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A Model to Compare Community-Based and Outpatient Settings for Pediatric Rehabilitation: An Example from South Carolina

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A MODEL TO COMPARE COMMUNITY-BASED AND OUTPATIENT SETTINGS FOR PEDIATRIC REHABILITATION: AN EXAMPLE FROM SOUTH CAROLINA

BY

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A doctoral project submitted to the faculty of the Medical University of
South Carolina in partial fulfillment of the requirements for the degree
Doctor of Health Administration
in the College of Health Professions

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Abstract of Doctoral Project Report Presented to the
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In Partial Fulfillment of the Requirements for the
Degree of Doctor of Health Administration

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Abstract

Implementation of the Affordable Care Act (ACA) has changed the dynamics of how health care is delivered throughout the United States. The purpose of this study was to develop a cost model as a tool that may be customized to calculate costs and compare community-based and outpatient settings for pediatric rehabilitation in South Carolina. Community-based services, in contrast to the outpatient rehabilitation setting has raised questions among rehabilitation professionals and payers of whether outpatient services in contrast to community-based services are more cost-effective, or at least cost neutral. The use of a cost model is important to identify cost-comparisons of community-based versus the outpatient clinic and the reality of delivering rehabilitation services to children while staying within the financial limitations allotted for the delivery of care.

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I. INTRODUCTION

Purpose

The objective of this study is to develop a cost model to compare community-based and outpatient settings for pediatric rehabilitation in South Carolina. Legislation or government regulation ensures access to care for individuals with disabilities, resulting in an increasing trend toward providing medical services in the home environment for medically homebound adults and children. The provision of services in the home may be less efficient than provision of services in an outpatient setting, because therapist time is used for travel to the home, and thus one therapist can provide fewer treatments during a work day in a home setting, compared to the potential for higher productivity in an outpatient therapy clinic. Children may receive medical services in the community setting even if the child is not medically homebound, because the home or community setting is considered the natural environment for the child. This growing trend of treatment in the community-based environment, in contrast to the outpatient rehabilitation environment, has raised questions among rehabilitation professionals and payers of whether community-based services are more cost-effective, or at least cost neutral in comparison to the outpatient clinic for rehabilitation services.

The issues raised include the assumptions that community-based visits increase compliance with appointments since the services would come to the child. However, some argue that since not all children are homebound there may be an increase of noncompliance with keeping community-based visits. Also, the outpatient clinic is equipped with necessary treatment equipment. The environment may be controlled by the therapist; prior to and during the treatment session. The community-based environment may include uncontrollable distractions that affect billable treatment time. Thus, issues raised include both effectiveness and efficiency of delivery of care.

Cost controls, as part of the implementation of the Affordable Care Act (ACA), may be expected to increase the number of medical services offered in the home. Thus, we need to identify the cost-comparisons of community-based versus outpatient clinic and the reality of delivering rehabilitation services to children while staying within the financial limitations allotted for the delivery of care.

Research Question

What are the factors that must be evaluated by rehabilitation organizations when the provision of cost of services for community-based pediatric rehabilitation and outpatient-based services are considered?

Population

The population addressed in this cost model included children birth to 18 years of age. This population was eligible, through physician referral, for participation in therapeutic services provided by an occupational therapist, physical therapist or speech therapist.

Delivery of service for therapeutic intervention was provided to children in either an outpatient rehabilitation setting or a community-based setting such as the home, preschool or daycare.

Delimitations

The time of the development of the cost model was from August of 2014 to February 2015. The location of the development of cost model reflects information gathered throughout South Carolina. Selected aspects and criteria of the development of the cost model included common reimbursement resources for pediatric rehabilitation that included Medicaid, Babynet, TriCare, Private Insurance and Self-Pay. The variable, fixed costs and revenue were estimated based on common CPT codes frequently used with billing for rehabilitation services with the pediatric population in an outpatient and community-based setting.

Definition of Terms

A cost model is a tool that helps business owners and managers determine the cost of certain activities or processes. A community-based pediatric rehabilitation setting is the environment that a child receives occupational, physical or speech therapy. Most often referred to as the natural environment, home or preschool setting. An outpatient pediatric rehabilitation setting is the environment that a child receives occupational, physical or speech therapy, where the caregiver takes the child to the clinic setting to receive services.

Methods

We used an examination of published studies, financial management texts, government reimbursement regulations and consultations with experienced rehabilitation professionals to develop a set of questions that should be considered when issues of financial viability of community based services for children considered. We organized these questions into 1) check list of points that administrators should consider; and 2) a spread sheet model implemented in Excel that can be used for "scenario analysis" performed by managers in specific settings. We approached the study in this manner because examples of literature and research studies have identified various aspects involved in providing services to the pediatric population in a community-based setting and also in an outpatient setting, but no actual examples of cost models could be identified. Various cost models have been developed for cost comparisons within the medical model for durable medical equipment and reimbursement for medical services for the inpatient and outpatient setting. However, after reviewing available literature, no template of a cost model was found that could be utilized as a tool to compare and contrast the dimensions involved in the costs and reimbursements for pediatric rehabilitation settings.

The result of this study is the development of a management tool. This cost model was developed using an Excel spreadsheet template outlining the estimated variable costs, fixed costs and revenue associated with operating an outpatient clinic in comparison to providing services within the community.

The remainder of the study is organized into five chapters and references in the following manner. Chapter 2 presents a review of the related literature and evolving trends in the practices and procedures used for reimbursement of pediatric rehabilitation and the settings that children receive these services. Chapter 3 delineates the design of the cost models, methodology, procedures followed for development of the cost models, analysis of the cost models and limitations. Discussion of the findings, conclusions, recommendations are presented in Chapter 4. Chapter 5 contains the summary, conclusions, and recommendations of the study and areas of further study. The study concludes with references.

II. REVIEW OF LITERATURE

The environment plays a very influential role in the lives of children, including rehabilitation settings, where the physical environment can promote or hinder participation in therapy sessions. It is critical to consider the overall impact that the environment may have on clients and caregivers (Isbell, 2014).

The American Occupational Therapy Association (AOTA), describes that understanding the environment and context provides therapy practitioners insight into influences of engagement. The physical environment may refer to the natural and structural surroundings in which daily occupations occur. The physical environment may either support or present barriers to participation in meaningful occupations. Conversely, environments may provide support and resources for delivery of care. The social environment may include the relationship with and expectations of persons, groups and populations with whom patients have contact. The social environment may also include the availability and expectations of significant individuals to the patients. These individuals may include spouse, friends, and caregivers. The dynamics of these relationships with individuals, groups, or populations also affect the role of the patient within his environment. A patient who has difficulty performing effectively in one environment or context may be successful when the environment or context is changed. Occupational therapy practitioners recognize that for patients to truly achieve an existence of full participation, meaning and purpose, they must not only function, but also engage comfortably with their world, that may be a unique combination of contexts and environments (http://www.aota.org, 2014).

The American Physical Therapy Association (APTA) describes the natural environment as important for support of families and promotes their child's development, learning and participation in life within the community. The natural environment enables families and therapists to identify barriers and constraints to skill acquisition in the typical setting in which the child will be using or executing this skill (http://www.apta.org, 2014).

The American Speech and Hearing Association, (ASHA) describes the natural environments as settings that are typical or natural for a similar aged infant or toddler without a disability who may be part of the home or community setting (http://www.asha.org, 2014).

This growing trend of treatment in the home environment, in contrast to the outpatient rehabilitation environment, has raised questions among payer sources, rehabilitation professionals and caregivers regarding the value of community-based versus outpatient rehabilitation services. This trend has also raised awareness among therapists related to caregiver's perceptions of the environment and the effectiveness of treatment.

From the perspective of some rehabilitation professionals, community-based service is considered more cost-effective and is assumed to increase chances of compliance with appointments since the services would come to the child's natural environment. Furthermore, since the home, daycare and preschool are the natural environment for the child and caregiver, evaluation of the community-based setting may provide a more realistic assessment of the dynamics between the child and caregiver; resulting in opportunities for more accurate education.

Historically, most patients received treatment in their homes unless they required hospital care. As services became more resource intensive and specialized we observed a shift to the outpatient setting for reasons of efficiency. At one time, a child was required to be medically homebound to receive home health services. However, through public law, this requirement has changed. Because the home is considered the natural environment for the child, children may receive medical services in the home. Community settings present life both as simple and complex, creating circumstances that are not always replicable in the clinical setting. These community settings, provided as early intervention, school-based, and transitional services, require that therapy professionals act in accordance with the knowledge, principles, and philosophies of their own profession (Dunn, 2011).

Legal Requirements for Services

The Rehabilitation Act of 1973, Section 504, specifically states, "no otherwise qualified handicapped individual in the United States, as defined in section 7(6), shall, solely by reason of his handicap, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance" (http://www.aota.org, 2014).

Congress enacted and President Reagan signed into law on October 8, 1986, P.L. 99-457, the Education of the Handicapped Act Amendments. The most significant changes to Education of Handicapped Act (EHA) or P.L. 94-142 of 1975, was the enactment of the EHA Amendments of 1986 or P.L. 99-457. Implementation of Public Law 94-142 had mandated inclusion of parents in planning and requirements for multidisciplinary cooperation (Gallagher, 1989). The P.L. 99-457 provided a challenge to the field of education for the deaf and to early childhood educators. Assumptions were re-examined about the range of services, the professionals providing those services, and the role of families who have children with hearing impairments (Dunn, 2011).

The EHA Amendments, of 1986 or P. L. 99-457, challenged healthcare professionals and parents to change past participation beliefs (Bazyk, 1989). The amendments reauthorized the EHA and included a rigorous national agenda pertaining to more and better services to young special needs children and their families. This agenda was fueled by recognition of the needs and competence of infants, the importance of early life experiences and by the documentation of the benefits of early intervention and preschool services. Public Law 99-457 recognized the unique role of families in the development of handicapped children.

Public Law 99-457 added an eighth subpart to the EHA by establishing Part H. Part H of these amendments establishes national guidelines for family-centered early intervention programs. Early intervention in childhood consists of any sustained and systematic effort to assist young disabled, and developmentally vulnerable children from birth to age three, and their families. Early intervention incorporates additional services and service providers that bridge several disciplines and orientations (Meisels, 1989).

