Magnesium Sulfate Injection

Scope: Unless otherwise stated, these items pertain to magnesium sulfate injection administered via the **PARENTERAL** (i.e., IV, IM) route of administration **ONLY**. Oral or topical forms of the drug are excluded.

Demographic Questions

1) In your facility, for which indications do you use PARENTERAL magnesium sulfate? (select all that apply)

- ☐ Eclampsia/pre-eclampsia and/or neuroprotection of the fetus (labor and delivery and/or emergency department administration)
- ☐ Treatment or prevention of hypomagnesemia or nutritional depletion
- ☐ Cardiac indications (e.g., Torsades de pointes)
- ☐ Other: (please specify) _____

2) Commercially available, premixed IV solutions of magnesium sulfate stocked in the pharmacy include those with the following total amounts of drug in the containers: (select all that apply)

- ☐ None—we don't stock commercially available, premixed solutions of magnesium sulfate
- ☐ 1 g
- ☐ 2 g
- ☐ 4 g
- ☐ 20 g
- ☐ 40 g
- ☐ Other: (please specify) _____

Self-Assessment Items

A	There has been no activity to implement this item.
B	This item has been formally discussed and considered, but it has not been implemented.
C	This item has been partially implemented for some or all patients, orders, drugs, or staff.
D	This item is fully implemented for some patients, orders, drugs, or staff.
E	This item is fully implemented for all patients, orders, drugs, or staff.

		A	B	C	D	E
General Items						
Protocols and Order Sets						
1	Separate protocols and order sets have been established and are used for each indication for which **PARENTERAL** magnesium sulfate is used.					
2	**PARENTERAL** magnesium sulfate protocols and order sets require periodic monitoring of magnesium blood levels, serum creatinine, and clinical patient assessments at defined intervals to determine the effectiveness of treatment and detect signs of toxicity.					

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Expression of Drug Name						
3	Magnesium sulfate is never abbreviated (e.g., MS, $MgSO_4$, Mag) in computer order entry systems, order sets, protocols, guidelines, MARs/eMARs, ADC screens, infusion pump screens, drug storage bins, pharmacy labels and/or **AUTOMATED SYSTEM LABELS**, and any other format used to communicate medications in the facility.					
Expression of Drug Doses						
4	Practitioners use a standard, facility-defined dosing unit of measure (e.g., g vs. mEq) to prescribe, label, dispense, administer, and document magnesium sulfate doses for all adult patients and older pediatric patients above a specified weight. ***Exception:*** *The dosing unit of measure used for a magnesium sulfate additive to PN may differ from other prescribed doses of magnesium sulfate, as long as the dosing unit used for the PN additive matches the prescriber and pharmacy computer order entry systems and automated compounder (if utilized).* ***Scoring guideline:*** *Choose Not Applicable only if your facility does not provide care to adults or older pediatric patients.*					
		NOT APPLICABLE				
5	Practitioners use a standard, facility-defined dosing unit of measure (e.g., mg or mg/kg vs. mEq or mEq/kg) to prescribe, label, dispense, administer, and document magnesium sulfate doses for neonates and younger pediatric patients below a specified weight. ***Exception:*** *The dosing unit of measure used for a magnesium sulfate additive to PN may differ from other prescribed doses of magnesium sulfate, as long as the dosing unit used for the PN additive matches the prescriber and pharmacy computer order entry systems and automated compounder (if utilized).* ***Scoring guideline:*** *Choose Not Applicable only if your facility does not provide care to neonates or younger pediatric patients.*					
		NOT APPLICABLE				
Dosing						
6	Information technology is available and used to assist any clinician who needs to convert the dosing units listed on a manufacturer's label of **PARENTERAL** magnesium sulfate to the standard unit of measure used to prescribe, dispense, administer, and document magnesium sulfate doses (e.g., g to mEq).					
Storage						
7	Vials of magnesium sulfate are not stocked outside the pharmacy in patient care units. ***Exception:*** *Vials of magnesium sulfate may be stored in secured resuscitation carts.*					
Emergency Preparedness						
FAQ 8	To respond to emergencies caused by magnesium sulfate overdoses, a standard protocol has been established that guides the administration of a **RESCUE** agent (i.e., calcium gluconate) after prescriber notification; **and** the **RESCUE** agent is easily accessible, along with directions for use, in all clinical areas where high-dose magnesium sulfate is administered.					

