

EBP Edge—More Isn't Always Better: Therapy for Children with Lifelong Disabilities, Part 1

By: Kathy Clapsaddle, MS, CCC-SLP, THERAPY 2000 Clinical Program Director



Introduction

There are several major changes occurring in healthcare that may have significant impacts on the delivery of medical therapy services to children. These shifts could specifically affect children with chronic, lifelong disabilities, such as autism spectrum disorders, intellectual disabilities, or cerebral palsy, given that their therapeutic journey can be long and expensive. Three factors in particular have the potential to change the direction of pediatric therapy services: the rising cost of healthcare, the regulatory impact of the Affordable Care Act (ACA), and the adoption of the International Classification of Functioning, Disability, and Health model (ICF) by the World Health Organization.

There is little dispute that healthcare costs in America are on the rise. The Kaiser Family Foundation (KFF) reported that health spending is currently 18 percent of the U.S. Gross Domestic Product (GDP), compared to only 7 percent in 1970 (KFF, 2019). Further, the Centers for Medicare and Medicaid (CMS) reported that Medicaid spending growth was projected to accelerate to an average of 5.7 percent annually from 2018 to 2025 due to the care needs of the increasing portion of the program population who is aged and/or disabled (CMS, 2015). In Texas, the Medicaid budget represented 28.6 percent of the entire 2015 Texas state budget, and Medicaid expenditures were \$38 billion. Healthcare spending represented 12 percent of the Texas Gross State Product (Hegar, 2015). In a cost-containment effort in September 2016, pediatric Medicaid therapy services were transitioned from a fee-for-service model to a managed care model. Further, \$350 million in cuts were made to Medicaid pediatric therapy services in December 2016. While Texas legislators passed some partial rate restorations during the 2019 legislative session, these dramatic shifts left providers considering the future of pediatric medical therapy services given the rapidly increasing costs and shrinking fiscal resources.



Another variable came from the introduction of the Affordable Care Act (ACA) in 2010 (U.S. Health and Human Services, 2017). The ACA shifted the payment of medical services to the quality of care provided, not just the volume of services, which led to consideration of new models of medical service delivery. One payment model considered was “episodic” or “bundled” payment. Episodic or bundled payments pay a lump sum for the costs for an episode of care and are designed to reduce unnecessary services while achieving good outcomes (Barnes, 2012). Episodic payments assume that medical interventions occur in an “episode,” or around one defined need for care. This is in contrast to the current fee-for-service payment model, in which reimbursement is received for each individual service provided, such as each treatment session. There has been widespread concern that the fee-for-service model incentivizes providers to provide more, and potentially unnecessary, services because payment is dependent on the volume of services provided (Barnes, 2012).

Additionally, in 2001, the International Classification of Functioning, Disability and Health model (ICF) was developed by the World Health Organization (WHO, 2001). The ICF model asked medical providers to not only consider an individual’s bodily functions and structures when determining medical necessity and appropriate interventions but also to consider the impact on activity and participation outside of therapy. Thus, providers began to view the therapeutic process in this

context. With participation as a focus, intervention goals began to shift toward a focus on function (ASHA, n.d.), which could include more focus on activities in the home, working with caregivers, home programs, and assistive technology, and away from focusing solely on often small and difficult to detect changes to the child's physical structures.

As necessity is often the mother of invention, pediatric medical therapy has begun to shift its focus to addressing participation and function, decreasing costs, and increasing the value of therapy services. What could that shift look like? This paper will discuss the first of three components of a changing pediatric medical therapy framework—considering an episodic care model. Part two will discuss the remaining two components—working effectively with caregivers and establishing and maintaining effective home programs. All three components should work together in creating a comprehensive, sustainable model of service for children with chronic, lifelong disabilities.

Meet Asher

Let's consider these shifts in service delivery through the perspective of services to a child, Asher.

Asher is a 12-year-old boy with diagnoses of cerebral palsy and cortical visual impairment. He is non-verbal but produces some vocalizations (e.g., open vowels, such as /a/) when happy, and he fusses when upset or uncomfortable. He communicates intentionally, and his communication skills are generally unconventional, as meaning must be inferred by the communication partner. With his current speech-language pathologist (SLP), Asher has been learning to use a manual communication board containing high-contrast images of preferred items through use of partner-assisted scanning. Receptively, he appears to anticipate care provided by familiar adults when given verbal notice.

He receives all of his nutrition via a G-tube. He receives bolus feedings four times a day. His feeding difficulties appear to be due to oral aversion and oral motor control and weakness. He can orally eat up to two ounces of pudding, Jell-O, and mashed potatoes with controlled pacing and therapist support. Caregivers in the home typically do not provide any oral feeding. His last swallow study (completed two years ago) did not show any aspiration or penetration. He has significant difficulty with saliva management.

