



Nutrition in the elderly

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Nutrition in the elderly is hardly discussed in medical circles. It seems acceptable that frailty, senility, degenerative disease and cognitive defect are part and parcel of the aging process. Nutrition is often seen as irrelevant to the state of health of an aging population. This article explains the relevance of an adequate diet and appropriate supplementation with vitamins and minerals to enhance the health and prevent illness in our aging population. It is an indictment on our society that many of our parents and grand parents are being debilitated by polypharmacy and inadequate nutrition

My Relative's Story

This article is also relevant to a close relative who has cancer of the stomach and in December 2004 was placed in a Hospice in the UK after a stomach operation, as a terminal case. The Hospice is very well run and beautifully designed. The doctors are charming and very caring. They have tremendous patience and understanding as do the wonderful team of nurses and carers

After a blood transfusion my relative improved. I am sure the improvement was also due to my encouraging her to start getting out of bed and walking. After a few days she began walking on her own and we would go out for short jaunts to the shops. She loves picking up bargains and antiques in community shops. She was then moved out of the Hospice and went to stay with her daughter with carers coming in to help her generally.

It was 7 weeks ago when she began to not eat.

Retrospectively this was partly due to her being anaemic but her GP decided to put her on a course of dexamethasone to enhance her appetite which is supposed to be the thing you do for some one with cancer.

I see this as the utter lack of understanding conventional medicine has for the nutritional requirements of the body.

Cancer is a disease caused by the oxidative process which results in inflammation and inability of the body to repair itself. Chronic inflammation inflicts devastating effects, especially as humans grow older. The pathological consequences of inflammation are fully documented in the medical literature. Regrettably, the dangers of systemic inflammation continue to be ignored, even though proven ways exist to reverse this process.

Adding antioxidants to a conventional cancer treatment regime may significantly improve survival in one study of patients with small cell cancer providing antioxidant nutrients resulted in better tolerance for radiation and chemotherapy. (Jaakaola Anticancer Res 1992). According to nutrient need the researchers used Vitamin A, 15 - 40,000 units a day, Betacarotene 10-20,000 units a day, Vitamin E, 300-800 units a day, Vitamin C 2-5gms a day, and Manganese and Sodium selenate 856-3,424 mcg a day.

Omega 3 competes with arachidonic acid which is an omega 6 fatty acid for prostaglandin synthesis. By eating fish or taking fish oil supplements there is :

1. A decrease in the production of the bad eicosanoids or

prostaglandin to metabolites.

2. A decrease in thromboxane A₂ (a potent platelet aggregator) and vasoconstrictor.

3. An increase in prostacyclin PGI₂ and PGI₃ (both active vasodilators and inhibitors of platelet aggregation). Omega 3 fatty acids modulate prostaglandin metabolism, decrease tryglicerides, lower cholesterol and are anti thrombotic and anti inflammatory.

Overall there is a general decrease in inflammation and the production of a more healthy immune system².

With a healthy immune system it is much easier for the cancer patient to survive the cancer process. The disease by its nature puts tremendous stresses on the eliminative and detoxification and regulatory functions of the body.

In an attempt to self repair there is heightened inflammation and the liver is overloaded with toxins.

The fight and flight function of the body is mobilised but without a modulatory balance from the healthy prostaglandins.

My relative is now terribly fatigued which I feel, was contributed to by the six week course of steroids given to her which blocked the production of the modulating eiconasoids and severely compromised her overall ability to deal with harmful free radicals .

Chronic stress leads to chronic metabolic imbalance and in the late stages adrenal glands become exhausted and DHEA and cortisol levels are low. The dosage of dexamethasone in my opinion contributed to adrenal exhaustion.

In late adrenal exhaustion there is low cortisol and low DHEA with low blood sugar and depressed immune function, fatigue, poor concentration and poor memory. She is currently very fatigued. The doctors currently attending have made a diagnosis of global weakness. In my opinion she may also have adrenal exhaustion.

