Management of Twin Pregnancies (Part 1)

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INTRODUCTION

The incidence of twin gestations across Canada has increased by 15 percent over the years 1993-1997. This increase is the major contributing factor to the rising incidence of preterm birth in Canada. Many aspects of the obstetric management of the twin pregnancy cannot be extrapolated from that of a singleton pregnancy. For example, the age related karyotypic risk is different for a twin compared to a singleton pregnancy; during pregnancy the clinical assessment of the growth of each fetus is difficult without ultrasound; and finally, the delivery of the second twin demands special attention. Therefore in December 1997, the SOGC and the Universities of Toronto and Western Ontario coordinated a National Consensus Conference in order to define, based upon the best evidence available, the standard care of twin and higher order multiples gestation.

PROCESS

Five priority areas were identified and questions relating to those areas developed in order to allow participants to concentrate on important guidelines for practice. The impact of the increase in multiple births was also addressed. The participants were divided into groups to address each of these topics. Each group had in charge a leader or leaders whose task it was to review the literature and provide evidence based answers and forward the group’s consensus on particular issues. The quality of evidence was evaluated and recommendations were made according to guidelines for assessing medical literature published by Health Canada (Table 1). As an aid to the reader, alongside each recommendation is the Level of Evidence and Category of Strength for that recommendation. Although many areas of practice have not been well studied, clinical practice dictates that some recommendations of practice are made to aid professionals in their day to day clinical activity. It is important to realize that these particular recommendations are made not on “best evidence” but on “best opinion” and should be flagged as areas for future research. The full deliberations of each group will be available on the SOGC “Multiples” Website and in a more complete publication which will be available in the future.

It was attempted to keep medical representation at the meeting wide, with input sought from all aspects of health care including midwifery, nursing, counseling, social work, as well as community groups. We are totally indebted to the group facilitators who reviewed and presented vast amounts of literature and who have allowed us to present this consensus document.

A. THE INCIDENCE AND IMPACT OF TWIN PREGNANCIES

Multiple births have increased from 1.9 percent to 2.1 percent of all live births between 1981 through 1983 and 1992 through 1994. The contribution of these multiple pregnancies to preterm birth rates in Canada has resulted in a 25 percent increase in the proportion of preterm births resulting from multiple gestations. The impact of this data on both our health care system and on Canadian society, along with the

<table>
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<th>TABLE 1</th>
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<tr>
<td>QUALITY OF EVIDENCE ASSESSMENT</td>
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<td>The quality of evidence reported in these guidelines has been described using the Evaluation of Evidence criteria outlined in the Report of the Canadian Task Force on the Periodic Health Exam.</td>
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<tr>
<td>I: Evidence obtained from at least one properly randomized controlled trial.</td>
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<td>II-1: Evidence from well-designed controlled trials without randomization.</td>
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<td>II-2: Evidence from well-designed cohort (prospective or retrospective) or case-control studies, preferably from more than one centre or research group.</td>
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<tr>
<td>III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.</td>
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| CLASSIFICATION OF RECOMMENDATIONS |
| Recommendations included in these guidelines have been adapted from the ranking method described in the Classification of Recommendations found in the Report of the Canadian Task Force on the Periodic Health Exam. |
| A. There is good evidence to support the recommendation that the condition be specifically considered in a periodic health examination. |
| B. There is fair evidence to support the recommendation that the condition be specifically considered in a periodic health examination. |
| C. There is poor evidence regarding the inclusion or exclusion of the condition in a periodic health examination, but recommendations may be made on other grounds. |
| D. There is fair evidence to support the recommendation that the condition not be considered in a periodic health examination. |
| E. There is good evidence to support the recommendation that the condition be excluded from consideration in a periodic health examination. |

With support of the Medical Research Council of Canada, Adeza, Ferring, Hewlett Packard, Mantria Health Care, Serono, and Upjohn
recommendations of the subgroup that addressed these issues, will be published in the August issue of Journal SOGC.

B. RECOMMENDATIONS FOR EARLY PREGNANCY ULTRASOUND AND GENETIC COUNSELLING.

1) The first trimester ultrasound in twin pregnancy?
Chorionicity, one of the most important determinants of pregnancy outcome in twin gestation, is best determined in the first trimester. Nuchal translucency can also be measured.

