■ Texas Birth Defects ■

MONITOR

■ Texas Department of Health, Bureau of Epidemiology ■

VOLUME 8, NUMBER 1, August, 2002

FROM THE DIRECTOR

Proceedings from the 2002 Statewide Birth Defects Conference

On March 7 and 8, 2002, over 135 professionals met in Fort Worth to share findings about the causes of birth defects and their prevention. These participants represented diverse disciplines such as genetic counseling, epidemiology, social work, public health, nursing, pediatric medicine, and early childhood intervention.

The speakers and topics were widely varied, but united around the overall goals of the conference:

- Identify current patterns of birth defects in Texas.
- Summarize findings from birth defects research in Texas and elsewhere.
- Discuss research-based strategies for preventing birth defects.
- Identify relevant public health and public policy issues.
- Identify treatment programs available to children with birth defects and their families.
- Describe the clinical features, epidemiology, and outcomes for Down Syndrome

The following is a sampling of abstracts from presentations made:

FINDINGS FROM THE TEXAS BIRTH DEFECTS REGISTRY. Peter Langlois, Ph. D. and Mary Ethen, M.P.H.,Texas Birth Defects Monitoring Division: Recent findings from the Texas Birth Defects Registry that demonstrate the descriptive epidemiology of birth defects in Texas, comparing the distribution of birth defects among groups defined by demographic and geographic characteristics (see article, page 3).

STATEWIDE NEURAL TUBE DEFECT RECURRENCE PREVENTION PROJECT. Elisa M. Ornelas, LSW, Texas A&M University: Explained how the Statewide Neural Tube Defect (NTD) Recurrence Prevention Project educates women who have had a NTD affected pregnancy, and gives them high-dose folic acid supplementation to reduce their recurrence risk. An overview of the intervention process, which identifies and contacts women, enrolls them in the project, and ensures that the vitamins are available to them. Discussed the most recent data accumulated by the project regarding demographics, enrollment, and compliance with folic acid treatment.

OVERVIEW OF SERVICES FOR CHILDREN WITH BIRTH DEFECTS IN TEXAS. Martha Jarmon, LMSW-ACP, B.C.D and Becky Ghose, M.P.H., Texas Scottish Rite Hospital: Demonstrated through case scenarios how to design a service plan that includes use of community resources. These services include government assistance programs and community-based organizations. Also looked at ways to find community resources, including identifying information and referral agencies.

USING BIRTH DEFECTS REGISTRY DATA FOR SERVICE DELIVERY PLANNING.Susan Panny, M.D., Maryland Department of Health: Maryland uses birth defects registry data to link individual infants to services, to characterize the population of children with each particular defect, to identify the types of services needed, to plan for the delivery of the appropriate number of services in the appropriate geographical area, and for research. Incidence/birth prevalence data can be plotted geographically on a state map, and existing services are plotted. Areas without services and significant need can be identified. This information can be used to justify budgets for establishing additional services or for moving existing services to a more user-

WHAT'S INSIDE

friendly location.

PRENATAL DIAGNOSIS AND SERVICE DELIVERY CONSIDERATION. Bannie Tabor, M.D., Obtertrix Medical Group of Ft. Worth: Described conditions in which prenatal diagnosis is beneficial for continuing pregnancies and situations where prenatal interventions are presently an option as well as potential future interventions. The importance of pre-delivery diagnosis to the family, obstetrician, and pediatrician was discussed.

THE ECONOMIC IMPACT OF BIRTH DEFECTS. Norman Waitzman, Ph. D., University of Utah Birth defects are diverse in terms of their origin and in terms of their effects. Cost-of-illness, to be rigorous, must take into account such diversity, as well as the long-term, non-medical effects of birth defects. The speaker and colleagues had developed a model to estimate the direct and indirect costs of birth defects in California and project their costs to the nation. This presentation introduced categories of birth defects and cost, and presented results on 18 of the most serious and costly birth defects.

The Texas Birth Defects Monitoring Division is committed to sponsoring this conference every two years in different Texas cities. We would like to thank our partners on the planning committee (see below), and look forward to the opportunity to collaborate with another multi-disciplinary group in the San Antonio–Austin area in 2004.

Copies of the conference proceedings will be available on the TBDMD web site (www.tdh.state.tx.us/tbdmd/index.htm) by mid-August. For more information, to receive a hard copy, or to be placed on the list for 2004, please contact Amy Case at 512-458-7232, amy.case@tdh.state.tx.us.