Asher attempts to assist with all Activities of Daily Living (ADL) tasks but requires maximum assistance for most due to limited motor control. At this time, caregivers report that they are able to complete dressing and hygiene tasks safely and without difficulty. Asher is dependent on others to push his manual wheelchair to access his environment. Asher's leisure and social engagement activities consist primarily of watching videos, listening to music, and playing with two cause-and-effect toys activated by a three-inch button-style switch that are designed for a much younger child. Asher has an 8-year-old brother who is typically developing. The family has an elaborate climber/jungle gym in the backyard, which Asher's brother utilizes regularly.

Caregivers report that Asher is in a self-contained special education classroom at school but has inclusion opportunities during specials and social studies class. He is in an adaptive PE class with an assigned peer. He uses an object-based schedule in the special education classroom, and teachers use yes/no questions to communicate with him throughout the day. A voice-output communication device was attempted at school when he was younger but was abandoned due to challenges with his visual impairment, motor access, and motivation to use the device. He receives speech, occupational therapy (OT), and physical therapy (PT) services once per six weeks through a consult model. Asher currently receives SLP services in the home two times per week, OT services at an outpatient clinic one time per week, and PT services two times per month at the clinic.

Episodic Care

Episodic care is one model that has come out of the participation focus and concern about therapy utilization. It has been used in inpatient and outpatient pediatric therapy settings for more than five years in some of the most well-respected institutions in the U.S., including Cincinnati Children's Hospital, but is still a relatively new approach for most clinicians. The American Physical Therapy

Association (APTA, 2013) describes an episode of care as the care provided for a specific need during a predetermined timeframe.

Episodes may occur over time punctuated by breaks in care (APTA, 2013). Lowe et al (2015) further describes episodic care as focused intervention around a current need with a distinct start and end. The model acknowledges that therapy is a “limited resource” and understands that decisions must be made for how to effectively and fairly allocate therapy resources (Bailes et al, 2008). Thus, episodic care can be thought of as providing a more intensive treatment regimen to achieve a meaningful achievable participation-based goal in a defined period of time (Lowe et al, 2015). An episode of care may occur during what some researchers suggest are “sensitive periods” of development of a skill or a period of time during which direct service may be more efficacious than at other times (Campbell, et al, 2012). Further, episodic care allows for breaks in therapy, which Schertz and Gordon (2009) suggested may be important for skill generalization into home and community settings.

As episodic care is a relatively new service delivery model, no studies explicitly compare an episodic treatment model to a continuous model, particularly in speech-language pathology; however, given that episodic care incorporates a more intensive treatment dosage over a shorter period of time, the literature on therapy dosage can be helpful in determining the effectiveness of this approach. While no research has systematically manipulated the dosage for a child with a particular diagnosis to determine the amount of intervention necessary to make a given amount of progress, there is some evidence that dosage can have an impact on outcomes. When discussing dosage in the context of episodic care, three aspects of dosage must be considered: dose frequency, dose, and total intervention duration. These three factors interact to create the cumulative intervention intensity (Warren et al, 2007), which can impact the intensity of the intervention plan as a whole.

Dose Frequency

Dose frequency is defined as the number of sessions per unit of time, such as a week or month (Warren et al, 2007). There is no research indicating that any one particular dose frequency is most effective. Unfortunately, the research is quite mixed. While some research shows that a short-term high-dose frequency may lead to better outcomes, other research shows that may not be the case.

There is a body of research that shows that intensive interventions led to better outcomes, particularly in the preschool population. A systematic review of interventions for preschool-age children reported that of seven studies in which an effect of language intervention intensity was reported, six of the studies favored a more intensive intervention or a greater amount of treatment (Schooling et al, 2010). In preschool speech sound disorder intervention, Allen (2012) found that children who received intensive intervention (three times per week for eight weeks) showed significantly greater gains than those who received intervention one time per week for 24 weeks. Further, the children continued to show gains in their speech during a six-week maintenance period following intervention. Eiserman et al (1990) reported that preschoolers receiving language intervention four times weekly showed significantly greater gains than those receiving treatment one time weekly. Similarly, Barratt et al (1992) showed that preschoolers who received language intervention four times per week had significantly greater gains in expressive language compared to those who received the same number of sessions with a once per week frequency; however, no significant differences were found in language comprehension. In school-age children, Gillam and Frome-Loeb (2010) found with 216 participants that children receiving intensive daily narrative intervention for six weeks performed five times better on standardized language assessment than children receiving services twice weekly for 20 minutes over two years. In addition, those gains were maintained six months after intervention.

