

MYERS COCKTAIL

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SUMMARY

Myers cocktail is a well established and safe procedure used for intravenous infusion and is allowed in many situations which have been passed by the Health Care Commission. This is also clinically effective.

HISTORY

Dr John Myers MD, was a physician in Baltimore, Maryland, and was one of the Pioneers in using intravenous (IV) minerals and vitamins as part of treatments of a vast array of medical conditions. Although he died in 1984, many of patients reported such beneficial results that they requested continuation of this method of treatment.

It is not clear exactly what the 'Myers Cocktail' consisted of, as no published material or written materials on the treatment was available. However it appeared that Dr Myers used a 10 ml syringe and administered by slow IV push a combination of vitamin C, vitamin B complex, vitamin B12, calcium pantothenate, vitamin B6, thiamine, magnesium chloride, calcium gluconate. The exact doses of the individual components were unknown. Another physician, Dr Alan Gaby MD, Past President of the American Holistic Medical Association 'inherited' a great deal of Dr Myers patients, and has given over 15,000 injections to approximately 1000 different patients over a 11 year period (1). Dr W Shrader MD, FAAEM, from Sante Fe, New Mexico, has also given 'well over 15000' infusions in his office (2). Both of these physicians, and countless others, have reported the benefits of using this therapy.

Today, it is almost impossible to define the number of medical doctors who use this protocol, however it has, and is still currently, being taught as course material for the

American Academy of Environmental Medicine (AAEM), the American College for the Advancement in Medicine (ACAM), the Australian College of Nutritional and Environmental Medicine (ACNEM). and by the British Society for Ecological Medicine (BSEM). Dr Gaby estimates that he has taught and presented his clinical results to over ‘several thousand physicians’ at more than 20 medical conferences in the United States alone. In the United Kingdom there are a number of registered medical practitioners who are prescribing and administering myers, or myers ‘type’ cocktails, at facilities that have been inspected and deemed satisfactory by the Health Care Commission. These include, though not limited to, the Breakspear Hospital at Hemel Hempstead, and the Chelation Clinic in Wimpole Street, London.

INDICATIONS FOR IV NUTRIENT THERAPY

There are many indications for the use of intravenous nutrient therapy. (2)

General

1. Inadequate nutrient intake
2. Malabsorption, secondary to
 - a. Achlorhydria
 - b. Intestinal dysbiosis, often as a result of food intolerance and chronic
 - c. use of antibiotics
 - d. food allergy or intolerance caused by chronic mucosal irritation
 - e. Chronic inflammation
 - i. gastritis
 - ii. enteritis (Crohn’s disease)
 - iii. colitis (ulcerative, IBS)
 - iv. chronic use of non steroidal anti inflammatory medication

v. post surgical lack of intrinsic factor.

Specific

1. Asthma, acute and chronic (22-52)
2. Cardiovascular disease (53-95)
3. Migraine, other Neurology.(96-125)
4. Chemical Toxicity secondary to any acute or chronic exposure to chemicals, including patients with severe environmental illness and chemical sensitivity(184-190)
5. Chronic Fatigue Syndrome/Acute or chronic viral infections (126-141)
6. Adjunctive treatment for cancer .(152-162)
7. Uro-genital conditions(142-151, 167-183)
8. Muscle spasm/sprain.(163-166)

THEORETICAL BASIS FOR IV NUTRIENT THERAPY

Serum concentrations of nutrients are obtainable with intravenous administration that are not obtainable with oral, or even intramuscular (IM) administration. For example, as the oral dose of vitamin C is increased progressively, the serum concentration tends to reach an upper limit, as a result of both saturation of gastrointestinal absorption and a sharp increase in renal clearance of the vitamin. (3) When the daily intake of vitamin

C is increased 12 fold, from 200mg/day to 2500mg/day, the plasma concentration increases by only 25%, from 1.2 to 1.5mg/l. The highest serum concentration of

vitamin C reported after the administration of pharmacological doses of vitamin C is 9.3 mg/dL. In contrast, IV administration of 50g/day of vitamin C resulted in a mean peak plasma level of 80mg/dL . Similarly, oral supplementation with magnesium results in little or no change in serum magnesium concentrations, whereas IV administration can double or triple the serum levels, (4,5), at least for a short period of time.

Various nutrients have been shown to exert pharmacological effects, which in many cases are dependent on the concentration of the nutrient. For example, the antiviral effect of vitamin C has been demonstrated at a concentration of 10-15mg/dL(6), a level achievable with IV but not oral therapy. The therapeutic effects of vitamin C has been, and is currently the topic of exciting research into many disease states, especially cancer and cardiovascular disease (see references)

As well as having direct pharmacological effects, IV nutrient therapy may be more effective than oral or IM treatment for correcting intracellular nutrient depletion.

Some nutrients are present in higher concentrations in the cells than in the serum. For example, the average magnesium concentration in myocardial cells is 10 times higher than the extracellular concentration. This ratio is maintained by an active transport pump. In certain cardiac disease states, this active transport pump is compromised. This, in turn, that there is a reduction in the intracellular/extracellular ratio. As magnesium plays a key role in mitochondrial energy production, intracellular deficiency may exacerbate heart failure and lead to a further vicious cycle of magnesium loss and heart failure. (7) Thus, the application of intravenous magnesium supplies an increase in serum concentration, thus providing an opportunity for ailing cells to acquire magnesium against a smaller concentration gradient. Magnesium ions also promote the relaxation of vascular (8) and bronchial

(8)smooth muscle, and has been shown to be useful in the treatment of vasospastic angina and bronchial asthma. (see reference section)

Some patients may require multiple IV nutrient injections for a number of reasons.

The transient increase in serum concentrations may allow some healing to occur, however, due to the disease process, some of the nutrients may ‘leak out’, requiring to be replenished. Other causes include: (A) an inborn error of metabolism that can only be controlled by higher than normal concentration of a particular nutrient., (B) a genetically determined impairment in the capacity to maintain normal intracellular concentrations(10), (C)or a renal leak of nutrients (11)

THE MYERS‘ COCKTAIL

The basic myers‘ cocktail consists of the following:

	mOsm/ml	
Ascorbic acid 500mg/ml	5.80	4ml
Magnesium Chloride 200mg/ml	2.95	5
Calcium Gluconate 100mg/ml	0.72	2
Hydroxycobalamin(B12) 1000mcg/ml	0.31	2
Pyridoxine hydrochloride(B6) 100mg/ml	1.11	1
Dexpanthenol (B5) 250mg/ml	0.85	1
B Complex 100mg/ml	2.14	1

(B complex: 1 ml contains 100mg each of thiamine and niacinamide, and 2mg each of riboflavin, dexpanthenol and pyridoxine)

All of the above ingredients are drawn into one syringe and 20ml of sterile water is added to reduce the hypertonicity of the solution. This mixture, the ‘myers cocktail’, is now infused, usually through a 25G butterfly needle, over a period of 5-15 minutes.

