

EARLY BRAIN DEVELOPMENT

In This Issue:

- 1 MCH & Early Brain Research
- 2 Disseminating Brain Research
- 3 Editorial: How Do We Care for Young Children?
- 6 Universal Hearing Screening
- 7 Alaska Report
- 8 Idaho Report
- 9 Oregon Report Washington Report
- 10 Resources Calendar
- 11 Bibliography
- 12 Technology Needs Assessment

Introduction:

The media is buzzing with the importance of early childhood brain development. Even *U.S. News and World Reports* has been wooed by the image of a busy smiling toddler (see "Baby Talk" June 15, 1998).

The current interest in infant and toddler development is the result of a nationwide effort that includes strong support from the White House, organizations such as the Carnegie Corporation and the Packard Foundation, and public awareness efforts that translate scientific discoveries directly to parents and other adults who interact with young children on a daily basis.

In 1997, President and Mrs. Clinton hosted "The White House Conference on Early Childhood Development and Learning: What New Research on the Brain Tells Us about Our Youngest Children." Participants spoke with the President, the First Lady, cabinet members, and thousands of people in over 100 satellite sites. Discussions centered around the role of early experience in brain development and the implications of this knowledge for children's intellectual and emotional well being.

This issue of *Northwest BULLETIN* focuses on early brain development with the goal of improving practices and policies that support the developmental needs of infants and toddlers. What is known to intuitive parents and experienced practitioners alike is that babies are eager for and capable of social interaction from birth. What is new is evidence that early experience creates physical changes in the architecture of the brain, and that sensory experience begin in utero. As Kathryn Barnard notes in her editorial (page 3), the first three years of life last forever.

Forming Connections: MCH and Early Brain Research

By Colleen Morisset Huebner, PhD, MPH

(Editors note: With this article, Dr. Huebner has provided an extensive bibliography which can be found on page 11.)

The significance of the early years of life for young children's development is well known among MCH professionals. Now, advances in research technology and neuroimaging have amplified this message, reaching a wider audience of scientists, service providers, policy makers and caregivers. The current interest in infant and toddler development creates and unusual opportunity for societal action on behalf of one of the most vulnerable groups within the MCH population. MCH professionals are in a unique position to lead this response because of a long-standing emphasis on prevention, the relation between health and development, the central role of parents, and the importance of advocacy.

This article begins with a brief summary of neurobiological changes in the first three years of life. Following that are highlights from research on infant capabilities and changes in the brain that relate to just one aspect of early development, language learning. Examples of how research findings such as these are translated to MCH policies and programs are provided in the material on newborn assessment, (page 2) and screening for hearing problems (page 6).

Early Brain Development: Age 0 - 3

Among humans, the brain is the last organ to fully mature. By the time a baby is born, the brain has approximately one hundred billion nerve cells (neurons). Cell formation and cell migration to appropriate regions of the brain are virtually complete, yet the brain is still unfinished. The connections by which nerve cells transmit and receive information are relatively few in utero; they increase dramatically after

Continued on page 4



Northwest BULLETIN: Family and Child Health is published quarterly for the Northwest Region by the Maternal and Child Health Program, University of Washington (UW) School of Public Health and Community Medicine, and the Healthy Mothers, Healthy Babies Coalition of Washington State, with support from the Seattle-King County Department of Public Health, the Western Washington Chapter of the March of Dimes Birth Defects Foundation, and the Bureau of Parent-Child Health Services, State of Washington Department of Health, and MCH Grant #MCJ-009043.

Editorial Board

Michelle A. Bell, Associate Professor
Maternal and Child Health Program
School of Public Health and Community Medicine, UW

Kathy Carson, MCH Coordinator
Seattle-King County Department of Public Health

Shelly Henderson,
Western Washington Chapter, March of Dimes Birth Defects Foundation

Carolyn Gleason, Regional Nutrition Consultant
Public Health Service, Region X
U.S. Department of Health and Human Services

Cynthia Shurtleff
Healthy Mothers, Healthy Babies Coalition of WA State
Jennifer Bright, Deputy Director,
NW Regional Primary Care Association

Sandra Burnham, Health Program Manager, Early Intervention Technical Assistant, Section of Maternal Child and Family Health, State of Alaska Department of Health and Social Services

Helen Stroebel, Director,
Idaho Kids Count, Mountain States Group

Jill Skrezyna, Centers for Child & Family Health
Oregon Health Division

Janna Halvorson, Health Services Administrator
Parent-Child Health Services
Washington State Department of Health

Guest Editor: Colleen Morisset Huebner, PhD, MPH

Board Editor of this Issue: Michelle Bell

Managing Editor: Deborah Davis Stewart

Assisting Managing Editor: Penny O'Leary

Contributions to the NW BULLETIN on news from throughout the Northwest, activities of state legislatures, upcoming meetings and events, as well as investigative articles and reviews are welcome; however materials submitted for publication are printed at the discretion of the Editorial Board. Notices for the Calendar should include a brief description of the event, the date, time and place, and the name of a contact person for further information. Submissions must be typewritten, double-spaced; illustrations and graphs should be in a form suitable for reproduction. Manuscripts and correspondence should be addressed to:

Deborah Davis Stewart, Managing Editor, Northwest BULLETIN, Maternal and Child Health Program, SC-36, University of Washington, Seattle, WA 98195

Disseminating What Is Known About Newborn Behavior

Bright Futures

In the last few years, there has been a broad-based effort to disseminate what is known about these amazing capabilities of the newborn and about early indices of communication and social development. For example, in 1990, the Maternal and Child Health Bureau initiated the *Bright Futures* project which expands guidelines for pediatric health supervision to consider the psycho-social context of the child's experience. "Best practice" recommendations for pediatric visits during the first year of a child's life include discussion of the family's social support network, observations of parent-infant interaction, and explicit questions about infants' physiologic and sensori-behavioral capabilities (Green, 1994).

