



Georgia Epidemiology Report

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Knowledge and Use of Folic Acid Among Women In Georgia, 1999-2000

Seventy percent of neural tube defects, comprising defects of the brain and spinal cord, could be prevented by the daily consumption of 400 micrograms of folic acid before and during the early weeks of pregnancy. Since 1992 all women capable of becoming pregnant have been advised to consume 400 micrograms of folic acid per day to reduce the risk of having a pregnancy affected by neural tube defects (1). The Food and Drug Administration has required since 1998 that enriched cereal grain products (i.e. breakfast cereals, breads, and flour) be fortified at the level of 140 micrograms of folic acid per 100 grams of grain to increase consumption of folic acid through food. Serum folate levels for US women of reproductive age were higher in 1999-2000 (13.0 ng/mL) compared to 1988-1994 (4.8 ng/mL), presumably due to consumption of fortified foods (2). However, serum folate levels among women in Georgia (8.9 ng/mL) are below the US average overall, and certain demographic groups are at greater risk than others (3).

Daily consumption of a multi-vitamin or folic acid supplement can benefit women who are not getting adequate folic acid through food. In 1995, a study by the Georgia Division of Public Health found that only 20% of women ages 15-44 took a daily multi-vitamin supplement, and 29% knew that folic acid can prevent birth defects (4). This report updates those results with findings from a similar study conducted in 1999 and 2000 among women ages 18-44 which shows that 39% took a daily multivitamin or folic acid supplement and only 37% knew folic acid prevents birth defects.

Methods

We analyzed the responses of 2003 women ages 18 to 44 who participated in the 1999 or 2000 Georgia Behavioral Risk Factor Surveillance System (BRFSS), an on-going random digit dial telephone survey of the adult non-institutionalized population of Georgia (5). The survey included questions on a wide range of health conditions and risk behaviors, including consumption of folic acid in multi-vitamins or supplements and knowledge of the reason folic acid is recommended. Responses were weighted to adjust for selection probability and non-response to produce estimates representative of the population of adult women ages 18-44 in Georgia. Estimates and confidence intervals (CI) for folic acid supplement consumption and awareness of the health benefit of folic acid were calculated using SUDAAN, a statistical software for the analysis of complex survey data (6).

Results

Among Georgia women ages 18-44, 39.0% (95% CI 36.1-41.9) took a multivitamin or supplement containing folic acid at least once per day. Women with more than a high school

Projected Number of Children Born with Neural Tube Defects In Georgia

The number of cases actively ascertained by the Metropolitan Atlanta Congenital Defects Program (MACDP)* in the 5-county metropolitan Atlanta area was used to estimate the statewide number of cases (births and fetal deaths greater than or equal to 20 weeks) of Spina Bifida and Anencephaly by racial/ethnic group for the years 1994 through 2001.

Race/ Ethnicity	Defect	1994	1995	1996	1997	1998	1999	2000
White (Non-Hispanic)	Spina Bifida	55	33	38	69	42	18	18
	Anencephaly	20	33	41	31	7	32	29
Black (Non-Hispanic)	Spina Bifida	12	2	16	9	29	9	7
	Anencephaly	7	9	9	7	13	16	18
Other**	Spina Bifida	0	0	2	7	0	3	0
	Anencephaly	1	0	3	3	1	6	3
Hispanic	Spina Bifida	0	6	6	4	2	0	11
	Anencephaly	0	6	4	0	1	6	3
Total	Spina Bifida	67	41	62	89	73	30	36
	Anencephaly	28	48	57	41	22	60	53

*MACDP[®] is managed by the Centers for Disease Control and Prevention, National Center on Birth Defects and Developmental Disabilities

** Other includes Asian, American Indian or Alaska Native, Hawaiian or Other Pacific Islander, Multiracial and Unknown

education or higher household income were more likely to consume folic acid supplements. Unemployed women were significantly less likely than employed women or homemakers to take daily folic acid supplementation (Table 1).

