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Education Article

NUTRITIONAL SUPPORT FOR THE MENOPAUSE A Natural Approach Through the Menopausal Transition

UNDERSTANDING THE MENOPAUSE

The menopause arises from the cessation of ovulation, which occurs regularly each month throughout the premenopausal period by the maturation of follicles. At ovulation, a follicle bursts to release an ovum, or egg, which then passes down the fallopian tube to the womb, or uterus, where, if it becomes fertilised, it may embed and develop into a foetus. During this phase of a woman's life, the active ovary produces the female sex hormones known as oestrogens, in a monthly cyclical manner. These hormones are largely responsible for the development of the so-called secondary sexual characteristics in females, such as breast enlargement. The rises and falls in the oestrogens circulating in the blood are related to, and in many respects control, the events in the female monthly cycle. The other principal hormone involved in this cycle is progesterone, which is produced during the second half of the monthly cycle after ovulation has occurred. It plays an important part in preparing the conditions necessary for pregnancy. Its source is a body within the ovary called the corpus luteum (meaning yellow body), which develops from the follicle after it has burst.

These activities of the ovaries are in turn controlled by other hormones from the anterior pituitary gland, known collectively as gonadotrophins. In particular, these include the follicle stimulating hormone (FSH), which stimulates the follicles of the ovary to mature, and the luteinising hormone (LH), which promotes the growth and activity of the corpus luteum. These



hormones are produced all through the premenopausal period and they are essential to normal female reproductive function. The levels of output of these hormones is in turn controlled by the circulating levels of oestrogens and progesterone. Therefore a balanced steady state is achieved through the premenopausal period.

However, once the ovary stops producing normal quantities of oestrogens and progesterone the pituitary gland increases its output of FSH and LH as if in an attempt to promote further activity. In fact, at this stage the ovary is commonly regarded as being exhausted of eggs, which the ovaries contain only in limited numbers, about 400 in a young girl when menstruation begins. When the menopause starts, these have mostly gone; just a few may remain and one or two of these may be released intermittently, a factor that represents a certain risk of unplanned pregnancy in the period just before the menopause is completed.

Changes in all these hormone levels therefore become diagnostic of the perimenopausal and menopausal stages and can be linked to menopausal symptoms. For example, the high levels of LH, and in particular the short-term surges of LH release coupled with low oestrogen, has been connected with the generation of the hot flushes (of hot flashes) during the menopause.

Natural menopause occurs in 25% of women by age 47, in 50% by age 50, 75% by age 52 and 95% by age 55.

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ADVERSE SYMPTOMS OF THE MENOPAUSE

It is unfortunate that in societies with a Western lifestyle, and to a lesser extent elsewhere, the onset and continuation of the menopause are often accompanied by undesirable symptoms. This inevitably reinforces the negative view of the menopause. A time when menstruation and ovulation cease with reproductive stage of life ending is bound to be an emotive watershed. There are, however, lifestyle and nutritional approaches that can help natural progression through this time whilst maintaining energy and health.

One of the more common symptoms of menopause is osteoporosis; a condition in which the bones lose a substantial proportion of the calcium phosphate mineral substance that hardens them. The result is a loss of strength in the bones and hence a tendency to fracture. The condition may well be symptom-free until a fracture occurs. Whilst fractures may occur in anybody, given a severe enough blow, the characteristic of osteoporosis is the occurrence of fractures even with fairly light stress to the bones. There are diagnostic tests to measure bone density, but unless there is reason to suspect some problem, these measurements are unlikely to be applied. Hence a fracture may be the first indication of trouble.

Osteoporosis is the most definitive and measurable symptom of the menopause. There are many others, however. Hot flushes, vaginal dryness, night sweats and palpitations are additional physical symptoms. Fatigue, insomnia, poor stamina, feelings of weakness, stress symptoms, night leg cramps, easy bruising and spontaneous nosebleeds are also prominent, but less specific, general symptoms. Psychological symptoms include anxiety, irritability, mood swings, depression, excessive worrying and memory loss. Although these symptoms are often worse at the time of the menopause, they are obviously not specific to it and may occur at any time throughout life.