2002 BIRTH DEFECTS CONFERENCE PLANNING COMMITTEE:

- Cindy Bolton, BSN, R.N., and Taherah Soltani-Duncan, LMSW, Texas Birth Defects Monitoring Division, Regions 2 & 3
- Joanne Cafiero, RN, Member, Board of Directors, Spina Bifida Association of Dallas
- Dixie Camp, LMSW-ACP, Genetic Screening and Case Management, Texas Department of Health
- Amy Case, MAHS, Texas Birth Defects Monitoring Division
- Glenda Estill, R.N., Rainbow Coordinator, Texas Scottish Rite Hospital
- Alex Hathaway, M.D., Tarrant County Public Health Department
- Dr. Mary Kukolich, M.D., FAAP, FACMG, Cook Children's Medical Center
- Sophia Moschos, M.Ed., March of Dimes North Texas Division
- Angela Scheuerle, M.D., P.A., Texas Birth Defects Monitoring Division
- Lori J. Wolfe, MS, CGC, Director, Texas Teratogen Information Service

RESEARCH CENTER

Publications

Since its inception in 1997, the Texas Birth Defects Research Center (TBDRC) has moved toward making a significant contribution to the body of knowledge about birth defects causes, outcomes, and preventability. The rate of publication has gained momentum since 2000, as demonstrated by the following list of scientific publications funded partly or completely by TBDRC:

PUBLISHED MANUSCRIPTS:

- Waller DK, Pujazon MA, Canfield MA, Scheuerle AE, Byrne JLB. Frequency of prenatal diagnosis of birth defects in Houston, Galveston, and the Lower Rio Grande Valley of Texas, 1995. Fetal Diagnosis and Therapy 2000; 15: 348-54.
- Barber R, Shalat S, Hendricks K, Joggerst B, Larsen R, Suarez L, Finnell R. Investigation of folate pathway gene polymorphisms and the incidence of neural tube defects in a Texas Hispanic population. Molecular Genetics and Metabolism 70:45-52, 2000.
- Suarez L, Hendricks KA, Cooper SP, Sweeney AM, Hardy RJ, Larsen RD. Neural tube defects among Mexican Americans living on the US-Mexico border: Effects of folic acid and dietary folate. Am J Epidemiol 152:1017-23, 2000.
- Lynberg M, Nuckols JR, Langlois P, Ashley D, Singer P, Mendola P, Wilkes C, Krapfl H, Miles E, Speight V, Lin B, Small L, Miles A, Bonin M, Zeitz P, Tadkod A, Henry J, Forrester MB. Assessing exposure to disinfection by-products in women of reproductive age living in Corpus Christi, Texas, and Cobb County, Georgia: Descriptive results and methods. Environmental Health Perspectives 2001;109 (6): 597-604.
- Yoon PW, Rasmussen SA, Lynberg MC, Moore CA, Anderka M, Carmichael SL, Costa P, Druschel C, Hobbs CA, Romitti PA, Langlois P, Edmonds LD The National Birth Defects Prevention Study. Public Health Reports 2001 Supplement 1; 116: 32-40.
- Waller DK, Keddie AM, Canfield MA, Scheuerle AE. Do infants with major congenital anomalies have an excess of macrosomia? Teratology 2001; 64:311-17.
- Nembhard WN, Waller DK, Sever LE, Canfield MA. Patterns of First-year survival among infants with selected congenital anomalies in Texas,

1995-1997. Teratology 2001:64:267-75.

- Hendricks KA, Nuno OM, Suarez L, Larsen R. Effects of hyperinsulinemia and obesity on risk of neural tube defects among Mexican Americans. Epidemiology 12:630-635, 2001.
- Miles AM, Singer PC, Ashley DL, Lynberg MC, Mendola P, Langlois PH, Nuckols JR. Comparison of trihalomethanes in tap water and blood. Environmental Science and Technology 2002; 36: 1692-1698.

MANUSCRIPTS UNDER REVIEW:

- Canfield MA, Anderson JL, Waller DK, Palmer S, Kaye C. Folic acid awareness and use among women with a history of a neural tube defect pregnancy.
- Waller DK, Tita ATN, Werler MM, Mitchell A. The association between pre-pregnancy maternal body mass index and the risk of having an infant with a congenital diaphragmatic hernia

MANUSCRIPTS UNDER DEVELOPMENT:

- Anderson JA, Waller DK, Shaw G, Watkins M, Werler M, Canfield MA. Maternal Obesity, gestational diabetes and central nervous system birth defects: A Texas case control study.
- Smith, A, Kamen, B, Wright, D. Measuring Venous and Dried Blood Folate.
- Wright, D, Novoa, A, Smith, A. Feasibility Study of Field Collection of Blood Folate.
- Waller DK, Keddie A, Canfield MA. The association between waist hip ratio, body mass index and malformations of the central nervous system.
- Waller DK, Keddie A, Canfield MA. The association between diet and diet-related behaviors and malformations of the central nervous system.

