MAGNESIUM AND EHLERS-DANLOS SYNDROME
PART ONE: *WHY* PERSONS WITH EDS NEED TO KNOW ABOUT MAGNESIUM

Everybody should know about magnesium. It's just that important.

"Magnesium is needed for more than 300 biochemical reactions in the body. It helps maintain normal muscle and nerve function, keeps heart rhythm steady, supports a healthy immune system, and keeps bones strong. Magnesium also helps regulate blood sugar levels, promotes normal blood pressure, and is known to be involved in energy metabolism and protein synthesis." – From Magnesium Fact Sheet from the National Institutes of Health (PLEASE TAKE THE TIME TO READ): http://ods.od.nih.gov/factsheets/Magnesium-HealthProfessional/ (Notice also the links provided at the bottom of the Fact Sheet to many of the 62 references.)

What are some of the symptoms of magnesium deficiency?

"Magnesium deficiency can affect virtually every organ system of the body. With regard to skeletal muscle, one may experience twitches, cramps, muscle tension, muscle soreness, including back aches, neck pain, tension headaches and jaw joint (or TMJ) dysfunction. Also, one may experience chest tightness or a peculiar sensation that he can't take a deep breath. Sometimes a person may sigh a lot. … Symptoms involving impaired contraction of smooth muscles include constipation; urinary spasms; menstrual cramps; difficulty swallowing or a lump in the throat-especially provoked by eating sugar; photophobia, especially difficulty adjusting to oncoming bright headlights in the absence of eye disease; and loud noise sensitivity from stapedius muscle tension in the ear. … The central nervous system is markedly affected. Symptoms include insomnia, anxiety, hyperactivity and restlessness with constant movement, panic attacks, agoraphobia, and premenstrual irritability. Magnesium deficiency symptoms involving the peripheral nervous system include numbness, tingling, and other abnormal sensations, such as zips, zaps and vibratory sensations. … Symptoms or signs of the cardiovascular system include palpitations, heart arrhythmias, angina due to spasms of the coronary arteries, high blood pressure and mitral valve prolapse. Be aware that not all of the symptoms need to be present to presume magnesium deficiency; but, many of them often occur together. For example, people with mitral valve prolapse frequently have palpitations, anxiety, panic attacks and premenstrual symptoms. People with magnesium deficiency often seem to be 'uptight.' Other general symptoms include a salt craving, both carbohydrate craving and carbohydrate intolerance, especially of chocolate, and breast tenderness." – From The Importance of Magnesium to Human Nutrition (PLEASE TAKE THE TIME TO READ): http://www.mbschachter.com/importance_of_magnesium_to_human.htm

Two of my personal favorite web-based resources for endless amounts of magnesium-related information are the Journal of Magnesium Research and the Magnesium Online Library.

Magnesium Research: http://www.magnesiumresearch.com/index.phtml

Magnesium Online Library: http://www.mgwater.com/

Both the Journal of Magnesium Research and the Magnesium Online Library offer links to many free full text copies and pdf versions of medical journal articles and even the full text versions of books. For example:

Magnesium Deficiency in the Pathogenesis of Disease:
http://www.mgwater.com/Seelig/Magnesium-Deficiency-in-the-Pathogenesis-of-Disease/

Magnesium in the Central Nervous System:
http://www.adelaide.edu.au/press/titles/magnesium/magnesium-ebook.pdf

Magnesium: The Nutrient That Could Change Your Life:
http://www.mgwater.com/rodtitle.shtml

The introduction to the book "Magnesium: The Nutrient That Could Change Your Life" (http://www.mgwater.com/rodintro.shtml), first published in 1968, seems as if it was written in today. Although the health impact of magnesium deficiency has been recognized for many years, magnesium has recently become a really hot topic in medicine. Magnesium gets plenty of attention in mainstream media if you tune in. Just take a peek:

