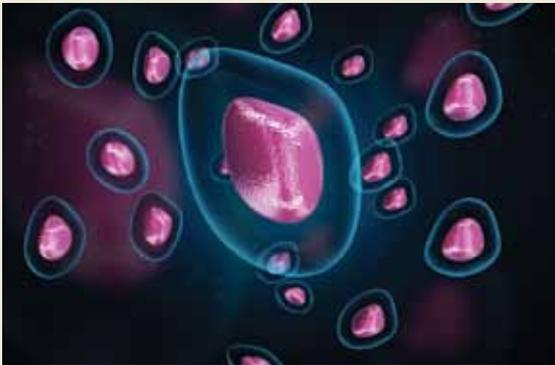
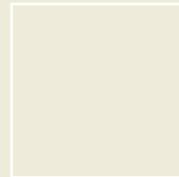


ACNEM JOURNAL

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THE JOURNAL OF THE AUSTRALASIAN COLLEGE OF
NUTRITIONAL AND ENVIRONMENTAL MEDICINE



THE HUMAN ENERGY FIELD

BIOCHEMICAL INDIVIDUALITY;
ASSESSMENT OF THE CHRONIC
REFRACTORY (OR COMPLEX) PATIENT

SPECTRAL CONTENT OF ARTIFICIAL
LIGHTING AND EFFECTS ON HEALTH

MOBILE PHONE RADIATION – IS IT SAFE?

RADIATION AND HEALTH



"Nutrition is not 'alternative' and not 'complementary'. It is a basic requirement of health and central to good medicine." Prof Ian Brighthope

INTEGRATING NUTRITIONAL & ENVIRONMENTAL MEDICINE INTO CLINICAL PRACTICE

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CONTENTS

From the CEO	2
The Human Energy Field Judy Jacka	3
Biochemical Individuality; Assessment of the Chronic Refractory (or Complex) Patient Joanna Harnett	8
Spectral Content of Artificial Lighting and Effects on Health Kristen E. Benke, Kurt K. Benke & Christina Dimitriadis	13
Mobile Phone Radiation – is it Safe? Lyn McLean	16
Radiation and Health Sergio Manzetti & Olle Johansson	19
1st International Conference on the Science of Nutrition in Medicine & Healthcare	20
Letters to the Editor	23
In The News Shirley Schurmann	24
Featured Books	26
Member Profile	27
Your College	28
Training Calendar	29

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FROM THE CEO

Stephen Penman, M App Sc (R), GC (Tert Teach Learn)

ANNOUNCING THE ACNEM BOARD FOR 2012

The AGM held at the Oaks on Collins in Melbourne on 25 November was very well attended with record nominations for Board positions. Following the election and further appointments at the Board meeting on 12 December, I am pleased to announce and welcome the ACNEM Board for the next 12 months:

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- Dr Matthew Shelton
- Dr Michelle Woolhouse

We are enormously grateful to our current, retiring and outgoing Board members for their dedication to the College.

ANNOUNCING THE NEW EDITOR OF THE ACNEM JOURNAL

In September 2008, I took on the role of acting Editor while we conducted the search for a new Editor for the ACNEM Journal. It has been a great honour to be entrusted with this role. Over 3 years and 11 issues later, I am delighted to announce that commencing with the first issue for 2012, Dr Oscar Serrallach has been appointed Editor of the ACNEM Journal.

You will have seen the Journal grow in stature, and now we look forward to the next stage in its development as we look to extend ACNEM's member communications through improvements to the Journal, website and email newsletters in 2012.

ANNOUNCING THE ACNEM TRAINING CALENDAR FOR 2012/2013

On the inside back cover of this Journal you will find an extensive selection of courses in NEM, both face-to-face and online, available in Auckland, Melbourne, Sydney, Perth and Adelaide, over the next 15 months, or at any time from the comfort of your home computer. The 2nd Nutrition in Medicine conference in May 2012 is also attracting considerable interest already.

ACNEM'S 30TH BIRTHDAY YEAR

2012 is going to be a big year for ACNEM. Celebrating 30 years of pioneering nutritional medicine into clinical practice, there will be a series of special events and benefits for members throughout the year, culminating with a Gala Anniversary Dinner in Melbourne in November 2012. Add to this the commencement of a 10 year strategic plan for the College, a major membership drive, new courses and qualifications, a revised Fellowship, and a new website with a members-only section, we think you will be both engaged and impressed. More on this in the next Journal.

THE ACNEM TEAM

It's not often we pause to reflect, but it is worth noting that in the last three years, the team in the ACNEM office has doubled in size, as has our workload and outreach. Our membership base is at an all-time high and we are training more doctors and other healthcare practitioners in NEM than ever before. For this, I would like to personally, and on behalf of the Board, acknowledge the hard work and commitment of the wonderful staff behind the organisation.

- Jimena Acevedo (Executive Officer)
- Michelle Bradford (Training & Events Manager)
- Ann-Mary Hromek (Education Co-ordinator)
- Kathryn Silver (Administration Officer)
- Max Wang (IT & Technical Manager)
- Sean Hubbard (Website and Graphic Design)

We look forward to bringing you closer to your College in 2012.

THE HUMAN ENERGY FIELD

Judy Jacka, B.HSc, ND, Grad.Dip.HRE

INTRODUCTION

Despite the recognition by modern medicine that electro-physical exchanges underlie most cellular activity, scant attention has been directed to the possible existence of a total or unified field or fields underlying the human organism. Such recognition might revolutionise modern medicine in the areas of causation, diagnosis and treatment of disease. This article briefly explores the work of five medical scientists. They were all bold enough to pursue investigations that indicated information for growth, disease and repair is transmitted by the total electro-magnetic field, and perhaps even by more subtle fields underlying the physical body.

When reviewing the medical research featured in this article, a major challenge relates to the different terminology used by each researcher. For instance, the Life Fields of Burr, the Etheric Formative forces of Steiner, and the Morphogenetic fields of Sheldrake all seem to carry a common theme but each is from a different perspective. The other challenge for the medical reader is the dearth of peer-reviewed research. The subjects reviewed cover a period of 60 years and most of the research does not appear to have been repeated recently.

Another difficulty is the possible confusion derived from the fact that the electromagnetic (EM) field of the body is measurable, whereas the interface or more subtle etheric field is not as yet measurable with physical instruments. William Tiller, formerly professor of material science at Stanford University, differentiated the electromagnetic field from the etheric by calling the latter the magneto-electric¹. From the various observations explored here, a useful and synthetic view is possible and this view might provide useful information to the medical practitioner and other therapists.

The concept of a human energy field in natural medicine goes back 200 years to Nature Cure therapists. They promoted the concept of a vital force that was often diminished or disturbed before physical disease takes place. Their treatments were based on promoting the life force or energy through sunbaking, good nutrition, rest and relaxation². Water treatments were used to flush out toxins plus the use of traditional herbal remedies to improve and balance energies. Modern nutritional and naturopathic medicine has developed complex approaches to the exhausted and toxic states of many clients today. Yet even amongst natural therapists there is reluctance to explore and acknowledge the human energy field, possibly from pressure to join the evidence-based camp.

Exploration of medical scientists exploring human energy fields begins with an American who began researching the subject in 1938.

HAROLD BURR & LIFE FIELDS

Between the years of 1938 and 1970, Burr published 90 papers on the Life Fields. In his professional life he was a lecturer in neuro-physiology at Yale University in the USA, but his work on the Life Fields was never fully acknowledged.

The Life Field was described by Burr as an electro-dynamic field which can be seen to vary in health and disease. The intensity of the field is measured using a vacuum-tube or digital voltmeter to measure voltage gradients (the difference in voltage between two points). Burr used silver chloride electrodes. He found the gradients to fluctuate each month to form a smooth sine wave in healthy persons with a variation between the points measured of 2 - 10 millivolts³. However, gradients varied strongly in the female mammal during ovulation, at puberty, and provided a wild electrical pattern in some patients suffering mental diseases such as schizophrenia. As one practical example resulting from Burr's discoveries - the measurements were used as an accurate guide to ovulation as the intensity of the field increases greatly at these times. This would perhaps be a cheap and quick way of helping cases of infertility or for contraception needs.



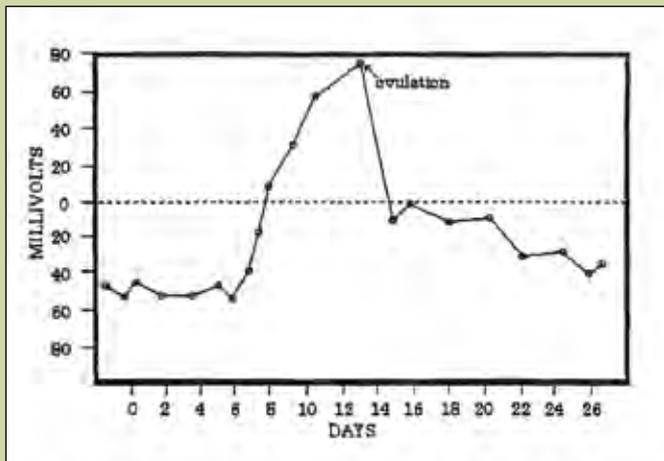
Hewlett-Packard DC Vacuum Tube Voltmeter Model 412A recommended by Dr Burr to measure electrodynamic fields.

from page 3

Implications for Diagnosis

Because measurements can be taken without the electrodes touching the skin, Burr considered he was measuring a field phenomenon and he described this field as serving as a mould for physical cells - providing the pattern for growth. He found changes in the Life Field to take place before physical disease occurs. This finding was underscored by a colleague in the area of gynaecology at Bellevue State Hospital, New York. Louis Langmans experimented with one thousand women suffering pelvic problems. Of 102 women with disturbance in their Life Field, 96 were found following biopsy to have malignant changes to the cells. A diagnostic instrument based on the research was designed and patented in Australia over two decades ago. However there was no support from the medical fraternity or investors and the shares on the stock market languished.

One of the most famous experiments conducted by Burr involved the direction for growth in electrical terms of the central nervous system in a salamander. This direction was found to be established in the egg before fertilisation and to remain unchanged throughout growth to adulthood. We could ask what implications this finding might have in the human system if a woman is exposed to EM fields that may over-ride the delicate EM field of her ovaries. Many women during pregnancy are sitting daily before computer terminals with routers discharging microwaves via wireless technology. The levels emitted are far in excess of international standards for health, designated to be below 10 microwatts per square metre⁴. Several decades later we come to the work of Robert Becker M.D. who took the work of Burr much further and who was very concerned with the effects of electrical products on humans.



The electrical rhythm of the ovulation cycle in the human female as recorded between a finger from each hand. Before and after ovulation the potentials are negative. About 5-6 days before ovulation, the potential begins to rise and increases above zero a few days before ovulation. Afterwards there is a rapid decline to below zero, at which time the body is free of a fertilizable ovum. The curve is taken from US Patent 3,924,609 Reprinted from *Energy Medicine* by James Oschman, Churchill Livingstone, 2000.

ROBERT BECKER & TRANSMISSION OF INFORMATION VIA EM BODY FIELDS

Robert Becker MD and some of his co-workers appear to have shown conclusively that the pattern for growth and development in living organisms is intimately connected to electromagnetic fields associated with the nervous system. Becker was a researcher in the Department of Orthopaedic Surgery at the State University of New York. Prior to his work, Lund and Burr had discovered that the electromagnetic field associated with the body had direct current (DC) potentials providing direction for morphogenetic and growth processes. The field is described by Becker as dipolar, i.e. a head/tail axis and is a summation of all the individual fields of all cells in the organism.

Becker repeated the experiments of Burr in the sixties and found the field to be complex rather than dipolar. He states in his book *The Body Electric* that "Evidence is quite conclusive that there are steady DC electrical currents flowing outside the neurones proper throughout the body. These are non-ionic in nature and similar to semi-conducting type currents. Peri-neural cells appear to be the most likely site at which the currents are generated and transmitted. They constitute a system for transmission of very basic data⁵."

