

# Clinical trials of magnesium

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## 1 acute myocardial infarction

Trial	Treatments	Patients	Trials design and methods
<b>magnesium vs control</b>			
<a href="#">ISIS-4 , 1995</a> n=29011/29030 follow-up:	24 h of intravenous magnesium sulphate (8 mmol initial bolus injection over about 15 minutes followed by 72 mmol in about 50 mL infused over 24 h) <sup>4</sup> versus no magnesium infusion	patients entering 1086 hospitals up to 24 h (median 8 h) after the onset of suspected acute myocardial infarction with no clear contraindications <sup>4</sup>	Parallel groups open
<a href="#">Wu , 1992</a> n=125/102 follow-up:	2.5 g MgSO <sub>4</sub> once or twice a day for 7-14 days versus usual care	suspected AMI	Parallel groups double blind
<a href="#">Zhu , 2002</a> n=1691/1488 follow-up:	100 mL (4 g) potassium-magnesium aspartate IV. for the first day, 50 ml for rest 4 days versus routine AMI treatment <sup>k</sup>	AMI	Parallel groups open
<b>magnesium vs placebo</b>			
<a href="#">Abraham , 1987</a> n=48/46 follow-up:	2.4g of magnesium sulfate in 50 ml of 5% glucose solution intravenously over a 20 minutes period for 3 days versus 50 ml of 5% glucose solution alone, im	patients with AMI	Parallel groups double blind
<a href="#">MAGIC , 2000</a> [NCT00000610] n=3113/3100 follow-up:	2 g intravenous bolus of MgSO <sub>4</sub> over 15 minutes, followed by a 17 g infusion of MgSO <sub>4</sub> over 24 h versus matched intravenous bolus and 24 h infusion of sterile water <sup>nd</sup>	AMI patients within 6 h of onset of symptoms <sup>m</sup>	Parallel groups double blind
<a href="#">Bhargava , 1995</a> n=40/38 follow-up:	8 mmol magnesium sulphate over 5 min followed by 65 mmol over 24-h infusion versus isotonic saline infusion	proven AMI patients with chest pain of 1-6h	Parallel groups double blind

continued...

<b>Trial</b>	<b>Treatments</b>	<b>Patients</b>	<b>Trials design and methods</b>
Ceremuzynski , 1989 n=25/23 follow-up:	8 g MgSO <sub>4</sub> in 500 mL 15% glucose for 24 h intravenously versus conventional treatment	patients with AMI within 12 h from onset of symptoms	Parallel groups NA
Chen , 1991 n=32/30 follow-up:	MgSO <sub>4</sub> 2g/day for 3 days versus 5% glucose	patients with AMI	Parallel groups open blind assessor
Feldstedt , 1991 n=150/148 follow-up:	continuous infusion of 80 mmol magnesium chloride in 1000 mL dextrose versus matching placebo	patients, aged 75 y or less, with suspected AMI less than 8 h+	Parallel groups double blind
Gyamlani , 2000 n=50/50 follow-up:	magnesium 12g (50 mmol) in the first 24h, 3g (12 mmol) in the second 24h used within 2h after admission and within 30 minutes of thrombolytic therapy versus equal volume of isotonic glucose	patients with proven AMI	Parallel groups double blind
Ising , 1990 n=22/20 follow-up:	81 mval/day magnesium sulphate infusion 13+/-9h after the onset of severe pain for 3 days versus 80 mval/day NaCl infusion for 3 days	patients with AMI	Parallel groups open
Morton , 1984 n=NA follow-up:	36 h intravenous infusion of magnesium sulphate (0.75 mEq/kg/body weight/12 h). versus saline solution infusion	patients with AMI within 8 h of onset	Parallel groups double blind
Nakashima , 2004 n=89/91 follow-up:	bolus injection of 8 mmol of magnesium followed by an infusion of 24 mmol over 24 h versus equivalent amount of normal saline	patients with successful PCI	Parallel groups double blind
Parikka , 1990 n=31/26 follow-up:	8mmol MgSO <sub>4</sub> in 10 min, 62 mmol in 24h versus NaCl	patients with <12 h from onset of chest pain AMI	Parallel groups double blind

continued...