Dr Oz: http://www.doctoroz.com/search?q1=magnesium

LIVESTRONG: http://www.livestrong.com/magnesium-deficiency/

Prevention Magazine: http://www.prevention.com/magnesium

While magnesium deficiency is serious for anybody, persons with EDS should take note that magnesium plays a particularly important part in connective tissue and collagen metabolism and tissue maintenance in general. Magnesium deficiency may even accelerate aging. See, for example:

Magnesium and connective tissue.
http://www.jle.com/en/revues/bio_rech/mrh/e-docs/00/03/FA/53/article.phtml

Regulation of collagen synthesis in human dermal fibroblasts by the sodium and magnesium salts of ascorbyl-2-phosphate.
http://www.ncbi.nlm.nih.gov/pubmed/8489778

Correcting magnesium deficiencies may prolong life.
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3287408/

For persons with EDS, being deficient in magnesium makes many of the unwanted symptoms and conditions related to EDS worse! A few links regarding some of the specific symptoms or conditions often experienced by persons with EDS:

Sleep Disruption
*Magnesium supplementation improves indicators of low magnesium status and inflammatory stress in adults older than 51 years with poor quality sleep.
http://www.ncbi.nlm.nih.gov/pubmed/21199787
*Effects of chronic sleep deprivation on autonomic activity by examining heart rate variability, plasma catecholamine, and intracellular magnesium levels.
http://www.ncbi.nlm.nih.gov/pubmed/15754837
*Effect of chronic stress and sleep deprivation on both flow-mediated dilation in the brachial artery and the intracellular magnesium level in humans.
http://www.ncbi.nlm.nih.gov/pubmed/15119699
*Erythrocyte magnesium and prostaglandin dynamics in chronic sleep deprivation.
http://www.ncbi.nlm.nih.gov/pubmed/9068914
*Changes of cardiopulmonary function and magnesium metabolism in the state of deprivation.
http://www.ncbi.nlm.nih.gov/pubmed/7699744
*Electrolyte content of brain and blood after deprivation of parodoxical sleep.
http://www.ncbi.nlm.nih.gov/pubmed/5637725

Anxiety/Stress
*Latent tetany and anxiety, marginal magnesium deficit, and normocalcemia.
http://www.ncbi.nlm.nih.gov/pubmed/1164868
*Magnesium, stress and neuropsychiatric disorders.
http://www.ncbi.nlm.nih.gov/pubmed/1844561
*Mechanisms of antistress and antidepressive effects of magnesium and pyridoxine.
http://www.ncbi.nlm.nih.gov/pubmed/20120072
*Consequences of magnesium deficiency on the enhancement of stress reactions; preventive and therapeutic implications (a review).
http://www.ncbi.nlm.nih.gov/pubmed/7836621

ADD/ADHD
* Improvement of neurobehavioral disorders in children supplemented with magnesium-vitamin B6. I. Attention deficit hyperactivity disorders.
http://www.jle.com/e-docs/00/04/18/F1/vers_alt/VersionPDF.pdf
*Magnesium, hyperactivity and autism in children
Chapter 21 of http://www.adelaide.edu.au/press/titles/magnesium/magnesium-ebook.pdf
(See many references at end of chapter, too.)

Neurologic Conditions
*Central nervous system magnesium deficiency.
http://www.ncbi.nlm.nih.gov/pubmed/2001142
*Neurotic, neuromuscular and autonomic nervous form of magnesium imbalance:
http://www.ncbi.nlm.nih.gov/pubmed/9368238
* Improvement of neurobehavioral disorders in children supplemented with magnesium-vitamin B6. II. Pervasive developmental disorder-autism.
http://www.jle.com/e-docs/00/04/18/F2/vers_alt/VersionPDF.pdf
* Magnesium in the Central Nervous System:
http://www.adelaide.edu.au/press/titles/magnesium/magnesium-ebook.pdf

