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## **FASD CENTER NEWS**

### **Coordinating Center Update:**

The FASD Center for Excellence oversees activities of 23 subcontractors that are implementing either prevention models (Project CHOICES, Screening and Brief Intervention (SBI), or Parent-Child Assistance Program (P-CAP) or diagnosis and intervention services in their state, local, or court settings. The programs have completed their first year of implementation (July 31, 2009) and are now in their second year. Key activities for the subcontractors in the past year have included:

- Achieving buy-in from all stakeholders and partners in order to ensure support for staff training on FASD awareness and intervention techniques, collection and input of client data, adherence to screening criteria, and delivery of services;
- Attending various trainings and technical assistance calls to strengthen techniques for implementing the interventions and to address questions resulting from implementation;
- Implementing data collection, storage, and reporting mechanisms developed to support the evaluation activities of the program;
- Implementing screening and program services to eligible women and children ;
- Convening task forces meetings to provide ongoing direction and feedback on implementation and evaluation issues; and
- Refining plans for the current implementation year based on lessons learned in the first year.

The Center has also made significant progress obtaining approval from the Office of Management and Budget (OMB) on the various programs being implemented in order to collect and submit data to SAMHSA. To date, OMB approval has been obtained for both Project CHOICES and SBI. Approval for the P-CAP and Diagnosis and Intervention programs are anticipated in the near future. Once OMB approval is received, the Center can begin to collect data and conduct more detailed analyses on descriptive data and outcomes. As of September 2009, approximately 1,581 women were screened for eligibility to participate in Project CHOICES, and 616 (39%) of the women were eligible to participate. Approximately 7,954 women were screened for participation in SBI, with 1,444 (18%) eligible to participate. For P-CAP, all women were recruited for participation in the program in the first year since it is a 3-year intervention; 113 women were screened, and 95 (84%) were eligible and are participating. The Diagnosis and Intervention program has screened 2,326 children and youth for referrals for an FASD diagnosis. All individuals with positive diagnoses are then provided with a customized service plan. Of those screened, 494 (21%) were either referred for a diagnosis or are being monitored (ages 0-3) for possible positive criteria and later referral. Future Center updates will include more detailed information on the completion rates and outcomes for participants at the end of the programs and at 6- and 12-month follow-ups.

## ANNOUNCEMENT

### **APIS Update**

The Alcohol Policy Information System (APIS), a project of the National Institute on Alcohol Abuse and Alcoholism, has announced the latest update on alcohol policies by state.

This year's update includes a new posting of laws on "underage internal possession," which make it illegal for an underage person to have alcohol in his or her system. These laws typically require evidence of alcohol in the body, but they do not require specific evidence of possession or consumption. Such laws are useful to law enforcement officers attempting to break up underage drinking parties, because they allow officers to bring charges against underage persons who are

not holding an alcoholic beverage container and who have not been observed drinking alcohol by the officers. As of January 1, 2009, eight States have internal possession laws.

The update reports on 22 changes in State alcohol policy statutes and regulations during the year ending January 1, 2009. Other highlights address health policy, underage drinking, alcohol use during pregnancy, alcohol use related to operation of recreational boats, and other policies to control alcohol use.

### *Health Policy*

- California enacted a provision to prohibit denial of payment of health insurance benefits for losses due to intoxication of the insured (Uniform Accident and Sickness Policy Provision law).

### *Underage Drinking*

- Rhode Island enacted a provision to prohibit the manufacture of false identification for obtaining alcohol. The State also amended the “Use/Lose” law to mandate suspension of driving privileges for 30 days.
- Indiana enacted a provision allowing underage youth to purchase alcohol for purposes of enforcing laws that regulate sale of alcohol to minors. In addition, the State increased the minimum age from 18 years to 19 years for establishments that sell beer, wine, and distilled spirits to youth for consumption off the premises.

### *Alcohol Use During Pregnancy*

- Utah enacted a law providing priority access to substance abuse treatment for women and minors who are pregnant and abuse alcohol.
- South Carolina enacted a law that imposes two types of reporting requirements for health professionals who suspect or have evidence of alcohol use or abuse by women during pregnancy: a mandate for the purposes of data gathering and a voluntary provision to accomplish referral for assessment and treatment of pregnant women who use or abuse alcohol.

### *Alcohol Use and Operation of Recreational Watercraft*

- Colorado and Missouri reduced the limit for blood alcohol content from 0.10 percent to 0.08 percent for operators of recreational watercraft.