Becker proved the relationship of this field to the nervous system through experiments in which he reversed the usual polarity through application of an external electrical current. The animal lost consciousness as the front vector on the head which is normally negative became positive. The back vector was reversed at the same time⁶.

In 1952, Beams and Marsh conducted an experiment reported in *The Body Electric* along the same lines with flatworms. These worms when cut, normally re-generate with the head on the same end as occurs naturally. By introducing an external current to reverse the usual electrical gradient, the head and tail grew in reversed positions. Becker concluded that the electrical gradient transmitted morphological information, i.e. information for growth and development.

Electrical Parameters in Limb Regeneration

In 1972, Becker achieved regeneration of the forearm of a rat by implanting negative electrodes in the amputation stump. This work was repeated by Rose in 1982 in salamanders who had been completely de-eneruated in the forearm. In other words, electrical parameters were introduced to mimic what occurs naturally in re-generating animals like the salamander.

Becker found it was the neuro-epidermal junction that was the significant factor producing the electrical potential which in turn produced a blastema from which regeneration of the limb took place. The regeneration was not resulting from the nerves or epidermis alone. The information for growth appears to be transmitted by the negative potential. The DC potential and the current at the injury site appear to give the signal for the negative polarity. The blastema caused differentiated cells to undifferentiate from which state regeneration then takes place. Becker was cited for the Nobel Prize for his work on tissue regeneration but failed to receive it.

Becker concluded that intrinsic electromagnetic energy in the nervous system is the factor that exerts the major controlling influence over growth processes in general. This appeared to be clearly demonstrated in those experiments where by varying the electrical parameters, instructions for growth were changed resulting in unusual growth, or as in the case of mammalian re-generation, in providing those instructions which enabled a healthy new limb to be developed following amputation.

Implications of Electromagnetic Interference to the Human Energy Field

The possible effects of power lines, television, hair dryers, microwave ovens, wireless internet use, smart meters, diathermy, and many other common processes and articles in our environment can now be envisaged. For if the electromagnetic field of our body is associated with the carrying of information for growth and re-growth, what happens when a stronger or different field prevails over this basic body field? This area has been extensively researched by Becker and his co-workers to show that if the normal mechanism is suppressed by outside electromagnetic interference, aberrations in cell growth can occur. In relation to this concept, the International Agency for Research on Cancer which is an arm of the World Health Organisation has declared cell phones are possibly cancer causing agents⁷.

The electromagnetic field associated with the body appears to be the direct expression of the more subtle underlying field often called the etheric pattern. The electromagnetic field provides a link between the etheric body and the nervous system. Bevan Reid, an Australian oncologist took the further step during the 1980's of examining what he saw as evidence of an etheric field in his laboratory.

BEVAN REID & ETHERIC FIELDS

Bevan Reid was a veterinary and medical scientist who held a senior position in the area of oncology at the University of Sydney. Apart from his late interest in the area of the etheric, Reid had nearly one hundred papers published in the field of oncology during his professional life. He found much more difficulty in publishing his work on etheric energy. He did not work directly with the human energy field but his work does have interesting implications for the human state.

Action at a Distance

His work first began with the microscopic observation that sodium chloride crystals in his laboratory had branching patterns and this usually only happened in the presence of protein material. He eventually traced this effect to the laboratory next door each time they washed salicylic acid with alcohol. Reid reasoned that the acid has a lattice-type structure and observed that other lattice-type substances such as ice, rubber, polymer and crystals had the effect in his laboratory of storing and transmitting energy to his experiments.

Another anomaly with crystals involved his finding of a copper sulphate pattern in his sodium chloride crystals three months after the former had been used in the laboratory. It was observed

that the presence of copper sulphate occurred at certain times during the day which were later correlated with slight changes in atmospheric pressure giving minute energy 'fronts' or tides.

Further work illustrated action at a distance with bacteria. Polystyrene drying during experiments with bacteria some distance away produced an almost identical copy of the bacteria on the plain polystyrene. Amazingly the copy without the physical bacteria even stained gram negative in keeping with the real bacteria! The implications for medicine are immense due to the possibility of the transmission of biological data through a subtle field without any physical contact. By 1982, Reid concluded that some force was coming through space and producing affects related to the crystals and bacteria⁸.

Vortices and the Etheric

Polystyrene was used to seal and preserve the earlier experiments in which the copper unexpectedly appeared. By focusing on the polystyrene rather than on the slide material, tiny vortices were found to have formed in the polystyrene as it dried. Reid compared the number of vortices on the slides during experiments made at 'quiet' times in the laboratory. The vortices increased from an average of 2 per slide to 20 at those times when a lot of activity was occurring.

Reid became very interested in the significance of the vortex. He saw it as a representation of ether and as carrying information to imprint matter. The whirlpool or vortex appeared from his viewpoint when form is imprinted on matter. Reid viewed the extra number of vortices present during 'busy' laboratory experiments as resulting in the release of more energy. He understood the vortices as associated with extra energy in biological systems and possibly as the basis for creation. Perhaps we could consider that the vortices are the basic pattern in the etheric field.

An artificial vortex was created by Reid for the purpose of measuring the physical distance between successive spirals. These were matched with those appearing from space. Values of 1.5 - 3.5 millivolts were found and this is the amount of electrical energy needed to drive a cell. This release of energy underscores the relation visioned between the vortex and manifestation. Reid saw from his experiments a continuous interaction between space and matter. He envisaged the outflow from matter to produce an exact copy of the form and that the inflow from the etheric may carry instructions for the pattern of a growing structure.

Fascinating as his work appeared, the university did not share Reid's vision and thus funding and staff numbers were reduced. Since he was already more or less at retirement age, he bought a beef cattle farm and moved to Queensland in the early 1990's. Like most of the individuals reviewed in this article, Reid had the capacity to cross disciplines and present us with some possible explanations of the human energy field. The patterning of matter discovered in his laboratory goes beyond the EM field and has been explored in yet a different way by United Kingdom scientist Rupert Sheldrake.

continued next page

from page 5

RUPERT SHELDRAKE & MORPHOGENETIC FIELDS

Rupert Sheldrake was another scientist very interested in patterns and how they manifest as cells and tissues. He asked where these energy patterns come from and where is the missing link in embryology to explain the relation between our genes and the placement of organs and tissues. Sheldrake is a scientist in the United Kingdom who has, apart from his scientific publications, promoted interest within the intelligent public with several books which explore the subject of energy fields.

The term morphogenetic field is not new, but Sheldrake has given a new place to the concept of morphogenesis with his observations and the synthesis he has made of the observed facts. He sees these fields as giving shape and movement to the universe. They include animate and inanimate matter and include many interlocking fields which in themselves are evolving and changing. Morphic resonance occurs when the forms in one place affect the forms in another⁹. Thus like Reid, he saw patterning transferred from one area to another but in a different context.

The fields are not seen by him as physical but enter into the physical, guiding atoms, molecules and cells into the right place. This resolves the gap in embryology as to what factor guides the molecules and cells into particular places in growth and regeneration. These master fields, from Sheldrake's viewpoint, give the reason why crystals have been observed to form more easily into particular patterns following earlier and similar experiments. (The usual extraordinary explanation is that minute crystals may be present in the hair, beards or clothes of the scientist after the initial experiment, falling into the solute of subsequent experiments thus acting as a seed crystal).

Behavioural Fields

Sheldrake was the first researcher to extend his concept of an energy field underlying the physical form to the behavioural realm. Experiments involving mice indicate that they learn tasks more easily after training of a previous generation and even more extraordinary, observations indicate that control groups also learn the tasks more easily.

The existence of fields which conduct information explains such enigmas. Perhaps the most famous example of this kind is that of the 'hundredth monkey' - who started washing her potato in the sea after monkeys on another island learnt to wash their potatoes. There was no physical contact between the monkeys from one island to another suggesting yet again, transmission of information via a subtle energy field.

Since the first publication of Sheldrake's work, his experiments have been successfully duplicated including projects involving successive groups of children learning nursery rhymes more quickly in areas separated by thousands of miles. Some of his latest research appears to involve telepathy by people becoming aware of being observed apart from sight, sound or touch, and dogs who know when their owners are coming home¹⁰. Subtle fields connecting people and/or animals may explain telepathy.

The transmission of data via etheric fields is no new idea to students of the ancient wisdom but is not as yet accepted by mainstream science. Implications in the fields of education and medicine are profound. Apart from the possibility of the etheric field providing the pattern for growth and the need to protect it from adverse influences, the philosophy underlying many natural therapies becomes more obvious. For instance, orthodox medicine may accept more easily homeopathic principles whereby a person can be influenced by infinitesimal doses of remedies wherein no physical molecules are present. Homeopaths generally accept that these potentised remedies penetrate the energy field of the patient¹¹. In the area of behaviour, the effect from one individual or group to another has significant implications for education, psychology, and the work force in any community.

RUDOLF STEINER & ETHERIC FORMATIVE FORCES

The last work to consider is that of Rudolf Steiner. He pioneered work in medicine, agriculture (biodynamic farming) and education (Waldorf schools). Steiner trained doctors in the 1920's to understand and influence what he called the Etheric Formative Forces. His medical

work, known as Anthroposophical medicine, became centred in a Swiss clinic and continues today with doctors from many parts of Europe and beyond taking courses in this type of medical approach. Like Burr, Steiner saw the etheric field underlying organs and tissues as providing the condition for growth, re-growth and healing¹².

Steiner developed a method for charting the etheric field known as capillary dynamolysis, a form of chromatography. Absorbent paper is treated with a metallic salt, e.g. silver nitrate or gold chloride and the substance to be tested forms an individual pattern when applied to the treated paper. The resulting pattern indicates the strength of the etheric field, e.g. in diabetes or nephritis, the pattern almost disappears corresponding to very weak energies in the patient. In contrast, if the etheric field is overly strong, the pattern takes on the appearance of stones. A sample of urine is often used for the test.

There is a typical or generic pattern from the urine of each species; man, cow, dog, sheep, etc. Different metallic salts also cause pattern changes within certain parameters. Doctors can do additional training to examine and diagnose cancer from the patterns in a blood spot dropped on to absorbent paper. European medical doctors use this form of diagnosis following training in the Swiss clinic at Arlesheim which specialises in cancer treatment. Again, this form of diagnosis indicates the disease pattern as a distortion in the etheric or Life Field for sometimes years before cancer develops¹³.

At the Arlesheim clinic, treatment includes all those influences for good health such as diet, water treatments, artistic expression, a body movement called Eurhythmy, and the specific mistletoe treatment which has been developed by Steiner. The type of mistletoe varies with the cancer and injections are given under the skin every second day. The mistletoe has both an immune enhancing property and is also cytostatic to the tumour. Other therapies pioneered by Steiner include many complex homeopathic formulas which are administered both orally and subcutaneously. His research and treatment covered all acute and chronic diseases and accompanied by diagnosis of the etheric field of the patient.



CONCLUSION

It is apparent that there is enough evidence to suggest that human energy fields exist and that they carry information for growth and repair. These fields appear to be at two levels; an electromagnetic field that interfaces with the physical body (Burr and Becker) and an etheric field or magneto-electric field (Reid and Steiner). In addition, the morphological fields of Sheldrake suggest the transmission of information deeper into the area of behaviour. The implications are that distortion or disturbance to such fields whether caused by electromagnetic, nutritional, or genetic factors may contribute to the basic causes of disease.

One general area of agreement amongst the research described is the finding that changes in both the EM and etheric fields precede organic physical changes or pathology sometimes by years. This is probably the most important point of the whole discussion. For an earlier diagnosis in many severe illnesses would save time, lives and money. If there is indeed an energy field underlying the human body that can be measured and used in diagnosis and treatment, the resulting concept of holism and integration in medical practice would surely be seen as the *sine qua non* of understanding re health and disease.

The existence of a unified energy field may also explain the mechanism for symptoms such as headaches, palpitations, and insomnia experienced by increasing numbers of patients exposed to dangerous levels of microwaves from cell phones, cell phone towers, cordless phones, and 'wireless' computer use. Characteristic of all the researchers mentioned is their view of human health and disease as related to the natural world, and in a more negative sense, to man-made technology.