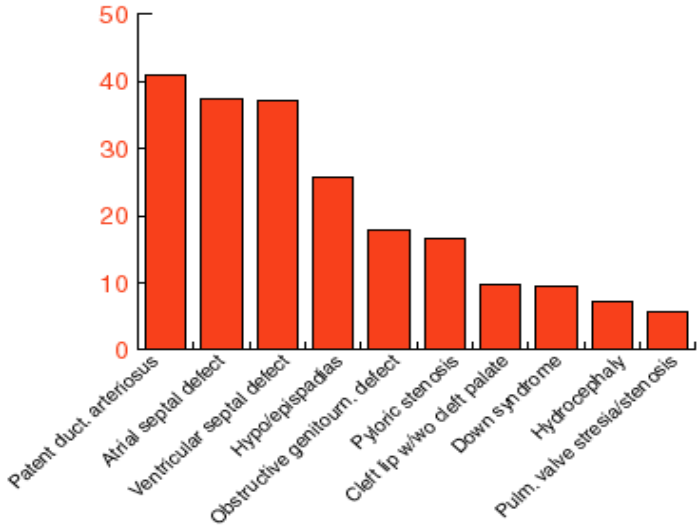
Continued Page 4

REGISTRY UPDATE

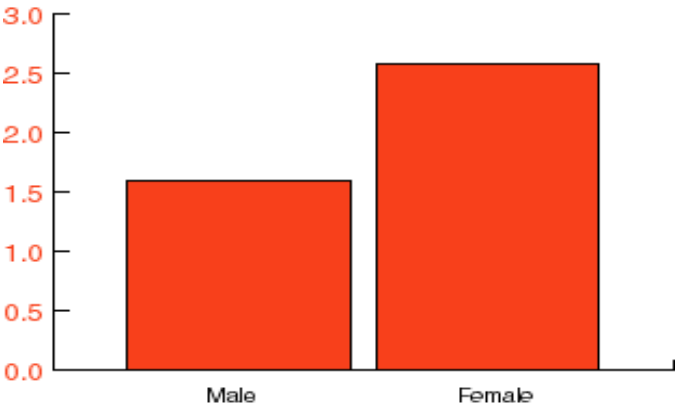
First Statewide Data to be Published

Beginning with deliveries occurring in 1999, all regions of Texas were included in the surveillance area; thus, with the coming publication of 1999 data, we have our first look at rates of birth defects for the whole state, and can in many cases compare rates between various regions and even counties. The following charts give us a glimpse into birth defect rates for Texas in 1998-1999. Presenters showed these provisional data to participants at the Texas Birth Defects Conference 2002 in Ft. Worth, Texas (See article, page 1).

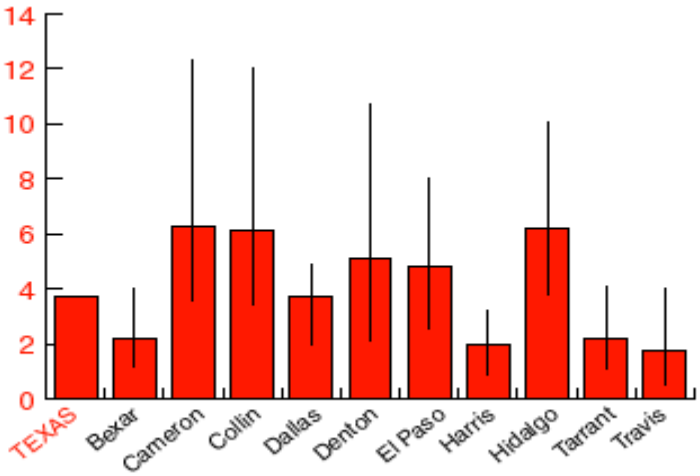
A report of 1998-1999 data is expected to be available electronically on the TBDMD web site by October 1, 2002. A printed report will follow. For more information, contact Mary Ethen, MPH at 512-458-7232, mary.ethen @tdh.state.tx.us.



Most Common Defects, Texas, 1998-1999, Per 10,000 Live Births



Anencephaly Rates by Sex, Texas, 1998-1999, Per 10,000 Live Births



Spina Bifida Rates in Populous Counties, Texas, 1998-1999, Per 10,000 Live Births

- Canfield et al. Patterns of folic acid awareness and supplementation in an ethnically diverse population.

Future Plans

The TBDRC co-principal investigators and staff and collaborators (including Drs. Shapira, Finnell, Waller, Brender, Suarez, Dyer, Scheuerle, Belmont, Hecht) convened in-person and telephone meetings throughout the spring to discuss long-term interests and proposals for consideration. Collaborators submitted proposals and budgets to TBDRC staff for review and comment. Based on the strategic partnerships among various university and government institutions, the group devised a five-year work plan.

On June 4, 2002, the TBDRC submitted an application for a Cooperative Agreements with the CDC Centers for Birth Defects Research and Prevention. If awarded, this grant will allow for the continuation of TBDRC activities such as the enhancement of the Texas birth defects surveillance system; further development and expansion of Texas 'epidemiological research capability; continued participation in the National Birth Defects Prevention Study; and the use of surveillance data for local and collaborative birth defects studies, including research into environmental exposures, gene-gene interactions, and gene-environment interactions.

For more information contact Beverly Taylor or Dawna Wright at the TBDRC, 512-458-7232.

Late-Breaking News

The Texas Birth Defects Research Center, has been awarded $900,000 for FY2003, in the first year of a new 5-year Cooperative Agreement from the CDC. Factors contributing to our successful application include a strong state-supported registry, an impressive team of collaborators from Texas universities, an important research agenda, and a building body of published findings from Center-funded research.