Brazelton's Neonatal Behavioral Assessment Scale

This scale demonstrates to parents their infant's readiness for social interaction. Witnessing a newborn's ability to see and hear his caregiver, and habituate to (or tune out) repeated stimuli such as bright lights or noise is memorable. Many hospitals and pediatric practices now include part or all of a neonatal behavior exam such as the Neonatal Behavioral Assessment Scale, as a way of helping parents get to know their newborn (Brazelton & Nugent, 1995). Published 25 years ago, it discovers and demonstrates for parents the remarkable abilities of their newborn baby. Usually done when an infant is three days old, it is an eye-opener for many parents who have not realized that their new baby is capable of so much at such an early age.

National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care Programs

Published in 1994, these child care standards resulted from a collaboration between the American Public Health Association, the American Academy of Pediatrics, and Maternal and Child Health Bureau.

Examples of standards directed to early brain-building experience are:

"Opportunities are provided for each child to develop a personal and affectionate relationship with and attachment to one or a small number of caregivers whose care for and responsiveness to the child ensure relief of distress, experiences of comfort and stimulation, and satisfaction of the need for a social partner which are demonstrated by care-givers holding and comforting children who are upset, engaging in social interchanges such as smiling, talking and touching and being play partners as well as protectors." p. 47

"The facility shall provide space, colorful materials and equipment, indoors and outdoors, arranged to support learning and optimize opportunities for the child to act upon the environment; to confront new opportunities; to experience obstacles, frustrations, and dangers; and thereby learn to manage both inner feelings and resources and the occurrences and demands of the outer world." P. 48

For more information contact: Maternal and Child Health Bureau, National Health and Safety Performance Standards NCEMCH, 200 15th Street North, Suite 701, Arlington, VA 22201-2617

Editorial

How We Care for Young Children: What does the emphasis on early brain development mean to human service delivery systems?

Kathryn Barnard

The evidence of post-natal experience on brain development is sufficient for creating a new reality: the years from birth to three are important for early learning, not only a prelude to later learning. Operating on this reality would change how we care for infants and toddlers.

Until the early sixties most early child care was provided by parents in their own homes. Society viewed infancy to the preschool years as the province of the family. Mothers were expected to care well for their children. Society was confident that advice from family, neighbors, and health care providers would suffice in guiding them to give appropriate care.

The meaning of 'appropriate care' was largely unspecified but thought to be determined by culture and related to the outcome of the children. If children did not thrive, we believed that care was not good and we recognized conditions of child neglect and abuse. Even today, our classification of child neglect and abuse is imperfect, particularly the definition of neglect. Yet neglect has considerable importance concerning early brain development.

Now, in the late 1990s, a majority of mothers with young children work. Over 60 percent of children under three years of age are cared for by someone other than a parent. This casts a new light on child care. No longer is it primarily the province of the family. The increasing rate of non-parental care demands that the community take more responsibility for defining and providing early child care and after school care.

As communities, we have taken responsibility for the education of children beginning at age five; setting standard curricula, training and certifying

teachers, and paying for K through 12 education. This same commitment now challenges communities to define and provide the structure for early and after school child care. This shift of early child care from family to community demands policies and standards of care that address the reality that the earliest years of life are foundational to later development.

We now know that the brain develops most rapidly during the first three years, and continues until age 11. Neurons in the cortex are developing connections that facilitate the transfer of information from one neuron to another. The resulting conductivity of the brain is critical to the function of the cerebral cortex for processing information, making rational decisions, and regulating emotions. This process of laying down of axons and dendrites is totally dependent on the early stimulation of those neurons and active processing of the information within the brain.

We also know, however, that, at about age three, the brain begins to prune the neuronal connections that are under utilized. Thus the first major limitation of later brain capacity begins. If a child's care has been neglectful or caregivers depressed and unable to express positive emotion, the affected neural pathways diminish.

More Research Needed

We need much more research on this process of human brain development and function. We will learn more as techniques improve to monitor brain function. In the past decade, advances in EEG technology, MRIs, and CAT scans have brought us remarkable knowledge about brain structure and function. As technologies further develop, our knowledge will be more specific, helping to guide intervention.

We need to know what influence deprivation has on the function of the brain. Can a change in environmental conditions lead to recovery? We need to understand how emotions interact with learning. How does anxiety alter the brain's processing ability? We are very dependent on animal research at the present time, and, while many parallel findings exist, we need human model evidence to confirm and expand our theories.

Improving Children's Care Today

While needing to know more about brain development, there is enough evidence to support the reality that early learning is important to brain function. Three immediate concerns that communities must address are discussed below:

- Adequacy of nurturing experiences within child care
- Staffing and training of child care providers
- Help for mothers who are not able to parent well

Adequate Nurturing in Child Care

From NICHD studies on early child care we know that high quality day care that includes opportunities stimulating brain development is especially important to low-income children. The current licensing of child care is deficient, with the majority of the licensing concerns involving the physical survival of the child. While those must remain, there needs to be immediate expansion of licensing standards to include criteria related to the program or day care curriculum. Fortunately, many of these standards have been defined in a document called the National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care Programs (1994) (See page 2). These standards must be put into practice more widely.

Continued on page 6

Early Brain Development Research

continued from page 1

birth. The function of these synaptic connections is to “wire” the various areas of the brain, allowing for the integration and organization of sensory information across modalities. In time, a single nerve cell will have as many as 10,000 to 30,000 synaptic connections (Greenough, Black & Wallace, 1987).

In humans, there is an overproduction in the number of nerve cells and nerve connections. Cell death begins during gestation and continues for at least six months post-natally (Huttenlocher, 1979). The density of interneuronal connections increases rapidly in the first three years. By age 3, the child’s brain has established as many as 1,000 trillion synaptic connections (Shore, 1997). This number remains constant to approximately age ten, and then begins to diminish. By late adolescence, the density of the brain looks similar to an adult’s, with only half the connections of the young child (Shore, 1997).