Judy Jacka has been in a consulting practice using natural therapies for 40 years. She was principal of the Southern School of Natural Therapies for 16 years, then Chairperson for 11 years and has published nine books in the area of health and healing. Her latest book is Synthesis in Healing.

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BIOCHEMICAL INDIVIDUALITY; ASSESSMENT OF THE CHRONIC REFRACTORY (OR COMPLEX) PATIENT

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INTRODUCTION

Over the last decade, Australian clinicians are challenged with an ever increasing demand of assessing the impact of human nutrition and the environment on their patients' health¹. One of the central premises of Nutritional and Environmental Medicine (NEM) assessment is the consideration of the unique biochemistry of the patient². Chronic illness of unexplained aetiology is a good example of a patient population that may benefit from a nutritional biochemical assessment³. However the current system that Australian medical doctors practice under is not sympathetic to these demands. Sadly, medical doctors are frequently investigated for providing extended consultations and ordering pathology tests to assess the biochemical and nutritional individuality of a patient as this falls outside standard general practice habits. As a result general practitioners practising NEM, under the rules that govern general medical practice, are restricted from practising their specialty of medicine⁴. Amidst this political environment a number of specialist pathology companies have begun to offer private testing to support NEM practice in Australia. While there is a smorgasbord of NEM tests that can be ordered for patients in Australia there are six important considerations for the clinicians and their patients before ordering tests:

1. Will the test provide further information about the nutritional biochemical individuality of the patient over and above standard pathology and thorough history taking?
2. Does the test have a scientific basis?
3. Is the cost of the test value for the patient's money?
4. Do treatments based on abnormal test results improve clinical outcomes?
5. Does the laboratory providing the test have appropriate accreditation?

This technical article is part one of three articles looking at different subgroups of urinary organic acid markers and their potential use in identifying nutritional biochemical variations in patients.

ORGANIC ACIDS IN NEM ASSESSMENT

Profiling of organics in urine is a relatively recent addition to laboratory evaluations in chronic disease⁵. Organic acid testing was initially used to detect inborn errors of metabolism in the neonate that result in severe pathology. The prevalence of absolute defects of enzymes is rare. However, the metabolic activity between individuals does vary with most people having some mild enzymatic defect or a slight polymorphism⁶. In the absence of inborn errors, organic acidurias can signal nutrient deficiencies that produce symptoms and health risks. Nutrient insufficiencies may be due to dietary insufficiency, physiological or psychological stressors or simply an

increased individual nutrient requirement. Current recommended nutrient intakes are designed to prevent deficiency diseases in most people of a population, but they do not take into consideration polymorphisms or enzyme defects in individual patients⁷. Since the invention of specific organic acid assays in the 1960s there has been a considerable expansion of available analytes, including metabolites of the Krebs cycle, energy production, carbohydrate metabolism, specific vitamin indicators, fatty acid oxidation, neurotransmitter metabolism, detoxification markers and metabolites of intestinal microflora. Australian clinicians have only been able to utilise this 'individualised' assessment tool since 2004, and have been developing their knowledge and experience since that time.

WHAT ARE ORGANIC ACIDS?

Organic acids are products of metabolism that 'spill' into the urine at elevated levels in the absence of enzymes or a lack of cofactors, such as nutrient insufficiencies. Organic acids in the urine can identify metabolic blocks that are associated with a patient's health condition⁸.

A steady supply of energy is reliant on each biochemical step in cellular function being fully functional. Each of these steps is reliant on specific and adequate amounts of micronutrients. Therefore a deficiency in one or a number of micronutrients will result in a metabolic roadblock. Unfortunately, standard full blood counts and standard biochemistry

panels are limited in identifying specific blocks in energy metabolism. Organic acid testing can overcome these limitations by identifying impairments in essential cellular functions such as those occurring in the mitochondria, involving the citric acid cycle or electron transport chain, as well as beta oxidation⁸. See Figure 1.

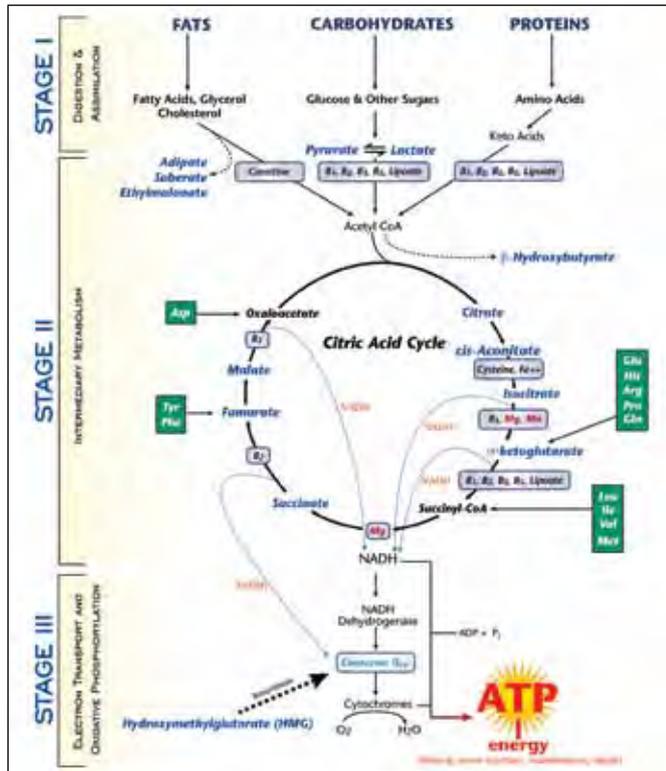


Figure 1: Urinary Markers of Nutrients involved in Central Energy Pathways. Reprinted with the permission of Metamatrix Inc

It is common to see multiple abnormalities on an organic acid report. Therefore understanding the relationship between different analytes often requires referring to biochemical charts to assist with pattern analysis. Test results are accompanied by individualised interpretative reports however a nutritional biochemistry text book such as 'Laboratory Evaluations for Integrative and Functional Medicine' by Richard Lord and Alexander Bralley, is very useful to gain a deeper understanding of the potential implications of different markers. Clinicians will develop skills in being able to cross-reference markers and see patterns of abnormalities that are reflected in the clinical picture of the patient. There are a number nutritional biochemical text books to educate clinicians in interpreting the significance of abnormal organic acid markers.

FATTY ACID METABOLISM MARKERS; ADIPATE, SUBERATE AND ETHYLMALONATE

Healthy fatty acid metabolism is required for ATP in the mitochondria. Carnitine and riboflavin (vitamin B2) play an important role allowing the intermediates adipate, suberate and ethylmalonate to enter the mitochondria⁹. An increase in these intermediates in the urine suggests an enzymatic deficit that compromises the ability to complete the process of beta oxidation, therefore compromising ATP production in the mitochondria. Blocks in fatty acid metabolism may present as periodic mild weakness, nausea, fatigue, hypoglycaemia, 'sweaty feet' odour and recurrent infection⁹. The inhibition of fatty acid oxidation found in the genetic disorder known as Reye syndrome (one of several known mitochondrialopathies) results in high levels of fatty acids being detected in the blood and associated fatty liver. See Figure 2.

CARBOHYDRATE METABOLISM; PYRUVATE, L-LACTATE AND β-HYDROXYBUTYRATE

Three products of abnormal carbohydrate metabolism can be assessed by employing urinary organic acids:

1. Pyruvate
2. L- lactate
3. β-hydroxybutyrate

Pyruvate is the breakdown product of glucose oxidation. Under aerobic conditions and in the presence of adequate pyruvate dehydrogenase complex (PDC) enzymes pyruvate is oxidized to acetyl-CoA. Under anaerobic conditions or in skeletal muscle where PDH activity may be limited by hypoxia, pyruvate is reduced to lactate. Pyruvate stimulates gluconeogenesis and inhibits fatty acid synthesis. It is also the substrate for the PDC that requires the coenzymes produced from thiamine (vitamin B₁), riboflavin (vitamin B₂), niacin (vitamin B₃), pantothenic acid (vitamin B₅) and lipoic acid^{10,11}. Therefore an elevation of pyruvate in the urine signals possible nutrient insufficiencies of carbohydrate metabolism. Serious conditions associated with an elevation of pyruvate in the urine include thiamine deficiency encephalopathy (Wernicke-Korsakoff syndrome) and fatty liver associated with alcohol use, and metabolic acidosis¹².

L-lactate is the product of anaerobic energy metabolism and a principal product of glucose oxidation in skeletal muscle. L-lactate is a substrate for gluconeogenesis. High urinary L-lactate always requires further investigation due to the multiplicity of serious medical causes, including metabolic acidosis from hypoxia, poor perfusion induced by various stages of shock, alcoholism and infection. It indicates a block in the final oxidative phosphorylation stage of energy production and inactivation of the citric acid cycle¹³. Nutrient insufficiencies associated with this block include coenzyme Q10¹⁴, biotin and lipoic acid¹⁵.

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FATTY ACID OXIDATION			
Adipate	H	L-Carnitine, 500-1000 mg TID;	Fatty acid oxidation
Suberate	H	L-Lysine (if low), 500 mg TID; B2, 100mg BID	
Ethylmalonate	H	See text for other interventions in genetic disorders	

Figure 2: Fatty Acid Oxidation. Reprinted with the permission of Metamatrix Inc

from page 9

Elevated L-lactate in urine is the most common abnormality produced by genetic disorders. See Figure 3.

CARBOHYDRATE METABOLISM			
Pyruvate	H	B ₁ , up to 100mg TID with B complex support; For concurrent H Lactate: lipoic acid, 500mg TID	Aerobic/anaerobic energy production
Lactate	H	Coenzyme Q ₁₀ , 50 mg TID	
β-Hydroxybutyrate	H	Chromium picolinate, 200 µg BID	Balance of fat and CHO metabolism

Figure 3: Carbohydrate Metabolism. Reprinted with the permission of Metametrix Inc

THE CITRIC ACID CYCLE INTERMEDIATES

Abnormal 'spilling' of citric acid cycle intermediates into the urine suggest a regulatory enzyme dysfunction or renal ammonia challenge. These dysfunctions can be modulated by supplementing the associated nutrient co-factors. The first three intermediates formed when an acetyl group enters the cycle are the tricarboxylic acids, citrate, cis-aconitate and isocitrate. When excess ammonia is produced by high protein intake, gastrointestinal bacterial overgrowth or medication toxicity, citrate will be drawn from renal mitochondria due to passage of tri-ammonium citrate into urine. Elevations of citrate, cis-aconitate and isocitrate indicate a status of renal ammonia challenge, and the ensuing loss of tricarboxylic acids can produce further metabolic stress¹⁶. Cross referencing using the marker orotate in the detoxification indicators will assist in deciphering whether the origin of the ammonia toxicity is due to a sluggish urea cycle involvement that requires the assistance of arginine or citrulline, or magnesium and manganese as cofactors in stimulating the hepatic urea cycle disposal of ammonia¹⁷. If orotate is not elevated it is worth checking the markers of intestinal microbial overgrowth which may be the source of ammonia challenge due to bacterial metabolism of indigested protein or other nitrogen sources. When there are multiple citric acid cycle markers elevated it could be due to a coenzyme Q10 insufficiency or to cytochrome C oxidase deficiency and inefficient oxidation of the primary product of the citric acid cycle NADH, resulting in reduced ATP production¹⁸. Two other factors to consider when these intermediates are high are excessive supplementation of a citrate complex or gentamicin toxicity. An individual with elevations in these intermediates may present with fatigue, weakness, confusion, poor memory and behavioural abnormalities. Intervention considerations would include supplementing with arginine or citrulline, lipoic acid and magnesium. Lipoic acid and magnesium are indicated if the elevations are related to gentamicin toxicity.

Causes of **low citrate, cis-aconitate and iso-citrate** may be due to amino acid deficiencies. Some of the catabolic products of amino acid digestion and assimilation are used as citric acid cycle intermediates. Therefore both dietary amino acid intake insufficiency and poor protein digestion and assimilation of amino acids will result in these intermediates being low. An individual may present with fatigue due to impairment of the citric acid cycle. In children low levels of these intermediates are

associated with developmental retardation. Low urinary citrate is also related to urolithiasis. The risk of cystine and calcium calculi are increased when citrate excretion is low¹⁹.