Just over one-third of women of reproductive age (36.7%, 95% CI 33.9-39.5) correctly identified “birth defects prevention” as the reason that folic acid is recommended (Figure 1). Women ages 25-34 were the most likely age group to know folic acid was recommended to prevent birth defects. Women with higher education and higher household income were also more likely to correctly identify the reason that folic acid is recommended. Women with a spouse or partner were more likely than divorced, separated, or widowed women and never married women to know that folic acid prevents birth defects, and homemakers were more knowledgeable than employed women or students (Table 1).

Among women who were aware of the health benefit of folic acid almost half consumed daily folic acid supplements (45.4%, 95% CI 40.6-50.2). However, among women who were not aware of the health benefit only about one-third took folic acid daily (35.1%, 95% CI 31.6-38.7).

Discussion

These findings indicate that most women of reproductive age do not take a daily folic acid supplement (61%) and are not aware that folic acid is recommended to prevent birth defects (63%). One of the Healthy People 2010 goals is for 80% of all non-pregnant women ages 15-44 to consume 400 micrograms of folic acid each day from fortified foods or dietary supplements. Women who were knowledgeable about the benefit of folic acid were more likely to consume daily folic acid supplements, suggesting that increasing awareness of the benefit will result in more women of childbearing age consuming adequate folic acid through supplementation.

Although the survey was limited to self-report data among households with telephones and included few non-black minority households, the findings confirm similar national surveys that found an increase in folic acid awareness from 64% to 73% between 1996 and 1998 among women who had a recent pregnancy (7) and an increase in consumption from 25% to 31% between 1995 and 2002 (8).

In the decade since the Public Health Service recommendations, many efforts have been undertaken to increase knowledge and awareness of folic acid consumption and reduce the incidence of neural tube birth defects in Georgia, including the creation of the Georgia Folic Acid Task Force (See box). Our results suggest that particular attention should be focused on socio-demographic groups with low income and low education. Pregnancy planning to decrease the incidence of unintended pregnancy; increased consumption of foods naturally rich in folates (e.g. fruits, green leafy vegetables, and dried beans and le-

Table 1. Percent of Women 18-44 who Consume Daily Folic Acid Supplement and Know Folic Acid is Recommended to Prevent Birth Defects, Georgia, 1999-2000

	Take a Folic Acid Supplement Daily			Know That Folic Acid is Recommended to Prevent Birth Defects	
	N	%	95% CI	%	95% CI
Total	1874	39.0	36.1-41.9	36.7	33.9-39.5
Age					
18-24	275	36.4	28.8-44.0	31.5	24.5-38.5
25-34	732	40.6	36.2-45.0	43.9	39.5-48.3
35-44	867	39.2	35.3-43.1	33.3	29.4-37.2
Race/Ethnicity					
White, non-Hispanic	1149	41.1	37.5-44.7	40.8	37.2-44.3
Black, non-Hispanic	611	35.3	30.2-40.4	29.5	24.5-34.5
Hispanic	69	34.6	21.1-48.1	31.0	17.5-44.4
Other, non-Hispanic	35	33.4	16.4-50.4	28.0	11.7-44.3
Education					
High School or Less	756	29.0	24.9-33.0	25.8	21.8-29.8
Some College/Tech School	521	40.3	34.5-46.0	33.6	28.3-38.9
College, 4 years or more	597	51.0	46.0-55.9	54.1	49.2-59.0
Household Income					
Less than \$25,000	522	33.5	27.5-39.5	25.9	20.7-31.1
\$25,000 - \$50,000	637	37.4	32.9-41.9	38.7	34.1-43.3
\$50,000 - \$75,000	295	41.1	34.2-48.0	40.8	34.1-47.5
More than \$75,000	249	55.5	48.1-62.9	52.8	45.3-60.3
Marital Status					
Never married	462	34.7	28.4-41.0	31.4	25.6-37.2
Married/Unmarried Couple	1022	41.9	38.3-45.5	41.3	37.7-44.9
Divorced/separated/widowed	387	36.5	30.5-42.5	27.8	22.5-33.1
Employment Status					
Employed	1383	38.7	35.4-42.0	34.3	31.2-37.4
Unemployed	105	23.6	14.7-32.5	34.7	22.0-47.4
Homemaker	240	44.5	36.8-52.2	53.8	46.4-61.2
Student	82	45.6	29.5-61.7	30.7	17.9-43.5
Retired/Unable to work	58	37.3	19.9-54.7	30.4	13.3-47.6