Prevention

Corn Mold and Neural Tube Defects

The story is now well known. In a matter of hours in April 1991, three babies were delivered at Valley Regional Medical Center in Brownsville. All three babies had anencephaly. Another three affected babies were delivered within the next six weeks. Public health officials were quite concerned. This rare condition usually affects only three babies in 10,000 live births. The culprit? Many criticized man-made chemicals. Some blamed the pesticides sprayed on the sorghum and cotton fields around Brownsville. Others blamed border manufacturing industries (maquiladoras) for releasing pollutants into the air and water. However, two years later, the anencephaly rate had returned to a more expected rate. What else might have produced this effect?

Shortly after the outbreak, officials from the Texas Department of Health (TDH) noted a temporal relationship between this unusual cluster and an unusual epizootic of equine leukocephalomalacia (ELEM), a fatal condition in horses caused by exposure to high levels of fumonisins, naturally occurring chemicals found in our food supply. TDH officials theorized that these same compounds could have been the cause of the outbreak and evidence collected over the past ten years is beginning to suggest that their concerns were not unfounded.

Fumonisins (pronounced few-MAHN-i-sin) are a family of mycotoxins produced by Fusarium moniliforme and F. proliferatum, two of the most prevalent molds associated with corn grown throughout the world. Most corn and corn-containing foods are likely to be contaminated with fumonisins at detectable levels.

The extent of fumonisin contamination depends upon environmental conditions, such as heat and drought. When the cluster of affected pregnancies occurred in south Texas, US corn-based products had experienced fumonisin levels two or three times higher than normal, as the entire nation was in a severe drought that affected the corn crop. In 1991, fumonisin levels in corn products around Brownsville increased, occurring concurrently with the increased anencephaly rate.

Since the prevalence of NTDs was greatest in Mexican Americans, a population that consumes relatively large quantities of corn in the form of tortillas, TDH speculated that exposure to fumonisins could be related to the outbreak.

TDH first alerted the Food and Drug Administration (FDA) in 1992, and since then research has produced a plausible biological explanation for how these compounds may contribute to increasing the risk for NTDs. It is widely accepted that folic acid supplementation is effective in reducing the risk for NTDs, and research has shown that fumonisins may impede the cell's ability to absorb folic acid.

The available toxicological and epidemiological information on adverse health affects and the association between fumonisins and human disease can be found in the November 2001 report entitled, "Background Paper in Support of Fumonisin Levels in Corn and Corn Products Intended for Human Consumption," accessible at www.cfsan.fda.gov/~dms/fumonbg3.html. This report also includes the recommended maximum levels for fumonisins in human foods that FDA considers achievable with the use of good agricultural and good

manufacturing practices. FDA officials feel that controlling fumonisins to these recommended levels can decrease exposure to fumonisins that may be found in corn products.

For more information, contact Dr. Kate Hendricks at 512-458-7111, Ext. 7676, kate.hendricks@tdh.state.tx.us; or Dr. John Villanacci, 512-458-7111, Ext. 6175, john.villanacci@tdh.state.tx.us.

–Contributed by Sarah Przybyla, MCH Intern and MPH Graduate Student from University of North Carolina; and Tonia Foyt, Community Health Intern from Texas A&M University.

ANNOUNCEMENTS

The March of Dimes Legislative Priorities

The March of Dimes of Texas announces the following legislative priorities for the 2003 Texas Legislative Session:

NEWBORN SCREENING: The March of Dimes (MOD) recommends every state screen newborns for nine metabolic disorders (or birth defects) that have no immediate visible effects on a baby but, unless detected and treated early, can cause physical problems, mental retardation, and even death. Texas currently screens for five of the nine disorders.

THE TEXAS BIRTH DEFECTS REGISTRY: Birth defect surveillance systems allow states to collect data for detecting birth defect trends and suggest areas for further research. The MOD continues to advocate for this vital component of Texas 'public health infrastructure.

CHILDREN'S HEALTH INSURANCE PROGRAM (CHIP): Higher-than-expected caseloads and premium costs have led to a possible shortfall in state funding for this program. The MOD advocates CHIP continue to be fully funded with no cuts.

IMMUNIZATION: The MOD supports renewed efforts to increase immunization coverage so that children are protected from preventable diseases, and will monitor legislation that attempts to broaden exemptions from immunizations. For more information, contact Jorey Berry at 512-477-3221, Jberry@marchofdimes.com.

UPDATE: Statewide Surveillance Restored

In the previous issue of the Monitor, we reported that surveillance activities in Texas Public Health Regions 1 and 4 would be curtailed beginning with 2000 deliveries. We are now pleased to announce that the Texas Department of Health awarded a portion of the state's Preventive Health and Health Services Block Grant funds to ensure that uninterrupted data collection continues throughout the entire state of Texas.