Nutritionally, Vitamin C and magnesium and optimal nutrition and supplementation are important for modulating the stress response

She has tremendous life force but she is now back in the Hospice.

It is evident that in hospitals and Hospices nutritional supplementation for illness is seen as almost quackery. Despite the thousands of medical trials detailing the need for nutritional supplementation (see Bibliography) the inadequacy of modern diets, the increased needs of the body when under the stress of illness and old age Nutritional or cellular medicine is not part of the educational curriculum of the modern doctor. This is the result of a bias to treating the illness and the disease rather than the person and the nature of the functional cause which created the disease

Modern allopathic medicine has been brought up with the idea of working against the body; therefore the word "allopathy", from the Greek "allo", meaning against. If there is a histamine reaction in the body, then an allopath

would use an anti-histamine or similar agent. The entire field of allopathic pharmacology is one of using mostly synthetic compounds to block or artificially stimulate processes within the body.

Nutritional medicine with its emphasis on lifestyle and enhancement of the body's natural cellular functions serves to enhance the body's abilities to cure itself and there is an enormous amount of supporting scientific evidence behind this

Modern pharmacology makes enormous profits from conventional band aid medicine and pharmaceutical companies are currently seeking to block the accessibility to vitamins and supplements in Europe through the widely contested Codex alimentarius.

It is no wonder that the health system is in crisis when the whole essence of health care is based on the use of allopathic drugs. The pharmaceutical industry exists and feeds on illness. Without illness it cannot grow. It cannot create new drugs to band-aid the illness. Yet it is known that iatrogenic illness or illness caused by drugs or technological intervention is such that the treatment of illness is now the fourth commonest cause of death in Western Society. (Journal of the American Medical Association). Sixteen per cent of patients who enter hospital either die or come out worse than when they went in. (Medical Journal of Australia 1995).

Medical treatment is the primary cause of death and morbidity in the USA. The results of seven years of research reviewing thousands of studies conducted by the Nutrition Institute of America showed that medical errors are the number one cause of death and injury in the United States. (Gary Null PhD, Carolyn Dean MD ND, Martin Feldman MD, Debora Rasio MD, Dorothy Smith PhD October 2003).

It should be realised that the human body has enormous ability to modulate and heal itself and prolong its life with the nutritional substances and supplements which can enhance the modulatory , anti inflammatory healing functions of the body.

Modern medicine needs to address the regulatory or detoxification or eliminative functions of my relative's body but does not have the knowledge to do this

She is on large doses of panadol and codeine which are detoxified by the liver and therefore needs liver support.

She had most of her stomach removed and therefore needs additional supplements or even B12 injections.

Vitamins and supplements like omega 3, unsaturated fatty acids with Vitamin E are basically not seen as making any difference to the state of health of a so called terminal elderly patient.

It is the omega 3 unsaturated fatty acids which produce the good eicosanoids which damp down the inflammation caused by the bad eicosanoids through the biochemical pathway from omega 6 through to arachidonic acid

My relative has had indigestion for years. She also has a past history of colitis albeit intermittently.

She was and is an evident candidate for vitamin and mineral supplementation.

From a nutritional point of view my relative needs vitamins and supplements to build up her immune system. Her tiny appetite is such that she needs proper supplements. Unfortunately hospital pharmacies recommend no more than the recommended daily allowance (which is a criterion for vitamin doses needed to prevent clinical features of vitamin deprivation) which has no relevance to the requirements of cellular medicine and people on the contemporary denatured diet who are severely compromised in terms of illness and stress.

Similarly the hospital dietitian may well recommend dairy products which can play havoc with elderly patients by causing systemic inflammation through a bowel wall which is often weakened by age, inflammation and possible dysbiosis.

Nutritional Medicine-An Overview

A strong endorsement for the use of vitamin supplements was made in the June 19, 2002, issue of the *Journal of the American Medical Association (JAMA)*. According to the Harvard University doctors who wrote the JAMA guidelines, it now appears that people who get enough vitamins may be able to prevent such common illnesses as cancer, heart disease, and osteoporosis. The Harvard researchers concluded that suboptimal levels of folic acid and vitamins B6 and B12 are a risk factor for heart disease and colon and breast cancers; low levels of vitamin D contribute to osteoporosis; and inadequate levels of the antioxidant vitamins A, E, and C may increase the risk of cancer and heart disease (Fairfield et al. 2002).

