



Breakspear Medical Bulletin

Breakspear Medical Group Ltd, Issue 18

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Notes on Lyme disease (borreliosis)

Dr Terence Daymond

Lyme disease takes its name from Old Lyme, Connecticut, USA, where an outbreak of arthritis in members of families in the town and neighbouring Lyme and East Haddam occurred in the early 1970s. An investigation suggesting that this was caused by an infective agent carried by ticks *Ixodes dammini* was later confirmed with the isolation of *Borrelia burgdorferi* as the causative agent.

Some of these patients had an expanding red rash (bull's-eye rash) and this had earlier been described in Europe in association with tick bites from the sheep tick (*Ixodes ricinus*).

Lyme disease is a bacterial infection caused by *Borrelia* organisms. It is carried in the tick, and gives rise to a constellation of symptoms (see table on page 11). The bacterium is a coiled spirochaete which exists in various forms within the body, leading to difficulty with detection and treatment. In addition, no two patients are exactly the same and each patient needs to be treated according to their own particular problems.

Erythema migrans appears in the early stages and may occur

(Continued on page 11)



Breakspear Medical Group is expanding

Construction is underway to transform the former tyre centre, which is located across the road from the current Breakspear site, to accommodate an expanding Breakspear Medical Group.

Work commenced this summer to acquire council approvals, clear the landscape, and redecorate the interior, including

planning the layout of the office space.

The site will provide more staff parking, much needed storage space and additional administration offices.

This project will not interrupt services at Breakspear Hospital and is expected to be completed by December this year.

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On the market: new way of testing iodine levels

It is important to evaluate the body's iodine content. Iodine is an essential element required for normal function of the thyroid gland, immune system, and the integrity of thyroid and breast tissue. Specific tissues in the body require adequate iodine and the reduced form of the element, iodide, for normal metabolism and optimal health.

Doctor's Data Inc offers patients and practitioners a new way to give comprehensive assessment of iodine sufficiency and antagonistic halides (bromide and fluoride, which act negatively against iodide) in a single investigation, the Urine Iodide; Pre and Post Loading Test.

Over the past 30 years, the average person's diet has included significantly decreased iodine/iodide and consequently clinical symptoms have become apparent. Below optimal levels of iodine are related to both insufficient intake of this essential element and excessive intake of highly antagonistic halides, such as bromide and fluoride.

Adequate iodide uptake and organification of iodine by the thyroid gland are required for the production, storage and release of thyroid

hormones. The essential thyroid hormone, triiodothyronine (T_3), regulates metabolism by affecting energy production and neuronal (cells in the nervous system that process and transmit information) and sexual development. Iodine insufficiency is associated with sub-clinical thyroid

deficiency, weight gain, loss of energy, goitre (enlarged thyroid gland) and impaired mental function.

Iodine is also concentrated in breast tissue where it helps to slow down or stop undesirable cell generation, therefore

offering protection against fibrocystic breast disease and cancer. Iodine and organic iodine compounds are also concentrated and secreted by the gastric mucosa, salivary glands and the cervix.

In addition to the reduced intake of iodide, excessive intake and retention of the antagonistic halides bromide and fluoride can cause accumulation in tissues, displace iodine and compromise the production of thyroid hormones and the integrity of the thyroid and mammary glands. Bromide and fluoride are non-essential, toxic halides that avidly compete with iodide for the sodium/iodide transporters.

Antagonistic bromide is abundant in commercially produced baked goods, soft drinks, pesticides, brominated chemicals and some medications.

Primary sources of fluoride include fluoridated water, beverages, toothpaste, mouthwashes and some medications

The Urine Iodide; Pre and Post Loading Test provides a comprehensive assessment of iodine sufficiency and retention of antagonistic halides in an easy-to-use test. The test requires taking a urine sample before and after a dose of oral iodide. The specific halides are analysed in the urine using the most accurate methodology available for each element.

Patients interested in completing this test may contact Breakspear Pathology directly for the test kit and instructions; however, it is recommended that the results are discussed in a consultation with one of our doctors or your registered practitioner.



Iodised table salt is the chief source of iodine in the Western diet. Seaweed, which includes brown algae (kelp), red algae (nori sheets, with sushi), and green algae (chlorella), is a good natural dietary source of iodine. Iodine supplements are also available.