<b>Trial</b>	<b>Treatments</b>	<b>Patients</b>	<b>Trials design and methods</b>
Raghu , 1999 n=181/169 follow-up:	18 g (75.6 mmol) of Mg sulphate over 24 h started immediately after completion of thrombolytic therapy versus equivalent amount of salinexbitm	confirmed AMI <6 h from the onset of symptomsce	Parallel groups double blind
Rasmussen , 1986 n=56/74 follow-up:	50 mmol MgCl2 during the first 24 h, 12 mmol during the second 24 h versus isotonic glucose	patients with suspected AMIxbitm	Parallel groups double blind
Santoro , 2000 n=75/75 follow-up:	MgSO4 7 g (28 mmol) with 5 hon versus matching saline solution	-	Parallel groups double blind
Shechter , 1990 n=50/53 follow-up:	magnesium 22 g (91.6 mmol) within 48 h (67 mmol within first 24 h). versus isotonic glucose.	patients with admission diagnosis of AMI	Parallel groups double blind
Shechter , 1991 n=21/25 follow-up:	22 g (91.6 mmol) within 48 h (67 mmol within first 24 h). versus isotonic glucose.	patients with documented AMIbitm	Parallel groups double blind
Shechter , 1995 n=96/98 follow-up:	magnesium 22 g (91.6mmol) within 48 h (67mmol within first 24 h)pj versus isotonic glucose	suspected with AMI and considered unsuitable candidates for thrombolysis	Parallel groups double blind
Singh , 1990 n=NA follow-up:	5 g (8.12 mmol) of MgSO4 daily for 4 daysptomsce versus 2% dextrose solution for 3 daysm	patients suspected with AMI within 8-12h of the onset of MI	Parallel groups double blind
Smith , 1986 n=92/93 follow-up:	65 mmol MgSO4 given over 24 h versus Saline	patients with suspected AMI h.tm	Parallel groups double blind
Thogersen , 1995 n=130/122 follow-up:	magnesium 50 mmol within 24 h versus isotonic NaCl.	patients with suspected AMI	Parallel groups double blind
Urek , 1996 n=31/30 follow-up:	17 g MgSO4 with first 24 h.xbitm versus saline.	patients with documented AMIbitm	Parallel groups double blind

continued...

Trial	Treatments	Patients	Trials design and methods
Woods , 1992 n=1159/1157 follow-up:	magnesium 8 mmol over 5 min, 65 mmol over 24h imaged versus physiological saline hon	patients with suspected AMI in the preceding 24h	Parallel groups double blind

More details and results :

- antiarrhythmic drugs for acute myocardial infarction in all type of patients at <http://www.trialresultscenter.org/go-Q130>

## References

### ISIS-4, 1995:

ISIS-4: a randomised factorial trial assessing early oral captopril, oral mononitrate, and intravenous magnesium sulphate in 58,050 patients with suspected acute myocardial infarction. ISIS-4 (Fourth International Study of Infarct Survival) Collaborative Group. Lancet 1995;345:669-85 [7661937]

### Wu, 1992:

### Zhu, 2002:

### Abraham, 1987:

Abraham AS, Rosenmann D, Kramer M, Balkin J, Zion MM, Farbstein H, Eylath U Magnesium in the prevention of lethal arrhythmias in acute myocardial infarction. Arch Intern Med 1987;147:753-5 [3548627]

### MAGIC, 2000:

Early administration of intravenous magnesium to high-risk patients with acute myocardial infarction in the Magnesium in Coronaries (MAGIC) Trial: a randomised controlled trial. Lancet 2002;360:1189-96 [12401244]

### Bhargava, 1995:

Bhargava B, Chandra S, Agarwal VV, Kaul U, Vashishth S, Wasir HS Adjunctive magnesium infusion therapy in acute myocardial infarction. Int J Cardiol 1995;52:95-9 [8749868]

### Ceremuzynski, 1989:

Ceremuzynski L, Jurciel R, Kulakowski P, Gebalska J Threatening arrhythmias in acute myocardial infarction are prevented by intravenous magnesium sulfate. Am Heart J 1989;118:1333-4 [2589170]

### Chen, 1991:

### Feldstedt, 1991:

Feldstedt M, Boesgaard S, Bouchelouche P, Svenningsen A, Brooks L, Lech Y, Aldershvile J, Skagen K, Godtfredsen J Magnesium substitution in acute ischaemic heart syndromes. Eur Heart J 1991;12:1215-8 [1782952]

### Gyamlani, 2000:

### Ising, 1990:

Ising H, Rebenitsch E, Bertschat F, Gnther T Correlations between ventricular arrhythmias and electrolyte disturbances after acute myocardial infarction. Magnes Trace Elem 1990;9:205-11 [2095164]