CONTRAINDICATIONS

Absolute contraindications include an allergy or sensitivity to a known nutrient. This is extremely rare. Another absolute contraindication is intravenous calcium in a patient who is taking digoxin.(2)

Relative contraindications which occur (mostly danger from hypotonic solutions) include thalassaemia, major enzyme disorders of the red cell (mainly glucose-6 phosphate deficiency), spherocytosis and sickle cell anemia.(2)

PRECAUTIONS

The commonest reactions to an IV of any type are vasovagal. The second most common is a fall in blood pressure with similar effects, due to the effect of the magnesium. If this happens, the infusion is ceased immediately and not resumed until the symptoms have resolved (usually 20-30 seconds). The rate of the infusion is slowed down considerably, with the patient being closely monitored.

Those patients who are both deficient in potassium and magnesium may have an influx of potassium into the cells after receiving potassium (12) Hypokalaemia may be triggered from the shift of potassium from the serum to the intracellular space as magnesium activates the pump that promotes intracellular uptake of potassium.

Patients considered to be at risk of potassium deficiency include those taking potassium depleting diuretics, beta-agonists, or glucocorticoids, those with diarrhoea

or vomiting, and those who are malnourished. If the patient is hypokalaemic, the hypokalaemia should be corrected before IV magnesium therapy is considered. Dr Gaby recommends for those at risk of potassium deficiency, administration of 10-20 mEq of potassium be given orally immediately prior to the magnesium infusion, and 4-6hrs later.(1)

Anaphylaxis to IV thiamine have rarely been reported. Between 1965 and 1985 nine deaths have been reported. (13). These reactions have occurred after oral, IV, IM or subcutaneous administration, and are thought to be in part to the nonspecific release of histamine. In the UK between 1970 and 1988, there were four reports of anaphylactic reactions for every million ampoules sold if IV B, and one report in 5 million for every IM B sold. (14). However it is extremely interesting to note that some animal studies have shown that thiamine supplementation in the presence of magnesium deficiency increases the severity of the magnesium deficiency (15). A magnesium deficiency can then lead to a release of histamine(16), and thus lead to an increase in anaphylaxis in experimental animals(17). Therefore, the presence of magnesium in the myers' cocktail might reduce the incidence of anaphylaxis to thiamine. It is also interesting to note that many of the patients who receive parenteral thiamine are alcoholics, and alcoholism frequently causes magnesium deficiency.(18)

When correctly administered, there seems to have been no reports of adverse reactions to the myers' cocktail published. Caution is given to not mix the myers' cocktail with trace minerals (copper, selenium, chromium, manganese) as they often form a precipitate.(19) In Trissel's Handbook of Injectable drugs(20), there are a number of parenteral nutrition formulas recommended, and although the Myers' cocktail is not specifically mentioned, there are a number of very similar preparations recommended. It is to expected that the parenteral formulas would have other

nutrients, such as amino acids, as the patient is relying on these parenteral nutrition for the vast majority of their nutritional needs. Analysis of the individual components shows no physical incompatibilities.

Specifically:

Calcium gluconate – physically compatible for at least 4 hours at room temperature with vitamin B Complex with C p253

Ascorbic acid – physically compatible with calcium gluconate, and B vitamins p 176

Magnesium sulfate –physically compatible with vitamin b complex with C

- physically compatible with calcium gluconate for 24hrs
- at 22 degrees C(10,20,30 mEq) 24 hrs at room
- temperature (4-100mEq) p 1033

CONCLUSION

The Myers cocktail is currently being used by thousands of medical practitioners Worldwide, including a number of United Kingdom registered medical practitioners who have passed inspection by the Health Care Commission. Prescribed and administered correctly, it is very safe. Although there is a paucity of research using the cocktail specifically (It would be extremely difficult to perform a double blind study when the patient can feel sensations induced by the solution – the magnesium causing warmth, for example), there are significant numbers of anecdotal evidence from many practitioners (particularly those from the ACAM, AAEM, ACNEM, BSEM)for its safety, use and effectiveness; often more effective, better tolerated, and significantly cheaper than conventional treatments.

References

1. Gaby A, Myers Cocktail. *Alternative Medicine Review*. 2002. 7:5. 389-399
2. Shrader, W , Instructional Course, American Academy of Environmental Medicine. 2006, 117-160.
3. Blanchard J, Tozer TN, Rowland M. Pharmacokinetic perspectives on megadoses of ascorbic acid. *Am J Clin Nutr* 1997;66:1165-1171.
4. Okayama H, Aikawa T, Okayama M, et al. High dose intravenous magnesium sulfate in bronchial asthma. *JAMA* 1987;257:1076-1078.
5. Sydow M, Crozier TA, Zielman S, et al. High dose intravenous magnesium sulfate in the management of life-threatening status asthmatics. *Intensive Care Med* 1993;19:467-471.
6. Harakeh S, Jariwalla RJ, Pauling L. Suppression of human immunodeficiency virus replication by ascorbate in chronically and acutely infected cells. *Proc Natl Acad Sci U S A* 1990;87:7245-7249.
7. Frustaci A, Caldarulo M, Schiavoni G, et al. Myocardial magnesium content, histology, and antiarrhythmic response to magnesium infusion. *Lancet* 1987;2:1019.

8. Iseri LT, French JH. Magnesium: nature's physiologic calcium blocker. *Am Heart J* 1984;108:188-193.
9. Brunner EH, Delabroise AM, Haddad ZH. Effect of parental magnesium on pulmonary function, plasma camp, and histamine in bronchial asthma. *J Asthma* 1985;22:3-11.
10. Henrotte JG. The variability of human red blood cell magnesium level according to HLA groups. *Tissue Antigens* 1980;15:419-430.
11. Booth BE, Johanson A. Hypomagnesemia due to renal tubular defect in reabsorption of magnesium. *J Pediatr* 1974;85:350-354.
12. Dyckner T, Wester PO. Ventricular extrasystoles and intracellular electrolytes before and after potassium and magnesium infusions in patients on diuretic treatment. *Am Heart J* 1979;97:12-18
13. Stephen Jm, Grant R, Yeh CS. Anaphylaxis from administration of intravenous thiamine. *Am J Emerg Med* 1992; 10:61-63
14. Cook CC, Thomson AD. B-complex vitamins in the prophylaxis and treatment of Wernicke-Korsakoff syndrome. *Br J Hosp Med* 1997;57:461-465
15. Itokawa Y, Tanaka C, Kimura M. Effect of thiamine on serotonin levels in magnesium-deficient animals. *Metabolism* 1972;21:375-379.
16. Caddell JL. Magnesium deprivation in sudden unexpected infant death. *Lancet*

1972;2:258-262.