CONSENSUS STATEMENT #1
When a multiple gestation has been diagnosed:
• Every effort should be made to determine chorionicity at the time of diagnosis. (II-3 C)
• The optimal time to determine chorionicity is 10-14 weeks. (II-3 C)
• While these recommendations apply to diagnosis of twin pregnancy with regard to prenatal diagnosis and counselling, there have been no studies relating the establishment of prenatal chorionicity to pregnancy outcome.

2) At what age should genetic testing be offered to a mother with dichorionic and monochorionic twins?
Invasive diagnostic testing may be offered in twins on the basis of late maternal age. When counselling women about their risk of chromosome abnormalities, the chorionicity should be taken into consideration. In monochorionic (M C) twins, the age-related risk for the fetuses is the same (all are monozygotic) and is equivalent to the risk in a singleton pregnancy. In dichorionic (D C) twins, the risk is essentially double the age-related risk (about 2/3 will be dizygotic). Although accurate determination of chorionicity by ultrasound is possible, it will not always be feasible. Hence, the group felt it was more appropriate at this time to follow the guidelines by Rodis et al. (1990) which state: “The chance of a 32 year old woman who carries twins of unknown zygosity having at least one child with Down syndrome is equivalent to the risks of a 35 year old with a singleton pregnancy.”

The risk of amniocentesis in twin gestation is uncertain (see below) and issues such as discordant anomalies that may arise need to be considered. Such counselling is complicated and is best carried in a specialized genetic centre, or centre specializing in the management of multiple gestation.

CONSENSUS STATEMENT #2
All women carrying twin pregnancies should be referred for counselling to a centre for the consideration of invasive testing at age 32. The counselling must be individualized and the final decision must be taken by the parents since the risk of amniocentesis is uncertain in twin gestation. (II-3 C)

3) What are the methods available for genetic screening in twin pregnancies and how effective are they in twin pregnancies in detecting fetal aneuploidy?

CONSENSUS STATEMENT #3
• Biochemical screening for aneuploidy is not recommended in twins.
• Maternal serum alpha fetoprotein (M S-AFP) is useful for detection of open neural tube and other birth defects (II-3 C)
• Evidence is promising that nuchal translucency (NT) screening is useful for identifying twin pregnancies at high risk of aneuploidy. This requires further prospective investigation. (II-3 C)

4) What are the risks/benefits of invasive genetic testing in twin pregnancy?

CONSENSUS STATEMENT #4
• The fetal loss rates with invasive testing (amniocentesis and chorionic villus sampling (CVS)) in twins are unclear. (II-3 C)
• Development of a protocol for standardization of technique (as determined by expert opinion) is recommended.
• Invasive testing should be offered to twins according to the usual standard of care.

C. PRETERM BIRTH PREVENTION IN TWIN GESTATION.
The use of tocolytics and corticosteroids in the treatment of established preterm labour was not addressed at this meeting. Readers are directed to The Canadian Consensus on the Use of Tocolytics for Pre-Term Labour.

1) Is there any evidence that bedrest, cervical suture or tocolysis, or any other intervention prevents preterm labour and delivery in twin pregnancies?

HOSPITAL BEDREST
Randomized controlled trials and a meta-analysis of hospital bedrest in twin pregnancies have shown no reduction in preterm birth or perinatal death. In uncomplicated twin pregnancies, hospital rest may result in increased risk of very preterm birth and maternal psychosocial stress. In women with twin pregnancy at high risk for preterm birth because of premature cervical change prior to labour, there is no evidence that hospital bedrest will reduce the rate of preterm birth.
CONSENSUS STATEMENT #6
Routine hospitalization for bedrest in multiple gestation is not recommended. (I E)

ACTIVITY RESTRICTION/WORK LEAVE
Restriction of activity level and the recommendation to stop work is commonly prescribed for women with twin pregnancies as a preterm birth prevention strategy. This prophylactic intervention has only been studied in a few observational trials with historical or geographic controls with conflicting results.13,14

CONSENSUS STATEMENT #7
There is insufficient evidence to support prophylactic activity restriction or work leave in multiple gestation. (III C)