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Prevent or Treat Hypomagnesemia						
Protocols and Order Sets						
9	Magnesium sulfate electrolyte replacement protocols have been established and are used to prevent and treat hypomagnesemia.					
10	Standard order sets have been established and are used to prescribe magnesium sulfate to treat hypomagnesemia.					
Patient Monitoring						
11	During administration of intermittent doses of IV magnesium sulfate, the patient is assessed for signs of toxicity (e.g., hypotension; respiratory depression; signs of pulmonary edema; bradycardia; cardiac arrhythmia; loss of deep tendon reflexes; progressive muscle weakness; decreased urine output; headache; clonus) at defined intervals (e.g., every 15 minutes for the first hour, every 30 minutes for the second hour, then hourly).					
Pre-eclampsia and Eclampsia, Fetal Neuroprotection						
Scoring guideline for this section: *Choose Not Applicable for these items only if your facility never treats pregnant patients with pre-eclampsia or eclampsia using IV magnesium sulfate in any unit or setting, including during an emergency.*						
Protocols and Order Sets						
12	Specific magnesium sulfate dosing and administration protocols that address the unique needs of pregnant patients have been established and are accessible and used to prevent and treat severe pre-eclampsia or eclampsia and/or to provide fetal neuroprotection.					NOT APPLICABLE
13	Magnesium sulfate standard order sets for pregnant patients have been established and are used to prescribe magnesium sulfate for severe pre-eclampsia and eclampsia and/or to provide fetal neuroprotection.					NOT APPLICABLE
Loading Doses						
14a	For all loading doses, either commercially available, premixed minibags of magnesium sulfate solution or pharmacy-prepared minibags are used. (Nurses do not prepare magnesium sulfate doses in syringes or minibags on patient care units except during resuscitation.)					NOT APPLICABLE
OR	OR					
14b	Loading doses of magnesium sulfate are administered by trained staff from a maintenance infusion bag, using only a **SMART INFUSION PUMP** with **DOSE ERROR-REDUCTION SOFTWARE** and a "loading dose" (sometimes called a "bolus dose") feature that automatically starts/resumes the maintenance infusion at the prescribed rate of infusion once the loading dose has infused. Loading doses are never administered via a basic infusion mode.					NOT APPLICABLE

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Products Used						
15	Commercially available, premixed bags of magnesium sulfate solution are used for all maintenance infusions.					
		NOT APPLICABLE				
16	Only 20 g/500 mL bags (not 40 g/1,000 mL bags) of magnesium sulfate are used for maintenance solutions to limit the amount of drug the patient could receive if an error occurs and to differentiate magnesium sulfate from other infusions in 1,000 mL bags (e.g., oxytocin, Lactated Ringer's).					
		NOT APPLICABLE				
Patient Monitoring						
17	During IV magnesium sulfate administration, the patient undergoes continuous cardiac monitoring, is assessed for signs of toxicity (e.g., hypotension; respiratory depression; signs of pulmonary edema; bradycardia; cardiac arrhythmia; loss of deep tendon reflexes; progressive muscle weakness; decreased urine output; headache; clonus) at defined intervals; **and** fetal heart rates and maternal uterine activity are monitored.					
		NOT APPLICABLE				
18	One-to-one nursing care at the bedside is provided during the first hour of IV administration (including the loading dose), with patient assessment intervals at least every 15 minutes.					
		NOT APPLICABLE				
19	During the second hour of IV administration, patient assessments are conducted at least every 30 minutes.					
		NOT APPLICABLE				
20	After the first 2 hours of IV administration, patients (even if stable) continue to be assessed at least every hour.					
		NOT APPLICABLE				
Discontinuation or Stoppage						
21	Upon discontinuation of a magnesium sulfate infusion, the solution is immediately disconnected from the patient; **and** the container is removed from the IV pole and discarded to prevent accidental administration at a later time.					
		NOT APPLICABLE				
22	Upon temporary stoppage of magnesium sulfate infusions, the solution is immediately disconnected from the patient. ***Exception:*** *Short stoppages caused by conditions such as changing a gown.*					
		NOT APPLICABLE				