However, Fey et al (2013) found no significant difference in outcomes that could be contributed to intensity in high-intensity versus low-intensity intervention with toddlers with intellectual disabilities. Ambridge et al (2007) showed that less intensive distributed practice was more effective than intensive massed practice in learning complex grammatical constructions. Kamhi (2014) noted that

threshold and plateau effects in language intervention can impact the effectiveness of intensive interventions, particularly with interventions that are repetitive in nature. Further, Fey et al (2013) noted that the effects from increases in dose frequency are often limited and may actually be impacted by other factors, including the intensity of each treatment session. Further, the findings of a Cochrane review (Brady et al, 2012) indicated that intensive intervention may not be a viable option for all families, as drop-outs were significantly higher for the intensive condition than the conventional condition. Enderby (2012) recommended that the International Classification of Functioning, Disability, and Health (WHO, 2001) should guide dosage recommendations, as the ICF recognizes that similar impairments can lead to different restrictions of activity and participation depending on environmental and personal factors. So, while increased dose frequency could potentially improve outcomes, the improvement is not assured, and it may be a difficult schedule for caregivers to maintain.

Dose

Dose is defined as the number of treatment targets during an individual treatment session (Warren et al, 2007). Some research evidence suggests that children with language impairments need a high dose of skill practice within a session to learn and use new language skills (Gray, 2003, Nelson et al, 1996). Unfortunately, dose appears to be specifically addressed less frequently in the research literature than other factors of dosage (Baker, 2012). Yet, some research indicates that dose may interact with treatment frequency and that it could be an important factor in determining the intensity of any intervention (Schmitt et al, 2017). Children who received a low-frequency but high-dose intervention did better than those who received a high-dose, high-frequency intervention (Schmitt et al, 2017). McGinty et al (2011) had similar results, finding that treatment with a lower-dose frequency had similar outcomes to that with a higher-dose frequency, given that the dose of each individual session was high.

Thus, if the conflicting research in dose frequency doesn't point to one frequency providing better outcomes than another, the research on the dose/dose frequency relationship may give more guidance. If a treatment session has a higher dose, the sessions may not need to be as frequent to still result in high overall effectiveness of the intervention.

Total Intervention Duration

Total intervention duration is defined as the total time in which intervention is provided (Warren et al, 2007). Some research has indicated that longer intervention durations led to greater intervention gains. For example, Jacoby et al (2002) found in a retrospective study of 234 subjects that more therapy provided overall resulted in more gain from intervention.

However, a significant body of research has found that an ever-increasing duration of intervention does not lead to an ever-increasing benefit from therapy services and that initial benefits from intervention will likely wane over time. A randomized controlled trial by Ukrainetz et al. (2009) found that four hours of treatment was as effective as 11 hours of treatment. Gillam et al (2012) showed a 200 percent increase in effect size from 10 to 12 hours of narrative intervention but only a 14 percent increase in effect size from 12 to 16 hours. Fey, Cleave, and Long (1997) reported that gains in the second four-and-a-half month block of treatment were much smaller than those seen in the first four-and-a-half month block of treatment. Thus, greater duration of intervention is related to larger effects of intervention, but there was probably a ceiling to the effects (Gillam et al, 2012), likely reflecting what Kamhi (2014) discussed as plateau effects. Schmitt & Justice (2012) found that a range of dose frequency (i.e., five to 18 hours) was associated with good outcomes and that longer durations did not necessarily correspond to greater benefit. Nye et al (1987) found the highest effect size for intervention to be those lasting four to 12 weeks. Thus, the diminishing returns of continuous therapy may be reduced in an episodic care model, given that therapy is slowed or paused at a predetermined time.

