Epidemiology in Texas 2006 Annual Report

Birth Defects

Birth Defect Trends in Texas Health Service Region 11, 1996-2003

Background

Texas Health Service Region (HSR) 11 (which includes the Lower Rio Grande Valley) is one of the initial pilot regions for the Texas Birth Defects Registry and has birth defects surveillance data starting with 1996 deliveries. Live birth data, which are used as denominators for birth prevalence calculations, are available through 2003. This provides the opportunity to look at birth defect trends over 8 years in this region of the state, which had a live birth population of 41,210 in 2003.

Methods

For deliveries to residents of HSR 11, we examined the prevalence of 49 specific birth defects and any monitored defect from 1996 through 2003, by year. Poisson regression was used to identify statistically significant time trends. For defects with statistically significant trends by Poisson regression, we also performed a chi-square test to assess departure from a linear trend.

Results

Nine birth defects had statistically significant trends by Poisson regression, meaning they either increased or decreased during 1996-2003 in a pattern that was at least roughly linear. Anencephaly and spina bifida without anencephaly (**Figures 1** and **2**) decreased in prevalence.

Seven defects increased in prevalence from 1996 to 2003 in HSR 11: encephalocele, microcephaly, ventricular septal defect, pulmonary valve atresia or stenosis, obstructive genitourinary defect (**Figure 3**), craniosynostosis, and gastroschisis (**Figure 4**).

Figure 1: Prevalence of anencephaly among deliveries to HSR 11 residents

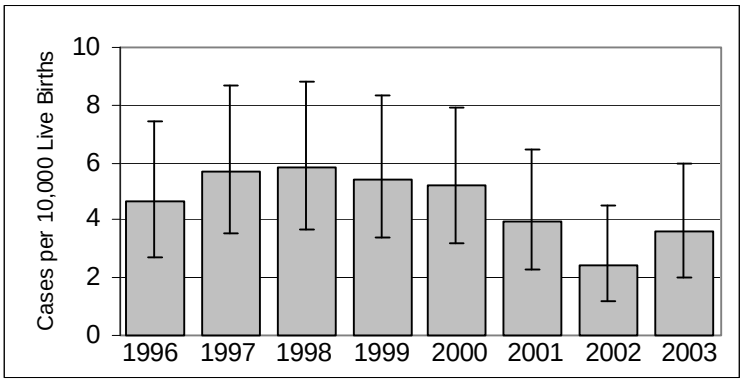


Figure 2: Prevalence of spina bifida among deliveries to HSR 11 residents

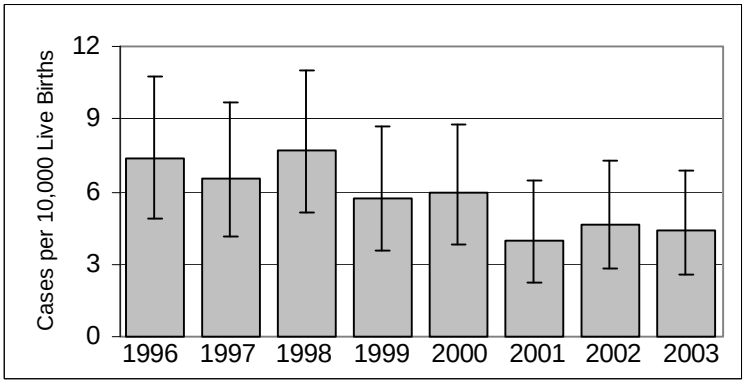


Figure 3: Prevalence of obstructive genitourinary defect among deliveries to HSR 11 residents

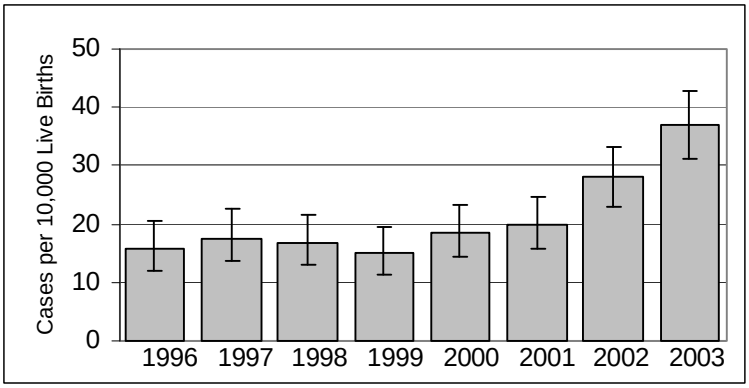
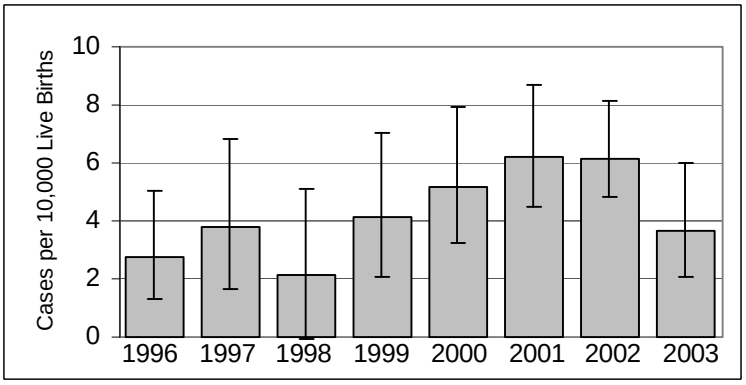


Figure 4: Prevalence of gastroschisis among deliveries to HSR 11 residents



Only obstructive genitourinary defect was significant for departure from a linear trend. This means that the data for obstructive genitourinary defect also have a nonlinear pattern that was statistically significant. Examples of nonlinear patterns are frequently observed with disease prevalence data that include seasonal (or cyclical) curves and exponential curves, either upward or downward.

Examining the data for obstructive genitourinary defect (Figure 3), we see the prevalence was generally stable from 1996 to 1999, then increased slightly in 2000 and 2001, and then increased noticeably in 2002 and again in 2003.

Conclusions

We examined 49 specific types of birth defects and any defect monitored by the registry and most had neither a statistically significant increasing nor decreasing trend from 1996 to 2003 in HSR 11. Anencephaly and spina bifida had significant downward trends. This may relate to folic acid fortification of enriched grain products, which began optionally in mid-1996 and has been mandatory in the United States since January 1998. The downward trend may also have been influenced by other efforts aimed at increasing the intake of folic acid among women of childbearing age along the Texas-Mexico border. Seven defects exhibited significant upward trends. Possible explanations

include changes in clinical practice, referral patterns, surveillance activities, or true changes in the occurrence of these conditions.

Prepared by the Texas Birth Defects Epidemiology and Surveillance Branch, (512) 458-7232, www.dshs.state.tx.us/birthdefects/BD_data.shtm