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Breakspear Medical Bulletin is a private publication that we aim to produce quarterly. It is for the promotion of environmental medicine awareness and Breakspear Medical Group Ltd. This newsletter is not intended as advice on specific cases but as a forum of information researched and stored at Breakspear. We urge readers to discuss the articles in this bulletin with their health-care practitioners. Unauthorised reproduction of this newsletter, or quotation except for comment or review, is illegal and punishable by law.

Ask Dr Daymond

What causes pins and needles in my hand?

Pins and needles are caused by irritation of nerves. Pressure on a nerve can give rise to pins and

needles in the distribution of nerves at the point of attachment of the limb.

A common example is hitting the elbow (funny bone), when you get a sudden pain and pins and needles going down the arm, along the course of the ulnar nerve, which is the largest unprotected nerve, to the little finger.

Fortunately it does not take long for the sensation to fade away.

Pressure on the median nerve, which is a nerve that runs down the upper arm and forearm, causes pins and needles in the distribution of the nerves in the hand, namely in the thumb, index, middle and half of the ring finger. Long-term pressure can cause symptoms of numbness, pins and needles and weakness and wasting of the muscles at the base of the thumb, which is called the thenar eminence.

Pressure on the median nerve occurs as it passes through the carpal tunnel which is formed by a fibrous band on the outside, and the wrist joint on the inside. The nerve passes through with the tendons to the fingers. Any swelling of this area leads to pressure on the nerve and symptoms will develop as a result. This is called carpal tunnel syndrome.

Pins and needles may be aggravated by certain activities, such as driving a car, holding the hand in one position for a period of time or computer work. Other consequences of carpal tunnel syndrome are: difficulty opening a jar or doing up small buttons, due to loss of feeling. Symptoms are worse at night and may frequently interrupt sleep.

Carpal tunnel syndrome is associated with certain medical conditions such as hypothyroid disease (low thyroid activity), circulatory problems, arthritis

and trauma. Patients who tend to retain fluid can develop carpal tunnel syndrome and this can be a problem in the late stages of pregnancy.

Carpal tunnel syndrome may be associated with employment or occupation. Vibration is a common cause of numbness and tingling and also blanching of the fingers (known as "white finger"), but this may also give rise to carpal tunnel syndrome. Repetitive activities such as typing or any such form of work, like using a sewing machine, can give rise to problems associated with carpal tunnel syndrome. This syndrome is common in middle-aged and menopausal women. It is, therefore, important to see whether

these factors are the cause of the problem or whether there is a distinct employment-related activity causing it, which tends to occur in younger women.

The diagnosis of carpal tunnel syndrome is made from clinical findings and history. Loss of sensation to light touch and pinprick involving the digits is a common symptom and so also is weakness of the thumb.

A definitive test is a nerve conduction study. This is performed by electrical stimulation and measuring the time it takes for the electrical impulse to travel from the stimulation to the recording site. Visualisation of the nerve with ultrasound can also identify whether there is nerve compression.

Management includes trying to relieve pressure on the nerve. Wearing a splint at night can be very effective. A local steroid injection into the carpal tunnel can help relieve the symptoms. (At Breakspear Hospital, Dr Mark Westaway has helped many patients, using an American osteopathy technique.) In severe cases definitive treatment is surgical release of the nerve.

Pins and needles are a warning of pressure on the nerve and prolonged pressure may lead to nerve damage. If symptoms are persistent, you should see your doctor about assessment and treatment.



Correction

In the Summer 2008 Breakspear Bulletin Issue 17 there was an inaccurate measurement printed in the Ask Dr Monro answer about tinnitus. The statement should have read: "For example, 300 mg of aspirin may produce tinnitus in one person but the same amount may not affect another person."

Your thoughts on organic food

A number of our Bulletin readers and website visitors completed our third on-line survey which provided the results below.

64% buy organic food regularly while **36%** sometimes buy it.

91% buy more organic food today than they did 5 years ago.

100% believe that organic food is better for them.

100% of people are, or are somewhat, bothered by the idea of genetically modified foods.

Home-grown vegetables ruined by cow manure

Several residents from the village of Studham, Bedfordshire, noticed that their potatoes and legumes and various other plants grown on the allotments were misshapen. But 4 of the allotments were producing normal produce. It didn't take long for the vegetable growers to realise that the allotments suffering had been treated in the Spring with a delivery of local cow manure. What was it that made their vegetables malformed? And were they safe to eat?