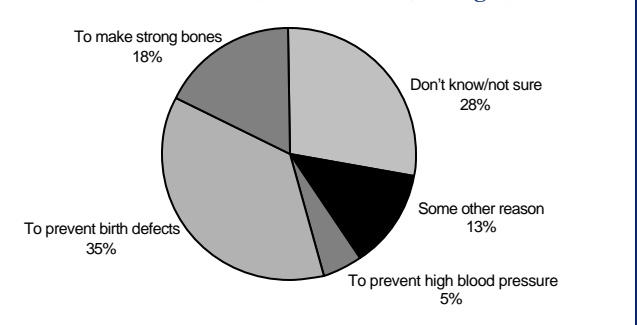
gumes); consumption of folate fortified foods; and daily consumption of multivitamins or folic acid supplements are all strategies that will improve blood folate levels among women of reproductive ages and reduce the incidence of related birth defects.

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Article written by Linda M. Martin, M.S. and Bina Jayapaul-Philip, Ph.D.

Figure 1. Knowledge of Reason Health Professionals Recommend Folic Acid, Women 18-44, Georgia, 1999-2000



The Georgia Folic Acid Task Force

The Georgia Folic Acid Task Force (GFATF) includes members from public and private health agencies, professional medical associations, non-profit organizations, and consumer representatives who are committed to promoting the consumption of folic acid to prevent birth defects. Since its inception in 1997, the GFATF has been involved with increasing public knowledge about folic acid and encouraging its use to prevent neural tube defect births. In 2003, one of the GFATF's major goals will be to target the Hispanic female population with awareness and education activities. In addition, the Task Force will seek to create partnerships with pharmacies to distribute the folic acid message. For more information on the GFATF contact Eddie Tonson, Georgia Division of Public Health, 404-463-0406 or email at eltowson@dhr.state.ga.us.

Revised Guidelines Recommend Prenatal Screening for Perinatal GBS Disease Prevention

Despite a marked reduction during the 1990's, Group B streptococcal (GBS) disease remains the leading cause of invasive bacterial infection in newborns less than a week old in the United States. This "early-onset" GBS disease is thought to occur as a result of infant exposure to GBS during labor, following bacterial ascent through the ruptured membranes and aspiration of amniotic fluid. Provided that maternal GBS colonization can be identified, early-onset GBS cases are largely preventable with the use of intrapartum antibiotics¹. New perinatal GBS prevention guidelines were issued by the Centers for Disease Control and Prevention (CDC) in 2002, and are endorsed by the American College of Obstetrics and Gynecology and the American Association of Pediatrics². The new guidelines recommend universal screening of pregnant women for GBS colonization by vaginal-rectal culture at 35 to 37 weeks gestation. If the screening culture is positive for GBS, antibiotics are offered during labor to reduce the risk of infant GBS exposure during birth.

