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Proceedings of the 2014 Annual Meeting of the Fetal Alcohol Spectrum Disorders Study Group

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ABSTRACT

The 2014 Fetal Alcohol Spectrum Disorders Study Group (FASDSG) meeting focused on the dual themes of the risks associated with low to moderate alcohol exposure during pregnancy and knowledge translation practices to enhance the impact of scientific research. The meeting theme was titled "Low drinking versus no drinking: Matching science with policy and public perception." Despite decades of basic science and clinical evidence that has documented the risks associated with prenatal alcohol exposure, there still exists confusion and uncertainty on the part of health professionals and the public regarding the question of whether or not there is a "safe" level of alcohol consumption during pregnancy. The first keynote presentation reviewed the data obtained from large-scale epidemiological studies that have attempted to address the question of relative risk associated with low to moderate alcohol exposure during pregnancy. This presentation was followed by an expert panel discussion of the state of scientific evidence obtained from clinical and basic science investigations concerning this question, and strategies for moving research evidence into policy and practice. The second keynote presentation presented a framework for knowledge translation and mobilization to move research discoveries toward implementation. The conference also featured updates by government agencies, FASt data talks that highlighted new and innovative findings in FASD research, and award presentations, including a lifetime achievement award presented to Dr. Kenneth Warren to acknowledge his longstanding support for FASD research. A highlight of the meeting was the presentation of the 2014 Henry Rosett award to Dr. Philip May in recognition of his substantial contributions to epidemiological studies on FASD.

The Fetal Alcohol Spectrum Disorders Study Group (FASDSG) held its annual meeting on June 21, 2014 in Seattle (Bellevue), WA as a satellite of the joint meeting of the Research Society on Alcoholism and International Society for Biomedical Research on Alcoholism. Approximately 200 individuals attended the study group meeting, which included professionals and students from the United States, Canada, Australia, Denmark, and South Africa. Fifteen abstracts submitted by FASDSG members were selected for brief one-slide 5-min presentations of recent research findings, of which the majority (10) were given by trainees. Eight of these trainees also received travel awards to attend the meeting and give presentations on their research. The top-ranked trainee abstract was selected to receive the Timothy A. Cudd Award. This award was established in 2013 in memory of Dr. Timothy Cudd, a longtime FASD Study Group member who was internationally recognized for his research on FASD. New for the 2014 meeting, the Research Merit Award, given annually to the trainee judged to have made the most significant contributions to FASD research, was renamed the Kenneth R. Warren Merit Award. Dr. Warren, Deputy Director of the National Institute on Alcoholism and Alcohol Abuse (Acting Director 2008–2014), initiated NIAAA's research program on FASD more than 30 years ago, and has long been a champion for FASD research initiatives. In addition to the keynote and research presentations, the FASDSG membership received updates on FASD-related activities from the National Institute on Alcohol Abuse and Alcoholism (NIAAA), Centers for Disease Control and Prevention (CDC), and the Interagency Coordinating Committee on Fetal Alcohol Spectrum Disorders (ICCFASD). Attendees also participated in a networking lunch, which gave trainees the opportunity to interact with more senior researchers and clinicians. The capstone events of the meeting were the presentation of the Kenneth R. Warren Merit

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Award to recognize an outstanding young researcher, and the Rosett Award, to recognize lifetime contributions, achievement, and service toward furthering FASD research.

The theme of the 2014 meeting was "Low drinking versus no drinking: Matching science with policy and public perception." It is generally well recognized that heavy prenatal alcohol exposure causes FASD, a broad range of developmental disorders that encompasses several diagnostic subgroups including Fetal Alcohol Syndrome (FAS), partial FAS, and Alcohol Related Neurodevelopmental Disorder (ARND). In contrast, the impact of low-to-moderate alcohol consumption on pregnancy outcomes has been more controversial. Whereas some studies have found effects of low-to-moderate maternal alcohol consumption on cognitive and behavioral outcomes in offspring (Burden, Jacobson, Sokol, & Jacobson, 2005; Day, Helsel, Sonon, & Goldschmidt, 2013; O'Leary et al., 2010; Sayal, Heron, Golding, & Emond, 2007), other studies have reported no measurable effects of low-to-moderate prenatal alcohol exposure on cognitive and socio-emotional function (Bay & Kesmodel, 2011; Bay et al., 2012; Kelley et al., 2009, 2012; Robinson et al., 2010) in children and adolescents. These discrepant reports have led to conflicting views on the part of health professionals concerning the risks associated with low-to-moderate alcohol consumption during pregnancy. Whereas the majority of government agencies and health organizations advocate for complete abstinence during pregnancy, the general public has been exposed to numerous articles published in the lay press reporting on the results of studies suggesting that "light" drinking during pregnancy has no significant adverse effects on child development. The 2014 FASDSG meeting addressed this issue by an examination of the state of the scientific evidence surrounding the question of low-to-moderate alcohol exposure during pregnancy, and a discussion regarding strategies for knowledge translation to increase the impact of scientific discoveries.

