Reproductive Health

Reproductive health refers to and addresses the reproductive process from fertility regulation to healthy pregnancies to healthy birth outcomes.

The impact of social determinants of health on various reproductive health issues will be explored in more detail within this chapter. Maternal and paternal characteristics known to affect pregnancy outcomes, such as age, income, education level and health behaviours, are reported for Huron County parents. In addition, birth, fertility and pregnancy rates are presented and compared to the province. Lastly, birth outcomes, such as birth weight, preterm births, and infant mortality, are described.

Maternal and Paternal Age at Mother's First Birth

Adolescent mothers are at a significantly higher risk of preterm birth and small-for-gestational age infants.[1] In addition, young parents face financial stress and additional barriers, such as lack of transportation, isolation from peers and communities, and food security. By contrast, advanced maternal age has been shown to be a risk factor for the development of Down's Syndrome (among other congenital anomalies), multiple births, preterm birth and low birth weight.[2]

In 2004, the average age of new mothers and fathers in Huron County was 26.2 years and 28.9 years up 0.9 years and 0.5 years from 2000.[3] Age at first birth, for both mothers and fathers, has gradually increased over the past 5 years in Huron County and Ontario (data not shown). Despite this, Huron County continues to have younger first-time mothers and fathers than Ontario.

Maternal Education

Low maternal education is related to poor perinatal health outcomes, such as preterm birth, small-for-gestational age, and increased rate of stillbirth and infant mortality.[4]

Between June 2002 and April 2004, Huron County mothers of newborn children were surveyed as part of the Southern Ontario Infant Feeding Survey.[5] Of all mothers surveyed, 9% reported having less than high school diploma (**Figure 1**). Thirty-one per cent of mothers completed high school, while 61% went on to further education (trade certificate, college diploma or university degree).

Household Income

Poverty is a risk factor for poor perinatal health outcomes, such as preterm birth, low birth weight and infant mortality. In 1991, Ontario infant mortality rates were 1.6 times higher in the lowest income groups when compared to the highest income groups.[6] Also, women in the lowest socioeconomic group have been shown to be four times more likely to experience pregnancy related complications that require hospitalization than those in the highest income group.[7]

More than a quarter of mothers (26%) reported an annual household income in 2001 of $40,000-$59,999, with another 22% reporting an income of $20,000-$39,999. Five per cent of mothers surveyed had a household income of less than $20,000 (**Figure 1).**

Level of Support in the Household

Household support was determined by asking new mothers who else lived in the household with them. Overall, 94% of mothers reported living with a partner or a partner and other children, while 2% lived alone with their children (**Figure 1**).

Smoking Status

Smoking during pregnancy can result in adverse health effects on the fetus and child. These effects include preterm birth, spontaneous abortion, placental complications, stillbirth and sudden infant death syndrome.[4] Recent research has shown that active maternal smoking during pregnancy may also lower cognitive development in children at age four, although research has not been completed to determine what effects this would have for the child later in life.[8]

Nineteen per cent of surveyed mothers reported that they smoked tobacco during their pregnancy and of these mothers, 78% continued to smoke after the birth of their baby. In comparison, the National Longitudinal Survey of Children and Youth found that 15.8% of Ontario mothers reported smoking during pregnancy in 1998-9.[4]

Alcohol Use

No amount of alcohol use during pregnancy is considered safe. Fetal Alcohol Spectrum Disorder (FASD) describes the range of effects that can occur in an individual whose mother consumed alcohol during pregnancy. These effects range from severe growth restriction to intellectual disability to birth defects to lifelong deficits in brain function.[9] It is estimated that more than 3,000 babies are born each year in Canada with FASD.[10]

In a national study, conducted in 2006 for the Public Health Agency of Canada, perceptions of alcohol use during pregnancy were obtained from Canadian women aged 18-40 years and their male partners.[11] Seventy-six per cent of respondents agreed that any alcohol consumption during a pregnancy can harm the baby and 86% of respondents had heard of FASD.

