



## January is Birth Defects Prevention Month

... but any month is the month to prevent birth defects.

Birth defects are abnormal structural or functional/metabolic conditions that are present at birth. Some are mild, like an extra finger or toe. Some are very serious, like a heart defect. They can cause physical, mental, or medical problems. Some birth defects are caused by genetic factors like Down syndrome or sickle cell anemia. Others are caused by certain drugs, medicines, or chemicals. The causes of most birth defects are still unknown. Researchers are working hard to learn the causes of birth defects so we can find ways to prevent them. \*\*

The good news is that new ways of preventing and treating birth defects are being found. Folic acid is a B vitamin that can help prevent birth defects of the brain and spinal cord called neural tube defects (NTDs). Genes that may cause birth defects are being discovered every day, providing hope for new treatments and cures. Genetic counseling can provide parents with information about their risks based on family history, age, ethnic or racial background,

or other factors. Better health care for mothers with problems like diabetes or seizures can improve their chances of having healthy babies. In addition, immunization prevents infections like German measles (rubella) that can harm unborn babies.\*\*

### Did You Know?

- ◆ Birth defects are the leading cause of death in children less than one year of age—causing one in every five deaths.
- ◆ 18 babies die each day in the U.S. as the result of a birth defect.
- ◆ Defects of the heart and limbs are the most common birth defects.
- ◆ Millions of dollars are spent every year for the care and treatment of children with birth defects.\*\*

\*\*Source: National Birth Defects Prevention Network (NBDPN) pamphlet: Important Information about Preventing Birth Defects



The Georgia Birth Defects Reporting and Information System (GBDRIS) was designed to provide information about the epidemiology of birth defects in Georgia. The GBDRIS is a statewide surveillance system with passive case ascertainment, which means that cases are identified and reported by hospitals, medical centers, and

other providers. The system was implemented during 2003 as a pilot project in 15 hospitals and medical centers. Due to the success of the pilot project, the surveillance system was expanded statewide to all the birthing hospitals and medical centers. The system now captures a total of 92 facilities (91%) of all birthing hospitals that are currently reporting on a regular basis.

The chart below illustrates the number of hospitals that are reporting from each of the public health districts in Georgia.

### Neural Tube Defects—Enhanced Surveillance

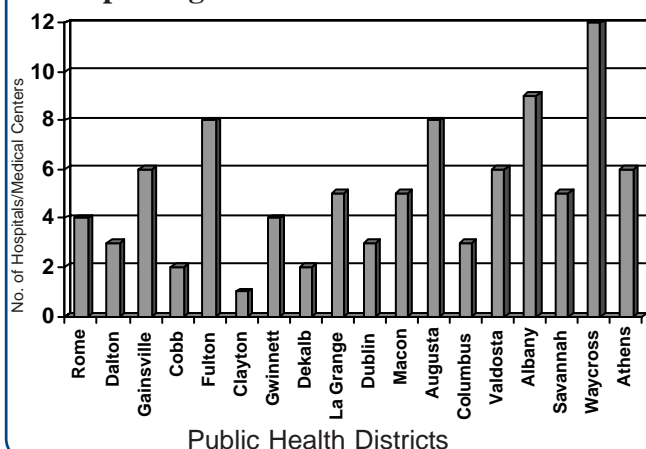
As part of our increased efforts to prevent neural tube defects (NTDs) we are flagging all NTD cases and are collecting additional information on each case on a monthly basis. The additional data will help us to further develop prevention strategies.

### Newborn Surveillance and Tracking System (NSTS)

The NSTS is a web-based newborn surveillance and tracking system for the collection, management and analysis of newborn and child health and case management information. It will provide secure access for approved private and public health care providers and local, district and state level program managers. The purpose of the NSTS is to:

- ◆ Provide rapid identification of every newborn
- ◆ Assure follow up and referrals through tracking
- ◆ Establish a unified child health profile over time
- ◆ Assess the burden of health conditions and risk factors through surveillance
- ◆ Evaluate programs

**Number of Hospitals/Medical Centers Reporting from each Public Health District**



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The NSTS will collect and integrate information for five programs that help address problems associated with infant morbidity/mortality and poor health outcomes of young children. The following programs will be integrated in the final system:

- ◆ Children 1<sup>st</sup>
- ◆ Hearing Screening, Diagnosis and Intervention
- ◆ Newborn Blood Spot Screening
- ◆ Georgia Birth Defects Reporting and Information System (GBDRIS)
- ◆ Georgia Childhood Lead Poisoning Prevention Program (GCLPPP)
- ◆ Vital Events Registration (birth, death and fetal death certificates)

#### INFORMATION ON BIRTH DEFECTS AND RELATED LINKS

<http://health.state.ga.us/epi/mch/birthdefects/index.asp>

<http://health.state.ga.us/epi/mch/birthdefects/gbdris/links.asp>


#### INFORMATION ON THE GBDRIS

<http://health.state.ga.us/epi/mch/birthdefects/gbdris/index.asp>

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## FOLIC ACID

You Don't Know What You're Missing!