The first keynote presentation by Dr. Katrine Strandberg-Larsen, Department of Public Health, University of Copenhagen, was titled "Evidence of risk from low-to-moderate alcohol exposure during pregnancy." Dr. Strandberg-Larsen presented data obtained from two sources: systematic reviews of the published literature on the risks associated with low-to-moderate alcohol exposure during pregnancy, and the Danish National Birth Cohort study. The question of whether or not there is a "safe" level of alcohol consumption during pregnancy continues to be debated in the popular press, in large part stimulated by publication of the results of studies that report little or no effect of low-to-moderate alcohol exposure on child outcomes. While these studies garner headlines, the actual information contained in the published reports remains difficult to interpret because of a large number of confounding factors. For example, there is no consistent definition of what constitutes "low-to-moderate" alcohol exposure during pregnancy, and different studies focus on a wide range of outcome measures taken at different developmental stages. These factors make it very difficult to compare outcomes across different studies. Compounding this problem, the dose–response relationship for alcohol to affect fetal development is poorly defined, is likely to vary across different outcome measures and with the timing of alcohol exposure, and is significantly impacted by a variety of risk modifiers (e.g., maternal and fetal genetics) that may not be known for an individual study population. Two systematic reviews published in 2007 reported on the effects of low-to-moderate prenatal alcohol exposure on pregnancy outcomes that included studies published up until 2005 (Henderson, Gray, & Brocklehurst, 2007; Henderson, Kesmodel, & Gray, 2007). The outcome measures considered in these reviews included miscarriage, stillbirth, intrauterine growth restriction, prematurity, birth weight, small for gestational age at birth, and birth defects including Fetal Alcohol Syndrome and neurodevelopmental effects. The authors of these reviews suggested that there was an association between weekly drinking and an increased risk for spontaneous abortion, and between binge drinking and neurodevelopmental effects, but no consistent evidence for other adverse consequences of low-to-moderate prenatal alcohol exposure on pregnancy outcomes. However, the authors also acknowledged that methodological weaknesses across studies made it impossible to rule out any risk associated with low-to-moderate alcohol exposure. A subsequent review (O'Leary & Bower, 2012) similarly suggested that, whereas there is no strong evidence for adverse fetal outcomes associated with low-to-moderate prenatal alcohol exposure, the threshold of alcohol exposure before the fetus is at risk is relatively low, and therefore the authors advocated for total abstinence from alcohol during pregnancy. Of interest, these authors also suggested that a number of confounding factors relating to the personal characteristics of "drinkers" versus "non-drinkers" could have had a significant impact on the observed frequency and/or severity of adverse outcomes associated with prenatal alcohol exposure in their sample. This phenomenon has been termed the "healthy drinker effect," which suggests that light drinkers are more likely than abstainers to be from high-income households, better educated, older, multiparous, and non-smokers. Moreover, given the widespread consensus that alcohol is harmful during pregnancy, women who have experienced difficult pregnancies and/or who are at high risk for reproductive failure are likely over-represented among non-drinkers. Finally, Dr. Strandberg-Larsen outlined the results of a large-scale meta-analysis of studies that specifically examined the impact of prenatal alcohol exposure on child neuropsychological outcomes (Flak et al., 2014). The authors of this meta-analysis reported a significant association between any binge prenatal alcohol exposure and child cognitive deficits and, based on 3 high-quality studies of 11,900 children aged 9 months to 5 years, a statistically significant detrimental association between moderate prenatal alcohol exposure and child behavior. However, the latter effect was not evident after exclusion of one large-scale study, nor was it evident when only studies that assessed moderate prenatal alcohol exposure were considered. The authors concluded that these findings support previous studies that have identified detrimental effects of prenatal binge drinking on child cognition, and suggested that prenatal alcohol exposure at levels less than daily drinking might be detrimentally associated with child behavior.

Dr. Strandberg-Larsen then reviewed data from the Danish National Birth Cohort Study, a longitudinal study that is following the offspring of close to 90,000 pregnancies recruited between 1996 and 2002 (Strandberg-Larsen et al., 2008). In this study, pregnant women were interviewed twice during the pregnancy, and then again, when their children reached the ages of 7 and 11 years old. This cohort has been used to examine the impact of prenatal alcohol exposure on pregnancy and child outcomes using maternal self-reports of alcohol intake, including the type, frequency, and amount of alcohol consumed per drinking occasion. Dr. Strandberg-Larsen outlined the results of two published studies that were designed to investigate the effects of maternal alcohol consumption during pregnancy on two measures, namely, fetal demise and neurodevelopmental outcomes. With respect to fetal death, alcohol consumption at a level of 2–3 drinks per week was found to be associated with a significant increase in the risk for spontaneous abortion during the first and second trimesters (Andersen, Andersen, Olsen, Grønbæk, & Strandberg-Larsen, 2012). However, in subsequent studies that have examined neurodevelopmental outcomes, and after adjusting for multiple confounders (e.g., maternal IQ, smoking, education, body mass index, age, parity, and pre-pregnancy drinking), low-to-moderate prenatal alcohol exposure was not found to be associated with children's intelligence,