A Campus-wide Education Campaign in East Texas:

REACHING NON-CONTEMPLATORS WITH THE FOLIC ACID MESSAGE: College-age young women primarily fall into the "non-contemplators" group when developing community-focused folic acid messages. That is, they are not contemplating a pregnancy, so they are not considering what behavior changes they can make to support a healthy pregnancy.

The East Texas Folic Acid Council (ETFAC) adopted a project of conducting a two-week campus-wide folic acid education campaign at Stephen F. Austin State University (SFASU) in Nacogdoches, Texas. The student population for 2001-2002 was 11,569 with women making up 59% at almost 6,800. Our primary goal was to increase awareness of the importance of folic acid in preventing neural tube defects in infants, though information about other folic acid benefits was included in the campaign through printed material. We used March of Dimes and CDC folic acid education material designed for non-contemplators.

Students returned to campus for their spring semester on January 16, 2002, so the Council chose the last two weeks in January for the campaign to coincide with Birth Defects Prevention Month and take advantage of less pressure and stress during the early part of the semester. ETFAC members conducted pre- and post-campaign knowledge and behavior surveys with approximately 200 women to measure success. Questions related to vitamin usage and folic acid knowledge and behavior were taken directly from the Texas Women's Health Survey (see *Monitor* Vols. 4-1 and 4-2).

Folic acid information was posted on bulletin boards on campus; bookmarks were available in the library; the campus dietitian and an intern developed a large three-sided display for the main cafeteria; the staff in Campus Health Services included a brief message to patients during the two-week period; and members of a student organizations, the Health and Science Alliance (co-sponsors of the campaign), presented folic acid information to women in all five sororities, reaching about 500 young women. In addition, three student-accessed web sites carried a folic acid article, and a broadcast email with in-depth folic acid information was sent to more than 400 faculty and staff who were members of the wellness program.

The most significant successes came from increases in awareness of folic acid and the knowledge that taking it before pregnancy prevents neural tube birth defects. Before the campaign, 67% reported some level of knowledge about folic acid; after the campaign, the percentage increased to 74%. Again, in the pre-campaign survey, only 13% were aware that folic acid needed to be taken before pregnancy, but 27% were aware post-campaign. There were increases in other areas of knowledge such as folic acid's role in preventing birth defects which changed from 9%

before the campaign to 15% afterwards, and there was a large percentage decrease from 35% to 16% for those who had answered initially that they did not know what folic acid was for although they had heard of it.

A member of ETFAC had an opportunity to share the campaign experience with a health education class at another East Texas college in early March. That class decided to adapt the project for their own campus and conduct a similar campaign. Though ETFAC members provided technical assistance and some material, the class of 12 students designed and evaluated their own campaign from beginning to end.

Results of the second campaign are still being analyzed.

For additional information or to obtain a copy of the survey used for pre- and post-campaign assessment, contact Susan Bennett, RD, LD, Texas Department of Health, 1517 West Front St., Tyler, TX 75702 or by email at: susan.bennett@tdh.state.tx.us.

CDC Excite Educational Curriculum Module

BABIES AND BIRTH DEFECTS: A MYSTERY IN TEXAS: The Texas Birth Defects Monitoring Division is promoting a FREE educational module designed by the Centers for Disease Control and Prevention in Atlanta, Georgia. The module is designed to teach middle school and high school students about epidemiology, neural tube defects, and folic acid. The basic concepts of epidemiology are attained as students study an actual birth defects case in Brownsville, Texas. Students learn about the scientific method and epidemiology as they follow the steps scientists used to investigate the problem, incorporating both math and science skills. The module eases scientific inquiry by exploring epidemiological methods such as, applying the scientific method to different case studies, conducting scientific investigations, calculating relative risk, and computing metric system conversions. The module is effective in enhancing students' aptitude of reasoning and deductive skills and improving their proficiency of collecting and analyzing data. The Excite Curriculum Module is designed to increase awareness and knowledge of risk factors and good health practices through promoting the consumption of folic acid as a measure in preventing neural tube defects.

The integration of this free module is complementary to many core subjects such as math, science, and health. For more information please visit the National Center on Birth Defects and Developmental Disabilities, Excite Educational Curriculum site at <http://www.cdc.gov/ncbddd/folicacid/excite/0Home.htm>

FAS Corner

Town Hall Meeting

A Town Hall Meeting on Fetal Alcohol Syndrome/Fetal Alcohol Effects (FAS/E) was held at the Capitol in Austin on June 21, 2002 to gather information from individuals and families affected by FAS/E, as well as professionals, on personal experiences and the issues about their lives and work, especially gaps in services for persons with FAS/E and their families.

Representatives of the federal Center for Substance Abuse Prevention (CSAP), the FAS Center for Excellence, the National Center on Birth Defects and Developmental Disabilities of the CDC, the FAS Family Resource Institute, the Texas Interagency Council on Early Childhood Intervention, the Texas Commission on Alcohol and Drug Abuse, the Texas Department of Mental Health and Mental Retardation, and the Texas Education Agency heard the testimony.