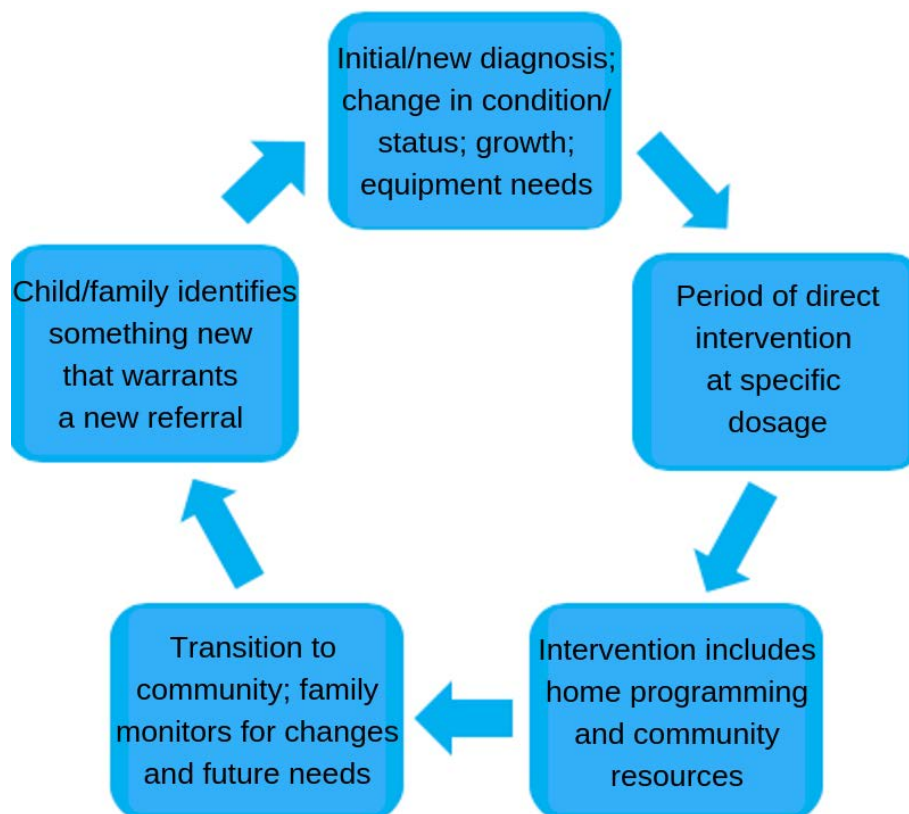
Community Transition

Another tenet of episodic care is consideration of community transition, or transition from therapy to

participation in the home or community, as part of the therapeutic cycle, rather than seeing therapy as an ongoing, repetitive process with direct intervention from a therapist at all times. There is some consensus that ongoing intervention throughout the lifespan is not beneficial and can have unforeseen negative consequences (Cramm, 2011). Therapy can be restrictive to participation, in that it requires that children and families spend free time in scheduled therapies versus spending time together or having experiences with peers in their communities. The WHO (2001) informed the healthcare community that participation was the greatest indicator of childhood health, regardless of diagnosis or disability. In addition, ongoing intervention could be damaging to the confidence of the child and the family as it is not generally perceived as “normal” to need help from an outside specialist to raise or be a child. Further, the focus of participation in the ICF model (WHO, 2001) is in some ways at odds with a model of intervention that focuses on “fixing” what is “broken” in children (Cramm, 2011).

Some children may require one episode of care in their lifetimes; others may require multiple episodes of care. The cycle of episodes may change depending on the specific needs of the child; thus, children may transition in and out of direct intervention and the community multiple times throughout their lives. In addition, there should be variation in the dosage provided across those episodes of care (APTA, 2012).

For children with chronic/lifelong conditions, community transition timeframes can be challenging to identify; however, these periods of time without active direct therapy intervention may be important for children and caregivers to have opportunities to use skills in their daily routines and to build confidence (Schertz and Gordon, 2009).



Relationship of Dosage to Treatment Outcomes

If anything is clear from the research on dosage, the relationship between dosage and therapy outcomes is at best complicated and at worst completely confusing. However, in terms of episodic care, there is no research that continuous services for years on end at a treatment frequency of two sessions per week will lead to better outcomes than another combination of treatment frequency, dose, or total intervention duration. In fact, recent research on dose indicates that the intensity of the individual treatment session may be the forgotten factor that can have a major impact on the effectiveness of the intervention as a whole. If services are provided in an episodic manner, with short-term intervention bursts around an emergent need followed by a transition to the community, and individual treatment sessions have a high dose of practice opportunities, there may be no difference between those services and services provided on a continuous basis. Additionally, the break in services between episodes may lead to better quality of life for the child and family and more opportunities for generalization of skills into home and community environments.

Episodic Care with Asher

Asher's therapists noticed that his progress across all three disciplines had been slowing for a while. He was appearing "tired" in motor therapy sessions, and the SLP noticed that he seemed "distracted" or disinterested in therapy some days yet somewhat more engaged other days. After communicating with Asher's caregivers, the SLP discovered that he is now taking the bus more than 45 minutes a day since his transition to middle school. In that conversation, his mother reported that their lives feel "super busy now" because of his brother's participation in after-school sports and Asher's therapies.

The SLP engaged in a conversation with his caregivers about a transition from a period of direct therapy from a therapist to a stage in which he began to actively practice those skills in activities in the community. This was not a surprise conversation, because Asher's SLP had been discussing the "therapy plan" with the caregivers since their initial treatment session. Asher's mother reported some concern that he would "stop learning," but they decided that they would re-evaluate any plans if regression or significant slowing of progress was observed.