A new hormone-type herbicide, called aminopyralid, is used on pastures to control weeds such as docks, thistles and nettles without affecting the grass around them.

However, it seems that many of the nation's home-grown vegetable gardens were contaminated by manure from animals fed on treated pastures, which contain chemical residues sufficient to damage susceptible crops.

Symptoms of damage include distorted foliage, cupping of leaves and fern-like growth.

Tomatoes, potatoes and legumes are particularly susceptible although ornamental plants, such as delphiniums, phlox and roses, may also be affected.

The Royal Horticultural Society's website reports, "as this weed killer can be grazed by livestock soon after application there is no reason to believe that children, pets, gardeners or wildlife are at risk." However, the Guardian newspaper, 27 June 2008, claimed, "Gardeners have been warned not to eat home-grown vegetables contaminated by a powerful new herbicide that is destroying gardens and allotments across the UK."

Dow AgroSciences, the producer of aminopyralid, posted a notice on their website for allotment holders and gardeners, acknowledging that many people have observed unusual growth patterns in a variety of crops. The notice states, "It has long been known that it is possible for low levels of product to be found in manure and that the use of such manure as a fertiliser or compost may, in some circumstances, cause damage to sensitive crops." To view the full notice, visit:

www.dowagro.com/uk/grass_bites/faq/allotment.htm.

Also on the website it is suggested that one should always read the label advice and safety instructions when using any herbicide product. However, it is understandable that many gardeners thought that they were using a safe, natural fertiliser when they used the farm animal manure. The advice the company offers is not to replant this year and to thoroughly rotavate and give the plant residues time to break down.

The Dow AgroSciences website also states, "Aminopyralid has been approved for use on certain food crops in Canada, the United States, and other countries" and they are seeking approvals for several food crops in a number of European countries in the near future.



Left: fern-like growth of the leaves of an affected potato plant in Studham. Right: normal growth on similar age plant in same village.



Those who completed our survey were asked to define "organic food".
Below are some examples of our readers' definitions.

How you define organic

Organic food is: *"grown without the use of pesticides and hormones"*

"as defined by the Soil Association."

"as nature intended"

"food prepared completely free from all man-made chemicals at seed, sowing, growth, harvesting, storage, transport and selling stages."

Report on diet and the risk of cancer

The World Cancer Research Fund (WCRF) internationally launched its second report on diet and cancer in November 2007.

The report took 6 years to produce and looked at all available research on cancer prevention. According to the WCRF website:

An initial 500,000 studies were screened down to 22,000, and then it was decided that 7,000 of these studies met the rigorous standards for inclusion in the report. This literature review process was done by 9 independent universities, which then presented the information to a panel of 21 world-renowned experts who reviewed the comprehensive collection of evidence and drew conclusions and made recommendations.

The report concluded that obesity increased the risk of cancer of the oesophagus, colorectum, pancreas, breast, endometrium, and kidney. The report's public health goal is for the median body mass index of the populations to be between 21 and 23. Currently the mean body mass of adults in the UK is 27.

The report concluded that alcohol increases the risk for cancers of the mouth, pharynx, larynx, oesophagus, colorectum, and breast as well as causing cirrhosis, which predisposes to liver cancer. The WCRF recommendations of less than 2 units per day for men and 1 unit for women are much lower than the current UK government advice, which is up to 3-4 units per day for men and 2-3 for women.

WCRF UK has developed 10 recommendations based on the conclusions of the expert report panel that certain foods and lifestyle choices affect the development of cancer.

WCRF UK's recommendations for cancer prevention

1. Be as lean as possible without becoming underweight
2. Be physically active for at least 30 minutes every day
3. Avoid sugary drinks. Limit consumption of energy-dense foods (particularly processed foods high in added sugar, or low in fibre, or high in fat)
4. Eat more of a variety of vegetables, fruits, wholegrains and pulses such as beans
5. Limit consumption of red meats (such as beef, pork and lamb) and avoid processed meats
6. If consumed at all, limit alcoholic drinks to 2 for men and 1 for women a day
7. Limit consumption of salty foods and food processed with salt (sodium)
8. Don't use supplements to protect against cancer
9. It's best for mothers to breastfeed exclusively for up to 6 months and then add other liquids and foods
10. After treatment, cancer survivors should follow the recommendations for cancer prevention



Notes on chickenpox and shingles

Chickenpox is most common in children who are between 2-8 years of age, although one can develop chickenpox at any age. Once a person has had chickenpox, it is very rare to catch it for a second time because the body develops immunity to the chickenpox virus, which stops it from becoming re-infected.

