist between partially capitated MC and FFS enrollees.

Key Words. SSI eligible children with disabilities, partially capitated managed care, fee-for-service, unmet needs

During the 1990s most states required that large percentages of their nondisabled Medicaid beneficiaries enroll in capitated managed care (MC) plans. Relatively few states, however, imposed such mandates on children with special health care needs (SHCN). Policymakers reluctance to require that low-income special needs children enroll in capitated MC plans stems from the concern that such plans contain financial incentives to control costs that may result in under-treatment, restrict access to specific procedures, services and specialty providers, and have adverse effects on quality (Fox and McManus 1998; Hughes and Luft 1998; GAO 2000). A thorough review of the Medicaid options available to children with SHCN in each state revealed that only five states (Indiana, Michigan, Oregon, Oklahoma, Pennsylvania) and the District of Columbia currently offer or recently terminated a MC option for special needs children that relies on either partial or full capitation. (Michigan terminated the two capitated MC plans available to children with special needs in October 2004.) The major components of each of these programs include increased care coordination, the establishment of a medical home and access to a broader range of services than what is available under fee-for-service (FFS).

On the other hand, these programs vary along several dimensions. First, while most states define children with SHCN as those who qualify for supplemental security income (SSI), some states have more expansive definitions. For example, in Pennsylvania, children are identified as "special needs" if they qualify for SSI, Title V, federal foster care, or adoption assistance under Title IV-E of the Social Security Act. Second, some states such as Michigan and the District of Columbia offer MC plans that specialize in serving children with disabilities. In contrast, the Medicaid MC plans that provide services to special needs children in Oregon, Oklahoma, and Pennsylvania also serve nondisabled Medicaid beneficiaries. Third, some states, including Oregon, Oklahoma, and Pennsylvania, contract with multiple plans to provide services to special needs children, while the District of Columbia offers a single partially

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capitated MC option to SSI eligible children. Fourth, enrollment is voluntary in Indiana, Michigan, Oregon, and the District of Columbia, but mandatory in Oklahoma and Pennsylvania. For example, in Oklahoma children with special needs are assigned to a partially capitated MC plan known as Sooner Care Choice. The exceptions are children who qualify for a home and community-based waiver program which relies on FFS. Fifth, many state programs include carve-outs for designated services, whereas other state programs are responsible for administering the gamut of services. For example, the Pennsylvania program includes carve-outs for dental and behavioral health, whereas Oklahoma pays capitated rates to primary care providers, but it carve-outs behavioral health, dental, pharmaceutical, transportation, and inpatient hospital care to the FFS setting. Finally, the duration of these programs varies widely. The programs in Oregon and the District of Columbia were implemented in the mid-1990s and thus are well established. The recently terminated Michigan plans became operational in September 1998, and the Oklahoma program became available to special needs children in 1999. Indiana's program was implemented in early 2004.

Considering the reluctance of states to implement any type of MC plan that relies on capitation for children with SHCN, it is not surprising that relatively little research exists documenting the effects of such plans on utilization of and access to health care services for children with SHCN (Grossman et al. 1999; Abt Associates 2000; Mitchell, Khatutsky, and Swigonski 2001; Mitchell and Gaskin 2004). In this paper, we address this gap in knowledge. Specifically, we analyze data obtained from interviews conducted with caregivers of SSI eligible children with disabilities enrolled in the District of Columbia's Medicaid program to identify factors that affect plan choice (partially capitated MC versus FFS) and unmet need for services. The Medicaid program available to special needs children in the District merits evaluation for several reasons. First, the partially capitated MC option has been operational since early 1996 and has enrolled increasing number of beneficiaries each year. Thus, an examination of its impact on unmet need reflects long-term rather than transitory effects. Second, the DC program is only available to children who qualify for SSI. Most policymakers agree that SSI eligible children are the ones who are most likely to benefit from coordination of services by a care manager. Third, the Medicaid MC plan available to SSI eligible children is comprehensive because it does not carve-out designated services. The plan therefore is responsible for coordinating and administering the complete gamut of services rendered to enrolled children. Finally, findings from prior research may be biased because the analyses did not control for the

potential selection bias associated with plan choice and its subsequent impact on either unmet need or use of services. The analyses presented below address the selection issue associated with voluntary enrollment.

OVERVIEW OF HEALTH SERVICES FOR CHILDREN WITH SPECIAL HEALTH CARE NEED (HSCSN)

The Maternal and Child Health Bureau defines children with special health care needs as “those who have or are at increased risk for a chronic physical, developmental, behavioral, or emotional condition and who also require health and related services of a type or amount beyond that required by children generally” (McPherson et al. 1998). The District of Columbia’s Medicaid program relies on more stringent criteria; children with SHCN are those who qualify for SSI because of a disability. The Social Security Administration considers a child disabled if he/she has a physical or mental condition or conditions that can be medically proven and which result in marked and severe functional limitations; and the condition(s) must have lasted or be expected to last at least 12 months or end in death. Household income must also not exceed a threshold amount. The monthly thresholds for earned income in 2004 are \$2,663 for a single-parent household with one child and \$3,227 for a two-parent household with one child. (See <http://www.ssa.gov/notices/supplemental-security-income/text-child-ussi.htm>.)