They discussed community activities to which Asher could transition for generalization. The caregivers shared that the teacher at school had talked to them about Special Olympics, but they had previously felt they were too busy to participate. The SLP shared information about a community organization that offered adaptive art and sports activities. She also discussed a local parent organization that offered opportunities for all children, including those with disabilities. Finally, they talked about activities that they enjoyed doing outside the home as a family. They decided that they wanted to practice using the partner-assisted scanning board in some activities outside of the home as they had previously only practiced it in home activities. The family said they would look into some of their choices and talk with the therapist about them to make a plan.

The family and the SLP worked together to decide that Asher would taper his current therapy schedule to one day per week for the next four weeks and then transition to two visits per month for the next 12 weeks. They would discuss at that time if the low frequency was still appropriate or if a complete break from services was warranted. The SLP told the family that she would keep the number of practice opportunities high in the sessions provided, noting that the research said that may contribute to as much improvement as if he were receiving therapy on a more frequent basis.

Conclusion

While there is no one right way to provide services to children with chronic, lifelong disabilities, there is evidence in the literature that continuous, twice-weekly therapy with the child focused solely on bodily structures and functions may not be the best approach. The rising cost of healthcare and the WHO's focus on function and participation force therapy providers to reconsider service delivery in a framework that is sustainable for both caregivers and families as well as the economy at large. Considering an episodic care model in which services are provided for a distinct period of time to address a participation-based need may in-part address the concerns related to the overall cost of

services. If treatment can be provided with less frequency yet more intensity in each session, less direct therapy may be needed.

This idea may feel uncomfortable for many therapy providers. We see our roles as critical to the outcomes of the children we serve, and there is no argument in that assessment. Speech-language pathology literature is clear that the services SLPs provide lead to positive outcomes. Yet providers must remember that those services do not occur without a cost. That cost can be an economic one. Continuing to provide services for a child who is making limited progress or receiving waning benefit can substantially drive up costs if these services occur at scale across the thousands of providers in Texas. However, this approach also may have a more personal negative impact. Continuation of unnecessary services may inhibit another child from receiving services by placing children on waiting lists for therapy or by leading to bureaucratic barriers to services, such as byzantine pre-authorization processes or strict medical necessity guidelines, as a method of controlling costs.

The cost also can be a personal one to the families. Reducing the hours that a child spends in direct therapy can potentially have positive impacts on life within the home. If families are waiting for therapy—whether in the home, in traffic or in the waiting room—they are not participating in the routines typical of childhood. Think of Asher’s mother’s description of their life as “super busy” and how attending multiple therapy visits each week adds to that busyness. As a result, children do not have opportunities to practice their communication skills in real childhood environments.

Thus far, this discussion only has considered one aspect of therapy effectiveness—the direct treatment provided by the therapist. An episodic care model may not be effective if caregivers aren’t empowered to support therapy outcomes outside of direct therapist intervention. The challenge then becomes enabling caregivers to be autonomous and confident in raising their children in a period without direct services. How do providers meet that goal? What do caregivers need to feel empowered? And how do we design a home program that both meets the needs of the child and the readiness level of the caregivers?

Considering these questions, in conjunction with rethinking our model of therapy dosage, can have positive impacts on both the healthcare economy and family life. The next article in this series will address the research on therapeutic relationships and effective home programs in the implementation of an episodic care model of services.

Acknowledgements

I would like to thank my team at THERAPY 2000, **Jennifer Lawson**, OTR, MS, and **Stephanie Cone**, PT, MPT, for their work in collecting, refining, and developing the corpus of work from which this paper was derived. Their dedication to “doing the right thing” is awe-inspiring. I also would like to thank **Vanessa Richardson** and **Jerre van den Bent** at THERAPY 2000 for cultivating an innovative and collaborative environment that allows out-of-the-box thinking and is always focused on the kids we serve.

References

Allen, J. and Marshall, C. R. (2011). Parent–Child Interaction Therapy (PCIT) in school-aged children with specific language impairment. *International Journal of Language & Communication Disorders*, 46(4), 397-410.

Allen (2012). Intervention Efficacy and Intensity for Children with Speech Sound Disorders. *Journal of Speech, Language and Hearing Research*. Jan 2013.

Ambridge, B., Theakson, A, Lieven, E, and Tomasello, M. (2007). The distributed learning effect for children’s acquisition of an abstract syntactic construction. *Cognitive Development*, 21, 174-193.

American Physical Therapy Association (2012). *Fact Sheet: Intensity of Service in an Outpatient Setting for Children with Chronic Conditions*. ATPA Section of Pediatrics.

Online: www.pediatricapta.org.