17. Ashkenazy Y, Moshonov S, Fischer G, et al. Magnesium deficient diet aggravates anaphylactic shock and promotes cardiac myolysis in guinea pigs. *Magn Trace Elem* 1990;9:29-83-288.
18. Turecky L, Kupcova V, Szantova M, Uhlikova E. Serum magnesium levels in patients with alcoholic and non-alcoholic fatty liver. *Bratisl Lek Listy*. 2006;107(3):58-61
19. Berger MM, Shenkin A. Vitamin and Trace Elements -Practical aspects of supplementation. *Nutrition*. 2006 Sept,22 (9): 952-959
20. Trissell L. Handbook of Injectable Drugs 14th Edition, 2007. American Society of Health-System Pharmacists.

Asthma/Allergy

21. Skobeloff EM, Spivey WH, McNamara RM, Greenspon L. Intravenous magnesium sulfate for the treatment of acute asthma in the emergency department. *JAMA* 1989;262:1210-121
22. Uchida K, Mitsui M, Kawakishi S. Monooxygenation of N-acetylhistamine mediated by L-ascorbate. *Biochim Biophys Acta* 1989;991:188-193.
23. Bloch H, Silverman R, Mancherje N, et al. Intravenous magnesium sulfate as an adjunct in the treatment of acute asthma. *Chest* 1995;107:1576-1581.
24. Pottenger FM. A discussion of the etiology of asthma in its relationship to the Various systems composing the pulmonary neurocellular mechanism with the

- physiological basis for the employment of calcium in its treatment. *Am J Med Sci* 1924;167:203-249.
25. Undritz E. The therapy of anaphylactic conditions with large amounts of calcium. *J Allergy* 1937;8:625.
26. Tuft L, Gregory J, Gregory DC. The effect of calcium pantothenate on induced whealing and on seasonal rhinitis. *Ann Allergy* 1958;16:639-655.
27. Ciarallo L, Sauer AH, Shannon MW. Intravenous magnesium therapy for moderate to severe pediatric asthma: results of a randomized, placebo-controlled trial. *J Pediatr* 1996;129:809-814.
28. Tiffany BR, Berk WA, Todd IK, White SR. Magnesium bolus or infusion fails to improve expiratory flow in acute asthma exacerbations. *Chest* 1993;104:831-834.
29. Crocket JA, Cyanocobalamin in asthma. *Acta Allergologica* 1957;11:261-268.
30. Baker E, Wyezolkowska J, Szye H, Maslinski C. The inhibitory effect of Nicotinamide on asthma-like symptoms and eosinophilia in guinea pigs, anaphylactic mast cell degredation in mice, and histamine release from rat isolated peritoneal mast cells by compound 48-80 *Int Arch Allergy Appl Immunol* 1947;47:737-748.
31. Green SM, Rothrock SG. Intravenous magnesium for acute asthma: failure to Decrease emergency treatment duration or need for hospitalization. *Ann Emerg Med* 1992;21:260-265.
- 32 Rowe BH, Bretzlaff JA, Bourdon C, et al. Intravenous magnesium sulfate

- treatment for acute asthma in the emergency department: a systematic review of the literature. *Ann Emerg Med* 2000;36:181-190.
33. Hannah CO, Jariké LN, Baig HA. High dose ascorbic acid in Nigerian asthmatics. *Trop Geogr Med* 1980;32:132-137.
34. Reynolds RD, Natta CL. Depressed plasma pyridoxal phosphate concentrations in adult asthmatics. *Am J Clin Nutr* 1985;41:684-688.
35. Collipp PJ, Goldzier S 3rd, Weiss N, et al. Pyridoxine treatment of childhood bronchial asthma. *Ann Allergy* 1975;35:93-97.
36. Sly R, O'Donnell R. Stabilization of asthma mortality (see comment). Comment in *Ann. Allerg. Asthma Immunol.* 78 (4) :333-7, 1997, Apr. *Ann Allerg Asthma and Immunol.* 78(4):347- 54, 1997.
37. Sydow M, Crozier T, Zielmann S, Radke J, Burchardi H. High-dose intravenous magnesium sulphate in the management of life threatening status asthmaticus. Comment in *Intensive Care Med.* 1995, Jan 21(1):94-5; *Intensive Care Med.* 19(8):467-71, 1993.
38. Tiffany B, Berk W, Todd I, White S. Magnesium Bolus or infusion fails to improve expiratory flow in acute asthma exacerbations. *Chest* 104 (3):831-4, 1993 Sep.
39. Wright J. Vitamin B-12: Powerful protection against childhood Asthma. *Internatl. Clin. Nutr. Rev.* 9(4): 185-8, 1989.
40. Shrader, W.A. Jr. Short and long term treatment of asthma with intravenous

nutrients. Nutr J. 2004 May 14; 3(1): 6.

41. Cheuk DK, Chau TC, Lee SL. A Review meta-analysis on intravenous magnesium sulphate for treating acute asthma. Arch Dis Child. 2005 Jan;90(1):74-7.
42. Blitz M, Blitz S, Beasley R, Diner BM, Hughes R, Knopp JA, Rowe BH. Review Inhaled magnesium sulfate in the treatment of acute Asthma. Cochrane Database Syst Rev. 2005 Jul 20;(3): CD003898
43. Anaesthesia. 2004 Feb;59(2):198. Intravenous magnesium sulphate and salbutamol for asthma. Sellers WF.
44. Chest 2002 Aug;122(2):489-97. Erratum in: Chest 2002 Nov;122(5):1870
Comment in: Chest. 2002 Aug;122(2):396-8. IV magnesium sulfate in the treatment of acute severe asthma: a multi-center randomized controlled trial. Silverman RA, Osborn H, Runge J, Gallagher EJ, Chiang W, Feldman J, Gaeta T, Freeman K, Levin B, Mancherje N, Scharf S; Acute Asthma/Magnesium Study Group.
45. Singh M . Management of acute asthma.. Indian J Pediatr 2001 Sep;68 Suppl 4:S23-30
46. Respir Care 2001 Dec; 46(12): 1380-91. Evidence-based treatments for acute asthma. Rowe BH, Edmonds ML, Spooner CH, Camargo CA.
47. Clin Pharmacol Ther 2001 May;69(5):365-71. Intravenous magnesium sulfate for bronchial hyperactivity: a randomized, controlled, double-blind study. Schenk P, Vonbank K, Schnack B, Haber P, Lehr S, Smetana R.

48. Cochrane Database Syst Rev 2000;(2):CD001490. Magnesium sulfate for treating exacerbations of acute asthma in the emergency department. Rowe BH, Bretzlaff JA, Bourdon C, Bota Gw, Camargo CA Jr.
49. Arch Pediatr Adolesc Med 2000 Oct;154(10):979-83. Higher-dose intravenous magnesium therapy for children with moderate to severe acute asthma. Ciarallo L, Brousseau D, Reinert S.
50. Bur J Emerg Med 1999 Sep;6(3):201-5. Intravenous magnesium sulphate in the management of moderate to severe acute asthmatic children non-responding to conventional therapy. Gurkan F, Haspolat K, Bosnak M, Dikici B, Derman O, Ecc A.
51. South Med J 1999 Nov;92(11):1040-7. Magnesium for the next millennium. Swain R, Kaplan-Machlis B.
52. Ann Emerg Med 2000 Sep;36(3):191-7. Comment in: Ann Emerg Med. 2000 Sep;36(3):234-6. Intravenous magnesium as an adjunct in acute bronchospasm: a meta-analysis. Alter HJ, Koepsell TD, Hilty WM.

