Partially Capitated Managed Care Versus FFS for Special Needs Children

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Little research has examined whether Medicaid managed care plans (MCPs) that incorporate case management are effective in coordinating services for children with special health care needs (CSHCN). This study evaluates the effects of enrollment of special needs children into a partially capitated MCP (with ongoing case management) versus the fee-for-service (FFS) option on use of therapeutic services, specifically speech, occupational, and physical therapy by site of service (school versus health care sector). Results show that special needs children enrolled in the partially capitated MCP are significantly more likely to obtain occupational and physical therapy at school relative to their FFS counterparts. Moreover, children enrolled in FFS are significantly less likely to be either regular or frequent users of each type of therapy relative to children enrolled in managed care. We attribute much of these disparities in use of therapeutic services at school to the availability of case management and coordination that is an integral component of the partially capitated MCP.

INTRODUCTION

Attempting to reign in escalating health care expenditures, a handful of State Medicaid Programs have implemented a managed care option for CSHCN. Although these initiatives vary widely in program design, each includes case management services or care coordination. There are at least two reasons why care coordination is critical for CSHCN (Jessop and Stein, 1994). First, special needs children are likely to have multiple health conditions requiring an array of health care services. Second, because CSHCN tend to obtain care from a physician who specializes in treating a specific condition such as asthma, they may not receive other necessary services rendered by primary care providers.

The American Academy of Pediatrics defines care coordination as a process that "…links CSHCN and their families to services and resources in a coordinated effort to maximize the potential of the children and provide them with optimal health care" (Ziring et al., 1999). The AAP outlined the following goals for care coordination: (1) to be aware of and integrate services and resources, (2) to connect service systems with the child's family, (3) to prevent duplication of services and unnecessary costs, and (4) to advocate for improved outcomes for the child.

While the care coordination component of Medicaid managed care programs in theory should improve access for CSHCN, there are several issues that must be addressed if such efforts are to effectively integrate services for this population. First, because there is no generally accepted definition of care coordination, States must decide which services to include under the umbrella of care coordination efforts

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(Wehr, 2000). A second issue concerns the absence of a single entry point into multiple systems of care (Ziring et al., 1999). A third concern relates to the primary care provider who may have little expertise in treating specific health conditions and limited knowledge of community resources. A further difficulty is that the managed care options available to special needs children in some States carve-out specific services to remain under FFS; such carve-outs make care coordination more arduous (Highsmith and Somers, 2000).

Because children spend a large proportion of their time in school settings, it is critical to coordinate medical and school-based services for children who require them (Ziring et al., 1999). In fact, care coordination is required under existing Federal education mandates. For example, the 2004 Individuals with Disabilities Education Act requires public special education programs to provide health-related services, which may entail specialized therapies, to disabled children. Thus, if effectively implemented, care coordination between the health care sector and schools has the potential to improve access to necessary services for CSHCN (Perrin, 2002). Surprisingly, little research has examined whether Medicaid MCPs that incorporate case management are effective in coordinating services for CSHCN outside the health care sector. After a thorough review of the literature, we identified only three studies that addressed the effects of care coordination for CSHCN (Smith, Layne, and Garell, 1994; Walsh, French, and Bentley, 2000; Schaller Anderson Inc., 2002). These studies are descriptive, do not control for sample selection bias, and have not focused on the types of services offered in schools and in the health care sector. One would expect that care coordination will have the most significant impact of these types of services. No prior research has examined whether case management available under Medicaid MCPs is effective in coordinating services received from both the school and health care sector.

In this study, we address this gap in knowledge. We evaluate the effects of enrollment of CSHCN in a partially capitated MCP versus the FFS option on use of therapeutic services, specifically, speech, occupational, and physical therapy by site of service (school and health care systems). Our analyses focus on disabled children enrolled in the District of Columbia Medicaid Program who qualified as special needs because they are eligible for Supplemental Security Income (SSI).

The District of Columbia Medicaid Program available to SSI-eligible children with disabilities merits investigation for several reasons. First, caregivers of CSHCN have the option of enrolling the child into either a partially capitated MCP or the FFS system. Care coordination provided by a case manager is available to each child enrolled in the partially capitated MCP, whereas under the FFS system, care coordination is minimal at best. Thus, caregivers who choose the FFS system receive minimal assistance in navigating the health care system to ensure that their special needs child receives necessary services. Second, the MCP available to special needs children has been operational for almost 10 years and an increasing number of special needs children have enrolled since its inception. Examination of a well established program reveals long-run impacts. In contrast, analysis of a new program during its early years of operation may reveal transitory impacts that are likely to change as the program evolves and is restructured. Third, the case manager is responsible for coordinating the gamut of services reimbursed by Medicaid, including physician, hospital, therapeutic

services, transportation, dental, pharmaceutical, and mental health across multiple providers and sites. Most States that have implemented a managed care option for special needs children carve-out specific services to the FFS system. As previously noted, carve-outs make care coordination efforts more difficult. Finally, while the MCPs available to special needs children in other States also serve non-disabled children, this is not the case in the District of Columbia. Because the plan only focuses on SSI-eligible children with disabilities, it can tailor its design to meet the specific needs of this population.