The HSCSN, Inc. is a nonprofit organization that coordinates care for SSI eligible children in the District of Columbia. In the initial demonstration that began in February 1996, HSCSN was formed as a capitated health maintenance organization to serve children in DC who qualify for Medicaid because they receive SSI support. Under this capitation model, HSCSN was reimbursed on a per member/per month basis. During 1999, HSCSN administrators recognized that it was not financially viable to provide services to this small but high-risk and costly population of children on a capitated basis. As of January 2000, HSCSN switched from a fully capitated MC plan, where HSCSN assumed all the risk for services provided, to a partially capitated reimbursement system, where HSCSN assumed partial risk. Under the revised system, HSCSN receives a monthly capitation payment for each enrolled child. HSCSN uses 20 percent of total capitation payments to cover administrative expenses including case management services and outreach. The other 80 percent of total capitation payments are used to reimburse providers for services rendered and to cover transportation costs for enrollees. If

the total costs of medical services rendered and transportation exceed the total amount of capitation payments set aside to cover such services, Medicaid and HSCSN agree on a "settlement payment," to partially cover the difference between capitation payments received and reimbursements made to providers and transportation expenses. Thus, while HSCSN assumes complete risk for their administrative, case management, and outreach expenses, they are only partially at risk for the direct costs of both medical services rendered and transportation. The rates are slightly higher than FFS Medicaid rates to attract providers and to partially compensate them for the extra tasks they may need to perform. There are no holdbacks or penalties assessed on providers.

HSCSN provides a comprehensive array of services for enrolled children including primary and specialty medical care, mental health, and an array of ancillary and support services that are reimbursed by the Medicaid program. HSCSN then contracts with a wide array of providers to deliver services to enrolled children, while HSCSN staff is responsible for outreach and case management services. The family must use a participating primary care provider, obtain approval for all referral services to participating specialists and will be provided with assistance in navigating the health care system by a case manager. Case managers are registered nurses, social workers, and other health care professionals who have experience working with children with SHCN. All case managers are licensed and have a caseload between 60 and 70 children. The primary advantage is the coordination of services between the family, primary care physicians, and specialty providers that is not generally available to other Medicaid recipients. For more extensive details on HSCSN see Mitchell and Gaskin (2004).

METHODS

Conceptual Framework and Hypotheses

Because the monetary costs of obtaining care are negligible for children enrolled in Medicaid, we anticipate that nonfinancial factors will be the major determinants of variation in access for special needs children. Our conceptual framework is a modified model of access to care developed by Andersen and Aday (1978). Access to care is determined by predisposing factors (demographic, social structure, and parental attitudes and beliefs), enabling factors (family resources and health care resources in the community), and children's health care needs (Hughes, Johnson, and Rosenbaum 1999). Therefore, we hypothesize that children's access to health care will be dependent on type of

plan, child demographic characteristics, child health status, caregiver demographic and health characteristics, and household resources.

The effect of plan choice (HSCSN versus FFS) on access to medical care is unclear because plan choice captures several factors. First, one would anticipate that greater availability of pediatricians per enrollee and physician specialists per enrollee should reduce the chances a child will encounter access problems. Since HSCSN has a smaller provider network than the Medicaid FFS program, one might expect to find a higher level of unmet need for medical services among children enrolled in HSCSN. Second, access to care may be affected by reimbursement rates. Since HSCSN reimburses primary care physicians and specialists at higher rates than FFS, pediatricians may refuse to treat children with SHCN enrolled in FFS. If so, this will result in higher levels of unmet need for children in FFS. Third, if case managers assist parents/guardians in navigating the health care system, and these efforts help children obtain necessary medical care, then one would expect to find a lower level of unmet need among children enrolled in HSCSN. Thus, on net, the effects of plan choice (FFS versus partially capitated MC) are ambiguous and must be determined empirically.

Sample and Data Collection

We conducted telephone interviews with a stratified random sample of caregivers of SSI eligible children enrolled in the DC Medicaid program. The caregiver was identified as the person in the household who arranged most of the health care for the child. Caregivers were stratified by plan choice and asked if their child experienced unmet needs for specific services during the six month period prior to the interview. The telephone survey was fielded by CODA Inc., a professional survey research firm located in Silver Spring, MD. The results reported below are based on the first round of interviews which were completed in November 2002. See Mitchell and Gaskin (2004) for more details.

We completed interviews with 1,088 caregivers, which included 644 caregivers of HSCSN enrollees and 444 caregivers of FFS participants. Because of the large number of nonlocatables, we calculated a response rate and a cooperation rate. The response rate is defined as the number of completed cases divided by the total sample minus the number of ineligible cases. The cooperation rate recognizes the impact of nonlocatables. It is defined as the number of completed cases divided by the remaining sample after deleting both ineligible cases and cases that could not be located. The overall response

