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Distance Analysis to Medicaid Pediatric Subspecialty Providers

Comparison by type of Medicaid plan -
Phase I Preliminary Study Results

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BACKGROUND

This is the second report in a series examining access to care within the SC Medicaid Managed Care Program. Each report investigates geographic proximity to a different Medicaid provider within the health plan network. Geographic proximity to health care providers is an important component of access to health care services. The Balanced Budget Act of 1997 (BBA) gave states new authority to require certain Medicaid beneficiaries to enroll in managed care plans and also required the establishment of consumer protections for Medicaid managed care enrollees in areas such as access to and quality of care (Pub. Law. No. 105-33, § 4701, 111 Stat. 251, 489; § 4705(a), 111 Stat. at 498). BBA requires safeguards to ensure enrollees have access to care including requiring plans to maintain provider networks that provide enrollees with sufficient geographic access to providers. State Medicaid programs set geographic access standards within their managed care programs. These State standards ensure that enrollees in managed care plans can physically access services as required by policy or indicated by the MCO and approved by SC DHHS. This report explores geographical access for Medicaid children with special health care needs by examining “optimal” access to care distance for Medicaid recipients needing Pediatric Subspecialty Providers.

Study Population

In 2006, the agency adopted an algorithm to identify special needs populations enrolled in a managed care health plan. The study population was children enrolled in fiscal year 2008 with a managed care health plan and identified using this algorithm. This algorithm is applied to twelve months of claims data for Identifying children with special health care needs(CSHCN) using the following criteria:

- a.) **Diagnosis Codes.** Qualifying diagnosis codes are those developed by the Foundation for Accountability (FACCT), considered the industry standard codes by NCQA for its HEDIS Measure for CSHCN.
- b.) **High Service Use Procedure Codes.** Examples of services include adaptive equipment (orthotics, hearing aids, and speech equipment), disposable medical supplies, durable

medical equipment, home nursing, hospice services, nutritional supplements, OT, PT, skilled nursing, and speech therapy.

- c.) **High Cost.** This category includes children whose annual costs are in the top 1% and 5% of all child enrollees in the Medicaid program identified for inclusion as CSHCN.
- d.) **Hospitalization.** This category consists of those children with 30 or more days of inpatient hospital stays.
- e.) **Medicaid Qualifying Category.** Children with a qualifying disability category fall into this category and are identified as CSHCN.

CSHCN have differing levels of severity and complexity in their medical and other service needs. This administrative algorithm stratifies the population by the number of indicators met per member in one of three categories:

- Level 1 - Low need: children with one indicator
- Level 2 - Medium need: children with two indicators
- Level 3 - High need: children with three or more indicators.

Thirteen thousand and seven hundred and thirty nine (13,739) children enrolled with a Medicaid managed health care plan classified as CSHCN form the study population. A stratified random sample of twenty percent of this population is spatially coded for analysis.

Study Approach

The ESRI ArcView extension, Shortest Network Paths, was used to calculate the shortest distance on the South Carolina road network (including streets, state and U.S. highways, and Interstate highways) between study population residences and the nearest children's hospital; and pediatric subspecialty provider. These computationally intensive spatial analyses represent an alternative calculation method to measuring trip-to-provider length using a straight line or "as-the-crow-flies" method. The analyses create point-to-point travel distances representing Medicaid recipient's likely path of travel to providers, instead of generalized straight line or zone-based distance estimates. The analyses can also be used to estimate travel-to-provider time. Using this approach, this study will estimate travel distance to MCO network identified Pediatric subspecialists and Pediatric Children's Hospitals. Phase 1 of the study limits the

analysis to health plans with 11 months of complete enrollment data. *Phase One Study Approach.* Medicaid Pediatric subspecialists and CSHCN with claims for SFY08 in Medicaid Managed Care were geocoded (spatially located) using MapInfo MapMarker Plus. This geocoding software assigns geographic coordinates (latitude-longitude) to street addresses, as well as other points and features. Based on these geographic coordinates, the features are mapped and entered into a Geographic Information System (GIS) to run the network path analysis between recipients and providers. The same approach is used to locate spatially the four Children’s Hospital providers and Medicaid CSHCN recipients to run the network path analysis between recipients and providers in managed care health plans.

Geographical Location of Children with Special Health Care Needs

Geographic barriers play a critical role for residents of rural areas. Distances to services combined with lack of public transit and a decreased percentage of residents who own or have access to a car increase transportation barriers compared to urban residents. For residents who live great distances from services *and* have no access to transportation, obtaining health care becomes that much more difficult. These concerns take on a greater urgency for children with special health care needs and their families. Children with disabilities require greater access to hospitals and specialists to meet their health care needs (USDHHS, 2005)¹. Table 1 provides a breakdown of the percentage of children with special health care needs that reside in rural zip codes by managed care health plan.