The Texas meeting was one of only six such meetings planned across the U.S., and are sponsored by the FAS Center for Excellence, which was established by federal law and is administered through CSAP. Testimony will be summarized in a report to Congress due October 1, 2002, which will outline a national strategy on FAS/E prevention, screening, diagnosis, and treatment.

Selected Reading List

ABDOMINAL WALL DEFECTS AND METHOD OF DELIVERY: This meta analysis found no significant association between method of delivery (vaginal vs. cesarean) and rate of primary fascial repair, neonatal sepsis, or mortality for infants with abdominal wall defects such as gastroschisis and omphalocele. [Obstet Gynecol 2001;98:867-873]

BIRTH DEFECTS AND METHIMAZOLE: Researchers in Europe reported no increased risk of birth defects with prenatal exposure to methimazole, a medication used to treat hyperthyroidism. [Teratology 2001;64:262-266]

BIRTH DEFECTS AND SEX: Investigators in Atlanta observed the overall rate of major birth defects to be higher in males than in females. This increased risk among males was also reported for some specific birth defects. [Teratology 2001;64:237-251]

EPIDEMIOLOGY OF COARCTATION OF AORTA AND VENTRICULAR SEPTAL DEFECT (VSD): Using data from the Baltimore-Washington Infant Study, researchers found infants with coarctation of aorta and VSD were more likely to be small for gestational age and die within the first year of life than infants with coarctation of aorta without VSD. [Teratology 2001;64:229-236]

IMPERFORATE ANUS AND FOLIC ACID: Using data from the China-US Collaborative Project for Neural Tube Defect Prevention, investigators found reduced risk of imperforate anus with maternal use of folic acid. [Am J Epidemiol 2001;154:1051-1056]

CARDIOVASCULAR DEFECTS AND CHROMOSOME 22Q11 DELETION: Researchers in Pennsylvania reported that 38% of patients with chromosome 22q11 deletion detected after six months of age had cardiovascular defects such as vascular ring, right aortic arch, and left superior vena cava. [Pediatrics 2001;108:e104]

ORAL CLEFTS AND DIABETES: Researchers using data from the National Center for Health Statistics reported increased risk of oral clefts with maternal diabetes mellitus. [Ann Plast Surg 200147:477-481]

PRENATAL DIAGNOSIS OF HYDRONEPHROSIS: A study in Great Britain reported that 88% of prenatally diagnosed cases of hydronephrosis resolved prenatally or in the early neonatal period. [Ultrasound Obstet Gynecol 2001;17:191-196]

BIRTH DEFECTS AND INDUSTRIAL CONTAMINANTS: This review article discusses assessing relationships between birth defects and industrial contaminants. [Mutat Res.2001;489:123-145]

BIRTH DEFECTS AND AIR POLLUTION: Researchers in California reported an increasing dose response with increasing second-month carbon monoxide exposure for ventricular septal defects and similar risks with increased second-month ozone exposure for aortic artery and valve defects, pulmonary artery and valve defects, and conotruncal defects. [Am J Epidemiol 2002;155:17-25]

GASTROSCHISIS AND SMALL INTESTINAL ATRESIA AND MATERNAL MEDICATION: Using data collected in multiple cities in the U.S. and Canada, investigators in Boston reported increased risk of gastroschisis with maternal use of aspirin, pseudoephedrine, acetaminophen, and pseudoephedrine in combination with acetaminophen and increased risk of small intestinal atresia with maternal use of pseudoephedrine and pseudoephedrine in combination with acetaminophen. [Am J Epidemiol 2002;155:26-31]

EPIDEMIOLOGY OF HYPOSPADIAS: This article reviews the prevalence, etiology, and epidemiology of hypospadias, particularly the potential association between hypospadias and endocrine disruptors. [Environ Health Perspect 2001;109:1175-1183]

BIRTH DEFECTS AND DIABETES: Investigators in Sweden reported increased risk of selected birth defects (oral clefts, heart defects, esophageal/intestinal atresia, hypospadias, limb reduction anomalies, polydactyly, and spine anomalies) with maternal diabetes. Rates for many selected birth defects differed between maternal preexisting diabetes and maternal gestational diabetes. [Early Hum Dev 2001;61:85-95]

DOWN SYNDROME AND MTRR AND MTHFR POLYMORPHISM: Investigators in Ireland reported that variants in the folate metabolizing enzyme methionine synthase reductase (MTRR) and methylenetetrahydrofolate reductase (MTHFR) genes in mothers were associated with increased risk of having an infant with Down syndrome, particularly if the variants were present for both MTRR and MTHFR. [Am J Med Genet 2002;107:151-155]

PARENTAL ORIGIN OF TURNER SYNDROME: Investigators in Mexico reported 90% of cases of 45,X to be due to paternal non disjunction. In 3 of 5 cases where Turner syndrome was due to the presence of an abnormal X chromosome, the abnormal X chromosome was of maternal origin. [Am J Med Genet 2002;107:181-189]