Chicken pox and shingles are caused by the varicella-zoster virus.



spinal cord. Generally it is more common in older people and in people with conditions where the immune system is poor such as HIV/AIDS, after chemotherapy and/or radiotherapy, and in those taking high-dose steroids or low-dose steroids in combination with other medicines. Any kind of emotional and mental stress also plays a huge role in provoking an attack of shingles, as stress suppresses the immune system.

Chickenpox is a mild but highly contagious illness caused by the varicella-zoster virus and spreads in tiny droplets of saliva and nasal mucus, by sneezes and coughs from an infected person. A person is infectious from about 2 days before the rash appears until roughly 5 days after when the blisters have fully crusted over, which is usually 5-7 days after the first blister appears. After the last blister has burst and crusted over, one is no longer infectious.

To prevent chickenpox, Breakspear Hospital offers a vaccine for children aged 9 months or older, adolescents and adults. The mercury-free vaccine is called Varilrix® (GlaxoSmithKline) and it works by causing the body to produce its own protection (antibodies) against this disease.

By the time most people reach adulthood, they have had a bout of chickenpox.

The most common late complication of chickenpox is shingles. If a person has had chickenpox, there is about a 1 in 5 chance that he or she will develop shingles sometime in their life. Approximately 1 in 50 people has shingles 2 or more times in their life.

Shingles is an infection caused by the same virus that causes chickenpox, therefore anyone who has had chickenpox in the past may develop shingles. Shingles itself is not contagious; however, people who have not had chickenpox may catch chickenpox from someone with shingles through direct contact with the blisters of shingles.

After a person has recovered from chickenpox, although the symptoms go away, virus particles remain dormant in the nerve roots, next to the

Symptoms of shingles include:

- a localised band of pain which may be constant dull, burning, or gnawing pain
- a rash which appears shortly after the pain begins, which starts as red blotches and can develop into itchy blisters, which may scar
- fatigue and weakness

A variety of complications may occur, including persistent nerve pain, skin infection, eye problems and muscle weakness. Severe pains may persist for months afterwards.

Generally it is recommended that people suffering from shingles:

- wear loose-fitting cotton clothes to reduce irritation
- ease the pain by cooling the area with ice, wet dressings or a cool bath
- take pain relievers such as paracetamol, or paracetamol with codeine, for some relief, if needed
- may be prescribed antiviral medicines to stop the virus from multiplying (although antivirals are most effective when prescribed early on during the onset of shingles and are not very effective after several days into the condition appearing)

Most of the commonly used treatments are addressing the symptoms to help the patient deal with the pain.

New thoughts on how a salty diet leads to fatter children



1 in 5 children in the UK is overweight and there are fears that this will contribute to a rising trend in adult obesity, heart disease and stroke in years to come

fluid intake by 100 grams per day.

As it is known that in adults, a salt-laden diet tends to increase the amount of sugary soft drinks consumed, they predicted that approximately a quarter of those 100 grams per day of children's fluid intake would be sugary soft drinks.

According to an article on BBC News, British researchers at St George's, University of London, analysed the National Diet and Nutrition Survey records of 1600 children between the ages of 4 to 18 in 1997.

They found that children eating a salty diet tended to drink more, including more fattening, sugary soft drinks.

The researchers found that children eating a lower-salt diet drank less fluid and estimated that 1 gram of salt cut from a daily diet would reduce

The researchers estimated that if children cut their salt intake by half, which is an average reduction of 3 grams a day, there would be a decrease of approximately 2 sugar-sweetened soft drinks per week per child.

That, in turn, would decrease each child's calorie intake by almost 250 calories per week.

The researchers urged parents to check the salt content of their children's meals and manufacturers to find ways to reduce children's salt intake.