CERVICAL CERCLAGE
Prophylactic cervical cerclage has not been shown to be effective in preventing preterm birth in twin pregnancy in observational or controlled trials.15

CONSENSUS STATEMENT #8
There is moderate evidence against routine prophylactic cervical cerclage in multiple gestation. However, cerclage may be indicated for the treatment of incompetent cervix or other specific circumstances. (I;II-2 D)

PROPHYLACTIC TOCOLYTIC THERAPY
Most randomized controlled trials have failed to show any benefit of prophylactic oral or intravenous tocolytic therapy in multiple gestation.16-20

CONSENSUS STATEMENT #9
There is moderate evidence against prophylactic tocolysis in the management of multiple gestation, but it may be indicated on other grounds. (I;II-2 D)

SPECIALIZED TWIN CLINICS/PREVENTION PROGRAMMES
Multi-intervention preterm birth prevention programmes for twin pregnancies have been evaluated in several observational studies with contemporary and/or historical controls.20-26 All studies reviewed suggest reduction in preterm birth rate, decreased perinatal mortality, and overall improvement in perinatal outcome.

CONSENSUS STATEMENT #10
The evidence to support specialized clinics is of insufficient quality to recommend that they be part of routine clinical practice. Further randomized controlled studies are needed to validate the improved outcomes that have been demonstrated in cohort studies. (II-2;III C)

2) Is there a role for routine clinical cervical assessment in multiple gestation?
Despite the lack of precision, clinical cervical assessment appears to be safe and may be effective in monitoring twin gestations, if transvaginal ultrasound is not available or determined to be too expensive.27 However, compared to transvaginal sonography, digital examination is more subjective and less reproducible.28-30

CONSENSUS STATEMENT #11
There is good evidence that premature cervical change by digital examination predicts preterm birth in twins. (II-2 A)
Since there are no well designed intervention trials available, the role of sonographic clinical cervical assessment in the prenatal period has not been determined. (C)

3) Is there a role for sonographic cervical assessment in multiple gestation?
Transvaginal sonographic cervical assessment provides insight into the cervical status, as well as the likelihood of preterm birth in twin pregnancies. There appears to be good correlation between cervical length and the risk of preterm birth.31-35

CONSENSUS STATEMENT #12
There is good evidence that transvaginal sonographic measurement of cervical length predicts preterm birth in twins. (II-1 A) While the predictive ability of cervical length measurement is established, there are no intervention studies that have evaluated cervical length measurement in the prevention of preterm birth, and therefore the role of sonographic clinical cervical assessment in the prenatal period has not been determined. (C)

4) Is home uterine activity monitoring useful in predicting preterm birth in twin pregnancy?
Although home uterine activity monitoring may be helpful in identifying women at increased risk of preterm labour before advanced cervical dilation occurs, this information has not resulted in reduction in the incidence of preterm labour, advanced cervical dilation at presentation or preterm birth in well-controlled randomized controlled trials.36-40

CONSENSUS STATEMENT #13
There is moderate evidence against home uterine activity monitoring in multiple gestation. (I D)

5) Does the measurement of fetal fibronectin predict preterm birth in twin pregnancy?
Data from prospective longitudinal studies suggests that a positive fetal fibronectin test has a very high negative predictive value for the prediction of preterm birth in asymptomatic
patients. The positive predictive value for preterm labour and delivery before 37 weeks is 60 percent for patients in preterm labour, 45 percent in asymptomatic high-risk women, and 30 percent in asymptomatic low-risk women.41

CONSENSUS STATEMENT #14
There is good evidence that the presence of cervicovaginal fetal fibronectin in twins predicts preterm birth. Without well designed intervention trials available, there is no basis for incorporating fetal fibronectin screening into routine prenatal management of multiple gestation. (C)

SUMMARY
No prenatal method has been shown to prevent preterm birth labour and birth in twin pregnancies. Cervical length measurement and presence of fetal fibronectin in cervico-vaginal fluids need to be evaluated to investigate whether the ability to predict whether selected interventions, applied to a subgroup of twins with a high risk of preterm birth, will result in a reduction in the rate of preterm birth.

