TWIN PREGNANCY AND BIRTH

INTRODUCTION AND BACKGROUND

Twin pregnancy occurs in approximately 2-3%[1,2,3] of pregnancies and the incidence has been increasing. This is mainly due to the use of assisted reproductive technologies and increasing maternal age[1,2,3]. Multiple pregnancy is associated with higher risks for both mother and babies.

Maternal morbidity is associated with increased risk of hypertensive disorders of pregnancy, gestational diabetes, PPH, operative delivery and postnatal illnesses. Maternal mortality is approximately 2.5 times that of singleton births[2] and perinatal mortality is 4.5 times higher for multiples compared to singleton pregnancies[9]. The overall stillbirth rate is higher in multiple pregnancies than in singleton pregnancies, for twin births the rate is 12.3 per 1000 births and triplet births 31.1 per 1000 births, in comparison to 5 per 1000 singleton births[2]. Other risks to babies include increased preterm delivery (spontaneous and iatrogenic), which occurs in up to 50% of twin pregnancies[1,2]. IUGR, congenital anomalies and twin-twin transfusion syndrome (TTTS) are all associated with multiple pregnancies, the latter depends on the chorionicity and amnionicity of the pregnancy.

The increased risks therefore warrant closer monitoring by specialist services. This may have a significant impact on the woman and her family in regard to psychosocial and economic factors and therefore she may require more support during pregnancy and after birth. LMC midwives are ideally placed to provide support as part of a collaborative approach to care.

REFERRAL TIMING AND MULTIDISCIPLINARY CARE

Multiple pregnancies are often discovered on the first ultrasound scan by the woman and her LMC midwife.

The New Zealand Guidelines for Consultation with Obstetric and Related Medical Services (Referral Guidelines) (Ministry of Health 2012)[23] defines twin and higher order multiple pregnancies as transfer level conditions. Early obstetric referral is important in order to implement a care plan for optimal outcomes. Referral is requested after NT scan (if done, or 12 weeks if NT declined). Screening for twin-to-twin transfusion syndrome commences at 16 weeks for monochorionic twins.

The Referral Guidelines (p.12) state:

Roles and responsibilities

Conditions listed as Transfer are those for which the LMC must recommend transfer of clinical responsibility from the LMC to a specialist. Once clinical responsibility for care is transferred, clinical decisions and decisions on the roles and responsibilities of all other practitioners involved with the woman's care rest with the specialist, taking into account the needs and wishes of the woman.

There is potential for LMCs to retain a role providing care for the woman, especially where the LMC is a midwife. Continuity of care should be preserved wherever possible. For example, where a woman

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who is pregnant with twins requires specialist oversight but continues to receive antenatal care from her LMC, the specialist has clinical responsibility.

An LMC may decline ongoing involvement with a woman's care if the clinical situation is outside their scope of practice or experience or unreasonably impacts on their workload.

DEFINITION OF MULTIPLE PREGNANCY AND CHORIONICITY AND AMNIONICITY

Multiple pregnancy is where there is more than one foetus. Zygosity refers to the degree of genetic similarity between the babies while chorionicity refers to the number of placentae.

Monochorionic twins share a placenta, and may have separate amniotic sacs (MCDA) or share the amniotic sac (MCMA). MCDA twins are almost always monozygotic (identical) and MCMA twins are always monozygotic.

Dichorionic (DCDA) twins have a placenta and amniotic sac each. Almost all dizygotic (non-identical/fraternal) twins are DCDA while approximately a quarter of monozygotic twins are DCDA.

DETERMINING GESTATIONAL AGE AND CHORIONICITY

Spontaneously conceived multiple pregnancies are often not suspected until the first ultrasound scan provides this diagnosis. Optimal dating of pregnancy by CRL is at 10+0 - 12+6 weeks, therefore a nuchal translucency (NT) scan (offered to all women as part of combined screening for trisomies) undertaken at 12+0 to 12+6 weeks achieves both screening and dating. For dating use the largest CRL[1.]