Table 1: Comparison of Respondents, Refusals, and Nonlocatables

<i>Characteristic</i>	<i>Respondents (N = 1,088) (%)</i>	<i>Refusals (N = 75) (%)</i>	<i>Nonlocatables (N = 1,006) (%)</i>
FFS	41.0	18.7	59.7
Male	67.8	62.7	64.8
Ages 4–5	8.5	10.7	9.5
Ages 6–7	10.8	12.0	8.9
Ages 8–9	16.7	8.0	16.8
Ages 10–11	18.4	21.3	19.7
Ages 12–13	20.3	20.0	20.1
Ages 14–16	25.4	28.0	25.0
Capitol Hill Area	25.8	18.7	22.5
Northwest DC	14.8	14.6	15.0
Brookland/Catholic University	6.0	8.0	3.2
Deanwood	19.6	16.0	19.5
Anacostia	32.0	36.0	35.3
Outside DC	1.8	.4	4.5

FFS, fee-for-service.

rate for the study was 46 percent, with 50.8 percent for the HSCSN sample and 41 percent for the FFS sample. Removing the cases we were not able to locate from the denominator yields an overall cooperation rate of 81 percent; 75 percent for the HSCSN sample and 92 percent for the FFS sample.

Because of the large number of nonlocatables, we compared the plan choice and basic demographic characteristics (gender, age composition, and geographic area of residence within the District of Columbia) of children whose caregivers responded, children whose caregivers refused to participate, and children whose caregivers were not locatable. As shown in Table 1, 41 percent of respondents were enrolled in FFS, compared with less than 19 percent of refusals and close to 60 percent of nonlocatables. Almost 68 percent of caregivers interviewed had a male child, compared with 63 percent of refusals and almost 65 percent of nonlocatables. The age distribution of children of respondents is quite similar to the age distribution of cases identified as nonlocatable. In contrast, caregivers who refused to participate were more likely to have younger children; nearly 11 percent of refusals had a child in the age group 4–5, while 12 percent had a child in the 6–7 age category. As regards geographic residence, most respondents, about 32 percent, reside in the Anacostia region of the District. Comparable percentages of refusals and nonlocatables reside in Anacostia. Almost 26 percent of respondents live in the

neighborhoods around the Capitol Hill/Trinidad area of DC, which is somewhat higher than the percentages of refusals and nonlocatables who reside in the Capitol Hill area; 18.7 and 22.5 percent, respectively. About 20 percent of both respondents and nonlocatables reside in the Deanwood area of the District. In contrast, 16 percent of those who refused to participate reside in the "Deanwood" region of Washington, DC. Six percent of respondents come reside in the area known as Brookland, while the corresponding percentages for refusals and nonlocatables are 8 and 3.2 percent, respectively. Overall the geographic distribution of respondents and nonlocatables are quite similar. While there appear to be some minor differences between the geographic distribution of respondents and refusals, only 75 caregivers who refused to participate.

Estimation Strategy

Parents can choose to enroll their child in either FFS or partially capitated MC plan. We anticipate that the characteristics of children with SHCN who voluntarily enroll in the partially capitated MC plan, will differ from those who opt to remain in the FFS system. If some of these differences are unobservable and significant, this could affect the differences in use of services between FFS and HSCSN enrollees. We employ a two-step estimation procedure outlined by Heckman (1979) to control for the potential nonrandom selection bias associated with plan choice.

Plan choice, that is, the decision to enroll in HSCSN or FFS is a function of individual characteristics, the quality of the contact information available to the MC plan, and caregiver preferences (denoted by X_1) and an unobservable random error term μ_1 .

$$\text{FFS}^* = \alpha_1 + \alpha_2 X_1 + \mu_1 \quad (1)$$

$$\begin{aligned} \text{where } \text{FFS} &= 1 \quad \text{if } \text{FFS}^* > 0 \\ \text{and } \text{FFS} &= 0 \quad \text{if } \text{FFS}^* \leq 0 \end{aligned} \quad (2)$$

If $\text{FFS} = 1$, the child is enrolled in FFS and if $\text{FFS} = 0$, the child is enrolled in partially capitated MC. The Heckman two-step procedure involves first estimating a probit model of plan choice (FFS versus partially capitated MC) and using the parameters constructed from this regression to construct a selectivity correction factor (λ , the inverse Mills ratio) for each child in the sample.

The probability of experiencing an unmet need is expressed as a function of plan choice, individual characteristics (X_2), the selectivity correction

factor, known as lambda (λ), and an unobservable error term μ_2 . The relationship between each indicator of unmet need and plan choice is expressed below:

$$\text{UNMET} = \beta_1 + \beta_2 X_2 + \beta_3 \text{FFS} + \beta_4 \lambda + \mu_2 \quad (3)$$

If the coefficient on λ , the selectivity correction, is statistically significant, then this implies that there are unobservable factors that influence plan choice that if ignored could bias the effect of plan choice on the probability of experiencing an unmet need. By purging the model of the potential selection bias associated with plan choice, the coefficient on the dummy variable indicating capitated MC or FFS is unbiased. We compare these results to a simple probit where plan choice is exogenous. Finally, to assess whether the nonlinear specification has a significant impact on the results, we again employ the Heckman two-step procedure but estimate linear probability models corrected for heteroskedasticity. This set of models could not be identified through nonlinearities.