Another pattern seen with these three intermediates is when cis-aconitate and isocitrate are high but citrate is normal. As seen in Figure 1, the conversion of citrate to cis-aconitate and then to isocitrate is mediated by the enzyme aconitase. Aconitase is highly susceptible to oxidative damage due to heavy metal toxicity, iron overload or anaemia. Therefore poisoning or oxidative damage by heavy metals or mitochondrial oxidative stress may result in fatigue and weakness and is associated with Friedreich's ataxia. A patient with elevations in these two intermediates should be assessed for iron status and heavy metal toxicity if indicated²⁰. By referring to the marker 8-hydroxy-2-deoxyguanosine on the oxidative stress sub-panel or an organic acid profile the clinician can cross-reference whether oxidative stress is impairing the activity of the enzyme aconitase²¹. The intervention is dependent on the follow-up investigations, i.e. treating iron deficiency or overload, reducing oxidative stress and/or treating heavy metal toxicity. This is an example of how organic acid profiles can reveal effects as well as origins that are amenable to specific nutrient interventions.

Another intermediate in the citric acid cycle is α -ketoglutarate. It plays a vital role in aerobic energy production and is involved in feedback regulation of the urea cycle. α -Ketoglutarate is a substrate of keto-acid dehydrogenase complexes that requires coenzymes produced by thiamine, riboflavin, niacin, pantothenic acid, and lipoic acid. Therefore a lack of availability of any of these nutrient co-factors will lead to an increase in α -ketoglutarate, resulting in reduced energy production²². A high level of α -ketoglutarate in the urine may be caused by under-eating, B complex deficiencies or the catabolic breakdown of the amino acids arginine, proline, histidine or glutamine. Treating the patient with high α -ketoglutarate with the above-mentioned B vitamins and aspartic acid may result in an improvement in fatigue and weakness.

A low α -ketoglutarate may also result in fatigue as well as an increase in serum triglycerides. It is often due to an insufficiency of amino acids and an upregulation of fatty acid synthesis. α -ketoglutaric acid supplementation maybe helpful for correcting this in addition to correcting amino acid insufficiencies²³.

The following intermediates of the citric acid cycle, succinate, fumarate, malate and hydroxymethylglutarate, are all involved in mitochondrial oxidation. When any of these are elevated in the urine it is suggestive of an insufficiency of CoQ10²⁴. This may be due to amino acid insufficiency, possibly due to poor protein intake or digestion or to medications such as the statin drugs that tend to inhibit the CoQ10 biosynthetic pathway that is shared with the pathway of cholesterol production (see Hydroxymethylglutarate below). However, it is important to consider these intermediates individually in relation to other potential insufficiencies that may be elevated in the urine.

Succinate is a citric acid cycle intermediate that donates electrons directly to complex II in the electron transport system via succinate dehydrogenase²⁵. Succinate dehydrogenase is the part of the electron transport chain that acts to initiate the sequence to transport electrons from succinate to oxygen. Succinate cannot play its role in cellular energy production when Co Q10 is inadequate because the electrons must be passed directly bound CoQ10²⁵. The reaction in which succinate is converted into fumarate depends on the presence of iron and flavin adenine dinucleotide (FAD) derived from riboflavin (vitamin B₂). Elevated succinate is a marker of an increased requirement of both CoQ10 and riboflavin²⁶. It is important to note that the amino acids leucine and isoleucine are converted into succinate in the presence of vitamin B₁₂. Therefore it is important to check the marker methylmalonate (a marker of functional vitamin B₁₂ status included on most organic acid profiles) when interpreting the meaning of an elevated urinary succinate²⁷. A low succinate may suggest an insufficiency of amino acids, specifically L-Leucine and isoleucine.

Fumarate is generated from the removal of electrons from succinate. Fumarate is then converted to malate. Because of the sequential nature of these reactions in the mitochondrial matrix an elevation in fumarate and malate supports the role of CoQ10 insufficiency or cytochrome oxidase defects. An elevation in malate may result from fatty acid stimulation. The fatty acid synthesis product palmitoyl-CoA is known to inhibit the malate dehydrogenase enzyme²⁵. Increased fatty acid synthesis may be attributed to following a low fat, high carbohydrate diet or hyperinsulinism²⁸.

Hydroxymethylglutarate is a substrate of hydroxymethylglutarate-CoA (HMG-CoA) reductase and metabolic precursor of cholesterol and CoQ10. An elevation is commonly seen in patients taking statin drugs for hypercholesterolaemia²⁹. It is interesting to note here the side effects of statins include fatigue, weakness, myalgia and myopathy, symptoms associated with insufficiency or impaired production of CoQ10. Therefore CoQ10 should be considered in the prescription of any patient taking statins³⁰. See Figure 4.

In summary, assessment of urinary organic acids plays a valuable role in the assessment of biochemical individuality in the practice of nutritional and environmental medicine by identifying metabolic blocks resulting in a more targeted treatment approach.

Notes:

This article is Part One of a three part series. Part Two will look at three more panels found in a urinary organic acid test: additional vitamin B complex, methylation and detoxification markers. Part Three will look at metabolites of gastrointestinal microbiota, and neurotransmitter and oxidative stress markers.

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ENERGY PRODUCTION (CITRIC ACID CYCLE)				
Citrate	H	Arginine, 1–3 gm/day	Citric Acid Cycle Intermediates	Renal ammonia clearance
	L	Aspartic acid, 500 mg; magnesium citrate, 500 mg		
Cis-aconitate	H	Cysteine, 1000 mg BID; Check for iron deficiency		
Isocitrate	H	Lipoic acid, 25 mg/kg/day		
		Magnesium, 400 mg; manganese, 20 mg		
α-Ketoglutarate	H	B-complex, 1 TID; lipoic acid 100 mg		
Succinate	H	CoQ ₁₀ , 50 mg TID, magnesium, 500 mg		
Fumarate	H	CoQ ₁₀ , 50 mg TID, magnesium, 500 mg		
Malate	H	CoQ ₁₀ , 50 mg TID, B ₆ , 100 mg TID		
Hydroxymethylglutarate	L,H	CoQ ₁₀ , 50 mg TID	(L) Substrate-limited CoQ ₁₀ synthesis (H) HMG-CoA reductase inhibition	

Figure 4: Energy Production (Citric Acid Cycle). Reprinted with the permission of Metamatrix Inc

continued next page

from page 11

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SPECTRAL CONTENT OF ARTIFICIAL LIGHTING AND EFFECTS ON HEALTH

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ABSTRACT

There is an increasing body of evidence indicating possible health effects from prolonged exposure to artificial lighting after dark. Both compact fluorescent lights and light emitting diode lamps have a greater proportion of blue light in the emission spectrum than the older incandescent light sources. Exposure to the blue light component at night has been the subject of ongoing research, with a number of published studies linking blue light content to the disruption of the internal body clock, suppression of melatonin production and various ocular effects. Aside from short-term discomfort, possible health effects include long-term chronic illnesses, including cancer, cardiovascular disease and diabetes. A brief review of recent research is provided, salient health issues are noted and discussed, and some examples of exposure minimisation strategies are suggested.

KEYWORDS

Artificial lighting, health effects, blue light, body clock, melatonin production

INTRODUCTION

Incandescent light sources, sometimes referred to as tungsten or halogen lighting, are characterised by a warm yellow colour of emitted light and greater heat output when compared with fluorescent tube lighting. The new and more efficient compact fluorescent lights (CFL) and light emitting diode (LED) lamps convert much more energy into visible radiation but produce a narrow spectrum shifted towards the blue wavelengths, as depicted in Figure 1. The rapid conversion to these new forms of lighting in recent years has resulted in greater interest in the health impacts of artificial lighting, which has been the subject of a number of published studies¹⁻⁴.

Blue light from artificial lighting at night has been associated with increased melatonin suppression and disruption of the internal body clock, with a range of physiological, epidemiological and ecological consequences^{1,5}. These recent reviews draw attention to the potential health risks of artificial lighting, especially with respect to the disruption of circadian rhythms^{6,7}.

PHYSIOLOGICAL RESPONSE TO ARTIFICIAL LIGHTING

Czeisler et al⁸ achieved prominence for a published study on the disruption of the circadian cycle and the effect on melatonin production. It was found that certain retinal cells, not used for vision,

were still receptive to light exposure. These specialised photoreceptors had the ability to regulate the body clock without relying on signals from the visual cortex^{9,10}. Random light and dark patterns at night have been found to affect sleep patterns, causing insomnia and altered psychological and metabolic processes¹¹.

The production of the hormone melatonin is associated with the diurnal (circadian) rhythm and is stimulated by darkness. Extended light levels in the evening before sleep can reset the internal body clock and suppress the production of melatonin which is secreted by the pineal gland and has an inhibitory effect against cancer¹².

Mood Disorders

The actual spectral composition of light may affect human health in different ways, including mitigation of mood disorders, such as depression¹¹. Recent studies have suggested that the intensity and spectral composition, especially with high blue light content, can be beneficial during the day, despite the harmful impact during the night⁵. Research has revealed that morning exposure to bright lighting during the day can benefit elderly residents in nursing homes and those suffering from depression and Seasonal Affective Disorder (SAD)¹³. It was found that students working under conventional or blue-enhanced lighting were more likely to achieve higher academic results than students working under blue-deficient high pressure sodium vapour lighting or yellow lighting¹⁴.

continued next page

from page 13

Research suggests high blue light content is beneficial for increased alertness during the day because the short-wavelength sensitivity of the visual system has greater affect on the circadian rhythm, alertness, performance and the ability to sustain attention^{2,15}. It is in the morning that the photoreceptors in the eye are activated and the brain awakens with increased alertness. During evening hours, however, the brain responds preferentially to lighting with more red light content, thus leading to a state of relaxation as we prepare for sleep¹⁰.

Chronic Diseases

There is evidence that disruption of the internal body clock at night due to light with high blue content, typically from fluorescent lights, can lead to serious health problems including prostate cancer, heart disease, obesity and diabetes^{5,11}. Suppression of melatonin production has been linked to the development of breast cancer and colorectal cancer in advanced industrial societies, where artificial lighting at night is common^{11,12,16}.

Artificial lighting at night and its association with cancer has also been raised as an issue by epidemiological studies which suggest that light, melatonin production and cancer are linked¹². For example, blind women without functioning light receptors have much lower rates of breast cancer, which may be due to an absence of light transmission through the retina thus avoiding the disruptive effect on melatonin production^{5,15,17}.

Disruption of the internal body clock and lower melatonin production have also been linked to higher health risks relating to cardiovascular disease, diabetes and obesity^{1,18}. Resetting internal clocks can lead to many health problems, including fatigue and insomnia. It also has health implications for shift workers, who are more prone to the foregoing problems, according to Kayumov et al⁶ and others^{1,18}, who observed decreased melatonin production in human and animal experiments due to environmental lighting, especially in the case of lighting with shorter wavelengths, between 470 and 525 nm.

A salient point made by Holzman⁵ and demonstrated in research by Brainard et al⁹, is that the blue wavelengths in ambient lighting have the most impact on suppression of melatonin and disruption of the body clock. According to Brainard et al⁹, melatonin suppression occurs at a maximum rate from exposure to intense blue light in the early hours of the morning in the wavelength range 450 - 480 nm.

UV EMISSIONS

Walls et al⁴ reviewed recent research and conducted a study that showed increased use of fluorescent lighting may increase eye disease, and a recommended safe range to avoid higher levels of ultraviolet UV radiation is 2000-3500 K in colour temperature and above 500 nm in wavelength (that is, towards the 'warm' red end of the spectrum). High colour temperatures of 5000 K are more strongly biased to the 'cool' blue wavelengths and represent higher risk. They estimated that fluorescent lighting may cause an additional 3000 cases of cataracts in Australia annually. Also recommended was greater control of UV exposure from fluorescent lighting by modifying the emission spectrum by glass filtering and light covers.