**FOLIC ACID:**

- ◆ Helps prevent birth defects;
- ◆ Reduces the risk of other birth defects such as cleft lip, cleft palate and heart defects;
- ◆ May reduce the risk of cardiovascular disease and colon, cervical and breast cancer; and may even help prevent Alzheimer's disease.

## Obesity, Diabetes and Birth Defects

Obesity and diabetes are intimately related. Both of these conditions have similar metabolic abnormalities which include insulin resistance and hyperinsulinemia.<sup>1</sup> These conditions occur both alone and in combination. They are also risk factors for birth defects, more specifically, neural tube defects. This section focuses on both obesity and diabetes.

### OBESITY

Obesity is defined as an abnormal accumulation of body fat in proportion to body size. It is typically measured using the height and weight of an individual to calculate the Body Mass Index. It is the most commonly used indicator of obesity.<sup>2,3</sup>

$$\text{BMI} = [\text{WEIGHT (KG)}] \div [\text{HEIGHT (M)}]^2$$

The Institute of Medicine has set the following cut off points to determine categories of weight status

	<b>BMI</b>
Underweight	< 19.8
Normal weight	19.8-26.0
Overweight	26.0-29.0
Obese	> 29.0

- ◆ Obesity has become a major public health issue all over the world.<sup>4</sup>
- ◆ The increased prevalence of obesity in the U.S among women of reproductive age raises concerns about the effect of obesity on pregnancy outcomes.<sup>2</sup>
- ◆ About 10% of pregnant women are obese.<sup>5</sup>

#### Risks Associated With Obesity During Pregnancy

- ◆ Obesity increases the risk of gestational diabetes, pre-eclampsia, delivery complications such as macrosomia, shoulder dystocia, higher rates of cesarean sections and infections.<sup>4</sup>

- ◆ Several independent studies have shown an association between obesity and neural tube defects.<sup>6-10</sup>
- ◆ Other defects possibly associated with obesity include heart defects, orofacial clefts and multiple congenital anomalies.<sup>10</sup>
- ◆ No association between obesity and the following defects have been documented.
  - Gastroschisis\*
  - \*Low BMI has been shown to be associated with increased rates.
  - Isolated cleft lip/palate

#### How is Obesity Linked to Birth Defects?

- ◆ The biological mechanisms linking obesity and neural tube defects are unknown.
- ◆ Obese women may have a metabolic abnormality or nutritional deficiency that disrupts the development of the embryo early in pregnancy.<sup>3</sup>

#### Recommendations

- ◆ Weight loss during pregnancy is not recommended; however, women of reproductive age should make efforts before conception to lose weight to achieve healthy pregnancy outcomes.<sup>11</sup>
- ◆ Obese women should be informed of the risks associated with pregnancy and receive appropriate dietary counseling.<sup>11</sup>
- ◆ Obese women should be screened for hypertension and glucose intolerance.<sup>11</sup>
- ◆ Pregnant women should be encouraged to perform physical activity unless told otherwise by their physician.<sup>11</sup>

#### DIABETES MELLITUS

Diabetes mellitus is a chronic disease caused by inherited and/or acquired deficiency in production of insulin by the pancreas, or by the ineffectiveness of the insulin produced. Such deficiencies result in increased concentrations of glucose in the blood, which in turn damage many of the body's systems, in particular the blood vessels and nerves.<sup>12</sup>

Diabetes mellitus is one of the most common medical complications of pregnancy. Women with this condition can be separated into those who have diabetes before pregnancy (pre-gestational) and those diagnosed during pregnancy (gestational).<sup>13</sup>

### Gestational Diabetes

Gestational diabetes is defined as glucose intolerance of varying severity that begins or is first recognized during pregnancy.<sup>2</sup>

Gestational diabetes results from decreased maternal insulin sensitivity. This may increase nutrient availability to the fetus, possibly accounting for an increased risk of fetal overgrowth and adiposity.<sup>14</sup>

### What Are The Risks to the Infant?

Infants of diabetic mothers are at increased risk of the following conditions:

- ◆ Macrosomia
- ◆ Neonatal hypoglycemia
- ◆ Neonatal hypocalcemia
- ◆ Hyperbilirubinemia
- ◆ Respiratory distress syndrome
- ◆ Long term obesity and glucose intolerance<sup>15</sup>