No local data is provided on reported use of alcohol during pregnancy or FASD due to small numbers of Huron County women who were surveyed about alcohol use during pregnancy.

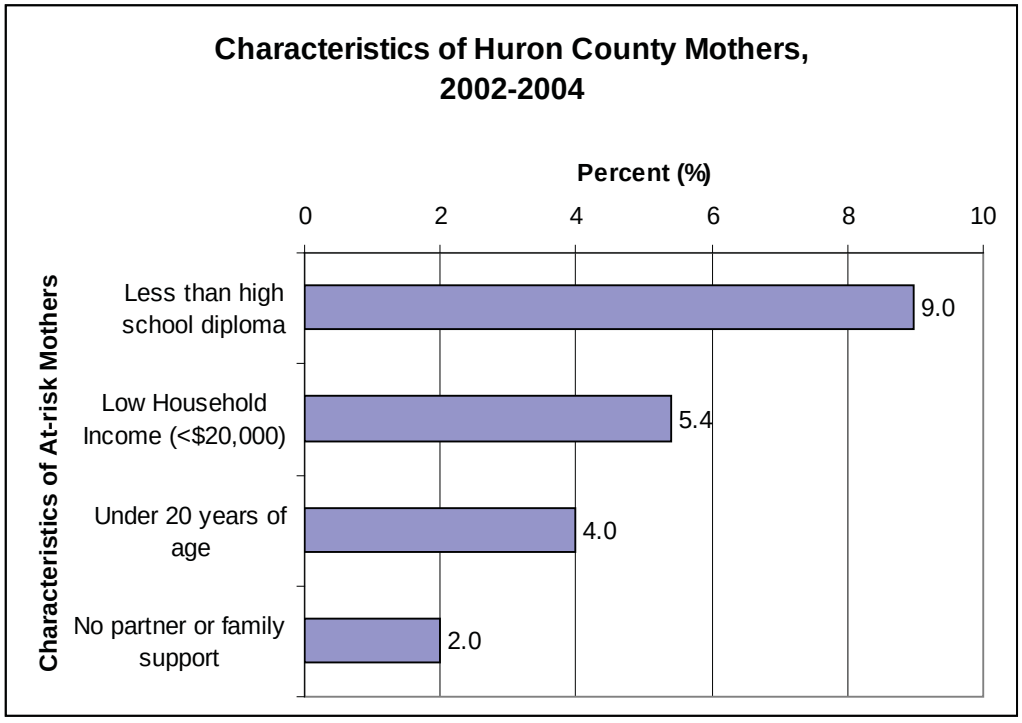


Figure 1. Percentage of mothers who report characteristics that are risk factors for adverse pregnancy and birth outcomes, Huron County, 2002-2004. Source: Southern Ontario Infant Feeding Survey, 2002-2004.

Folic Acid Supplementation

Maternal folate supplementation has been shown to reduce the rates of neural tube defects in North America.[12] Recently, a meta-analysis has shown that multivitamins containing folic acid are also associated with a protective effect against cardiovascular and limb defects.[13]

In 2005, 37.0%* (95% CI 18.1-55.9) of women who had given birth (live births only) within the past five years reported that they had taken a vitamin supplement containing folic acid before becoming pregnant.[14] This is significantly lower than 62.8% (95% CI 60.1-65.5) reported for Ontario.

Prenatal Classes

Prenatal education classes provide expectant parents with information and skills needed to improve pregnancy and birth outcomes, to have a positive birth experience and to prepare parents for early parenting.[15] In Huron County, maternal age, education, income and smoking status are all associated with attendance of prenatal classes in any pregnancy.[5]

In 2006, 104 Huron County women attended at least one prenatal class (three classes in the first trimester and five classes in the final trimester are offered).[16] Of those, 58 (55.8%) attended both the early and late sessions. The majority of women attending at least one session were aged 25-29 years (41.3%) and were either married or common law (91.3%).