Table 1: Percentage of Children with Special Health Care Needs in Medicaid Managed Care Recipients Residing in Rural ZCTAs by Managed Care Plan, FY 2008

	N	Rural	% Rural
Absolute Total Care	1,042	359	34.5
First Choice	7,884	2,234	28.3
SC Solutions	3,683	1,655	44.9
Unison	1,130	375	33.2
Total	13,739	4623	33.6

¹ U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau. The National Survey of Children’s Health 2003. Rockville, Maryland: U.S. Department of Health and Human Services, 2005

Table 1 illustrates that approximately thirty-four percent of children with special health care needs enrolled in Medicaid managed care reside in rural areas. Among the health plans, forty-five percent of children with special health care need enrolled with SC Solutions reside in rural areas. Conversely, only twenty-eight percent of the children with special health care needs enrolled with First Choice reside in rural areas. Absolute Total Care and Unison are within the average range of children residing in rural areas with special health care needs.

Network Distance Analysis

Federal regulations require states, through their contracts, to ensure that each MCO has a contracted provider network that is sufficient to provide access to all services covered under the state's plan. When developing its network, the plan must consider the following:

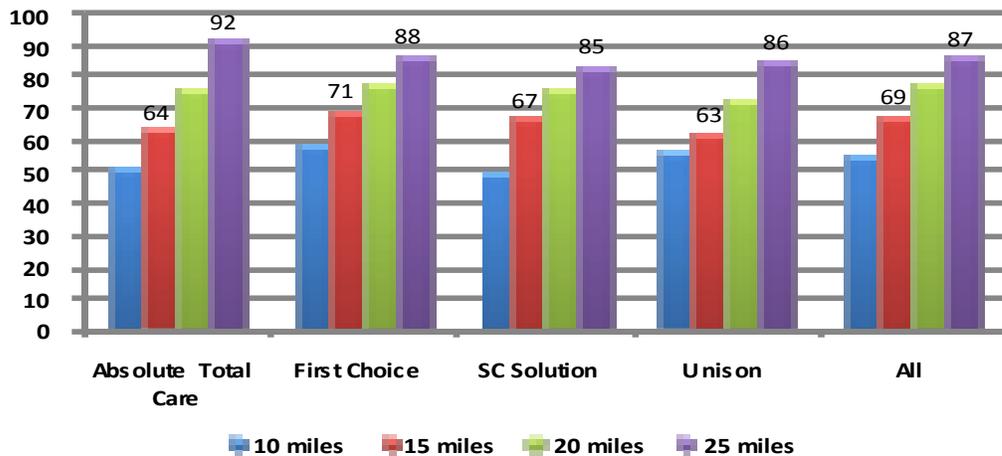
1. anticipated Medicaid enrollment;
2. expected service utilization based on the Medicaid population's characteristics and health care needs;
3. the number and types of providers needed to provide contracted Medicaid services;
4. the number of network providers not accepting new Medicaid patients; and
5. the geographic location of providers and Medicaid enrollees, considering distance, travel time, transportation, and disability access (42 CFR § 438. 206).

South Carolina has set this geographic access as within 25 miles of primary care providers. In conducting a network analysis, the next section of the report explores "optimal" access to care distance for Medicaid recipient needing Pediatric Subspecialty providers through a network analysis of study population by health regions. See Appendix A – for study definitions.

Figure 1 provides a summary of all Medicaid recipients within 25 or less miles of Pediatric Subspecialty providers. ***It highlights that at minimum, eighty-seven percent of Medicaid CSHCN in fiscal year 2008 enrolled in managed care have access to a Pediatric Subspecialty Care provider within 25 miles of their home.*** The data differentiates the findings by health plan. Geographic access to pediatric subspecialty care providers by CSHCN enrolled with a managed care plan did not vary substantially by plan. This is a significant finding given the number of children with special health care needs that reside in rural areas by plan. In

other words, some health care plans have a proportionally higher number of enrollees residing in rural zip code areas with paid claims associated with pediatric subspecialty. In Phase 2, the analysis will document access by recipient and neighborhood characteristics by plan compared to a fee-for-service sample of CSHCN.

Figure1: Percent of all Medicaid Recipients within 25 miles of a Pediatric Subspecialty Care Provider



Analysis of Distance to Children’s Hospital

As noted, children with disabilities require greater access to hospitals and specialists to meet their health care needs (USDHHS, 2005)². To have a better understanding of access to the four children’s hospitals, we examined the relationship between Medicaid recipients and the children’s hospital designated by the managed care health care plan within their approved network.

Table 2 illustrates children with special health care needs within 50 or less miles of a Children’s Hospital provider as a function of the network of the managed care health plans. ***It highlights that approximately seventy-six percent of CSHCN enrolled with a managed care health plan in fiscal year 2008 have access to a network Children’s Hospital within 50 miles of***

² U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau. The National Survey of Children’s Health 2003. Rockville, Maryland: U.S. Department of Health and Human Services, 2005

their home. Consistent with previous findings, health plans with the highest number of children with special health care needs residing in rural areas will have larger distance to travel.