Cardiovascular

53. Malkiel-Shapiro B, Bersohn I, Turner PE. Parenteral magnesium sulphate therapy in coronary heart disease. A preliminary report on its clinical and laboratory aspects. Med Proc 1956;2:455- 462.
54. Cohen L, Kitzes R. Magnesium sulfate in the treatment of variant angina.

55. J Cardiovasc Pharmacol Ther. 2003 Sep;8(3):193-200. A prospective, randomized, open-labeled pilot study investigating the use of magnesium in patients undergoing nonacute percutaneous coronary intervention with stent implantation. Rukshin V, Santos R, Gheorghiu M, Shah PK, Kar S, Padmanabhan S, Azarbal B, Tsang VT, Makkar R, Samuels B, Lepor N, Geft I, Tabak S, Khorsandhi M, Buchbinder N, Eigler N, Cercek B, Hodgson K, Kaul S.
56. Cardiology. 2003;99(4):205-10. Long-term outcome of intravenous magnesium therapy in thrombolysis-ineligible acute myocardial infarction patients. Shechter M, Hod H, Rabinowitz B, Boyko V, Chouraqui P.
57. Magnes Res. 2003 Mar;16(1):65-9. Intravenous magnesium sulphate in Acute myocardial infarction-is the answer "MAGIC"? Smetana R, Stuhlinger HG, Kiss K, Glogar DH.
58. Pharmacotherapy. 2003 Mar;23(3):296-300. Effects of intravenous magnesium sulfate on the QT interval in patients receiving ibutilide. Caron MF, Kluger J, Tsikouris JP, Ritvo A, Kalus J.
59. Paediatr Cardiol. 2002 Jan-Feb;23(1):41-8. Studies of magnesium in congenital long QT syndrome. Hoshino K, Ogawa K, Hishitani T, Kitazawa R.
60. Can J Cardiol. 2002 Feb;18(2):133-40. Magnesium sulphate infusion suppresses

- the cardiac release of noradrenaline during handgrip stress test. Ohtsuka S, Oyake Y, Seo Y, Eda K, Yamaguchi I.
61. Masui 2002 Jan;51(1):56-60. [Marked reduction of life-threatening ventricular tachy-arrhythmias in a critically ill patient by intravenous administration of magnesium sulfate]. Chang KH, Uchikoba K, Obara M, Chinzei M, Sumida T,
62. Clin Sci (Lond). 2003 May;104(5):529-35. Role of nitric oxide and oxidative stress in baro-receptor dysfunction in patients with chronic heart failure. Nightingale AK, Blackman DJ, Field R, Glover NJ, Pegge N, Mumford C, Schmitt M, Ellis GR, Morris- Thurgood JA Frenneaux MP.
63. Am Heart J. 2003 Jan;145(1):E2. Reduction of oxidative stress augments natriuretic effect of furosemide in moderate heart failure. Tomiyama H, Watanabe G, Yoshida H, Doba N, Yamashina A.
64. Ann Thorac Surg 2001 Oct; 72(4):1256-61; discussion 1261-2. Magnesium Infusion dramatically decreases the incidence of atrial fibrillation after coronary bypass grafting. Toraman F, Karabulut EH, Alhan HC, Dagdelen S, Tarcan S.
65. Int J Cardiol 2001 Jul;79(2-3):287-91. Intravenous magnesium sulfate versus diltiazem in paroxysmal atrial fibrillation. Chiladakis JA, Stathopoulos C, Davlouros P, Manolis AS.
66. Europace 2000 Oct; 2(4):320-6. Dose-related cardiac electrophysiological effects of intravenous magnesium. A double-blind placebo-controlled dose-response study in patients with paroxysmal supraventricular tachycardia. Christiansen EH, Frost L, Andersen F, Mortensen P, Thomsen PE, Pedersen AK.

67. *Magnesium Res* 2000 Jun;13(2):111-22. Effect of intravenous magnesium on ventricular tachy-arrhythmias associated with acute myocardial infarction. Thiele R, Protze F, Winnefeld K Pfeifer R, Pleissner J, Gassel M.
68. *Am Heart J* 2000 Apr;139(4):703. Benefits of magnesium in acute myocardial infarction: timing is crucial. GyamLani G, Parikh C, Kulkarni AG.
69. *Am Heart J* 2000 Mar; 139(3): 522-8. Magnesium supplementation in the prevention of arrhythmias in paediatric patients undergoing surgery for congenital heart defects. Dorman BH, Sade RM, Burnette JS, Wiles HB, Pinosky ML, Reeves ST, Bond BR, Spinale FG.
70. *J Intern Med* 2000 Jan;247(1):78-86. Hypomagnesemia in heart failure with ventricular arrhythmias. Beneficial effects of magnesium supplementation. Ceremuzynski L, Gebalska J, Wolk R, Makowska E.
71. *Blood Coagul Fibrinolysis* 2001 Jun;12(4):223-8. Intravenous magnesium does not influence the activity of the coagulation cascade. Raven HB, Lassen JF, Bergenheim N, Kritensen AT.
72. *Int J Cardiol* 1999 Dec 1;71(3):209-15. Comment in: *Int J Cardiol*. 1999 Dec 1;71(3):217-8. Protective effect of intravenous magnesium in acute myocardial infarction following thrombolytic Therapy. Raghu C, Peddeswara Rao P, Seshagiri Rao D.
73. *Ann Pharmacother* 1999 Oct; 33(10): 1046-50. Haloperidol-induced torsade de pointes. O'Brien JM, Rockwood RP, Suh KL.

- 74 .Scand J Clin Lab Invest 1999 Oct;59(6):425-30. Effect of magnesium infusion on bleeding time in healthy male volunteers. Falck G, Lundgaard H, Jareld T, Skarra S, Arbo I, Gunnes S, Jynge P.
75. Angiology 1999 Jul;50(7):573-82. Effect of magnesium sulfate pretreatment and significance of matrix metalloproteinase-I and interleukin-6 levels in coronary reperfusion therapy for patients with acute myocardial infarction. Shibata M, Ueshima K, Harada M, Nakamura M, Hiramori K, Endo S, Sato N, Mukaida H, Suzuli T, Inada K.
- 76 .J Indian Med Assoc 1999 Jul;97(7):259-64, 270. Current concepts in cardiopulmonary resuscitation in adults. Datta S, Nasr NF, Khorasani A, Datta R.
77. Int J Angiology 1999 Jun;8(3):165-170. Ventricular Arrhythmia Suppression by Magnesium Treatment after Coronary Artery Bypass Surgery. Parikka H, Toivonen L, Verkkala K, Jarvinen A, Nieminen MS.
78. Arterioscler Thromb Vasc Biol 1999 Mar;19(3):569-74. Intravenous magnesium reduces infarct size after ischaemia/reperfusion injury combined with a thrombogenic lesion in the left anterior descending artery. Ravn HB, Moeldrup U, Brookes CI, Ilkjaer LB, White P, Chew M, Jensen S,
79. Scand Cardiovasc J 1999;33(5):300-5. Acute effects of intravenous magnesium on ventricular refractoriness and monophasic action potential duration in humans. Birk-Soerensen L,
80. Ann Thorac Surg. 2005 Jan;79(1):117-26. Review. Kohno H, Koyanagi T. Kasegawa H, Miyazaki M, Three-day magnesium administration prevents atrial

defibrillation after coronary artery bypass Grafting.