Use It or Lose It

This knowledge of neuroanatomy is not new. However, until relatively recently, scientists assumed the proliferation and elimination of pathways among brain cells was automatic maturational process. Now, technological advances in brain imaging have helped make an amazing discovery: as the brain matures, it retains and strengthens synaptic connections that are repeatedly used and eliminates those that are underused.

Which connections are maintained and which are eliminated is not predetermined. Rather, this process occurs in response to early experience in the first three years of life, when children’s brains are more than twice as active as adult brains (Chugani, 1996). The process of synaptic pruning occurs less in areas of the brain devoted to life-sustaining regulatory functions such as breathing; it occurs most dramatically in the cerebral cortex, the area of the brain most involved in mental activities such as thinking, remembering, and planning (Shore, 1997). Based on measures of EEG activity, Dawson and her colleagues suggest the frequency and intensity of social experience plays a central role in establishing patterns of neural networks associated with individual differences in emotional behavior as early as age 12 months of age (Dawson, Hessler & Frey, 1994). This flexibility in neurobiological development has allowed humans to adapt to a wide range of physical and social environments. Now, our knowledge of the “use it or lose it” process of brain development carries with it an obligation that we attend to the emotional and intellectual needs of infants from the start.

Prenatal Start on Language Learning

Throughout history, adults have been fascinated by the ease at which otherwise helpless infants acquire spoken language. Yet despite both ancient and modern research, there is still no

consensus about how children as young as age three, master this remarkable skill.

More than thirty years of behavioral studies have provided a detailed account of the prerequisites and developmental milestones that characterize early language development (Kessel, 1988). The component skills required for first language learning depend on diverse capabilities including auditory perception and speech-sound production, imitation through cross-modal matching (e.g., the ability to observe and repeat the vocal and gestural movements of others) and complex memory systems that can store, recognize, and recall speech events. In addition to all this, first language acquisition depends on the newborn’s innate motivation for social interaction (Bates, Thal & Janowsky, 1992).

Infants are born ready for social interaction. At birth, the full-term newborn is equipped with diverse and complex central nervous system reflexes such as crying, rooting, sucking and clinging. These behaviors allow him to seek and regulate social stimulation. In addition, at birth, the newborn is capable of other behaviors that help him pay attention to human faces and voices, engage social partners, and shut out repetitive stimuli that are uncomfortable or intrusive (Brazelton, 1979; Trevarthen and Aitken, 1994).

Scientists interested in the perceptual capabilities of the infant have traced auditory processing skills back to the womb. Observations of fetal movement, using video-recorded ultrasonography, indicate the fetus is responsive to acoustic stimulation as early as 20 weeks gestation. And, by age 25 weeks, the fetus shows a reliable, organized auditory startle response (Shahidullah & Hepper, 1993). A particularly clever series of studies by DeCasper and colleagues has established a direct link between prenatal auditory experiences and postnatal preference. In the first of these studies, pregnant women were asked to read an assigned children’s story twice a day during the last six weeks of pregnancy. When tested in an operant-choice task postnatally, newborns showed clear preference for the target story. They preferred the familiar story over a novel story and over the target story as read by an unfamiliar female (DeCasper & Spence, 1986). Presumably, the newborns had learned and remembered features of the experience in utero. A related study conducted totally within the prenatal period, showed similar results. After just four weeks experience, fetuses responded differentially to target and control rhymes. The target rhyme elicited a decrease in fetal heart rate, but the control rhyme did not (DeCasper, Lecanuet, Busnel, Granier-Deferre & Maugeais, 1994). It appears that the remarkable skill of newborn to localize sound and show preference for human speech, especially the mother’s voice, is the result of several months of prenatal learning.

Postnatal Changes in Language and the Brain

In addition to prenatal experience with sounds and voices, by the time a normal-developing one-year old utters her first word, she has spent over 4,000 waking hours with caregivers and has heard countless words and conversations. Given the speed and accuracy with which infants make use of the abundant, but relatively imperfect input available to them, most theories of language development agree that human's ability to acquire language is a product of both nature and nurture. While the exact mechanisms responsible for language acquisition remain unknown, recent studies of infant learning, combined with research in cognitive neuroscience, have identified associations in the timing of changes in the brain and two hallmarks of early language development.

Age 12 months: Near the first birthday, at approximately the same time that neural connections among major areas of the brain are complete (Huttenlocher, 1984), infants can discriminate word and spoken non-word stimuli (Saffran, Aslin & Newport, 1996) and are capable of understanding a few words (Bates, Thal, & Janowsky, 1992). Bates proposes that early word comprehension depends on the presence of neural connections that integrate and organize information across modalities and regions of the brain. These connections permit the development of higher order functions such as the ability to recognize patterns and categorize input.

16 -24 months: Neural developments that accompany the transition from understanding words to producing them are less clear, but plausible. Following the establishment of functional connections, between 16 and 24 months of age there is a rapid acceleration in synaptic density that corresponds with a second well-known language milestone: the vocabulary "growth spurt" (Bates, Thal & Janowsky, 1992). Observable changes in language behavior during this period are well documented. The production of first words generally occurs around the first birthday. Following that, children pass through a ponderous period of vocabulary growth, adding and retaining a few words per month. However, upon achieving an expressive vocabulary of 50 to 75 words, at about 24 months of age, there is typically a vocabulary "growth spurt." The acquisition of new words accelerates rapidly and the content of the two-year-old child's vocabulary expands from one of mostly names to include verbs and adjectives (Fenson, Dale, Reznick, Thal, Bates, Hartung, Pethick, and Reilly, 1991). Thus there is an intriguing association between the timing of the vocabulary spurt and acceleration in synaptogenesis.