HEALTH SERVICES FOR CHILDREN WITH SPECIAL NEEDS

The District of Columbia implemented a voluntary Medicaid MCP for SSI-eligible children with disabilities in 1996. The District of Columbia contracts with a nonprofit managed care organization, known as Health Services for Children with Special Needs (HSCSN), to administer the program. HSCSN is responsible for administering a comprehensive array of services to enrollees, including primary and specialty care, hospital, mental health, dental, pharmaceutical, therapeutic services, and ancillary procedures. During its initial years of operation, HSCSN functioned as a fully capitated plan. Administrators from HSCSN and the District of Columbia Medicaid Program realized that this financing mechanism was not sustainable, and in late 1999 revamped the plan to make it partially capitated. Under the revised funding approach, HSCSN still receives a fixed payment for each enrollee per month. HSCSN earmarks 20 percent of its capitation payments to support administrative expenses, case management, and outreach. The remaining 80 percent is used to reimburse providers and cover transportation expenses. If this amount does not cover reimbursed expenses, then HSCSN and Medicaid administrators negotiate a settlement payment to partially compensate HSCSN for the shortfall. This reconciliation process means that the risk imposed on HSCSN for the direct costs of medical services and transportation have been significantly reduced.

The most significant difference between HSCSN and the traditional FFS system is that each child enrolled in HSCSN is assigned to a case manager. Each case manager is a licensed health care professional (a nurse or social worker) who has experience working with special needs children. While the case manager is responsible for developing a treatment plan tailored to the needs of each child, his/her primary role is to coordinate care for the child across a wide array of providers from both the health care sector and the school system. The majority of care coordination services are provided by telephone. Each case manager is responsible for 60 to 70 special needs children's care.

METHODS

Sampling and Data Collection

We conducted two rounds of telephone interviews with a stratified random sample of caregivers of SSI-eligible children with disabilities who were enrolled in the District of Columbia Medicaid Program. We contracted with a professional survey research firm to conduct both rounds of the telephone interviews. The baseline interviews were conducted between June and November 2002, and the followup interviews were conducted between April and July 2003. The time interval between the baseline and followup interviews was approximately 7 months.

Baseline interviews were completed with 1,088 caregivers, comprised of 644 with a child enrolled in HSCSN, and 444 with a child in FFS. The response rate reflects the number of successfully completed cases divided by the total sample less the number of cases found to be ineligible (2,547 minus 189). Overall, the response rate for round one was 46 percent; the response rate was somewhat higher for the HSCSN subsample than for the FFS subsample (51 versus 41 percent, respectively). Given the large number of cases that could not be located, we also calculated a cooperation rate. The cooperation rate removes non-locatable cases; it is defined as the number of completed cases divided by the total sample less the ineligible cases and all cases that could not be located. Elimination of non-locatable cases yielded an overall cooperation rate for the survey of 81 percent (75 percent for the HSCSN sample and 91 percent for the FFS sample).

The large number of non-locatables raised concerns that the sample of caregivers who participated in the baseline survey may not be representative of the population of SSI-eligible children with disabilities enrolled in the District of Columbia Medicaid Program. To address this concern, we compared some basic characteristics of respondents (1,088), non-locatables (1,006), and refusals (75). Approximately 41 percent of respondents were enrolled in FFS, compared with 60 percent of non-locatables, and close to 19 percent of refusals. Otherwise, the age and sex composition as well as geographic location of respondents, non-locatables, and refusals were quite similar.

Followup interviews were completed with 935 of the original 1,088 cases, yielding an overall response rate of 88.5 percent. The response rate was 91.5 percent for those enrolled in HSCSN, and 84 percent for those in FFS. The final sample of caregivers who completed both rounds of interviews contained 358 with a child enrolled in FFS, and 577 with a child enrolled in HSCSN. Because detailed questions regarding the receipt and utilization of therapeutic services by site (school versus health care sector) were only asked during the followup interviews, this analysis is based on the sample of children whose caregivers completed both rounds of interviews.

Estimation Strategy

Caregivers have the option of enrolling their SSI-eligible child with disabilities in either HSCSN (the partially capitated MCP) or the FFS system. Because enrollment is a choice, we recognize that children enrolled in HSCSN may differ in unobservable characteristics from children who remain in the FFS option. Controlling for caregiver's selection of either HSCSN or FFS is therefore necessary to obtain unbiased estimates of the effect of plan choice on use of therapeutic services. To address this concern, we employed a two-step estimation procedure outlined by Heckman (1979) to correct for the potential selection bias associated with plan choice.

