1. **Purpose**

To provide guidelines for the use of antenatal Magnesium Sulphate (MgSO4) for fetal neuroprotection of the preterm infant. Antenatal MgSO4 administration should be considered for fetal neuroprotection when a woman presents at < 31+6 weeks gestation with imminent preterm birth. This is defined as a high likelihood of birth because of active labor with cervical dilatation > 4 cm, with or without rupture of membranes, and/or planned preterm birth for fetal or maternal indications.

1. **Scope**

Physicians, midwives, and obstetrical nursing staff.

3.0 **Definitions**

CP- cerebral palsy is a complex of non-progressive motor impairment syndromes secondary to brain injury or anomalies

PPROM- preterm pre-labor rupture of membranes is the spontaneous rupture of membranes prior to <37 weeks gestation without labour

**4.0 Policy Statement**

The Canadian preterm birth rate (i.e. birth at < 37 weeks gestation) reached 8.2% of live births in 2004, with births at < 32 weeks gestation representing 1.2% of live births in Canada. The survival of infants born preterm has improved with interventions such as antenatal corticosteroids and surfactant. However, survival has been associated with a substantial risk of medical and neurodevelopmental impairment.

Clinically, the most frequent adverse neurological outcomes associated with preterm birth are cerebral palsy (CP) and cognitive impairment. CP is a symptom complex of non-progressive motor impairment syndromes secondary to brain injury or anomalies arising in early development. The typical signs of CP include spasticity, movement disorders, muscle weakness, ataxia, and rigidity.

The prevalence of CP is 2 to 2.5 per 1000 births. The risk of CP is highest at earlier gestational ages. Compared with infants born at term, infants born preterm have a CP risk that is approximately 8-fold to 14-fold higher at 30-33 weeks gestation, 46-fold higher at 28-30 weeks gestation, and as high as 30-fold to 80-fold higher at <28 weeks gestation. There is no known cure for CP, which makes effective preventative measures of primary importance.

Meta-analyses have shown that antenatal magnesium sulphate reduced the risk of death or CP. Although there is some controversy about the upper gestational age, magnesium sulphate for fetal neuroprotection should be considered from viability to < 31+6 weeks gestation.

**5.0 Procedure:**

Criteria for Treatment:

If a woman presents to the FBC at < 31+6 weeks gestation and is felt to have a high likelihood of birth due to one or both of the following conditions:

* 1. Active labour with > 4 cm of cervical dilatation, with or without rupture of membranes
  2. Planned preterm birth for fetal or maternal indications

\*Antenatal magnesium sulphate administration should be considered for fetal neuroprotection, in consultation with neonatologist.

Contraindications for MgS04:

1. Hypersensitivity to magnesium sulphate
2. Hepatic coma
3. Myasthenia gravis
4. Those whose fetus is unlikely to benefit from potential neuroprotection (i.e. severe fetal malformations or chromosomal abnormalities)
5. Use with caution in women who have renal impairment, and serum magnesium levels should be monitored
6. Not usually used if tocolytics are being administered

5.1 **Dosage:**

MgS04 for neuroprotection should be administered as a 4 gram I.V loading dose, over 30 minutes, followed by 1 gram per hour maintenance infusion until birth.

For a planned preterm birth for fetal or maternal indications, MgS04 should be started, ideally within 4 hours prior to birth, as a 4 gram I.V loading dose, over 30 minutes, followed by a 1 gram per hour maintenance infusion until birth.

5.2 **Responsibilities:**

1) When MgS04 is used for fetal neuroprotection, maternity care providers should use the existing protocol for monitoring a woman who is receiving MgS04 for preeclampsia/eclampsia.

2) Health care provider should not delay delivery to administer antenatal MgS04 for fetal neuroprotection if there are maternal and/or fetal indications for emergency delivery.

3) Health care provider should also administer antenatal corticosteroids for fetal lung maturation.

4) Be aware there is insufficient evidence that a repeat course of antenatal MgS04 for fetal neuroprotection should be administered.

5) Side effects of MgS04 are primarily related to the peripheral vasodilation that it causes. Common side effects include flushing, problems at the injection site, sweating, nausea, and vomiting. Maternal hypotension and tachycardia also occur, but cardio respiratory arrest or maternal death has not been reported when MgS04 has been used for neonatal neuroprotection.

6) Health care providers should have an increased awareness of the potential to alter the neonate’s neurological evaluation. MgS04 can cause hypotonia or apnea, therefor assessment of neonatal respirations (rate and rhythm), and tone should be monitored closely after MgS04 administration.

6.0 **Approved by**: Maternal Child Committee-September 29, 2015

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7.0 **Cross References/Related Documents**

*Policy- Magnesium Sulphate Guidelines for Treatment*

1. **References**

*SOGC Clinical Practice Guidelines, No.258, May 2011: Magnesium Sulphate for Fetal Neuroprotection*

I.V Drug Manual

Maternal Newborn Youth Child Network-Order Set