81. *Ann Thorac Surg.* 2005 Dec;80(6):2402-6. Henyan NN, Gillespie EI, White CM, Kluger J, Coleman CI. Impact of intravenous magnesium on post-cardiothoracic surgery atrial fibrillation and length of hospital stay: a meta-analysis.
82. *Circ J.* 2004 Jan;68(1):23-8. Cardioprotective effects of magnesium sulfate in patients undergoing primary coronary angioplasty for acute myocardial infarction. Nakashima H, Katayama T, Honda Y, Suzuki S, Yano K.
83. *Pharmacoeconomics.* 2004;22(13):877-83. Cost effectiveness of ibutilide with Prophylactic magnesium in the treatment of atrial fibrillation. Coleman CI, Kalus JS, White CM, Spencer AP, Tsikouris JP, Chung JO, Kenyon KW, Ziska M, Kluger J, Reddy P, Parikka HJ,
84. *Am J Cardiol* 2001 May 15;87(10):1154-9. Impaired endothelium-dependent vasodilation in the brachial artery in variant angina pectoris and the effect of intravenous administration of vitamin C. Hamabe A, Takase B, Uchata A, Kurita A, Ohsuzu F, Tamai S.
85. *Cardiovasc Pharmacol* 2001 May;37(5):564-70. Acute effects of vitamin C on Platelet responsiveness to nitric oxide donors and endothelial function in patients with chronic heart failure. Ellis GR, Anderson RA, Chirkov YY, Morris-Thurgood J, Jackson SK, Lewis MJ, Horowitz JD, Frenneaux MP.
86. *Hypertension* 2001 Mar;37(3):949-54. Ascorbic acid-induced modulation of venous tone in humans. Grossmann M, Dobrev D, Himmel HM, Ravens U, Kirch W.

87. J Am Coll Cardiol 2001 Feb;37(2):517-20. Vascular endothelial function and oxidative stress mechanisms in patients with Behcet's syndrome. Chambers JC, Haskard DO, Kooner JS.
88. Circulation 2001 Feb 13;103(6):826-30. Comment in: Circulation. 2001 Feb;103(6):782-3. UI: 21112918. Vitamin C augments the inotropic response to dobutamine in humans with normal left ventricular function. Mak S, Newton GE.
89. J Am Coll Cardiol. 2003 Sep 3;42(5):814-22. Coronary vasoregulation in patients with various risk factors in response to cold pressor testing: contrasting myocardial blood flow responses to short and long-term vitamin C administration. Schindler TH, Nitzsche EU, Munzel T, Olschewski M, Brink I, Jeserich M, Mix M, Buser PT, Pfisterer M, Solzbach U, Just H.
90. J Am Coll Cardiol 2001 Feb;37(2):517-20. Vascular endothelial function and oxidative stress.
91. J Hypertens 2000 Nov;18(11):1665-9. Systemic and renal effect of nicotine in non-smokers: influence of vitamin C. Halimi JM, Mimran A.
92. J Am Coll Cardiol 2000 Nov 1;36(5):1474-82. Neutrophil superoxide anion-generating capacity, endothelial function and oxidative stress in chronic heart failure: effects of short- and long-term vitamin C therapy. Ellis GR, Anderson RA, Lang D, Blackman DJ, Morris-Thurgood J, McDowell IF, Jackson SK, Lewis MJ, Frenneaux MP.
93. Am J Cardiol 2001 Nov 1;88(9):1001-5. Reversibility of coronary endothelial

vasomotodysfunction in idiopathic dilated cardiomyopathy: acute effects of vitamin C. Richartz BM, Werner GS, Ferrari M, Figulla HR.

94. *Circulation* 2001 Oct 30;104(18):2182-7. Vitamin C inhibits endothelial cell apoptosis in congestive heart failure. Rossig L, Hoffmann J, Hugel B, Mallat Z, Haase A, Freyssinet JM, Tedgui A, Aicher A, Zeiher AM, Dimmeler S.
95. *Pediatr Cardiol* 2001 Sep-Oct;22(5):419-22. Antioxidants may mitigate the deterioration of coronary arteritis in patients with Kawasaki disease unresponsive to high-dose intravenous gamma-globulin. Shen CT, Wang NK.

Headaches and Neurology

96. Shealy CN, Cady RK, Veehoff D, et al. Magnesium deficiency in depression and chronic pain. *Magnes Trace Elem* 1990;9:333.
97. Mauskop A, Altura BT, Cracco RQ, Altura BM. Intravenous magnesium sulfate relieves migraine attacks in patients with low serum ionized magnesium levels: a pilot study. *Clin Sci* 1995;89:633-636.
98. Demirkaya S, Vural O, Dora B, Topcuoglu MA. Efficacy of intravenous magnesium sulfate in the treatment of acute migraine attacks. *Headache* 2001;41:171-177.
99. Mauskop A, Altura BT, Cracco RQ, Altura BM. Intravenous magnesium sulfate

- Relieves cluster headaches in patients with low serum ionized magnesium levels.
Headache 1995; 35:597-600.
100. Anesth Analg. 2005 Apr;100(4):1189-92. Turan A, Memis D, Karamanlioglu B, Guler T, Pamukeu Z. Intravenous regional anesthesia using idocaine and magnesium.
101. J Clin Pharm Ther. 2005 Oct;30(5):439-42. van Norden AG, van den Bergh WM, Rinkel GJ. Dose evaluation for long-term magnesium treatment in aneurismal subarachnoid haemorrhage.
102. Stroke. 2004 May;35(5):c106-8. Epub 2004 Mar 11. Prehospital neuroprotective therapy for acute stroke: results of the Field Administration of Stroke Therapy-Magnesium (FAST-MAG) pilot trial. Saver JL, Kidwell C, Eckstein M, Starkman S, FAST-MAG Pilot Trial Investigators.
103. Lancet. 2004 Feb 7;363(9407):439-45. Comment in: Lancet. 2004 Feb 7;363(9407):414-5. Magnesium for acute stroke (Intravenous Magnesium Efficacy in Stroke trial): randomized Controlled trial. Muir KW, Lees KR, Ford I, Davis S,; Intravenous Magnesium Efficacy in Stroke (IMAGES) Study Investigators.
104. Intern Med. 2004 May;43(5):410-4. Comment in: Intern Med. 2004 May;43(5):351-2. Depressive state and parasthesia dramatically improved by intravenous MgSO₄ in Gitelman's Syndrome. Enya M, Kanoh Y, Mune T, Ishiwaza M, Sarui H, Yamamoto M, Takeda N, Yasujima M, Tsutaya S, Takeda J
105. Intensive Care Med. 2003 Jul;29(7):1182-5. Epub 2003 Apr 16. Intravenous magnesium sulfate administration in a patient with refractory vasospasm