### Pre-existing Diabetes

Women with poorly controlled diabetes at conception are at increased risk of delivering an infant with congenital malformations, particularly neural tube defects.<sup>15</sup>

### How is Diabetes Linked to Birth Defects?

The underlying mechanisms linking diabetes and birth defects are unknown. However,

- ◆ It is postulated that the increased risk of birth defects may be due to the result of metabolic abnormalities early in pregnancy<sup>1</sup>.
- ◆ An increased risk for birth defects associated with hyperinsulinemia could be the result of an adverse event such as hyperglycemia early in pregnancy<sup>1</sup>.
- ◆ Gestational diabetes occurs later in pregnancy and may be associated with pre-existing factors that are directly associated with the development of birth defects.<sup>3</sup>

### Recommendations for pregnant diabetic women


- ◆ **Glycemic control** - Glycemic control, defined as maintaining blood sugar levels at an acceptable level, before conception and throughout pregnancy is necessary for optimal maternal and fetal outcomes.<sup>16</sup>
- ◆ **Monitoring** - Self monitoring of blood glucose is essential during pregnancy. Preprandial and postprandial testing are recommended.<sup>16</sup>

- ◆ **Diet** - Women should receive nutritional assessments throughout pregnancy to make sure they are receiving adequate nutrition to promote euglycemia, appropriate weight gain and adequate nutritional intake.<sup>2</sup>
- ◆ **Physical activity** - Pregnant women should be encouraged to perform physical activity unless told otherwise by their physician.<sup>16</sup>

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**Reported Cases of Selected Notifiable Diseases in Georgia Profile\* for October 2005**

Selected Notifiable Diseases	Total Reported for October 2005	Previous 3 Months Total Ending in October			Previous 12 Months Total Ending in October		
	2005	2003	2004	2005	2003	2004	2005
Campylobacteriosis	46	166	158	163	670	558	613
<i>Chlamydia trachomatis</i>	1837	9499	8692	7638	36219	34218	31624
Cryptosporidiosis	13	32	80	58	112	186	133
<i>E. coli</i> O157:H7	6	9	4	17	31	21	33
Giardiasis	60	273	279	191	859	871	681
Gonorrhea	917	4791	4212	3687	18021	15915	14874
<i>Haemophilus influenzae</i> (invasive)	6	20	15	18	82	112	113
Hepatitis A (acute)	8	373	86	33	784	373	130
Hepatitis B (acute)	11	177	102	33	618	474	223
Legionellosis	5	12	8	11	35	40	34
Lyme Disease	1	0	1	2	10	12	6
Meningococcal Disease (invasive)	0	6	4	0	31	23	17
Mumps	0	2	2	0	3	2	1
Pertussis	2	9	4	11	32	26	51
Rubella	0	0	0	0	0	1	0
Salmonellosis	299	854	747	841	1997	1974	1978
Shigellosis	118	229	156	269	1498	657	639
Syphilis - Primary	0	38	19	6	123	121	85
Syphilis - Secondary	0	119	100	23	458	463	353
Syphilis - Early Latent	0	166	76	8	766	421	220
Syphilis - Other**	0	241	201	40	882	807	678
Syphilis - Congenital	0	0	2	0	11	6	2
Tuberculosis	30	135	112	107	519	523	476

\* The cumulative numbers in the above table reflect the date the disease was first diagnosed rather than the date the report was received at the state office, and therefore are subject to change over time due to late reporting. The 3 month delay in the disease profile for a given month is designed to minimize any changes that may occur. This method of summarizing data is expected to provide a better overall measure of disease trends and patterns in Georgia.

\*\* Other syphilis includes latent (unknown duration), late latent, late with symptomatic manifestations, and neurosyphilis.

**AIDS Profile Update**

Report Period	Total Cases Reported*			Percent Female	Risk Group Distribution (%)					Race Distribution (%)			
	<13yrs	>=13yrs	Total		MSM	IDU	MSM&IDU	HS	Blood	Unknown	White	Black	Other
Latest 12 Months: 01/05-12/05	3	1,902	1,905	26.3	32.1	5.6	1.9	9.5	1.2	49.7	24.1	73.8	2.1
Five Years Ago: 01/01-12/01	2	1,616	1,618	27.0	33.5	9.3	2.7	18.4	1.7	34.3	18.7	76.9	4.3
Cumulative: 07/81-12/05	224	29,492	29,716	19.6	45.1	15.6	4.9	14.2	1.9	18.5	31.7	65.8	2.5

MSM - Men having sex with men      IDU - Injection drug users      HS - Heterosexual

\* Case totals are accumulated by date of report to the Epidemiology Section