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## Maternal characteristic in pregnancies affected by Neural Tube Defects (NTD) in Queensland 2007-2008

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Neural tube defects (NTD) are major congenital anomalies that result from early disruption in the development of the brain and spinal cord. NTD are often incompatible with life, and many women opt for a termination early in the pregnancy. There has been mounting evidence of a decreased prevalence of NTD that is associated with an increased intake of folic acid around the period of conception<sup>1</sup>. Over the past decade, Australian governments have actively promoted folic acid intake around the time of conception<sup>2</sup>. Voluntary folate fortification has been encouraged for a range of foods since 1995, and in 2009, Australia moved to the mandatory fortification of wheat flour.

This report examines incidence rates and characteristics of women with pregnancies affected by NTD. The data were extracted from the Queensland Hospital Admitted Patient Data Collection (2007/2008) and the Queensland Perinatal Data Collection (2007). Three major forms of NTD were aggregated to form a single measure (NTD): anencephaly, which is the absence of major parts of the brain, skull and scalp; encephalocele, which is a protrusion of brain tissue and/or covering membranes through a defect in the skull; and spina bifida, in which the vertebrae that cover the spinal cord have one or more openings in the middle, allowing exposure and or protrusion of nervous tissue and coverings. The data were too sparse to support a separate analysis for each of the three diagnostic categories.

There were 70 pregnancies affected by a NTD in Queensland during the study period (Table 1), yielding an incidence rate of 9.6 per 10,000 pregnancies. The incidence did not vary with mother's age, but was twofold higher in Australian-born than overseas-born women. Socioeconomic disadvantage was associated with a higher incidence of NTD and the incidence of NTD was also higher in regional and remote areas (12.0 per 10,000) when compared to that in major cities (7.6 per 10,000). Roughly one-half of pregnancies affected by a NTD (51.4%) were terminated at prior to 20 weeks gestation, resulting in a termination rate of 5.0 per 10,000 pregnancies (Table 1). The proportion of pregnancies that were terminated increased with increasing age and the termination rate (per 10,000 pregnancies) was highest in the older women (35 years and older). The proportion of pregnancies that were terminated was higher amongst overseas-born women compared to Australian-born women, although the termination rate (per 10,000 pregnancies) was higher amongst Australian-born women. Similar trends were observed in relation to socioeconomic disadvantage and area of residence, whereby the group with the smallest proportion of terminations had the highest termination rate per 10,000 women. This reflects differences in the incidence of NTD across the population subgroups.

The incidence of pregnancies affected by NTD is comparable to the published rates for Australia in 2005 (10.1 per 10,000)<sup>2</sup>. The termination rate is also similar to that reported for Australia in 2005 (4.9 per 10,000 pregnancies)<sup>2</sup>. The incidence of NTD in Queensland was highest amongst Australian-born women, amongst socioeconomically disadvantaged women and amongst women residing in regional and remote areas. The proportion of pregnancies with a NTD that were terminated varied across all population subgroups evaluated, as did the termination rate per 10,000 pregnancies.

**Table 1: Incidence and termination of pregnancies affected by Neural Tube Defects (NTD) by maternal characteristics in Queensland 2007/2008**

	Incidence <sup>1</sup>	Percentage of pregnancies terminated	Termination rate <sup>1</sup>
Age of mother			
Less than 25 years	9.5	47.4	4.5
25-34 years	9.7	50.0	4.9
35 + years	9.6	61.5	5.9
Country of birth			
Australia	10.7	50.8	5.4
Overseas	5.1	57.1	2.9
SEIFA <sup>2</sup>			
Least disadvantaged (4 <sup>th</sup> -5 <sup>th</sup> Quintile)	8.4	61.9	5.2
2 <sup>nd</sup> and 3 <sup>rd</sup> Quintile	9.1	48.4	4.4
Most disadvantaged (1 <sup>st</sup> Quintile)	13.6	44.4	6.1
ARIA <sup>3</sup>			
Major cities	7.6	53.3	4.1
Regional and remote areas	12.0	50.0	6.0
Total	9.6	51.4	5.0

<sup>1</sup>Rate per 10,000 pregnancies

<sup>2</sup>Socio-economic Indexes for Areas: Index of Advantage-Disadvantage.

<sup>3</sup>Accessibilty and Remoteness Index of Australia

*Sources: Queensland Admitted Patient Data Collection, Queensland Health – TOP prior to 20 weeks gestation (extracted November 2008)*

*Queensland Perinatal Data Collection, Queensland Health – Live births and deaths in fetuses of at least 20 weeks gestation or 400 grams birth weight (extracted November 2008)*

## References

1. Lumley J, Watson L, Watson M, Bower C, Dowswell T. Periconception supplementation with folate and/or multivitamins for preventing neural tube defects. Cochrane Database of Systematic Reviews 2001, Issue 3. Art. No.: CD001056. DOI: 10.1002/14651858.CD001056.
2. Abeywardana S & Sullivan E 2008. Neural tube defects in Australia. An epidemiological report. Cat. No. PER 45. AIHW National Perinatal Statistics Unit.

## Related publications:

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