Beyond age two, language skills grow more complex and individual variation increases. Milestones in development are less obvious as children move from acquiring vocabulary and grammar to using language as a social tool. For many

children, especially those in low-income families, variation in the frequency and quality of verbal input in home experience are related to differences in language practice and proficiency (Hart & Risley, 1995). Among low-income children from multi-problem families, individual differences persist between 24 and 36 months of age; and on average, boys are less skilled than girls, particularly in child-mother conversation (Morisset, Barnard & Booth, 1995).

Whether differences in language competence in the toddler years are reflected in the connectivity of the brain is not known. Similarly, we know relatively little about what it takes to reverse the trajectory of poorer performance among socio-economically disadvantaged children. Stipek and Ryan's study of 233 preschool and kindergarten children indicates that it takes more than one year of formal schooling and the motivation to do well (Stipek & Ryan, 1997). In contrast, we do know that prevention, in the form of comprehensive intervention can succeed (Ramey & Landesman-Ramey, 1998).

Relevance to MCH

The correspondence between the earliest language milestones and changes in the anatomical structure of the brain is remarkable. Contrary to previous assumptions that early development unfolded according to a pre-determined blueprint, there is evidence that early experience plays a major role in the emotional expression and behavior of young children. The astonishing finding from current research is that social and environmental experience during early development becomes reflected internally in the physical make-up of the brain. This, along with other new research on brain development is taking us a step forward in hypothesizing about the mechanisms responsible for the qualities that make us human – language, emotion, creativity, planning, and choice, to name a few.

The implications for assuring children have the opportunity to develop these qualities to their fullest are vast. The skills of nurturing need to be nurtured in parents and other caregivers. For MCH practitioners, what is *new* calls us back to what is *known*: "the main determinant of children's health is the physical and social environment in which they grow" (Klerman, 1997).

Colleen Morissett Huebner, is Assistant Professor of Health Services with the Maternal and Child Health Program, Adjunct Assistant Professor, Family and Child Nursing, and Research Affiliate of the Center on Human Development and Disability. Her research focus is cognitive and emotional development among very young children. She can be contacted at collenh@u.washington.edu.

Editorial: How We Care for Young Children continued from page 3

The Staffing and Training of Child Care.

The current supply of staff is inadequate for licensed centers and homes, (ignoring the issue of unlicensed child care). The marked turn-over in child care staff impacts the need of young children for consistency. Training is inadequate. Washington State S.T.A.R.S. recommend 20 hours of initial and 10 hours annual training covering a vast array of topics such as child growth and development, child care and programming activities, health and safety practices, infection control, cultural diversity, nutrition and eating habits, parent education, design and use of physical space, and the care and education of children with special needs. Private and public agencies must create mechanisms and provide funding for training of prospective child care staff prior to their attaining responsibility for child care. This should include supervised experience on site.

Parents Needing Help

My final concern is with the parents who are not emotionally available to care for their young child. My estimate is that approximately 25 per cent of mothers who meet the criteria for poverty are not able to be nurturing parents because of their mental or emotional status. From Early Head Start programs we are learning that a sizeable proportion of the mothers are hard to engage in the program or in their child's care. These women have had traumatic life histories riddled with repeated episodes of abandonment, family violence, rape, and abuse. They have various levels of post-traumatic stress syndrome. Because of their own fears and unresolved losses, they are not emotionally available to their child and do not have the needed experience and skill to parent. Therefore, their children experience varying forms of neglect, rejection, and abuse.

For many years, public health nurses have been the "holding environment" for

these families. We have discovered that the nursing presence has helped the mothers on a long term basis (Olds, et al., 1997), but the children haven't shown developmental gains as a result of the nurse home visiting program. The attempt to improve parenting through working with the parent on parenting skills did not change the child's environment sufficiently to make a difference.

We need to reexamine the models we are using in early intervention, in the light of the new evidence about the importance of early learning in the first three years. We need to more directly influence the environment of the young child with complementary systems such as therapeutic child care and or infant mental health practices involving the infant in positive relationships with caring and responsive adults. The first three years last forever. We have it within our power to make the first three years good ones.

Kathryn Barnard is Professor of Nursing, Adjunct Professor of Psychology, and Affiliate Professor, Center of Human Development and Disability at the University of Washington. She is the Principal Investigator of the Washington State Training Program for Improving Family and Child Outcome funded by the Washington State Department of Health. She can be contacted at kathyb@u.washington.edu

References

Olds, D.L., Eckenrode, J., Henderson, C.R., Kitzman, H., Powers, J., Cole, R. Sidora, K., Morris, P., Pettitt, L.M. & Luckey, D. (1997) Long-term Effects of Home Visitation on Maternal Life Course and Child Abuse and Neglect: Fifteen-Year Follow-up of a Randomized Trial. *JAMA* 278(8) pp. 637-643

Maternal and Child Health Bureau. (1994) National Health and Safety Performance Standards. NCEMCH, 2000 15th Street North, Suite 701, Arlington, VA 22201-2617.

Universal Hearing Screening for Newborn

by Colleen Morissett Huebner M

Evidence that newborns are affected by and apparently make use of auditory stimuli beginning in utero, underscores the importance of early identification and intervention for infants with hearing problems. In 1994, the Joint Committee on Infant Hearing changed its recommendations from screening high-risk infants to universal newborn screening by age 3 months (Joint Committee on Infant Hearing, 1995). The Bureau of Maternal and Child Health strongly endorsed this recommendation by selecting newborn hearing screening as one of eighteen National "Core" Performance measures to be reported state by state beginning in 1998 (OSCH MCHB, 1997).

The benefit of universal screening is clear. A substantial proportion of children with serious bilateral sensorineural hearing loss, presumably present from birth, go undetected until the preschool years (MMWR, 1997). No doubt the situation is even worse for the larger number of children whose impairments are less extreme yet still sufficient to interfere with language development.

I am Your Child

I Am Your Child is a national public awareness campaign begun in 1997 to inform parents and professionals about early brain development and how important the first three years of life are to the emotional and intellectual growth of the individual.