Along with addressing the patients' symptoms and providing relief with a variety of medications and treatments, at Breakspear Hospital we also work to boost the immune system to help the body fight the virus.

As the virus that causes shingles is a type of herpes virus, it can be assumed that as in the treatment of herpes simplex virus, which has a high requirement for arginine and which is inhibited by lysine, a diet low in arginine and supplemented with lysine may help prevent shingles from replicating.

Lifestyle factors such as stress and depression have also been linked to shingles in various studies. Adjustments to diet and nutritional supplements help the body to reduce physical stressors.

Using low-dose immunotherapy will also help to alleviate stressors on the immune system. A paper by Joseph B Miller MD, "Treatment of active herpes virus infections with influenza virus vaccine", states "Results indicate that the discomforts of influenza and herpes virus infections usually disappear within 30 minutes after injection of the vaccine. The relief occurs during testing and repeated subcutaneous injections produce rapid healing."

There have been studies which conclude that nutritional supplements, such as adenosine monophosphate, vitamin E, ascorbic acid, together with amino acid L-lysine and injections of vitamin B12, may be helpful. Studies have shown that vitamin B12 has an analgesic effect in patients with a variety of very painful conditions; thiamine has also seemed to have an analgesic effect in open trials. High doses of vitamin C are helpful to relieve the pain of shingles and to speed healing. Vitamin C may be given as a supplement or intravenously (IV).

There are also botanical treatment options. For example, the hot component of cayenne pepper (capsaicin) has been used to relieve the pain caused by postherpetic neuralgia. Double-blind studies using concentrations of capsaicin of 0.075% and less have shown it to be beneficial.

If you wish to receive a chickenpox vaccination, contact our Immunisation Department 01442 867 280. If you are suffering from shingles, telephone 01442 261 333 ext. 300 and make an appointment for a consultation with a Breakspear doctor to find out which treatment programme may be best for you to recover from shingles and to keep it from recurring.



Did you know...?



Sleep apnoea increases risk of death

As reported in the Breakspear Medical Bulletin Issue 16, abnormal breathing during sleep is often due to

obstructive sleep apnoea. With this condition, the airways can be partially or completely blocked which causes the person to wake up and take a gasping breath. This can also happen when the airway muscles relax with sleep.

According to MedPage Today, a long-running American study revealed that disordered breathing in sleep causes significant increase in risk of death from any cause compared to a normal sleep pattern. The study concluded that people with severe sleep-disordered breathing had a mortality rate of 14.6 per 1,000 person-years, compared with 2.85 for those whose sleep breathing was normal.

One implication of the analysis is that continuous positive airway pressure may reduce the risk of death in people with severe sleep apnoea.

Bedridden UK teenager diagnosed with Lyme disease

Earlier this year several newspapers and news programmes covered the story of Danielle Fisher, a 13 year-old girl from Greater Manchester, who was suffering from viral meningitis-like symptoms, including severe headaches and fatigue, and whose condition, over the course of a few months, worsened as her eyes became ultra-sensitive to light and she began suffering from vertigo and shortness of breath. She spent 3 months in and out of hospital and eventually was bedridden because of the pain.

Fortunately for Danielle, her mother began researching on the Internet and found Lyme disease (medical term: borreliosis), which seemed to fit her daughter's symptoms. She took her daughter to see Dr Terrence Daymond privately and the diagnosis was confirmed. Treatment with antibiotics is now underway and it is hoped that she will make a full recovery.

For more information on Lyme disease and the treatment of it, visit our website:

www.breakspearmedical.com/files/lyme-disease.html

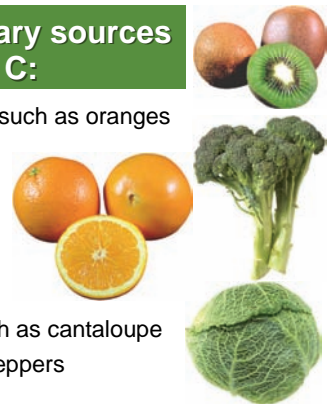
Vitamin C intake linked to lower risk for type 2 diabetes

Higher plasma vitamin C level and, to a lesser degree, fruit and vegetable intake, are associated with a decreased risk for type 2 diabetes, according to the results of a population-based, cohort study reported in the July 28 issue of the Archives of Internal Medicine.