Most people are affected by nutritional deficiency. The food we eat is denatured and processed, grown on a substrate of nitrogen phosphorus and sulphur and lacking in basic minerals and vitamins our food on its own cannot sustain us. Pollution, pesticides, heavy metals, smoking, stress, trans fats, animal fats, dairy and sugar all serve to compromise the immune system. At extremes of age i.e. in childhood or in the elderly or in pregnancy, food requirements become more significant. The fruit we eat does not contain adequate vitamin C considering the personal and environmental stresses we are under.

Stress, denatured food, smoking, pharmaceutical chemicals, and the polluted environment all produce oxidative stress.

Vitamins are essential for oxidative phosphorylation (the energy generating pathway of the cell) and protection against oxidants. They also act as co-factors in many enzymatic reactions and as signal mechanisms to other cells.

The most consistent nutrients linked to immune

dysfunction have been low levels of vitamins A, C, E, and B6, copper, iron, and zinc. Many of these nutrients are linked to deficiency in the developed world.

Kenneth H. Brown, a University of California nutrition professor, estimated that as much as half of the world population is at risk for zinc deficiency and 40% of children in low-income countries have stunted growth related to zinc deficiency.

Chandra *et al.* (1983) have repeatedly demonstrated that groups such as atopic, formula-fed children, low-birth-weight infants, obese adolescents, malnourished hospitalised patients, and the elderly have not only increased immune dysfunction but also increased risk for infection and allergic disorders, such as eczema. Many of these studies have actually shown improvement of immune function when supplemented with appropriate nutrients and foods (Chandra 1999). In North America, there is more under-nutrition through overconsumption of poor-quality food, namely, fat, sugar, and processed foodstuffs.

Another area where immunity suffers in western civilization is at the gut lining. About 60% of the immune system cells are collected around the small intestine in areas known as Peyer's patches or the GALT (gut associated lymphoid tissue). Any thinning of the gut lining, such as in lactose intolerance, food allergy, gluten sensitivity, ulcerative colitis, Crohn's disease, antibiotic-induced colitis, yeast overgrowth, and so forth, will render the gut leaky. This leakiness allows incompletely digested food proteins, which are immune stimulating, to enter the blood stream.

From the above, it can be seen that a strong immune system is dependent on a good foundation of nutrition. There is no single nutrient that, by itself, will enhance immunity (Lesourd 1997; Scrimshaw et al. 1997). In fact, too much of one nutrient can do the opposite of what one might want and decrease immunity (Delafuente 1991). Thus, the descriptions that follow, where individual nutrients are identified as being important, should be taken in the context in which the various nutritional supplements work together in a synergic fashion.

Sub-optimal intake of some vitamins, above levels causing classic vitamin deficiency, is a risk factor for chronic diseases and common in the general population, especially the elderly. Sub-optimal folic acid levels, along with sub-optimal levels of vitamins B6 and B12, are a risk factor for cardiovascular disease, neural tube defects, and colon and breast cancer; low levels of vitamin D contribute to osteopenia and fractures; and low levels of the antioxidant vitamins (vitamins A, E, and C) may increase risk for several chronic diseases. Most people do not consume an optimal amount of all vitamins by diet alone. It is prudent for all adults to take vitamin supplements. Physicians should make specific efforts to learn about their patients' use of vitamins to ensure that they are taking vitamins they should².