- following subarachnoid hemorrhage. Barile M, van De Wyngaert F, Mbia JJ, Jativa M, Grandin C, Rooijackers H, Hantson P.
106. Acta Neurochir (Wien). 2003 Mar;145(3):195-9; discussion 199. Magnesium therapy after aneurismal subarachnoid haemorrhage a dose-finding study for long term treatment. Van den Bergh WM, Albrecht Kw, Berkelbach van der Sprenkel JW, Rinkel GJ.
107. Br J Anaesth 2002 Nov;89(5):711-4. Efficacy of intravenous magnesium in neuropathic pain. Brill S, Sedgwick PM, Hamann W, Di Vadi PP.
108. Otol Neurotol 2002 Jul;23(4):447-51. Magnesium: a new therapy for idiopathic Sudden sensorineural hearing loss. Gordin A, Goldenberg D, Golz A, Joachims HZ.
109. J Clin Neurosci 2002 May;9(3):279-81. Magnesium: a useful adjunct in the prevention of cerebral vasospasm following aneurismal subarachnoid haemorrhage. Chia RY, Hughes RS, Morgan MK.
110. Eur J Anaesthesiol 2002 Jan;19(1):52-6. Magnesium infusion reduces proprioceptive pain. Kara H, Sahin N, Uluhan V, Aydogdu T.
111. Headache 2001 Feb;41(2):171-7. Efficacy of intravenous magnesium sulfate in the treatment of acute migraine attacks. Demirkaya S, Vural O, Dora B, Topcuoglu MA.
112. Ann Emerg Med 2001 Dec;38(6):621-7. Randomized clinical trial of

- intravenous magnesium sulfate as an adjunctive medication for emergency department treatment of migraine headache. Corbo J, Esses D, Bijur PE, Innaccone R, Gallagher EJ.
113. J Neurotrauma 2001 Apr;18(4):465-9. Subdural hematoma following traumatic brain injury causes a secondary decline in brain free magnesium concentration. Heath DL, Vink R.
114. Headache 2001 Feb;41(2):171-7. Efficacy of intravenous magnesium sulfate in the treatment of acute migraine attacks. Demirkaya S, Vural O, Dora B, Topcuoglu MA.
115. Clinical Neuropharmacol 2001 Jan-Feb;24(1):11-5. Intravenous administration of magnesium sulfate in acute stroke: a randomized double-blind study. Lampl Y, Gilad R, Geva D, Eshel Y, Sadeh M.
116. J Emerg Med 2000 Apr;18(3):311-5. A prospective study of i.v. magnesium and i.v. prochlorperazine in the treatment of headaches. Ginder S, Oatman B, Pollack M.
117. J Pain Symptom Manage 2000 Jan;19(1):35-9. The safety and efficacy of a single dose (500mg or 1 g) of intravenous magnesium sulfate in neuropathic pain poorly responsive to strong opioid analgesics in patients with cancer. Crosby V, Wilcock A, Corcoran R.

118. *Psychiatry Res* 1999 Dec 27;89(3):239-46. Treatment of severe mania with Intravenous magnesium sulphate as a supplementary therapy. Heiden A, Frey R, Presslich O, Smetana R, Kasper S.
119. *Ann Acad Med Singapore* 1998 Nov;27(6):780-5. Is it feasible to use magnesium sulphate as a hypotensive agent in oral and maxillofacial surgery? Sanders GM, Sim KM.
120. *Arch Dis Child* 2005 May;90(5):512-5. Wang HS, Kuo MF, Chou ML, Hung PC, Lin KL, Hsieh MY, Chang MY. Pyridoxal phosphate is better than pyridoxine for controlling idiopathic intractable epilepsy.
121. *J Intern Med* 1993 Jun;233(6):495-7. Reversal of apparent AIDS dementia complex following treatment with vitamin B12. Herzlich BC, Schiano TD.
122. *J Med Assoc Thai*. 2005 Jun;88(6):855-8. Chotmongkol V, Limpawattana P. Wernicke's encephalopathy: report of a case.
123. *J Paediatr Child Health* 2001 Dec;37(6):592-6. Pyridoxine-dependent seizures: a case report and a critical review of the literature. Gupta VK, Mishra D, Mathur I, Singh KK.
124. *Brain Dev* 2001 Mar;23(1):24-9. CSF glutamate/GABA concentrations in pyridoxine-dependent seizures: etiology of pyridoxine-dependent seizures and the mechanisms of pyridoxine action in seizure control. Goto T, Matsuo N,

Takahashi T.

125. Chem Senses. 2004 Mar;29(3):247-51. Hemodynamic response of the frontal cortex elicited by intravenous thiamine propyldisulphide administration.
Ishimaru T, Yata T, Hatanaka-Ikeno S.

Chronic Fatigue Syndrome

126. Manuel y Keenoy B, Moorkens G, Vertommen J, et al. Magnesium status and parameters of the oxidant-antioxidant balance in patients with chronic fatigue: effects of supplementation with magnesium. J Am Coll Nutr 2000;19:374-382.
127. Howard JM, Davies S, Hunnisett A. Magnesium and chronic fatigue syndrome. Lancet 1992;340:426.
128. Ellis FR, Nasser S. A pilot study of vitamin B 12 in the treatment of tiredness. Br J Nutr 1973; 30:277-283.
129. Watts AB, Ross OB, Whitechair CK, MacVicar R. Response of castrated male and female hyperthyroid rats to vitamin B12. Proc Soc Exp Biol Med 1951;77:624-626.
130. Browne SE. Magnesium sulphate in arterial disease. Practitioner 1984;228:1165-1166.
131. Glass GB, Skeggs HR, Lee DH, et al. Applicability of hydroxocobalamin as a long-acting vitamin B12. Nature 1961;189:138-140.
132. Herbert V. Vitamin B12. Am J Clin Nutr 1981;34:971-972.