Early childhood intervention services consist of multidisciplinary programs for children ages birth to three years old. These children may be disabled and developmentally vulnerable. These programs are intended to enhance development, minimize potential developmental delays, remediate existing problems, prevent deterioration or acquisition of additional or more severe handicapping conditions, and improve function within the family. These goals are to provide developmental and therapeutic services to children and support caregiver education (Meisels, 1989).

Early intervention programs are awarded grants to develop and expand comprehensive services for infants and toddlers and their families in each state (Hanft, 1988). Public Law 99-457 encouraged states to address four major needs: 1) to enhance the infant’s development and minimize delay 2) to be cost-effective by reducing future educational costs 3) to establish community-based programs, reducing the likelihood of institutionalization; and 4) to support families in their quest to meet their children’s special needs (Hanft, 1988).

The Individuals with Disabilities Education Act (IDEA) (P. L. 105-17) of 1997 is a federal law that governs how states and public agencies provide early intervention, special education and related services to children with disabilities. It addresses the educational needs of children with disabilities from birth to age 21 (idea.ed.gov, 2014). IDEA and the predecessor statute, EHA of 1975 (P. L. 94-142), have had the greatest impact on the practice of therapeutic intervention with children 21 years of age or younger (Dunn, 2011). IDEA was reauthorized through The Individuals with Disabilities Education Act Amendment of 2004 with the intent to coordinate with services provided through the No Child Left Behind Act (NCLB) of 2001.

The IDEA, Part C, proclaims a family-centered model that guides intervention. Interventions focus on the individual family service plan (IFSP), described as a family-directed assessment of the resources, priorities, and concerns of the family and the identification of the supports and services necessary to enhance the family's capacity to meet the developmental needs of the infant or toddler (Fingerhut, Piro, Sutton, Campbell, Lewis, Lawji & Martinez, 2013).

The struggle of America's children without health insurance and state concerns of former welfare recipients returning to welfare, led to a proposal for what became known State's Children's Health Insurance Program (SCHIP), by Senators Orrin Hatch (R-UT) and Edward Kennedy (D-MA) (Feldstein, 2006). The proposal was for a block grant program allowing the states to extend health insurance to an estimated 5 million children. An increased cigarette tax became the source of funding for this grant program. Low-income children, whose families are not poor enough to qualify for Medicaid, would receive funds for coverage by the States. As part of this grant, the federal government would pay 50% of the cost for the wealthiest states and up to 80% for the poorest states. The program was enacted as part o the Balance Budget Act of 1997 (Feldstein, 2006).

President Clinton and the Democrats in Congress, wanted legislation to specify a set of comprehensive benefits that the states had to offer. Governors and Republicans wanted to give the states flexibility in the design of benefits, claiming that a set of benefits too comprehensive would increase the program's cost and reduce the number of children a state could cover. The resulting compromise that gave states a block grant, allowed some flexibility in the benefits offered. States could choose from a list of possible benefit packages, determine the eligibility of children, and decide how the money was to be spent. States had the option to use traditional Medicaid, contract with private insurers to provide benefits or subsidize the employee's share of employer-paid health insurance. This process allowed the government to act as a contractor with private managed care plans rather than as a direct payer to individual (Feldstein, 2006).

The Balanced Budget Act of 1997 (P. L. 105-33), allowed provisions for the establishment of the SCHIP. The P.L. 105-33 provided states with $24 billion in federal funds from 1998-2002 to increase health insurance for children (Longest, 2010). In 2003, the SCHIP was amended as the SCHIP Allotments Extension that amended Title XXI (SCHIP) of the Social Security Act (Longest, 2010). The American Academy of Pediatrics Committee on Child Health Financing has explained the importance of the implementation of SCHIP. The effort of implementation includes efforts to maintain continuous health care coverage, streamline the health care process between government-subsidized health care programs, such as SCHIP and Medicaid, so that families moving between programs can maintain continuity with their provider (Kempe et al., 2004).

Medicaid

Medicaid, the largest federal program providing funding for services to individuals with developmental disabilities, was passed as part of Title XIX of the Social Security Act. Within the past ten years, Medicaid and SCHIP were identified as the primary payer source for more than a quarter of all children in the United States (Viver, 2005). The passage of Medicaid allows the federal government to provide partial funds to the states. These funds provide for medical, social, psychological, and health services to families and individuals meeting income eligibility criteria. The Early and Periodic

Screening Diagnosis, and Treatment program (EPSDT) provides for medical, dental, vision, and health intervention. The health intervention includes therapy services programs, schools, clinics and hospitals (Dunn, 2011). The most recent revision, as of March 14, 2013, requires a permit or consent form from the parents to access Medicaid benefits. Medicaid may be accessed from a school district and/or early intervention services under IDEA 2004 (http://www.wrightslaw.com).

Many early intervention and school programs access Medicaid funds for related services to help supplement program costs. Therapists in these settings are required to complete Medicaid forms and submit documentation in order to receive these funds. The therapists' decisions about which children require therapy services and how those services will be implemented are based on the collective knowledge of the team, rather than on a child's Medicaid eligibility or possibility of additional funds (Dunn, 2011).

Medicaid Limitations

Three fourths of all pediatric home health expenditures are paid for by Medicaid. Understanding the limitations of Medicaid's home health care policies is important. Unlike private insurance, Medicaid provides a comprehensive home health benefit for children that include part-time or intermittent services, with a state's options for physical, occupational and speech therapy. Although states are able to limit the amount, duration and scope of coverage of home health services for adults, these limits, because of requirements in the Early Periodic Screening, Diagnostic and Treatment (EPSDT) service cannot apply to children, provided the services are determined by the state to be medically necessary. States that want to enhance their home health benefit package or increase eligibility to children from higher-income families can seek a home and community-based waiver. As of 2006, fifty states had implemented these waivers. States also have had the option to extend regular Medicaid eligibility to children who would have been eligible for Supplemental Security Income and Medicaid if they received their care in a nursing home or hospital under the "Kate Beckett" or Tax Equity and Fiscal

Responsibility Act (TEFRA) eligibility option ("Financing of Pediatrics", 2006). The main financing difficulty pertains to low reimbursement for services from Medicaid. Specifically, Medicaid agencies have been criticized for paying home health agencies at rates that are insufficient to provide beneficiaries with access to home health services. In many states, families complain that they are unable to secure nurses all hours to be medically necessary. Home health agencies also report difficulty recruiting and retaining qualified nurses because of low payment rates, payment delays and restrictive policies regarding overtime. Due to these financial limitations, many home health agencies do not accept Medicaid referrals. "Additional complaints about pediatric Medicaid concern restrictive interpretations of medical necessity and benefit definitions that follow adult home health care standard. Additional complaints include excessive paperwork and time required for authorization, retrospective denials and long waits to gain eligibility for home, community-based and TEFRA waivers" ("Financing of Pediatrics", 2006).

Health Care Among States

Health care policy varies among states. Variations in child health care policy, particularly for public insurance programs, are largely determined at the state level including income eligibility, the extent of benefits for Medicaid recipients, and administration of the SCHIP. Within federal guidelines, states have flexibility in the implementation of Medicaid, including deciding on income eligibility, extent of coverage of benefits, and service payment levels. States may independently structure SCHIP as an expansion of Medicaid or increase their flexibility in the program for children with different eligibility and benefit structure (Gnanasekaran et al., 2007).

In addition to legislation that expanded services to children, in 1999 the ruling of the Supreme Court case of Olmstead v. L.C. required states to eliminate unnecessary segregation of individuals with disabilities and to ensure that those with disabilities receive services in the most integrated setting appropriate to their needs (http://www.ada.gov, 2014). State and local government officials, disability rights groups and attorneys throughout the nation recently collaborated with representatives of the Department of Health and Human Services to develop an effective nationwide program to assist in enforcing the integration mandate (http://www.ada.gov, 2014).

What is Health Insurance Coverage?

The Current Population Survey Annual Social and Economic Classifies private health insurance as a plan provided through an employer or a union, or purchased by an individual from a private company. Government health insurance includes programs such as Medicare, Medicaid, the State Children's Health Insurance Program (SCHIP), individual state health plans, TRICARE, Civilian Health and Medical Program of the Department of Veterans Affairs (CHAMPVA), as well as care provided by the Department of Veterans Affairs and the military. In the CPS ASEC, people were considered insured if they were covered by any type of health insurance for part or all of the previous calendar year. They are considered uninsured if, for the entire year, they were not covered by any type of health insurance. Additionally, people were considered uninsured if they only had coverage through the Indian Health Service (IHS) (http://www.census.gov).

The Uninsured and Underinsured

Kogan, Newacheck, Honberg & Strickland (2005) explain that health insurance is treated as a dichotomy: an individual is either insured or uninsured. Underinsurance has been defined subjectively by out-of-pocket health care costs that exceed what families consider appropriate or burdensome. Additional definitions define underinsurance as out-of-pocket health care expenses that exceed a certain dollar threshold or percentage of family income (Kogan et al., 2005).

Kogan's et al. (2005), study defined and documented the extent of underinsurance among Children with Special Health Care Needs (CSHCN) and to describe its impact on access, utilization, and financial burden on the family. Past studies identified that although CSHCN make-up nearly 15% of the child population, they account for nearly half of all childrens' medical expenses. Numerous problems have also been identified with private and public coverage that included discontinuation of coverage, and inability to obtain referrals to specialists due to insurance plan limitations (Kogan et al., 2005).

Researchers have also identified that underinsurance may be of particular concern for CSHCN based on higher rates of supplemental insurance purchased by families for this population and inadequate depth of covered services for privately insured CSHCN (Kogan et al., 2005). Underinsurance may actually be a much larger problem than absence of insurance (Kogan et al., 2005).

Access to Health Care for Children with Special Health Care Needs

The American Academy of Pediatrics, in 1967, originated the term medical home as a concept for improving the care for CSHCN. A medical home involves care that is accessible, family-centered, coordinated, comprehensive, continuous, compassionate, and culturally effective (Porterfield, 2011). Porterfield (2011) determined that families with CSHCN incurred lower out-of-pocket medical costs when their child received health care with coordination of the medical home in place (Porterfield, 2011).