American Speech Language Hearing Association (n.d.). *International Classification of Functioning, Disability, and Health (ICF)*. Online: <https://www.asha.org/slp/icf/>

American Speech-Language-Hearing Association. (2004). *Preferred practice patterns for the profession of speech-language pathology [Preferred Practice Patterns]*. Online: www.asha.org/policy.

Bailes, A., Reder, R., & Burch, C. (2008). Development of Guidelines for Determining Frequency of Therapy Services in a Pediatric Medical Setting. *Pediatric Physical Therapy*, 194-198.

Baker, E. (2012). Optimal intervention intensity in speech-language pathology: Discoveries, challenges, and uncharted territories. *International Journal of Speech-Language Pathology*, 14(5), 478-485.

Barnes, J. (2012). Moving Away from Fee for Service. *The Atlantic*, June 2012.

Barratt, J., Littlejohns, P., Thompson, J. (1992). Trial of Intensive Compared with Weekly Therapy in Preschool Children. *Archives of Disease in Childhood*, 67, 106-108.

Brady, M. C., Kelly, H., Godwin, J., & Enderby, P. (2012). Speech and language therapy for aphasia following stroke. *Cochrane Database of Systematic Reviews 2010*, Issue 5. Art. No.: CD000425.

Blackstone, S.W., Ruschke, K., Wilson-Stronks, A., & Lee, C. (2011). Converging communication vulnerabilities in health care: An emerging role for speech-language pathologists and audiologists. *Perspectives on Communication Disorders and Sciences in Culturally and Linguistically Diverse Populations*, 18(1), 3-11.

Campbell S, Palisano R, Orlin M. (2102). *Physical Therapy for Children*. St. Louis, MO: Elsevier/Saunders; 52-54.

Center for Medicare and Medicaid Services (2015). *National Health Expenditure Projections 2016-2025*. Online: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/proj2016.pdf>

Center for Medicare and Medicaid Services (2012). *Toolkit for Making Written Material Clear and Effective*. U.S. Centers for Medicare and Medicaid Services. Online: <https://www.cms.gov/Outreach-and-Education/Outreach/WrittenMaterialsToolkit/ToolkitPart01.html>

Coogle, C. G., & Hanline, M. F. (2014). An exploratory study of family-centered help-giving practices in early intervention: families of young children with autism spectrum disorder. *Child & Family Social Work*, 21(2), 249-260.

Crais, E.R., Roy, V.P., & Free, K. (2006). Parents' and professionals' perceptions of the implementation of family-centered practices in child assessments. *American Journal of Speech-Language Pathology*, 15(4), 365-377.

Cramm, H (2011). Can interventions have negative impacts? The importance of seeing the bigger picture. *Physical and Occupational Therapy in Pediatrics*; 31(3); 217-221.

Crowe, L. K., Norris, J. A., Hoffman, P.R. (2004). Training caregivers to facilitate communicative participation of preschool children with language impairment during storybook reading. *Journal of Communication Disorders*, 37(2), 177-196.

Duchan, J.F. and Kovarsky, D (2011). Rapport and Relationships in Clinical Interactions. *Topics in Language Disorders*, 31(4), 297-299.

Eiserman, W, McCoun, M., Escobar, C. (1990). A Cost Effectiveness Analysis of Two Alternative Program Models for Serving Speech Disordered Preschoolers. *Journal of Early Intervention*, 14, 297-317.