Visit the *I Am Your Child* campaign is the web site: www.iamyourchild.org. From this web site you can download parent information, the latest info on research in early brain development, the location of the national and state coalitions, and the campaign materials.

Alaska Report

1998 Early Brain Development Activities in Alaska

by Michele Hansen, Alaska Department of Health and Social Service

Alaska's focus on early brain development research began with the *I Am Your Child* campaign. A statewide committee coordinated with the national campaign effort and encouraged local communities to sponsor appropriate activities. The communities of Anchorage, Fairbanks, Juneau and Bethel hosted a viewing of the national broadcast of the *I Am Your Child* television program in April of 1997. An Alaskan video was developed by The Alaska Children's Trust, a non-profit that works in partnership with communities to prevent child abuse and neglect. The Alaska video was televised prior to the national program. This "kick off" created opportunities for the statewide *I Am Your Child* committee to continue their efforts. The committee developed two information packages for parents that were distributed through Head Start, Early Intervention/Infant Learning, Childcare, WIC and Healthy Families programs statewide.

In the fall of 1997, many of the agencies who had collaborated on the *I Am Your Child* campaign once again collaborated to pull together a statewide conference under the theme of early brain development. As a lead up to the event, Dr. Frank Newman, President of the Education Commission of the States traveled to Juneau, Anchorage and Fairbanks in March 1998 to present the implications of early brain development research to legislators, families, community leaders, providers and physicians. The Alaska Department of Education joined Community and Regional Affairs and Health and Social Services in sponsoring and planning the conference entitled "The Early Years, The Critical Years – Implications of Brain Research on Early Childhood Policy and Practice." The conference was held September 23-25, 1998 in Anchorage. The Education Commission of the States, based in Colorado, sponsored the first day.

Approximately 650 participants attended. All areas of Alaska were represented and a few participants came from Washington, Oregon, California and Idaho. The first day involved high level policy makers and program staff who had the opportunity to hear national experts including: Dr. James McGaugh, founding director of the Center for Neurobiology of Learning and Memory, University of California Irvine; Dorothy Routh, Director of the Florida Starting Points Initiative; Dr. Ron Lally, Director of the Center for Child and Family Studies at West Ed, California; and Nina Sazer O'Donnell, Senior Associate at the Families and Work Institute, New York. Alaska Governor Tony Knowles gave his "1998 State of the Child Address" which provided an overview of the many successes and work that still needs to be done for children in Alaska. His address recognized outstanding programs and recommended additional funding for early childhood programs. In the afternoon, based on the brain development information, participants were asked to develop recommendations and strategies to improve policy and programs serving young children.

The box at the right gives a summary of some of the recommendations and strategies from this process.

The second and third days of the conference offered more in-depth training on brain research and development for those working in with young children prenatal to age three. Training strands included: Child Care in the Business World; Providing Quality Infant Care; Promoting Mental Health in the First Three Years, Translating Brain Research into Action – Advocacy, The Medical Science of Brain Development, Self-Care for Caregivers, and Strategies for Developing Healthy Families.

Michele Hansen can be reached at 907/269-3464.

RECOMMENDATIONS

Public Awareness/

Training/Education

Provide information and training on implications of brain research on child development to policy makers, providers and parents. This should occur through a media campaign and continuing education opportunities. (During the conference 60 individuals were trained to carry forward this new brain information.)

Prenatal to Three Services

Fully fund and mandate universal access to some level of prevention, early intervention, and home based services for all children and families in Alaska.

Child Care

Provide employment incentives such as access to health care, increased salaries, and training opportunities for childcare providers.

Parenting

Reduce stress on families by providing support through training, flexible work options, health care, increased community supports, and business/employer assistance.

Abuse and Neglect

- Increase public awareness of the effects of abuse and neglect on brain development,
- Rethink substance abuse service,
- Provide specific training for social workers, foster parents, sexual assault/domestic violence services providers, public safety workers, judicial system staff, and
- Revisit child protection policies to integrate brain development information.

These recommendations were compiled and included in a published report of the conference proceedings, which will be used to guide early childhood policy and practice in Alaska. State agency staff have made a commitment to follow up on specific recommendations and strategies from the conference.

Idaho Report

Success by BY 6: Treasure Valley's Goal

By Layle Wood, Initiative Director,
Treasure Valley United Way

The goal of Treasure Valley United Way's "Success by 6" initiative is that all of the community's children enter school prepared to learn. To accomplish that, the initiative is addressing the needs of families when they are the most receptive and most vulnerable - when they first become parents and during children's earliest years.

Activities are focusing on providing new parents with education related to child development and preparation for reading. They include: 1) publishing a parenting guide that lists community referrals; 2) implementing Mentor Parents and Parents as Teachers home visiting programs; and 3) expanding the *Healthy Families* home visiting program for moderate and high risk families.

The guide to parenting was completed in 1998. Community members in the fields of resources, health and safety, nutrition, parenting, and child development compiled it. The booklet will be available from doctor offices, Health and Welfare, hospitals, and home visiting programs.

Grant funds are being solicited to support local home visiting programs. Funds are needed to provide low risk families with at least one visit for information (including the parent guide) and referral to services to help them begin parenting with more confidence. In addition, medium/high risk families will receive the intensive support they need to reduce their risk factors and increase their parenting knowledge, skills and self-sufficiency. As a result of the home visiting programs, it is anticipated there will be less child abuse, more children meeting developmental tasks for their age, and more stability within the home, including on-going employment.

The fourth project of the initiative is offering preconception, prenatal, child

development, and school readiness classes in the workplace for employees. The businesses will be offered a menu from which their employees can choose. Preconception and prenatal classes will stress the importance of early prenatal care. Child development and school readiness classes will give parents educational support. For information, contact Layle Wood at Treasure Valley United Way (208) 336-1070.