CRYPTORCHIDISM, HYPOSPADIAS, AND POLYTHELIA AND DDE: A study in the United States found no association between maternal serum levels of DDE (1,1-Dichloro-2,2-bis(p chlorophenyl)ethylene), a metabolite of the pesticide DDT, and risk of cryptorchidism, hypospadias, and polythelia in male offspring. [Am J Epidemiol 2002;155:313-322]

BIRTH DEFECTS AND DRINKING WATER CONTAMINANTS: This review article discusses the potential relationship between drinking water contaminants and adverse pregnancy outcomes, including birth defects. [Environ Health Perspect 2002 Jan;110 Suppl 1:61-74]

FOOT ANOMALIES AND AMNIOCENTESIS: Investigators in Canada found the rate of foot anomalies to be 1.1% after amniocentesis at 11-12 weeks 'gestation, 0.4% after amniocentesis at 13-14 weeks 'gestation, and 0.1% after amniocentesis at 15-19 weeks 'gestation. [Prenat Diagn 2001;21:1137-1141]

CONGENITAL HEART DEFECTS AND PRENATAL DIAGNOSIS: Investigators in Pennsylvania reported prenatal detection rates of congenital heart defects (95%) and accuracy of prenatal detection (87%). Prenatal detection rates varies by the type of specialist performing the fetal echocardiography. [Fetal Diagn Ther 2001;16:407-12]

PYLORIC STENOSIS AND ERYTHROMYCIN: Investigators observed no association between pyloric stenosis and maternal erythromycin use during pregnancy. [Am J Obstet Gynecol 2002;186:288-290]

SPINA BIFIDA AND RFC1GENE: A study in California observed no association between spina bifida and the RFC1 A80G polymorphism. However, the data did suggest a potential interaction between the polymorphism and maternal periconceptional vitamin use. [Am J Med Genet 2002;108:1-6]

BIRTH DEFECTS AND ASSISTED REPRODUCTIVE TECHNOLOGIES: Investigators in Australia observed increased risk of major birth defects with in vitro fertilization and intracytoplasmic sperm injection. [N Engl J Med 2002;346:725-30]

BIRTH DEFECTS AND FENFLURAMINE AND PHENTERMINE: An investigation in California reported no increased risk of birth defects and maternal use of the weight loss product fenfluramine and phentermine during pregnancy. [Teratology 2002;65:125-130]

BIRTH DEFECTS AND VIETNAMESE RACE/ETHNICITY: Researchers in California compared the risk of various birth defects among the offspring of Vietnamese women to the offspring of non-Hispanic white women. Infants of Vietnamese women were at greater risk for 17 birth defect categories and at lower risk for 33 birth defect categories when compared to infants of non-Hispanic white women. [Teratology 2002;65:121-124]

BIRTH DEFECTS AND ANTHRAX VACCINATION: A study of U.S. Army women observed no increased risk of birth defects with anthrax vaccination. [JAMA. 2002;287:1556-1560]

BIRTH DEFECTS AND MULTIPLE SCLEROSIS: Researchers in Washington State noted no association between maternal multiple sclerosis and birth defects among their offspring. [Am J Obstet Gynecol 2002;186:446-452]

DOWN SYNDROME AND MORTALITY: Using U.S. death certificate data, investigators reported an increase in the median age at death between 1983 and 1997. Median age at death was lower in nonwhite than in whites. [Lancet 2002;359:1019-1025]

BIRTH DEFECTS AND PATERNAL OCCUPATION: This review article describes recent studies on the relationship between paternal occupation and birth defects and discusses potential pathways for paternal occupation teratogenesis. [Occup Environ Med. 2002;59:149-155]

FOOT DEFORMITIES AND EARLY AMNIOCENTESIS: Researchers in Sweden reported increased risk of foot deformities with early amniocentesis. [Fetal Diagn Ther 2002;17:129-132]

TETRALOGY OF FALLOT AND 22Q11 DELETION: Investigators in France found that 17% of fetuses with Tetralogy of Fallot had 22q11 deletion. Increased

nuchal translucency, intrauterine growth retardation, polyhydramnios, and severe pulmonary artery anomalies were more common in cases with 22q11 deletion, suggesting that these conditions could be used the predict 22q11 deletion. [Prenat Diagn 2002;22:231-234]

CHROMOSOMAL ABNORMALITIES AND GESTATIONAL DIABETES: Researchers in New England reported increased rates of chromosomal abnormalities, particularly numeric sex chromosomal abnormalities, when the mother had gestational diabetes. [Am J Epidemiol 2002;155:719-724]

EPIDEMIOLOGY OF DOWN SYNDROME: Investigators in Hawaii examined risk of Down syndrome with respect to various factors such as maternal age, delivery year, maternal race/ethnicity, and residence at delivery. [Teratology 2002;65:207-212]

TERATOGENESIS OF HOLOPROSENCEPHALY: This review article describes various potential teratogenic causes of holoprosencephaly, including maternal diabetes, alcohol, retinoic acid, and gene mutations. [Cohen MM, Shiota K. Teratogenesis of holoprosencephaly. Am J Med Genet 2002;109:1-15]

ORAL CLEFT STUDY GUIDELINES: This article presents summary statements of the International Consortium for Oral Clefts Genetics relating to studies of nonsyndromic oral clefts. [Cleft Palate Craniofac J 2002;39:93-100]

OMPHALOCELE AND MULTIVITAMINS: Researchers in Atlanta reported decreased risk of nonsyndromic omphalocele with maternal periconceptional multivitamin use. [Pediatrics 2002;109:904-908]

NEURAL TUBE DEFECTS AND RISK FACTORS: Investigators in Colorado reported increased risk of neural tube defects with female sex, low maternal age, maternal country of origin (Mexico) as compared to the United States, and low maternal education. [Public Health. 2002;116:89-94.]