### *Other Policies To Control Alcohol Use*

- Colorado repealed the ban on Sunday sales of alcohol.
- Virginia enacted a voluntary Beverage Service Training and Related Practices law that provides for mitigation of penalties for violations.

These and other changes related to the 29 current APIS policy topics are posted at [www.alcoholpolicy.niaaa.nih.gov](http://www.alcoholpolicy.niaaa.nih.gov).

## **FASD-RELATED LITERATURE**

### **All About Me! – Advocacy Guidebook for Families**

The Bluegrass Prevention Center, under The Sycamore Project: Kentucky’s Prevention Enhancement Site for Fetal Alcohol Spectrum Disorders, has developed a guidebook for parents or caregivers to provide information about a child that is useful to professionals who work with the child, such as new teachers, therapists, and care providers. For further information, see a link specific to fetal alcohol spectrum disorders (FASD) and prenatal exposure to alcohol

[http://www.betterendings.org/downloads/AAM\\_FASD.pdf](http://www.betterendings.org/downloads/AAM_FASD.pdf) or the link that refers only to brain differences [http://www.betterendings.org/downloads/AAM\\_BrainDifferences.pdf](http://www.betterendings.org/downloads/AAM_BrainDifferences.pdf).

### **Atypical Functional Lateralization in Children With Fetal Alcohol Syndrome**

*Developmental Psychobiology*. September 18, 2009.

Domellöf E, Rönqvist L, Titran M, Esseily R, Fagard J

To explore effects of prenatal exposure to alcohol on functional lateralization, researchers administered tasks that measure preferences of hand, foot, eye, and ear to 23 children with a diagnosis of fetal alcohol syndrome (FAS). Results were compared with those in children with typical development (TD). In addition, a dichotic listening task was administered to a subsample of 11 children with FAS and a TD group of comparable age, sex, and handedness. The children with FAS had a greater tendency toward “non-right-handedness” than did children with TD. No differences were evident for preferential use of foot, eye, or ear. During dichotic listening, children with FAS displayed more right-ear extinctions than did children with TD, indicating a lack of right-ear advantage in children with FAS. These results add to findings of decreased manual asymmetry and less left-lateralized speech perception in children with developmental disorders. Study results are discussed in relation to the high incidence of abnormalities of the corpus callosum in children with prenatal exposure to alcohol.

### **Sexually Dimorphic Effects of Alcohol Exposure During Development on the Processing of Social Cues in Rats**

*Alcohol and Alcoholism*. November-December 2009; 44(6):555-560.

Kelly SJ, Leggett DC, Cronise K

In study of an animal model of fetal alcohol spectrum disorders, researchers investigated the impact on social recognition memory when rat fetuses were exposed to alcohol during a period equivalent to all three trimesters of fetal development in humans. The hypothesis was that effects on specific aspects of social recognition memory are sexually dimorphic. Measurement of oxytocin receptor binding in the amygdala region indicated that ethanol exposure lowered oxytocin receptor binding in females but not in males. The results suggest that ethanol exposure during development caused a deficit in memory duration but not encoding in males and a deficit in encoding but not memory duration in females. The researchers concluded that the deficit in ethanol-exposed females may be related to changes in oxytocin receptors in the amygdala.

### **Effects of Ethanol on Mouse Embryonic Stem Cells**

*Alcoholism, Clinical and Experimental Research*. September 17, 2009.

Arzumanyan A, Anni H, Rubin R, Rubin E

Fetal alcohol syndrome (FAS) reflects a constellation of congenital abnormalities caused by excessive consumption of alcohol by the mother. Interference with embryonic development likely plays a role in pathogenesis of the disorder. Ethanol-induced apoptosis has been suggested as a causal factor in the genesis of FAS. Mouse embryonic stem (mES) cells differentiate in vitro to form cell aggregates known as embryoid bodies (EBs), in which differentiation capacity and gene expression are similar to those of the early embryo.

In this study, ethanol increased apoptosis during in vitro differentiation of mES cells to EBs, but undifferentiated cells were not affected. In EBs, ethanol also delayed regulation of transcription factors during differentiation. The researchers concluded that ethanol may contribute to pathogenesis of FAS by triggering apoptotic pathways during differentiation of mES cells and by deregulating early stages of embryogenesis.