Previous guidelines (1996) allowed a choice of the above "screening-based approach" or a "risk-based approach" which offered intrapartum antibiotics to women with certain obstetric risk factors during labor. The screening-based approach was recently shown to be at least 50% more effective than the risk-based approach, leading to the new recommendations for universal screening.³

Under the new guidelines:

- 1) **Universal screening is recommended (Figure 1):** whenever possible, a prenatal screening culture is obtained at 35 to 37 weeks' gestation to identify maternal colonization with GBS. The screening culture is taken from both vaginal and rectal sources, and cultures are processed in selective broth culture medium to increase detection of GBS by inhibiting competing bacterial flora. If the culture is positive for GBS, antibiotics are offered during labor to reduce the risk of infant GBS exposure during birth.
- 2) **Women whose culture results are unknown at delivery are to be managed according to the risk-based approach;** the obstetric risk factors remain unchanged (i.e.: preterm labor <37 weeks' gestation, membrane rupture >18 hours, or intrapartum temperature > 100.4 F (>38.0 C)). Women with these risk factors and unknown GBS screening culture results at the time of delivery should be offered intrapartum antibiotics.
- 3) **Women with negative vaginal and rectal GBS screening cultures within 5 weeks before delivery do not require intrapartum antibiotics for GBS prevention,** even if they develop obstetric risk factors.
- 4) **As before, women with GBS bacteriuria during the current pregnancy or who previously gave birth to an infant with**

early-onset GBS disease should receive intrapartum antibiotic prophylaxis.

The complete guidelines also include:

- **Updated intrapartum antibiotic regimens** for women with penicillin allergy, in light of emerging clindamycin and erythromycin-resistant GBS isolates;
- **Instructions on antimicrobial susceptibility testing for clindamycin and erythromycin** for penicillin-allergic patients;
- **Algorithm for management of patients with threatened preterm delivery;**
- **Recommendation against routine intrapartum antibiotics for GBS-colonized women undergoing planned Cesarean delivery** who have not begun labor or had rupture of membranes;
- **Expanded instructions on specimen collection and culture methods;**
- **Updated algorithm for management of newborns exposed to intrapartum antibiotic prophylaxis.**

The success of the screening-based approach is enhanced by best practices for specimen collection and handling, laboratory culture methods, timely reporting of results, and familiarity with the new guidelines by a complex team of healthcare professionals. We encourage obstetric and pediatric providers, other prenatal care providers, infection control practitioners, laboratorians, and hospital maternity staff to review and discuss the revised guidelines, which can be found at <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5111a1.htm>. In addition, CDC has developed a GBS prevention website, with useful educational print materials and slidesets at <http://www.cdc.gov/groupBstrep/default.htm>.

Rates of early-onset GBS disease in Georgia have been consistently higher than the national average, and remain higher than Healthy People 2010 goals (Table 1). Widespread adoption of the newly issued GBS prevention guidelines could improve this situation.

References:

- 1) CDC. Early-onset Group B Streptococcal disease—United States, 1998-1999. MMWR 2000; 49: 793-796.
- 2) Centers for Disease Control and Prevention. Prevention of perinatal group B streptococcal disease: revised guidelines from CDC. MMWR 2002; 51(RR11): 1-23.
- 3) Schrag SJ, Zell ER, Lynfield R, et al. A population-based comparison of strategies to prevent early-onset group B streptococcal disease in neonates. NEJM 2002; 347: 233-239.

Article written by Kathryn E. Arnold, M.D.

Figure 1. Indications for intrapartum antibiotic prophylaxis to prevent perinatal GBS disease under a universal prenatal screening strategy based on combined vaginal and rectal cultures collected at 35 - 37 weeks' gestation from all pregnant women