- Enderby, P. (2012). How much therapy is enough? The Impossible question! *International Journal of Speech Language Pathology*, 14(5), 432-437.
- Ferguson, A., & Armstrong, E. (2004). Reflections on speech-language therapists' talk: Implications for clinical practice and education. *International Journal of Language & Communication Disorders*, 39(4), 469-477.
- Fey, M. E., Cleave, P. L., & Long, S. H. (1997). Two models of grammar facilitation in children with language impairments: Phase 2. *Journal of Speech, Language, and Hearing Research*, 40, 5-19.
- Fey, M.E., Yoder, P.J., Warren, S.F., and Bredin-Oja, S.L. (2013). Is more better? Milieu Communication Teaching in Toddlers with Intellectual Disabilities. *Journal of Speech Language Hearing Research*, 56, 679-693.
- Fey, M. E., Warren, S. F., Brady, N., Finestack, L.H., Bredin-Oja, S.L, Fairchild, M., Sokol, S., and Yoder, P.J. (2006). Early Effects of Responsivity Education/Prelinguistic Milieu Teaching for Children with Developmental Delays and Their Parents. *Journal of Speech, Language, Hearing Research*. 49(3), 526-547.
- Fourie, R., Crowley, N., and Oliviera, A. (2011). A Qualitative Exploration of Therapeutic Relationships from the Perspective of Six Children Receiving Speech–Language Therapy. *Topics in Language Disorders*, 31(4), 310-324.
- Gillam, R., Baker, E., and Williams, L. (2012). *How Much is Enough? Dosage in Child Language Intervention*. Paper presented at the American Speech Language Hearing Association Convention, Atlanta, Georgia, November 2012.
- Gillam, R. & Frome Loeb, D. (2010, January 19). Principles for School-Age Language Intervention: Insights from a Randomized Controlled Trial. *The ASHA Leader*.
- Gray, S. (2003). Word learning by preschoolers with specific language impairment: What predicts success? *Journal of Speech, Language and Hearing Research*, 46, 56-67.
- Hagar, G (2015). *Texas Health Care Spending Report Fiscal 2015*.
Online: <https://comptroller.texas.gov/economy/docs/96-1796.pdf>
- Hsiao, Yun-Ju (2017). Parental Stress in Families of Children with Disabilities. *Intervention in School and Clinic*, 53 (4), 201-205.
- Jacoby G, Levin L, Lee L, Creaghead N, and Kummer A, (2002). The Number of Individual Treatment Units Necessary to Facilitate Functional Communication Improvements in the Speech and Language of Young Children. *American Journal of Speech-Language Pathology*, 11, 370-380.
- James, C. and Chard, G. (2010). A Qualitative Study of Parental Experiences of Participation and Partnership in an Early Intervention Service. *Infants & Young Children*, 23(4), 275-285.
- Kaiser Family Foundation (2019). *Health System Dashboard, Total Health Spending*.
Online: <https://www.healthsystemtracker.org/dashboard/#spending>
- Kamhi, A (2014). Improving Clinical Practices for Children with Language and Learning Disorders. *Language Speech Hearing Services in the Schools*, 45, 92-103.
- Kelley, J. M., Kraft-Todd, G., Schapira, L., Kossowsky, J., and Riess, H. (2014). The Influence of the Patient-Clinician Relationship on Healthcare Outcomes: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *PLoS ONE*, 9(4), 1-7.
- Law, J.,Garrett, Z., et al. (2010). Speech and language therapy interventions for children with primary speech and language delay or disorder. *Cochrane Database of Systematic Reviews*.

Law, M. (1998). Does client-centred practice make a difference? In M. Law (Ed.), *Client-Centred Occupational Therapy*(pp. 19–27). Thorofare, NJ: Slack.

Lillo-Navarro, C., Medina-Mirapeix, F., Escolar-Reina, P., Montilla-Herrador, J., Gomez-Arnaldos, F., Oliveira-Sousa-S. (2015). Parents of children with physical disabilities perceive that characteristics of home exercise programs and physiotherapists' teaching styles influence adherence: a qualitative study. *Journal of Physiotherapy*, 61, 81-86.

Lowe, A., Schmit, J. Wenz, A, and Harpster, K (2015). *Saddling Up for Episodic Care*. Paper presented at the American Academy for Cerebral Palsy and Developmental Medicine Conference. October 22, 2015, Austin.

McConachie, H., Randle, V., Hammal, D., and LeCouteur, A. (2005). A controlled trial of a training course for parents of children with suspected autism spectrum disorder. *Journal of Pediatrics*, 147(3): 335-340.

McGinty, A.S., Breit-Smith, A., Fan, X., Justice, L.M., and Kaderavek, J.N. (2011). Does intensity matter? Preschoolers' print knowledge development within a classroom-based intervention. *Early Childhood Research Quarterly*, 26(3), 255-267.

Mullen, R. and Schooling, T. (2010). The National Outcomes Measurement System for Pediatric Speech-Language Pathology. *Language, Speech and Hearing Services in Schools*, 41, 44-60.

Nelson, K.E, Camarata, S.M., Welsh, J., Butkovsky, L., and Camarata M. (1996). Effects of imitative and conversational recasting treatment on the acquisition of grammar in children with specific language impairment and younger language-normal children. *Journal of Speech and Hearing Research*, 39, 850-859.

Novak, I. (2011). Parent Experience of Implementing Effective Home Programs. *Physical and Occupational Therapy in Pediatrics*, 31(2), 198-213.

Novak, I. and Cusick, A. (2006). Home programmes in paediatric occupational therapy for children with cerebral palsy: Where to start? *Australian Occupational Therapy Journal*, 53(4), 251-264.

Novak, I., Cusick, A., and Lannin N. (2009). Occupational Therapy Home Programs for Cerebral Palsy: Double Blind, Randomized, Controlled Trial. *Pediatrics*, 124, 4.

Novak, I. (2012). Evidence to Practice Commentary: Is More Therapy Better? *Physical and Occupational Therapy in Pediatrics*, 1-5.

