

ALLERGIES AND INTEGRATIVE MEDICINE – MAKING SENSE AS A PRIMARY CARE PRACTITIONER

Maria Christodoulou, MB ChB, Dip Homeopathy, Dip Life Coaching
Division of Family Medicine and Primary Care, Stellenbosch University, Tygerberg, South Africa

ABSTRACT

Integrative medicine (IM) is defined as a healing-oriented medicine that takes account of the whole person (body, mind and spirit) including all aspects of lifestyle. It emphasises the therapeutic relationship and makes use of all appropriate therapies, healthcare professionals and disciplines, in an evidence-based approach. The IM approach presented here considers a different perspective on disease manifestations, explores the pathophysiology of allergy in the context of biochemical individuality and emphasises a systems-oriented approach. Evidence-based dietary guidelines, supplements, botanicals and mind-body modalities that may be of benefit to the allergic patient are presented.

INTRODUCTION

The Consortium of Academic Health Centres for Integrative Medicine (CACHIM), defines Integrative Medicine (IM) as 'the practice of medicine that reaffirms the importance of the relationship between practitioner and patient, focuses on the whole person, is informed by evidence, and makes use of all appropriate therapeutic approaches, healthcare professionals and disciplines to achieve optimal health and healing'.¹

Across the globe there is evidence of an increased demand for an integrative approach that acknowledges complementary and alternative medicine (CAM). Deteriorating patient-provider relationships, the escalating costs of conventional medicine, overutilisation of pharmaceuticals and technology, and the pandemic of chronic disease for which medicine has yet to find adequate solutions, are contributing factors in this trend.² Public perception that conventional management of chronic conditions is often exclusively reliant on pharmaceutical measures, while potentially ignoring other options which are deemed to be safer, less invasive, more natural and more cost-effective, is causing patients to broaden their healthcare options by going outside the conventional healthcare system. Research also shows that 'people find complementary approaches to be more aligned with their own values, beliefs, and philosophical orientations toward health and life'.² This is borne out by the fact that South African consumers spent approximately R3 billion on traditional medicines and R4 billion on complementary and alternative medicines, in 2006 alone.³

In the context of all of this, medical practitioners are often left floundering. Lack of knowledge, limited understanding and no regulated forums for proper education in the available evidence or effective use of CAM modalities leaves them without access to relevant information, an inability to answer clinical questions and no

means of effective collaboration with the vast network of CAM and traditional medicine (TM) practitioners who provide support to their patients. This in turn places patients at greater risk of making unsafe treatment choices, forgoing necessary conventional treatments and receiving inadequate supervision.

Laying the foundations: A note on terminology

The terms **allopathic** or **conventional medicine** typically refer to 'western'/orthodox medicine as practised by the scientifically trained medical doctor in hospitals and clinics throughout the world. The term **alternative medicine** usually refers to any treatment, therapy or modality that is not recognised by allopathic medicine and that patients might use *instead of* conventional medicine. **Complementary medicine** usually refers to any treatment, therapy or modality that may be used *in conjunction with or as an adjunct to* allopathic medicine. An example of this would be the use of a herbal medicine (made from herbs) to treat symptoms of nausea while a patient is having chemotherapy. It is important to understand cultural bias when defining something as CAM. For example, to the doctor of Chinese medicine, Chinese medicine may be the convention, and anything else, including allopathic medicine, might be considered alternative or complementary.

Integrative medicine is not CAM. Neither is it complementary or alternative to allopathy. On the contrary, IM represents a holistic approach to patient care that is based on the biopsychosocial framework and is in line with current trends in family practice. At the same time, it extends beyond the bounds of regular medical practice to acknowledge different kinds of evidence and incorporate methods, treatments and practices from different paradigms in an evidence-based approach. This may include functional medicine, lifestyle medicine, preventative medicine, and other approaches, alongside CAM methodology.

The integrative practitioner

There is a common misconception that IM is the domain of CAM practitioners or those 'misguided' colleagues who operate outside the bounds of 'proper' science. In fact, good IM practitioners embody the ethos of a research-based model by being enquiry-driven and open to new paradigms. An IM practitioner is not defined by the fact that he or she may draw on CAM modalities. Rather, IM practitioners are defined by their capacity to practise biopsychosocial medicine with a strong emphasis on the importance of the therapeutic relationship and broader concepts of health and wellness, alongside an awareness that the doctor must serve as a role model and advocate for health. Practising IM is less about the tools in the medical toolbox and more about a way of being and behaving in relation to patients. Many CAM practitioners are guilty of a mechanistic, reductionist approach that simply replaces allopathic drugs with herbs and homeopathic preparations to manage symptoms. Similarly, many allopathic practitioners are practising in a holistic, systems-based,

integrative way, without necessarily incorporating CAM methods and practices.

