



Infant Wellness Program

1. **Families with Infants born Prematurely or with a Low Birth Weight**
2. **Families of Infants who have a History of Parental or Sibling Autism Spectrum Disorders, Learning Disabilities, or other challenges believed to have a strong Genetic Component**
3. **Research Regarding Massage Interventions, Bonding and Attachment**

The primary goal of our infant wellness program is to ensure that infants and babies who are at risk for developmental delays receive optimal and timely care.

It is our Infant Wellness Program mission that, as healthcare professionals, we provide families with the appropriate education, resources, and assistance in understanding their developing infant and their infant's needs, while providing techniques to promote overall healthy development; while we provide this care, we are determined to recognize signs and symptoms of developmental (emotional/social, physical and speech / language) delays AS EARLY AS POSSIBLE so that we can assist families in accessing and directing the best care to impact their infant's developing and plastic nervous system.

Several research studies support the fact that children with developmental disorders, such as sensory integration disorder, low muscle tone, and autism spectrum disorders can meet their physical, emotional and cognitive potential with early and appropriate intervention (First Signs™ Video, First Signs, Inc., 2004). Our Infant Wellness Program incorporates aspects of our Infant Massage Program with additional discussion topics, resources and a referral options for infants and babies who would benefit from direct therapy services. The Wellness Program also provides ongoing care and consultations for families who desire wellness visits and periodic screenings for their developing baby/babies.

Families with Infants born Prematurely or with a Low Birth Weight

Families with infants born prematurely or with a low birth weight will benefit from our Infant Wellness Program. It is clear in current research that infants born prematurely, or with a low birth weight are at risk for developmental delays, learning disabilities and various neurological impairments, which impact early development, and can potentially impact an individual well into adulthood. A study entitled Neurodevelopmental and Functional Outcomes of Extremely Low Birth Weight Infants in the National Institute of Child Health and Human Development Neonatal Research Network, 1993-1994 (PEDIATRICS Vol. 105 No. 6 June 2000, pp. 1216-1226) found that infants with low birth weight were likely to have increased “neurologic, developmental, neurosensory, and functional morbidities (that) increased with decreasing birth weight.” A recent online abstract by Alison Salt and Maggie Redshaw entitled Neurodevelopmental follow-up after preterm birth: follow up after two years

(National Perinatal Epidemiology Unit, University of Oxford, Old Road Campus, Headington, Oxford OX3 7LF, United Kingdom; accepted 17 December 2005; available online 10 March 2006.) emphasizes that “Marked differences are seen in neurological and health status, intellectual functioning, school performance and behavior between children born prematurely and those born at term. Assessment in later childhood has identified more subtle problems than the severe disability or sensory deficits readily identifiable at two years.

These problems include learning disabilities, specific neuropsychological deficits in executive function, difficulties in visual-motor integration and perception, selective language impairment, motor coordination disorders, behavior problems, attention deficit hyperactivity disorder (ADHD), and reduced educational achievement.” It is our goal to help families help their at-risk infants as early as possible in order to decrease or eliminate altogether such negative sequelae of prematurity.

In one of the first studies to use brain imaging [functional magnetic resonance imaging (fMRI)] with adolescents born prematurely, New Jersey researchers from the Robert Wood Johnson Medical School at the University of Medicine and Dentistry of New Jersey report, in *Child Development* (2006), that the effects of premature birth and environmental risks on the brain during the first three years of childhood continue through adolescence. As stated above, studies of children born prematurely have found deficits in cognitive function through young adulthood. This report indicates, however, that the *early childhood social environment* plays a prominent role in subsequent development, with greater environmental risk such as life stresses and little social support related to lower cognitive abilities and delayed social development.