In the first stage, the caregiver's choice of health plan for the special needs child is modeled as function of child and caregiver characteristics, the quality of the contact information available to the MCP, caregiver preferences, and unobservables captured by the error term. From the first stage probit estimation, we construct a selectivity correction factor (the inverse Mill's ratio, λ) for each observation in the sample. The selectivity correction factor captures all unobservable characteristics relevant to plan choice that may bias the

effect of plan choice on the provision of therapeutic services.

In the second stage, use of therapy services is modeled as a function of plan choice, health and demographic characteristics of the child and caregiver, and the selectivity correction (λ), and a random error term. When the indicator of use of therapy services is binary, we estimate a probit model. Because the indicators measuring frequency of use of therapeutic services are ordinal, we estimate ordered probit models.

If the coefficient of the selectivity correction variable, λ, is statistically significant this implies that there are unobservable factors that if ignored could bias the effect of plan choice on use of therapeutic services. We compare the results to a similar model where plan choice is assumed to be exogenous.

Purging the model of the effects of selection bias associated with plan choice is contingent on identifying a set of instruments that predict plan choice but at the same time are unrelated to use of therapeutic services. The set of instruments we employ to identify the plan choice equation include: (1) quality of the contact information available to the MCP, and (2) the caregiver's preferences regarding health care providers for the special needs child. The rationale for using these variables as instruments to identify the plan choice equation is described in the model specification section. We recognize that instrument validity is critical if one is to eliminate selection bias linked to plan choice.

We perform two tests to evaluate the validity of the instruments included in the plan choice equation. The first involves estimating the plan choice equation with and without the set of instruments and then testing whether the set of instruments are jointly equal to zero. If both the χ^2 measuring goodness of fit and the pseudo R^2 for the model that contains the instruments are significantly higher than the corresponding statistics for the model without the instruments, this implies that the instruments are good predictors of plan choice (Bound, Jaeger, and Baker, 1995; Staiger and Stock, 1997). The second test requires that the instrument be orthogonal to or uncorrelated with the residuals from the second stage equations predicting either receipt or utilization of therapeutic services. To test whether this orthogonality condition holds, we regress each indicator of use of therapeutic services on the dummy variable identifying plan choice, the other exogenous variables that are hypothesized to influence use of services and the set of instruments. We then conduct a χ^2 test to determine if the coefficients of the instruments are jointly equal to zero. If the instruments jointly have no effect, this means the instruments are uncorrelated with the residuals in the second stage equations predicting use of therapeutic services (Davidson and MacKinnon, 1993).

Empirical Model

The dependent variable in the plan choice equals one if the child is enrolled in FFS and zero if the child is enrolled in HSCSN. The independent variables include variables that measure child health and demographic characteristics, caregiver attributes (age, educational attainment, mental health), household income, caregiver preferences regarding health care providers, and the quality of the contact information available to the MCP on each special needs child. The variables included in the plan choice equation are defined in Table 1.

We hypothesize that the instruments used to identify the plan choice equation are uncorrelated with the indicators of

Table 1

Definition of Dependent Variables for Models Predicting Use of Therapeutic Services