### **Polymicrogyria in Fetal Alcohol Syndrome**

*Birth Defects Research. Part A, Clinical and Molecular Teratology.* September 17, 2009 [Epub ahead of print].

Reinhardt K, Mohr A, Gärtner J, Spohr HL, Brockmann K

Intrauterine exposure to alcohol may result in a distinct pattern of craniofacial abnormalities and dysfunction of the central nervous system, designated as fetal alcohol syndrome (FAS). The spectrum of malformations of the brain associated with maternal alcohol abuse during pregnancy is much broader than the relatively uniform clinical phenotype of FAS. The most striking abnormalities involve impairment of neuronal cell migration. Polymicrogyria (PMG) has been reported only once, in an autopsy study of a child with FAS.

The observation in this study is only the second report of a patient with FAS and PMG. Cranial magnetic resonance imaging in a 16-year-old girl with confirmed fetal exposure to alcohol and the full phenotype of FAS revealed bilateral PMG in the superior frontal gyrus with asymmetric distribution. History, clinical features, and genetic investigations provided no evidence for any of the known genetic or acquired causes of PMG. This report appears to confirm the phenotypic variability of cerebral malformations associated with maternal alcohol abuse during pregnancy. The researchers recommend neuroimaging to detect PMG in patients with clinical features of FAS and neurologic deficits or seizures. They concluded that FAS should be considered as a differential diagnosis for PMG.

### **Prenatal Choline Supplementation Mitigates the Adverse Effects of Prenatal Alcohol Exposure on Development in Rats**

*Neurotoxicology and Teratology.* September-October, 2009; 31(5):303-311.

Thomas JD, Abou EJ, Dominguez HD

Prenatal alcohol exposure can lead to a range of physical, neurologic, and behavioral alterations referred to as fetal alcohol spectrum disorders (FASD). Variability in outcome observed among children with an FASD is likely related to prenatal and postnatal factors, including nutritional variables. Choline is an essential nutrient that influences brain and behavioral development. Recent animal research indicates that prenatal choline supplementation leads to long-lasting cognitive enhancement, as well as changes in brain morphology, electrophysiology, and neurochemistry.

This study examined whether choline supplementation during ethanol exposure effectively reduces the impact of exposure to alcohol in fetal rats. These data indicate that early dietary supplements may reduce the severity of some of these effects. The researchers reported that these findings have important implications for children of women who drink alcohol during pregnancy.

### **Prenatal Alcohol Exposure and Interhemispheric Transfer of Tactile Information: Detroit and Cape Town Findings**

*Alcoholism, Clinical and Experimental Research.* September 2009; 33(9):1628-1637.

Dodge NC, Jacobson JL, Moltano CD, Meintjes EM, Bangalore S, Diwadkar V, Hoyme EH, Robinson LK, Khaole N, Avison MJ, Jacobson SW

Previous research demonstrated that prenatal alcohol exposure due to heavy drinking by the mother affects the size and shape of the corpus callosum and compromises transfer of information between the hemispheres of the brain. The aim of this study was to confirm previous reports of poorer performance on a finger localization test of interhemispheric transfer in a cohort of 40 children with prenatal exposure to large quantities of alcohol and to extend these findings

to a cohort of 85 young adults with prenatal exposure due to moderate-to-heavy maternal drinking. These results confirm a previous report of impaired interhemispheric transfer of tactile information in children exposed to large amounts of alcohol in utero. The findings show that these deficits are also seen in individuals with moderate prenatal exposure to alcohol, particularly those exposed by binge-like maternal drinking.

### **Effects of Prenatal Alcohol Exposure on the Morphological Characteristics of Spinal Motor Neurons in Rats**

*Birth Defects Research. Part A, Clinical and Molecular Teratology.* September 2009; 85(9):791-799.  
David P, Subramaniam K

Clinical studies and research in animals have established that alcohol consumption during pregnancy produces irreversible developmental anomalies. Deficits in fine motor performance are often noted in infants with a diagnosis of fetal alcohol syndrome. However, the effects of alcohol on spinal motor neurons have not been examined. In this study, researchers assessed the morphometric alterations in spinal motor neurons in rats after prenatal exposure to alcohol. They observed adverse cytotoxic effects on growth and differentiation of motor neurons in utero.

### **Interventions for Children With Fetal Alcohol Spectrum Disorders: Overview of Findings for Five Innovative Research Projects**

*Research in Developmental Disabilities.* September-October 2009; 30(5):986-1006.