The National Survey of Children with Special Health Care Needs provides baseline data on whether CSHCN have adequate health insurance. For more than a decade, the United States Maternal and Child Health Bureau (MCHB) has played a major role in promoting adequate health insurance for all CSHCN and their families (Honberg, McPherson, Strickland, Gage & Newacheck, 2005). Beginning in 1998, A National Goal: Building Service Delivery Systems for Children With Special Health Needs and Their Families laid the groundwork for legislative change. This legislative change established the authority of the MCHB to facilitate a community-based system of services for CSHCN and their families. The set of core outcomes adopted by the MCHB and later reiterated in President George W. Bush's New Freedom Initiative in 2001 included:
1) families and providers work together as partners at all levels of decision-making;
2) children have access to ongoing comprehensive health care through a medical home;

3) children and families have adequate insurance coverage for the services they require; 4) children are screened early and continuously for special health care needs and receive the early intervention services that they require; and 5) community services are organized so that families can use them easily (Honberg et al., 2005).

Almee & Newacheck, (2006) hypothesized that improved access to health care should translate to improvements in health outcomes and functional ability over the long-term. Past reports from the 2001 National Survey of CSHCN found greater difficulty with community-based services, more frequent delays in obtaining care and greater prevalence of unmet needs among those with inadequate coverage (Almee & Newacheck, 2006). Health outcomes, due to improved access to health care included an increase in school attendance, future employment and overall productivity. Health insurance improves access to care and this study identified that further research would be beneficial to differentiate between public versus private insurance (Almee & Newacheck, 2006).

The Affordable Care Act

On February 4, 2009, President Obama signed the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009, amending Title XXI of the Social Security Act. This amendment reauthorized SCHIP through 2013 at increased levels of funding by providing an additional $35 billion over five years. The Act lowers the rate of uninsured low-income children by providing states with incentives and tools for outreach and enrollment (Longest, 2010). This legislation marked a new era in children's coverage by providing states with significant new funding, options for programs and various new incentives for covering children through Medicaid. One of the goals of the legislation is to support states in developing efficient and effective strategies, to identify, enroll and retain health coverage for uninsured children who are eligible for Medicaid or CHIPRA, but are not currently enrolled. The re-authorization act also provides flexibility to states to expand health care coverage to children who need it and the Secretary of Health and Human Services (HHS) is responsible for developing standards by which states can measure the quality of the care that children are receiving (http://www.cms.gov, 2014).

The Affordable Care Act (ACA), extends SCHIP through most of 2015, for those participating states. Beginning October 1, 2015, the enhanced SCHIP federal matching rate will increase 23%, bringing the average federal matching rate for SCHIP to 93%. The enhanced federal matching rate continues until September 30, 2019. States can operate the SCHIP as a program separate from Medicaid, as an expansion of the Medicaid program or a combination of both program types (http://www.medicaid.gov).

Participation and Utilization of Health Care Services

A study completed by Kempe et al., (2004), found that for participation in health care programs, most states have an active redetermination and re-enrollment process, with a few having a passive renewal process in which families do not have to submit new eligibility information unless their circumstances have changed. Challenges that some families found were the unintentional periods of disenrollment and also unawareness of needing to re-enroll. Costly administrative changes were identified that will prevent unintentional disenrollment and re-enrollment in various states' for SCHIP.

An additional study, by Kempe et al., (2005) identified the changes in access, utilization and quality of care after enrollment into SCHIP. The results showed a corresponding increase in the percentage of all enrolled children who received preventative health care services and higher utilization of office-based acute visits in the subgroup that did not have a provider before enrollment (Kempe, 2005).

CSHCNs differ from children without special needs in that they are likely to affect insurance coverage and access to care. CSHCN tend to be more economically disadvantaged. A higher percentage of CSHCN live in single-parent families, live with unemployed parents, or with a parent in fair or poor health or disability. They often live in poverty and receive cash assistance through either Social Security Income or Temporary Assistance for Needy Families. These factors increase the likelihood that a child would be eligible for and enrolled in public insurance. CSHCN are also less likely, than children without special needs, to be Hispanic, noncitizen, or have immigrant parents. These characteristics are usually associated with low rates of private insurance and restricted public insurance eligibility for immigrants (Davidoff, 2004). Past studies of health care utilization of children with chronic illnesses found that a higher percentage of children enrolled in Medicaid managed care (5.3%) have chronic illnesses compared with children enrolled in employer-insured managed care programs (3.2%); 2) on average, children with chronic health conditions who are enrolled in Medicaid managed care use more services than children with similar medical conditions than those who are insured through employers; and 3) utilization of services are generally higher for children enrolled in Medicaid managed care than for children enrolled in employer-based managed care. The differences in rates vary by service, diagnosis and Medicaid plan (Shatin, Levin, Ireys, & Haller, 1998).

Among insured CSHCNs, there is a likelihood of receiving timely ambulatory care and higher overall utilization of health care services. There is little difference in utilization rates between CSHCN with private and public coverage. Kuhlthau et al, (2005) found no differences in subspecialty service use between children with different types of insurance. In contrast, payment mechanism (fee-for-serviced or managed care) has been shown to affect utilization. Among publicly insured children with chronic conditions, managed care is associated with reduced use of inpatient care and outpatient hospital based care (Newacheck, Houtrow, Romm, Kuhlthau, Bloom, Cleave & Perrin, 2009). Several studies have demonstrated that families of insured CSHCN are better protected against burdensome out-of-pocket health care expenses than their uninsured counterparts. Type of coverage is also associated with expenditures; the families of insured CSHCN have higher total expenditures and spend more out-of-pocket than publicly insured CSHCN (Newacheck et al., 2009). Overwhelming evidence indicates that CSHCN, with insurance receive better care than uninsured children. CSHCN with insurance have a regular source of care, access to specialists and needs are met and not delayed. Continuity of coverage also affects access to care. Continuously uninsured CSHCN fare worse than those with partial-coverage, who, in turn fare worse than those with full-year coverage. Inadequate coverage is defined as insurance that only sometimes or never covers needed providers and services or pays less than a reasonable share of expenses. Parents of CSHCN with inadequate coverage also have reported increased unmet needs for routine services, delayed or forgone care and difficulty receiving specialty referrals. Children with inadequate health insurance were statistically more likely to have unmet needs for therapy and supportive services than adequately insured CSHCN (Newacheck et al., 2009). The impact of the type of insurance on access to health care services is less clear. Studies have failed to show differences in access for publicly and privately sponsored insurance. With the exception of services for mental health, CSHCN with public insurance had better access to most services. A study conducted by Newacheck et al., (2000) found that private insurance was associated with better overall access. According to Newacheck, et al. (2005), recent studies that examined payment mechanisms found more consistent results. Several studies showed that CSHCN enrolled in managed care received better services their fee-for service peers (Newacheck et al., 2005).

From a study conducted in 1996, more than 8% of CSHCN were uninsured for the entire year. For those who were insured in January of 1996, 14% lost their coverage by December 1996. CSHCN were more likely than other children to be insured (92% vs. 89%), mainly due to their better access to public insurance (35% vs. 23%). Conversely, CSHCN were less likely than other children to stay insured if they were school-aged, non-Hispanic White, from working low-income families or the US Midwest region. Higher parental education improved health insurance enrollment for CSHCN, whereas higher family income or having activity limitations protected them from losing coverage.

Regardless of CSHCN status, being publicly insured was associated with a higher risk of losing coverage for children. Despite increased health care needs, a considerable proportion of CSHCN is unable to access or maintain coverage. Compared to other children, CSHCN are more likely to have coverage but no more likely to stay insured. Improving continuity of coverage for publicly insured children is needed, especially CSHCN who are more likely to have coverage but no more likely to stay insured. Improving continuity of coverage for publicly insured children is needed, especially CSHCN who are more likely to obtain their coverage through public programs (Liu, Zaslavsky, Ganz, Perrin, Gotmaker, McCormick, 2005).

A study, conducted between 2001 and 2004 examined how the growth of health care costs affected financial burden for families of CSHCN between 2001 and 2004 and to determine the extent to which health insurance coverage protected families of CSHCN against financial burden. An upward trend in financial burden for families of CSHCN occurred and was associated with growth of economy-wide health care costs. A multivariate analysis indicated that, given the economy-wide increase in medical costs between 2001-2004, a family with CSHCN was at increased risk in 2004 for having financial burden exceeding 10% of family income. Similar findings were noted for financial burden exceeding 20% of family income. Over 15% of families with public insurance had financial burden exceeding 10% of family income compared with 20% of families of CSHCN had significantly lower likelihood of financial burden of >10% or 20% of family income than privately-insured families of CSHCN (Yu, Dick & Szilagyi, 2008).

Viver (2005), examined a study to understand the differences between children who enrolled in Medicaid or SCHIP in Ohio and those who did not. In the study, 130 families who had eligible children responded to a question as to why they did not attempt to enroll them in Medicaid or SCHIP. The most common reason given by parents was that they were not aware that the child was eligible (49.8%). Additional common reasons given by parents were that there was no perceived need for Medicaid (17.4%) and difficulty with the application (8.1%) (Viver, 2005).

Analysis of child health policy by Gnanasekaran et al. in 2008, identified individual characteristics that may place a child at risk for delayed care. Through this study, it was determined that improving Medicaid eligibility levels improved the process of care for CSHCN.

Kuhlthau, Hill, Fluet, Meara & Yucel (2008), investigated the correlation of use and expenditures for physical, occupational and speech therapies among children in the United States. This study identified that use of therapy services were among those with chronic conditions, functional limitations and/or a history of hospitalizations or injuries. Results from this study indicate that minority children may under use these services. Lack of insurance was not related to reduced utilization. Limited use may be possibly due to alternative access to services or because not all insurers cover therapy. Therapy expenditures account for a high proportion of overall expenditures among the high users of therapy whereas, for the entire child population, therapy expenditures account for a very small part of the overall health expenditures (Kuhlthau, et al., 2008).

The United States Census Bureau data reported in 2008, the uninsured rate among children was at the lowest level since 1987 with 7.3 million children that did not have health insurance coverage that year. Many more children suffered gaps in coverage throughout the year. Most of these children were eligible for Medicaid and CHIPRA but were not enrolled (http://www.cms.gov, 2014). In 2009, the Centers for Medicare and Medicaid Services (CMS), worked closely with states, federal departments and various private and public leaders and organizations interested in children's coverage to implement CHIPRA (http://www.cms.gov, 2014).