Breastfeeding Initiation and Duration

To maximize the health benefits of breastfeeding for both infants and mothers, exclusive breastfeeding is recommended for the first six months after birth.[17] Specific benefits in babies include protection against gastrointestinal and respiratory infections and otis media. In mothers, breastfeeding reduces postpartum bleeding and the risk of ovarian cancer and increases the spacing between pregnancies.[18] [19]

Of all mothers participating in the Infant Feeding Survey, 91% (95% CI 88-94) reported that they had initiated breastfeeding with their baby.[5] This is slightly higher than the 83.8% (95%CI 72.1-95.6) of Huron County mothers who reported initiating breastfeeding in the Canadian Community Health Survey in 2005.[14] In Ontario, 88.0% (95% CI 86.2-89.9) of mothers report initiating breastfeeding with their infant.[14]

At three months postpartum, the percentage of Huron County mothers breastfeeding dropped to 58%.[5] Common reasons for stopping breastfeeding included not having enough milk (40%) and having sore nipples (11%). Breastfeeding status continued to decline with increasing time since birth with 48% of mothers reporting breastfeeding at six months and 27% at nine months postpartum.

FERTILITY AND PREGNANCY

Crude Birth Rate

The crude birth rate is the total number of live births per 1,000 population. The number of live births over the past five years in Huron County has remained relatively stable, with an average of 561 births and a rate of 9.1 births per 1,000 population.[20] The number of live births and crude birth rates for 2000-2004 are shown in **Table 1**. For this time period, Huron County has a significantly lower average crude birth rate compared to Ontario (data not shown). This is likely a result of having a lower proportion of women of childbearing age (15-49 years).

Year	Huron County		Ontario
	# Live Births	Rate (per 1,000)	Rate (per 1,000)
2000	582	9.4	10.9
2001	549	8.9	11.0
2002	528	8.5	10.6
2003	575	9.3	10.6
2004	569	9.2	10.6

Table 1. The number of live births and crude live birth rate for Huron County and Ontario, 2000-2004. Source: Ontario Live Birth Data [2000-2004], Provincial Health Planning Database (PHPDB) Extracted: 15/08/2007, Health Planning Branch, Ontario MOHLTC.

* High sampling variability. This estimate should be interpreted with caution.

Multiple Births

Multiple births are at increased risk for preterm birth and low birth weight.[4] The rate of multiple births has increased in Ontario from 1991 to 2004, which is likely due to an increase in births to older mothers and increased use of fertility treatments and assisted conception.[22]

The multiple live birth rate is the ratio of the total number of live multiple births divided by the total number of live births. The multiple live birth rate has fluctuated in Huron County over the past five years from 1.8% in 2001 to 4.3% in 2003.[20] In 2004, 1.9% (95% CI 0.8-3.1) of live births in Huron County were multiple births (i.e. twins, triplets, etc). From 2000 to 2004, a total of 2.6% (95% CI 2.0-3.2) of all live Huron County births were multiple births, which is lower than the provincial percentage of 3.1% (95% CI 3.0-3.1).

Pregnancy Rate

The number of pregnancies is calculated by summing the number of live births, therapeutic abortions and stillbirths. There were a total of 640 pregnancies in Huron County in 2004, with an average of 634 pregnancies a year over the past five years (**Table 2**). When compared to the province, Huron County has statistically significant lower pregnancy rates (confidence intervals not shown). In 2004, the pregnancy rate in Huron County was 46.8 pregnancies per 1,000 women aged 15-49 years compared to 52.5 pregnancies per 1,000 women in Ontario. Teen pregnancy rates are also significantly lower in Huron County than Ontario.

Despite having a significantly higher pregnancy rate in the 25-29 year age group and a similar rate in the 20-24 year age group, Huron County pregnancy rates are lower than Ontario's for all other age groups (**Figure 2**).