Variable	Definition
Fee-for-Service (FFS)	Indicator variable equals 1 if child is in FFS Medicaid; equals 0 if child is enrolled in health services for children with special needs (HSCSN) Medicaid managed care.
Receipt of Therapeutic Services	
Speech Therapy	Indicator variable equals 1 if child received speech therapy either from school or health care sector in last 6 months.
Occupational Therapy	Indicator variable equals 1 if child received occupational therapy either from school or health care sector in last 6 months.
Physical Therapy	Indicator variable equals 1 if child received physical therapy either from school or health care sector in last 6 months.
Speech Therapy (School)	Indicator variable equals 1 if child received speech from school in last 6 months.
Occupational Therapy (School)	Indicator variable equals 1 if child received occupational therapy from school in last 6 months.
Physical Therapy (School)	Indicator variable equals 1 if child received physical therapy from school in last 6 months.
Speech Therapy (Other)	Indicator variable equals 1 if child received speech from health care sector in last 6 months.
Occupational Therapy (Other)	Indicator variable equals 1 if child received occupational therapy from health care sector in last 6 months.
Physical Therapy (Other)	Indicator variable equals 1 if child received physical therapy from health care sector in last 6 months.
Frequency of Therapeutic Services	
School Speech Therapy	Ordinal variable equals 0 if child receives no speech therapy through the school in the past 6 months; equals 1 if child receives infrequent speech therapy in the past 6 months (from 1 to 6 times); equals 2 if child receives regular speech therapy in the past 6 months (from 2 times a month to once a week); equals 3 if child receives frequent speech therapy (more than once a week).
School Occupational Therapy	Ordinal variable equals 0 if child receives no occupational therapy through the school in the past 6 months; equals 1 if child receives infrequent occupational therapy in the past 6 months (from 1 to 6 times); equals 2 if child receives regular occupational therapy in the past 6 months (from 2 times a month to once a week); equals 3 if child receives frequent occupational therapy (more than once a week).
School Physical Therapy	Ordinal variable equals 0 if child receives no physical therapy through the school in the past 6 months; equals 1 if child receives infrequent physical therapy in the past 6 months (from 1 to 6 times); equals 2 if child receives regular physical therapy in the past 6 months (from 2 times a month to once a week); equals 3 if child receives frequent physical therapy (more than once a week).
Other Speech Therapy	Ordinal variable regarding how often the child received speech therapy through Medicaid in a non-school setting (same values as previously indicated).
Other Occupational Therapy	Ordinal variable regarding how often the child received occupational therapy through Medicaid in a non-school setting (same values as previously indicated).
Other Physical Therapy	Ordinal variable regarding how often the child received physical therapy through Medicaid in a non-school setting (same values as previously indicated).
Independent Variables – Physical Therapy Equations	
FFS	Indicator variable equals 1 if child is in FFS Medicaid; equals 0 if child is enrolled in HSCSN Medicaid managed care.
Excellent/Very Good[1]	Indicator variable equals 1 if child's reported health is excellent or very good; equals 0 if reported as good, fair, or poor.
Good	Indicator variable equals 1 if child's reported health is good; equals 0 if reported as excellent, very good, fair, or poor.
Fair/Poor	Indicator variable equals 1 if child's reported health is fair or poor; equals 0 if good, very good, or excellent.
Income	Average monthly income in dollars; predicted from regression equation based on caregiver characteristics at baseline.
Main Problem Chronic/Acute	Indicator variable equals 1 if child's main health problem reported as being chronic or acute (asthma, bone problems, bronchitis, cancer, diabetes, heart problems, HIV/AIDS, seizures, sickle cell anemia, allergies, weight/obesity, ear infections, lead poisoning); equals 0 if reported as anything else.

Refer to footnotes at the end of the table.

Table 1—Continued

Definition of Dependent Variables for Models Predicting Use of Therapeutic Services

Variable	Definition
Main Problem Therapy	Indicator variable equals 1 if child's main health problem reported as a therapy-type (eyesight problems, hearing problems, speech/language problems, or other physical condition); equals 0 if reported as anything else.
Main Problem Birth Defect	Indicator variable equals 1 if child's main health problem reported as a birth defect (autism, cerebral palsy, Down Syndrome, other genetic condition, mental retardation, hydrocephaly); equals 0 if reported as anything else.
Main Problem Mental[1]	Indicator variable equals 1 if child's main problem reported as mental (anxiety disorders, depression, developmental disorders, attention deficit hyperactivity disorder, learning disability, behavior problems, slow, or other mental condition); equals 0 if reported as anything else.
Number of Comorbid Conditions	Series of indicator variables for children with 0 comorbid conditions[1] (other reported problems) (1=yes; 0=no); 1 comorbid condition; 2 comorbid conditions; 3 comorbid conditions; 4 comorbid conditions; 5 comorbid conditions; or 6 or more comorbid conditions.
Age	Series of indicator variables regarding the age group of the child at baseline: age group 1 (3-5), age group 2 (6-10), age group 3 (11-13), and age group 4[1] (14 or over). These ages are divided so as to mirror the typical ages before school age, elementary school, middle school, and above.
Personal Adjustment and Role Skills (PARS) Scale III	Measure of child's psycho-social functioning as reported by caregiver, higher number indicates better psychological adjustment. The 6 dimensions of the index are peer relations, dependency, hostility, productivity, anxiety/depression, and withdrawal. Each dimension comprised of a series of questions scored on a scale from always to never/rarely.
Activities of Daily Living Index	Ability to perform daily activities as reported by caregiver, higher number indicates higher functional level. Measures are walking and running, breathing, seeing, and hearing.
Young Caregiver	Indicator variable equals 1 if caregiver is under age 30; equals 0 if 30 or over.
Caregiver Education	Measure of caregiver's educational achievement divided into areas of some high school, high school graduate, some college, college graduate plus.
Caregiver Mental Health Scale	Scale of caregivers mental health status per the 7-item Center for Epidemiologic Studies-Depression Scale (CES-D). Higher number indicates greater depression.
Plan Choice Equation	
Last Names Match	Indicator variable equals 1 if caregiver's last name matches that of the child; equals 0 if otherwise.
Same Family Important	Indicator variable equals 1 if caregiver indicated that it was important that their special needs child be able to see the same physician and use the same hospital as other family members; equals 0 if otherwise.
Same Family Neutral	Indicator variable equals 1 if caregiver indicated that he/she is neutral if their special needs child be able to see the same physician and use the same hospital as other family members; equals 0 if otherwise.
Same Family Not Important[1]	Indicator variable equals 1 if caregiver indicated that it was not important that their special needs child be able to see the same physician and use the same hospital as other family members; equals 0 if otherwise.