D. ULTRASOUND IN TWIN GESTATIONS42-69
1) When should ultrasounds be performed in twin pregnancies and why?
Without ultrasound, up to 40 percent of twin gestations will not be recognized until 26 weeks gestation on average, and up to 20 percent will remain unrecognized until term. In the first or second trimester ultrasound will usually (>95%) determine chorionicity. The detection of fetal anomaly, the incidence of which is three times higher with twin pregnancy, is initially best assessed between 16 and 20 weeks. In the second and third trimesters, fetal growth will be reliably assessed by serial ultrasound.

CONSENSUS STATEMENT #15
There is good evidence that the diagnosis of twin gestation is improved by the routine use of ultrasound. There is consensus that serial ultrasonographic evaluation every three to four weeks is indicated in twin gestations. (I B)

2) Is fetal growth the same in twins as in singletons and what ultrasonic growth curves should be used to plot fetal weights?
Fetal growth in twin gestation parallels that of singletons until approximately 32-35 weeks. Thereafter the rate of fetal growth is measurably slightly less, although the clinical significance of this is undetermined. The patterns of twin fetal growth vary by race and gender, with African-American mothers having lower median body weight (BW) values. Male twins have heavier median BW for gestational age than female twins at every gestational age.

CONSENSUS STATEMENT #16
Fetal growth differs slightly in twin gestations and twin specific charts may be used to define the normal growth rate. Precision may also be obtained by using sex and race specific charts. In clinical practice, however, these differences are small and singleton growth curves may be used. Patterns of fetal growth are more important than absolute measurements. Both must be interpreted in the light of the clinical history, together with all the genetic and environmental factors that may affect fetal growth. (III B)

3) What level of growth discrepancy between twins is cause for concern?
The importance of accurate and timely identification of discordant growth lies primarily in its relationship to the complication of twin twin transfusion and to intra-uterine growth restriction (IUGR) of the smaller twin. True discordance is an indicator for an increased risk of IUGR, morbidity, and mortality for the smaller twin. A risk for aneuploidy, anomaly or viral syndrome affecting only one fetus must also be considered when discordant growth is identified.

CONSENSUS STATEMENT #17
The diagnosis of discordance has been based on the following:
• an abdominal circumference (AC) difference of 20 mm (sensitivity of 80%, specificity 85%, positive predictive value (PPV) 62%)
• estimated fetal weight (EFW) based on bi-parietal diameter (BPD) and AC or AC and femur length (FL) > 20 percent (sensitivity 25-55%) (II-2 B)

E. LABOUR MANAGEMENT AND THE DELIVERY IN TWIN GESTATION
1) What are the indications for elective Caesarean in twin pregnancies (> 2,500g)?

CONSENSUS STATEMENT #18
The indications for elective Caesarean section in twin gestations are:
• Monoamniotic twins because the risk of entrapment is too great to permit elective vaginal delivery;
• Conjoined twins other than at gestations remote from term;
• Indications as for singleton pregnancies. (III C)

2) What are the attendance at labour and delivery guidelines for physicians managing a twin gestation?

CONSENSUS STATEMENT #19
The following points highlight the factors most crucial to...
the successful care of a woman during labour and delivery of a twin pregnancy.

a) Timely attendance by a physician competent to manage a twin birth.

b) The presence of additional antenatal risk factors should be reviewed at the onset of labour. Intrapartum risk factors should be assessed on an ongoing basis and changes attended to appropriately.

c) When participating in a call system, the replacing physician should be of similar competence and informed of all facts pertaining to a case when care is transferred.

d) The diagnosis of twins is usually antenatal. Therefore, arrangements for delivery and/or transfer should be set in place. This may include antenatal consultation with a high risk centre.

e) The assessment of lie and presentation of each fetus on admission in labour, preferably by ultrasound.

f) Intravenous access should be secured, and blood sent for group and antibody screen.

g) Anaesthetic personnel should be informed as soon as possible of a planned twin birth. Epidural anaesthesia is advantageous.

h) Oxytocin augmentation may be used before the delivery of the first twin and/or between twins for hypotonic contractions.