Year	Huron County		Ontario	
	Pregnancy Rate (per 1,000)	Teen Pregnancy Rate (per 1,000)	Pregnancy Rate (per 1,000)	Teen Pregnancy Rate (per 1,000)
2000	47.5	20.3	54.9	32.7
2001	44.9	19.4	55.2	30.5
2002	43.6	17.5	53.2	28.7
2003	46.3	20.5	53.0	27.6
2004	46.8	16.4	52.5	25.6

Table 2. Pregnancy rates for women aged 15-49 years and for women aged 15-19 years (teen) for both Huron County and Ontario, 2000-2005. *Sources: Ontario Live Birth Data [2000-2004], Provincial Health Planning Database (PHPDB) Extracted: 03/10/2007, Health Planning Branch, Ontario MOHLTC. Source: Ontario Therapeutic Abortion Database 2004, 2001 and 2000, HELPS (Health Planning Systems). Released January 2007, Ministry of Health Promotion, Chronic Disease Prevention and Health Promotion Branch.*

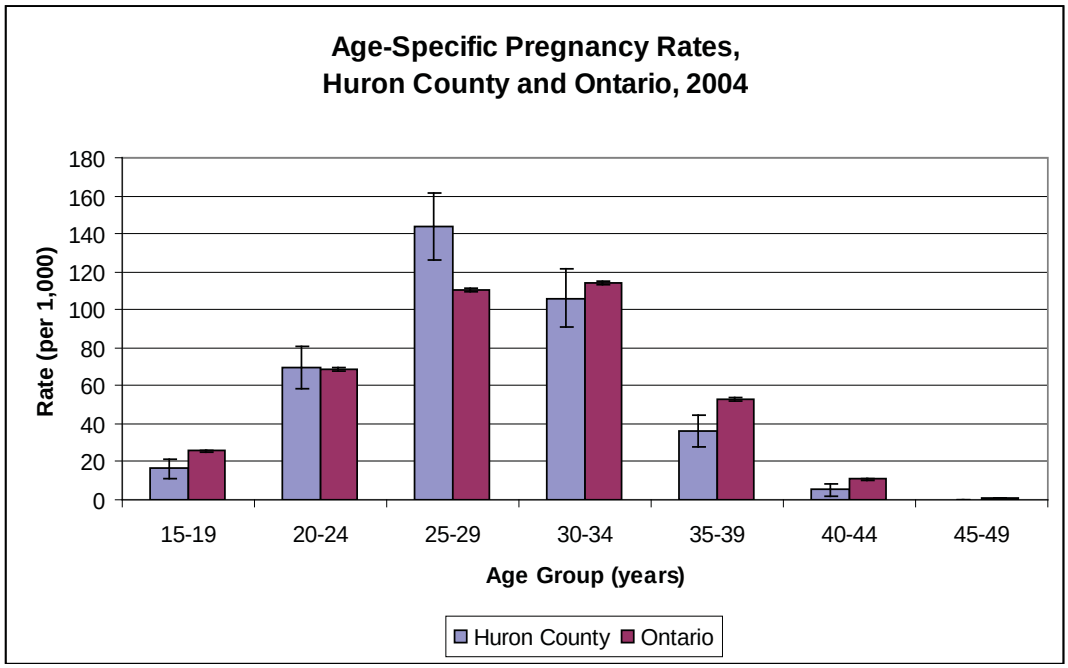


Figure 2. Age-specific pregnancy rates for Huron County and Ontario, 2004. Error bars represent 95% confidence intervals for the rates. *Sources: Ontario Live Birth Data [2000-2004], Provincial Health Planning Database (PHPDB) Extracted: 03/10/2007, Health Planning Branch, Ontario MOHLTC. Source: Ontario Therapeutic Abortion Database 2004, 2001 and 2000, HELPS (Health Planning Systems). Released January 2007, Ministry of Health Promotion, Chronic Disease Prevention and Health Promotion Branch.*

Fertility Rate

The general fertility rate (number of live births per 1,000 women aged 15 to 49 years) is a more refined measure of fertility than the crude birth rate as it is restricted to women of childbearing years. In Huron County, general fertility rates have remained relatively stable over the past five years, ranging from 38.0 to 41.9 live births per 1,000 women aged 15-49 years. These rates are similar to Ontario.