It is clear that the prime triggers causing these problems are related to the reduction of circulating oestrogen and/ or progesterone. In the case of the hot flushes the excess of circulating LH has been implicated, which is corrected by increasing concentrations of circulating oestrogen and progesterone during the premenopausal stage. Because the whole condition appears to be completely geared to the body's availability of steroid hormones, it is not surprising that orthodox medicine came up with hormone replacement therapy (HRT) as a treatment.

HORMONE REPLACEMENT THERAPY

For many physicians, HRT is the preferred treatment strategy prescribing artificial or animal-derived oestrogen and progesterone hormones via HRT. Depending upon circumstances, supplementary calcium and vitamin D may also be advised. However, research has shown that there may be risks associated with HRT, especially when given for more than five years.

Side effects associated with HRT include:

- Abnormal vaginal bleeding
- Breast tenderness
- Candidiasis
- Depression
- Gall bladder disease
- Headaches or migraines
- Jaundice
- Loss of hair
- Loss of sexual drive (libido)
- Thrombosis (blood clots)
- Uterine and breast cancer
- Vomiting or nausea
- Weight gain

In 2002, the Women's Health Initiative (WHI) conducted the largest, most rigorous study to date on hormone therapy, and found that HRT can increase the risk of both breast cancer and heart disease in healthy postmenopausal women.¹³ The study lasted five years and included 16,000 women. Follow-ups were published over the next two years looking at specific risks, such as stroke or heart disease, and then in 2008, WHI investigators looked at risk three years after stopping HRT, and found that although cardiovascular risk returned to normal, there was still a greater incidence of malignancies.^{14, 15, 16, 17}

There is a major misconception amongst many health care providers and the general public that bio-identical hormone replacement therapy (BHRT) is safer than HRT.^{18, 19} Albeit this makes sense logically, particularly to integrative healthcare practitioners, in that you would want to use a hormone with the same molecular structure as a hormone that is endogenously produced, versus one that is completely synthetic. But to be clear, these bio-identical hormones are still made in a laboratory in the same way that conventional HRT would be made and from the same sources. So are they really any "natural" solutions?

Firstly, these are hormones just as in HRT except that that they are marketed as having a molecular structure similar to your own. No matter what stage of the menopause, replacing hormones that are naturally decreasing is basically telling the body that its natural rhythm is 'wrong' and that this decline should not be happening. And when would you stop taking them? If it were indeed correct to replace these naturally declining hormones then would you need to take them forever? Adding back these hormones requires a judgement as to which hormone you need and in what dose or combination with other hormones Hormone levels would still need to be adjusted as you go through the different stages because of their individual nature but these individual requirements might not be taken into account.

HRT and bio-identical hormones also both carry similar risk profiles,³ except for medroxyprogesterone acetate (MPA). It is believed that MPA increases the risk of breast cancer,⁴ while this has not yet been seen in bio-identical use of progesterone.⁵



NUTRITION & THE MENOPAUSE

About two million women turn 50 every year. The average age of onset for perimenopause is 47, with the average duration 3-4 years; 51 is the average age of menopause. For the many millions of women in menopause, there are an every increasing number of impressive new research studies, including human trials, on nutrients that have proven benefit in ameliorating menopausal discomforts.

SUGAR

Oestrogen production in the body is inhibited by insulin resistance, which is becoming a widespread phenomenon associated with obesity and Type II diabetes. The naturally lowering levels of oestrogen during the menopause may therefore be further exacerbated by a diet high in sugar. This in turn can impact on adrenal function and oestrogen production by these glands, as well as raising adrenaline levels, which can contribute to hot flush symptoms. A low refined sugar diet is therefore an important factor in balancing hormones, and may help reduce hot flushes and other menopause symptoms including reduction in bone density. Typical dietary approaches include avoiding high sugar foods and drinks, as well as caffeine and alcohol, which can also raise adrenaline levels and impact on adrenal function.