i) For either twin, the indication(s) for any intervention should be convincing, compelling, and documented at the time of the event(s). However, for the cephalic second twin, vaginal delivery should be expedited should fetal distress occur. There is little evidence to suggest the best operative method of delivering the second twin who remains in the vertex position, should the need arise. A vacuum or forceps procedure, preferably during which the prerequisites of any operative delivery are fulfilled, may be considered. However, the vacuum may be employed at a station perhaps slightly higher than would be attempted with a singleton fetus. Other options are conversion to breech and delivery by breech extraction if the Vx was not engaged or Caesarean if the operator felt that no other method could be safely accomplished.

j) Documentation of all aspects of labour and delivery should be clear, contemporaneous, and consistent among all involved health care providers.

k) Progress of labour should emerge clearly from the documentation.

l) Continuous electronic fetal heart rate monitoring of both twin A and B should ensure that both twins are being monitored individually. The presence of an ultrasound machine in the delivery room may be advantageous.

m) For attempted delivery by mid-forceps, vaginal breech delivery, and multiple pregnancies, Caesarean section should be available immediately. Immediate availability means the presence in the hospital of anaesthetic, obstetrical, neonatal, and nursing staff trained in Caesarean delivery. A note should be dictated describing all operative deliveries and complicated labour and delivery events. The time difference between the delivery of each baby should be noted.

n) Cord blood samples should be drawn at the time of delivery.

o) The third stage of labour should be managed actively, with oxytocin being administered with the delivery of the second twin.

p) Placentas should undergo gross and microscopic pathological examination.

q) We suggest that twin deliveries be planned in Level II and Level III hospitals. (II C)

3) What is the best method of delivering the non vertex second twin?

CONSENSUS STATEMENT #20

a) Delivery of cephalic twin A/non-cephalic twin B: Estimated weight 1,500-4,000 g. Vaginal delivery is indicated as long as the obstetrician is comfortable with and skilled in vaginal breech delivery.70-83 (II-2 B)

b) Delivery of cephalic twin A/non-cephalic twin B: Estimated weight 500-1,500 g. In this weight range the group acknowledged that there is no consistent evidence to support either Caesarean section or the vaginal route for delivery.70-78 (III C)

4) Non-cephalic twin B: Breech extraction with or without internal podalic version OR external cephalic version?

CONSENSUS STATEMENT #21

Breech extraction with or without internal podalic version is associated with a lower Caesarean section rate and similar neonatal and maternal outcomes compared with external cephalic version in the twin pairs whose estimated fetal weights are greater than 1,500 g.79-84 (II-2 B)

5) What is the optimal delivery interval between twins in a vaginal twin delivery?

CONSENSUS STATEMENT #22

It is reasonable to either:

a) expedite delivery by oxytocin infusion, stabilizing amniotomy and, if indicated, operative vaginal delivery; or

b) permit a longer delay between deliveries using an oxytocin infusion and continuous electronic fetal heart rate monitoring. For the non-cephalic second twin, if breech extraction with or without podalic version is considered, then this should be done without delay.85-88 (II-2 B)

F. Special Twin Circumstances, Guidelines For Diagnosis And Management: Twin Twin Transfusion (TTTS), Monoamniotic Pregnancies.

1) What are the diagnostic markers of twin twin transfusion?
CONSENSUS STATEMENT #23
a) Evidence for diagnosis:
   i) single monochorionic placenta,
   ii) polyhydramnios/oligohydramnios sequence, and
   iii) same sex fetuses.
   This does not imply that all pregnancies characterized by these features are affected by TTTS— further investigations may be required— but these features should prompt referral to a tertiary care unit. (II-2 B)

b) Evidence of decompensation in fetal health. These include:
   i) chronically distended bladder of recipient twin;
   ii) growth discordance (>25%); and
   iii) evidence of cardiac dysfunction eg., non-immune hydrops.
   These should prompt urgent referral to a tertiary care perinatal centre. (II-2 B)

2) How should TTTS pregnancies be managed antenatally and when should they be delivered?

