OLIVE VIEW-UCLA MEDICAL CENTER
LABOR & DELIVERY
POLICY & PROCEDURE

NUMBER: 5673
VERSION: 3

SUBJECT/TITLE: **MAGNESIUM SULFATE FOR NEUROPROTECTION**

MD ORDER: **YES [X] NO [ ]**

POLICY:

PURPOSE: The purpose of this policy is to outline the indications for magnesium administration for the purpose of neuroprotection and the recommended regimen.

DEPARTMENTS: Obstetrics and Gynecology, Nursing

DEFINITIONS:

PROCEDURE:

A. Rationale: Numerous large clinical studies have evaluated the evidence regarding Magnesium Sulfate, neuroprotection, and preterm births. The ACOG Committee on Obstetric Practice and the Society for Maternal-Fetal Medicine recognize that none of the individual studies found a benefit with regard to their primary outcome. However, the available evidence from meta-analysis suggests that Magnesium Sulfate (****Safety Warning pg. 2**) given before anticipated early preterm birth reduces the risk of cerebral palsy in surviving infants, with no increased risk of death.

B. Candidates:
Inclusion criteria:
- Singleton or multiple gestation
- Viability to 31 6/7 weeks gestation
- High risk of spontaneous birth in the next 24 hours due to preterm premature rupture of membranes (PPROM) or preterm labor with intact membranes.
- High risk for indicated preterm delivery (such as IUGR) anticipated within 24 hours.

Exclusion criteria:
- Imminent delivery anticipated (within 2 hours)
- Advanced cervical dilation (> 8cm)
- Nonviable fetuses
- > 32 weeks gestation
- Recent Magnesium Sulfate administration (within 12 hours)
- Already receiving magnesium sulfate for other clinical indication such as

seizure prophylaxis (preeclampsia) or tocolysis (preterm labor).

C. Contraindications/cautions for use:

- Known myasthenia gravis.
- Known myocardial compromise or cardiac conduction defects.
- Magnesium maintenance dosing should be adjusted in patients with renal insufficiency (serum creatinine > 1.0 mg/dL) due to decreased clearance. A standard loading dose should be maintained due to unchanged volume of fluid distribution.

*****FDA Safety warning**:

Magnesium Sulfate is FDA approved for the prevention of seizures in Pre-eclampsia. Its use for the management of Preterm Labor in pregnant women is off-label, which means that it is not an FDA-approved use of the drug. Administration of magnesium sulfate injection to pregnant women longer than 5-7 days may lead to low calcium levels and bone problems in the developing baby or fetus, including thin bones, called osteopenia, and bone breaks, called fractures. The shortest duration of treatment that can result in harm to the baby is not known.

As a result of the above warning, **Magnesium Sulfate is now categorized as a Class D Drug.**

D. Regimen for Magnesium Sulfate administration

- Magnesium Sulfate 6 gram intravenous bolus over 20-30 minutes followed by continuous intravenous infusion of 2 grams per hour.
- If no delivery within 12 hours and delivery no longer considered imminent, discontinue the infusion at this time if the sole intent is for **neuroprotection**.
- Consideration may be made of resuming the magnesium when the delivery is imminent. Avoid use of magnesium for more than 24 hours total, even if given in divided doses.

Alternate Regimen

- Magnesium Sulfate 4 gram intravenous bolus over 20-30 minutes followed by continuous intravenous infusion of 1 gram per hour
- If no delivery within 24 hours discontinue the infusion at this time if the sole intent is for **neuroprotection**.

If emergency delivery is necessary given maternal or fetal status, it should not be delayed to administer Magnesium Sulfate for neuroprotection.

E. Monitoring:
- Urine output.
- Respiratory rate.
- Deep tendon reflexes.
- Maintenance dosing should be discontinued if patellar reflex is lost, if respiratory rate of < 12 breaths per minute or urine output of less than 100 mL in four hours.

References:

ACOG Committee Opinion #455, March 2010. Magnesium sulfate before anticipated preterm birth for neuroprotection.

Rouse DJ, Hirtz DG, Thom E, Varner MW, Spong CY, Mercer BM, et al. A randomized, controlled trial of magnesium sulfate for the prevention of cerebral palsy. Eunice Kennedy Shriver NICHD Maternal-Fetal Medicine Units Network. N Engl J Med 2008; 359:895–905.

UpToDate: Neuroprotective effects of in utero exposure to magnesium sulfate. May 2011.

Crowther CA, et al: Effect of magnesium sulfate given for neuroprotection before preterm birth. JAMA, Nov 2003, 9290:2669-2676.

Doyle W Lex, Crowther C, et al. Magnesium sulfate for women at risk for preterm birth for neuroprotection of the fetus. Cochrane Database of Systematic reviews 2009, Issue 1. No CD004661.

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