Scans performed prior to 15 weeks have near 100% accuracy in determining chorionicity. Chorionicity is determined by the number of placental masses, the Lambda sign (indicating DCDA pregnancy and can only be used in first trimester as placentas can fuse later in pregnancy), or Tau sign which indicates MCDA twins. The absence of membranes indicates MCMA pregnancy. If the scan cannot determine chorionicity, refer for repeat scan before 15 weeks by an experienced operator. TransVaginal Ultrasound is recommended if MCMA twins are suspected[1]. Foetuses of different sex are always dichorionic.

It is important to store images used to determine chorionicity for future reference. If unable to determine chorionicity manage as monochorionic until proven otherwise. Assign nomenclature (twin A and Twin B) early and use consistently throughout pregnancy.

ANTENATAL SCREENING AND ULTRASOUND SCREENING

Risk estimates for Down Syndrome are difficult to make. Combined first trimester screening for Down Syndrome with MSS1 screening and NT scan is as accurate for twins as in singleton pregnancies. In dichorionic pregnancies the NTs are combined separately with serum analytes to produce individual risk for each foetus; for monochorionic twins the result is the same for each twin. In triplets and higher order, aneuploidy risk is based on the NT alone.

Non-invasive prenatal screening/testing (NIPS/T) is more accurate than combined screening and can be used in twin pregnancies, although is not publicly funded. While this test has a high level of accuracy, it is slightly less accurate with twins than for singletons and invasive diagnostic testing is still usually recommended for positive results, if termination of pregnancy is planned.

Anatomy scans are recommended at 18-20 weeks as normal.

RECOMMENDATIONS FOR TIMING OF GROWTH SCANS

DCDA twins:

- 4 weekly from 24 weeks when progress is normal
- Fortnightly if either of the twin is estimated by scan to be small for gestational age (SGA) (<10th centile) or fetal growth restricted (FGR) (dropping ≥30 centile points but still >10th centile).
- If the UAPI is abnormal: twice weekly AFI and doppler studies is recommended.
- After 24 weeks follow the NZMFMN SGA guideline.

MCDA and MCMA twins: (are monitored by Fetal Maternal Medicine)

- Fortnightly scans form 16 weeks to monitor for signs of Twin-Twin Transfusion Syndrome (TTTS) and growth.
- If no signs of TTTS or discordant growth, women with MCDA twins are followed up in general obstetric clinic from 24-26weeks.

PREGNANCY NUTRITION

Nutrition is an important consideration in twin pregnancy, with observational studies indicating that rates of preterm birth may be decreased, birthweights improved/optimised and neonatal outcomes improved with higher nutrient and calorie intakes and higher pregnancy weight gain than for singleton pregnancies. This is based on data suggesting increased resting energy expenditure and increases in maternal tissues that require higher energy and protein intake[20].

Higher pregnancy weight gain than for singleton pregnancies is associated with higher birthweights and lower rates of SGA. The most important times for gaining weight appear to be in early pregnancy < 20 weeks and mid-pregnancy 20-28 weeks. The Ministry of Health has adopted the international recommendations for weight gain with twin pregnancies for optimal fetal growth rates and birth weights[19].

RECOMMENDATIONS

Pre-pregnancy or early pregnancy BMI (kg/m^2)	Recommended weight gain
Healthy weight (BMI 18.5 to 24.9)	17 kg–25 kg
Overweight (BMI 25 to 29.9)	14 kg–23 kg
Obese (BMI 30 or more)	11 kg–19 kg

Source: Ministry of Health 2014, citing IOM and NRC 2009

Recommend the nutrition information for multiple gestations on HealthInfo.

Iron supplementation is likely to be necessary. Iron requirements increase 1.8 times in multiple pregnancy and anaemia is common. It is difficult to maintain adequate iron levels with diet alone.

Consider prescribing calcium if the woman is unable to eat at least 3 servings of calcium-rich foods per day. The recommended dose is 600 mg of calcium per tablet, such as Caltrate.

Ensure folic acid is being taken if < 12 weeks of pregnancy and prescribe a higher 5mg dose if the woman has diabetes, BMI > 30, coeliac disease or malabsorption risk factors, sickle-cell anaemia, thalassaemia trait, is on anti-epileptic medication, family history of spina bifida.