Brighter Futures for Idaho's Kids

by Patricia Williams, Coordinator, Early
childhood Information Clearinghouse

In 1998 Idaho Department of Health and Welfare embarked on a series of steps to help Idaho's children get a better start in life. Under the umbrella of a project called *Brighter Futures for Idaho's Kids*, the three-pronged approach includes a clearinghouse of information on early childhood development, to expand child care access and quality, and to develop a long-term plan for the new Children's Health Insurance Program.

The clearinghouse include an internet site (<http://www2.state.id.us/idahochild>) where parents and caregivers of young children have access to a wide array of information on topics ranging from early brain development to health and wellness. The web site, unveiled in October 1998, was developed in cooperation with the Idaho State Library, the Idaho Department of Education, the Idaho Head Start Association and the Conference Office for Public Health Departments.

The web site includes information on immunizations, active parenting, adoption, early learning and toddler development, father's role and much more. Information is available in English and Spanish. Much of the information will be available in print. In addition, by calling the Idaho CareLine (1-800-926-

2588), individuals can obtain direct referrals to over 3,500 health and human services providers throughout Idaho. A resource specialist will stay on the line with the caller until the appropriate connection is found.

Recent improvements have drawn more families to the Idaho Child Care Program. The number of children served by the child care subsidy program has more than doubled since 1997, jumping from 6,630 children in 1997 to 13,502 children in 1998. In addition, quality improvement funds are being used to develop innovations such as before- and after-school care programs and continuing education for child care employees.

On November 16, 1998, a task force delivered recommendations for the long-term operation of Idaho's Children's Health Insurance Program. The program began operation as a Medicaid expansion in October 1997. Idaho was one of the first states to implement this new initiative. Public meetings on the task force's recommendations were held in October 1998. For questions, contact Pat Williams at 208/334-5551 or E-mail to williams@dhw.state.id.us.

Idaho Brain Research Conference

The J.A. and Kathryn Albertson Foundation is hosting a conference on June 8th and 9th. It will focus on the implications of the brain research on the learning and development for Idaho's young children. IRIS, an interactive technology system will be used throughout the conference.

Activities such as this conference are part of the Foundation's pledge to foster improvement of education in Idaho. Further information about the conference will be available through Mary Lou Kinney at the J.A. and Kathryn Albertson Foundation at 208/424-2600.

Oregon Report

Maximizing Oregon's Brain Power

by Jackie Meadows

Most of the professionals who work in the maternal child health field are delighted to have the concrete evidence of the brain research to prove unequivocally what they have known intuitively for years, that there is a critical opportunity in the perinatal period to start out right and make a difference.

The early years in the life of a child and family warrants the community's whole-hearted support and careful attention. Communities must invest in the nurturing of the physical, intellectual and emotional needs of pregnant women and parenting families to reap the extraordinary benefits to infants and society. The Oregon Title V-MCH Block Grant programs have mastered the art of working collaboratively with partners to improve the health of mothers and babies within their communities.

Oregon's Child: Everyone's Business (OCEB) Statewide Steering committee was formed as a public engagement campaign to promote the healthy development of young children. The intent was to popularize the national *I AM Your Child* promotion and provide a point of contact to support local efforts to get this information to parents, policy makers, and providers.

Our goals were simple and clear. A combined multidisciplinary effort of both public-private partners with a real commitment to families would be needed to:

- Increase public awareness of brain research and the importance of the first three years of life, including prenatal care
- Motivate family, business and community action to ensure young children's healthy development
- Stimulate and promote school readiness

- Publicize successful local programs which connect families with services and resources

The work of OCEB has been selected by the National Governor's Association as one of 25 exemplary public-private partnerships in the nation. The Steering Committee, consisting of partners from education, health, child care, business, government, libraries, child advocacy groups, and community groups, focused on several key activities. They financed and developed a beautiful set of photo cards highlighting developmental milestones and activities for parents from before conception through age three. The cards use the maternal-child health hotline number as a resource for parents and provider.

The OCEB Steering Committee also sponsors a Speakers Bureau. It has trained over 80 trainers statewide who speak to diverse groups on the implications of the brain research.

A large traveling exhibit is now available for display at meetings and public events to mark "the windows of opportunity." It includes a message from Governor Kitzhauser on how we can make a difference in a young child's development.

In June 1998, a statewide policy summit was held to focus on the strategies that would be needed in the health, education, housing, child care, and nutrition communities to maximize Oregon's brain power for the future. The Oregon Commission on Children and Families and the Oregon Child Care Resource and Referral Network has provided extraordinary staff support to manage the close partnerships required for this statewide grassroots initiative.

For more information or samples for the photo cards contact Jackie Meadows, Oregon Health Division 503/731-4021.

Washington Report

Improving Early Childhood Brain Development

by Maria Meengs Lathrop

Emerging science on early childhood brain development has mobilized state and local agencies in Washington State to undertake activities designed to improve early learning environments for children. The importance of the early years is not new information to many providers and policy makers. New scientific information provides useful reinforcement. It is also helpful when advocating for new opportunities for early child development.

Following are a few of the many activities around the state that use findings in early brain development to influence policies and practices.

"Brain Research Workgroups" In 1997 Community Trade and Economic Development (CTED), in partnership with the Child Care Coordinating Committee and the Lieutenant Governor's office, offered a day long train-the-trainer meeting focusing on the science of early childhood brain development. This group was reconvened to update on progress and decide next steps. It was decided that a more unified effort in Washington state on early childhood brain development activities was needed. Three subgroups were formed; infrastructure (which is the steering committee), media, and knowledge skills. These subgroups are in the planning phase to determine the best state-wide approach to increase information, skills, and knowledge around early childhood brain development for policy makers, providers, and the public. In addition, train-the-trainer events and advanced training events are already being planned.

Childcare Strategic Initiative: The Department of Health has adopted six strategic initiatives to help further their mission. The initiatives are opportunities to make significant progress in specific areas as they work with a

Washington, cont.

variety of partners. Health and safety in child care was identified as one of the six initiatives.