The study authors write, "Our findings highlight a potentially important public health message on the benefits of a diet rich in fruit and vegetables for the prevention of diabetes."

Good dietary sources of vitamin C:

- citrus fruits, such as oranges
- strawberries
- tomatoes
- cabbage
- broccoli
- kiwi fruit
- melons, such as cantaloupe
- sweet red peppers



Immunonutrition gives a 90% regression rate in HPV infection

An article in CAM magazine May 2008, examined a study by two doctors at the Cervical Pathology Unit of the Portuguese Institute of Oncology and concluded that while the study sample was limited in number, the clinical results strongly suggest that *Coriolus versicolor* (mushroom) supplementation offers doctors a nutritional tool in the treatment of human papilloma virus (HPV).

The supplement was effective in both aiding regression of the dysplasia and in the disappearance of high-risk sub-types of HPV.

Raw versus cooked: the nutritional debate

Ron Leon

Look in the health section of any good bookshop and you will find no shortage of books advocating a 100% raw food diet. In fact, even some nutritionists recommend it.

Undoubtedly, there are benefits of eating raw foods, as these foods are generally high in nutrients, and since they are not cooked, save on preparation time. Nonetheless, are there advantages in eating an all raw diet to the exclusion of all cooked foods? The answer is a resounding 'no'. Eating an exclusively all raw food diet has numerous disadvantages, one of which is narrowed nutrient diversity.

Some proponents of raw food diets cite the many studies that have found cooking vegetables decreases the water-soluble and heat-sensitive nutrients, such as vitamin C and vitamin B₁ (thiamine).

The vitamin C loss during cooking was investigated as far back as 1937. In that year a study examined the vitamin C content in two varieties of Swiss chard and found it decreased by 42% after cooking the vegetables for only 2 minutes.

In 1990 a Japanese study found that the loss of thiamine in cooked food was the largest in boiling, followed by baking and frying.

Another study presented in 1990 found that when Brussels sprouts and kale were microwaved, the vegetables lost 19% to 57% of their xanthophylls, a particular group of carotenoids with antioxidant activity.

On the other hand, in 1999 researchers at the Institute of Food Research in Norwich found that the absorption of the carotenoid that gives carrots their bright orange colour (beta-carotene), increased from about 3-4% in raw carrots to about 15-20% when cooked. One of the difficulties with absorbing carotenoids from carrots is breaking down the cellulose, which comprises the tough outer shell of the carrot. Cooking carrots helps to break down the cellulose (as humans lack the enzymes to digest cellulose), making the beta-carotene more easily absorbed.



In another study in 2002, scientists found that heating tomatoes resulted in a significant increase in the carotenoid lycopene, and also in the total antioxidant activity, even though a decrease in vitamin C was observed.

In addition to the enhanced bioavailability of certain carotenoid compounds when cooked foods are eaten, there are other benefits. Many foods cannot be consumed raw, which narrows the variety of foods consumed and the diversity of nutrients obtainable. Legumes and certain tubers (e.g. potatoes) contain enzyme inhibitors, which reduce the effectiveness of some of the body's pancreatic enzyme production.

When foods containing these enzyme inhibitors are eaten raw, it can lead to pancreatic enlargement in humans and cancer in animals. However, cooking is not the only way to enhance the digestibility of these foods. Germinating legumes (e.g. lentils, beans) to produce sprouts is one good way of inactivating these enzyme inhibitors, and this has the added benefit of reducing phytic acid, a mineral chelator, known to bind certain minerals (e.g. zinc) and thus prevent absorption.

It is too simplistic to say that raw foods are superior to cooked foods or vice versa, especially since the absorption of one compound may be improved by cooking, whereas another may be decreased.

The diet needs to be examined in its entirety, looking carefully at factors that include:

- age of the individual
- health status
- dietary preferences
- food availability
- financial constraints
- time allocated to food preparation

Taking these considerations into account and tailoring the diet to meet the needs of the individual are imperative in achieving optimal health.



Nutritional term explained: amino acids

Amino acids are the building blocks of proteins.

There are 20 amino acids, which, when combined in various combinations, are synthesised into numerous proteins. It is the structure of a protein that determines its function in the body.