Prescribe iodine 0.15 mg per day for the duration of pregnancy and breastfeeding.

In the event of hyperemesis, prescribe thiamine until normal eating is resumed.

Consider recommending multivitamin supplementation in the case of hyperemesis or poor nutrition.

MATERNAL COMPLICATIONS

HYPERTENSION

Routine antenatal screening for hypertensive disorders of pregnancy occurs at every antenatal appointment, as per standard care.

Low dose aspirin guidance is the same as for singleton pregnancies: see Ministry of Health guideline *Diagnosis and Treatment of Hypertension and Pre-eclampsia in Pregnancy in New Zealand*[22]. Aspirin is commenced at 12-16 weeks and taken in the evening to be effective at reducing the likelihood of pre-eclampsia.

PRETERM BIRTH

Women with twin pregnancies are at higher risk of preterm birth (both spontaneous and iatrogenic). Approximately 50% of twins are born prior to 37 weeks.[2]

There is no good evidence to support prenatal methods (bedrest, cervical cerclage, foetal fibronectin, cervical length measurements, prophylactic tocolysis, progesterone) for reducing preterm birth in those with no other risk factors or signs of preterm birth[2,3].

TIMING OF BIRTH

- **MCMA:** the major concern is fetal demise related to cord accidents and therefore delivery is recommended at 32 weeks with corticosteroid cover[1]. Refer to NZMFMN guideline[1] for further detail.

For MCDA and DCDA pregnancies without other maternal or foetal complications:

- **MCDA-**recommend delivery between 36+0 and 37+0. If elective caesarean is planned, administer antenatal corticosteroids[2].
- **DCDA-**Offer elective delivery at 37+0 weeks to 38+0 weeks.[2]

Women who have not birthed by 38 weeks and decide to continue pregnancy beyond this time are recommended to have close monitoring with their specialist team.

RATIONALE

Epidemiological analyses indicate the perinatal mortality rate for uncomplicated twin pregnancies is lowest at 37 weeks, at which point the intrauterine death rate balances the neonatal death rate[10]. Stillbirth rates in uncomplicated twin pregnancies at 36-38 weeks correspond to singleton rates at 40-42 weeks[11] and rates increase in twins from 37-38 weeks[10, 11, 12, 13]. Elective preterm birth increases the risk of admission to a special care baby unit.

MODE OF BIRTH

MCMA TWINS

Caesarean section is strongly recommended due to the risk of cord accident and twin entanglement in labour.

MCDA AND DCDA TWIN PREGNANCIES

- If the leading/presenting twin is cephalic: Recommend the woman attempts vaginal birth.
- If the leading twin is non-vertex presentation: caesarean section is currently recommended.

RATIONALE

In a qualitative study of women's experiences from the Twin Birth Study[5], women expressed a strong desire to be involved in decision-making around mode of birth and there was a preference for vaginal birth over caesarean section. Those who had a vaginal birth were more satisfied with their birth experience[16]. The authors of the Cochrane review point to the increasing evidence of benefits of vaginal birth in terms of perinatal and long-term benefits for babies and maternal mental health, satisfaction and self-esteem, even if, in the latter case, an acute caesarean section in labour is required[6].

Presentation of the leading twin for MCDA and DCDA twins is often the determining factor in counselling for mode of birth. The Cochrane review[6] (including data from the Twin Birth Study[5]) found that planned vaginal birth is associated with a 30-40% caesarean section rate, with 60-70% achieving vaginal birth.

For pregnancies where the first twin is cephalic, the evidence supports planned vaginal birth and does not support routine planned caesarean section for twin pregnancies[4,5,6] provided there is appropriate intrapartum monitoring and management and the second twin is not at risk of neonatal morbidity or mortality from other causes[4,5,], an experienced obstetrician is available and there is recourse to emergency caesarean section[1,4]. Planned caesarean section does not decrease morbidity or mortality for the second twin in comparison to planned vaginal delivery.[4,5] There is no difference in maternity morbidity or mortality from a planned vaginal birth in comparison to planned caesarean section which is likely explained by the high rate of emergency caesareans performed during labour in those women attempting vaginal delivery.[5]

Good quality evidence regarding delivery of a non-vertex second twin[4] is lacking. Most observational data suggests there is little difference in neonatal outcomes for a non-vertex second twin regardless

of mode of delivery or procedures performed during the delivery of the second twin. Some obstetricians may offer internal podalic version and breech extraction for the second twin.[4] Decisions are individualised in discussion with the woman.