We conduct a series of tests to evaluate the validity of our instruments. First, we estimate the plan choice equation with and without the identifying variables. We test whether the instruments are jointly equal to zero. Essentially we compare the χ^2 -statistic for model goodness of fit and the pseudo R^2 's for the models with and without the identifying variables. If the χ^2 -statistic and pseudo R^2 increase significantly with the identifying variables, this is one indicator that the identifying variables are good predictors of plan choice (Bound, Jaeger, and Baker 1995; Staiger and Stock 1997). The second test is to evaluate if the instruments are uncorrelated (orthogonal) to the residuals in the second stage equation predicting either unmet need. We evaluate this orthogonality condition by regressing each indicator of unmet need on the dummy variable indicating plan choice, the other exogenous variables, and the set of instruments. We then test if the coefficients of the instruments are jointly equal to zero. If this is the case, it implies that the instruments are uncorrelated with the residuals of the second stage equation predicting the probability of having an unmet need (Davidson and MacKinnon 1993). It also indicates that the instruments provide no new information to predict unmet need; such information is captured by the plan choice variable.

Specification for Plan Choice

Table 2 defines the dependent and independent variables included in the plan choice and unmet need equations. The dependent variable in the plan choice equation is dichotomous and equals one if the child is enrolled in FFS and

Table 2: Variable Definitions

<i>Variable</i>	<i>Definition</i>
Any unmet need	Equals 1 if the caregiver reported the child had an unmet need for one or more of the following: emergency room, hospital overnight stay, regular checkup with physician, medical specialist, mental health specialist, dental care, home health services, prescribed medicine, medical equipment or supplies, and physical, occupational, or speech therapist; equals 0 if no unmet needs
Unmet medical equipment need	Equals 1 if the caregiver reported the child had an unmet need for medical equipment/supplies; equals 0 if the caregiver reported the child had no unmet needs for medical equipment/supplies
Unmet prescription drug need	Equals 1 if the caregiver reported the child had an unmet need for prescribed medicine; equals 0 if the caregiver reported the child had no unmet need for prescribed medicine
Unmet dental care need	Equals 1 if the caregiver reported the child had an unmet need for dental care; equals 0 if the caregiver reported no unmet need for dental care
Unmet physician/hospital need	Equals 1 if the caregiver reported the child had an unmet need for physician or hospital services; equals 0 if the caregiver reported no unmet need for either physician or hospital services
FFS	Equals 1 if child is enrolled in FFS; equals 0 if child is enrolled in HSCSN (capitated MC plan)
Poor health	Equals 1 if caregiver reported child's health is either poor or fair; equals 0 if parent/guardian reported child's health is either good, very good, or excellent
Chronic condition	Equals 1 if the caregiver reported that the child has one or more of the following chronic conditions: asthma, bronchitis, tuberculosis, bone problem, heart condition, seizures, cancer, diabetes, sickle cell anemia, HIV-AIDS; equals 0 otherwise
Acute condition [†]	Equals 1 if caregiver reported that the child has one or more of the following acute conditions: ear infections, meningitis, lead poisoning; equals 0 otherwise
Mental condition	Equals 1 if caregiver reported that the child has one or more of the following mental health problems: developmental delay, anxiety disorder, depression, ADHD, or other mental condition; equals 0 otherwise
Birth defect	Equals 1 if caregiver reported that the child has one or more of the following birth defects: cystic fibrosis, autism, mental retardation, cerebral palsy, Downs syndrome, or genetic disorder; equals 0 otherwise

continued

Table 2: *Continued*

<i>Variable</i>	<i>Definition</i>
Therapy required condition	Equals 1 if caregiver reported that the child has one or more conditions that require therapy services: speech/language problem, hearing problem, eyesight problem, motor/physical problem; equals 0 otherwise
Other condition	Equals 1 if caregiver did not report a specific condition; equals 0 otherwise
ADL index	Reflects the child's ability to perform ADLs. Questions regarding ADLs identify whether the child has difficulty (1) walking or running, (2) breathing, (3) seeing, and (4) hearing. We constructed an index by summarizing the responses to these four questions. Responses coded "Yes, A Lot" were assigned a value of 3, responses coded "Yes, A Little" were assigned a value of 2, and responses coded "NOT AT ALL" were assigned a value of 1
PARS	Measures the child's psycho-social adjustment. The PARS is a parent-reported measure of the disabled child's psycho-social functioning across six specific dimensions: peer relations, dependency, hostility, productivity, anxiety/depression, and withdrawal. Caregivers respond with a four-point scale (ordered from "always" to "never (rarely)" to 28 items that begin with the statement "In the past 30 days has (CHILD) . . ." Higher scores on the PARS reflect better psychological adjustment
Caregiver mental health	Measured by the 7-item version of the Center for Epidemiological Studies-Depression scale (CES-D)
Caregiver physical health	Equals 1 if caregiver has a chronic health condition that prevents her/him from working or performing regular activities; equals 0 otherwise
Young caregiver	Equals 1 if caregiver is under age 30; equals 0 if child's caregiver is over age 30
Monthly income	Total monthly household income predicted from a regression equation to eliminate measurement
High school graduate [‡]	Equals 1 if the caregiver has a high school diploma; equals 0 otherwise
Some college [‡]	Equals 1 if the caregiver has some college; equals 0 otherwise
College plus [‡]	Equals 1 if the caregiver has attained schooling beyond a college degree; equals 0 otherwise
Caregiver's and child's last names match	Equals 1 if the caregiver's and child's last names match; equals 0 if caregiver's and child's last names do not match
Same family important [§]	Equals 1 if it was important to the caregiver that the special needs child be able to see the same physician or use the

continued

Table 2: *Continued*

<i>Variable</i>	<i>Definition</i>
Same family neutral [§]	<p>same hospital as other family members; equals 0 otherwise</p> <p>Equals 1 if it was neutral to the caregiver that the special needs child be able to see the same physician or use the same hospital as other family members; equals 0 otherwise</p>

Notes:[†]Reference category is "Acute condition."[‡]Reference category is "Less than high school."[§]Reference category is "Same family not important."