PHYTOESTROGENS

It's well known that Japanese women do not experience so many of the menopausal symptoms – in part due to the high level of natural soya consumed. Soya beans contain substances called phytoestrogens, which, although for the most part are not steroids like the normal human oestrogens, exert weak but definite oestrogenic effects in the human body. Obviously, such substances have the potential to give significant physiological support to menopausal women whose symptoms arise from relative oestrogen deficiency. This helps support cardiovascular health, bone health and even cognitive function.¹

Phytoestrogens have also been studied extensively for their effect on lowering cholesterol, so they can have protective effects in terms of heart disease, which is important around the menopause. Phytoestrogens can include soya (fermented is best to concentrate the isoflavones – a type of phytoestrogen), hops, dandelion, red clover, sage, alfalfa, flaxseeds. Ground flaxseeds provide good levels of phytoestrogens, as well as other nutrients including essential fatty acids and fibre.

VITAMIN E

Studies have demonstrated that Vitamin E reduces the severity of hot flushes and other symptoms associated with menopause such as vaginal dryness. One study showed that just 400IU supplemental Vitamin E taken daily for between 1 and 4 months helped 50% of women. Although most women fear breast cancer, the greatest risk of female mortality is heart disease.^{20,21,22,23,24} There is now such a wealth of information on the beneficial effects of nutrition on heart disease and unfortunately HRT has been shown to increase the risk of heart attacks and strokes.²⁴ Vitamin E is linked to a reduction in the risk of cardiovascular disease so may be of benefit during the menopause.²

B VITAMINS

B vitamins are commonly called the "stress" vitamins because of their benefits when under a great deal of pressure. They are vital nutrients for the energy producing pathways in the cells, as well as production of hormones from the adrenal gland, which is partly responsibly for producing oestrogen during and after the menopause when the ovaries oestrogen function has diminished.

VITAMIN C

Vitamin C is known for its beneficial effect on the immune system, strengthening blood vessels and also for its role as an antioxidant in the body. Vitamin C also has specific benefits at the menopause. For example, supplementing Vitamin C with bioflavonoids has been shown to help reduce hot flushes in women going through the menopause.³

Vitamin C also helps to build up collagen which is important for bone health and gives skin its elasticity so is therefore helpful in the prevention and treatment of vaginal dryness (which can cause discomfort when the vagina muscle wall loses some of its 'stretch'). It can also help retain the elasticity in the urinary tract and prevent leakage or stress incontinence, which is common at the menopause. For more Education Articles & information, visit **nutrigold.co.uk** or call **0800 233 5675**

NUTRITION & BONE HEALTH

We have previously discussed the reduction of bone density that is coupled with declining oestrogen levels. Other lifestyle and diet factors that can negatively affect bone density include:

- Certain drugs, e.g. the contraceptive pill
- Chronic diarrhoea leading to loss of minerals and poor nutrient absorption
- Over consumption of alcohol, coffee, or salt
- Poor diets and/or frequent dieting
- Low gastric acid levels
- High consumption of processed food
- High protein diets, such as those containing too much meat, eggs and dairy produce
- High sugar diets
- High milk and dairy intake
- Smoking

For this reason, diets low in processed foods and sugar and high in vegetables is recommended for health including supporting bone health.



CALCIUM

The medical approach to staving off reduction of bone density and support bone strength during the menopause, or at any other time in life, is to suggest increasing levels of dietary calcium through increasing dairy consumption, and maybe supplement using calcium in carbonate form. However, there are several reasons to suggest that this might not be the best approach to support bone health. For a start, increasing dairy in the diet also increase levels of saturated fats and salt if consuming cheese. Calcium can be found in other dietary sources, like seeds and green leafy vegetables, which have greater nutritional benefits, as well as the calcium being in a form that is better absorbed through the digestive tract.

There are also several different nutrients that work synergistically to support bone health. Calcium is important for bone structure but so are magnesium, boron, Vitamin K, certain B vitamins and Vitamin D3 and these nutrients should not be overlooked at the expense of supplementing a nutrient in isolation.