BEHAVIOUR MODIFICATION

Even very dim ambient lighting at night from digital bedside clocks can affect the production of melatonin, which is maximised in total darkness, and disrupt the internal body clock⁵. Avoiding bright screens from computers or televisions late at night before retiring to bed is recommended as these can affect both the body clock and melatonin levels. Holzman⁵ also suggests dimming lights well before bedtime and maintaining a consistent sleep-wake cycle. The emitted spectrum of room lighting can be filtered with appropriate light covers or reflection off walls or ceilings.



CONCLUSION

There is mounting evidence of possible health effects caused by night time use of artificial lighting. This paper provides a brief introduction and review of recent research and draws attention to relevant health issues. Further research is needed to increase environmental data on the health effects of the spectral composition of artificial lighting. Attention to the selection and deployment of artificial lighting in the home is advised as a precautionary behaviour pending increased knowledge of the health effects from research studies.

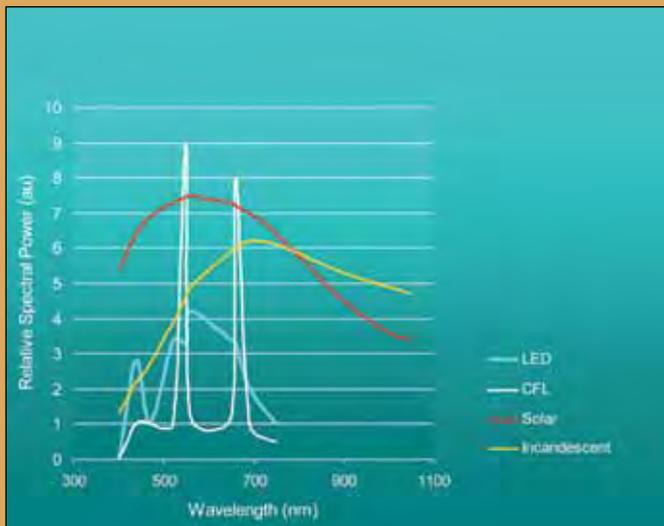


Figure 1. Trend lines compared for various source spectra. Note Light Emitting Diode (LED) and Compact Fluorescent (CFL), (adapted from data published by Excel Sustainability Consultants, 2011).

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MOBILE PHONE RADIATION — IS IT SAFE?

Lyn McLean

Accumulating evidence suggests that radiofrequency radiation from mobile phones and related technologies is not as safe as we've been led to believe. The possibility that this radiation may contribute to cancer raises important considerations for doctors and their patients.

In late May 2011, a panel of 30 international scientists met in Lyon, France, under the auspices of the International Agency for Research on Cancer (IARC) to consider the carcinogenicity of radiofrequency radiation from mobile phones and other communications technology. On 31st May, it announced to the world its decision that this radiation is a class 2 carcinogen; 'possibly carcinogenic to humans'¹.

A month later the working group clarified its position in an article in 'The Lancet'. Radiofrequency radiation will, "Couple with the body, resulting in induced electric and magnetic fields and associated currents inside tissues," the scientist wrote. "Holding a mobile phone to the ear to make a voice call can result in high specific RF energy absorption-rate (SAR) values in the brain, depending on the design and position of the phone and its antenna in relation to the head, how the phone is held, the anatomy of the head, and the quality of the link between the base station and the phone." The amount of radiation absorbed by children is "up to ten times higher" in children than adults².

With an estimated five billion mobile phone users globally, even a small increase in cancer risk from the radiation these

devices emit could have important public health consequences. "Given the potential consequences for public health of this classification and findings, it is important that additional research be conducted into the long-term, heavy use of mobile phones," said Christopher Wild, Director of the IARC. "It is important to take pragmatic measures to reduce exposure such as hands-free devices or texting," he continued³.

The IARC decision is a significant about-face for international authorities. It is an admission that existing standards do not necessarily protect public health and that the premise on which they are based is flawed: namely, that only the heating (thermal) effects of radiation cause health problems. This premise has been on shaky ground for some time. Over the last several decades there have been many hundreds, if not thousands of studies which have found that radiofrequency radiation causes harmful effects on the body at levels too low to cause heating.

The IARC is not the only authority to admit the risks of mobile phone radiation in recent months. On 27 May 2011, the Council of Europe adopted a Resolution noting the similarity between electromagnetism and other environmental risks such as chemicals, heavy metals and genetically modified products and calling for strong precautions to protect the public from electromagnetic radiation. Electromagnetic signals, "Appear to have more or less potentially harmful, non-thermal, biological effects on plants, insects and animals as well as the human body even when exposed to levels that are

below the official threshold values," the Resolution states⁴.

The Council recommended that member states, "Take all reasonable measures to reduce exposure to electromagnetic fields, especially to radio frequencies from mobile phones, and particularly the exposure to children and young people who seem to be most at risk from head tumours." It advised the use of wired - rather than wireless technology, education campaigns for teachers, parents and students, consumer labelling of radiation-emitting devices and a review of international standards.

Just a few weeks beforehand, Russia's peak radiation body – the Russian National Committee on Non-Ionising Radiation Protection (RNCNIRP) – issued a similar statement. Its 36-member committee of scientists concluded that exposure may cause damage to the blood-brain-barrier, disturb the electrical activity of the brain, contribute to psychosomatic disorders and affect brain cells. "Human brain and nervous system tissues directly perceive EMF [electromagnetic fields] and react irrespective of its intensity, and in certain cases it depends on EMF modulation. This feature distinguishes EMF from all other environmental factors and complicates human health risk assessment for EMF exposure," it said⁵.

The committee expressed particular concern for young children whom they considered particularly susceptible to mobile phone radiation for a variety of reasons. Firstly, childrens' brains have been shown to absorb more radiation than the

brains of adults. Secondly, childrens' brains have more stem cells which are particularly affected by radiation. Thirdly, their brains are still maturing and are more likely to be affected by environmental assaults. Finally children, unlike adults, are unable to recognize the risks of mobile phone radiation. The scientists referred to three studies by Dr Lennart Hardell which showed that mobile phone users aged less than 20 had an unusually high rate of brain tumours. "For the first time in human evolution, the brain is daily exposed to modulated EMF at all developmental stages," they said.

The RNCNIRP scientists called for a review of current international standards which, they claimed, did not adequately protect mobile phone users. They listed precautionary measures such as consumer labelling of mobile phones, the development of low-exposure phones, education of appropriate phone use in schools and funding for long-term research.

These calls for precaution are a response to the growing evidence of risk from recent research studies.

Perhaps the most important of these is the INTERPHONE study, a collection of studies conducted in 13 countries involving over 14,000 subjects. While the results of individual studies were published separately over the last five or so years, the overall results appeared only last year. They showed that mobile phone users had less risk of developing brain tumours than non-users, a result which was unlikely and has raised questions

about the reliability of the study. It also showed that the ten percent of people with highest mobile phone exposures had a 40% increased risk of gliomas (and a 15% increased risk of meningiomas). This included people who used mobile phones for just 30 minutes a day⁶.

However, there is evidence that the INTERPHONE study may have considerably underestimated the brain tumour risk of mobile phone use. For example, its subjects were comparatively low mobile phone users, there was a high non-participation rate, there were few long-term users, it didn't consider cordless phone use and it didn't include children who are often considered more vulnerable to mobile phone radiation. In fact, the head of the INTERPHONE study, Dr Elizabeth Cardis, later wrote a paper criticising it⁷. It's reasonable to expect that, in reality, the risks may be greater than the INTERPHONE study detected.

Since the publication of the Interphone results, there have been other studies indicating a link between mobile phone use and brain tumours.

Dr Lennart Hardell assessed data from previous studies on people diagnosed with brain tumours between 1997 and 2003 that included over 3,500 people. He found that people who had used a mobile phone

for ten years or more had nearly three times the risk of gliomas and those who had used cordless phones for the same length of time had nearly double the risk. He also found that people who had used a mobile phone before the age of 20, had nearly five times the risk of astrocytomas and those who had used a cordless phone before that age had nearly four times the risk. The longer subjects had used mobile or cordless phones, the greater was their tumour risk⁸.

Recently a Chinese team showed that people who had used mobile phones for seven to nine years had over 19 times the risk of developing mucoepidermoid cancers and those who had made more than 42,000 calls on a mobile phone had more than 15 times the risk of developing epithelial parotid gland cancers⁹.

In July, D Aydin and other European scientists published a paper showing a different result. They looked for a connection between mobile phone use and brain tumours in 352 children and teens aged 7 to 19 and 646 controls in Denmark, Sweden, Norway and Switzerland. The authors claimed not to have found a relationship¹⁰. However, an independent analysis of the results revealed a different picture. According to L. Lloyd Morgan, Senior Research Fellow of the US-based Environmental Health Trust, the study's own data show that subjects who had used a mobile phone for more than 2.8 years had more than double the risk of brain tumours. Those who had used the phones for more than four years had nearly four times the risk¹¹.

continued next page



from page 17

Unfortunately the debate about mobile phone safety has become mired in a bog of economic and political interests. There's no doubt that this is a highly lucrative technology and proof of carcinogenicity would be an inconvenient truth indeed.

Not surprisingly, the mobile phone industry has been quick to downplay the IARC decision. "The IARC classification suggests that a hazard is possible but not likely. Put simply, this comprehensive scientific review identified some suggestive evidence in the human studies but no consistent support from animal and cell studies," said Dr Jack Rowley of the GSM Association¹².

Another organisation keen to downplay the IARC decision was the International Commission on Non-Ionizing Radiation Protection (ICNIRP). On 1 July it published a paper saying, "The trend in the accumulating evidence is increasingly against the hypothesis that mobile phone use can cause brain tumours in adults¹³." The chief author, Anthony Swerdlow holds shares in several telecommunications companies.

The tentacles of industry influence have reached the highest echelons of mobile phone research. Just days before the IARC panel was scheduled to meet, it was revealed that the committee chairman, Prof Anders Ahlbom, had an interest in a firm which lobbies on behalf of the telecommunications industry. Ahlbom was a member of the Swedish Scientific Council, a member of ICNIRP, which sets guidelines for radiation exposure, and chaired various scientific investigations on radiation safety.

While the scientific debate on mobile phone safety continues, there is one group that is already convinced about the risk. These are the brain tumour sufferers whose tumours developed in the very part of the head against which they held their mobile phones. "I honestly believe I'm in this position right now with this tumour because I've overused my phone," said Anna Tarrant in an interview on Today Tonight earlier this year¹⁴. She is one of the many sufferers who have voiced their concerns on air. Her brain surgeon, Dr Charlie Teo, said on the same program, "We've seen an increase in tumours in the insular region... the temporal lobe, the frontal lobe, so it's right there where you hold your phone¹⁵." Teo was co-author of a 2009 review which found that using a mobile phone for ten years or more doubled the risk of developing a brain tumour on the side of the head used for calls¹⁶.

Admissions and denials of risk, conflicting interests, and uncertain science have created challenging terrain for the aware practitioner. It's true that we don't yet have conclusive proof that mobile phone radiation is dangerous. On the other hand, the IARC's admission of risk means that the technology can no longer be assumed to be safe, nor regulated standards protective. With latency an important factor in tumour incidence, it may be years before we know the full risk of this radiation. Till then,

it seems appropriate to take precautions to reduce exposure to radiation from mobile and cordless phones as much as possible and to consider the exposure of patients when taking their cases.

Lyn McLean is author of 'The Force – living safely in a world of electromagnetic pollution', published by Scribe in 2011 and editor of 'EMR and Health', a quarterly report on electromagnetic radiation. Her website is at www.emraustralia.com.au

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RADIATION AND HEALTH

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Radiation has become an ever-present entity in modern society. Through its applications in mobile telephone networks, internet connections and high frequency antennas, and through derivation from electric circuits, electromagnetic fields and radiation affect millions to billions of people world-wide¹. The application of radiation-emitting technologies increases also with population density, and questions of the effects on public health are increasingly posed. Simultaneously, sleeping disorders are reported with increasing frequency in densely populated areas, and the current lack of legislation and regulation from public health authorities fail to prevent potential hazardous effects from these man-made electromagnetic field (EMF) sources.