A multivitamin and mineral supplement reduced the incidence of participant-reported infection and related absenteeism in a sample of participants with type 2 diabetes mellitus and a high prevalence of sub-clinical micronutrient deficiency.³

Medical research has shown oxidative stress to be a significant cause of over 70 chronic degenerative diseases including heart disease, stroke, cancer, diabetes, arthritis, Alzheimer's dementia, and macular degeneration. Oxidative stress produces free radicals which then cause various kinds of inflammatory response. This response is tied up with the body's fight and flight or sympathetic reaction. An example is the way chronic or severe depression contributes to the causation of osteoporosis and also cognitive defect. In these situations overproduction of cortisol by the adrenals with concomitant excess epinephrine contributes also to hyperinsulinaemia and insulin resistance characteristic of the metabolic syndrome. Stress and the eating of excess fat and processed foods also creates obesity which further inflames this vicious circle and obesity is associated with an increased incidence of cancer and cardiovascular diseases all due BASICALLY to what we are eating and how much stress we are under.

By simply eating 7 to 9 servings of fruits and vegetables each day and increasing the fish in our diet to 4 or 5 dishes per week we can decrease the risk of heart attack, stroke, Alzheimer's dementia, and cancer, two to three fold.

However, even if we eat a great diet we can barely obtain the RDA level of all essential nutrients. And due to the enormous amount of oxidative stress our bodies are under not to mention the severe degree that the metabolic functions are also compromised we need antioxidants and adequate cellular nutrition.

Dietitians taught in the conventional mode have no knowledge of nutritional, environmental or Mind Body Medicine but these components of the New Medicine are what can prevent, ameliorate or even reverse the current ravages of degenerative disease on the planet.

Obesity and concomitant diabetes have now overtaken smoking as a major cause of illness. Cardiovascular disease is aided and abetted by fatty diet, trans fats, sugar and a lack of an adequate life style which should include essential foods and nutrients especially fish, vegetables, fish oils, vitamin E, zinc magnesium, vitamin B6, Vitamin B12 and folic acid, losing weight, adopting a regular, intensive exercise program and quitting smoking.

Many people in the world are deficient in selenium, magnesium and zinc, Vitamin C and the B vitamins. Stress, heart disease, diabetes, insulin resistance, obesity cancer and autoimmune disease are all linked by the common cause of stress, imbalance of the neuroendocrine system, and the inability of the eliminative systems of the liver and gut to cope with stress, and severely compromising diets which are lacking essential nutrients.

Our bodies are often in a state of chronic inflammation which could easily be helped by a sensible diet complete with many vegetables fruit seeds and grains, (if not intolerant) and lots of fish and water and appropriate supplementation.

It should be also remembered that intestinal dysbiosis should be considered as a mechanism promoting disease in all patients with chronic gastrointestinal, inflammatory or autoimmune disease

Nutrition In The Elderly Important Points

1. Nutrition in the elderly is often severely compromised. Often they do not even get the RDAs (Recommended daily allowance) of essential vitamins and minerals and certainly not the optimal amounts
2. Hospital food is notoriously deficient in essential vitamins and minerals. It is often made of processed food which has lost its essential goodness being over cooked and often left standing. It is often unpalatable.
3. Common vitamin and mineral deficiencies occur in the elderly.
4. There is often deficiency in folate B12 and Vitamin B6.
5. Hypochlorhydria leads to mineral deficiency. As well as the stomach the general function of other digestive organs such as the pancreas is also reduced. It also leads to the digestive lining not functioning as well as it used to and leads to decreased absorption of minerals and vitamins.
6. Many old age problems such as anorexia, fatigue, depression, weakened immune system and infections are the result of poor diets and nutritional deficiencies.
7. Excess consumption of simple sugars, saturated fats, refined foods and non nutrient calories should be avoided.
8. Sufficient fluid and fibre are crucial.
9. Elderly people require easy to digest well balanced vitamin and mineral formulation.

Nutrition in The Elderly -An Overview

The assessment of the nutritional status is an important part of medical examination especially in the elderly. Major factors to be considered in the evaluation of the nutritional status of the patient are the quality and the quantity of food eaten, the efficiency of its digestion, absorption and assimilation, and most importantly, the biochemical uniqueness of the individual.