The study asked whether adolescents with many medical risks at birth and varying amounts of “environmental risks” used the same or different parts of the brain when performing various attentional tasks. The researchers found that individual differences in medical and environmental risks were in fact, related to patterns of brain activation. “The implications of these findings are that different risk factors associated with preterm birth have different effects on brain function in adolescence,” said lead author Michael Lewis, Ph.D., Distinguished Professor of Pediatrics and Psychiatry and Director of the Institute for the Study of Child Development at the Robert Wood Johnson Medical School. The findings indicate that poor environments may affect not only early behavior, but also impact an adolescent's ability to attend to tasks. “Although there may be no intervention to overcome the deficits associated with severe medical complications at birth, there is room for improvement in the social environment,” he said. “These types of improvements may help increase brain activation that would translate into better school achievement,” he concluded. In terms of early intervention, this study clearly states an individual born prematurely can have an improved functional outcome in terms of school achievement when the social environment is impacted. This further supports the idea of families with infants born prematurely to enter into a wellness program in order to facilitate improvements in environmental risk factors such as everyday life stress, help accessing necessary social support and in order to learn ways to facilitate parent-child bonding and attachment.

Families of Infants who have a History of Parental or Sibling Autism Spectrum Disorders, Learning Disabilities, or other challenges believed to have a strong Genetic Component

Families of infants who have a history of parental or sibling autism spectrum disorders, learning disabilities, or other challenges believed to have a strong genetic component will benefit from our Infant Wellness Program. Studies published before 1985 showed prevalence rates of 4 to 5 per 10,000 children for the autism spectrum overall and approximately 2 per 10,000 for classic autism. [Source for 2 in 10,000 figures: only two autism prevalence studies were conducted in the US in the 1980's: one

showed a rate of 1 case per 10,000 children, and the other showed a rate of 3.3 per 10,000, (or 1 in 3,030); this typically has been averaged out to 2 per 10,000]. However, in the early 1990's, this rate began to quickly increase. Today, this figure is 60 per 10,000 (1 in 166) live births and there are indications it may still be climbing. The First Signs™ Video, copyrighted in 2004 by First Signs, Inc. states clearly that the current detection rate for an autism spectrum disorder in early pediatric (medical settings) is only 30%. This means that 70 % of children with an autism spectrum disorder in the United States *right now* go undiagnosed until after the age of 2 years.

This statistic, we feel is not only inadequate, but also unacceptable. The fact is that the earlier an infant receives intervention for signs and symptoms of a nervous system dysfunction, the better their chances are to reach their potential for growth and development. Within our program, infants will not only receive timely referrals and remedial care when necessary, but will maintain an optimal level of wellness through parental education, awareness and understanding ways to implement and advocate for preventative / wellness care within their families.

Research Regarding Massage Interventions, Bonding and Attachment

Several studies support the use of massage techniques for impacting attachment and bonding, as well as the health and growth of pre-term infants: Stable preterm infants gain more weight and sleep less after five days of massage therapy. (Journal of Pediatric Psychology, Vol. 28 (6) 403-411, 2003.

Authors: John N.I. Dieter, PhD, Tiffany Field, PhD, Maria Hernandez-Reif, PhD, Eugene K. Emory, PhD, Mercedes Redzepi, PsyD.) The purpose of this study was to determine whether stable preterm infants would have significant weight gain and/or changes in their sleep/wake cycles as a result of a 5-day protocol of massage therapy. The study refers to various studies including the study completed by Field, et al. in 1986, which show significant weight gain, changes in the sleep/wake cycles, and earlier discharge from hospitals for preterm infants who underwent a 10 day massage therapy program. The massage group and control group were matched for gestational age, weight, maternal age, obstetric and postnatal complications, formula intake, and days since birth, among other items. Each group consisted of 16 preterm infants. The massage protocol implemented with the massage group was the same protocol that had been implemented in the previous study completed by Field, et al. in 1986. The protocol was 15 minutes of massage, 3 times per day. During the 15 minute period, the first 5 minutes was the tactile stimulation, the next 5 minutes was kinesthetic stimulation (passive limb movements), and the last 5 minutes was tactile stimulation.