FFS, fee-for-service; HSCSN, Health Services for Children with Special Health Care Need; ADL, activities of daily living.

equals zero if the child is enrolled in HSCSN. The independent variables in the plan choice equation include indicators of each child's physical, cognitive, and emotional health status; family structure; parents' mental health status; household economic status; caregiver preferences regarding health care provider; and the quality of the contact information available to the MC plan on each Medicaid enrollee.

The instruments used to identify the plan choice equation are hypothesized to be uncorrelated with unmet need for services. These variables are: (1) whether the caregiver and the special needs child have the same last name; (2) a set of dummy variables which indicate the importance of having the special needs child use the same doctor or hospital as other family members; rated as either important, not important, or neutral in selecting a plan. We expect that better contact information should increase the likelihood that the MC plan can locate the caregiver to provide him/her with information about HSCSN. On the other hand, if it is important that the special needs child be able to see the same doctor or go to the same hospital as other family members, we expect the child will be more likely to remain in the FFS option.

Specification for Unmet Needs

We construct five indicators of unmet need from the survey data. The first is a general indicator of unmet need. The variable "UNMET NEED" equals 1 if the parent/guardian reported that the child had an unmet need for one or more of the following services: emergency room, overnight hospital stay; shot, immunization, or checkup; visit with a primary care physician or physician's

assistant; visit with a medical specialist; visit with a mental health specialist; visit with a physical, occupational, or speech therapist; dental care; prescribed medications; medical equipment or supplies; and home health services. The second indicator identifies those children who experienced an unmet need for either physician or hospital services. The third indicator identifies those children who experienced an unmet need for medical equipment or supplies. The fourth indicator distinguishes those children who experienced an unmet need for prescribed medications. The final indicator of unmet need identifies whether the child experienced an unmet need for dental care. Except for the set of instruments, the unmet need equations include the same set of explanatory variables as the plan choice equation.

Empirical Results

Descriptive Findings. Table 3 contains descriptive statistics for the sample controlling for plan choice. Almost 41 percent (427) children were enrolled in

Table 3: Means of Variables

<i>Variable</i>	<i>Total Sample (N = 1,043)</i>	<i>FFS Sample (N = 427)</i>	<i>HSCSN Sample (N = 616)</i>
Any unmet need	0.406 (0.491)	0.459 (0.498)	0.369 (0.483)
Unmet medical equipment need	0.127 (0.333)	0.147 (0.355)	0.112 (0.316)
Unmet prescribed drug need	0.029 (0.167)	0.040 (0.196)	0.021 (0.144)
Unmet dental care need	0.191 (0.393)	0.220 (0.414)	0.170 (0.376)
Unmet physician/hospital need	0.084 (0.278)	0.084 (0.278)	0.084 (0.278)
FFS	0.407 (0.491)	n/a	n/a
Poor health	0.181 (0.385)	0.166 (0.372)	0.192 (0.394)
Chronic condition	0.491 (0.500)	0.410 (0.492)	0.549 (0.498)
Acute condition	0.241 (0.428)	0.234 (0.424)	0.246 (0.431)
Mental condition	0.635 (0.482)	0.571 (0.495)	0.679 (0.467)
Birth defect	0.357 (0.479)	0.285 (0.452)	0.407 (0.492)
Therapy required condition	0.613 (0.487)	0.543 (0.499)	0.663 (0.473)
Other condition	0.136 (0.343)	0.182 (0.386)	0.104 (0.305)
ADL index	1.28 (1.54)	1.08 (1.46)	1.42 (1.59)
PARS	79.27 (13.50)	79.31 (13.65)	79.24 (13.45)
Caregiver mental health	14.42 (12.67)	14.53 (12.47)	14.35 (12.82)
Caregiver physical health	0.287 (0.453)	0.290 (0.454)	0.286 (0.452)
Young caregiver	0.187 (0.390)	0.199 (0.400)	0.180 (0.384)
Monthly income	\$1,573.43 (450.80)	\$1,546.51 (443.04)	\$1,592.1 (455.53)
Less than high school	0.331 (0.470)	0.323 (0.468)	0.336 (0.472)
High school graduate	0.477 (0.499)	0.468 (0.499)	0.482 (0.500)

FFS, fee-for-service; HSCSN, Health Services for Children with Special Health Care Need; ADL, activities of daily living.