Environmental and genetic factors may influence these factors. However the elderly are particularly at risk of marginal deficiencies of vitamins and trace elements. Today the early recognition of malnutrition is an important challenge. Its prevention may influence the evolution of nonspecific inter-current disease and restore immunocompetence.⁴

Chewing, swallowing, and mouth pain (CSP) are identified as indicators of nutritional risk in older adults.⁵

Most people do not consume an optimal amount of vitamins by diet alone. Elderly people, vegans, alcohol-dependent individuals, and patients with malabsorption are at higher risk of inadequate intake or absorption of several vitamins.

With regard to nutritional status, elderly people are sometimes even more difficult to nourish than teenagers. Many old-age problems, such as insomnia, anorexia, fatigue, depression, diminishing eyesight and hearing, fragile bones, and fractures, are a result of poor diets and nutritional deficiencies.⁶ This can also lead to a weakened immune system.

The thymus gland⁽¹⁾, which produces the T lymphocytes that mediate the cellular immune system and help to regulate antibody formation, tends to diminish in activity with aging, especially with a low vitality diet, living under stress, and possible emotional factors, such as loss of friends and relatives, anxieties of aging and loneliness, and depression, thus leading to problems of weakened resistance, infections, and sometimes cancer.

‘Anorexia of aging’, leading to nutritional deficiencies, is a common syndrome in the elderly people and may be either caused by or result in loss of functions and accelerated aging. The results of studies in animals suggest that aging is associated with a decrease in the opioid feeding drive and an increase in the satiating effect of cholecystokinin. Unrecognized depression is a common, treatable cause of anorexia and weight loss in elderly persons. Early detection of malnutrition and intervention with supplements or an adequate diet should stop the negative health spiral.⁷

Eighty percent of older adults have at least one chronic disease. Most conditions could be improved with nutritional intervention.⁸

Aging (and related diseases) may be described as a process which results from impaired immunological, genetic, neurological or endocrinological functions. Older individuals often have multiple nutrient deficiencies because of physiological, social and economic factors. Oxidative mechanisms may play an important role in the aging process. Aging is often associated with dysregulation of immune response even among the healthy elderly. It is important, therefore, to emphasise the relationship between health and nutrition in the elderly, particularly with regard to antioxidant micronutrient requirements. Indeed, accelerated aging may be related to a deficit in the intakes of antioxidant vitamins (tocopherols, carotenoids and vitamin C) and trace elements (Zn and Se), as well as to an impaired adaptative mechanism against oxidative stress. A combined supplementation, including Zn, Se, vitamins C and E and carotenoids, could be the best way to prevent accelerated ageing and reduce the risk of several common age-related disease⁹.

Nutrient supplementation is often accompanied by an improvement in immune function particularly in those who are nutrient-deficient.¹⁰ Elderly individuals have a higher risk of developing trace element deficiencies due to modified dietary habits and requirements, age related physiological changes, drug therapy, and chronic diseases leading to or associated with enhanced consumption or excretion of trace elements.¹² Alterations in the macronutrient and micronutrient constituent of the diet can modulate gene expression. Selenium deficiency appears to be associated with an increased prevalence of cancer¹³.

These findings have considerable fundamental, clinical and public health significance.¹¹

Common Deficiencies in the Elderly

Calories	Potassium	Vitamin B1
Protein	Zinc	Vitamin B2
Fiber	Chromium	Vitamin B6
Fluids	Iron	Vitamin B12
Calcium	Copper	Folic acid
Magnesium	Vitamin A	Vitamin C

Many elderly people do not obtain enough calories. Protein is also needed for tissue building, especially in elderly people where there is difficulty in absorption.

Fibre is very important to colon health and function. It reduces the incidence of colon cancer and other types of cancer, as well as pulling some chemical toxins from the body. Fresh fiber foods, include vegetables and whole grains. Extra bran (insoluble fibre) or psyllium (soluble fibre) will help bowel function when natural-fibre foods are not eaten in sufficient quantities. Constipation, a common problem in the elderly, can be treated with adequate fiber and water.