[1] Used as a reference group (excluded from regressions).

SOURCE: Schuster, C.R., The RAND Corporation, Mitchell, J.M., Georgetown University, and Gaskin, D.J., the University of Maryland, 2007.

use of therapeutic services. The instruments, therefore, are not included in any of the equations predicting use of therapeutic services. The specific instruments are: (1) whether the caregiver and child have the same last name, and (2) a set of variables indicating whether it is important for the special needs child to obtain care from the same physician and hospital as other family members. Possible ratings are important, not important, or neutral. The District of Columbia Medicaid Program provides HSCSN with a list of SSI-eligible children with disabilities. We anticipate if the child and caregiver share the same last name, it will be easier for HSCSN staff to locate the caregiver to inform him/her about the MCP and enroll the child. Regarding caregiver ratings, we expect the special needs child will be more prone to remain in the FFS system if the caregiver feels it is important

for the special needs child to see the same physician or use the same hospital as other family members.

We construct several indicators to measure use of therapeutic services. The first set of indicators is based on responses to questions regarding whether the child received speech, occupational, or physical therapy either from school or the health care sector. Because the each dependent variable is binary, we employ probit estimation. To evaluate the effect of plan choice on coordination with the school system, the binary indicators measuring receipt of speech, occupational, and physical therapy are stratified by site (school versus health care sector). We again employ probit estimation to predict receipt of each type of therapeutic service by site (school versus health care sector). We estimate this set of model measuring receipt of each type of therapeutic service with and without the selectivity correction.

The survey contained a series of questions regarding the frequency of use of each type of therapeutic service during the last 6 months by site (school versus health care sector). We used the responses to these questions to construct a series to dependent variables to measure the frequency of use of each type of therapy by site. The dependent variables capturing the frequency of each variable are categorized as follows: (0) no therapy sessions in the previous 6 months; (1) from one to six sessions in the previous 6 months; (2) from seven sessions in the previous 6 months up to one session each week; and (3) more than one session each week. Because the dependent variables measuring frequency of use are ordinal, we employ ordered probit estimation. Again, these models are estimated with and without the correction for selection bias. Except for the instruments, the equations measuring use of therapeutic services include the same set of explanatory variables as the plan choice specification.

RESULTS

Sample Characteristics

Table 2 compares sample characteristics controlling for plan choice. Irrespective of plan choice, more than 60 percent of the children are age 10-16, almost 70 percent are male, and approximately 98 percent are Black. Caregivers were asked to identify the child's main health problem. As shown in Table 2, almost 35 percent of caregivers indicated the child has a mental health disorder; the most common mental health disorder is attention deficit hyperactivity disorder affecting 16 percent of the sample. Approximately 21 percent of the children have either a chronic or acute health care condition. Asthma is the most frequent affecting 8.4 percent of children. The remaining two categories of main health problems are birth defects and therapy conditions (15.9 and 17.1 percent, respectively). Close to 5 percent of caregivers reported the child has no main health problem. Children enrolled in HSCSN have a greater number of comorbid conditions, 3.15 on average compared with 2.59 for children enrolled in FFS. Caregiver characteristics, including age, education, and income do not vary significantly by plan choice.

Table 3 shows the frequency of use (never, infrequent, regular, frequent) for each type of service controlling for both plan choice and site (school versus health care sector).

Relative to children in FFS, higher percentages of HSCSN enrollees appear to be either regular or frequent users of therapeutic services. On the other hand, children enrolled in FFS are more prone to be either non-users or infrequent users in