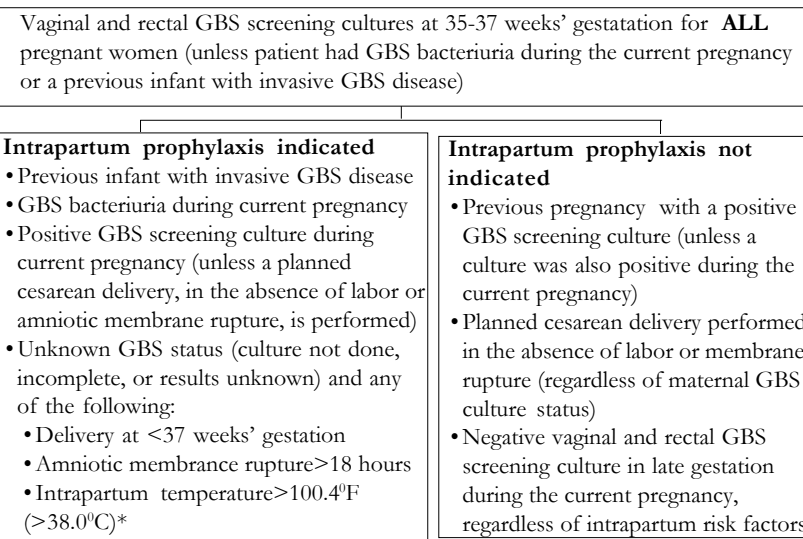


Table 1. Emerging Infections Program data regarding the incidence of early-onset GBS disease for the Atlanta Metropolitan Area compared to the national average, 1998-2001.

POPULATION	INCIDENCE RATE			
	1998	1999	2000	2001
Metro Atlanta	0.92*	0.74*	0.67*	0.63*
National Average	0.6 ⁺	0.4 ⁺	0.6 ⁺	0.5 ^v
Healthy People 2010 Goal	0.5 cases per 1,000 live births			

* Cases per 1,000 live births in the Atlanta Metropolitan Area

⁺ Cases per 1,000 live births

^v Cases per 1,000 persons <1 year of age

*If amnionitis is suspected, broad-spectrum antibiotic therapy that includes an agent known to be active against GBS should replace GBS prophylaxis.



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Reported Cases of Selected Notifiable Diseases in Georgia Profile* for February 2002

Selected Notifiable Diseases	Total Reported for February 2002	Previous 3 Months Total Ending in February			Previous 12 Months Total Ending in February		
	2002	2000	2001	2002	2000	2001	2002
Campylobacteriosis	18	105	106	97	622	632	647
<i>Chlamydia trachomatis</i>	2105	7769	8329	7709	30254	33117	33839
Cryptosporidiosis	4	34	33	15	182	160	110
<i>E. coli</i> O157:H7	2	5	6	7	45	48	46
Giardiasis	25	241	161	176	1169	925	912
Gonorrhea	1007	4352	4539	3869	19429	18356	18224
<i>Haemophilus influenzae</i> (invasive)	2	31	38	13	85	112	73
Hepatitis A (acute)	21	145	142	94	438	926	458
Hepatitis B (acute)	10	116	87	82	390	412	456
Legionellosis	1	2	3	4	11	12	21
Lyme Disease	1	0	1	1	0	2	2
Meningococcal Disease (invasive)	5	21	9	13	52	44	39
Mumps	0	2	0	0	3	7	2
Pertussis	0	5	3	2	39	24	26
Rubella	0	0	0	0	1	0	0
Salmonellosis	21	252	265	190	1694	1711	1935
Shigellosis	43	75	365	379	331	887	1853
Syphilis - Primary	7	24	29	22	121	99	100
Syphilis - Secondary	18	62	56	65	281	296	319
Syphilis - Early Latent	25	134	203	97	550	697	608
Syphilis - Other**	14	195	200	104	756	851	626
Syphilis - Congenital	0	6	5	0	21	24	6
Tuberculosis	19	191	149	88	687	535	536

* 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
<i>Latest 12 Months:</i>													
04/02-03/03	1	1,371	1,372	26.6	34.6	7.1	2.0	13.1	1.5	41.7	18.7	75.9	5.4
<i>Five Years Ago:</i>													
04/98-03/99	11	1,265	1,276	20.8	39.2	17.0	5.5	17.9	1.1	19.2	22.6	74.9	2.4
<i>Cumulative:</i>													
07/81-03/03	211	25,928	26,139	17.8	47.3	17.2	5.4	13.5	1.9	14.8	33.7	63.8	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