



LOW BIRTH WEIGHT & PRETERM MULTIPLE BIRTHS:

A CANADIAN PROFILE

This resource provides background information for health professionals on risks and strategies for low birth weight and preterm multiple births. This resource is produced by Best Start: Ontario's Maternal, Newborn and Early Child Development Resource Centre in partnership with Multiple Births Canada.

BACKGROUND

Over the past two decades, there has been a dramatic rise in the number of multiple births in Canada. Between 1994 and 2003, the rate of multiples (per 100 total births) increased 35%.^(1,2) The recent increase has a significant impact on perinatal health. Although multiples represent only 1 in 34 births, they account for 1 in 5 preterm births, 1 in 4 low birth weight births and 1 in 3.5 very low birth weight births.^(2,3,4)

Families with twins or higher order multiples have special needs that are not always fully understood or appreciated. While babies are a special gift to a family, with multiples there is a greater risk of immediate and long-term health risks, plus substantial social, emotional and other consequences for the family. Compared to single born babies, multiple birth infants are at greater risk of suffering from long term disability, particularly cerebral palsy and of dying during the first year.^(2,5,6) Even when the babies are healthy, many parents experience overwhelming challenges in caring for, feeding and transporting two, three or more infants.^(7,8,9,10) As multiple birth children grow, they are also more likely to experience slower language development, behavioural disorders, challenges in school, and relationship difficulties.^(11,12,13)

It is possible to reduce the risks and associated costs, and to improve health outcomes and the functioning of families by linking multiple birth families to a range of appropriate supports and services.





FREQUENCY OF MULTIPLE BIRTHS

- There are about 120,000 multiple birth children in Canada under the age of 13 and 48,000 multiple birth children age 5 and under.⁽¹⁾
- Each year there are close to 10,000 twin babies and 400 higher order multiple birth babies (see Types of Multiples) born in Canada.⁽¹⁾
- Approximately 41% of multiple birth children born in Canada live in the province of Ontario.⁽¹⁾

TYPES OF MULTIPLES

There are two types of multiples: monozygotic and dizygotic. Although the expressions "identical" and "fraternal" are commonly used by the media and general population, experts and parents of multiples consider these terms to be inaccurate labels that can have a negative impact on the multiples. For instance, using the term identical to describe monozygotic (MZ) multiples causes confusion. Although genetically identical, no two children are the same. Parents distinguish between their MZ babies by identifying their differences, and strive to foster their children's individuality. Similarly, the term fraternal means a close brotherly relationship, and therefore does not describe boy/girl or all girl dizygotic (DZ) multiples.^(14, 15)

- **MONOZYGOTIC (MZ)** multiples result from the splitting of a fertilized egg during the first two weeks after conception. Monozygotic twins have the same genetic makeup and therefore are of the same sex.⁽¹⁵⁾
- **DIZYGOTIC (DZ)** twins resulting from the fertilization of two different eggs. They can be either the same or of different sex, and genetically they are no more alike than any siblings.⁽¹⁵⁾
- **TRIZYGOTIC (TZ)** – Triplets resulting from three fertilized eggs. No more genetically alike than singleton siblings.⁽¹⁵⁾
- **QUADRAZYGOTIC (QZ)** – Quadruplets resulting from four fertilized eggs. No more genetically alike than singleton siblings.⁽¹⁵⁾
- **HIGHER ORDER MULTIPLE BIRTHS** is the term used for births involving three or more babies (e.g. triplets, quadruplets, quintuplets). There can be many variations of zygosity within a higher order multiple set. For example, a set of quintuplets can consist of two MZ (monozygotic) children and three TZ (trizygotic) children resulting from four fertilized eggs.⁽¹⁵⁾



INFLUENCING FACTORS

The odds of having multiples are influenced by many factors, and multiple birth rates have changed throughout the years due to some of those factors. The widespread use of fertility drugs and high-tech procedures such as in vitro fertilization (IVF), and increased maternal age are considered to be the major contributing factors to the increase in multiple births.^(15,16,17,18)

Multiple Births by Maternal Age

- Multiple births are more frequent among women in their thirties and forties. In 2002, approximately 55% of multiple birth babies were born to women age 30 and older.⁽¹⁾

Infertility Treatments

- Approximately 35% of multiple pregnancies result from infertility treatments (fertility drugs and/or reproductive technologies). However, it is estimated that over 80% of higher order multiples result from these treatments.⁽¹⁶⁾
- The incidence of monozygotic multiples is doubled in multiples conceived through the use of ovulation stimulation treatments.⁽¹⁹⁾

Maternal Weight

- Women with a pre-pregnancy Body Mass Index (BMI) of 30 or greater are at a significantly increased risk of conceiving dizygotic multiples.⁽¹⁸⁾



THE IMPACT OF MULTIPLE BIRTHS

Multiple birth infants have a disproportionately high risk of preterm birth, perinatal death and illness which places enormous stress on families as well as health, social and education services.