The United States Census Bureau for 2013 reported that the overall percentage of children under the age of 19 years without health insurance was 7.6%, the uninsured rate varied by household income, poverty status, race and Hispanic origin. The uninsured rates were 5.4% for non-Hispanic White children, 7.5% for Black children, 8.4% for Asian children and 12.1% for Hispanic children. Among native-born children, 6.9% were uninsured in 2013. The uninsured rate for naturalized children was 10.1%, while the rate for noncitizen children was 28.2% (http:// www.census.gov).

Although improvements have been made in delivery of minority health, racial and ethnic disparities in health status and health care have persisted and in some cases have increased. In comparison with white children, black and Hispanic children are more likely to be uninsured, to experience inadequate access to healthcare and to have a poorer health status (Shone et al., 2003). The study conducted by Shone et al., (2003) provides a baseline measurement that documents whether disparities exist among new SCHIP enrollees that is essential to understand what happens after children enroll in SCHIP.

Private Health Care

Additional healthcare options include consumer-driven healthcare that provides opportunities for coverage with a high-deductible plan with the option for a tax-advantage spending account. This high deductible plan usually offers fewer benefits, higher cost-sharing than conventional health maintenance organizations (HMOs) and preferred provider plans (PPOs). The high-deductible plans offer a strategy for sharing risk and responsibility for health care costs among employers and employees ("High Deductible", 2007). Participation in the high deductible plans includes high financial risks, especially for low to moderate-income families and for families with CSHCN. Families face greater exposure to financial risk with higher deductibles, use of coinsurance versus copays, and higher out-of-pocket maximums ("High Deductible", 2007).

Home Health Services for Children

For the states that are operating non-Medicaid state SCHIP plans, home health coverage is much more generous than private health insurance. Twenty-five percent of the states plans impose visit limitations and co-payments are rarely charged. The extent of home health coverage under employer sponsored health insurance plans is not well known. Past history and a study conducted from 1998-1999, reveal almost all HMO and PPO products in each state covered home health services. However, one third did not cover physical, occupational and speech therapy services. In this study, almost half of the plans imposed visit or monetary limits with most often a cap limitation of $5,000.00. Additionally, condition exclusions were imposed in two thirds of plans, usually for impairments not caused by illness or injury and less often for developmental disabilities and neurologic conditions or mental health disorders ("Financing of Pediatrics", 2006). Children covered in non-group plans rarely qualify for home health coverage. Many of these children's parents seek support from their state's Title V program for children with special needs and depending on the family income and diagnosis of the child, they may be eligible for gap-filling home health services. Past reports indicate that it is not unusual for families with inadequate private insurance coverage to terminate employment to gain Medicaid eligibility for their child. Many private health insurance carriers and managed care plans, especially those with strong management programs, will authorize home health care when it is perceived to be cost-effective alternative to institutionalizations or outpatient treatment ("Financing of Pediatrics", 2006). However, these authorizations are often for less than the services deemed medically necessary by the child's physician and the home health care agency. As with Medicaid, authorization delays and retroactivity denials are common in the private health insurance industry.

Delivery of Health Care Services for CSHCN

Historically, public programs have been a particularly important source of insurance for CSHCN. The supplemental Security Income (SSI) program provides cash assistance to families with children who have severe physical or mental impairments and who meet the income and resource limits required by the program. A National Survey of Children with Special Health Care Needs included the question, "How many CSHCNreceive SSI disability benefits?" (http://www.childhealth.org, 2014). Results found 9.4% of children in South Carolina received SSI disability benefits, compared to 8% of children nationally (http:// www.childhealthdata.org, 2014).

Fox & Newacheck (1990), identified the historical role of private insurance meeting the needs of children with chronic illnesses, particularly those children with long-term limitation of activities. Long-term care benefits traditionally have been defined primarily as institutional care, home health nurse and aide services. As insurers have made changes to contain cost, more comprehensive benefits were adopted through employers' plans. These additional services included in home skilled nursing, home health aide, physical therapy, respiratory therapy and medical social work (Fox & Newacheck, 1990).

Patient characteristics and health care needs were identified for CSHCN enrolled in the SCHIP (Szilagy et al., 2003). CSHCN were more likely than children without special needs to have been insured before SCHIP. It was determined, that a large portion of CSHCN were uninsured for at least 12 months prior to SCHIP, and had substantial unmet health care needs at the time of enrollment. The states identified the unmet need in this study to include New York 56%, Florida 68%, Kansas 24% and Indiana 25% (Szilagyet al., 2003).

As the costs of health care rise, various resources may be explored to deliver quality medical services to patients, while working to maintain or exceed the effectiveness of treatment. There is national and federal interest and support, through public law, for early intervention in the community-based setting. Additionally, as a result of the changes in health care due to the ACA, providers may seek alternative methods to deliver more cost-effective therapy services. Many studies were identified that explore the differences in community-based versus outpatient for treatment of various medical conditions. However, none of these studies identified the cost-comparison conditions, cost-effectiveness and preference of the therapeutic setting.

Current federal policies, including Healthy People 2010 and Maternal and Child Health Bureau (MCHB) Strategic Plan, explicitly focused on improving access to services for CSHCN. The main initiative in this effort was the provision of medical homes for these children. Families of CSHCN rely on therapeutic and supportive services to assist them in caring for children in home and community settings; however if identified needs for therapeutic and supportive services remain unmet, then the health and well-being of children and their families are placed at risk. In the absence of services, CSHCN may experience secondary conditions or disabilities or poor outcomes from medical interventions or may fail to achieve their full functional potential. Children with complex health care needs are more likely to require therapeutic and supportive services and to have unmet service needs than those with less severe conditions. The reasons for unmet service needs are varied but include financial limitations, time conflicts and the accessibility or availability of a needed provider. The cost of care and burden on the family to pay for care rises for children whose limitations of function require the family to seek intensive health, education and community-based services. Third party reimbursement sources frequently impose limitations on the coverage, scope, intensity or duration of therapeutic and supportive services, leaving families to bear the burden of paying out-of-pocket or forgo care (Benedict, 2008).

Recommended Standards of Cost-Containment for Delivery of Health Care, as reported by Weller, Minkovitz, & Anderson (2003), describes 1) cost-containment as essential but must not impair the quality of care delivered. Physicians should play an important role in establishing principles of evidence-based medicine, validating the measurements used, and ensuring quality of care in any cost-containment process; 2) controlling costs should be the combined responsibility of families, clinicians, third-party payers, pharmaceutical companies, medical product/supply manufacturers and other manufacturers, employers, and administrators of health care delivery systems; 3) financial incentives should be used to encourage health care delivery systems to provide medical home for all children and emphasize preventive care, early detection, and a comprehensive diagnosis and treatment, thus promoting quality and efficiency; 4) health care financing should encourage delivery of services in the most medically appropriate and cost-effective settings; 5) health care insurers should recognize the unnecessary extra cost involved with individualized and non-standardized requirements for provider participation. Standardization among programs for administrative efficiency, such as uniform credentialing, claim forms, referral processes, and payment systems will aid in achieving cost effectiveness and; 6) innovative models of health care financing should be carefully evaluated before assuming that they are relevant to the needs of children.

The Community-Based Setting

Past literature has sought to provide a conceptual definition of a family-centered system of services for children and youth with special health care needs. Understanding of the characteristics of community-based system of services, as outline in Title V of the Social Security Act of community-based services includes. The macro level includes agency-level groups may include federal, state and local organizations. Micro level includes families, physicians, other health care providers, local schools, public transportation and social service providers (Perrin et al., 2007).

The community setting is an emerging arena for rehabilitation practitioners to provide services and programs for children. Some of these interventions include universally designed play spaces that all children can use or after school programs that promote physical activity and healthy behaviors to decrease obesity. These initiatives also decrease injuries during play and leisure activities (Fagan, Oss, Cabrera, De La O & Vance, 2008). Among three settings, private clinics, home-based and school-based therapy, practice-setting barriers were different. Impediments for providing home-based practitioners identified budget cuts, high caseloads and changes in eligibility guidelines for enrolling children in early childhood intervention (Fingerhut, et al., 2013).

The home of the pediatric patient is an appropriate and often preferred site for the provision of health care services to address a wide range of conditions. The four most common conditions are cerebral palsy, failure to thrive, developmental delay, and preterm birth account for 15% of the pediatric population (“Financing Pediatrics”, 2006).

Over the past 20 to 30 years, the demand for pediatric in-home services has grown substantially which may be a result of the various factors that include increased survival of preterm infants, trauma patients, and infants or children treated in the Pediatric Intensive Care Unit (PICU), medical and surgical treatment advances, miniaturization and simplification of life-sustaining equipment, family preferences for home versus hospital care and cost-containment pressures to limit or avoid hospital admissions (“Financing Pediatrics”, 2006).

The American Academy of Pediatrics (AAP) recognizes the growing trend to provide health care services for children in their homes (“Financing Pediatrics”, 2006). Home health care has been shown to be a cost-effective alternative to inpatient hospital care. Medicaid is the major payer for pediatric home health care (77%), followed by other public sources (22%). Private health insurance and families each paid less than 1% of pediatric home health expenses. The most important factors affecting access to home health care are the inadequate numbers of clinicians, shortages of home health nurses with pediatric expertise, inadequate payment along with restrictive insurance and managed care policies. The main financing problem in relation to Medicaid is low payment to home health agencies at rates that are insufficient to provide beneficiaries access to home health services. Although home care services may be a covered benefit under private health plans, most do not cover home-based physical, occupational or speech therapy (33%) and/or impose visit or reimbursement limits or caps. According to national estimates, 500,000 children use home health services in the United States.

The AAP has issued a policy statement for the provision of home health care services and also a guide on the management of pediatric patients in the home. The support improvements in financing pediatric home health care, the AAP has developed a financing policy statement for its members, public policy makers, federal and state Medicaid officials, private insurers, managed care officials and home health care professionals. The financing policy statement contains recommendations for improving public and private insurance coverage, payment and authorization policies" ("Financing Pediatrics", 2006). As a result, since 2006, many home health agencies have reduced or eliminated their pediatric home health capacity ("Financing Pediatrics", 2006).

Early Intervention for South Carolina

BabyNet is South Carolina's early intervention agency for infants and toddlers under three years of age with developmental delays or for children diagnosed with conditions associated with developmental delays. BabyNet matches the special needs of infants and toddlers who have developmental delays with the professional resources available within the community. Services are provided in everyday routines, activities and places relevant to the life of the family. BabyNet is funded and regulated through the Individuals with Disabilities Education Act (IDEA) and managed through South Carolina First Steps to School Readiness program. Services are provided for the child in a natural setting that may include the child's home, daycare or preschool (http://www.scfirststeps.org).