BIRTH DEFECTS AND INFLAMMATORY BOWEL DISEASE: Investigators in Washington State reported increased risk of birth defects among infants born to mothers with Crohn's disease and ulcerative colitis. [Am J Gastroenterol 2002;97:641-648]

BIRTH DEFECTS AND CARBAMAZEPINE: This meta-analysis reported increased risk of birth defects with maternal use of the antiepileptic drug carbamazepine. [Reprod Toxicol 2002;16:9-17]

RENAL AGENESIS AND RISK FACTORS: Researchers in Colorado reported increased risk of renal agenesis with male sex, maternal diabetes, and African-American race. [Am J Kidney Dis 2002;39:689-694]

BIRTH DEFECTS AND CORTICOSTEROIDS: Investigators in Denmark reported no increased risk of birth defects with maternal use of topical corticosteroids during the periconception period or pregnancy. [Acta Obstet Gynecol Scand 2002;81:234-239]

Calendar

2002:

AUGUST 15-18. 5p- Annual Conference Salt Lake City, UT. For information, call 714-901-1544 or 888-970-0777.

SEPTEMBER 17-19: National Centers on Birth Defects and Developmental Disabilities Inaugural Meeting, Atlanta, Georgia. https://sec.cdcmeetings.com/ncbddd/

SEPTEMBER 20: National Birth Defects Prevention Network/International Clearinghouse for Birth Defects Systems Meeting. Atlanta. Contact: Cara Mai (770) 488-3550, cmai@cdc.gov.

SEPTEMBER 21-23. National Down Syndrome Congress 29th Annual Convention, Denver. For information, call 800-232-NDSC or visit www.ndsccenter.org.

SEPTEMBER 26-29: Texas Pediatric Society Annual Meeting, Fort Worth. www.txpeds.org/annual_meeting.htm 512/370-1519 Kathy.Burshnick@txpeds.org

SEPTEMBER 28-30, 2002. World Congress on Disabilities Atlanta. For information, contact Jennifer Molski at 800-795-6732, SDA@dystonia-foundation.org or visit www.dysphonia.org.

SEPTEMBER 30-OCTOBER 3: Statewide Community Resource Coordinating Group Conference 2002, San Antonio. State CRCG Office, 512-206-4564. www.hhsc.state.tx.us/crcg/Conference2002/crcg_conference_2002.html

OCTOBER 2002--NATIONAL SPINA BIFIDA AWARENESS MONTH:

NOVEMBER 8-9: Texas Children's Heart Center, International Pediatric Cardiac Nursing Symposium.Contact nursing@texaschildrenshospital.org, 832-826-5741

NOVEMBER 11:Pre-filing of legislation for Texas 78th Legislature begins

NOVEMBER 9-13:American Medical Informatics Association Annual Fall Symposium San Antonio www.amia.org/meetings/annual/current/general.html 301-657-1291, mail@mail.amia.org.

2003:

JANUARY: National Birth Defects Prevention Month

JANUARY 14 :Texas 78th Legislature convenes

OCTOBER 11-15:American Society for Reproductive Medicine Meeting, San Antonio

The *Monitor* is published twice a year by the Texas Birth Defects Monitoring Division, Texas Department of Health.

EDITOR: Amy Case, M.A.H.S., Communications Manager, Texas Birth Defects Monitoring Division

CONTRIBUTORS: Mark A. Canfield, Ph.D., Mary Ethen, M.P.H., and Mathias Forrester, Texas Birth Defects Monitoring Division; Dawna Wright Ph.D., Texas Birth Defects Research Center; Susan Bennett, Texas Department of Health Region 4; Sarah Przybyla, Univeristy of North Carolina; Tonia Foyt, Texas A&M University.

TO BE ADDED TO THE MAILING LIST. For this or other free publications from the Division, please contact us at (512) 458-7232 or e-mail bobbie.mankowski@ tdh.state.tx.us.

MORE INFORMATION CAN BE FOUND AT. www.tdh.state.tx.us/tbdmd/index.htm

TDH Pub. No. 58-10955 Vol. 8-1

Texas Birth Defects Monitoring Division
Texas Department of Health
1100 West 49th Street
Austin, Texas 78756
512-458-7232
www.tdh.state.tx.us/tbdmd/index.htm

Address Service Requested

First Class U.S.
Postage Paid
Austin TX
Permit 28