133. Cox IM, Campbell MJ, Dowson D. Red blood cell magnesium and chronic fatigue syndrome. *Lancet* 1991;337:757-760.
134. Clague JE, Edwards RH, Jackson MJ. Intravenous magnesium loading in chronic fatigue syndrome. *Lancet* 1992;340:124-125.
135. Lapp CW, Cheney PR. The rationale for using high-dose cobalamin (vitamin B12). *CFIDS Chronicle Physicians' Forum* 1993;(Fall):19-20.
136. Moorkens G, Manuel y Keenoy B, Vertommen J, et al. Magnesium deficit in a sample of the Belgian population presenting with chronic fatigue. *Magnes Res* 1997;10:329-337.
137. Disashi T, Iwaoka T, Inoue J, et al. Magnesium metabolism in hypothyroidism. *Endocr J* 1996; 43:394-402.
138. *Int J Mol Med.* 2005 Jan;15(1):109-16. Kodama T. The clinical course of interstitial pneumonia alias chronic fatigue syndrome under the control of megadose vitamin C infusion system with dehydroepiandrosterone-cortisol annex.
139. Neguib MA. Effect of magnesium on the thyroid. *Lancet* 1963;1:1405.
- 140..Wright J. Littleton K. Defects in sulphur metabolism. *Internatl. Clin. Nut. Rev.* 9 (3) : 118-19, 1989 Jul.
141. Zidenberg-Cherr S. Essential trace elements in antioxidant processes. *Trace Elements, Micro-nutrients and Free Radicals* 107-27, 1992.

Obstetrics

142. Hypertens Pregnancy. 2005;24(1):17-27. Schauf B, Becker S, Abele H, Klever T, Wallwiener D, Aydeniz B. Effect of magnesium on red blood cell deformability inPregnancy.
- 143 .Eur J Obstet Gynecol Reprod Biol. 2003 Apr 25;107(2):168-75. Local and systemic tolerability of magnesium sulphate for tocolysis. Zygmunt M, Heilmann L, Berg C, Wall wiener D, Grischke E, Munstedt K, Spindler A, Lang U.
- 144.Obstet Gynecol 2000 Mar;95(3):358-62. Tocolysis with advanced cervical dilatation Amon E, Midkiff C, Winn H, Holcomb W, Shumway J, Artal R.
- 145 Acad Emerg Med. 2004 Sep;11(9):968-72. The effect of magnesium on length f stay for pediatric sickle cell pain crisis. Brousseau DC, Scott JP, Hillery CA, Panepinto JA
146. J Clin Anesth. 2004 Jun;16(4):262-5. Effect of intraoperative magnesium infusion on perioperative analgesia in open cholecystectomy. Bhatia A, Kashyap L, Pawar DK, Trikha A.
147. Clin Sci (Lond). 2004 Mar;106(3):269-77. Magnesium for the prevention and treatment of acute mountain sickness. Dumont L, Lysakowski C, Tramer MR, Junod JD, Mardirosoff C, Tassonyi E, Kayser B.
148. Keio J Med 2000 Feb;49 Suppl :A71-4. Recovery of decreased local cerebral blood flow detected by the xenon/CT CBF method in a patient with eclampsia. Yamaguchi K, Nogawa S, Dembo T, Tomita Y, Tanaka K.

149. Cochrane Database Syst Rev 2000;(2)CD000128. Magnesium sulphate versus phenytoin for eclampsia. Duley L, Henderson-Smart D.
150. Int J Gynaecol Obstet 2000 Jan;68(1):3-6. Intrapartum fetal distress and magnesium sulfate. Vigil-De Gracia P, Simiti E, Lora Y.
151. Obstet Gynecol 1999 Jan;93(1):79-83. Randomized comparison of intravenous nitroglycerin and magnesium sulfate for treatment of preterm labor. El-Sayed YY, Riley ET, Holbrook RH Jr, Cohen SE, Chitkara U, Druzin ML.

Cancer

152. Integr Cancer Ther. 2005 Mar;4(1):32-44. Review. Gonzalez MJ, Miranda-Massari JR, Mora EM, Guzman A, Riordan NH, Riordan HD, Casciari JJ, Jackson JA, Roman-Franco A. Orthomolecular oncology review: ascorbic acid and cancer 25 years later.
153. J Am Coll Nutr. 2003 Apr;22(2):118-23. The use of antioxidants with first-line chemotherapy in two cases of ovarian cancer. Drisko JA, Chapman J, Hunter VJ.
154. Am J Clin Nutr 1982 May;35(5):1003-9. Serum vitamin level maintenance in cancer patients on total parenteral nutrition. Kirkemo AK, Burt ME, Brennan MF.
155. J Parenter Enteral Nutr 1987 May-Jun;11(3):243-9. Water-soluble vitamins in cancer patients on parenteral nutrition: a prospective study. Inculet RI, Norton JA, Nichoalds GE, Maher MM, White DE, Brennan MF.
156. P R Health Sci J. 2004 Jun;23(2):115-8. Intravenous vitamin C as a

- chemotherapy agent: a report on clinical cases. Riordan HD, Riordan NH, Jackson JA, Casciari JJ, Hunninghake R, Gonzalez MJ, Mora EM, Miranda-Massari JR, Rosario N, Rivera A.
157. Br J Cancer 2001 Jun 1;84(11):1544-50. Cytotoxicity of ascorbate, lipoic acid, and other anti-oxidants in hollow fibre in vitro tumours. Cascari JJ, Riordan NH, Schmidt TL, Meng XL, Jackson JA, Riordan HD.
158. Cell Mol Biol (Noisy-le-grand) 2000 Feb;46(1):129-43. Apoptosis-inducing activity of vitamin C and vitamin K. Sakagami H, Satoh K, Hakeda Y, Kumegawa M.
159. Ann Intern Med. 2004 Apr 6;140(7):533-7. Vitamin C pharmacokinetics: implications for oral and intravenous use. Padayatty SJ, Sun H, Wang Y, Riordan HD, Hewitt SM, Katz A, Wesley RA, Levine M.
160. World J Gastroenterol. 2003 Nov;9(11):2565-9. Therapeutic efficacy of high-dose vitamin C on acute pancreatitis and its potential mechanisms. Du WD, Yuan ZR, Sun J, Tang JX, Cheng AQ, Shen DM, Huang CJ, Song XH, Yu XF, Zheng SB.
161. P R Health Sci J 2002 Mar;21(1):39-41. Orthomolecular oncology: a mechanistic view of intravenous ascorbate's chemotherapeutic activity. Gonzalez MJ, Miranda-Massari JR, Mora EM, Jimenez IZ, Matos MI, Riordan HD, Casciari JJ, Riordan NH, Rodriguez M, Guzman A.
162. Mayo Clin Proc 2000 Jun;75(6):568-80. Collins DA, Hogenkamp HP<

O'Connor MK, Naylor S, Benson LM, Hardyman TJ, Thorson LM.

Biodistribution of radiolabeled adenosylcobalamin in patients diagnosed with various malignancies.

Musculoskeletal Pain

163. Reed JC. Magnesium therapy in musculoskeletal pain syndromes – retrospective review of clinical results. *Magnes Trace Elem* 1990;9:330.

164. Rosenbaum EE, Portis S, Soskin S. The relief of muscular weakness by pyridoxine hydro-chloride. *J Lab Clin Med* 1941;27:763-770.

