

# Magnesium Sulfate

McHenry Western Lake County  
EMS



# Objectives

- During this session we will discuss:
- Class
- Actions
- Indications
- Contraindications
- Dosing/Routes
- How supplied
- Precautions
- Side effects



# Class:

- Electrolyte
- Magnesium supplement

# Actions:

- Major intracellular cation responsible for metabolic processes and enzymatic reactions.
- Critical in glycolysis (need for ATP production)
- Membrane stabilizing agent
- Responsible for neuro transmission and muscular excitability
- Acts like a Ca channel blocker-causes smooth muscle relaxation (vaso and bronchodilator)



# Glycolysis

- It is the initial process of most carbohydrate catabolism, and it serves many functions one of the main ones is:
- The generation of high-energy molecules (ATP and NADH) as cellular energy sources as part of anaerobic and aerobic respiration.
- From Wikipedia.org



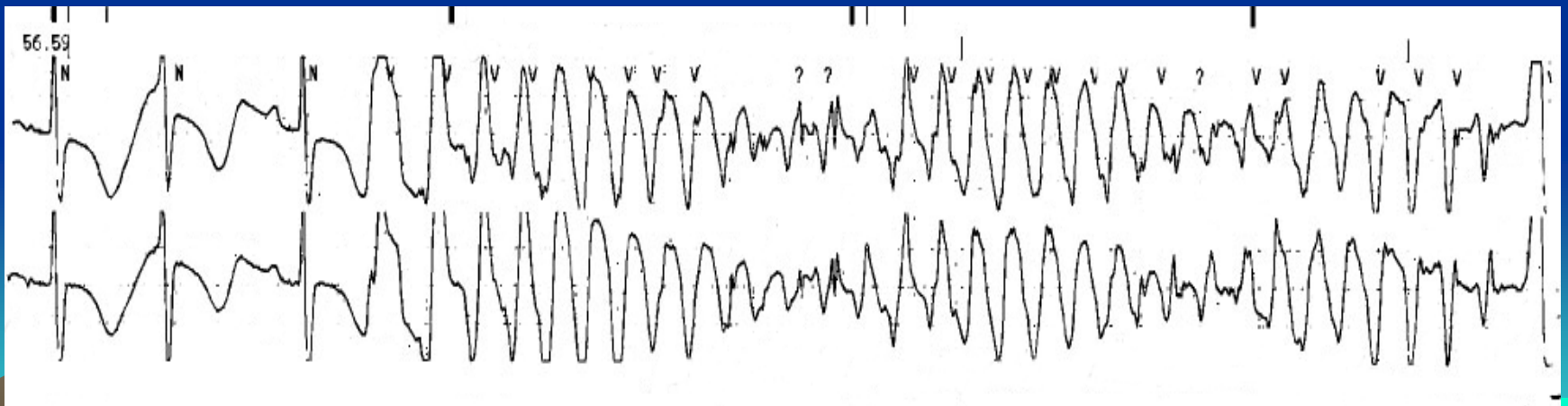
# Indications:

- Severe asthma that responds poorly to  $\beta$  agonists
- Torsades de Pointes (polymorphic VT with prolonged QT interval)
- Preeclampsia/eclampsia to prevent and/or Rx seizures



# Dosing/Routes:

- Adult:  
Severe Asthma/Torsades;
- 2 Gm mixed with 16ml NS (20ml syringe) slow IVP or in 50 ml NS IVPB over 5-10 min (no more than 1 Gm/min)



# Dosing/Routes

- Peds: Critical Asthma/Torsades; 25mg/kg (max 2 Gm) mixed with NS (to total volume of 20ml) slow IV over 10 minutes
- Preeclampsia/Eclampsia; 2 Gm mixed with 16ml NS slow IVP or in 50 ml NS IVPB over 5-10 minutes. May repeat x1 up to 4gm IVP/IO if seizures



# How supplied:

- 5 Gm in 10 ml



# Contraindications:

- Hypocalcemia
- Heart block
- Renal dysfunction



# Precautions:

- Patient on Digitalis
- It is also known as digoxin and digitoxin. It's a drug that strengthens the contraction of the heart muscle, slows the heart rate and helps eliminate fluid from body tissues. It's often used to treat congestive heart failure and is also used to treat certain arrhythmias.



# Side effects/adverse reactions:

- CNS: Drowsiness
- CV: Bradycardia, Dysrhythmia, ↓ B/P with rapid bolus
- Resp: Rapid IV administration may cause respiratory or cardiac arrest
- Skin: Facial flushing
- Metabolic: Hypothermia
- Ref: MWLCEMS Protocol and 2000 Mosby's Nursing Drug Reference Book



# Case Study

- You are treating a patient in V Tach and you have noted the rhythm to be Torsades de Pointes. What is your initial dose of Magnesium Sulfate going to be?



# Answer

- 2 Gm mixed with 16ml of NS (20 ml syringe) slow IVP or in 50 ml NS IVPB over 5-10 minutes (no more than 1 Gm/min)

# Case Study

- What is another medical condition that we are authorized to give Magnesium Sulfate for?



# Answer

- Severe Asthma
- Preeclampsia/Eclampsia