Maternal Health

- Multiple pregnancies present significant complications for pregnant women, such as gestational hypertension, preeclampsia, anemia, gestational diabetes, premature rupture of membranes, and postpartum hemorrhage.^(20,21,22)
- Reduced activity, withdrawal from employment, and prescribed bed rest (at home or hospital) during pregnancy are common for expectant mothers of multiples. Prolonged bed rest can lead to cardiac and/or respiratory problems and muscular wasting, and recovery from these problems may take several weeks.^(24,25)
- Cesarean section is needed for over 50% of twin pregnancies, and is almost always required for higher order multiples. Since infection, prolonged pain, and delayed recovery are more common with caesarean deliveries, new mothers of multiples frequently have difficulty in holding, carrying and caring for their infants.^(2, 25,26)



Problems Unique to Multiple Pregnancy

- Monozygotic multiples who share one placenta (monochorionic) have a high incidence of umbilical cord entanglement, Twin-to-Twin Transfusion Syndrome (TTTS)* and fetal death.⁽²⁷⁾

**TTTS is a condition in which blood from one monozygotic twin fetus transfuses into the other fetus via blood vessels in the placenta. TTTS can also occur between monozygotic multiples in a triplet or more pregnancy.*

- Poor and differing fetal growth between the babies is common.⁽²⁷⁾

Perinatal Death

- Occasionally one fetus dies in early pregnancy and is reabsorbed (Vanishing Twin Syndrome).⁽²⁸⁾
- Compared to mothers expecting a single baby, mothers expecting multiples are nearly three times more likely to lose one, more or all of their babies before birth.^(1,2)

Preterm Birth

- The average length of pregnancy is 36 weeks for twins, 33 weeks for triplets, 31 weeks for quadruplets, and 29 weeks for quintuplets.⁽³⁰⁾
- Most multiple birth babies are born before full term (40 weeks), and 57% of twins and 98% of higher order multiples are born preterm (before 37 weeks).^(1,2,31)
- Multiple births are the fastest growing segment of the preterm birth infant population, representing 20% of all preterm births.^(2,31)
- Due to their prematurity, multiple birth infants frequently have ongoing health problems such as respiratory and neuro-developmental challenges, requiring prolonged and frequent hospitalization.^(5,6)

Infant Death

- Infant death is 4 to 5 times more likely to occur among multiple births than among singleton births.⁽²⁾
- Multiple birth babies are more vulnerable to Sudden Infant Death Syndrome (SIDS).⁽²⁹⁾

Low Birth Weight

- Low birth weight (<2500 grams, or 5.5 lbs) and very low birth weight (<1500 grams, or 3.3 lbs) occur about nine times more frequently among multiple than singleton births.⁽¹⁾
- Multiples represent about 25% of all low birth weight infants and 28% of the very low birth weight infant population.^(1,2,3,4)
- The average birth weight for each multiple birth baby is approximately:
 - Twins 2,500 grams (5-1/2 pounds)
 - Triplets 1,800 grams (4 pounds)
 - Quadruplets 1,400 grams (3 pounds)⁽³⁰⁾
- Given that multiple birth infants are more likely to be born with a low birth weight, they often have short and long term health and developmental problems, require more feedings during the early weeks or months, and tend to require more care.⁽³¹⁾

Disabilities

- Complications during pregnancy, delivery and in the early weeks of life may result in one, more or all of the babies having special needs.^(5,6)
- Compared to singletons, twins are 1.4 times more likely to have a disability. Similarly, triplets are 3 times more likely to have a severe disability and 1.7 times more likely to have a moderate disability.^(5,6)
- Multiples are at a significantly increased risk of having Cerebral Palsy (CP). In contrast with single born children, twins are 10 times more likely, triplets 30 times more likely, and quadruplets 110 times more likely to have CP.⁽⁵⁾
- Since disabilities and/or developmental delays are more common in multiples, parents often must commit to intensive and ongoing involvement in therapies throughout the first few years.^(5,6)