The author's perspective

In describing the IM perspective on allergies it is not the author's intention to suggest that mainstream approaches to allergy are not holistic or integrative in nature. Instead, the intention is to offer a perspective that might emphasise and reinforce what we already know while introducing new concepts that may be useful to the primary care practitioner.

The article therefore provides a brief overview of the integrative medicine perspective and discusses allergies in this context. It also describes some of the therapeutic options for which there is a reliable evidence base. Since there is already much literature pertaining to the pathophysiology of allergy and conventional allopathic treatment, especially of acute and life-threatening allergic manifestations, these will not be the focus of this article.

AN INTEGRATIVE PERSPECTIVE

The biomedical perspective has tended toward a mechanistic and reductionist view that seeks to understand the underlying cause of disease by way of a linear path in which there is a single, underlying initiating cause for any pathology. Identifying and treating 'the cause' becomes the primary therapeutic goal of a pathology-based, disease-oriented approach. The additional assumption has been that each disease or illness has the same, or very similar, underlying cause in every individual who exhibits the disease. This resulted in standardised approaches for treating people with the same disease as a collective group, rather than as unique, complex individuals displaying similar pathology.

IM takes a broader stance, which asserts that multiple causative factors (genetic, environmental, nutritional, physiological, psychological, lifestyle, spiritual, etc.) may come together in a particular individual in a particular way at a particular time to precipitate a particular disease process. This allows for recognition of biochemical and psychosocial individuality (i.e. variations in metabolic function that derive from genetic and environmental differences among individuals) and individualised application of therapeutic interventions (including biomedical ones). The causative combination will be unique to each individual even though the ultimate manifestation might be a similar disease process.

Health is viewed as a state of dynamic balance between internal and external, individual and collective, constructive and destructive forces, that impact on the patient. Rather than being 'caused' by a morbid agent (e.g. virus or bacteria or allergen), symptoms of disease are the result of the body's intrinsic response or reaction to that morbid agent as it attempts to defend or heal itself.⁴ With this in mind, symptoms and disease are not seen as an enemy to be destroyed, but a constructive phenomenon that is the best 'choice' the body can make to correct an imbalance, given its circumstances.

Imbalance and susceptibility can occur at multiple levels such as physical, emotional, mental, spiritual, or environmental, and all of these can express symptomatically through the body. Initially, the signs and symptoms of imbalance may be mild and relatively harmless; prolonged imbalance will result in more chronic and potentially debilitating dysfunction and disease, as evidenced in what has been described as the 'allergic march' (the progression of allergic disorders from atopic dermatitis or eczema to food allergies, allergic rhinitis, and allergy-associated asthma which often begins in early childhood).⁵ The physician's role is to understand and

support the body in its efforts to restore balance, rather than take over or attempt to manipulate the physiology of the body – unless the self-healing process has become so exhausted or overwhelmed that it cannot rally without external intervention. Suppression of symptoms (e.g. inflammation with anti-inflammatories or fever with antipyretics) or treatment of infection (e.g. with antibiotics), without also comprehending and correcting the underlying imbalance or unique susceptibility, may cause greater distress and disease.

IM therefore adopts a systems-oriented 'functional' approach that is based on the understanding that complex and chronic diseases result from long-term disturbances in the normal physiological function of the body. These disturbances or core clinical imbalances may be:

- Immune or inflammatory imbalance
- Digestive, absorptive or microbiological imbalance
- Structural or membrane imbalance
- Hormone or neurotransmitter imbalance
- Detoxification, biotransformation and excretory imbalance
- Oxidation/reduction or homeodynamic imbalance and mitochondriopathies
- Psychological and/or spiritual imbalance.

Intervening to restore physiological function and prevent further disturbances that will result in organ pathology and disease progression is considered paramount to the prevention of illness and restoration of health. In order to do this, practitioners must carefully consider how multiple factors interact with and influence the physiological function of the individual patient. These factors might include:

- Environmental inputs, e.g. air, water, toxic exposure, pollution
- Lifestyle choices, e.g. diet, nutrient intake, exercise habits, sleep patterns
- Mind-body elements, e.g. psychological, spiritual and social factors
- Genetic make-up.