At its most basic level the amino acid tryptophan is used as the starting point for serotonin synthesis, whilst the amino acids glutamate, cysteine and glycine can link together to form glutathione, which is not technically a protein, but a tripeptide. Glutathione is found in most cells of the body, and serves numerous functions including, scavenging free radicals, leukotriene synthesis, which is a prostaglandin (messenger molecule formed from fatty acids) involved in inflammation, and ascorbic acid (vitamin C) metabolism.

Scientists have traditionally placed amino acids into 2 main categories: essential and non-essential. Most people are able to synthesise 12 of the 20 amino acids provided that their diet contains the element nitrogen, which is a component of amino acids. The other 8 amino acids must be obtained from the diet, hence the term essential. These 8 amino acids are: leucine, lysine, isoleucine, tryptophan, phenylalanine, threonine, valine and methionine. Animal products typically contain all the essential amino acids in high quantities forming a 'complete'

Examples of proteins which are complex amino acid structures with different functions include:

- haemoglobin, which transports oxygen in the blood
- antibodies that interact with antigens to protect the body against infection
- collagen, the protein that provides strength for many body structures
- insulin, which is a hormone that helps regulate blood sugar levels
- enzymes, such as those that participate in digestion.

Vegans have even more difficulty than vegetarians in satisfying their protein requirements, as they are reliant on nuts, seeds, legumes and grains for their protein sources.

However, the combining of a legume with a grain will produce a 'complete' protein. If both are eaten at the same meal, the proportions of lysine and methionine will then complement each other. Synthesis of proteins in the liver is impaired if the essential amino acid tryptophan is not consumed at the same meal as the other amino acids.

If you are concerned about getting sufficient quantities of amino acids in your diet, then

please do not hesitate to consult our nutritionist, Ron Leon, who can advise you. Breakspear Pharmacy also stocks numerous high quality supplements (e.g. whey protein) that may be used to augment the diet.

The estimated protein requirements for sedentary individuals to elite athletes are as follows:

Population	Protein requirement g/kg of body weight per day
Sedentary males and females	0.80 – 1.0
Elite male endurance athletes	1.6
Moderate-intensity endurance athletes ¹	1.2
Recreational endurance athletes ²	0.80 – 1.0
Resistance training athletes	1.0 – 1.2
Female athletes	~ 15% lower than male athletes

¹ exercising approximately 4-5 times/week for 45-60 minutes

² exercising 4-5 times/week for 30 minutes

Notes on Lyme disease (borreliosis)

(Continued from page 1)

approximately 8 to 9 days after the tick bite. It begins as a red, circular, macular lesion and expands in size, giving the appearance of a bull's-eye. The skin may be red to purple and the site of the rash may vary. It usually occurs by the tick bite, but may also appear in other parts of the body.

The rash may also occur later on during treatment, as antibody titres rise, but may not occur at all – it appears in about 50% of patients.

Sometimes patients begin to feel ill at about the time of the rash with muscle aches and pains, fatigue and fever, but this may occur 2 to 3 weeks afterwards. It is important to recognise the rash, as early treatment may lead to an effective cure.

Ticks have a 2-year cycle, going from egg to larva, to nymph and then to tick. At each stage the tick has a blood feed and then passes on to the next stage. Larvae and nymph usually feed on small animals, such as mice, but ticks tend to feed on large animals, particularly deer or sheep, where they may mate, fall off, lay eggs and then die. *Borrelia* does not appear to harm the tick or the secondary host (such as the rodents or deer). It can, of course, also infect dogs and cats, as well as human beings. It has to be appreciated that the *Borrelia* organism is able to live in the tick at a temperature of 20°C and then change to live in warm-blooded animals, including man, at a temperature of 35°C, and different markers may appear on its surface during the course of this time.

Most ticks can be found in woodland walks and countryside where animals are grazing. It is obviously important to wear protection whilst out rambling and climbing in tick-infected areas. Light clothing which covers the body, making sure socks are tucked into trousers, and frequent vigilance, are required. Further information on how to avoid ticks and the removal of ticks can be obtained from suitable websites, such as www.BADA-UK.org.

The second stage of Lyme disease occurs approximately 2 to 3 weeks after the rash or up to 4 weeks after the tick bite. This includes a general feeling of being unwell, fevers and very marked non-specific symptoms. At this time, neurological and cardiac symptoms may occur. The commonest cardiac problem is reported as being mild heart block. Neurological symptoms include nerve palsy, such as Bell's palsy (which is quite common), radicular pain, headaches, meningeal symptoms and occasional eye problems.