Child care is a cornerstone for learning, and safe child care settings greatly reduce children's risk of injury, illness, disease, and death. More than one-third of Washington's infants and toddlers are in child care situations that could be detrimental to their development. Three recommendations were identified to maximize these opportunities to build a foundation for later learning:

- 1) the development of a comprehensive approach to child care regulatory compliance among DOH, DSHS and local health departments and districts;
- 2) the development or revision of child care regulations and interpretative guidelines to reflect current health and safety trends and incorporate brain development research, and;

3) the creation and strengthening of community partnerships to provide consultation to parents, child care providers, and health professionals in the areas of early childhood brain development, mental and physical health, environmental health, infection control, and other areas of growth and development. The strategic action workgroups are now developing workplans to implement the recommendations.

Early Learning Commission: On June 4, 1998 Governor Gary Locke launched the Governors Commission on Early Learning. The Commission is co-chaired by the First Lady, Mona Lee Locke and Melinda French Gates. The Commission's charge is to ensure that every child in Washington goes to school prepared to succeed. The plans for the Commission include bringing

together leaders in health, education, child care, business, and government to critically examine the state's role in improving the earliest stages of learning for children from birth to three.

CHILD Profile education materials: Beginning July 1, 1998, all parents whose children are born in Washington State receive age appropriate periodic mailings (up to age 6) which provide them with information on caring for their young children. The information included (health, development, parenting, safety, etc.) assists parents in creating a healthy environment for their children. The materials are periodically reviewed to ensure the continuing incorporation of information on early childhood brain development.

Maria Meengs Lathrop can be reached 360/236-3588.

BULLETIN Updates

EVALUATION ISSUE

In the last issue, on evaluation, Janice Rabkin answered program evaluation questions in consultation with Lin Song, PhD., and Christie Spice, MPH, epidemiologists with the Seattle King County Department of Public Health. Marcia Weaver, PhD answered Idaho's Question #2 about whether you can demonstrate through a program evaluation that expanding family planning services will result in fewer potential Medicaid clients. She is an economist with the UW School of Public Health and Community Medicine. These names were inadvertently left from the article.

UPCOMING ISSUES AND

Northwest BULLETIN on the WEB

The next issue of *Northwest BULLETIN* will be on child care health, followed by an issue on technology. Please help us by filling out and FAXing the technology assessment on page 12. We hope to have issues of *Northwest BULLETIN* on the web for download by the next issue.

Resources & Calendar

Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents and related materials, Green, M. (Ed.) National Center for Education in Maternal and Child Health, 1994. Includes various support materials, such as an oral health guide (1996), encounter forms for parents and for health care providers, activity books for children, anticipatory guidance cards, and posters. Contact the National MCH Clearinghouse, 703/356-1964, or (e-mail) nmchc@circsol.com.

The Early Childhood Brain

Presentation Kit and video from the White House Conference on Child Care are available at 212/465-2044 X401 or www.familiesandwork.org

April 19-20, 1999, 24th Annual Adolescent Sexuality Conference Sponsored by Marion County Health Department Location: Seaside, Oregon. Contact Kristin Nelson at 503-373-3751 or e-mail KNelson@open.org

June 7-9, 1999, Rural Youth Injury Prevention Seminar, Marshfield, WI Contact Steve Schaeffer, 715/389-3754 www.marshmed.org/nfmc/children/

June 6-12, 1999, National Summer Institute, Low Literacy Communication Skills for Health Professionals, Contact University of New England Office of Continuing Education 207/283-0170

Spanish Language Workshops for Health Care Professionals

The Medical Spanish Workshops offer an intensive one-, two-, or four-day experience in which health professionals learn how to communicate effectively with Spanish speaking patients.

- April 23-24 Flagstaff, AZ
- May, 1999 Yuma, AZ
- June, 1999 El Paso, TX
- July, 1999 Albuquerque, NM

For information contact:
Rebecca Ruiz, Spanish Language Workshops, (520) 626-7946
Fax: (520) 326-6429
E-mail: spanish@rho.arizona.edu
URL <http://ahsc.arizona.edu/rho/spanish/>

