

Department:	Obstetrics and Gynecology (L&D)		
Document:	Departmental Policy and Procedure		
Title:	Magnesium Sulphate Protocol for Pre-Eclampsia		
Applies To:	All Obstetrics and Gynecology Staff		
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1. PURPOSE:

1.1 To clarify the methodology of giving MgSO4 to obstetric patients in a comprehensive and easy way.

2. DEFINITIONS:

2.1 **Eclampsia**- refers a condition in which one or more convulsions occur in a pregnant woman suffering from high blood pressure, often followed by coma and posing a threat to the health of mother and fetal.

3. POLICY:

- 3.1 Magnesium Sulphate is the anticonvulsant of choice as first line of treatment, control and prevention of convulsion in-patient with eclampsia and preeclampsia.
- 3.2 Mechanism of action: not entirely clear
 - 3.2.1 Blocking neuromuscular transmission at the motor end plate.
 - 3.2.2 Depressant effect on the CNS.
 - 3.2.3 Peripheral vasodilation.
 - 3.2.4 NMDA receptor antagonist.
- 3.3 Indications:
 - 3.3.1 Prophylactic for cases of severe PET (impending eclampsia) before delivery and twenty four (24) hours postpartum.
 - 3.3.2 Therapeutic to abort convulsions in cases of eclampsia and to prevent the recurrence over the next forty eight (48) hours.
- 3.4 Caution:
 - 3.4.1 Hepatic impairment.
 - 3.4.2 Cardiac disease.
 - 3.4.3 Renal disease (including acute renal failure).
 - 3.4.4 Neuromuscular disease.
- 3.5 The use of Magnesium Sulphate prior to delivery must be discussed with a physician in patients with impaired renal function; half of the maintenance dose of Magnesium Sulphate is given.
- 3.6 Normal range of Magnesium Sulphate level in non-infused person 0.7-1.0 mmol/L (1.5-2.5 meq/L). Therapeutic Level 1.25-3.25 mmol/L (2.5-5 meq/L)(3-6 mg/dl).
- 3.7 Adverse reactions and toxicity: These include flushing, sweating, hypotension, depressed reflexes, flaccid paralysis, hypothermia, circulatory collapse, cardiac and central nervous system depression and respiratory paralysis.
- 3.8 Caution: Artificial ventilation must be provided until Calcium Gluconate is available by anesthetist on duty.

4. PROCEDURE:

- 4.1 There must be a physician order to start Magnesium Sulphate infusion on order sheet.

- 4.2 Nurse or midwife in-charge of the patient should start an IV line with at least 18 gauge cannula if not already in place.
- 4.3 Magnesium Sulphate is supplied in a plastic ampule each contains 2 grams (10% concentration) in a 20 ml ampoule equivalent to 2 gm/20 ml of sterile water.
- 4.4 The loading dose is 4 grams (40 ml), (2 vials). This is given via IV infusion pump over 30 minutes.
- 4.5 Continuous Maintenance IV infusion of Magnesium sulphate 1-2 grams per hour as specified in the Physician's order, Nurse in charge of the patient should add twenty (20) grams of Magnesium Sulphate, i.e. 200 ml (10 ampules of a 10% solution in 20 ml) 2 gm. in 20 ml.
 - 4.5.1 For 1 gram/hour, run at 10 ml per hour
For 2 grams/hour, run at 20 ml per hour, until delivery and as long as symptoms persist (at least 24 hours post-delivery).
- 4.6 Using the perfusion pump:
 - 4.6.1 This is the "First Choice" as it delivers the dose correctly and it avoids any volume overload.
 - 4.6.2 Withdraw 2 ampules of MgSO₄ (40cc=4gms MgSO₄) into perfusion pump syringe.
 - 4.6.3 Adjust the pump to a rate of 10 cc/hour (it will deliver 1gm/ hour) so it will cover a 4 hours period.
Every 4 hours you have to prepare the infusion.
- 4.7 Duration of therapy (Postpartum):
 - 4.7.1 Eclamptic women 24 hours after last seizure.
 - 4.7.2 Severe PET: if the patient is generally well, 24 hours are enough.
- 4.8 Monitoring effects of Magnesium Sulphate on hourly basis.
 - 4.8.1 Nursing staff duties (Assigned nurse):
 - 4.8.1.1 Blood Pressure
 - 4.8.1.2 Pulse
 - 4.8.1.3 Temperature
 - 4.8.1.4 Respiratory Rate
 - 4.8.1.5 Input
 - 4.8.1.6 Output
 - 4.8.1.7 Oxygen saturation
 - 4.8.1.8 Infusion Rate
 - 4.8.2 Physician on duty:
 - 4.8.2.1 Knee jerk
 - 4.8.2.2 Lung base auscultation
 - 4.8.3 Biochemical monitoring check Mg levels in blood every 6-8 hourly provided that the urine output is >100 cc/4 hours and there is no clinical signs of toxicity.
 - 4.8.4 Patients should be treated in intensive care unit.
 - 4.8.5 CTG for pregnant patients
- 4.9 Patients with toxicity:
 - 4.9.1 Inform physician on call.
 - 4.9.2 Stop Magnesium Sulphate infusion.
 - 4.9.3 Give Lasix 20 mg IV stat and observe urine output (if oliguria/increased Serum Creatinine), ECG
 - 4.9.4 Auscultate lung bases (risk of pulmonary edema)
 - 4.9.5 Check Magnesium levels
 - 4.9.6 Oxygen mask (10 litres/minute)
 - 4.9.7 Check oxygen saturation
 - 4.9.8 Give antidote "Calcium Gluconate" 1 gram by slow IV injection over 10 minutes. If severe respiratory depression, call anesthetist to consider endotracheal intubation and mechanical ventilation.
- 4.10 Recurrent convulsions:
 - 4.10.1 This occurs in 15-20% of cases.
 - 4.10.2 Check Mg levels.
 - 4.10.3 Give a bolus dose of Magnesium Sulphate 2 grams IV over 10 minutes.
 - 4.10.4 Call physician on call.
 - 4.10.5 Call anaesthetist.
 - 4.10.6 Transfer to ICU for observation.

- 4.10.7 If Mg levels are sub therapeutic, increase the maintenance dose to 2 grams/ hour and check Mg level hourly.
- 4.10.8 After stabilization, arrange for brain CT scan.
- 4.10.9 Documentation

5. MATERIALS AND EQUIPMENT:

N/A

6. RESPONSIBILITIES:

- 6.1 Physician
- 6.2 Nurses
- 6.3 Midwives
- 6.4 Pharmacist

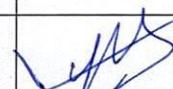
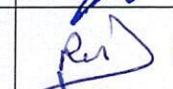
7. APPENDICES:

N/A

8. REFERENCES:

- 8.1 William Obstetric 22nd 2005.
- 8.2 RCOG, Green Top Guideline, Management Of Severe Preeclampsia, Eclampsia, March 2006.
- 8.3 Oxford Handbook of Obs. & Gyn, 1st Edition, 2004.
- 8.4 Guidelines for Obstetrics and Gynecology/ Ministry of Health, General Directorate of Health Centers-Riyadh, 2013.

9. APPROVALS:

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