

# Neural Tube Defects Training Module Revised June 2006



**Kentucky**  
UNBRIDLED SPIRIT™

# Infant Mortality

- US infant mortality rates have decreased during the 20th century, but the proportion of infant deaths attributed to birth defects has steadily increased.
- Birth defects account for approximately 20% of all infant deaths and continue to be the leading cause of infant mortality.

# Risk for Birth Defects

- All couples in the general population have a 3-4% risk of having a child with a birth defect or genetic condition

# Neural Tube Defects (NTD's)

- Three types:
  - Spina bifida (65%)
  - Anencephaly (25%)
  - Encephaloceles (10%)
- NTDs occur in 1/1000 newborns in the general population of the U.S.
- Higher incidence in East and South vs. West

# Spina Bifida

- Neural tube fails to close properly
  - occurs by 28 gestational days
- Associated problems:
  - Hydrocephalus
  - Clubfoot
  - Vertebral anomalies
  - Renal anomalies
- Surgery for repair within 24 hours

# Long Term Sequelae

- Paralysis
- Loss of bowel and bladder control
- Learning disabilities

# Anencephaly

- Upper end of neural tube fails to close
- Cranial nerve tissue may be exposed
- 10-14% have additional anomalies
- 50% stillbirth rate
- Usually fatal, 5% survive one week

# Encephalocele

- Protrusion of brain or skin-covered brain
- 50% have additional congenital anomaly
- Overall mortality rate about 29%



# Cost of NTDs

- Average lifetime cost \$532,000 per child
- The cost for many exceeds \$1 million
- These figures do not include the physical, emotional costs, and costs to the family

# Who Is At Risk To Have A Child With an NTD?

- A previous pregnancy affected with NTD
- Maternal insulin-dependent diabetes
- Use of anti-seizure medication (i.e. valproic acid)
- Maternal obesity
- Exposure to high temperatures in pregnancy
- Race/Ethnicity
- Lower socio-economic status

# Who Is At Risk To Have A Child With an NTD? (Cont.)

- Women who have had a pregnancy affected with a NTD have a 4% chance of having another affected pregnancy
- Hispanic whites have increased rates of NTDs compared to non-Hispanic whites.
- Caucasian individuals have 2-3 x the rate of African Americans

# What Causes NTDs?

- Isolated, Multifactorial Condition
  - Combination of genetic factors and environmental factors
- Syndromic
  - NTD as a common feature of an identified syndrome.

# Folic Acid Supplementation

- All women of childbearing age need 0.4 mg (400 mcg) of folic acid per day
- Women who've had a previous child with a NTD and are planning another pregnancy need a daily supplementation of 4 mg (4,000 mcg) of folic acid starting three months prior to conception and continuing through the first three months of the pregnancy.

# Why Take Folic Acid

- If a woman takes the proper amount of folic acid before she comes pregnant and during the first three months of her pregnancy...

**She helps to prevent the risk of her baby developing a neural tube defect by up to 70%**

# Folic Acid For...

- Any woman capable of becoming pregnant
- EVERY DAY
- Before getting pregnant
- Lifetime Habit

# Why All Women?

- Half of 4 million births are unplanned
- 2/3 of all women in the US consume insufficient levels of Folic Acid
- Protection against disease and promote long-term health
- Growth and repair of every cell in the body



# Folic Acid Supplementation in KY

- According to the 2004 Kentucky Behavioral Risk Factor Survey: 45.6 percent of Kentucky women ages 18-44 reported taking a multivitamin or a vitamin containing folic acid
- From 2000-2004, NTDs in Kentucky have decreased by 34%