Treatment plans are customised for each patient and focus on interventions that will have the most impact on restoring physiological function as a way of promoting, restoring and maintaining health. This may include combinations of drugs, therapeutic diets, botanical medicines, nutritional supplements, detoxification programmes, counselling on lifestyle, exercise and stress-management techniques, as well as incorporation of evidence-based TCAM modalities and treatments. Figure 1 illustrates the functional medicine matrix model for mapping the patient's history and identifying the core imbalances that may need to be addressed.

IM AND THE ALLERGIC PATIENT

In South Africa, allergies are more prevalent than TB or AIDS, affecting 25-30% of the population and resulting in significant morbidity, absenteeism, loss of quality of life and even fatal outcomes.⁶ According to Potter,⁶ the term allergy describes a spectrum of diseases and variety of reactions whose expression can range from mildly debilitating to life-threatening. The wide range of allergic conditions, along with the diversity in end-organ effects, give the impression that there are a multitude of different mechanisms responsible for allergic symptoms.⁷ However, much of the underlying pathophysiology is very similar and the following two phases are often involved.^{6,7}

- **Induction phase.** An initial sensitisation stage, in which a genetically susceptible individual develops immune memory following allergic sensitisation to

an inhaled, ingested or injected substance. During this stage the person often has no symptoms of allergy since changes are at the molecular and cellular level.

- **Effector phase.** A second, reactivity phase that occurs when the sensitised person is re-exposed to the allergen. This re-exposure results in a cascade of reactions wherein the mediators of allergic inflammation produce the observable symptoms of an allergic reaction. These can vary from negligible rhinorrhoea to severe anaphylaxis and sudden death, depending on the degree of exposure and specific sensitivity of the individual. Differences in target organ responses will ultimately dictate the clinical syndrome that presents once a reaction has been induced.

In addition to managing the end-organ manifestations of the allergic response, the integrative practitioner will consider measures to diminish the 'atopic' predisposition in each patient, thereby intending to minimise or even prevent future recurrence of allergic manifestations.

Key considerations that can be discerned from the description of the two stages include:

- The unique susceptibility of individual patients
- The common inflammatory pathway with known pathophysiology of immune function
- Individual variation resulting in differing target organ responses.

The unique susceptibility of individual patients

Gene expression is a product of the interaction between genetic predisposition and the environment. Allergic expression is a product of the interaction between genetic predisposition, immunity and the environment. Factors determining susceptibility are therefore genetic, immunological and environmental.

In considering environmental factors the IM practitioner will pay attention to aspects over which the patient has choice (such as diet, exercise and lifestyle); aspects that may be outside the direct control of the individual (such as air and water quality, exposure to toxins and microbes); aspects that may be the result of unavoidable trauma or exposure (such as micro-organisms in food); and psychosocial factors (such as stress levels, psychospiritual factors, access to resources and socioeconomic status). According to Potter,⁶ factors typically

influencing the expression of allergy in Africa include:

- TB/AIDS
- Bacterial and viral infections
- Parasitic infections
- Endotoxin exposure
- Dietary changes/insufficiencies
- Squatter conditions
- Western lifestyle
- Urbanisation/migration.

What is also notable according to Potter, is that rural Africans who live in the grasslands or deserts of Southern Africa in traditional accommodation and follow traditional dietary practices rarely suffer from allergic disease, and that diseases such as eczema, food allergy and allergic rhinitis are rare in rural Africans.⁶ This is despite the fact that traditional dwellings are typically made from clay, cow dung and thatch and surrounded by grass pollens, wood smoke, chickens, goats, fungal spores and cow allergens; theoretically, an ideal environment for the development of inhalant and food allergies.⁶ The so-called 'hygiene hypothesis' also suggests that the reduced consumption of fermented foods, prevalent use of antibiotics and increase in hygiene, with its resultant lack of exposure to microbial stimulus early in childhood, is a major factor for this difference in sensitisation of rural versus urban children.^{8,9} Potter⁶ cites a study by Steinman *et al.* which revealed an increase in bronchial hyperreactivity and specific IgE responsiveness when rural children adopted a more Western lifestyle; this was similar to the prevalence of these conditions in children born in the Cape Town suburb of Kirstenhof. Similarly, Liu⁵ asserts that 'children who grow up in rural areas of developing countries or in farming communities are several-fold to as much as 50-fold less likely to have allergic conditions and to manifest atopic sensitization or bronchial hyperresponsiveness when compared with children raised in nearby metropolitan areas'. This highlights the importance of considering biochemical, as well as psychosocial, individuality and the 'total burden of toxicity' in defining susceptibility.