Table 2

Mean Characteristics of Sample

Characteristic	Total Sample (*N*=935)	FFS (*N*=358)	HSCSN (*N*=577)	χ^2	*P*-Value
Child					
Age					
4-5 Years	0.10	0.10	0.10	—	—
6-9 Years	0.28	0.30	0.27	—	—
10-12 Years	0.30	0.29	0.30	—	—
13-16 Years	0.32	0.31	0.33	0.74**	0.46
Sex				—	—
Male	0.68	0.7	0.67		
Female	0.32	0.3	0.33	0.71	0.4
Race				—	—
Black	0.98	0.98	0.970	—	—
White	0.003	0.006	0.002		
Other	0.017	0.014	0.028	*	0.23
Health Status Condition					
Main Mental	0.348	0.408	0.354	2.65	0.10
Main Chronic/Acute	0.211	0.222	0.224	0.01	0.93
Main Therapy	0.171	0.169	0.189	0.55	0.46
Main Birth Defect	0.159	0.114	0.204	12.11	0.001
No Main	0.049	0.088	0.030	14.21	<0.001
Poor Health	0.180	0.160	0.190	1.44	0.230
Comorbid	2.940	2.590	3.150	3.55**	<0.001
Activities of Daily Living Index	1.300	1.070	1.460	3.71**	<0.001
PARS[1]	79.320	79.170	79.420	0.28**	0.780
Poor Psychological Adjustment	0.330	0.340	0.320	0.48	0.490
Other					
Biological Mother Present	0.77	0.80	0.76	1.72	0.19
Biological Father Present	0.12	0.11	0.12	0.25	0.62
Caregiver					
Age					
Mean Age (Years)	40.13	39.09	40.78	2.35**	0.02
Young Caregiver	0.19	0.18	0.19	0.14	0.71
Education					
Some High School	0.33	0.32	0.33	0.001	0.98
High School Graduate	0.48	0.48	0.48	0.004	0.95
Some College	0.17	0.17	0.16	0.230	0.63
College Graduate or Beyond	0.02	0.03	0.02	0.680	0.41
Marital Status					
Single Parent	0.34	0.38	0.32	1.16	0.28
Married	0.24	0.22	0.25	0.22	0.64
Other					
Monthly Income (Dollars)	1551	1514	1575	0.82**	0.41
Caregiver Mental Health	14.24	14.17	14.28	0.13**	0.90
Last Names Match	0.55	0.43	0.63	37.65	<0.001

* Fisher's exact test *p*-values are shown; no test score generated.

** T-scores and *t*-test *p*-values are shown.

[1] Personal Adjustment and Role Skills (PARS) Scale III.

SOURCE: Schuster, C.R., The RAND Corporation, Mitchell, J.M., Georgetown University, and Gaskin, D.J., the University of Maryland, 2007.

comparison to children enrolled in HSCSN. The most notable disparities in frequency of use are evident for occupational and physical therapy rendered at school. For example, more than 41 percent of HSCSN enrollees are classified as either regular or frequent users of occupational therapy at school, whereas only 32 percent of FFS children are assigned to either of these groups. Less than 19 percent of FFS participants are either regular or frequent users of physical therapy at school. On

Table 3

Frequency of Use of Therapeutic Services Controlling for Site (School Versus Health Care Sector)

Number of Types of Therapy	Observations Receiving Therapy (*N*=935)	Fee-for-Service Observations Receiving Therapy (*N*=398)	HSCSN Observations Receiving Therapy (*N*=577)
		Percent	
Source-Specific Frequency			
School Speech Therapy			
Never	34.90	38.20	32.80
Infrequent	5.40	5.50	5.40
Regular	22.30	21.80	22.50
Frequent	37.40	34.50	39.30
School Occupational Therapy			
Never	59.30	64.90	55.70
Infrequent	3.00	3.20	2.90
Regular	16.90	15.20	18.00
Frequent	20.70	16.70	23.40
School Physical Therapy			
Never	72.30	79.80	67.60
Infrequent	2.50	1.40	3.20
Regular	10.60	8.00	12.20
Frequent	14.60	10.80	17.00
Health Sector Speech Therapy			
Never	88.10	88.50	87.80
Infrequent	4.80	5.30	4.50
Regular	3.20	2.80	3.40
Frequent	3.90	3.40	4.30
Health Sector Occupational Therapy			
Never	87.50	89.90	86.10
Infrequent	4.20	3.40	4.70
Regular	4.30	4.20	4.30
Frequent	4.10	2.50	5.00
Health Sector Physical Therapy			
Never	87.70	90.70	85.90
Infrequent	3.70	4.00	3.50
Regular	4.80	3.10	5.80
Frequent	3.80	2.30	4.80

NOTE: HSCSN is health services for children with special needs.

SOURCE: Schuster, C.R., The RAND Corporation, Mitchell, J.M., Georgetown University, and Gaskin, D.J., the University of Maryland, 2007.

the other hand, the proportion of HSCSN children classified as such is 29 percent, approximately 10 percentage points higher. The reverse pattern emerges if one compares the combined categories of no use and infrequent use after controlling for plan choice. To illustrate, more than 80 percent of FFS children never or infrequently receive physical therapy at school, compared with less than 71 percent of HSCSN participants. The frequency of use of therapeutic services received from the health care sector reveals a similar pattern. However, irrespective of plan choice, only small percentages of children receive physical, occupational, and speech therapy outside the school setting.