Fluid intake by older people may also be low. It is important for waste elimination and reducing toxicity and prevents dehydration.

A number of common vitamin and mineral deficiencies occur in the elderly,. Vitamin A deficiency can lead to poor vision, dry skin, and weakened immunity.

Inadequate thiamine and riboflavin (B1 and B2 because of low intake of whole grains), may affect the skin and energy level. Pyridoxine (B6) is often low, especially with eating refined flour products. Folic acid and vitamin B12 are important for building blood cells and for well being. Supplemental B12, through weekly injections, is often helpful for enhancing energy levels in the elderly. Low Vitamin C intake, because of lack of fruits and fresh and raw vegetables, may lead to poor tissue health, healing abilities, and disease resistance.

Calcium deficiency is more common in women than in

men.

Decreased absorption and limitations in the diet may affect the levels of most of the minerals as well. Iron may be low, but fortunately there is less need for it in the elderly.

Low immune function due to zinc deficiency is frequently a factor in infections, cancer, and cardiovascular problems.

Many medicines may interfere with mineral absorption and function.

Antibiotics can reduce colon flora, a source for the production of B vitamins and vitamin K. They can also lead to candida, which creates severe systemic disturbance in the elderly. High intakes of sugar create swings of production of cortisol and insulin which in the elderly can lead to confusion. Low glycaemic foods are required.

Fluid intake should be enough to produce three to four pints of urine a day. More water, herbal teas, juices, and soups, as well as fresh fruits and vegetables (all water-content foods) will help.

Important Factors to Good Health for the Elderly

- Regular meals
- Low-fat- high-fiber diet
- Exercise -Nutritional supplements

Foot note 1

The quality of an individual's immune system can be evaluated through the balance of cytokines it is producing. This increasingly popular classification method is referred to as the Th1/Th2 balance. Th1 cells promote cell-mediated immunity while Th2 cells induce humoral immunity Chronic fatigue is a symptom of TH2 imbalance and TH2 Dominance leads to cancer There are many natural agents available to help restore balance in an underactive Th1 arm.

These include Omega-3 fatty acids, monounsaturated fats found in olive and hazelnut oils, vitamin A cod liver oil, l-Glutamine, digestive enzymes, friendly intestinal flora ginseng (Red Korean or concentrated Siberian Ginseng extract), chlorella (spirulina and some other sea vegetables may have similar benefits), thyroid hormones, garlic (raw or aged extract), l-Glutathione etc

This facet of the immune response originates from the Thymus Gland and it is known that the Thymus shrinks markedly with age

Footnote 2

“ Prostaglandins are the best known and most studied member of the eicosanoid family. Synthesised from fatty acids, eicosanoids are powerful, short-range, short-lived cellular hormones that have a very direct role in controlling our physiological function. This is where the

balance of omega-3 and omega-6 fatty acids becomes crucial, as well as hormones such as insulin, Cortisol, glucagon and estrogens. Cortisol blocks the production of all prostaglandins, good and bad, radically decreasing inflammation. But this comes at a severe price if the action of cortisol continues unopposed. Insulin promotes the production of inflammatory eicosanoids through its activation of delta-5-desaturase, the enzyme that initiates the production of arachidonic acid, the substrate for inflammatory prostaglandins and other “bad” eicosanoids. Glucagon, the thyroid hormone triiodothyronine (T3), and estrogens decrease the activity of delta-5-desaturase, and thus lower the production of arachidonic acid and ultimately of inflammatory eicosanoids. Marine-fish oils are rich in long chain omega 3 polyunsaturated fatty acids. The increase omega 6/omega 3 ratio in western diets most likely contributes to an increased incidence of cardiovascular disease and inflammatory disorders. In western diets omega 6 fatty acids are the predominant polyunsaturated fats.

APPENDIX

Nutrition Health and Wellness in the Elderly

There are three legs to health and Wellness

1. Nutrition is a key determinant of health
2. Mastery of mind or life, and Release of stress
3. Support from family, relationships, friends and community

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