Setting for Delivery of Rehabilitation Services

Children often receive physical, occupational or speech therapy services in various settings, such as homes, outpatient clinics, daycare and the school setting. A child receives therapy in the school system under the educational model. Under the medical model, other types of settings are appropriate for children requiring therapy services to address additional rehabilitation needs. The choice of the occupational therapy treatment setting, for a child, is often influenced by payer sources, physicians and other health care professionals. The parent may be influenced to choose a setting based on reimbursement from payer sources. The historical development, of early intervention services, identifies challenges and guidelines to provide therapy in natural environments.

Past literature review, by Del Vecchio (1992), indicates that there is no evidence that the child performs better during occupational therapy treatment in the natural environment. Results of this study provides insight and increased awareness of parent's and therapist's perception of the impact of a child's environment and how it can impact a child's ability to succeed therapeutically. Studying the perceptions of therapists and parents, relative to a child's performance in either a home environment versus an outpatient clinic, can assist with better defining the role and expectations of the occupational therapist in these intervention settings. By understanding the perceptions, the needs of the child may be better understood. There is national and federal interest and support, through public law, for early intervention in the community based setting. Although many studies were identified that explore the differences in community based versus outpatient for treatment of various medical conditions, no cost-comparison of the therapy setting have been identified. This study will remedy this gap in our knowledge of the cost comparison delivery for pediatric rehabilitation and also provide an example of a cost model that may be used to compare delivery of pediatric rehabilitation.

Utilization of Cost Models In Health Care Settings

Cost Comparison for Direct Providers vs. Purchaser of Health Care Services

Various studies have identified methods and use of a cost model for cost distribution and estimations of expenditures in various health care settings. As described in a study by Nugent, Grippen, Parris & Mitchell (2003), the purpose in estimating private sector payments for the Veterans Administration (VA) was to identify the difference in cost to taxpayers for the Veterans Health Administration as a direct provider versus a purchaser of health care services. For this particular study, utilization of cost reappointment was based on developing a cost distribution report (CDR). It was recommended that revisions would bring the CDR in alignment with private sector payment categories. The purpose of the CDR was to improve effectiveness for internal VA analyses and external expenditure comparisons. As part of the reporting system, benefits that were not assigned expenditures for comparison with payments represented a potential liability if the VA were to purchase health care services in the marketplace (Nugent, et. al, 2003).

Cost Comparisons for Inpatient and Outpatient Activities and Medical Conditions

Additional studies were reviewed that identified various comparisons and costs for inpatient and outpatient activities, medical conditions and the overall expenditures required to treat diseases such as musculoskeletal disorders (MSD) (Osborne, Nikpour, Busija, Sundararajan & Wicks, 2007). This study was based on population and a public hospital system, utilizing a healthcare survey of four million individuals over a four-year span from public hospitals throughout Victoria, Australia. For the purposes of this study, MSD are defined as a combination of episodes of care assigned to the orthopedic and rheumatology specialties. Rehabilitation medicine comprises a substantial component of MSD management. Separate tables were developed to identify frequencies of inpatient episodes of care. Total bed-days for each specialty area, for each year were outlined in Tables for comparisons throughout the four-year span. Trends, comparisons and costs were made for inpatient and outpatient activities. The number and proportion of all outpatient encounters together with estimated cost for each specialty area was made for each year and outlined in individual tables (Osborne, et al., 2007).

Cost Comparisons for Expenditures for Mental Health Services in a Community-Based vs. Outpatient Setting

Expenditures for mental health and substance abuse services for a large population with severe mental illnesses, were examined as part of a study for major types of clinical-medical mental health and psychiatric rehabilitation services over a one-year period (Hollingsworth & Sweeney, 1997). Expenditures for community-based outpatient services were compared to the expenses for hospitals and institutions. Expenditures were presented as totals, types of expenditures, and categories of clinical and psychiatric rehabilitation services. Data on a broad range of services was included in this study of costs and expenditures, including indirect and direct costs. Three published studies were examined to develop a framework. Societal costs models were established to estimate costs of assertive community treatment. The Program for Assertive Community Treatment model or an adaptation of this model with less intensive approaches included a clinical team model and an intensive broker model. Direct cost of care was defined as the actual dollar expenditures related to an illness or disorder, including amounts spent for hospital and nursing home care, physician and other medical professional services, drugs an appliances and rehabilitation (Hollingsworth & Sweeney, 1997). Expenditures for community-based outpatient services were greater than expenditures for care in hospitals and institutions.

Costs Analysis Associated with Traumatic Brain Injury

Additional literature assessed the use of long-term utilization and costs associated with Traumatic Brain Injury (TBI) over time (Vangel, Rapport, Hanks, Black, 2005). This study identified billing patterns, predictors of healthcare utilization and costs associated with TBI. Health care utilization and cost outcomes were codified as billing that was used as an index of utilization, reflecting an instance of a service, medication or supply. Subcategories of billing included home health care, primary care, outpatient services, medications, medical equipment and supplies, inpatient treatment, residential treatment, transportation, and case management by the state. Intensity of medical follow-up was measured by the number of professional services received during the period of study that is reflected by billings for those services (Vangel, et al., 2005). Intensity was also reflected by the frequency of billings in the study period. Results reveal that the total billings, charges and payments were calculated over the study period. This amount was determined service type provided and the type of billing. These billings may have reflected utilization and costs associated with care and supervision. A limitation identified was that the billing was used as a representation of costs to allow an assessment of total healthcare costs, not just those for the hospital system. Billing data did not reflect the true costs to providers and did not reflect the amount paid by individuals and through the publicly funded program, Medicaid (Vangel, et al., 2005). A database was provided to detail individual billing and charges per billing, Current Procedural Terminology (CPT) codes, and relevant International Classification of Disease (ICD) codes. The median daily charge and payment were calculated to provide cost figures that may have been generalizable outside of the sample given in this study. The calculations were made by dividing each participant's charges and payments by the number of days the participant was served in the program. Median charges and Medicaid payments are outlined in tables for the most common billed service (Vangel, et al., 2005).

Analysis and Cost Benefit of Telemedicine in Rural and Urban

Outside of a hospital or outpatient setting, telemedicine was utilized as a tool in rural settings to provide accurate monitoring and delivery of care to a patient that otherwise may not seek out medical treatment from a physician's office or hospital. The use of telemedicine was identified to only be profitable when the cost of traveling to a clinic is very high. The study by McCue & Palsbo (2006), found that the telemedicine program is financially viable when the patient's travel costs or avoided hospitalizations are removed from the analyses (McCue & Palsbo, 2006).

So that a hospital financial analyst could model various scenarios, an interactive financial spreadsheet was developed. What has been known as financial analyses of telemedicine programs are actually cost-benefit analyses built in support of the telemedicine infrastructure for support through public funding (McCue & Palsbo, 2006). Most of these studies calculate indirect benefits to the investor, such as improved population health by providing timely services to people in remote geographic areas or improved productivity for people who must travel for care (McCue & Palsbo, 2006).

The cost benefits of telemedicine was outlined through building an interactive financial spreadsheet that contains 13 sheets, including five sheets to input direct projected revenues (Medicare, Medicaid, commercial insurers, workers' compensation and self-pay contracts), 1 sheet for indirect revenues, and 3 expense sheets (telecommunication expense, medical expenses and capital outlay). Four output sheets included revenues, consolidated expenses, breakdown points and payback period and internal rate of return over a five-year projection period (McCue & Palsbo, 2006). Various scenarios were modeled by actual cost and revenue information from a free-standing rehabilitation hospital that had an established telemedicine program.

Direct revenue variables were identified as payers that included Medicare, Medicaid, workers' compensation, self-pay and contracts and private. The financial model allowed the user to enter different payer mixes, project service volume by procedure code, different revenues for each procedure code and payer, and bad-debt losses for uncollected copayments or coinsurance (McCue & Palsbo, 2006). Indirect revenue variables were outline on a spreadsheet that allowed users to incorporate indirect revenues from three potential sources: 1) operating profits for a fixed-price hospital stay when the patient is able to be discharged earlier because a patient may be monitored through telemedicine; 2) additional revenues gained because patients keep their appointments versus missing appointments; and 3) savings from not spending money for the clinician to travel to remote sites for face-to face encounters (McCue & Palsbo, 2006).

Telecommunication expenses were included on a spreadsheet that allowed analysts to distribute fixed and variable costs required by different equipment types. Examples included the labor costs of a telecommunications technician to maintain the equipment and troubleshoot connection problems. Medical expenses included staff costs and a fixed cost per visit to cover supplies. For capital outlay, users were allowed to input the costs for the telemedicine systems, including displays, communication software costs, telemedicine room renovation costs and training. Use of this spreadsheet outlined depreciation and the ability to input different assumptions about the percentage of time that the equipment is used for tele-rehabilitation or an allowable cost versus the use of videoconferencing (McCue & Palsbo, 2006).

Outcome measures were projected as annual cash revenues over a five-year period. The model used to compute standard financial performance measures for business investment decision-making or Internal Rate of Return (IRR) and payback (McCue & Palsbo, 2006). The use of telemedicine is proven to be profitable if the IRR is greater than opportunity cost of capital (McCue & Palsbo, 2006). Each scenario identified the investment decision for providing telemedicine to urban patients. Costs were modeled for the expense of the health care professionals' salary and operating costs for use of equipment. The annual costs were modeled for projected estimates for cash revenue and net cash flow. The breakeven volume for each service is measured by dividing total fixed costs by its contribution margin. The contribution margin is defined as the difference between cash revenue or payment per visit minus the variable operating cost per visit for each service (McCue & Palsbo, 2006).

To measure the breakeven volume by the health care professionals, the revenue per visit for each payer across all CPT codes and then across all payers. This value was computed in a two-stage process. The first stage required estimating a weighted average of the cash revenue or payment per visit across CPT codes by each payer. The payment, per visit, was weighted by patient volume across the CPT codes for each payer. The second stage weighted the previous value by the patient volume across payers and then the total fixed costs for the health care professionals were allocated by volume (McCue & Palsbo, 2006).

Most financial analyses of telemedicine programs are actually cost-benefit analyses to build the public policy case for investing in telemedicine infrastructure. The analysis outlined by McCue & Palsbo (2006) identifies the method to build a business case for the private sector to invest in the use of telemedicine in rural and urban areas. This analysis outlines the importance of segmenting the revenue market and making educated assumptions regarding the revenue for each specific type of service.