The ubiquitous effects of electromagnetic radiation on health have been of widespread scientific and public interest for a long time. Its adverse effects on health have been demonstrated in a multitude of reports, and among them its manifestations on sleep disorders and depression^{2,3}. EMF-exposure is associated with psycho-emotional and cognitive disorders through its effects on neurohormonal responses in the brain³, which affect neural responses that promote depressed mental states, reduced appetite and disturbances of cholesterol levels. The neurochemical responses to EMF are in turn represented by decreased levels of melatonin and serotonin⁴. Decreases in serotonin and melatonin are correlated with depression, insomnia and other neuropsychological disorders, and may also be part of breast

cancer generation as well as breast cancer treatment problems⁵.

In a study carried out in Northern Taiwan, Li and colleagues² mapped the prevalence of sleeping disorders among 5,078 inhabitants of an area strongly affected by radiation. This urban town area was exposed to a background power-frequent magnetic field level of more than 2 milliGauss (mG). The study revealed that the inhabitants suffered from difficulties of initiating sleep, maintaining sleep and waking up early. The study also reported that extensive exposure to computers is associated with all types of insomnia. Similar findings are also supported by another study⁶.

Radiation and electromagnetic sensitivity have furthermore been correlated with other problems, such as tinnitus^{7,8}, a condition that is difficult to objectively demonstrate but that affects millions of people worldwide. EMF's effect on tinnitus may also be connected to its demonstrated effects on cerebral blood flow⁹. It, of course, affects brain physiology and several brain functions, indicating that EMF may substantially affect the brain in everyday life in strongly or moderately exposed surroundings.

The listed studies therefore invite public health legislators to initiate restrictions on EMF spread, and to study further the potential effects from radiation on human health and, finally, to provide potential solutions, such as:

- Restrictions of wireless networks in schools, hospitals, residential areas, public transportation and similar locations.
- Shield EMF-emitting antennas and installations; wherever possible use shielded cables, fiberoptic solutions, etc.

- Investigate the health effects of the widespread implementation of wireless telecommunication networks in urban and rural areas. And do it now!
- Update the allowed threshold for background radiation in populated areas.

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1ST INTERNATIONAL CONFERENCE ON THE SCIENCE OF NUTRITION IN MEDICINE & HEALTHCARE MAY 2011

This year ACNEM, the CSIRO and the NSA jointly convened the inaugural 'Science of Nutrition in Medicine and Healthcare' Conference from 13-15 May at the Swiss Grand Hotel, Bondi Beach.

The conference was a sell-out with 440 people attending over the three days, including delegates, speakers and sponsors. It seems that we managed to create something entirely new, meeting a need for a coming together of minds in the medical, scientific, academic and public health communities.

The success of the inaugural conference exceeded our expectations and the feedback from delegates and speakers alike was that bringing together clinicians with the researchers and scientists driving medical and clinical innovation was not only beneficial but also inspiring.

As MC of the conference and facilitator of the plenary panel discussions, Dr Norman Swan, of the ABC Health Report, gave speakers and delegates a generous serve of 'sandpaper', using scrutiny and humour to keep everyone engaged and challenged.

Over 30 invited speakers from Australia, New Zealand and overseas, and another 30 scientific abstract and 20 academic poster presenters created a very impressive lineup.

The conference program dealt with themes most common to general practice and the national health priority areas; mental health, metabolic and cardiovascular conditions and cancer. In addition, there was a pre-conference workshop on the Friday focusing on epigenetics and nutrigenomics, which in turn set the tone for the entire conference – looking at the clinical applications of the latest science and research in the theme areas.

TESTIMONIALS

We consistently heard from delegates that they were most impressed by the quality and depth of the program. Clinicians found the direct engagement with those conducting the science to be illuminating, while scientists found the opportunity to present their work directly to clinicians, as well as other scientists, researchers and public health professionals gratifying. The only improvement needed, it seems, is more focus on the 'translational' aspects of the program; e.g., practical aspects of incorporating the latest science and research into clinical practice.

- ♦ We appreciate all the hard work that has been put in both before and after the event which was very professionally organised. We look forward to participating in the next one! *Ms JG*
- ♦ I just wanted to convey my appreciation for all your hard work in organising a great meeting on the weekend. Both the organisation and content were excellent. I heard many positive comments from my colleagues and the balance between science and medicine was terrific. Congratulations on hosting a very successful event! *A. Prof JC*
- ♦ Congratulations to the team at ACNEM. What an extraordinary event to pull off! So professional and caring and accommodating to so many needs. No doubt this will manifest as a quietly positive improvement in Healthcare, with hopes for an explosive change! *Ms JS*
- ♦ Congratulations... the praise is well deserved. I was very impressed with the conference organisation. *Prof JB*
- ♦ Congratulations to you and the team. Very professional, very valuable meeting. *Prof JM*
- ♦ Congratulations on a fantastic conference! It's encouraging for us to see so many new faces on the horizon. *Ms LE*
- ♦ It was an excellent conference and I look forward to the next one. *Ms LB*
- ♦ I would like to congratulate you and your team for organising a great conference. The venue, the food, the delegates, the speakers and the discussion - all excellent. All the feedback I received has been positive and the delegates expressed hope that such an event should be held again. *Prof MG*
- ♦ Thank you for the opportunity to participate in what I thought was a successful conference. Look forward to working with you again next year. *Dr MC*
- ♦ Thank you for the opportunity to participate at this most interesting and valuable meeting. *Prof MB*
- ♦ The conference was a major event and it is very pleasing to hear that there has been an impact. The whole event was so well presented and handled I was proud to be an ACNEM member. *Mr MC*
- ♦ From my point of view I thought it was an excellent conference and enjoyed by both the academic presenters and non-presenting attendees that I spoke to. They were indeed a very enthusiastic audience with a great willingness to participate in discussion in a productive manner. *Prof AM*
- ♦ The conference was fantastic, you all did an amazing job. Not only was the content and calibre of the presenters excellent but the logistics were well planned. *Ms NS*

- Great conference and great to talk directly to the medical profession. Your crew did a great job, evident from the outset that the team had things well organised. *Prof NM*
- My thanks to you for the opportunity to make a more significant contribution to what was indeed a worthwhile exercise. I have had a longstanding interest in therapeutic applications of nutrients and am always pleased to see this focus being addressed from a sound scientific perspective.
Prof PH

- First, let me thank you for all your efforts in putting together such an excellent conference. We rarely get to interact across such a spread of the community, from those of us buried away in the lab to those interacting on a daily basis with patients. I think everyone enjoyed the opportunity, as was evident from the lively question times at all sessions. *Dr PM*
- Thank you for the opportunity to be part of this conference, we hope that we can add further value next time around.
Mr SH

- May I join the list of those congratulating you and the organising committee for a great conference. You really filled a gap, and getting us all together was invaluable. *Dr TG*
- I wanted to thank you for inviting me to the meeting. I really enjoyed participating in the meeting and it was a tremendous success, you should be very proud. *Prof IE*
- A big thank you for putting together a truly interesting conference of a high scientific standard! The atmosphere was very friendly, open and welcoming - a great spirit of interdisciplinary exchange.
Prof BB

continued next page



Representatives of the co-convenors, Prof Manohar Garg, NSA, Dr Karel Hromek, ACNEM, Prof Michael Fenech, CSIRO, with Dr Norman Swan



Dr Peter Molloy and Prof Peter Clifton



Prof Cres Eastman and Dr Norman Swan



Closing panel with Prof Stephen Myers, Dr Peter Molloy, Prof Peter Clifton, Dr Matt Shelton



Dr Norman Swan



Main plenary panel session



Prof Michael Fenech



Panel session with Professors Kerryn Phelps, Ian Olver, Alan Bensoussan and Michael Fenech



Prof Anne Marie Minihane

from page 21



ACNEM CEO, Stephen Penman with winner of Best Oral Abstract, Jenny (Jia) Liu



Kim Bell-Anderson with her Abstract poster presentation



SPONSORS & SUPPORTING ORGANISATIONS

We'd like to thank all the sponsors and supporting organisations that were involved with the conference. Without their financial and in-kind support the conference would not have been the success that it was.



ANNOUNCING... THE 2ND INTERNATIONAL CONFERENCE ON THE SCIENCE OF NUTRITION IN MEDICINE AND HEALTHCARE

The Australasian College of Nutritional and Environmental Medicine (ACNEM), the Food and Nutritional Sciences Division of the CSIRO, and the Nutrition Society of Australia (NSA) are proud to announce the 2nd International Conference on the Science of Nutrition in Medicine and Healthcare, to be held at the Grand Hyatt, Melbourne, from 4-6 May, 2012.

We're also pleased to confirm that Dr Norman Swan will be returning as facilitator and Master of Ceremonies.

For further information and to register, please visit www.nutritionmedicine.org.au or call ACNEM on +61 3 9597 0363.

We look forward to seeing you there!

LETTERS TO THE EDITOR

RE: WWW.SCENTSENSE.COM.AU

As the name implies, it collates data, (a lot of it...) on the implications of the use of perfume and cosmetics. As many of us are aware, this is becoming ever more ubiquitous. Try buying babies nappies, bin liners, shampoo or tissues without fragrance, or finding a Motel room that does not smell like a brothel, and you'll know what I mean.

Variouly described as 'perfume', 'parfum', 'fragrance' or 'scent', the bottom line is that this is a petrochemical, whatever name you like to use for it. My interests in the substances are several. From a purely selfish point of view, I am one of the unfortunate one in six of us who suffers migraine. In years of treating migraine patients, I have found very few who can tolerate 'fragrance'. So I get pretty mad when I spend good money on the rare trip to the opera, only to have to leave the theatre because of someone else's perfume. Or on a four hour train trip, or a long plane flight. Motion sickness and headache are the price I have to pay for someone else's indulgence.

But my professional interest goes beyond my headaches. The petrochemicals that go into cosmetics include carcinogens and gender-benders. A furore hit the headlines a few years ago when it was shown that baby boys feminised when rubbed with lavender oil - a natural fragrance at that!

These pheromones are Nature's chemical signals, and have hormonal impacts in their own right. Add to this the 'penetration enhancers' and known and suspected carcinogens in cosmetics, and you have a recipe for a lot of health problems.

If I sound passionate about this, it's because I am. It's not just my headaches - it's the young breast cancers, the kids with specific learning difficulties, the chronic fatigue syndromes and all the rest of the mystery illnesses that I want to understand. We are a college of Nutritional and Environmental medicine, and I think we need to take a look at all possible environmental toxins.

The author is known to me and is a reliable academic who for personal reasons would like to remain anonymous. It is not me - I would be proud to claim this amount of quality research. I hope it helps someone out there.

Dr Carole Hungerford, BA, MBBS, FACNEM

THOUGHTS FOLLOWING THE NUTRITION IN MEDICINE CONFERENCE

First of all, I want to congratulate ACNEM, CSIRO and NSA for putting on a fantastic conference in May 2011. The speakers were of international standard and drew a wide audience. From the attendance of so many practitioners and researchers it became obvious that the future of medicine lies in nutrition and that such a conference was well overdue. It demonstrated that nutritional medicine goes much deeper than just a diet for a disease – it addresses the physiological, biochemical and metabolic imbalances by supplying substrates and co-factors for these pathways. I am looking forward to many more conferences of this kind.

It was a great audience too for another reason: it brought together health care practitioners from a broad range of disciplines. What a wonderful opportunity to develop networks between the different professions – none of us are equipped with the knowledge, tools and time to address all areas of health. The World Health Organisation published a document last year that outlines the future of health care in inter-professional education in readiness for collaborative practice (http://www.who.int/hrh/resources/framework_action/en/). I would love to see opportunities built into future Nutrition in Medicine conference agendas to foster this building of bridges.

As a result perhaps, integration and acceptance of practitioners of different disciplines as equal partners in the quest to help people live healthier lives could have been fostered more. In the final plenary session it became obvious that this conference was aimed at doctors, despite a portion of the audience being nutritionists, naturopaths and other 'allied health' practitioners. It was disappointing to see that these professions are still not seen as equal partners in health care – unregistered and hence with perhaps dubious education and professional standards.