Psychosocial and Financial Issues

- Since death is much higher among multiple births than singletons, parents who lose one, more or all of their babies face extremely difficult situations. In the case of losing all of the babies, the parents have lost not only their babies but a unique parenting experience. If there are survivors, the parents find it hard to celebrate the birth and the anguish of death at the same time. As a result, some parents find it difficult to attach emotionally with the survivor(s). For those who have experienced years of infertility, the loss of one or more of the babies can be particularly heartbreaking. These additional issues can make the grieving process more complex.^(33,34,35)
- Some centres that offer assisted conception, also offer Multifetal Pregnancy Reduction as an option to women who conceive higher order multiple pregnancies. Multifetal Pregnancy Reduction aims to increase a woman's chance of a near term delivery of a singleton baby or twins instead of three or more babies. This procedure and associated decisions are not straight forward and the long term psychological effects may be profound. In particular, the decision whether or not to undergo this procedure can be extremely distressing. For many, after experiencing the emotional and financial strains of infertility, the decision to reduce seems to be in conflict with the goal of conception.^(36,37)
- The total cost of raising multiples is higher than the cost of raising the same number of singletons. Parents must purchase clothing and equipment all at once (e.g. cribs, special stroller, car seats, high chairs, etc.), preventing an opportunity to pass along hand-me-downs. The first year "start up" costs for basic essentials of infants for families with triplets is approximately \$12,000 higher than families raising a single baby. This amount does not include: the cost of disposable diapers; transportation needs when a larger vehicle is required to accommodate three, four or more infant car seats; the cost of moving to larger accommodation or renovations to existing accommodation; childcare costs; or the loss of a second family income if the mother does not return to the paid labour force.
- Caring for multiples is more difficult and physically demanding than caring for one child, especially during infancy and childhood, and with higher order multiples. One Australian study showed that mothers of triplets spend an average of 197.5 hours per week (unfortunately there are only 168 hours in a week) between themselves and paid/volunteer assistance, on caring for their babies and managing the household. This situation can place extraordinary stress on the couple relationship.^(38,39)
- Parenting multiples presents unique situations and experiences yet information, support and advice regarding multiple births is often difficult to find.^(7,8,9,10,47)
- Compared to a single baby, the maternal and paternal attachment process takes longer and is more complex with two, three or more babies.^(40,41,42)
- Since most new mothers of multiples suffer from sleep deprivation and chronic fatigue, they are at higher risk of Post-partum Depression (PPD) than mothers of singletons.^(7,10,43,44,45,46)
- Parents of multiples are at risk of maternal isolation, marital stress, financial difficulties and illness. This stress, in combination with the lack of access to special information and support, places multiple birth families at an increased risk of family problems.^(7,10,47)
- As a result of the unrelenting parental demands, the associated fatigue, and the attention that multiple birth babies attract, the birth of twins, triplets or more can have a negative impact on other children in the family (e.g. behavioural changes).⁽¹¹⁾
- Due to the extraordinary parental stress, multiple birth infants are at a greater risk of abuse such as Shaken Baby Syndrome.^(48,49,50)





PREVENTION

In order to avoid short and long term problems, families with multiple birth children require timely access to preventative health care and social support that is specifically designed for parents of multiples.

- Physicians need to inform families who seek infertility treatments, about the known risks of multiple pregnancy, multi-fetal reduction, and parenting demands before starting therapy.^(51,52,53)
- Physicians need to refer patients to appropriate specialists for infertility management and high-risk multiple gestations.^(23,56)
- To ensure that the pregnancy goes as near to term as possible, women expecting multiples require:
 - Early diagnosis of the multiple pregnancy (before 16 weeks) in order to :
 - Identify monozygotic multiples sharing a single placenta (monochorionic)⁽²⁷⁾
 - Put into place an appropriate obstetrical care management plan^(23,51,55,56,57)
 - Allow the mother and her family adequate time to adjust^(23,55,56)
 - Early nutritional counselling and dietary resources to support a weight gain of 18-27 kilos (40-60 pounds)^(51,52,53)
 - Education regarding preterm labour⁽⁵¹⁾
 - Obstetrical care which follows the protocols of best practice for multiple birth^(23,51,54,57)
- Multiple birth families need to receive special support. In particular:
 - The primary antenatal care provider should identify all those involved in the care of the family and ensure that close links are sustained throughout the pregnancy and postpartum period;^(47,58)
 - Early prenatal classes designed for parents expecting multiples;^(47,55,56,58)
 - Practical help and referral to local resources;^(47,55,56,58)
 - Multiples-specific breastfeeding support.⁽⁵⁹⁾
 - Links with other parents who share their unique experience (e.g. Multiple Births Canada, local parents of multiples support group).^(47,55,56,58)
 - When the health of the mother or family circumstances indicates, limited activity, greater work restrictions and increased bed rest are often recommended. In these situations, mothers may also require in-home nursing support and household help, especially if there are older siblings.^(47,55,56,58)
- Creation of healthy public policies must recognize the need for and benefits of additional supports for multiple birth families. Programming must address barriers to supports and services for multiple birth families including lack of services, long waiting lists for services, and the need for service coordination.