Development of a Cost Model to Compare Community-Based and Outpatient Settings

The growing trend of treatment in the home environment, in contrast to the outpatient rehabilitation environment, has raised questions among payer sources, rehabilitation professionals and caregivers regarding the value of community-based versus outpatient rehabilitation services. Thus, we need to identify the cost-comparison of community-based versus outpatient clinic and the reality of delivering rehabilitation services to children while staying within the financial limitations allotted for the delivery of care.

III. METHODOLOGY

Study Design

The design of this study was to develop an analytical framework and use of archival data to estimate the cost of care for outpatient and community-based pediatric rehabilitation settings.

Limitations

The cost model is a tool that will need to be customized. Health administrators or other users will determine the specific costs and reimbursements that will apply to their specific setting.

Delimitations

The time of the development of the cost model was from August of 2014 to February 2015. The location of the development of cost model reflects information gathered from South Carolina. Selected aspects and criteria of the development of the cost model included common reimbursement resources for of pediatric rehabilitation and estimated variable and fixed costs associated with a business establishment.

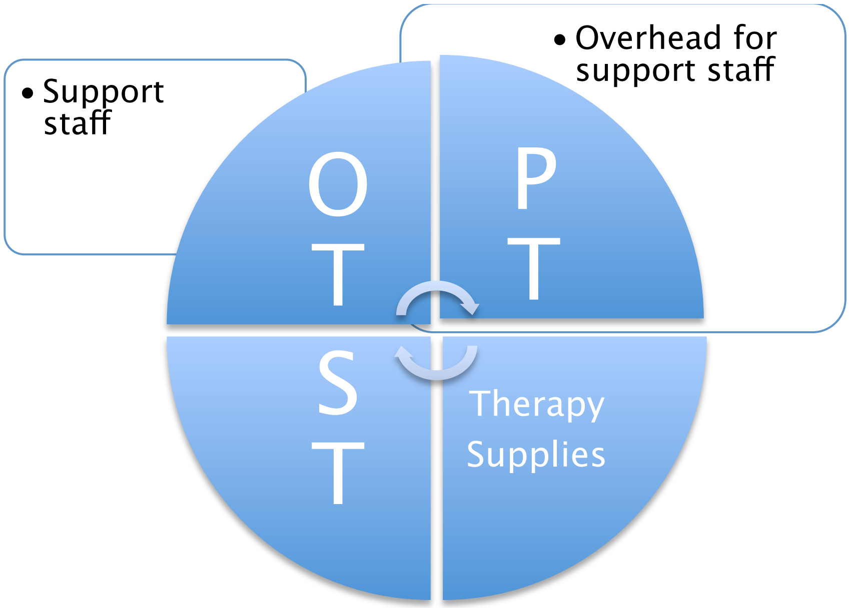
Methods

We used an examination of published studies, financial management texts, government reimbursement regulations and consultations with experienced rehabilitation professionals to develop a set of questions that should be considered when issues of financial viability of community-based services for children are considered. We organized these questions into 1) a checklist of points that administrators should consider;

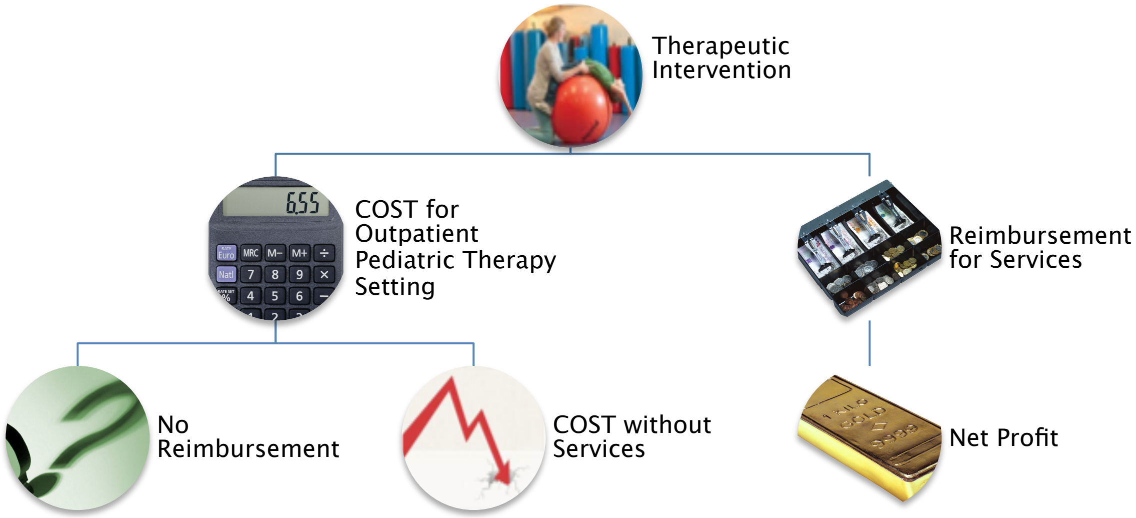
and 2) a spread sheet model implemented in Excel that can be used for “scenario analysis” performed by managers in specific settings. We approached the study in this manner because examples of literature and research studies have identified various aspects involved in providing services to the pediatric population in a community-based setting and also in an outpatient setting, but no actual examples of cost models could be identified. The development of a checklist and a financial spreadsheet allows health administration and financial analysts to compare and contrast two scenarios for pediatric rehabilitation.

The usability of the Excel spreadsheet was tested for two scenarios, representing the cost models for the pediatric rehabilitation in an outpatient setting and a community-based setting. The pediatric rehabilitation services identified as part of the cost model include physical therapy, occupational therapy and speech therapy for each scenario. The Excel workbook, in scenario one, is a representation of a cost model based on one month of estimated profits and expenditures commonly found with pediatric rehabilitation services in the community-based setting. The profits are estimated by using common reimbursement rates for specific CPT codes utilized during treatment. The profits are projected revenues based on reimbursement rates from Medicaid, commercial insurers, self-pay, Babynet and Tricare. Personnel from community-based therapy services were interviewed to obtain a realistic picture or model of the business expenditures, profits and operating costs as well as projected revenues. As personnel from community-based therapy were interviewed, the trend among their business model was the use of independent contracted therapists to provide services and the use of reimbursement on a per visit rate rather than a salaried employee. For the purposes of this cost model, due to the business model trend based on reimbursement at a per visit rate, the cost model for scenario one is based upon independent contract therapists.

Logic Model for Scenario 1 describes how the business model is driven by the therapy visits with minimal overhead for the support staff and facility supplies and costs for support staff.



Logic Model for Scenario 2



IV. RESULTS

The decision to compare and contrast the two pediatric rehabilitation settings was based on the growing trend and support through regulation for children to receive therapy in the natural environment and issues raised by consumer insurance payers for refusal to reimburse based on homebound status. The following 10 questions were derived from our review of the literature and regulations and defined after discussions with practitioners. After compiling information from interviews with experienced personnel in each setting, it became evident that two different business models were used in these two settings and this became an important factor to consider when developing the cost models.

<u>Checklist questions</u>:

1) What are the components of costs that should be included in the development of a cost model to deliver pediatric rehabilitation in a community-based setting?
2) What are the components of costs that should be included in the development of a cost model to deliver pediatric rehabilitation in an outpatient pediatric setting?
3) What factors may inhibit effective treatment in a community-based setting?
4) What factors may inhibit effective treatment in the outpatient clinic?
5) What factors may contribute to effective treatment in the community-based setting?
6) What factors may contribute to effective treatment in the outpatient clinic?
7) Is transportation cost for therapist travel reimbursable?
8) What is the probability of no-show in clinic at what scheduling cost?
9) What is the probability of no one home at scheduled home visit?
10) Is administrative staff needed for full-time or part-time for community-based versus outpatient?

Discussion of Checklist Questions for Community-Based and Outpatient-Based Setting:

Questions 1 and 2: What are the components of costs that should be included in the development of a cost model to deliver pediatric rehabilitation in a community-based setting or in an outpatient setting? Each setting includes basic overhead costs of the facility, utilities, insurance, hardware, software, internet service, phone and office supplies. However, community-based services only requires adequate space for support staff and the outpatient setting requires facility space for administrative support staff, treatment areas and office space for employed therapists. The business model, for the community-based setting, is based on the use of contracted therapists for services. The business model for the outpatient setting is based on salaried employees.

Questions 3 and 4: What factors may inhibit effective treatment in a community-based setting or an outpatient clinic? In the community-based setting, the environment is not controlled by the therapist that may result in loss of billable treatment time and also effective treatment for the child. The outpatient environment may result in distractions of other children and/or adults for effective and billable treatment time. An additional factor that may limit effective treatment in the outpatient setting and the community-based setting is unforeseen travel conditions.

Questions 5 and 6: What factors may contribute to effective treatment in the community-based setting or in an outpatient clinic? The community-based setting provides the opportunity for the therapist to assess the environment and the dynamics within the family and/or with the caregiver and child. The outpatient setting may offer the opportunity for a support system among the parents and provide a social opportunity for the children during their visit to the outpatient clinic.

Question 7: Is transportation cost for therapist travel reimbursable? The community-based model does not reimburse for travel time or cost of travel.

Question 8 and 9: What is the probability of no-show in the clinic at what scheduling cost and what is the probability of no one home at scheduled home visit? Personnel and experienced community-based and outpatient therapists were interviewed and the rate of missed visits in the community and the outpatient clinic was reported as comparable.

Question 10: Is administrative staff needed for full-time or part-time for community-based versus outpatient? The number of administrative staff will be based on the number of employees or contract therapists and the caseload for the outpatient or community-based settings.