Late-stage problems occur with skin changes of red and purple patches called acrodermatitis chronica atrophicans, prolonged neurological problems, and arthritis, which usually involves swelling of the large joints such as the knee.

Testing for Lyme disease includes looking for antibodies to the organism. Normally bacteria are isolated and grown, but this is very difficult with *Borrelia* and,

therefore, the only test available is searching for antibodies. In the early stages these are negative and very often they are negative throughout the course of the disease depending upon the state of the antibody response, the type of test being performed and the material used.

At Breakspear Hospital, we use American laboratories which have a much greater knowledge of Lyme disease. In particular we look for *Borrelia* which is commonly found in Europe. Breakspear Hospital has expertise in managing this disease and managing co-infections, which can occur and need to be isolated, particularly *Babesia*, *Bartonella* and *Ehrlichia*.

In addition to antibiotics, often immune support is required and certainly prophylactic probiotics are required during the treatment to prevent gastric side effects.

Lyme disease is an increasing problem and appears to be spreading. Late Lyme will require long and repetitive courses of antibiotics, but we have found this treatment is of benefit to patients and can help improve their lives considerably, despite a long illness having occurred.

Symptoms of Lyme disease:

- musculoskeletal symptoms of joint and muscle pains, muscle twitching
- neurological symptoms of headaches, Bell's palsy, generalised limb pains, hot and cold sweats
- reduction of mental capabilities, memory loss, confusion, 'brain fog', cognitive disturbances
- dietary problems with diarrhoea, constipation
- respiratory problems including shortness of breath
- general lack of well-being with experiences of flu-like illness

Tell us your thoughts on GM foods

In August 2008, the media covered Prince Charles's launch of a new debate with an attack on GM (genetically modified) foods. The prince stated '**if they are the future, count me out**'. In response to our last reader survey, 100% of the respondents said they were, or were somewhat, bothered by the idea of GM foods.

Take our on-line survey today and let us know more about your thoughts on the production and consumption of GM foods!

www.breakspearmedical.com/survey

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Breakspear Pharmacy is pleased to offer our doctor-recommended top 8 nutritional supplements for adult protection at the onset of common infections.

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Write a letter: Breakspear Pharmacy, Hertfordshire House, Wood Lane, Hemel Hempstead, Hertfordshire HP2 4FD, United Kingdom. Please write a note which includes your Visa or Mastercard card details. (*We do not accept American Express.*)

Or come and visit us! It would be appreciated if you could give the Pharmacy Department 48 hours' notice of your requirements for a repeat order and check when your order will be ready for collection.

All prices are inclusive of VAT, where applicable.

There will be an additional charge for postage and packaging. Stock items will be dispatched within 48 hours of the order being processed.

Breakspear Hospital reserves the right to alter prices without notice.

Bulletin Board

International shortage of separate mumps vaccines



Breakspear Hospital maintains an uninterrupted supply of separate rubella and measles vaccines. However, currently there is an international shortage of the separate mumps vaccines. This is due to the American manufacturer, Merck, halting production of the mumps vaccine until early 2009. Because of this suspended production, we are unable to offer the mumps vaccination until production resumes.

Breakspear Hospital provides only mercury-free required childhood and travel vaccinations, for tetanus, diphtheria & polio, pneumococcal meningitis, tuberculosis and chicken pox. For more information about our Immunisation Department, visit our website: www.breakspearmedical.com/files/travel.html

Latest news on Lyme disease

There is a free American newsletter, Public Health Alert (PHA), which is dedicated to researching and investigating Lyme disease, other chronic illnesses, such as chronic fatigue syndrome (CFS), and various other illnesses of unknown origins.

To read more about the newsletter, visit: www.publichealthalert.org.

Public Health Alert

—waking up the nation one reader at a time

Reduce your carbon footprint and help Breakspear Hospital Trust

If you sign up for email receipt of the Breakspear Bulletin, Breakspear Medical Group will donate £2 to Breakspear Hospital Trust. All you have to do is send your full name, current mailing address, and email address to Ljenkins@breakspearmedical.com with the subject heading: "Save the environment and donate to Breakspear Hospital Trust."