I would like to point out that despite the lack of national registration for naturopaths (which they are seeking and preparing for) the minimum standard for joining a professional organisation is a three year full-time course. Many naturopaths have Bachelor degrees, and of those present at the conference a large proportion have PhDs or are working towards it. Trained naturopaths in private practice also hold public liability and professional indemnity insurance. Nutritionists, although not registered by government either, nonetheless have the opportunity to register with the Nutrition Society of Australia after meeting stringent criteria.

The training, knowledge and clinical experience particularly of naturopaths and nutritionists in disease prevention and chronic disease management as far as lifestyle and nutrition are concerned generally excel that of medical practitioners. Their advantage is that they usually spend a lot longer with the patient than standard medical consultations allow for. Therefore I find it rather disconcerting that not more use is made of a profession that has so much to offer and is eager to work alongside doctors for the wellbeing of people. Our health care system would be strengthened and enhanced by this cooperation (not to mention the reduced financial burden) since medicine, as it is generally practised today, has not been able to stem the rise in chronic disease. People are not suffering a deficiency of a drug, but they may well be sub-optimally nourished on a cellular level, resulting in diminished metabolic activity and ultimately ill-health.

Nutritionists and naturopaths are ideally placed to address this. I would encourage every health care practitioner to check out the qualifications and reputation of other local health care providers (such as naturopaths or nutritionists) with the aim of cooperation – ultimately for the benefit of the patient.

Dr Tini Gruner, Ph.D., Dip.Teach., Dip.Psych.Ther., ND, M.Sc., RNutr, AdjProf (SPCNT), Senior Lecturer, Clinic Supervisor and Course Coordinator, School of Health & Human Sciences, Southern Cross University

IN THE NEWS

Shirley Schurmann, RN, B App Sci, Dip Nurs Ed, M Ed Studies, Grad Cert Health Sci(Nutr&EnviroMed)

The question, 'Is it ethical for medical practitioners to prescribe alternative and complementary treatments that may lack an evidence-base?', presented on Life Matters , ABC Radio National, on 11 July 2011 was answered firmly in the negative by Emeritus Professor John Dwyer.

The case for the affirmative was put by academic GP, Marie Pirotta, who argues that in terms of safety, patients requesting CAM advice and a growing evidence-base for CAM, consideration should be given to incorporating use of CAM¹.

With more than half the population taking some form of alternative or complementary medicine and spending > \$2b annually to do so, there is a groundswell of patient driven demand for using CAM. The questions being asked by our patients are; 'Why are we getting sick?' and, 'What can we do to get and stay well?' Is it possible that the motivation for these questions may be that the current system is not working?

Let's look at the data and come to a logical, scientific, evidence-based conclusion. In Australia, per capita expenditure on prescription drugs alone increased by 260% to \$462 per person/year between 1993 and 2006. This may not be explained by price movements in the cost of pharmaceuticals. Concurrently, the incidence of lifestyle and chronic illness is rising; the incidence of diabetes and obesity has doubled in the last two decades², and cardiovascular disease, cancer, and mental health conditions are all on the increase. The data is clear that the incidence of illness and disease and the cost of treating the same is increasing exponentially on a per capita and per year basis. And these trends are consistent across all industrialised nations, including Canada and Great Britain.

In a two part series published in The Annals of Internal Medicine, Dr Eliot Fisher points out that the assumption that more drugs and surgery equate to better health outcomes is false. He summarises the findings of his study; "A third of medical spending is now devoted to services that don't appear to improve health or quality of care –and may make things worse³". These figures do not include any of the expenditure on addressing the harm, or the human costs of, ineffective and/or harmful treatments. The facts are that the expenditure on chronic illness is increasing exponentially and this has not decreased the incidence of chronic illness.

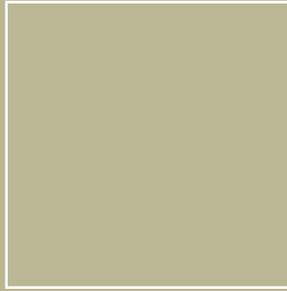
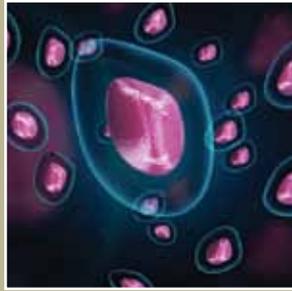
However medical practitioners operating in the sickness and treatment paradigm may believe that humans are genetically predetermined to get sick or that getting older causes heart disease, cancer, obesity and diabetes, and conclude that the increase in expenditure is inevitable. This is the message the sickness/treatment paradigm gives to patients, politicians and policy makers.

On examination, the expenditure rates are increasing at exponentially higher rates than the population is. We are not simply living longer and therefore developing more chronic illness. The percentage of the population aged 65 and older has not increased at all between 1990 and 2010 so ageing has nothing to do with the per capita increases in chronic illness rates or expenditures⁴. Per capita prescription rates are increasing and pharmaceutical company profits are rising exponentially. Further, chronic illness rates are rising most rapidly in our children and in middle aged adults. Half our children are overweight and each year have more diabetes, attention and behavioral issues⁵.

Treating the effects of lifestyle-caused illness with drugs and surgery instead of addressing the lifestyle causal factors is the real issue that nobody seems able to address.

In a breakthrough landmark paper regarding the paradigm shift from sickness and treatment to wellness and prevention, Hyman et al state that lifestyle medicine needs to become the foundation of our health care system⁶.

One of the most useful studies for providing evidence of the effectiveness of lifestyle intervention is the work of Dean Ornish, in which he took patients with diagnosed prostate cancer and put them through a 3 month lifestyle program that included change of diet, 30 minutes walking/day, stress reduction including meditation, imagery and breathing. Patients lost weight, reduced blood pressure and saw other health improvements⁷. Other studies demonstrating evidence for lifestyle intervention include the ACCORD study, and the INTERHEART study⁸. As well, Booth et al state that exercise is a genetic requirement and document the benefits of walking⁹.



Medical practitioners who fail to see or act on the evidence for lifestyle intervention assume an inherent superiority of the medical system and may develop the view that drugs and surgery represent the only evidence-based intervention. They are experts in diagnosis of illness and prescription medicine and perpetuate those who profit from it.

One apparent hurdle is that many CAM medicines or therapies currently lack high quality evidence. This should not be taken as proof that all CAM is ineffective. It is estimated that as little as one quarter of conventional medicine in use is based on level 1 evidence.

The gold standard RCT is designed to test a hypothesis; e.g., that drug X will have beneficial effect Y on patients with a particular disease or set of risk factors. This suits the disease model. It cannot always be applied to nutritional medicine for example, because nutrients work synergistically. Not surprisingly, many nutrients have individually failed to show benefit. Lack of evidence does not necessarily mean lack of benefit. However, there is a growing body of scientific evidence emerging for CAM medicines and therapies worldwide – not always Level 1 – however this evidence should be made accessible and incorporated into guidelines for treatment for health conditions¹⁰.

Once a therapy or medicine, whether it be conventional or complementary, has scientific evidence to demonstrate safety, and evidence to suggest or confirm efficacy, then the medical practitioner has a legal and ethical obligation to consider the best treatment options possible for the patient, taking into account the needs and desires of the patient¹¹.

As primary care providers, medical practitioners are well placed to prescribe or recommend evidence-based CAM. They need to have adequate knowledge of safety considerations including interactions and contraindications, adequate knowledge of the latest research to understand whether efficacy is suggested or demonstrated, whether CAM may be useful as adjunct to a conventional approach, and maintain a respectful dialogue with patients in relation to their needs and wishes.

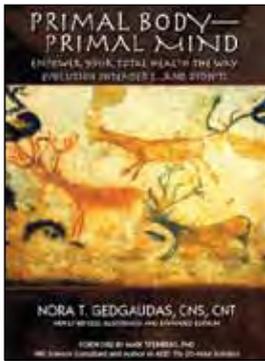
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Editor's note: This public debate highlighted an ongoing problem in the medical and mainstream media, and indeed in the views of some commentators and practitioners, of indiscriminate generalisations. The umbrella term 'CAM' refers to a range of medicines and therapies not historically considered to be part of conventional medicine, some of which have a solid evidence-base of efficacy for some conditions, such as massage, meditation, yoga, hypnosis and acupuncture, considered to be both safe and effective by most Australian GPs. Others have little or no evidence of efficacy for specific conditions, yet are not considered to be potentially harmful and may augment whole-person integrative treatment. They may also have a traditional medicine knowledge-base, yet to be demonstrated by a large well-constructed randomised controlled trial or a Cochrane review. It is disappointing to note that commentators and media continue to make sweeping statements about the evidence base for ALL complementary medicines and therapies.*

* Cohen MM, Penman S, Pirotta M, Da Costa C. The integration of complementary therapies in Australian general practice: results of a national survey. J Altern Complement Med. 2005 Dec;11(6):995-1004.

FEATURED BOOKS



Primal Body- Primal Mind – Beyond the Paleo Diet for Total health and a Longer Life
By Nora Gedgaudas

Primal Body-Primal Mind takes many health and nutritional issues being discussed across the spectrum today and summarises them into short and informative chapters. It's well written and equally accessible to professionals and the public. It combines nutritional anthropology with modern science, a powerful combination in health.

Palaeolithic nutrition encompasses the diet that our ancestors ate prior to the Neolithic (agricultural) revolution. This diet includes pasture-fed meats, vegetables, small amounts of fruit in season, natural fats, nuts, and seeds. The diet avoids grains, legumes, starchy vegetables, and processed foods and processed vegetable oils.

The book is an excellent summary of health and dietary issues that can act as a springboard to further research. For example, Gedgaudas claims that we should keep our protein intake low to down-regulate the newly discovered mTOR metabolic pathway. Grains are well discussed with gluten sensitivity and its associated problems; phytic acid affecting mineral absorption; and the protein, zonulin affecting gut permeability. The role of leptin in metabolism was also a real eye-opener.

The breadth of information covered in Primal Body-Primal Mind is where this

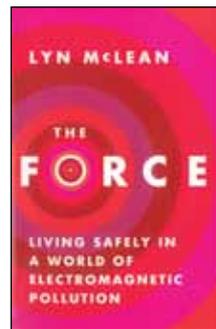
book is most valuable. Gedgaudas brings together many issues affecting our health both positively and negatively. Since implementing some of the principles of the book for my patients I have been amazed at the conditions that have been resolved. And I'm a dentist.

It's a book well worth a read.

Reviewed by Dr Ron Ehrlich, BDS, FACNEM

This book is published by Healing Arts Press

ISBN 9781594774133



The Force: living in a world of electromagnetic pollution
By Lyn McLean

"In the space of a single century, humans have transformed the electromagnetic environment of the entire planet without adequately testing the technology responsible for it, without knowing the effects of long-term exposure, and without being able to guarantee its safety, particularly for future generations." Lyn McLean in The Force

It was in the 1950s when concerns were first raised that our use of radio and microwave technology may have unintended health consequences and by the late 1970s evidence started to accumulate that our use of mains power (50/60 Hertz) electromagnetic fields may be linked to childhood leukaemia. (Together referred to as electromagnetic radiation (EMR). During all this time, in the scientific, medical and public arenas,

the health effects issue was being hotly debated with powerful vested interests largely controlling that debate. Lyn McLean in her book The Force, however, convincingly shows in her analysis of the scientific evidence that the tide is now turning with an increasing weight of published scientific data indicating that our use of modern technology can adversely affect our health through exposure to EMR. The all-important message that Lyn McLean gives to the reader is that once we recognize that there are risks to health, we can usually take positive steps to reduce our exposure to EMR thereby reducing those risks. It's not about eliminating technology but using it appropriately and wisely.

The book goes into detail about the possible health problems that have been linked by research to EMR exposure. From the point of view of the medical fraternity, this book is an important resource because it is inevitable that doctors and other practitioners may be seeing patients with symptoms that do not respond to treatment and which may be the result of excessive EMR exposure at home or work. (For example see: 'Changes in Health Status in a Group of CFS and CF Patients Following Removal of Excessive 50 Hz Magnetic Field Exposure', JACNEM, Vol. 21, No. 1; April 2002 and 'Medical warnings needed on DECT cordless phone use', JACNEM, Vol. 25, No. 2 August 2006.)

