Drug Protocol: Magnesium Sulfate

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Indication(s) for Use in C.P.M. Practice: Magnesium is an important cofactor for enzymatic reactions and plays an important role in neurochemical transmission and muscular excitability. Magnesium sulfate could be indicated for individuals with hypertension that is threatening seizure or Pre-Eclampsia symptoms usually a blood pressure over 160/100 mmHg, or to slow uterine contractions as a tocolytic (Drugs.com, 2021).

Mechanism of Action: "Magnesium prevents or controls convulsions by blocking neuromuscular transmission and decreasing the amount of acetylcholine liberated at the end plate by the motor nerve impulse. Magnesium is said to have a depressant effect on the central nervous system, but it does not adversely affect the mother, fetus or neonate when used as directed in eclampsia or pre-eclampsia. Magnesium acts peripherally to produce vasodilation. With low doses only flushing and sweating occur, but larger doses cause a lowering of blood pressure (Drugs.com n.d.)."

Legal for use in your state/province: In WA state, certified professional midwives are allowed to use magnesium sulfate for the prevention of maternal seizures pending transport but it is illegal to use it as a tocolytic (WAC 246-834-250, n.d.).

Form	Dose	Route of Administratio n	Administration instructions	Treatment notes
Powder in Vial	Total initial dose is 10g to 14g. (4 grams for IV to start)	Intravenous (IV)	For administration for pre-eclampsia/eclampsia treatment, 4g of Magnesium Sulfate should be mixed with 10ml of saline and shaken up to completely mix the powder into a solution. Then using a 21g needle draw up all of the solution and push it into 100mL of sterile saline and given intravenously to "not exceed 150 mg/minute, or 3.75 mL of a 4% concentration (or its equivalent) per minute" (Drugs.com, 2021).	Onset: Immediate Duration: 30 minutes
Powder	4g-5g on each side	Intramuscular (IM) in buttocks	At the same time as the IV dose administer the 4g to 5g intramuscularly into each buttock using undiluted 50% Magnesium Sulfate Injection, USP (Drugs.com, 2021). This can be done by pulling up the medication in a 21g needle and syringe, locating the buttocks muscle, pinch it between your thumb and index finger and wipe with alcohol wipes, then tell the client they will feel a poke and inject the solution and repeat on the other side. Caution	Onset: 60 minutes Duration: 3-4 hours

with this method and these doses need to be verified as correct by a second person before administration and might be painful for the patient.	
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Contraindications: Intravenous magnesium should not be given to mothers with toxemia of pregnancy during the two hours preceding delivery. Caution should be used for renal impairment. Urine output should be maintained at a level of 100 mL every four hours (Drugs.com, 2021).

Adverse reactions/side effects: The adverse effects of parenterally administered magnesium usually are the result of magnesium intoxication. These include flushing, sweating, hypotension, depressed reflexes, flaccid paralysis, hypothermia, circulatory collapse, cardiac and central nervous system depression proceeding to respiratory paralysis. Hypocalcemia with signs of tetany secondary to magnesium sulfate therapy for eclampsia has been reported (Drugs.com, 2021).

Storage: Store at 20° to 25°C (68° to 77°F) [see USP Controlled Room Temperature]. Avoid excessive heat. Protect from freezing (Drugs.com, 2021).

References:

Drugs.com. (2021, June 1). Magnesium sulfate package insert. https://www.drugs.com/pro/magnesium-sulfate.html

WAC 246-834-250: (n.d.). Washington State Legislature. https://app.leg.wa.gov/wac/default.aspx?cite=246-834-250