Unplanned caesarean section for the delivery of the second twin occurred for 4.2% of women in the planned vaginal birth group of the Twin Birth Study[5].

FETAL HEART MONITORING

Intrapartum monitoring is recommended via continuous fetal heart tracings as per the CDHB Foetal Heart Monitoring guideline[7]. Monochoronic twins have a 1.5–2.5 per cent risk of intrapartum twin-to-twin transfusion syndrome[21] and immediate delivery is warranted if there are signs of this occurring. Acute TTTS is difficult to detect and any signs of hypoxia should be acted upon immediately. A sinusoidal rhythm presents in some, but not all, cases of fetal anaemia. If a CTG becomes abnormal for one or both twins ensure immediate review by a senior midwife or obstetric registrar/SMO.

MANAGEMENT OF LABOUR

RECOMMENDATIONS

Antenatal preparation

The woman's plans and wishes are discussed during pregnancy. Provide information about intrapartum management recommendations.

Analgesia

There is minimal published research comparing outcomes and experience of twin labour with epidural vs no epidural analgesia. Several guidelines recommend considering epidural use in twin labour to minimise pain for the woman if manoeuvres are required to deliver the second twin or to enable conversion to epidural anaesthesia if caesarean section is required. However, women who decide to have an active labour and birth without epidural are supported to do so.

Recommendations: analgesia options are discussed in a three-way conversation between the woman, her LMC midwife and the obstetrician. Document the woman's decision regarding epidural analgesia. Inform the woman that a working epidural is useful if internal manoeuvres are required for the birth of the second twin. Internal manoeuvres are more common with non-vertex second twin presentations. General anaesthetic may be more likely without an existing epidural if caesarean section is indicated for the second twin, however GA is still a possibility if the epidural cannot be topped up for effective pain relief. For women who prefer to avoid epidural, inform them that ECV and breech extraction can be undertaken without analgesia but are uncomfortable procedures. In the absence of epidural internal podalic version is more difficult.

Intrapartum care

Intrapartum care is provided according to the woman's antenatal birth plan as developed with her midwife and the obstetrician in three-way discussion, and documented. It is not appropriate to re-state risks if this has occurred at an antenatal consultation unless new risk factors have presented.

Roles are clearly discussed and agreed.

Midwifery care is provided by the LMC midwife with core midwifery support, or by core midwives.

The midwife notifies the obstetric team and anaesthetist on admission for spontaneous labour, and when labour establishes during an induction of labour.

Notify the obstetric team when the woman is fully dilated.

Neonatal team support is indicated for preterm gestation, monochorionicity, instrumental birth, internal manoeuvres, breech birth and any concerns about fetal distress.

After the birth of the first twin, stabilise the lie of the second twin until engaged. Monitor the position and heart rate of the second twin with the aid of ultrasonography and CTG monitoring. Expedite the delivery of the second twin in the case of fetal distress.[4]

The interval between delivery of the two twins is determined by the wellbeing of the second twin. If there are concerns with the CTG, delivery needs to be expedited[4]. Oxytocin for augmentation is appropriate to stimulate effective contractions in order to minimize the inter-twin birth interval[4].

Deferred cord clamping is appropriate for DCDA twins. There is no evidence base for timing of cord clamping with monochorionic twins, however there is a risk of acute TTTS at birth. In some cases, therefore, DCC may be possible for the second monochorionic twin but it is recommended that the first monochorionic twin has cord clamping within 15 seconds due to the risk of hypovolaemic shock in the second twin[4].

Active management of the third stage and routine prophylactic oxytocin infusion is recommended as per the CDHB PPH protocol[8], as there is an increased risk of post-partum haemorrhage in multiple pregnancy.

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