Early Brain Development Bibliography

continued from page 5

References

- Barnard, K. Editorial: How We Care for Young Children: What does the emphasis on early brain development mean to human service delivery systems? *North-west BULLETIN: Family and Child Health*, 1999; 13(1) page 3.
- Bates, E., Thal, D., Janowsky, J.S. Early language development and its neural correlates. In Segalowitz S.J., Rapin, I., et al. (eds), *Handbook of Neuropsychology*, Amsterdam, Netherlands: Science Publishing Company, 1992: Vol. 7:69–110.
- Brazelton, T.B. Evidence of communication during neonatal behavioral assessment. In Bullowa, M. (ed), *Before Speech: the Beginning of Interpersonal Communication*, New York: Cambridge University Press, 1979:79–88.
- Brazelton, T.B., Nugent, J.K. (eds). Neonatal Behavioural Assessment Scale. *Clinics in Developmental Medicine 137*. Cambridge, UK: Cambridge University Press, 1995.
- Brownlee, K. Baby talk. *US News and World Report*, June 15, 1998; 124 (23):48–55.
- Centers for Disease Control and Prevention. Serious hearing impairment among children ages 3–10 years—Atlanta, Georgia, 1991–1993. *MMWR*, 1997;46(45):1073–4.
- Chugani, H.T. Neuroimaging of developmental non-linearity and developmental pathologies. In Thatcher, R.W., et al. (eds), *Developmental Neuroimaging: Mapping the Development of Brain and Behavior*, San Diego, CA: Academic Press, 1996:187–97.
- Dawson G., Hessl D., Frey, K. Social influences of early developing biological and behavioral systems related to risk for affective disorder. *Development and Psychology, Special Issue: Neural Plasticity, sensitive periods, and psychopathology*, 1994;6(4):759–779.
- DeCasper, A.J., Spence, M.J. Prenatal maternal speech influences newborns' perception of speech sounds. *Infant Behavior and Development*, 1986;9:133–50.
- DeCasper, A.J., Lecanuet, J-P, Busnel, M-C, Granier-Deferre, C., Maugeais, R. Fetal reactions to recurrent maternal speech. *Infant Behavior and Development*, 1994;17:159–64.
- Fensen, et al. *Technical Manual for the MacArthur Communicative Development Inventories*. San Diego, CA: San Diego State University, 1991.
- Green, M. (ed). *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents*. Arlington, VA: National Center for Education in Maternal and Child Health, 1994.
- Greenough, W.T., Black, J.E., Wallace, C.S. Experience and brain development. *Child Development*, 1987;58(3):539–59.
- Hart, B., Risley, T.R. *Meaningful Differences in the Everyday Experience of Young American Children*. Baltimore, MD: Paul H. Brookes Publishing Co., 1995.
- Huttenlocher, P-R. Synaptic density in human frontal cortex: developmental changes and effects of aging. *Brain Research*, 1979;163(2):195–205.
- Huttenlocher, P-R. Synapse elimination and plasticity in developing human cerebral cortex. *American Journal of Mental Deficiency*, 1984;88(5):488–96.
- I Am Your Child. ONLINE. 1997. The Reiner Foundation. Available: <http://www.iamyourchild.org> [15 Jun 1998]
- Joint Committee on Infant Hearing 1994 position statement. *Pediatrics*, 1995;95:152–6.
- Kessel, F.S. (ed). *The Development of Language and Language Researchers: Essays in honor of Roger Brown*. Hillsdale, NJ: L. Erlbaum Associates, 1988.
- Klerman, L.V. Promoting the well-being of children: the need to broaden our vision—The 1996 Martha May Eliot Award Lecture. *Maternal and Child Health Journal*, 1997;1(1):53–9.
- Morrisset, C.E., Barnard, K.E., Booth, C.L. Toddlers' language development: Sex differences with social risk. *Developmental Psychology*, 1995;31(5):851–65.
- Office of State and Community Health. *Training Materials: Maternal and Child Health Services Title V Block Grant Program, Title V Application/Annual Report*. Rockville, MD: Maternal and Child Health Bureau, 1997.
- Ramey, C.T., Landesman-Ramey, S. Prevention of intellectual disabilities: Early intervention to improve cognitive development. *Preventive Medicine: An International Devoted to Practice and Theory*, 1998;27(2):224–32.
- Saffran, J.R., Aslin, R.N., Newport, E.L. Statistical learning by 8-month-old infants. *Science*, 1996;274:1926–8.
- Shahidullah, S., Hepper, P.G. The developmental origins of fetal responsiveness to an acoustic stimulus, *Journal of Reproductive and Infant Psychology, Special Issue: Prenatal and Perinatal Behaviour*, 1993;11(3):135–42.
- Shore, R. *Rethinking the Brain: New Insights into Early Development*. New York, NY: Families and Work Institute, 1997.
- Stipek, D.J., Ryan, R.H. Economically disadvantaged preschoolers: Ready to learn but further to go. *Developmental Psychology*, 1997;33(4):711–23.
- Trevarthen C., Aitken, K.J. Brain development, infant communication, and empathy disorders: Intrinsic factors in child mental health. *Development and Psychology, Special Issue: Neural Plasticity, sensitive periods, and psychopathology*, 1994; 6(4):597–633.
- The White House Conference on Early Childhood Development and Learning: What New Research on the Brain Tells Us about Our Youngest Children. *Proceedings (April 17, 1997)*. ONLINE. 1997. U.S. Department of Education. Available: <http://www.ed.gov/offices/OERI/ECI/session1.html> [15 Jun 1998].

Reader's Survey

An upcoming issue of *Northwest BULLETIN* will be on Communications Technology. To ensure the issue is useful to you, we would like to know more about the technology you use, your knowledge of tools, about distance learning and, of course, what you would like to know more about technology.

Check all of the boxes that apply.

I am a

- Physician (specialty) _____
- Nurse Public Health Nurse
- Health Educator Social Worker
- Nutritionist Other _____

I practice in:

- Urban Setting Rural Setting
- State Agency Local Health Department
- Community Clinic Private Practice
- Academic Setting Other _____

I have access to a computer:

- as needed at limited times daily
- only a few times weekly other _____

Types of Programs I use regularly:

- Word Processing Spreadsheets Database

I have access to the Internet:

- as needed at limited times daily
- only a few times weekly other

I have e-mail: Yes No

I am comfortable using the internet to search for information:
Yes No

I am familiar with Distance Learning: Yes No

I have participated in Distance Learning:
As a Presenter As a Student

I would participate in Distance Learning: Yes No
Why not? (Tell us your concerns below or on a separate sheet.)

Are you interested in all types of Distance Learning?
All WEB-Based Satellite downlink Other
(Tell us your concerns below or on a separate sheet.)

I am familiar with and can use an "Acrobat Reader":
Yes No

I would read *Northwest BULLETIN* if it were on the Internet:
Yes No

What other topics would you like the *Northwest BULLETIN* cover? (Tell us your ideas below or on a separate sheet.)

If necessary, please correct your address on the label below. Please fax or mail names and address of subscriptions to be added or deleted. Please FAX this page to 206/364-5992 by May 5, 1999 or mail it to Deborah Stewart Managing Editor, 5223 NE 187th Street, Lake Forest Park, WA 98155.

Seattle-King County
Department of Public Health
999 Third Avenue, Suite 900
Seattle, WA 98104

Bulk rate
U.S. Postage
PAID
Seattle, WA
Permit No. 1619

Maternal Child Health Program
University of Washington, School of
Public Health and Community Medicine