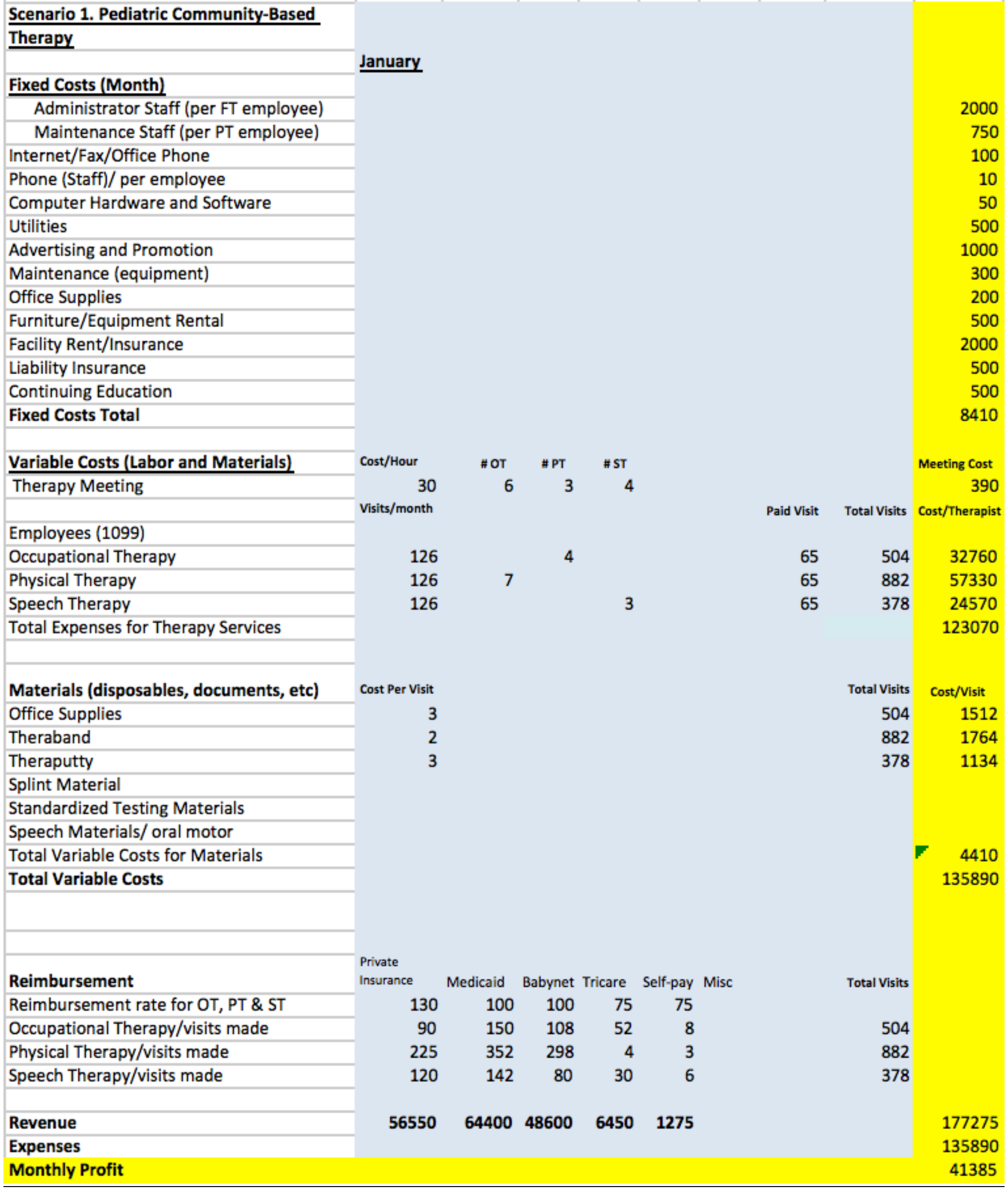
Historically, most patients received treatment in their homes unless they required hospital care. As services became more resource intensive and specialized we observed a shift to the outpatient setting for reasons of efficiency. At one time, a child was required to be medically homebound to receive home health services. However, through public law, this requirement has changed. Because the home is considered the natural environment for the child, children may receive medical services in the home. (Dunn, 2011).

The American Academy of Pediatrics (AAP) recognizes the growing trend to provide health care services for children in their homes ("Financing Pediatrics", 2006). Home health care has been shown to be a cost-effective alternative to inpatient hospital care. Medicaid is the major payer for pediatric home health care (77%), followed by other public sources (22%). Private health insurance and families each paid less than 1% of pediatric home health expenses. The most important factors affecting access to home health care are the inadequate numbers of clinicians, shortages of home health nurses with pediatric expertise, inadequate payment along with restrictive insurance and managed care policies. The main financing problem in relation to Medicaid is low payment to home health agencies at rates that are insufficient to provide beneficiaries access to home health services. Although home care services may be a covered benefit under private health plans, most do not cover home-based physical, occupational or speech therapy (33%) and/or impose visit or reimbursement limits or caps. According tonational estimates, 500,000 children use home health services in the United States ("Financing Pediatrics", 2006).

The AAP has issued a policy statement for the provision of home health care services and also a guide on the management of pediatric patients in the home. To support improvements in financing pediatric home health care, the AAP has developed a financing policy statement for its members, public policy makers, federal and state Medicaid officials, private insurers, managed care officials and home health care professionals. The financing policy statement contains recommendations for improving public and private insurance coverage, payment and authorization policies ("Financing Pediatrics", 2006).

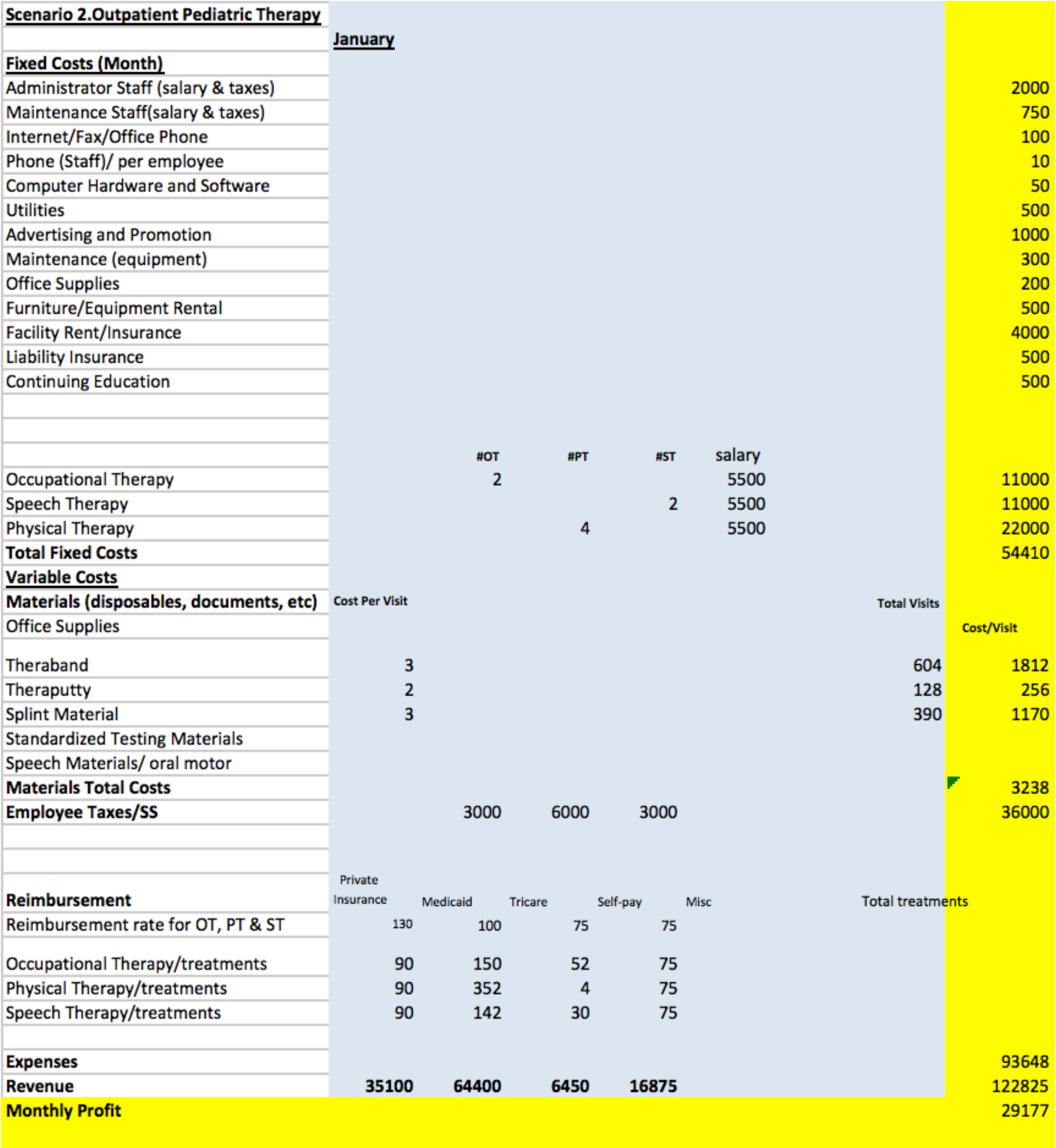
This growing trend of treatment in the home environment, in contrast to the outpatient rehabilitation environment, has raised questions among payer sources, rehabilitation professionals and caregivers regarding the value of community-based versus outpatient rehabilitation services. This trend has also raised awareness among therapists related to caregiver's perceptions of the environment and the effectiveness of treatment.