When looking at fertility rates for different age groups, specific trends emerge. Fertility rates for the 15-29 year age group have decreased in Huron County since 1994, but increased in the 30-44 year age group (**Figure 3**). The most marked increase in fertility was in the 30-34 year age group, which increased by 29% from 1994 to 2004. When compared to Ontario, fertility rates were significantly higher in the younger age groups (20-29 years), but lower in the older age groups (35-44 years) in 2004 (**Figure 3**).

Year	Huron County Fertility Rate (per 1,000)	Ontario Fertility Rate (per 1,000)
2000	41.9	41.6
2001	39.5	42.4
2002	38.0	40.8
2003	41.7	41.1
2004	41.6	41.2

Table 3. The general fertility rate for Huron County and Ontario, 2000-2004. Source: Ontario Live Birth Data [2000-2004], Provincial Health Planning Database (PHPDB) Extracted: 24/09/2007, Health Planning Branch, Ontario MOHLTC.

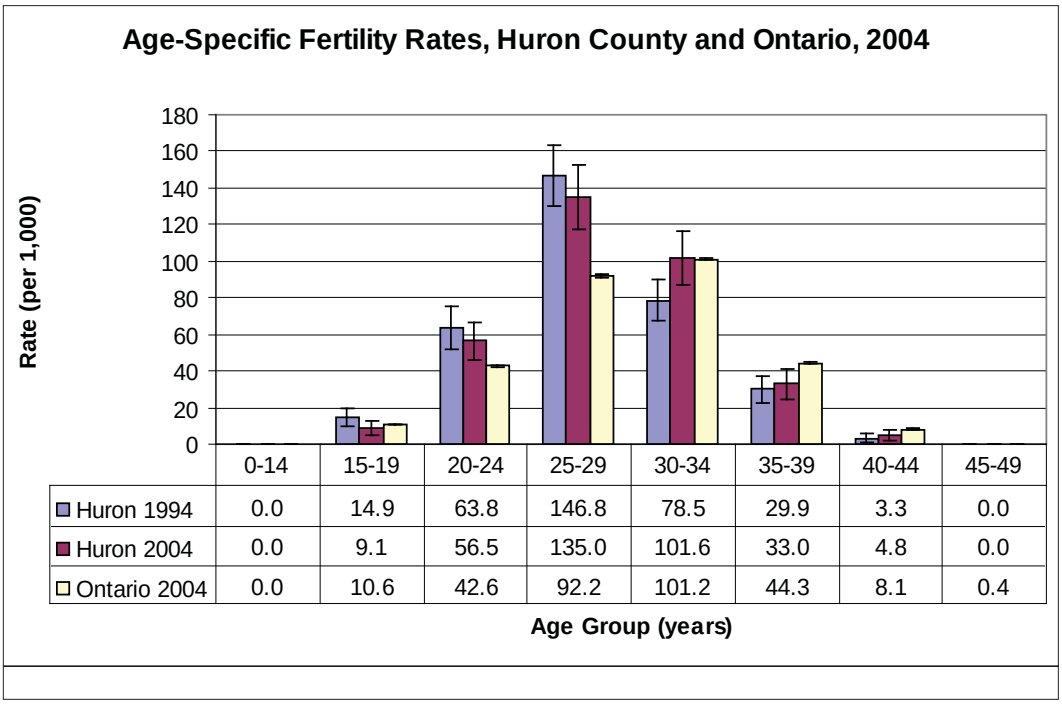


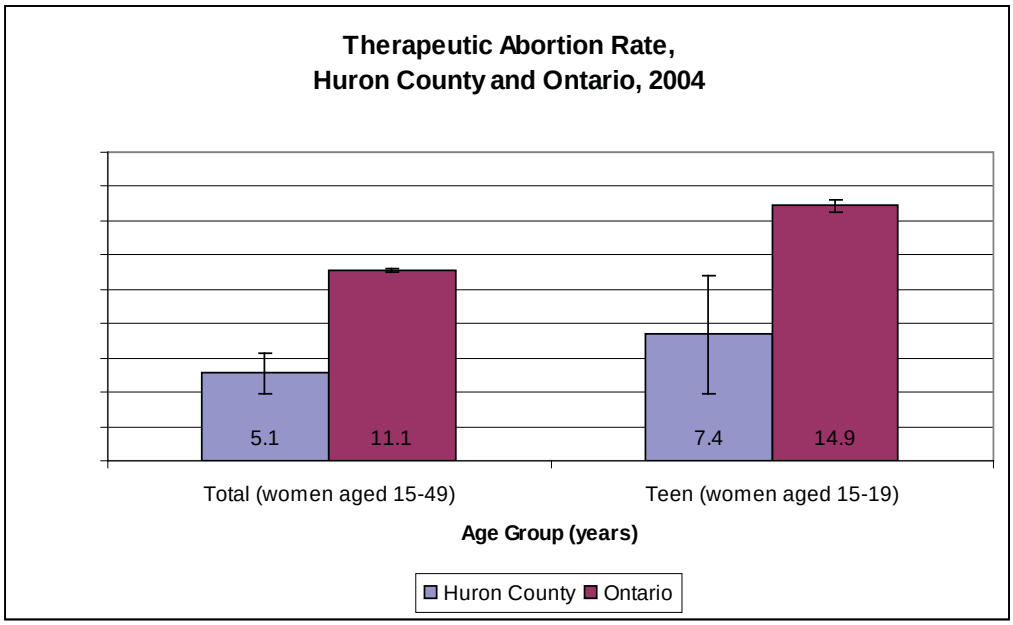
Figure 3. Age-specific fertility rates for Huron County in 1994 and 2004, and Ontario 2004. Error bars represent the 95% confidence intervals for the rate. Source: Ontario Live Birth Data [2000-2004], Provincial Health Planning Database (PHPDB) Extracted: 24/09/2007, Health Planning Branch, Ontario MOHLTC.

Therapeutic Abortion Rate

The rate of therapeutic abortions (the number of therapeutic abortions per 1,000 women aged 15-49 years) is an indicator of unwanted pregnancy. The number of therapeutic abortions are usually underestimated as procedures performed out of province, pharmacologically terminated pregnancies and terminations performed in physician offices not designated as abortion clinics are not included in the total counts.[21]