Probit Results Predicting Plan Choice

Although not reported, the overall goodness of fit for the probit model predicting plan choice is highly significant. Moreover, the instruments used to identify the plan choice equations are highly significant ($p<0.01$). If the child and caregiver have the same last names, the child is 22 percentage points less likely to be enrolled in FFS ($p<0.05$). As expected, the discordance in names makes it more difficult

for HSCSN staff to contact the caregiver and inform him/her about HSCSN. On the other hand, a child is nearly 7 percentage points more likely to be enrolled in FFS if the caregiver indicated that it is important for CSHCN to use the same physician and/or hospital as other family members ($p<0.05$). This finding is also consistent with expectations, as FFS allows more freedom of provider selection. We acknowledge the possibility that a systematic relationship may exist between caregiver educational attainment, marital status, and plan choice for those with and without matching last names. Contingency table analyses indicate that plan choice was not associated with educational attainment for caregivers with matching last names ($p=0.69$) or for those without matching last names ($p=0.87$). Caregivers with non-matching last names were more likely to enroll their child in FFS irrespective of marital status ($p=0.04$), whereas both single and married caregivers with matching last names were more likely to enroll their child in HSCSN ($p=0.07$). Marital status and educational attainment are not significant determinants of plan choice.

Results from the likelihood ratio test to evaluate whether the instruments are strong predictors of plan choice yields a highly significant χ^2 statistic of 55.49 ($p<0.01$). Further statistical tests show that the instruments are uncorrelated with each indicator of use of therapeutic services. These results indicate that the instruments are valid because for each specification they are orthogonal to the residuals in the use of therapeutic services equation. These results are available on request from the authors.

Therapeutic Services by Type

In Table 4, we report the marginal impacts from the probit estimations predicting receipt of each type of therapeutic service, irrespective of site. Also shown in Table 4 are the marginal impacts for the estimations predicting receipt of speech, occupational, and physical therapy at school, and the health care sector. While we estimated the models with and without correcting for selection bias, lambda is statistically insignificant across all models. This implies that selection due to unobservables does not bias the coefficients on plan choice in any of the receipt of services equations. For this reason, we focus on the results without the selectivity correction.

The marginal impact of plan choice is interpreted as the percentage point increase or decrease in the probability of receiving each type of therapeutic service associated with being in FFS as opposed to HSCSN. Irrespective of site of services, enrollment in FFS has a negative effect on the probability of receiving each type of therapeutic service. Enrollment in FFS rather than HSCSN reduces the likelihood that a special needs child receives occupational therapy by 9.2 percentage points ($p<0.01$). Similarly, enrollment in FFS rather than HSCSN decreases the chances that a special needs child receives physical therapy by nearly 11 percentage points ($p<0.01$). The marginal impact in the speech equation is not statistically significant.

Controlling for site of service (school versus the health care sector) reveals that plan choice has no impact on the likelihood that a child receives each type of therapeutic service from the health care sector. The marginal impacts on the FFS variables in the three models predicting receipt of therapeutic services at school are quite similar in magnitude to those from the specifications that do not control for site.

Table 4

Marginal Impacts of Plan Choice on Receipt of Therapy Services

Dependent Variable	With Selectivity Correction	Without Selectivity Correction
	Percent	
Types of Services		
Receipt of Services		
Speech Therapy	-4.48	-4.03
Occupational Therapy	-9.21**	-8.71**
Physical Therapy	-10.83***	-10.51***
Source-Specific Services		
School Services		
Speech Therapy	-5.22	-4.85
Occupational Therapy	-9.06**	-7.95**
Physical Therapy	-10.83***	-10.51***
Medicaid Services		
Speech Therapy	-0.50	-0.64
Occupational Therapy	-1.62	-2.10
Physical Therapy	-2.89	-2.89

*$p<0.10$.

**$p<0.05$.

***$p<0.01$.

SOURCE: Schuster, C.R., The RAND Corporation, Mitchell, J.M., Georgetown University, and Gaskin, D.J., the University of Maryland, 2007.

Use of Therapeutic Services

Table 5 shows the marginal effects of plan choice on the frequency of use of school-specific speech, occupational, and physical therapies. The linkage between the receipt of no school therapies and FFS enrollment is evident for all three school-specific therapies. Plan choice has a marginally significant effect on receipt of speech therapy, yet the effects are only significant for non-users and frequent users ($p<0.10$). Children enrolled in FFS are 5.6 percentage points more likely than HSCSN enrollees to be non-users of speech therapy ($p<0.10$). Moreover, FFS enrollment reduces the likelihood that a child receives frequent speech therapy by almost 5.7 percentage points ($p<0.10$).