FFS and 59 percent (616) were enrolled in the partially capitated MC option. Close to 46 percent of FFS enrollees reported one or more unmet needs compared with 37 percent of capitated MC participants. Close to 15 percent of FFS children and 11 percent of children enrolled in HSCSN experienced an unmet need for medical equipment/supplies. About 4 percent of those enrolled in FFS experienced an unmet need for prescription drugs compared with 2 percent of children in HSCSN. Almost 22 percent of FFS children experienced an unmet need for dental care compared with about 17 percent of children enrolled in HSCSN. Except for physician/hospital services, these differences in unmet need by plan choice were all statistically significant ($p < .05$).

Children enrolled in HSCSN appear to be sicker than those enrolled in FFS. To illustrate, almost 55 percent of HSCSN enrollees have a chronic health condition compared with 41 percent of children enrolled in FFS. Mental health disorders, birth defects, and conditions requiring therapy are likewise more common among children enrolled in the partially capitated MC plan. Nearly 68 percent of HSCSN participants are reported to have a mental health disorder compared with 57 percent of FFS enrollees. Birth defects are present among 41 percent of HSCSN participants but occur in less than 29 percent of their FFS counterparts. Therapy is required by 66 percent of children in HSCSN, whereas only 54 percent of FFS enrollees have a condition that requires some type of therapy. Not surprisingly, children enrolled in HSCSN encounter more difficulties in performing activities of daily living; the ADL score of the MC sample is 1.42 compared with a mean score of 1.08 for FFS participants.

Probit Results Predicting Plan Choice. Table 4 contains the probit coefficients and marginal impacts predicting plan choice. We find that the probit equation predicting plan choice is highly significant ($\chi^2 = 99.50$ ($p < .000$)) and that several of the explanatory variables including the set of instruments we use to identify the plan choice equation are highly significant at conventional levels ($p < .05$). The marginal impacts can be interpreted as percentage point increase or decrease in the probability of being enrolled in FFS as opposed to partially capitated MC associated with each binary indicator variable. Children who have a chronic condition are close to 8 percent points less likely to be enrolled in FFS relative to children who have an acute condition ($p < .01$). Children with a birth defect such as cerebral palsy are about 9 percent points less likely to be participate in FFS compared with those who have an acute condition ($p < .01$). Other types of health problems (mental

Table 4: Probit Results Predicting Plan Choice (FFS = 1; HSCSN = 0)

<i>Variable</i>	<i>Probit Coefficient (Standard Error)</i>	<i>Marginal Impact (Standard Error)</i>
Caregiver's and child's last names match	-0.604*** (0.083)	-0.232*** (0.031)
Same family important	0.194*** (0.095)	0.074*** (0.036)
Same family neutral	0.130 (0.187)	0.051 (0.036)
Poor health	-0.011 (0.113)	-0.004 (0.044)
Chronic condition	-0.197** (0.094)	-0.076*** (0.036)
Mental condition	-0.096 (0.108)	-0.037 (0.042)
Birth defect	-0.228*** (0.095)	-0.087*** (0.036)
Therapy required condition	-0.091 (0.104)	-0.035 (0.040)
Other condition	-0.018 (0.154)	-0.007 (0.059)
ADL index	-0.064*** (0.031)	-0.025*** (0.012)
PARS	-0.0018 (0.0033)	-0.0007 (0.0012)
Caregiver mental health	0.001 (0.003)	0.0004 (0.0014)
Caregiver physical health	0.037 (0.095)	0.015 (0.037)
Young caregiver	0.098 (0.106)	0.038 (0.041)
Monthly income	-0.0004*** (0.0001)	-0.00014*** (0.00004)
High school graduate	0.092 (0.100)	0.035 (0.039)
Some college	0.370*** (0.156)	0.146*** (0.062)
College plus	0.435* (0.271)	0.172* (0.107)
Overall model χ^2 adjusted R ²	105.68*** 0.075	

***Significant at ($p \leq .01$);**Significant at ($.01 < p \leq .05$);*Significant at ($.05 < p \leq .10$).

FFS, fee-for-service; HSCSN, Health Services for Children with Special Health Care Need; ADL, activities of daily living.

health or condition that requires therapy) however, do not significantly affect plan choice. Educational attainment of the caregiver is an important determinant of plan choice. Children of caregivers who attended some college are close to 15 percent points more likely to be enrolled in FFS than children of caregivers who did not finish high school ($p < .01$). The effect is even larger for caregivers who completed college. Children of caregivers who graduated from college are 17 percent points more likely to be enrolled in FFS than children of caregivers who did not complete high school ($p < .10$). Children with more limitations in activities of daily living and those from higher income households are also less likely to be enrolled in FFS ($p < .05$). Because these variables are continuous, we calculate elasticities to evaluate their impacts. A 10 percent (\$157.3 per month) increase in household income results in a 5.4 percent reduction in the likelihood of being enrolled in FFS ($p < .05$). On the other hand, if the mean number of ADLs were double from 1.28 to 2.56, the probability that a child is enrolled in FFS would decline 7.9 percent ($p < .05$).