Model Scenario 1. Pediatric Community-Based Therapy



Scenario 1. Pediatric Community-Based Therapy									
	January								
Fixed Costs (Month)									
Administrator Staff (per FT employee)									2000
Maintenance Staff (per PT employee)									750
Internet/Fax/Office Phone									100
Phone (Staff)/ per employee									10
Computer Hardware and Software									50
Utilities									500
Advertising and Promotion									1000
Maintenance (equipment)									300
Office Supplies									200
Furniture/Equipment Rental									500
Facility Rent/Insurance									2000
Liability Insurance									500
Continuing Education									500
Fixed Costs Total									8410
Variable Costs (Labor and Materials)	**Cost/Hour**	**# OT**	**# PT**	**# ST**					**Meeting Cost**
Therapy Meeting	30	6	3	4					390
	Visits/month						**Paid Visit**	**Total Visits**	**Cost/Therapist**
Employees (1099)									
Occupational Therapy	126		4				65	504	32760
Physical Therapy	126	7					65	882	57330
Speech Therapy	126			3			65	378	24570
Total Expenses for Therapy Services									123070
Materials (disposables, documents, etc)	**Cost Per Visit**							**Total Visits**	**Cost/Visit**
Office Supplies	3							504	1512
Theraband	2							882	1764
Theraputty	3							378	1134
Splint Material									
Standardized Testing Materials									
Speech Materials/ oral motor									
Total Variable Costs for Materials									4410
Total Variable Costs									135890
Reimbursement	Private Insurance	Medicaid	Babynet	Tricare	Self-pay	Misc		**Total Visits**	
Reimbursement rate for OT, PT & ST	130	100	100	75	75				
Occupational Therapy/visits made	90	150	108	52	8			504	
Physical Therapy/visits made	225	352	298	4	3			882	
Speech Therapy/visits made	120	142	80	30	6			378	
Revenue	**56550**	**64400**	**48600**	**6450**	**1275**				177275
Expenses									135890
Monthly Profit									41385

Scenario 2. Outpatient Pediatric Therapy



Scenario 2.Outpatient Pediatric Therapy							
	January						
Fixed Costs (Month)							
Administrator Staff (salary & taxes)							2000
Maintenance Staff(salary & taxes)							750
Internet/Fax/Office Phone							100
Phone (Staff)/ per employee							10
Computer Hardware and Software							50
Utilities							500
Advertising and Promotion							1000
Maintenance (equipment)							300
Office Supplies							200
Furniture/Equipment Rental							500
Facility Rent/Insurance							4000
Liability Insurance							500
Continuing Education							500
		#OT	#PT	#ST	salary		
Occupational Therapy		2			5500		11000
Speech Therapy				2	5500		11000
Physical Therapy			4		5500		22000
Total Fixed Costs							54410
Variable Costs							
Materials (disposables, documents, etc)	Cost Per Visit					Total Visits	
Office Supplies							Cost/Visit
Theraband	3					604	1812
Theraputty	2					128	256
Splint Material	3					390	1170
Standardized Testing Materials							
Speech Materials/ oral motor							
Materials Total Costs							3238
Employee Taxes/SS		3000	6000	3000			36000
Reimbursement	Private Insurance	Medicaid	Tricare	Self-pay	Misc	Total treatments	
Reimbursement rate for OT, PT & ST	130	100	75	75			
Occupational Therapy/treatments	90	150	52	75			
Physical Therapy/treatments	90	352	4	75			
Speech Therapy/treatments	90	142	30	75			
Expenses							93648
Revenue	**35100**	**64400**	**6450**	**16875**			122825
Monthly Profit							29177

Model 1 Specifications

Fixed Costs were estimated and represented on the spreadsheet for projected costs. The Direct Revenue Variables were represented by fixed costs for specific reimbursement amounts. The reimbursement amounts were identified as common CPT codes, used as data, to provide actual cost information for projected revenue in the community-based therapy setting. The financial model allows the user to enter different payer mixes, project service volume by procedure code and payer and bad-debt losses for uncollected copayments or coinsurance (McCue & Pablo, 2006).

Model 1 Flexibility

The spreadsheet allows users to incorporate Indirect Revenue Variables from three potential sources: 1) operating profits for a fixed-price therapy visit; 2) additional revenues gained when patients keep their appointments; 3) savings, based on the use of contracted therapists and elimination of employer taxes and benefits as an added expense. Additional Variable Costs, such as Labor and Materials are distributed through the spreadsheet, along with Staffing, Maintenance and Disposable Materials (McCue & Pablo, 2006). The cost models also allow the user to enter input related to Capital Outlay. This input may vary for the costs of software, hardware, facility rent/utilities, training, insurance and furniture. The Outcome Measures were modeled for one month in Scenario 1 and may be similarly duplicated for consecutive months throughout the year. When applying a standard time frame for capital budgeting techniques, 5 years is a common projected time frame to project total annual cash revenues. The use of the model may be used to compute standard financial performance measures for business investment decision making-internal rate of return (IRR) and payback (McCue & Palsbo, 2006). If the IRR is greater than opportunity cost of capital, then the case model supports the business model for Scenario 1 of therapy services in the community-based setting (McCue & Pablo, 2006).

Model Scenario 1 explores the investment decision for providing pediatric therapy services in the community-based setting; based on a business model to use contract therapists to provide therapy services. Costs and revenues were modeled for six occupational therapists, three physical therapists and four speech therapists. As part of developing the model, input for projected operating costs were made that included the CPT code reimbursement rate, cost per visit, use of disposable materials, labor and reimbursable materials. The current model is based on a monthly scenario, however this may be duplicated with various changes of monthly input by the user and projected annually. The model may also provide annual estimates for cash revenue, cash costs and net cash flow. The profit was estimated by subtracting the total costs from the projected revenue.

Model Scenario 2, is the development of a cost model for pediatric rehabilitation in the outpatient setting. As with scenario 1, the cost model was developed as a financial spreadsheet allowing health administration and financial analysts to compare and contrast two scenarios for pediatric rehabilitation. The Excel spreadsheet used for scenario two was based on information gathered by interviews with personnel operating outpatient pediatric rehabilitation clinics. This information was obtained to gain a more realistic picture or model of the business expenditures, profits and operating costs and projected revenues. The Excel workbook, in scenario two, is a representation of a cost model based on one month of estimated profits and expenditures commonly found with pediatric rehabilitation services in the outpatient setting. The profits are estimated by using common reimbursement rates for specific CPT codes utilized during outpatient treatment. The profits are projected revenues based on reimbursement rates from Medicaid, commercial insurers, self-pay, Babynet and TriCare. As part of the business model, in the outpatient pediatric rehabilitation setting, the therapists are salaried employees.

Model Scenario 2 Specifications

Fixed Costs were estimated and represented on the spreadsheet for projected costs. The Direct Revenue Variables were represented by fixed costs for specific reimbursement amounts. The reimbursement amounts were identified as common CPT codes used for pediatric therapy. This data is used to provide actual cost information for projected revenue in the outpatient therapy setting. The use of this cost model allows the user to enter various payer mixes, project service volume by procedure code and payer and bad-debt losses for uncollected copayments or coinsurance (McCue & Pablo, 2006).

Model Scenario 2 Flexibility

As with the community-based setting, the spreadsheet allows users to incorporate Indirect Revenue Variables from three potential sources: 1) operating profits for a fixed-price therapy visit; 2) additional revenues gained when patients keep their appointments; 3) savings, based on money not spent for the therapist to travel to patient's homes to provide services. Additional Variable Costs, such as Labor and Materials are distributed through the spreadsheet, along with Staffing, Maintenance and Disposable Materials cost (McCue & Pablo, 2006). The outpatient costs, of overhead, is higher due to the increased space required for treatment and also for staff. As with scenario 1, the cost model for scenario 2 allows the user to enter input related to Capital Outlay. This input may vary for the costs of software, hardware, facility rent/utilities, training, insurance and furniture. The Outcome Measures were modeled for one month in scenario 2 also and may be similarly duplicated for consecutive months throughout the year. As described in scenario 1, a standard time frame was applied to scenario 2 for capital budgeting techniques, with 5 years as the common projected time frame to project total annual cash revenues. The use of the cost model for scenario 2 may also be used to compute standard financial performance measures for business investment decision making-internal rate of return (IRR) and payback (McCue & Palsbo, 2006). If the IRR is greater than opportunity cost of capital, then the case model supports the business model for scenario

2 of therapy services in the outpatient setting (McCue & Pablo, 2006). Scenario 2 explores the investment decision for providing pediatric therapy services in the outpatient setting, based on a business model to use salaried employees to provide therapy services. Costs and revenues were modeled for two occupational therapists, four physical therapists and two speech therapists. As part of developing the model, input for projected operating costs were made that included the CPT code reimbursement rate, cost per visit, use of disposable materials, labor and reimbursable materials. The cost model for scenario 2 is also based on a monthly scenario. The costs may be duplicated over a year based on the monthly projections. Cost model for scenario 2 may also provide annual estimates for cash revenue, cash costs and net cash flow. As with scenario 1, the profit was estimated by subtracting the total costs from the projected revenue.

V. DISCUSSION

Most financial analyses and cost models developed are for purposes to calculate indirect benefits such as costs involved for improved health by the use of treatment techniques, equipment or mode of delivery of care. As stated in Chapter 1, the objective of this study is to develop a cost model to compare community-based and outpatient settings for pediatric rehabilitation in South Carolina. The chapter is organized in terms of the two specific settings for pediatric rehabilitation in South Carolina. It first reports the type of setting, costs involved for each setting and the differences are described, if any, of materials and variable costs. The analysis of the two settings resulted in recognition of a trend of per visit rates and independent contracted therapists among community-based settings. This led to considerations of differences in variable and fixed expenses in comparison to an outpatient setting with overhead costs and salaried employees.

There is little information in the literature on cost-effectiveness on cost models for rehabilitation; thus, each entity has to develop their own. Cost models, practice evaluation checklists and other tools should be shared. One model does not fit all.

Additional intangible considerations for delivery of care in the outpatient and the community-based settings include the risk of personal safety for community-based services, loss of travel time due to a patient not home or cancellation for the community-based therapist. The contracted therapists are reimbursed at a rate per visit that does not include travel time, team coordination, scheduling or documentation. Due to the contracted therapist reimbursement rate per visit, there is a cost shift to the contracted therapist. Although the business model for the community-based setting may be more cost-effective for the business, the contracted therapist experiences a time loss due to nonreimbursable time spent related to direct treatment of the child. Examples of nonreimbursable time include documentation, scheduling and coordination with the physician and team members. However, the community-based environment may lend greater insight to the therapist when developing the treatment plan resulting in more effective treatment for the child.

The unique opportunity of community-based care, provides access to observation of the family dynamics and the environment in which the child functions. However, there is a limited ability to effectively monitor quality control factors for pediatric rehabilitation. Some of these factors include the appropriate treatment for the child, reported billable time in relation to actual treatment time, infection control and appropriate use of equipment. In comparison, delivery of care in the outpatient setting may provide opportunities for collaboration among staff and access to equipment and the ability to control sanitary conditions.

In conclusion, these two cost model scenarios provide a framework to analyze two types of business models and settings that may be considered upon owning or managing a pediatric rehabilitation business. The two frameworks allow flexibility by allowing the user to enter data that is specific to the setting, for example: reimbursement rates, number of therapists, and fixed and variable costs. Recommendations that may be considered would be to include additional cost per therapist for facility overhead and also to develop a cost model that will identify comparisons in length of treatment in comparison to CPT codes and reimbursement rates. Further studies and development of cost models would benefit not only the patient receiving the services, but assist in delivering services more cost efficiently and effectively.

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