### Morton, 1984:

Morton BC, Nair RC, Smith FM, McKibbin TG, Poznanski WJ Magnesium therapy in acute myocardial infarction—a double-blind study. *Magnesium* 1984;3:346-52 [6399346]

**Nakashima, 2004:**

Nakashima H, Katayama T, Honda Y, Suzuki S, Yano K Cardioprotective effects of magnesium sulfate in patients undergoing primary coronary angioplasty for acute myocardial infarction. *Circ J* 2004;68:23-8 [14695461]

**Parikka, 1990:**

Parikka H, Toivonen L, Naukkarinen V, Tierala I, Pohjola-Sintonen S, Heikkil J, Nieminen MS Decreases by magnesium of QT dispersion and ventricular arrhythmias in patients with acute myocardial infarction. *Eur Heart J* 1999;20:111-20 [10099907]

**Raghu, 1999:**

Raghu C, Peddeswara Rao P, Seshagiri Rao D Protective effect of intravenous magnesium in acute myocardial infarction following thrombolytic therapy. *Int J Cardiol* 1999;71:209-15 [10636525]

**Rasmussen, 1986:**

Rasmussen HS, McNair P, Norregard P, Backer V, Lindeneg O, Balslev S Intravenous magnesium in acute myocardial infarction. *Lancet* 1986;1:234-6 [2868254]

Rasmussen HS, Suenson M, McNair P, Nrregrd P, Balslev S Magnesium infusion reduces the incidence of arrhythmias in acute myocardial infarction. A double-blind placebo-controlled study. *Clin Cardiol* 1987;10:351-6 [3297445]

**Santoro, 2000:**

SHREENIVAS, MESSER AL, JOHNSON RP, WHITE PD Prognosis in bundle branch block. I. Factors influencing the survival period in right bundle branch block. *Am Heart J* 1950;40:891-902 [14789731]

**Shechter, 1990:**

Shechter M, Hod H, Marks N, Behar S, Kaplinsky E, Rabinowitz B Beneficial effect of magnesium sulfate in acute myocardial infarction. *Am J Cardiol* 1990;66:271-4 [2195862]

**Shechter, 1991:**

**Shechter, 1995:**

Shechter M, Hod H, Chouraqui P, Kaplinsky E, Rabinowitz B Magnesium therapy in acute myocardial infarction when patients are not candidates for thrombolytic therapy. *Am J Cardiol* 1995;75:321-3 [7856520]

**Singh, 1990:**

Singh RB, Singh NK, Niaz MA, Sharma JP Effect of treatment with magnesium and potassium on mortality and reinfarction rate of patients with suspected acute myocardial infarction. *Int J Clin Pharmacol Ther* 1996;34:219-25 [8738859]

Singh RB, Sircar AR, Rastogi SS, Garg V Magnesium and potassium administration in acute myocardial infarction. *Magnes Trace Elem* 1990;9:198-204 [2095163]

**Smith, 1986:**

Smith LF, Heagerty AM, Bing RF, Barnett DB Intravenous infusion of magnesium sulphate after acute myocardial infarction: effects on arrhythmias and mortality. *Int J Cardiol* 1986;12:175-83 [2427458]

**Thogersen, 1995:**

Thgersen AM, Johnson O, Wester PO Effects of intravenous magnesium sulphate in suspected acute myocardial infarction on acute arrhythmias and long-term outcome. *Int J Cardiol* 1995;49:143-51 [7543083]

Thgersen AM, Johnson O, Wester PO Effects of magnesium infusion on thrombolytic and non-thrombolytic treated patients with acute myocardial infarction. Int J Cardiol 1993;39:13-22 [7691765]

**Urek, 1996:**

Urek R, Halle J, Frank B, Goles T, Tomicic D, Mirat J, Kolevska-Kaniski T [Intravenous magnesium in acute myocardial infarct] Lijec Vjesn 1996;118:279-81 [9213716]

**Woods, 1992:**

Roffe C, Fletcher S, Woods KL Investigation of the effects of intravenous magnesium sulphate on cardiac rhythm in acute myocardial infarction. Br Heart J 1994;71:141-5 [8130021]

Woods KL, Fletcher S, Roffe C, Haider Y Intravenous magnesium sulphate in suspected acute myocardial infarction: results of the second Leicester Intravenous Magnesium Intervention Trial (LIMIT-2) Lancet 1992;339:1553-8 [1351547]