Mitral Valve Prolapse
*The importance of magnesium status in the pathophysiology of mitral valve prolapse.
http://www.jle.com/en/revues/bio_rech/mrh/e-docs/00/04/0C/97/article.phtml
*Therapeutic effect of a magnesium salt in patients suffering from mitral valvular prolapse and latent tetany.
http://www.ncbi.nlm.nih.gov/pubmed/3914582
*Clinical symptoms of mitral valve prolapse are related to hypomagnesemia and attenuated by magnesium supplementation.
http://www.ncbi.nlm.nih.gov/pubmed/9070556
*Fifteen years experience of the use of magnesium preparations in patients with mitral valve prolapse.
http://www.ncbi.nlm.nih.gov/pubmed/21878073
*Magnesium deficiency in the pathogenesis of mitral valve prolapse.
http://www.ncbi.nlm.nih.gov/pubmed/3014234
*Recent data on mitral valve prolapse and magnesium deficit.
http://www.ncbi.nlm.nih.gov/pubmed/3079420

Malabsorption / Gluten Intolerance, Constipation, Gut Flora Imbalance (Miscellaneous Gastrointestinal Issues)
*Hypomagnesaemia due to malabsorption is not always responsive to oral magnesium oxide supplementation alone.
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1773248/pdf/gut05000897.pdf
*Nutritional Aspects of Magnesium Metabolism
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1272307/pdf/westjmed00230-0028.pdf
*Incidence of Hypomagnesaemia in Intestinal Malabsorption
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1872271/pdf/brmedj02507-0033.pdf
*Magnesium deficiency: possible role in osteoporosis associated with gluten-sensitive enteropathy.
http://www.ncbi.nlm.nih.gov/pubmed/9116391
*Therapeutic uses of magnesium.
http://www.aafp.org/afp/2009/0715/p157.pdf

*Prebiotics, probiotics, and synbiotics affect mineral absorption, bone mineral content, and bone structure.
http://www.ncbi.nlm.nih.gov/pubmed/17311984

PreMenstrual Syndrome
* Evaluating the effect of magnesium and magnesium plus vitamin B6 supplement on the severity of premenstrual syndrome.
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3208934/
*Interrelationship of magnesium and estrogen in cardiovascular and bone disorders, eclampsia, migraine and premenstrual syndrome.
http://www.ncbi.nlm.nih.gov/pubmed/8409107

Headaches / Migraines
* Blood Magnesium levels in migraineurs within and between the headache attacks: a case control study.
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3343674/
*The effects of magnesium prophylaxis in migraine without aura.
http://www.jle.com/e-docs/00/04/3E/1E/vers_alt/VersionPDF.pdf
*Headache due to photosensitive magnesium depletion.
http://www.jle.com/en/revues/bio_rech/mrh/e-docs/00/04/0F/78/article.phtml
*Magnesium in headache
Chapter 8 of http://www.adelaide.edu.au/press/titles/magnesium/magnesium-ebook.pdf
(See numerous references at end of chapter, too.)

Temporomandibular Joint Dysfunction
*Serum nutrient deficiencies in the patient with complex temporomandibular joint problems
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2446412/pdf/bumc0021-0243.pdf

Pain
*Magnesium involvement in pain
http://www.jle.com/e-docs/00/04/71/35/vers_alt/VersionPDF.pdf
*The role of magnesium in pain
Chapter 11 of http://www.adelaide.edu.au/press/titles/magnesium/magnesium-ebook.pdf
(See numerous references at end of chapter, too.)

Addiction
*Magnesium in drug abuse and addiction
Chapter 24 of http://www.adelaide.edu.au/press/titles/magnesium/magnesium-ebook.pdf
(See numerous references at end of chapter, too.)

A few general links in addition to what has already been mentioned above

Magnesium metabolism and its disorders.
http://www.ncbi.nlm.nih.gov/pubmed/18568054

Magnesium homeostasis and clinical disorders of magnesium deficiency.
http://www.ncbi.nlm.nih.gov/pubmed/8173141

TAKE HOME MESSAGE: Persons with EDS and EDS-related problems very often prove to have significant magnesium deficiency, so they need to EDUCATE THEMSELVES regarding the impact of magnesium deficiency on their health and do something about it.

COMING SOON:
PART TWO: *WHAT* PERSONS WITH EDS NEED TO KNOW TO ABOUT MAGNESIUM