Nye, C., Foster, S. H., & Seaman, D. (1987). Effectiveness of language intervention with language/learning disabled children. *Journal of Speech and Hearing Research*, 52, 348-357.

Patient Protection and Affordable Care Act, 42 U.S.C. § 18001 et seq. (2010).

Plexico, L. W., Manning, W. H., and Dilollo, A. (2010). Client perceptions of effective and ineffective therapeutic alliances during treatment for stuttering. *Journal of Fluency Disorders*, 35(4), 333-354

Reagon, K. A. and Higbee, T. S. (2009). Parent-implemented script fading to promote play-based verbal initiations in children with autism. *Journal of Applied Behavior Analysis*, 42(3), 659-664.

Roberts, M. Y. and Kaiser, A. P. (2011). The Effectiveness of Parent-Implemented Language Interventions: A Meta-Analysis. *American Journal of Speech Language Pathology*. 1058-0360_2011_1010-0055.

Sanders L. (2011). Health literacy and the health reform: where do children fit in? In: Wizemann T, editor. *Health Literacy Implications for Health Care Reform: Workshop Summary*, Institute of Medicine. Washington, DC, USA: The National Academies Press; Online: http://www.nap.edu/openbook.php?record_id=13056&page=101

- Santer, M., Ring, N., Yardley, L., Geraghty, A., and Wyke, S. (2014). Treatment non-adherence in pediatric long-term medical conditions: Systematic review and synthesis of qualitative studies of caregivers' views. *BMC Pediatrics*, 14:63, 1471-2431.
- Schertz M. and Gordon AM. (2009). Changing the model: a call for a re-examination of intervention approaches and translational research in children with developmental disabilities. *Developmental Medicine and Child Neurology*. 51(1):6-7.
- Schmitt, M.B. & Justice, L. (2012). Optimal intervention intensity for emergent literacy: What we know and need to learn. *International Journal of Speech Language Pathology*, 14(5), 451-455.
- Schmitt, M.B., Justice, L., and Logan, J. (2017). Intensity of language treatment: contribution to children's language outcomes. *International Journal of Speech Language Pathology*, 52(2), 155-167.
- Schooling, T., Venediktov, R., and Leech, H. (2010). *Evidence Based Systematic Review: Effects of Service Delivery on the Speech and Language Skills of Children from Birth to 5 Years of Age*. National Center for Evidence Based Practice in Communication Disorders. American Speech Language Hearing Association, Rockville, MD.
- Texas Health and Human Services (2016). *HHS Basic Writing Tips for Consumer Materials*. Texas Medicaid and Chip Communications Resources. Online: <https://hhs.texas.gov/services/health/medicaid-and-chip/provider-information/texas-medicaid-and-chip-communications-resources>
- Texas Health and Human Services Commission Office of Inspector General (2017). *Texas Medicaid Speech Therapy: Informational Report on Payment Trends and Service Delivery*. Online: <https://oig.hhsc.texas.gov/sites/oig/files/reports/IG-Speech-Therapy-Informational-Report-Full-Report.pdf>
- Tickle-Degnen, L. (2002). Client-Centered Practice, Therapeutic Relationship, and the Use of Research Evidence. *American Journal of Occupational Therapy*, 56(4), 470-474.
- Ukrainetz, T. A., Ross, C. L., & Harm, H. M. (2009). An investigation of treatment scheduling for phonemic awareness of kindergartners who are at risk for reading disabilities. *Language, Speech, and Hearing Services in the Schools*, 40, 86 – 100.
- U.S. Department of Health and Human Services (2008). *America's Health Literacy: Why We Need Accessible Health Information*. An Issue Brief from the U.S. Department of Health and Human Services. Online: <https://health.gov/communication/literacy/issuebrief/>
- U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion (2006). *Quick Guide to Health Literacy*. Online: <http://www.health.gov/communication/literacy/quickguide/>.
- U.S. Department of Health and Human Services, Office of Minority Health (2016). *National CLAS Standards*. Online: <https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=2&lvlid=53>
- Warren, S., Fey, M. and Yoder, P. (2007). Differential treatment intensity research: A missing link to creating optimally effective communication interventions. *Mental Retardation and Developmental Disabilities Research Reviews Special Issue: Language and Communication*. 13(1), 70-77.
- World Health Organization. (2001). *International Classification of Functioning, Disability and Health (ICF)*. Geneva: Author.
- Yoder, P. J. and Warren, S. F. (2002). Effects of Prelinguistic Milieu Teaching and Parent Responsivity Education on Dyads Involving Children with Intellectual Disabilities. *Journal of Speech, Language Hearing Research*. 45(6), 1158-1174.
-