CONSENSUS STATEMENT #24
In consideration of the high perinatal mortality rate accompanying a diagnosis of TTTS, all monochorionic twin pregnancies should be seen in consultation by a maternal-fetal medicine specialist for counselling and monitoring of fetal condition. Urgent consultation should be sought for the criteria listed in Section 23(b) above. (II-3 B)

a) Monitoring (uncomplicated monochorionic twin pregnancy):
Following diagnosis of uncomplicated monochorionic twin pregnancy and detailed second trimester anomaly screen, serial ultrasound surveillance of fetal health performed every two weeks, looking for evidence of suboptimal growth and/or emergence of features suggestive of TTTS. (III C)

b) Established TTTS:
The frequency of ultrasound surveillance of fetal health in severe cases of TTTS will depend on the severity and intervention strategy. (III C)

Therapeutic options: These include:
   i) no intervention (survival 0—30%),
   ii) amnioreduction 64 percent (survival 64% overall, 74% of at least one twin),
   iii) laser photoagulation (55% overall survival—73% of at least one twin),
   iv) amniotic septostomy, 83 percent survival (12 cases only).
   Termination of pregnancy, either selective or total may be considered.112-137

3) What are the diagnostic features and risks of monoamniotic twin gestation?

CONSENSUS STATEMENT #25
Monochorionic, monoamniotic placentation is found in approximately 1 percent of all twin gestations. High mortality rates (up to 50%) have been attributed to cord entanglement, knots and twists, congenital anomalies, and prematurity. Cord entanglement is present at birth in virtually 100 percent of monoamniotic twins and is a key diagnostic feature of monoamnionicity on sonography. Other sonographic diagnostic features of a monoamniotic twin pregnancy include:
   a) absence of a dividing amniotic membrane,
   b) presence of a single placenta,
   c) both fetuses of the same gender,
   d) adequate amniotic fluid surrounding each fetus, and
   e) both fetuses moving freely within the uterine cavity.138-156

4) How should they be managed antenatally and when should they be delivered?

CONSENSUS STATEMENT #26
These cases should all be referred to a regional perinatal centre. A reasonable management plan includes:

Antenatal:
   a) frequent (weekly or more) non stress test commencing at 24 weeks, (II-3)
   b) judicious use of antenatal corticosteroids. (III C)

Delivery:
   a) By 32-33 weeks, although some evidence that later delivery may be appropriate, (II-3,2 C)
   b) Caesarean delivery.145,150,153, 156 (II B)


REFERENCES


13


A multidisciplinary group was convened to address important issues surrounding the impact of twin pregnancies on individuals, families, health care providers, and society as a whole. Particular attention was placed on addressing the following aspects related to twin pregnancies:

1) Incidence
2) Perinatal Morbidity and Mortality
3) Social and Financial Impact
4) Role of Assisted Reproduction
5) Health Promotion Programs

After careful literature review, the group achieved consensus on a number of recommendations. There was unanimous agreement that the Declaration of Rights and Statement of Needs of Twins and Higher Order Multiples prepared by the International Society for Twin Studies Council of Multiple Birth Organizations should be endorsed and supported at all levels of government and providers of health care within Canada. The full document is published in Twin Research (1998).\(^1\)

With regards to the specific needs of Canadian families with multiple pregnancies, it is known that the incidence of twin pregnancies continues to increase in Canada from 9.05 per 1,000 confinements in 1974 to 11.29 per 1,000 confinements in 1995.\(^2\) In absolute numbers, this represents an increase from 3,037 sets of twins in 1974 to 4,245 in 1995, or a 30 percent increase overall in that 21 year period. Although 1995 is the latest year for which Statistics Canada information is available, it is likely that this trend will have continued to increase.

It was noted that there is a significant increase in perinatal morbidity and mortality in twin pregnancies compared to singletons, primarily due to the increased rate of preterm delivery. Between 1991 and 1995 in the United States, the preterm delivery rate in twins was 13.94 percent (<33 weeks) and 50.74 percent (<37 weeks) compared to 1.7 and 9.43 percent respectively in singleton pregnancies.\(^3\) The contribution of multiple pregnancies to preterm birth rates in Canada has recently been confirmed, with a 25 percent increase in the proportion of preterm deliveries among multiple pregnancies.
births resulting from multiple gestations between the years 1981-1983 to 1992-1994. It should be noted that approximately 98 and 97 percent of multiple pregnancies in 1981-1983 and 1992-1994 respectively were twin pregnancies.