In 2004, the rate of abortion in Huron County was less than half that of Ontario at 5.1 abortions per 1,000 women 15-49 years (**Figure 4**). Teen abortion rates were higher, with 7.4 abortions per 1,000 women 15-19 years in Huron County, but still lower than for Ontario.

Figure 4. Therapeutic abortion rates for Huron County and Ontario in women of childbearing years (15-49 years) and in teens (15-19 years), 2004. Error bars represent 95% confidence intervals for the rates. Source: Ontario Therapeutic Abortion Database 2004, HELPS (Health Planning Systems). Released January 2007, Ministry of Health Promotion, Chronic Disease Prevention and Health Promotion Branch.



Birth Weight

Infants weighing less than 2,500 grams are classified as having a low birth weight while infants born weighing more than 4,000 grams at birth are classified as having a high birth weight. Low and high birth weight infants face increased health risks compared to infants born in the middle of the spectrum. Infant birth weight is affected by a multitude of factors including: mother's age, type of birth (single versus multiple), maternal lifestyle factors (such as smoking, alcohol use and diet), physical and social environment, genetic factors and parity (primaparous opposed to multiparous women).[22, 23] Low birth weight is associated with increased fetal and infant morbidity and mortality, along with lower cognitive development.[4] High birth weight is associated with low blood glucose levels and shoulder dystocia, along with other trauma to the head and neck during delivery.[23, 2]

Low Birth Weight Rate

In Huron County, 5.1% (95% CI 4.3-6.0) of all live births occurring between 2000 and 2004 weighed less than 2,500 grams.[3] The proportion of low birth weight infants born in Ontario for that same time period was similar at 5.8% (95% CI 5.7-5.8).