The frequency of use of both school-based occupational and physical therapy has even more significant ties to HSCSN enrollment. Compared with HSCSN enrollees, children in FFS are 7.8 percentage points more likely to receive no occupational therapy, and almost 10.3 percentage points more likely to receive no physical therapy in the school ($p<0.01$). The reverse pattern holds true for the regular receipt of these therapies. FFS enrollees are 5.3 percentage points less likely to receive frequent occupational therapy and 6.2 percentage points less likely to receive frequent physical therapy from the school system relative to those in managed care ($p<0.01$).

DISCUSSION

CSHCN tend to be more frequent users and require a wider array of health care services compared with non-disabled children. This explains in part why only a handful of State Medicaid Programs have implemented a managed care option with some form of capitation for CSHCN. While initiatives vary in program design, one common feature is the availability of case management and care coordination services. Care coordination, when administered correctly, has the potential to improve access and receipt of services for

Table 5

Marginal Impacts of Plan Choice on Frequency of Use of Therapeutic Services at School

Dependent Variable	With Selectivity Correction	Without Selectivity Correction
Speech Therapy		
Non-User	5.57*	4.84
Infrequent User	0.28	0.25
Regular User	-0.16	-0.14
Frequent User	-5.68*	-4.95
Occupational Therapy		
Non-User	7.75**	6.87*
Infrequent User	-0.23*	-0.20*
Regular User	-2.25**	-1.98*
Frequent User	-5.27**	-4.69**
Physical Therapy		
Non-User	10.25***	9.71***
Infrequent User	-0.64***	-0.60**
Regular User	-3.38***	-3.19***
Frequent User	-6.24***	-5.92***

*$p<0.10$.

**$p<0.05$.

***$p<0.01$.

SOURCE: Schuster, C.R., The RAND Corporation, Mitchell, J.M., Georgetown University, and Gaskin, D.J., the University of Maryland, 2007.

this population. Although State Medicaid Program officials have acknowledged the importance of care coordination for CSHCN, little research has examined whether Medicaid MCPs that incorporate care coordination services for special needs children are effective.

We addressed this gap in knowledge by examining the effects of enrollment in a partially capitated plan versus the FFS system on the use of therapeutic services among SSI-eligible children with disabilities enrolled in the District of Columbia Medicaid Program. Care coordination is available to special needs children enrolled in the partially capitated MCP, whereas under the FFS option this feature is either absent or minimal at best. Thus, the caregiver must navigate and coordinate care for the special needs child enrolled in FFS. Our analyses focused on the use of therapeutic services (speech, occupational, and physical therapy) because a child can obtain these services either at school or from the health care sector.

After controlling for other confounding factors, children enrolled in HSCSN are significantly more likely to obtain occupational and physical therapy at school relative to their FFS counterparts. In contrast, plan choice has no impact on the probability that a special needs child receives each of the types of therapeutic services from the health care sector. The results regarding the frequency of use of each type of therapeutic service tell a similar story. Compared with children enrolled in HSCSN, children enrolled in FFS are significantly more likely to be non-users of speech, occupational, and physical therapy rendered at school. Conversely, children enrolled in FFS are significantly less likely to be either regular or frequent users of each type of therapy relative to their counterparts enrolled in HSCSN. We attribute much of these disparities in use that exist between FFS and HSCSN enrollees to the case management and coordination services that are available under the partially capitated MCP. The case manager is responsible for assessing the health care needs of each child, developing an appropriate plan of care, and coordinating care across multiple health care providers. The findings point to the benefits of having a single plan that is responsible for administering the gamut of services

available to special needs children. We suspect that the results would differ if the managed care option included multiple, separate plans.

While these findings suggest that case management and coordination are beneficial to children with disabilities, the study has some limitations. First, the analyses are based on SSI-eligible children with disabilities who qualify for the District of Columbia Medicaid Program. Nearly all Medicaid enrollees in the District of Columbia are Black. The results may differ for other racial/ethnic groups and children who reside in non-urban areas. Second, we do not have sufficient data on each child's health status to ascertain the appropriate levels of services that would be required in order to meet their health care needs nor can we link use of services to clinical outcomes. Finally, we are not able to comment on whether the care coordination efforts available under the MCP are cost effective. We plan to address this issue in future research by analyzing 5 years of Medicaid paid claims for services rendered to FFS and HSCSN participants. Nevertheless, considering the paucity of research that exists on Medicaid MCPs that feature care coordination, our findings have important implications for the design of State Medicaid Programs. Medicaid MCPs should consider the use of ongoing case management to facilitate use of school-based services among special needs children. Although we cannot state definitively that the minimal use of school-based services by FFS enrollees represents unmet need, the absence of selection due to unobservables suggests that unmeasured clinical factors are not driving the differences in service use that exist between FFS and HSCSN participants. For special needs and non-disabled children, unmet need for necessary health care services could be significantly reduced if Medicaid MCPs fostered the use of both therapeutic and other medical services at school.

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