Bertrand J, Floyd RL, O'Connor MJ, Frankel F, Paley B, Coles CD, Kable J, Taddeo E, Dent D, Chasnoff I, Wells A, Bailey G, Gurwitch R, Mulvihill J, Chaffin M, Grim M, Olson HC, Astley S

Prenatal exposure to alcohol causes damage to the developing fetus, which results in a spectrum of disorders known as fetal alcohol spectrum disorders (FASDs). Although our understanding of the deficits and disturbances associated with FASD is far from complete, consistent findings indicate that such exposure results in serious, lifelong disabilities, especially when there is damage to the central nervous system. Until recently, information and strategies for interventions specific to individuals with FASDs have been gleaned from interventions used with persons who have other disabilities and from practical wisdom gained by parents and clinicians through trial and error or shared through informal networks. Such interventions have been implemented without systematic or scientific evaluation. This article provides a brief overview of a general intervention framework developed for individuals with an FASD and the methods and general findings of five intervention studies conducted within this framework.

The studies evaluated five interventions in diverse locations in the United States with different segments of the FASD population. All participants showed improvement in the target behaviors or skills, and the results of four studies achieved statistically significant treatment outcomes. Important strategies that emerged from the five interventions may explain their success. These strategies include educating or training parents, teaching children specific skills usually learned by observation or abstraction, and integrating therapy into existing treatment systems. These research studies for families dealing with an FASD suggest that there are current interventions that can address the needs of these children's and that can be presented as scientifically validated and efficacious to intervention agents such as schools, social services, and mental health providers. In the field of FASD research and clinical service, a common theme reported by families has been that clinicians and professionals have been reluctant to make a diagnosis of FASD because there were no known effective treatments. Results of these five studies dispel that concern by demonstrating several interventions that have been shown to improve the lives of individuals with an FASD and their families.

### **Uganda Health News: No Alcohol While Pregnant**

UGpulse.com, September 4, 2009

A gynecologist at Mulago Hospital, Uganda, urges women not to drink alcohol during pregnancy because of the risk of damage to the fetus. He said physicians have long known that alcohol easily passes through the placental barrier from the mother to the fetus and that, unlike the mother's body, the body of the fetus is not equipped to eliminate alcohol. As a result, the physician explained, the fetus retains a higher concentration of alcohol than that in the mother's body and the high concentration lingers longer in the blood stream of the fetus than in the mother's blood stream.

<http://www.ugpulse.com/articles/daily/news.asp?about=No+alcohol+while+Pregnant&ID=11784>

### **Living With Fetal Alcohol Spectrum Disorder**

*Leduc Representative*, September 4, 2009

The Bridges FASD Mentor Program targets women age 18 years or older who are living with fetal alcohol spectrum disorders (FASD) in Leduc, Alberta, and surrounding areas. The program is part of a 10-year government plan to increase services and support for individuals with an FASD and to prevent future births of children with an FASD.

Laurel Fitzsimonds, coordinator of the Bridges program, said the primary goal of the program is to create a circle of support around each woman to help her maintain a safe and stable lifestyle.

"Our basic philosophy is that...person[s] with FASD...[are] victim[s] in all of this, and there should be no shame or blame placed on them," she said. "We want to support them to achieve whatever potential they can reach and reduce [the chances of] any further disabilities...emerging."

FASD present differently depending on when and how often the mother drank during pregnancy, Fitzsimonds explained. Alcohol inhibits and alters development of brain structures and cells, and the fetal brain is developing throughout every stage of pregnancy.

There is no safe amount of alcohol during pregnancy, she said. The recommendation is that women stop consuming alcohol if they are considering pregnancy. Prenatal exposure to alcohol creates the potential for a wide range of disabilities, including poor memory, attention deficits, impulsive behavior, and poor ability to reason from cause to effect. All these disabilities present challenges for the individual throughout life. "Most adults with FASD have few people left in the world who support them unconditionally, and that is the promise we make to (the clients) – to support them unconditionally," Fitzsimonds said.

<http://www.leducrep.com/ArticleDisplay.aspx?e=1728496>

### **State Expands Addiction Treatment Services To Prevent Alcohol- and Drug-Related Birth Defects**

Read Media Newswire/New York State Office of Alcoholism and Substance Abuse Services, September 4, 2009

Commissioner Karen Carpenter-Palumbo has announced the expansion of Project Choices, which is an evidence-based program designed to prevent FASD in New York State. A federally funded multiyear program, Project Choices focuses on reducing risky drinking behaviors and increasing use of contraception by women in childbearing years.