PERINATAL MORBIDITY AND MORTALITY

Much of the increased morbidity and mortality of twin pregnancies is directly related to prematurity, and includes respiratory distress syndrome, intraventricular haemorrhage, necrotizing enterocolitis. In addition, there is an increased incidence of intrauterine growth restriction in one or both fetuses, congenital abnormalities, and complications related to twin to twin transfusion syndrome. Careful evaluation of the extent of the increase in perinatal morbidity and mortality with twin pregnancies is complicated by inconsistencies in perinatal data collection between institutions as well as between provinces within Canada. In order to attempt to address these problems in relation to preterm birth in particular, the Canadian Perinatal Surveillance system to monitor changes in perinatal health entitled The Canadian Perinatal Surveillance System. It was recommended that, given the significant contribution these pregnancies make to the overall incidence of preterm labour, this group should include in their indicator framework variables specific to multiple gestations. Information requiring documentation which is likely to be important in improving our understanding of causation of the increase in perinatal morbidity and mortality related to twin pregnancies includes: 1) mode of conception and nature of assisted reproductive technology if used; 2) embryonic and fetal demise (selective or spontaneous); 3) familial twinning; 4) placental inspection.

RECOMMENDATION 1

There is an urgent need for the standard reporting of perinatal data within hospitals and provinces as well as nationally which reflects the special considerations of twin and higher order multiple pregnancies.

SOCIAL AND FINANCIAL IMPACT

In addition to traditional indicators of perinatal morbidity and mortality, twin pregnancies are associated with a number of financial, personal, and social costs for their families and twins themselves. Because of the increase in preterm birth, there is also an increase in the incidence of cerebral palsy overall in twins compared to singletons. The financial costs related to the care of low birthweight children, a substantial number of which are twins, continue long after the costs of neonatal intensive care have been assumed. It has been estimated that 50 percent of the increase in costs related to the care of children with disabilities is related to special education. Clearly the impact of twin pregnancies on families and society does not end with the perinatal period.

The financial costs related to neonatal intensive care are significant, and governments have, over the last 10 years, progressively decreased the funding provided for this important component of health care as they have with many others. This decrease has occurred at the same time that the number of twin pregnancies and their associated preterm birth rates have increased in Canada. Twin pregnancies and higher order multiples place an additional challenge on the provision of neonatal intensive care, since by nature the clinical volume load is greater than that which occurs with a singleton delivery. With an increasing prevalence of transport of mother/fetuses or preterm neonates to distant level III units due to the lack of availability of medical and/or nursing staff or equipment, even greater stresses have been placed on women and families with both singleton and multiple pregnancies with threatened or actual preterm labour. This is a trend that must be reversed.

It has been well documented that the financial, emotional, and social costs of twins are greater than for singletons; and yet this is not recognized by governments, nor by society in general. The incidence of clinical depression is increased in mothers of twins and issues around mother-infant and father-infant interactions require special consideration by health professionals. Surveys of families with triplets and other higher order multiples have revealed in general a lack of professional awareness of the special needs of these members of society.

RECOMMENDATION 2

Federal and provincial community health providers should incorporate recognition of the special needs of families with twins and higher order multiples into existing and future related prevention and early intervention programmes for families and children at risk. All families with twins and higher order multiples should have access to appropriate services and supports (medical and essential non-medical) that address their special needs.

RECOMMENDATION 3

Health professionals should provide additional information and support services for families expecting twins antenatally in order to allow preparation for additional emotional, financial, and practical stresses related to their twins. Such information and support should include preventative health and parenting education as well as psychosocial services to help them cope with the high health and psychosocial risks related to multiple births.

RECOMMENDATION 4

Governments and health care delivery policy makers should
be made aware of the impact that current restrictions in funding for neonatal intensive care make on the ability to provide optimal care for families with twins and higher order multiples when the care cannot be provided regionally.

**RECOMMENDATION 5**

The SOGC in conjunction with other health professional bodies (e.g., Canadian Paediatric Society, Canadian College of Family Physicians) should be encouraged to hold further workshops to heighten the awareness of care providers regarding the special needs of families with twins and higher order multiples.