Table 2: Distance to the Nearest Children's Hospital* for Children with Special Health Care Needs in Medicaid Managed Care, FY2008

	N	Mean (Miles)	Range (Miles)	% Within 10 Miles of Nearest Hospital	% Within 25 Miles of Nearest Hospital	% Within 50 Miles of Nearest Hospital
Absolute Total Care	1,042	40.2	1.2 to 91.5	11.0%	35.9%	60.6%
First Choice	7,884	28.6	0.4 to 101.1	23.3%	47.5%	84.6%
SC Solutions	3,683	42.3	0.6 to 99.8	9.7%	27.5%	56.4%
Unison	1,130	26.1	0.5 to 81.0	25.8%	52.0%	90.4%
All Plans	13,739	32.9	0.4 to 101.1	18.9%	41.6%	75.6%

*Greenville Memorial Medical Center - Greenville
 McLeod Regional Medical Center - Florence
 MUSC Medical Center - Charleston
 Palmetto Health Richlane - Columbia

To test regional access to the Children’s Hospitals, we recalculated the data by health care regions. This analysis would indicate the more logical choice in seeking health care treatment. **Table 3 highlights this analysis indicating that the mean travel distance to Children’s Hospital ranged from a low of twenty-eight miles for children in the Piedmont region to a high of thirty-eight miles in the Pee Dee region.** No differences were found in the Midlands and Low Country with an average travel distance of thirty-five miles to the nearest children’s hospital for each region. **Overall seventy-six percent of all children with special health care needs enrolled in managed care are within 50 miles of a Children’s Hospital of their home.**

Table 3: Distance to the Nearest Children's Hospital* for Children with Special Health Care Needs in Medicaid Managed Care Recipients by Health Region FY2008

Region	N	Mean (Miles)	Range (Miles)	% Within 10 Miles of Nearest Hospital	% Within 25 Miles of Nearest Hospital	% Within 50 Miles of Nearest Hospital
Low Country	2,223	34.8	0.5 to 101.1	22.9%	51.7%	66.9%
Midlands	5,358	34.4	0.5 to 84.0	18.7%	37.8%	73.6%
Pee Dee	2,018	37.6	0.4 to 78.8	5.0%	32.4%	67.7%
Piedmont	4,140	27.7	0.7 to 74.4	20.0%	45.6%	86.8%

Summary of Findings

Using the ESRI ArcView Desktop extension, Shortest Network Paths, as an alternative calculation method to measuring trip length using a straight line or "as-the-crow-flies" method, we found the following:

- Approximately thirty-four percent of children with special health care needs enrolled in Medicaid managed care reside in rural areas of South Carolina.
- Eighty-seven percent of Medicaid CSHCN in fiscal year 2008 enrolled in managed care have access to a Pediatric Subspecialty Care provider within 25 miles of their home.
- The mean travel distance to Children’s Hospital ranged from a low of twenty-eight miles for children in the Piedmont region to a high of thirty-eight miles in the Pee Dee region.
- Seventy-six percent of all children with special health care needs enrolled in managed care are within 50 miles of a Children’s Hospital of their home.

In summary, the network path analysis findings indicates that children with special health care needs enrolled in Medicaid managed care have geographical access to pediatric specialty care and the Children’s Hospitals based on paid claims and the identified network of providers by the health plans. In Phase 2, we will compare these findings with a population of fee-for-service children with special health care needs.

Appendix A

Study Terms and Definitions

I. **Pediatric subspecialty provider:** All providers designated by SCDHHS with a pediatric subspecialty code of AA such as: pediatric allergy, pediatric cardiology, child psychiatry, neonatology, pediatric surgery.

II. **South Carolina Health Regions**

Low Country includes the following counties:

Beaufort
Berkeley
Charleston
Colleton
Dorchester
Georgetown
Hampton
Jasper

Midlands includes the following counties:

Aiken
Allendale
Bamberg
Barnwell
Calhoun
Clarendon
Fairfield
Kershaw
Lancaster
Lee
Lexington
Newberry
Orangeburg
Richland
Sumter
York

Pee Dee includes the following counties:

Chesterfield
Darlington
Dillon
Florence
Horry
Marion
Marlboro

Williamsburg

Piedmont includes the following counties:

Abbeville
Anderson
Cherokee
Chester
Edgefield
Greenville
Greenwood
Laurens
McCormick
Oconee
Pickens
Saluda
Spartanburg
Union

III. Rural/Urban Definitions (RUCA 2006 ZIP Version 2.0)

RUCAs, Rural-Urban Commuting Area Codes, are a new Census tract-based classification scheme that utilizes the standard Bureau of Census Urbanized Area and Urban Cluster definitions in combination with work commuting information to characterize all of the nation's Census tracts regarding their rural and urban status and relationships.

Urban: RUCA Codes 1.0, 1.1, 2.0, 2.1, 3.0, 4.1, 5.1, 7.1, 8.1, 10.1;

Rural: RUCA Codes 4.0, 4.2, 5.0, 5.2, 6.0, 6.1, 7.0, 7.2, 7.3, 7.4, 8.0, 8.2, 8.3, 8.4, 9.0, 9.1, 9.2, 10.0, 10.2, 10.3, 10.4, 10.5, 10.6;

Isolated Rural: RUCA Codes 10.0, 10.2, 10.3, 10.4, 10.5, 10.6.