"Nationally, one in eight pregnant women drink alcohol and 40,000 babies are born each year with FASD. Providing additional specialized services throughout our provider system will not only increase awareness and advance effective prevention and treatment of FASD, but more importantly, will lead to healthier children and families," she said.

<http://readme.readmedia.com/news/show/State-Expands-Addiction-Treatment-Services-to-Prevent-Alcohol-and-Drug-Related-Birth-Defects/949667>

### **New FASD Network Brings Help Closer**

*Winnipeg Sun*, September 9, 2009

The new Manitoba FASD Centre opened its doors on International FASD Awareness Day, September 9, 2009. Children with fetal alcohol spectrum disorders (FASD) in rural and northern Manitoba will now be able to obtain a more thorough diagnosis more rapidly. The province allocated an additional \$1.6 million into the FASD strategy to fund multidisciplinary diagnostic services.

"To families and parents, it's going to be extremely significant, because with the diagnosis they'll get information on which of the domains are impacted and what strategies they can employ to best accommodate that," said Jocelyn Bjorklund, a Winnipegger who has two children with FASD.

The difference, according to Bjorklund, is that instead of parents simply learning the form of FASD their child has, they will learn which of their child's nine brain domains (e.g., memory and attention) are affected and how to deal with that disability.

<http://www.winnipegsun.com/news/manitoba/2009/09/09/10805641.html>

### **Canadian Foundation on Fetal Alcohol Research Grants Awarded**

CNW Group, September 9, 2009

The Canadian Foundation on Fetal Alcohol Research is a 5-year commitment of \$1 million by the Brewers Association of Canada to promote interest and fund research in the short- and long-term biomedical, psychological, and social effects of alcohol consumption during pregnancy, as well as prevention of fetal alcohol spectrum disorders.

<http://www.newswire.ca/en/releases/archive/September2009/09/c3458.html>

### **Families Battle an "Invisible Disability"**

*Chicago Tribune*, September 9, 2009

For a decade, the call has gone out every year on the ninth day of the ninth month – Fetal Alcohol Spectrum Disorders Awareness Day – warning women about the dangers of drinking while pregnant, yet fetal alcohol syndrome remains stubbornly below the national radar, some health officials say. Almost 30 years after the U.S. Surgeon General began to warn women about alcohol-related brain damage, the disorder is still not as widely recognized as autism, epilepsy, or other developmental disorders.

"It's frustrating," said Kathy Mitchell, of the National Organization on Fetal Alcohol Syndrome. "Many physicians and health clinics still do not screen women for alcohol use, do not educate them on the hazards of drinking while pregnant, and do not even recognize FASD in their patients."

The Centers for Disease Prevention and Control and virtually every other mainstream public health organization maintain that there is no known safe amount or safe kind of alcohol or safe

time to drink alcohol during pregnancy. However, convincing moms that even a few beers or an occasional martini can do irreparable damage continues to be a muddled message. Last year, on "Good Morning America," an obstetrician told a woman in her eighth month of pregnancy who enjoyed a glass of wine...most evenings not to worry. "You're not going to do harm to that baby," he said. Shortly after the segment aired, the American College of Obstetricians and Gynecologists fired back, calling the information "potentially dangerous" and reiterating its "long-standing position that no amount of alcohol consumption can be considered safe during pregnancy."

Mitchell claims that only "a small handful" of medical schools teach physicians to recognize the range of birth defects in FASD. Too many clinicians still define the condition by its most severe manifestation – marked by facial deformities and stunted growth. "Unless a child has profound features or [is] adopted from Russia, the possibility of FASD is never even thought of," she lamented.

Lori Gertz of Long Grove said she visited 38 health care providers before getting a diagnosis for her now 6-year-old daughter, adopted at birth in the Midwest. However, even when children do fit a predictable profile, finding help can be a challenge, due to a lack of clear diagnostic criteria.