Immune function and the inflammatory pathway

Allergic responses and reactions are immune-mediated. The immune system represents an interface between the external and internal environment. In considering inter-

vention for, and prevention of, allergies, it is important to understand the progression of immune dysfunction that typically accompanies this range of reactions. According to Liu,⁵ the development of atopy in early childhood is closely associated with the later development of allergic disease. He clarifies that atopy begins when the immature immune system develops aberrant responses to common, typically benign immunogens, whether environmental or endogenous. Chronic, ongoing exposure then exacerbates and prolongs injury and inflammation to the airways, resulting in abnormal repair of affected tissues. If this process begins in early childhood and continues through the stages of lung growth and differentiation, then the adult lung in such a person may differ from the normal lung, potentially describing the persistent asthma phenotype.⁵

Healthy development of the immune system relies on protective type 1 helper T-cell (Th1) immune responses to naturally

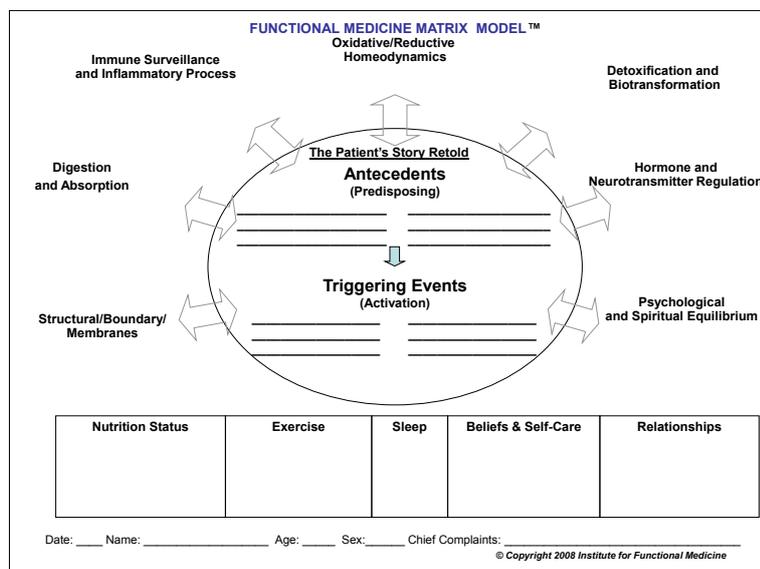


Fig. 1. Functional medicine matrix model (reproduced with permission from the Institute of Functional Medicine).

occurring infections and microbial exposures of the respiratory and gastrointestinal tracts, which begin immediately after birth. Th1-based immunity also prevents pro-allergic type 2 helper T-cell (Th2) immune development and atopy and improves host defence, thereby preventing environmental exposure from precipitating allergic manifestations.⁵ Th1 responses during airway injury and inflammation also inhibit abnormal repair processes that underlie pathological tissue changes in asthma.⁵ According to Michail,⁹ there is increasing evidence to suggest that environmental factors and aberrant gut microflora are associated with a shift of the Th1/Th2 balance towards a Th2 response in allergic disorders, although the exact aetiology remains unclear.

Postulated immunological modifiers of expression of atopic diseases include:⁶

- Early exposure to lipopolysaccharide/endotoxins which induce Th1 responses
- Parasite induction of interleukin-10 (IL-10) production via Th2 cells
- Tolerance induced by heavy allergen exposure (especially via the oral route)
- Exposure to minute doses of allergen in 'clean' environments tends to 'sensitise'.

Individual variation in target organ response

Immune function is inextricably interconnected not only with external, environmental influences, but also with internal, multiple-system function. The endocrine system, gastrointestinal system, nervous system and nutritional status are intricately associated with immune health. A systems approach is therefore imperative when contemplating suitable interventions and preventative measures for allergic responses.