165. *Anesth Analg.* 2005 Sep;101(3):705-9, table of contents. Guler A, Satilmis T, Akinei SB, Celebioglu B, Kanbak M. Magnesium sulfate pretreatment reduces myoclonus after etomidate.

166. *Artif Organs* 2001 Jun;25(6):430-6. *Fukuoka Igaku Zasshi* 2001 Apr;92(4):99-104. High-dose vitamin C therapy for inclusion body myositis. Yamada T, Minohara , Sakae N, Hara H, Tanaka K, Yamamoto T, Taniwaki T,

Renal

167. *J Nephrol.* 2004 Jul-Aug;17(4):537-43. Effects of intravenous ascorbic acid on Erythropoiesis and quality of life in unselected hemodialysis patients. Taji Y, Morimoto T, Okada K, Fukui T, Kuwahara T.

168. Sure B, Easterling L. The protective action of vitamin B12 against the toxicity of dl-thyroxine. *J Nutr* 1950;42:221-225.

169. Dyckner T, Webster PO. Ventricular extrasystoles and intracellular electrolytes before and after potassium and magnesium infusions in patients on diuretic treatment. *Am Heart J* 1979;97:12-18.
170. Canavese C, Petrarulo M, Massarenti P, Berutti S, Fenoglio R, Pauletto D, Lanfranco G, Bergamo D, Sandri L, Marangella M. Long-term, low-dose, intravenous vitamin C leads to plasma calcium oxalate supersaturation in hemodialysis patients. *Am J Kidney Dis.* 2005 Mar;45(3):540-9.
171. *Ren Fail.* 2003 May;25(3):445-53. Low dose intravenous ascorbic acid for erythropoietin-hyporesponsive anemia in diabetic hemodialysis patients with iron overload. Lin CL, Hsu PY, Yang HY, Huang CC.
172. *Bull Exp Biol Med* 2000 Nov;130(11):1055-7. Effects of ascorbic acid on lipid peroxidation and functional state of neutrophils at the early period after transurethral resection of the prostate. Volchegorskii IA, Vasil'kov AY.
173. *J Nephrol* 2000 Nov-Dec;13(6):444-9. Intravenous ascorbic acid in hemodialysis patients with functional iron deficiency: a clinical trial. Giancaspro V, Nuzziello M, Pallotta G, Sacchetti A, Petrarulo F.
174. *Metabolism.* 2005 Jun; 54(6):835-40. Hoffer LJ, Saboohi F, Golden M, Barre PE. Cobalamin dose regimen for maximum homocysteine reduction in end-stage renal disease.
175. *Kidney Int.* 2005 Mar;67(3):1161-70. Sturm B, Laggner H, Ternes N,

- Goldenberg H, Scheiber- Mojdehkar B. Intravenous iron preparations and ascorbic acid: effects on chelatable and Bioavailable iron.
176. *Metabolism* 1999 May;48(5):631-5. Supplementation with vitamin B12 decreases homocysteine and methylmalonic acid but also serum folate in patients with end-stage renal disease. Dierkes J, Domrose U, Ambrosch A, Schneede J, Guttormsen AB, Neumann KH, Luley C.
177. *Kidney Int* 2000 Aug;58(2):851-8. Tremblay R, Bonnardeaux A, Geadah D, Busque L, Lebrun M, Ouimet D, Leblane M. Hyperhomocysteinemia in hemodialysis patients: effects of 12-month supplementation with hydrosoluble vitamins.
178. *Res Exp Med (Berl)* 2001 Mar;200(3):155-68. Henning Bf, Zidek W, Riezler R, Graefe U, Tepel M. Homocyst(e)ine metabolism in hemodialysis patients treated with vitamins B6, B12 and folate.
179. *Intern Med* 1999 Jun;38(6):472-5. Intravenous methylcobalamin treatment for uremic and diabetic neuropathy in chronic hemodialysis patients. Kuwabara S, Nakazawa R, Azuma N, Suzuki M, Miyajima K, Fukutake T, Hattori T.
180. *Int J Vitam Nutr Res.* 2003 May;73(3):215-20. Variations in the lipid profile of patients with chronic renal failure, treated with folic acid. DeGomez Dumm NT, Giammona AM, Touceda LA.
181. *J Nephrol.* 2004 May-Jun;17(3):411-3. The achievement of normal homocysteinemia in regular extracorporeal dialysis patients. Gonella M, Calabrese G, Mengozzi A, Aleo AG, Vagelli G, Mazzotta A, Deambrogio P.

182. Res Exp Med (Berl) 2001 Mar;200(3):155-68. Homocysteine metabolism in Hemodialysis patients treated with vitamins B6, B12 and folate. Henning BF, Zidek W, Riezler R, Graefe U, Tepel M.
183. Am J Kidney Dis 2001 Apr;37(4):758-65. Efficacy of folinic versus folic acid for the correction of hyperhomocysteinemia in hemodialysis patients. Hauser AC, Hagen W, Rehak PH, Buchmayer H, Fodinger M, Papagiannopoulos M, Bieglmayer C, Apsner R, Koller E, Ignatescu M, Horl WH, Sunder-Plassmann G.

Environmental/Chemical poisoning

184. J Paediatr Child Health 2002 Oct;38(5):530-2. Organophosphate poisoning complicated by a tachyarrhythmia and acute respiratory distress syndrome in a child. Nel L, Hatherill M, Davies J, Andronikou S, Stirling J, Reynolds L, Argent, Toivonen LK.
185. Aten Primaria. 2005 Apr 30;35(7):382-3. Spanish. Bugarin Gonzalez R, Portela Romero M, Martinez Varela F, Galego Feal P. [Intravenous administration of vitamin B12a in cases of cyanide poisoning]
186. Toxicol Clin Toxicol 1996;34(4):397-404. Pharmacokinetics of hydroxocobalamin in smoke inhalation victims. Houeto P, Borron SW, Sandouk P, Imbert M, Levillain P, Baud FJ.
187. Lancet 1995 Sep 2;346(8975):605-8. Comment in: Lancet. 1995 Dec 23-30;346(8991-8992):Relation of blood cyanide to plasma cyanocobalamin

concentration after a fixed dose of hydroxocobalamin in cyanide poisoning.

Houeto P, Hoffman JR, Imbert M, Levillain P, Baud FJ.

188. *J Toxicol Clin Toxicol* 1993;31(2):277-94. Hydroxocobalamin as a cyanide antidote: safety, efficacy and pharmacokinetics in heavily smoking normal

volunteers. Forsyth JC, Mueller PD, Becker CE, Osterloh J, Benowitz NL,

Rumack BH, Hall AH.

189. *Turk J Pediatr* 2002 Jan-Mar;44(1):54-7. Acute isoniazid neurotoxicity in

childhood. Citak A, Kaya O, Uesel R, Karabocuoglu M, Uzel N.

190. *Vet Hum Toxicol*. 2004 Apr;46(2):76-9. A case of acute strychnine poisoning.

Shadnia S, Moisesadat M, Abdollahi M.