As regards to the instruments we use to identify the plan choice equation, we find that if the caregiver and special needs child have a matching last name, the child is 23 percent points less likely to be enrolled in FFS compared with children who have a different last name than their primary caregiver ($p < .01$). On the other hand, if it is important for the child to see the same doctor or go to the same hospital as other family members, the probability of being in FFS rather than partially capitated MC is 7.4 percent points higher ($p < .01$). Evaluation of the quality of the instruments shows that the χ^2 -statistic to test whether the instruments are strong predictors of plan choice is 55.49 ($p < .01$). Moreover, the value of the pseudo R^2 for the plan choice equation with the identifying variables is 0.075 compared with 0.03 when the identifying variables are excluded. We also find that the instruments are uncorrelated with each of the indicators of unmet need. Using a test prescribed by Davidson and MacKinnon (1993), we find that once we have controlled for plan choice in a model predicting having any unmet need, the instruments provide no new information. The χ^2 -statistic to test the joint significance of the three identifying variables in the plan choice equation is 1.59 ($p = .662$), which is not statistically significant. This finding indicates that the instruments are orthogonal to the residuals in the general unmet need equation and thus are valid instruments. Results from the χ^2 -tests for the other indicators of unmet need are similar.

Probit Estimates Predicting Unmet Need. Table 5 contains the probit results predicting whether a child experienced any unmet need, an unmet need for medical equipment or supplies, an unmet need for prescription drugs, an unmet need for dental care, or an unmet need for physician/hospital services. For the probability of having a general unmet need, the results show that the coefficient on the FFS variables is 0.255 and highly significant, implying that a child enrolled in FFS is much more likely to have a general unmet need ($p < .01$). In addition, we find that the selectivity correction has a coefficient of -0.036 , but it is not statistically significant. This finding implies that there is no evidence of selection bias through unobservables not captured by the model.

The probit regressions predicting whether a child experienced an unmet need for either medical equipment/supplies, dental care, or prescription drugs tell a similar story. In the model predicting an unmet need for medical equipment, the FFS coefficient is 0.232 and is highly significant ($p < .05$). The FFS coefficients are also positive but only marginally significant ($p < .10$) in the models predicting the likelihood of having an

Table 5: Probit Results Predicting the Probability of Having Any Unmet Need, a Medical Equipment Unmet Need, a Prescription Drug Unmet Need, a Dental Unmet Need, or a Physician/Hospital Unmet Need

Variable	Having Any Unmet Need [†]	Having a Medical Equipment Unmet Need [†]	Having a Prescription Drug Unmet Need [†]	Having a Dental Unmet Need [†]	Having a Physician/ Hospital Unmet Need [†]
FIS	0.255*** (0.086)	0.232** (0.110)	0.279* (0.164)	0.153* (0.095)	-0.002 (0.121)
Selectivity correction	-0.036 (0.698)	0.058 (0.886)	-2.16 (1.46)	-0.136 (0.770)	-1.00 (0.965)
Poor health	0.147 (0.109)	0.111 (0.129)	0.212 (0.199)	0.067 (0.121)	0.002 (0.141)
Chronic condition	0.063 (0.098)	0.006 (0.127)	0.353 (0.232)	-0.043 (0.110)	0.070 (0.133)
Mental condition	0.046 (0.111)	-0.095 (0.143)	0.667 (0.247)	-0.010 (0.120)	0.197 (0.176)
Birth defect	-0.027 (0.096)	0.051 (0.125)	-0.119 (0.207)	-0.109 (0.109)	0.115 (0.132)
Therapy condition	0.157 (0.106)	0.264*** (0.139)	-0.136 (0.205)	0.004 (0.117)	0.346*** (0.164)
Other condition	0.309** (0.159)	0.342* (0.206)	0.540 (0.364)	-0.053 (0.174)	0.469*** (0.230)
ADL index	0.078*** (0.031)	0.166*** (0.037)	0.0001 (0.062)	-0.0007 (0.034)	0.040 (0.039)
PARS	-0.011*** (0.003)	-0.002 (0.004)	-0.0003 (0.0055)	-0.0034 (0.0035)	-0.0005 (0.005)
Caregiver mental health	0.006** (0.003)	0.007* (0.004)	0.015*** (0.006)	0.005 (0.004)	0.013 (0.005)
Caregiver physical health	0.049 (0.092)	-0.052 (0.118)	0.123 (0.178)	0.121 (0.102)	0.095 (0.127)
Young caregiver	0.171* (0.103)	0.203 (0.128)	0.102 (0.211)	-0.137 (0.119)	0.130 (0.138)
Monthly income	-0.0003*** (0.0001)	-0.00018 (0.00016)	0.0004** (0.0002)	-0.00017 (0.00014)	-0.0001 (0.0001)
High school graduate	0.057 (0.099)	-0.119 (0.128)	-0.635*** (0.222)	0.129 (0.112)	0.0004 (0.137)
Some college	0.418*** (0.159)	0.109 (0.202)	-0.298 (0.298)	0.271 (0.181)	0.196 (0.187)
College plus	0.262 (0.288)	-0.097 (0.378)	-0.402 (0.524)	0.060 (0.335)	0.286 (0.361)
Model χ^2	80.46***	64.30***	59.49***	18.36	42.73***
Pseudo R^2	0.060	0.085	0.120	0.017	0.05

Note: [†]Parameter estimates are probit coefficients and standard errors in parentheses.