SOURCES OF INFORMATION:

Multiple Births Canada www.multiplebirthscanada.org

Toll-Free (in Canada): 1-866-228-8824

Telephone: 705-429-0901 Fax: 705-429-9809

Email: office@multiplebirthscanada.org

International Society for Twin Studies

www.ists.qimr.edu.au/

Society of Obstetricians and Gynaecologists of Canada

www.sogc.org/sogcnet/index_e.shtml

Telephone: 613-730-4192

Toll Free: 1-800-561-2416 Fax: 613-730-4314

Email: helpdesk@sogc.com

The Multiple Births Foundation

www.multiplebirths.org.uk/

Telephone: 0208 383 3519 Fax: 0208 383 3041

E-mail: info@multiplebirths.org.uk

Center for the Study of Multiple Birth

www.multiplebirth.com/

Telephone: (312) 695-1677

Fax: (312) 908-8777

Email: lgk395@northwestern.edu

Multiple Births: Prenatal Education and Bereavement Support

www.multiplebirthsfamilies.com



DOCUMENTS & ARTICLES

Declaration of Rights and Statement of Needs of Twins and Higher Order Multiples

<http://www.ists.qimr.edu.au/Rights.html>

Consensus Statement on the Management of Multiple Pregnancy

http://sogc.medical.org/multiple/sogc_statement.htm

Preterm and Low Birth Weight and Multiple Births: An Information Guide for Parents

<http://www.successby6ottawa.ca/lbwfpn/english/multiplebirthsLBW.html>

Twins, Triplets and More: A Resource Guide for Multiple Pregnancy and Parenthood

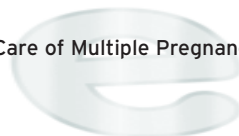
<http://www.nursing.ubc.ca/PDFs/TwinsTripletsAndMore.pdf>

Multiple Birth Resources, LLC

<http://www.expectingmultiples.com>

Multiple Exposure: An Innovative Approach to the Antenatal Care of Multiple Pregnancy

<http://sogc.medical.org/multiple/MultExposure.htm>

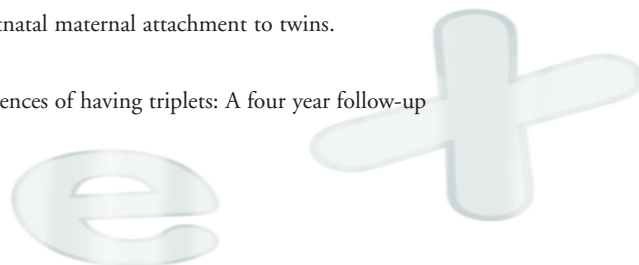






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CANADIAN MULTIPLES

Number of Multiple Births & Rates per 1,000 (excluding Newfoundland)

	Twins 	Triplets 	Quads 	Quints 	Total Multiple Births	Total Singletons 	Total Births
1982	6,794	138	4	0	6,936	359,623	366,559
1983	6,920	120	0	0	7,040	360,243	367,283
1984	7,104	195	0	0	7,299	363,513	370,812
1985	7,230	150	16	0	7,396	363,163	369,559
1986	7,012	156	8	0	7,176	359,909	367,085
1987	7,424	192	8	5	7,629	356,661	364,290
1988	7,530	183	24	5	7,742	361,701	369,443
1989	7,990	201	8	10	8,209	379,144	387,353
1990	8,322	237	32	0	8,591	398,513	407,104
1991	8,018	237	28	5	8,288	396,535	404,823
1992	8,160	300	16	5	8,481	392,686	401,167
1993	7,906	321	28	0	8,255	382,431	390,686
1994	8,434	351	20	5	8,810	378,529	387,339
1995	8,490	300	Not Recorded	Not Recorded	8,790	371,548	380,338
1996	8,572	352	22	0	8,946	359,375	368,321
1997	8,496	383	8	0	8,887	341,854	350,741
1998	8,803	374	8	0	9,185	335,220	344,405
1999	8,867	375	20	5	9,267	330,036	339,303
2000	8,741	365	12	0	9,118	320,719	329,837
2001	Not Available	Not Available	Not Available	Not Available	9,594	326,192	335,786
2002	Not Available	Not Available	Not Available	Not Available	9,712	321,105	330,817
2003	Not Available	Not Available	Not Available	Not Available	10,336	327,028	337,364

Twins, triplets and other multiple birth babies accounted for 3% of all births in 2003. Between 1994 and 2003 the multiple birth rate increased 35% while the single crude birth rate per thousand population dropped 25%.

Source: Statistics Canada, Canadian Vital Statistics, [Birth Database](#), CANSIM table number 102-4515, Ottawa, 2005



Toll-Free (in Canada): 1-866-228-8824 Telephone: 705-429-0901 Fax: 705-429-9809
Email: office@multiplebirthscanada.org www.multiplebirthscanada.org

Best Start: Ontario's Maternal, Newborn and Early Child Development Resource Centre
c/o Ontario Prevention Clearinghouse, 180 Dundas Street West, Suite 1900, Toronto, Ontario M5G 1Z
Phone: 416-408-2249 or 1-800-397-9567 Fax: 416-408-2122 www.beststart.org

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