The results of this study show that stable preterm infants in the massage group gained an average of 26 grams more weight per day compared to a control group. Also, the infants in the massage group spent more time in the awake state (specifically the drowsy state) compared to the control group infants who spent more time the sleep cycle after the 5 day protocol. The weight gain, and changes in the sleep /wake cycle between groups were found to be statistically significant. This study relates to the field of infant massage and our infant wellness program directly. It shows that tactile stimulation early on promotes increased food absorption for the same amount of food intake. It further suggests that by impacting an infant's sleep/wake cycle, the massage promotes the ability of preterm infants to engage and bond with their primary caregivers.

New research by a team at the University of Warwick reports that massage may help infants under six months sleep better, cry less and be less stressed. The study entitled, Massage may help tots sleep better was published in Child Health News on Nov. 8, 2006. The team of researchers from Warwick Medical School and the Institute of Education at the University of Warwick was led by Angela Underdown. They looked at nine studies of massage of young children covering a total of 598 infants

aged less than six months. They found the various studies showed a range of significant results including indications that infants who were massaged cried less, slept better, and had lower levels of stress hormones such as cortisol compared to infants who did not receive massage. One of the studies reported that massaging affects the release of the hormone melatonin, which is a key hormone in regulating sleep/wake cycles for infants. "Given the apparent effect of infant massage on stress hormones, it is not surprising to find some evidence of an effect on sleep and crying," reports Angela Underdown of the University of Warwick.

Another study provided evidence that massage could potentially help build better relationships between infants and mothers who had postnatal depression (although the reviewers said more research is needed to confirm this effect). The studies mainly involved infant massage by parents who were trained by health professionals in appropriate technique.

An "exploratory study," entitled Exploring a massage intervention for parents and their children with autism: the implications for bonding and attachment. (Journal of Child Health Care, Vol 9 (4) 245-255, 2005. Authors: Lesley A. Cullen-Powell, PhD, CPsychol; Julie H. Barlow, PhD, BA, CPsychol; Delia Cushway, PhD, CPsychol.) further demonstrates the importance of touch, bonding and attachment for the overall wellness of families, including parents and children. The goal of the study was to answer 2 questions that the authors pose in the abstract: "What does touch mean between parents and their children with autism on completion of a massage intervention?" and "Do parents feel that their relationship has changed on completion of a massage intervention?"

The study included 14 sets of parents and children (9 of the sets made it through the entire process) who took part in the massage intervention program. The parents were interviewed prior to the massage intervention, immediately following the eight-week (one one-hour session per week for eight weeks) massage intervention program, and then 16 weeks following the termination of the program. The interviews were approximately 35 minutes in length. The ages of the children ranged from 2 years of age through 13 years, with the median age being 6.5 years. The massage intervention itself was set up with one therapist working directly with one parent-child dyad for the entire hour of the session. Similar to infant massage, the therapist instructed the parent in using massage techniques, in this case, effleurage, which uses gentle slow strokes.

Results of the study found that prior to the study, the amount and degree of touch among the families was quite varied. Most of the parents felt that touch was dictated by their child with autism, which is common because often children with autism experience varying degrees of sensitivity to touch among other sensory modulation difficulties and as a result, often shy away from touch in an effort to control their environment. The study reports that some parents felt frustrated that they were unable to connect with their children because they could not hug them, or nurture them, even if they are upset or hurt. Results immediately following the study found that the majority of parents felt more connected to their children, more understanding, confident and bonded. Results 16 weeks following the ending of the massage intervention demonstrate that the majority of the families continued to incorporate the massage into their lives, although the degree and time was varied. The families continued to report increased attachment, understanding and closeness, which fostered a sense of confidence and wellness. This study relates to infant massage and our infant wellness program in that it is focused not only on the physical benefits of massage, but also the bonding and attachment that occurs with mutual touch. It supports the idea that touch is overall beneficial for both parents and children.