Looking back on the past decade, Ed Riley, a researcher, said, "We have a much better understanding of the mechanisms ... and have started to look at interventions in much more rigorous fashion .... For the most part, I remain optimistic that we're finally on the right track." [http://www.chicagotribune.com/news/local/chi-090909-fetal-alcohol-syndrome-story\\_0,5466337.story](http://www.chicagotribune.com/news/local/chi-090909-fetal-alcohol-syndrome-story_0,5466337.story)

### **British Columbia Scraps Healthy Choices in Pregnancy Project**

*Times Colonist*, September 19, 2009

The British Columbia government closed the Healthy Choices in Pregnancy project a year before it was slated to finish. The program focused on reducing the number of babies born with fetal alcohol syndrome. The project produced a number of educational materials and trained physicians and other health care providers in how to talk to women about substance abuse during pregnancy.

Officials had hoped to see a 50 percent increase in the number of women who received expert counseling. Jan Christilaw, president of British Columbia Women's Hospital, said, "It leaves us in a bit of bind in that we won't be able to actually learn as much as we should have been able to learn from this program." However, she still believes the program "focused attention on the role of the caregiver in fetal alcohol syndrome in a substantial way."

<http://www.timescolonist.com/health/scraps+healthy+pregnancy+project/2011524/story.html>

### **U.S. Supreme Court To Consider Case of Death Penalty for Person With Fetal Alcohol Syndrome**

PR Newswire, September 28, 2009

The U.S. Supreme Court will consider whether to take up the *Holmes v. Louisiana* case. The case involves Brandy Holmes, a 29-year-old woman with fetal alcohol syndrome, who is on death row in Louisiana. She was convicted of murder in 2003.

The National Organization on Fetal Alcohol Syndrome (NOFAS) submitted a friend of the court brief arguing that Brandy's prenatal alcohol-induced brain damage and deficits should be viewed as mitigating factors. A nonprofit public health advocacy organization, NOFAS represents

children and adults seeking medical, mental health, education, rehabilitation, and other therapeutic services for the spectrum of effects associated with prenatal alcohol exposure.

NOFAS President Tom Donaldson said, "Thirty-three states and the federal government don't execute persons with mental retardation – 16 more than only 10 years ago. Evolving standards of decency place Brandy's case squarely within the precedent established by the court and society with regard to intellectual disabilities and the ultimate punishment."

<http://www.prnewswire.com/news-releases/us-supreme-court-to-consider-fetal-alcohol-syndrome-death-penalty-case-62327972.html>

## FASD EVENTS

### **Four-Part Series on the Human Brain**

Madison, Wisconsin, October–December 2009

This four-part series on the human brain aims to provide a thorough overview of the human brain, discussion of the impact of prenatal alcohol use on the developing brain, and an arena for sharing information on the risks of alcohol consumption from adolescence through adulthood.

The instructor, Kimberly Chance Price, PhD, University of California–Berkeley, has expertise in research, program evaluation, teaching, clinical outreach, and peer counseling. Dr. Price served as a research fellow with the National Institute on Aging, National Center of Excellence in Women's Health, and National Institute of Mental Health.

The first workshop, "Overview of brain structure and function" (October 5), will provide a comprehensive view of brain function and structure, including major divisions of the nervous system; brain organization, key structures, and lateralization of function; and the main parts of neurons, as well as communication between neurons.

The second session, "Impact of prenatal alcohol use on brain development" (October 19), will give a detailed explanation of fetal brain development, summarize the latest research on the impact of maternal alcohol consumption on fetal brain structure and function, and provide discussion of factors that mediate protection of brain growth and development.

The third workshop, "Impact of alcohol and other drugs on the human brain" (November 13), will offer an update of research-based information on the human brain and will focus on the impact of drugs of abuse on short- and long-term brain structure and function.

The fourth session, "Demystifying the adolescent brain" (December 11) will highlight research-based information about adolescent brain development with emphasis on the impact of drugs of abuse on short- and long-term brain structure and function, as well as discussion of other factors that influence adolescent behavior.

For additional information on these workshops, contact Kristi Obmascher at 608-262-8971, toll free at 800-442-4617, or [kobmascher@dcs.wisc.edu](mailto:kobmascher@dcs.wisc.edu) and [http://www.dcs.wisc.edu/pda/aoda/015\\_brain\\_f09.pdf](http://www.dcs.wisc.edu/pda/aoda/015_brain_f09.pdf).

### **24th National Training Institute: Connecting Science, Policy, and Practice**

Dallas, Texas, December 4-6, 2009

This conference will cover the latest research, best practices, and policies for promoting health and development of infants and toddlers, including brain development and challenging

behaviors. For additional information, visit the Zero to Three Web site at <http://www.zerotothree.org/>.