Lyn's book gives clear advice on what is the appropriate action to take in order to;

1. Determine if EMR exposure may be a factor in a patient's illness and,
2. What action to take or advise to eliminate or reduce the exposure.

It is Essential reading!

Reviewed by Don Maisch, PhD

This book is published by Scribe
ISBN 9781921640292

MEMBER PROFILE: SY PIERRE, MD



My name is Sy Pierre, and I have been practising anesthesia in Nassau, Bahamas, for the past seventeen years. In that time, I've come to realise that traditional allopathic methods are ineffective against many of the challenges in patient health care that we face today. Having said that, I've surprised even myself with my deep interest in and desire to practice Nutritional and Environmental Medicine!

My background training and experience was strictly in Western allopathic medicine. After completing high school in my native Nassau, Bahamas, I attained an undergraduate degree in Pharmacy abroad. Returning home, I practised hospital pharmacy at the Princess Margaret Public Hospital in Nassau for two and a half years, before deciding to enter medical school in Nashville, Tennessee. After medical school came an internship in general surgery (one year), residency in anesthesiology (three years), and finally a fellowship in cardiac anesthesia (one year), all completed in the USA.

I returned home to the Bahamas in 1994 to work as a Consultant Anesthetist. In the years since, I'm proud to have been a member of the teams that performed the first adult open-heart surgery, the first pediatric open-heart surgery, and the first transplant surgery (renal) in the Bahamas.

Chronic degenerative diseases are the major causes of morbidity and mortality in the Bahamas, just as is the case in any modern, 'westernised' nation. With my training

and experience in medicine and anesthesia, I have seen first-hand the continued failings of 'modern' medicine to address the long-term health needs of our patients. Nutritional and environmental medicine seems to provide solutions to many of these needs. While 'modern' medicine does have tremendous value in treating acute, life-threatening conditions, such as major trauma, I believe that even here, nutritional medicine has a role to play.

What piqued my interest in this field was a YouTube presentation on the treatment of an intractable case of swine flu with high dose intravenous Vitamin C. I went on to read books by Dr Linus Pauling, and articles on Orthomolecular Medicine. These led me to the ACNEM website, and my subsequent registration for the Primary Course in Nutritional and Environmental Medicine.

What impresses me about the entire field is the scientific basis – not just on molecular biochemistry, but also the emphasis on human evolution, and the role evolution has played in determining what is best for human kind.

The opportunities to learn about functional medicine in the U.S. are extraordinary. The organisation with which I have been doing my most recent training is the American College for Advancement in Medicine. I have taken courses in hyperbaric medicine, DMSO therapy, chelation therapy, oxidative medicine, and nutritional and environmental medicine. These have

further opened my eyes to the options of non-toxic treatment modalities. In addition, the American Academy of Anti-Aging Medicine (A4M) provides numerous opportunities for continuing education in nutritional, functional and anti-aging medicine.

This month (August 2011), I look forward to completing a one-day, hands-on course in Oxidative Medicine (intravenous hydrogen peroxide, ultraviolet blood irradiation therapy, and ozone hemotherapy). This will be followed by a week-long preceptorship training in Bio-identical Hormone Replacement Therapy, intravenous nutraceutical therapy, DMSO (dimethyl sulfoxide) and chelation therapy.

Following all of this training, I hope to launch a successful Orthomolecular & Environmental Medical Practice in Nassau in November 2011! Then, in the not-too-distant future I plan to complete the one-year Environmental Medicine Fellowship with ACAM and the A4M Fellowship. It's a journey of discovery – and I'm enjoying every minute of it!

YOUR COLLEGE

Well here we are at the end of another year, and didn't it just fly by! This has been a year of much activity for the College with an emphasis on increased visibility in the marketplace. The year commenced in March with our first 'hybrid' face-to-face and online course in Injectable Nutrients and Heavy Metal Detoxification. Those who attended appreciated having to take less time out of their practice and were able to complete all the follow-up assessment tasks online over the next couple of months.



At the recent Melbourne course we also held the ACNEM Annual General Meeting, welcomed some new board members, welcomed Dr Janet Kim as a new Fellow to the College and we hosted a free evening lecture for healthcare professionals, 'Mouth-to-Mouth - how to sleep well, breathe well and eat well', presented by Dr Ron Ehrlich.



Ron Ehrlich's lecture Mouth to Mouth



Dr Janet Kim receiving her Fellowship Certificate

May arrived before we knew it, with the inaugural International Conference on the Science of Nutrition in Medicine and Healthcare held in Bondi, Sydney (see conference write-up in this issue). The conference proved so successful that we had to turn away last minute registrations and a second one is planned for May 2012 in Melbourne. More information is available at www.nutritionmedicine.org.au with more details forthcoming in the new year.

In the remainder of 2011, training events were held on the Gold Coast and in Melbourne. Melbourne was particularly well-attended and delegates were impressed by the calibre of the speakers and the content of the programs. This year also saw the implementation of a new 'workshop' session in some of the courses, which would commence with a short lecture followed by a round-table discussion assisted by a panel of lecturers.



ACNEM board members following the AGM

TRAINING CALENDAR

ACNEM also attended a number of events as an exhibitor. The GP11 in Hobart, Tasmania, saw 2000 doctors through its doors. ACNEM's exhibit stand was well attended by delegates at GP11, the Healthscope Functional Medicine Conference, the AIMA Integrative Medicine Conference and the ALMA (Australian Lifestyle Medicine Association) Conference.



Michelle Bradford and Jimena Acevedo introduce ACNEM at GP11

ACNEM's email communication continues to flourish with the addition of a member only e-News distributed weekly. ACNEM now produces a quarterly Journal, a monthly e-News to its entire database and a weekly e-News to members only.

With the increase in activity, ACNEM welcomes its newest staff member, Sean Hubbard. Sean will assist in providing website and promotional material design and development.



Max Wang and Sean Hubbard at the recent Melbourne Course

Moving into 2012 there are some exciting plans afoot for the year and those details will be addressed in the next issue of the ACNEM Journal.

In closing, the ACNEM Team would like to wish all its members and those involved in support of the College throughout the year, a glorious and happy holiday season!



March 2012 Auckland

- Primary Course in NEM (4 days, 22-25 Mar)
- Tiny Tots to Teenagers - Childhood Conditions (2 days, 22-23 Mar)
- Tired or Wired - Thyroid and Adrenal Conditions (2 days, 24-25 Mar)

July 2012 Perth/Fremantle

- Primary Course in NEM (28-29 July, 2 days face-to-face + 2 days online)
- The GUT - Gastrointestinal Disorders including Gut Dysbiosis and Permeability (28 July, 1 day face-to-face + 1 day online)
- Allergy in General Practice - Allergy, Autoimmune and Dermatological Conditions (29 July, 1 day face-to-face + 1 day online)

September 2012 Sydney

- Primary Course in NEM (4 days, 13-16 Sept)
- No Health Without Mental Health - Mood and Anxiety Disorders, Age and Lifestyle-Related Cognitive Decline (2 days, 13-14 Sept)
- Diabetes Society & CVD - Metabolic Conditions, Diabetes and Cardiovascular Disease (2 days, 15-16 Sept)

November 2012 Melbourne

- Primary Course in NEM (4 days, 22-25 Nov)
- Oral Health Imperatives - Applications of NEM in the Gateway to the Respiratory and Digestive Tracts (1 day, 22 Nov)
- Environmental Health - Exposure, Sensitivity, Toxicity and Detoxification (1 day, 23 Nov)
- A to Z of NEM - Putting it into Practice, including Investigations and Pathology Testing (2 days, 24-25 Nov)
- Heavy Metal Detoxification Workshop with optional Certification (26 Nov, 1 day face-to-face + 1 day online)

March 2013 Adelaide

- Primary Course in NEM (23-24 Mar, 2 days face-to-face + 2 days online)
- Tiny Tots to Teenagers - Childhood Conditions (23 Mar, 1 day face-to-face + 1 day online)
- Menopause & 'Andropause' - Mid-Life for Women & Men, Hormones & BHRT (24 Mar, 1 day face-to-face + 1 day online)

Online Learning (can be taken at any time)

- Primary Course in NEM
- Epigenetics & Nutrigenomics - Nature or Nurture?
- The GUT - Gastrointestinal Conditions
- Injectable Nutrients
- Heavy Metal Detoxification
- Tired or Wired - Thyroid & Adrenal Conditions

Please visit www.acnem.org for up to date course information

"Wish this had been part of my medical training."

THE ACNEM PRIMARY COURSE

The four-day (30 hour) ACNEM Primary Course provides foundation training in NEM, covering the key nutritional, environmental and biochemical factors in health and well-being, and treatment approaches to many of the conditions, illness and disease seen in primary care. The course is pitched at a post-graduate medical level, providing the nutritional biochemistry not taught at medical school or during registrar training, and the application of this knowledge in clinical practice. With practical tools to aid integration into daily practice, the Primary Course enables practitioners to immediately begin practising Nutritional and Environmental Medicine confidently and safely.



Dr Matthew Shelton lecturing in the Primary Course

Topics covered in the Primary Course include:

- Introduction to NEM
- Gastrointestinal conditions
- Cardiovascular disease
- Diabetes & metabolic conditions
- Allergies and food sensitivities
- Dietary history & the Low Stress Diet
- Cancer
- Mental health
- Chronic fatigue syndrome
- Coeliac disease
- Vitamin C & antioxidants
- Migraines & other headaches
- Adrenal & thyroid conditions
- Musculoskeletal conditions
- Women's health & menopause
- Men's health
- Childhood conditions
- Heavy metal toxicity
- The sensitive patient
- The dental perspective
- Applications in pharmacy
- Contraindications & interactions
- Case histories
- Interactive panel discussions

CERTIFICATE, DIPLOMA & FELLOWSHIP

ACNEM training optionally leads to nested Certificate, Diploma and Fellowship qualifications in NEM, providing greater recognition of training and specialty. The Certificate and Diploma qualifications are open to healthcare practitioners who meet Associate membership requirements while the Fellowship is open to Full members (doctors and dentists). The ACNEM Primary Course is the starting point for each of these qualifications.

FURTHER TRAINING

The Primary Course is complemented by a range of two-day (15 hour) Special Training Programs investigating particular subject areas in more detail, such as Gastrointestinal, Allergy & Autoimmune, Thyroid & Adrenal, Cancer, and Mental Health, to name a few. Some of these programs are also available by distance learning. Prior completion of the Primary Course is recommended.

ONLINE (DISTANCE) LEARNING

ACNEM online learning is good news for those living in rural or remote areas, overseas, or who are otherwise unable to travel or to spend days away from family or practice to attend training in person. The Primary Course and a growing selection of Special Training Programs are available online.

UPCOMING ACNEM TRAINING

March 2012 – Auckland

Primary Course in NEM

Thursday 22 – Sunday 25 March, 2012

The ACNEM Primary Course provides foundation training in Nutritional and Environmental Medicine (NEM) covering the key nutritional, biochemical and environmental factors in health and well-being.

Tiny Tots to Teenagers - Childhood Conditions

Thursday 22 - Friday 23 March 2012

A comprehensive NEM approach to childhood conditions commencing with the nutritional requirements for healthy pregnancy, birth and optimal development in the early years of life, additives and preservatives, ADHD, ASD and other behavioural disorders, allergies and sensitivities, many childhood conditions commonly seen in general practice, adolescent mental health and eating disorders.

Tired or Wired - Thyroid and Adrenal Conditions

Saturday 24 - Sunday 25 March 2012

"Serum TSH is normal but your patient presents with a range of symptoms of hypothyroidism". This popular training program investigates the biochemical and physiological processes behind the symptoms of clinical and sub-clinical thyroid and adrenal conditions, and presents evidence-based NEM approaches and hormonal treatments.



Dr Matthew Shelton lecturing in the Primary Course