***Significant at ($p \leq .01$);

**Significant at ($.01 < p \leq .05$);

*Significant at ($.05 < p \leq .10$).

FIS, fee-for-service; HSCSN, Health Services for Children with Special Health Care Need; ADL, activities of daily living.

unmet need for either dental care or prescription drugs. For each of these indicators of unmet need, we find the selectivity correction is negative but highly insignificant. This finding indicates that there is no selection because of unobservables that could bias the coefficient on the plan choice variable. We also found that after controlling for other factors, plan choice has no impact on the probability that a special needs child experiences an unmet need for either physician or hospital services. The significance and magnitude of the parameter estimates from the linear probability models corrected for heteroskedasticity are similar.

Because the probit coefficients and standard errors only indicate the direction and significance of the plan choice variable on the various indicators of unmet need, we also calculated marginal impacts to evaluate the magnitude of the effect of being in the FFS system versus the capitated MC plan. Compared with a predicted mean of 40.6 percent, the probability of experiencing any unmet need is 9.9 percentage points higher for children enrolled in FFS relative to those enrolled in the capitated MC plan ($p < .01$). Relative to children in the capitated MC plan, the probability of having an unmet need for medical equipment or supplies is 4.5 percentage points higher for those in the FFS option ($p < .05$). This is almost a 40 percent increase over the predicted mean of 11.1 percent. While only marginally significant, the likelihood of experiencing an unmet need for dental care is 4.3 percentage points higher for those in FFS compared with those enrolled in HSCSN ($p = .090$). This is almost 25 percent higher than the predicted mean of 18.7 percent. For prescription drugs, the impact of plan choice is likewise only marginally significant. The probability of having an unmet need for prescription drugs is 1.2 percentage points higher for those in FFS compared with children enrolled in HSCSN ($p = .089$). This represents a 67 percent increase over the predicted mean of 2 percent.

DISCUSSION

States' reluctance to mandate that children with SHCN enroll in some form of capitated MC plan stems from the concern that such plans may be detrimental to children with SHCN because of their incentives to limit the choice of and/or access to providers and because of their incentives to control spending. Research examining how children with SHCN fare under capitation versus the traditional FFS approach is sparse. In this study, we identified characteristics that influence the decision to enroll in a partially capitated MC option versus

the FFS system for SSI eligible children with disabilities. Second, we analyzed the effects of plan choice on unmet need among SSI eligible children enrolled in the DC Medicaid program. We find that more disabled children and those with higher household income are more likely to enroll in the partially capitated option. Conversely, children with more highly educated caregivers are more prone to remain in the FFS system. We find evidence that enrollment in partially capitated MC can improve access to care for children with SHCN. Caregivers whose children were enrolled in HSCSN were less likely to report that their special needs child experienced any unmet need, an unmet need for medical equipment or supplies, an unmet need for prescription drugs, or an unmet need for dental services.

We speculate that the case management services available under HSCSN account for some of the differences in unmet need that exists between partially capitated MC and FFS enrollees. Case managers assist the family in navigating the health care system in order to obtain medical care for the child with SHCN. Case managers schedule appointments; arrange for transportation services; serve as the link between primary care physicians, specialty providers and the family; and coordinate services received from the DC public schools. Obviously, this case management component of HSCSN is extremely helpful to the family and child with SHCN. Our findings suggest that if children enrolled in FFS had access to case management services, they would be significantly less likely to experience unmet needs.

Another explanation is that the partially capitated MC plan reimburses participating physicians at higher rates than the FFS plan. Potentially, this payment differential should give physicians the financial incentives to treat children enrolled in the partially capitated MC plan rather than those enrolled in the FFS option. A third factor contributing to these differences in unmet need is provider availability. While the list of potential providers is larger for FFS enrollees in comparison with those in HSCSN, the FFS providers may not be in close proximity to special needs children enrolled in the FFS system.

While these findings suggest that children with SHCN can benefit from a partially capitated MC plan with case management services, our findings have some limitations. First, most of the children in our sample are African-American, so these findings may differ for children of other races. Second, these findings may not be applicable to children with SHCN who reside in rural areas. Third, we recognize the possibility that child health is potentially endogenous. Given that our data are cross-sectional, we cannot address this point. Fourth, the model χ^2 for the probit equation predicting whether a child experienced an unmet need for dental care is not significant at conventional

levels. We recognize that the dental care specification is hampered by omitted variables bias. While the data include good indicators of overall health status, mental health status, and functional status, which measure health need for medical services, mental health services, and medical equipment, the data lack a specific measure of dental health. The coefficients on plan choice would be bias towards zero if children with poor dental health are more likely to enroll in the MC option. Finally, although the partially capitated MC plan appears to reduce unmet need for services among its enrollees to a greater degree than for those enrolled in FFS, we have not examined monthly expenditures per enrollee. It may be that HSCSN participants use more primary care and less inpatient and emergency room care, and as a consequence they incur lower expenditures per month than children enrolled in FFS. Further analysis of claims and encounter data is required to determine if monthly expenditures are lower or higher under HSCSN relative to the FFS option. Despite these limitations, we believe these findings provide new information for policy-makers documenting some potential benefits of a partially capitated MC approach for children with SHCN.

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