When looking at singleton versus multiple births, the proportion of low birth weight singleton infants decreased to 3.7% (95% CI 3.0-4.4). By contrast, 59.7% (95% CI 48.4-71.1) of all live multiple births in Huron from 2000 to 2004 were low birth weight. Neither rate was significantly different from Ontario.

High Birth Weight Rate

Between 2000 and 2004, 16.9% (95% CI 15.5-18.3) of all live births in Huron County weighed at least 4,000 grams at birth.[3] The proportion of high birth weight infants was significantly higher in Huron County than Ontario (13.1%, 95% CI 13.1-13.2).

Preterm Birth Rate

A birth is considered preterm if the gestational age at birth is less than 37 completed weeks. Preterm birth is the most important cause of perinatal mortality and morbidity.[4] Risk factors for preterm birth include single marital status, younger or older mothers, smoking, low pre-pregnancy weight, low or high weight gain and multiple pregnancy.[4]

On average, 42 births were delivered annually before 37 completed weeks of gestation in Huron County between 2000 and 2004.[3] In total, 7.4% (95% CI 6.5-8.4) of all live births from 2000 to 2004 were delivered preterm, compared to 7.2% (95% CI 7.2-7.3) in Ontario.

Preterm births are more likely to occur with multiple gestations. From 2000 to 2004, 68.1% (95% CI 57.3-78.8) of all multiple live births were delivered preterm, which was significantly higher than the provincial average (53.2%, 95% CI 52.5-53.9). By comparison, just 5.8% (95% CI 4.9-6.7) of all live singleton births were preterm. This rate is similar to Ontario.

Stillbirth Rate

The delivery of a fetus or infant that occurs after 20 weeks of gestation and that shows no signs of life upon delivery is considered a stillbirth. Congenital anomalies, prenatal infections and fetal growth restrictions can all cause stillbirths.[4]

In Huron County, an average of three stillbirths occurred each year (range: 1-4) from 2000 to 2004.[3] In total, the rate of stillbirths was 4.6 stillbirths per 1,000 total births (live and still) for all five years combined. This is slightly lower than the Ontario rate of 6.5 stillbirths per 1,000 total births.

Infant Mortality Rate

Infant mortality is a death that occurs in a live born infant younger than 365 days old. Nine infant deaths have occurred in Huron County from 2000 to 2004 (average two deaths/year), resulting in an infant mortality rate of 3.2 deaths per 1,000 live births.[3] This is similar to the

provincial rate of 5.4 deaths per 1,000 live births for the same time period.

Congenital Anomalies

A congenital anomaly (birth defect) includes any abnormality of structure, function or metabolism that is present at birth.[4] Neural tube defects, Down's Syndrome, congenital heart defects, oral facial clefts and limb reductions are all examples of congenital anomalies. Serious congenital anomalies are detected in 2-3% of births every year in Canada and are the leading cause of infant death. Recognized genetic conditions (such as inherited and chromosomal disorders) and environmental factors (such as maternal-related conditions or drug/chemical exposure) increase the risk of congenital anomalies.[24]

In Huron County, there were 83 births with at least one congenital anomaly between 2000 and 2004 (range: 7-21).[25] This translates to a rate of 309.2 per 10,000 births (live and still), which is significantly lower than the provincial rate of 416.4 per 10,000 births (confidence intervals not shown).

Conclusions

Huron County has a lower birth rate when compared to the province, which is likely due to having a lower percentage of women in their childbearing years. Despite following the provincial trend of increasing maternal age at first birth over time, first-time mothers in Huron still tend to be younger than Ontario, with a significantly higher pregnancy rate in women 25-29 years of age. Huron, however, continues to have a lower teenage pregnancy rate than the province and lower reported therapeutic abortion rates for this age group.

While adverse birth outcomes in Huron appear similar to the province, continued education on the benefits of folic acid, breastfeeding and cessation of smoking need to be promoted in order to ensure the health of babies born in Huron County.

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