**ROLE OF ASSISTED REPRODUCTIVE TECHNOLOGY (ART)**

It is well established that the incidence of twins and higher order multiple pregnancies is greater following assisted reproduction than following spontaneous ovulation and conception. Recent studies have shown that up to 35 percent of twin pregnancies in some centres occur as a result of assisted reproductive technologies (ARTs). Overall population data for the relative contributions to multiple pregnancy rates of ovulation induction medications and other ART, however, is difficult to obtain for the reasons discussed previously regarding perinatal data collection in Canada. Nevertheless, the Royal Commission on New Reproductive Technologies (1993) noted the increased rate of multiple pregnancies with ovulation induction drugs as well as the increased rate of multiple births in Canada that we have outlined. The Royal Commission concluded that “the explanation for all these rises is almost certainly the use of fertility drugs and techniques such as in vitro fertilization (IVF).” This led them to make the following recommendation: “No more than three zygotes be transferred during IVF procedures, and then only after counseling of the couple to ensure that they understand the possibility and implications of having triplets. Patients should give their consent in writing if more than one zygote is to be transferred and should be assured that no more than three will be transferred.”

Of perhaps even greater importance is the contribution of ovulation induction agents to multiple pregnancy rates when IVF is not used. At present, there are no limitations on the ability of medical practitioners to prescribe these medications and there are no mechanisms to ensure appropriate prescribing other than through extensive professional and consumer education. There is an urgent need for this to take place. In a survey of families with twins and higher order multiples in Southwestern Ontario in 1994, none of the mothers who had conceived through ART had been provided with information or counselling before treatment began about preconceptual health, potential health risks to women carrying multiples and their babies, the chances of disabilities in multiples, or the demands of raising two, three or more babies.

**RECOMMENDATION 6**

The SOGC should endorse the moral obligation of physicians to inform women and their families who seek infertility treatments of the implications of multiple births in advance.

**RECOMMENDATION 7**

There is an urgent need for national regulations regarding the maximum number of embryos that may be transferred in ART Programmes in Canada as well as the prescribing practices of clinics and physicians related to ovulation induction agents.

**RECOMMENDATION 8**

The SOGC should establish standardized methods of reporting pregnancy rates in all ART programmes and their implementation should be regulated. A national registry for ART programs should be established in Canada.

**RECOMMENDATION 9**

The SOGC should initiate an open discussion and debate about issues related to multi-fetal pregnancy reduction procedures.

**HEALTH PROMOTION PROGRAMS**

Canada is well positioned to make a substantial contribution to the care of families with twins and higher order multiples largely because of the existence of a highly organized and effective parent support group known as POMBA (Parents of Multiple Birth Association). This organization has a distinguished legacy of providing information and support for families both during pregnancy and after birth. The opportunity exists for health professionals to work with this group to establish health promotion programmes for families, communities and care providers. Other countries have established organizations dedicated to this process, such as the U.K.’s MUltiple Births Foundation, which work closely with their parallel parent support groups. A similar organization in Canada working with POMBA and national organizations such as the SOGC could...
be an effective instrument for profiling the special needs of families with twins and higher order multiples through education programmes for professionals, governments, and communities.

**RECOMMENDATION 10**

A national inventory of services and supports available for women expecting twins and higher order multiples and their families should be conducted in order to determine the potential benefit of a national provider survey.

**RECOMMENDATION 11**

There is an urgent need for the development of health promotion and awareness programmes for families, communities, and health professionals regarding twins and higher order multiples.

**RECOMMENDATION 12**

The SOGC endorses the Declaration of Rights and Statement of Needs of Twins and Higher Order Multiples.

**SUMMARY**

The care for families with twins and higher order multiples is complex and there are a number of medical, financial, social, and moral factors which influence it. This workshop attempted to identify the key issues determining the impact of twins on families and society. A number of recommendations have been put forth for consideration which were endorsed unanimously by the Working Group. Many of these recommendations are included in the Declaration of Rights and Statement of Needs of Twins and Higher Order Multiples but have been identified separately here because of their particular relevance to the current Canadian scene. The authors would like to thank all of the participants in the Working Group for their important contribution to the preparation of this document.


**REFERENCES**