VITAMIN K

Research has shown that Vitamin K deficiency could lead to impaired mineralisation of bone due to decreased osteocalcin levels. Osteocalcin is one of the proteins in the organic bone matrix that binds calcium. Osteocalcin contains an amino acid called gamma carboxyglutamic acid, which enables osteocalcin to tightly bind calcium. Vitamin K is needed for the conversion of glutamic acid to its gamma carboxy derivative. Vitamin K is found in abundance in green leafy vegetables. Osteoporotic women have been found to have only 35% of the blood vitamin K levels that are normal in age-matched controls.⁹

Vitamin K occurs in two forms; Vitamin K1 (phylloquinone) is mostly used by the liver to activate calcium-binding proteins involved in blood clotting, while K2 (menaquinone) is used to activate proteins that regulate where calcium ends up in the body. Vitamin K2 is the form that has been demonstrated in studies to reduce the risk of heart disease⁴ and lower the risk of osteoporosis.⁵

MAGNESIUM

Magnesium is well known for its ability to ease insomnia, muscle cramps and spasms, irritability, migraines and more.⁶ Magnesium levels tend to decrease during menopause. Inadequate magnesium appears to reduce serotonin levels, and antidepressants have been shown to raise brain magnesium.⁷ Magnesium supplementation has also been shown to slow bone turnover in postmenopausal women suffering from osteoporosis⁸. Magnesium is a co-factor for the enzyme alkaline phosphatase, a particularly important enzyme in bone.

The conversion of Vitamin D to its active form also requires magnesium. Osteoporotic women have low whole body content of magnesium, as well as low bone concentrations. Low dietary magnesium is extremely common in both the UK and the US and several studies have shown that it is quite critical for bone health.

Magnesium is found in highest levels in the diet in green leafy vegetables, as well as nuts and seeds, pulses and legumes. However, levels of many minerals are lower in our diets compared to just a few decades ago due to the reduction of mineral levels in soils, such as through overfarming. Magnesium supplementation may therefore be recommended using organic forms of minerals, such as magnesium, calcium or citrate, to ensure absorption and bioavailability of the mineral.

Inorganic forms of supplementary minerals such as magnesium oxide and calcium carbonate are not efficiently absorbed through the digestive tract and are therefore not readily bioavailable for the cells to utilise. In fact calcium carbonate is just chalk and, along with magnesium oxide, can neutralise the stomach acid causing digestive symptoms such as diarrhoea – not desirable side effects from a food supplement!

VITAMIN D3

Lack of Vitamin D can play a big factor in menopausal symptoms. Vitamin D deficiency can contribute to fatigue, poor immunity, mood swings/low mood and depression, sleep problems, bone, joint and back pain, muscle weakness and cardiovascular disease. In the perimenopause low Vitamin D could even cause prolonged periods/bleeding and reduce dietary calcium absorption through the digestive tract contributing to reduced bone density. A simple blood test can show Vitamin D status with levels boosted through the diet, including oily fish like salmon and sardines, and eggs, and also through supplements. Vitamin D3 is the



best supplementary form for bioavailability and Vitamin D3 mouth sprays may even enhance absorption as they bypass the digestive tract.

FOLIC ACID

The importance of folic acid (one of the B vitamins) for bone health seems to be connected with its role in the metabolism of the amino acid homocysteine. Methionine, one of the essential amino acids present in food proteins, is converted in the body partly to homocysteine, which, although a normal product of metabolism, becomes toxic if it accumulates. The importance of this has been shown up as a result of finding some individuals with a genetic fault of the enzymes for the removal of homocysteine. In these people, homocysteine accumulates to high levels and they become subject to osteoporosis from an early age. High homocysteine levels have also been linked to cardiovascular disease. Supplementing with folic acid (in MTHRF form) along with other B vitamins can help support a health methylation cycle and balance homocysteine levels.

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BORON

The non-metallic trace mineral boron has been recently shown to have a positive effect on calcium and active oestrogen levels in postmenopausal women. Supplementing the diet with 3mg of boron daily reduced urinary calcium excretion by 44% and dramatically increased the levels of the most biologically active oestrogen, oestradiol.¹⁰

The way boron functions is not quite clear, but it has been suggested that boron is required for the interconversion of different types of steroid hormone. Whatever the mechanism, intake of extra boron has been found to result in the formation of low concentrations of a form of oestrogen having high activity. It is thought that this obviates the dangers which accompany the administration of much higher doses of oral oestrogen that have to be used in HRT.

The same type of biochemical change, which is required for the interconversion of the above steroids, is also required for the formation of the active form of Vitamin D, the vitamin needed for the absorption of calcium. Some studies show that boron deficiency may lead to poor Vitamin D status. Hence, boron deficiency may be having a marked effect upon calcium absorption.

Boron is most readily available from vegetables, fruits and nuts. Therefore, boron intake may well be yet another case of a micronutrient whose daily human intake is being compromised today by industrialised food patterns and unwise food choices.

ZINC & MANGANESE

Zinc and manganese are necessary for bone formation and mineralisation.¹¹ Like magnesium, zinc is a cofactor for some 200 enzymes within the living cells, and so is fundamental to healthy and balanced metabolism. It also increases Vitamin D activity and promotes immune functions. When supplementing with zinc and manganese at higher doses and for long periods of time, it is necessary to also ingest copper, since high dose zinc reduces copper absorption and may produce copper deficiency. Foods rich in zinc include lamb, pumpkin seeds, grass-fed beef, chickpeas, cashew nuts, natural yoghurt, mushrooms and spinach. Organic forms of zinc in supplements includes zinc in citrate form, which has high bioavailability in the body.

COPPER

Copper is thought to be involved in bone health, both through its effects upon the production of bone matrix and on bone mineralisation. The effect on matrix formation occurs because copper is needed for the action of an enzyme called lysyloxidase. This enzyme is needed to give the correct properties to the main structural protein of the bone matrix, collagen. In particular it forms cross-linkages between the fibres of protein – such an important aspect of bone strength.

The adverse effects of copper deficiency on mineralisation are thought to be through the impact of cellular deficiency in the cells, which form new bone, called the osteoblasts. Copper rich foods include liver, sunflower seeds, lentils, almonds, apricots and blackstrap molasses. Copper in gluconate form is commonly found in supplements that can support menopausal stages.

SILICON

The non-metallic bulk mineral silicon is often available in the form of plant extracts, such as from horsetail found in food supplements. Silicon aids calcium absorption into bone. Like copper it probably influences both matrix formation and mineralisation. Silica can also be found in the diet in whole grain bread, bran, brown rice, green beans, oats, spinach, bananas and seafood.

CHROMIUM

We have previously discussed how insulin resistance impairs bone calcium deposition, as well as leads to hyperinsulinaemia, which in turn reduces the synthesis of the hormone dehydroepiandrosterone (DHEA) produced in the adrenal glands. In postmenopausal women, DHEA is the only source of oestrogens, and also an inhibitor of osteoclast activity (i.e. the cells that breakdown bone matrix). Therefore DHEA has a bone protective effect, as well as providing low levels of oestrogen post menopause.

One report indicated that adequate status of chromium in the body after the menopause; a woman can increase her internal production of the oestrogen dehydroepiandrosterone (DHEA) by around 20%.²

Chromium is also important in enhancing insulin action and reducing insulin resistance, as well as supporting bone health through increasing DHEA levels.

Chromium is found in foods including whole grains including barley and oats, bran, raw onions, romaine lettuce, black pepper and green beans. To ensure adequate levels supplementary forms are often found as chromium picolinate.

What is clear is that a multifactorial approach to health before, during and after the menopause is required. A varied whole food diet, exercise and stress management all helps to balance during this natural time of a woman's life.

If you have any questions then please contact the Nutrigold team on 0800 233 5675 or email talk2us@nutrigold.co.uk

This education article was co-written by Dr Elisabeth Philipps PhD with Nutrigold.

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