PREVENTION AND INTERVENTION

Nutrition

Food allergies and atopic dermatitis may precede and predict the development of allergic rhinitis and asthma.⁵ The severity of atopic disorders is predictive of their persistence and progression.⁵ This suggests that dietary intervention, particularly in childhood, may be a vital part of management of the allergic patient. Food allergies are increasingly common in the primary care setting.¹⁰ Practitioners distinguish between food allergies caused by a distinct immunological reaction (such as IgE-mediated anaphylactic reaction to peanuts or shellfish) and purported food sensitivity and/or intolerance, which appears to be a more common complaint in general practice. Food intolerance is defined as a reproducible adverse reaction to a specific food or group of foods without a clearly identifiable immune mechanism.¹⁰ Exaggerated reactions to a digestive product of a particular food, impairment of the intestinal barrier function (also known as 'leaky gut syndrome'), generalised and immunoglobulin G (IgG)-mediated inflammatory reactions have all been postulated as possible mechanisms.^{10,11} Symptoms may range from the abdominal discomfort of lactose intolerance and irritable bowel syndrome, to worsening of arthritic symptoms in response to wheat-containing foods.¹⁰ Heightened awareness and clinical suspicion should alert the practitioner to the possibility of food sensitivity or intolerance, especially in patients with chronic and recurring symptomatology.¹⁰ In particular, dairy products, animal proteins and wheat have been popularly linked to allergic exacerbations and worsening of allergic symptoms in many patients.⁷ According to Enrique *et al.*¹² several studies have also documented cases of cross-reactivity between food and pollen antigens.

Modified elimination or low allergen diets form the mainstay of diagnosis and even treatment in an integrative approach. Common antigens such as wheat and dairy, or select antigens identified by the history, are removed from the diet for a period of 4-6 weeks with appropriate support to ensure optimum nutrition. During this time the patient is observed for an improvement in symptoms and supported with an array of other measures designed to reduce inflammation and restore healthy gastrointestinal and systemic function. Implicated foods may then be re-introduced with 2-4-day intervals, allowing for possible delayed hypersensitivity reactions to be observed. If these occur then the offending food should be eliminated entirely in the case of true allergy, or for a period of 3-6 months in the case of sensitivities and intolerance, after which it may be re-introduced again.

Basic dietary guidelines for allergic patients

These include:^{7,10,13}

- **Use plant proteins instead of animal proteins** as far as possible since animal proteins include high levels of arachidonic acid (AA) which may be inherently pro-inflammatory^{7,14-16} in action. Elmadaf and Kornsteiner¹⁴ cite research by Dimopoulos and by Das which shows that prostanoids (prostaglandins, prostacyclins, thromboxanes), leukotrienes, lipoxins, and resolvins released from dihomo-linolenic acid (DGLA), AA, eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA) have a key role in modulating inflammation, cytokine formation, immune response, platelet aggregation, vascular reactivity and thrombosis. In particular, studies have focused on the role of AA metabolites as mediators of inflammation in various conditions, including asthma.¹⁴⁻¹⁶ AA produces prostaglandin E2 (PGE2) and thus raises cardinal signs of inflammation, including fever, vascular permeability and vasodilatation, and enhances pain and oedema caused by other agents such as bradykinin and histamine.¹⁴ AA also induces thromboxane A2 (a powerful platelet aggregator and vasoconstrictor) as well as prostacyclin 12 (vasodilator and inhibitor of platelet aggregation).¹⁴ In addition, leukotriene B4 (LTB4), which is a potent inducer of inflammation, leucocyte chemotaxis and adherence, is produced via lipoxygenase from AA.¹⁴ Conversely, investigations have also demonstrated that PGE2 inhibits lipoxygenase thereby reducing the formation of LTB4 and encouraging the formation of lipoxins, which have anti-inflammatory effects.¹⁴
- **Avoid or eliminate milk and dairy products.**
- **Eliminate wheat and other gluten-containing products.**
- **Increase intake of natural antioxidants** by increasing intake of fruits and vegetables. Although this is a subject of much debate and controversy, various studies have suggested that increased dietary consumption of vitamin C and selenium, in particular, as well as vitamin E and vitamin B6, may reduce allergic manifestations and asthma prevalence.¹³ Hasset¹³ also cites some evidence that a vegan exclusion diet with high fluid intake may lead to significant improvement in symptoms, although this may be due to the high intake of fruits and vegetables.
- **Eliminate polyunsaturated vegetable oils, partially hydrogenated oils and all foods that may contain trans-fatty acids** (e.g. fried foods). These were shown to double the risk of asthma and potentially contribute to 17% of asthma cases in children aged 3-5 years in a survey conducted by Haby *et al.*, cited by Hasset,¹³ among children in New South Wales.

- **Increase intake of omega-3 essential fatty acids.** These have been shown to decrease the ratio of omega-6 to omega-3 fatty acids in the fatty acid composition of cell membranes, resulting in less substrate for inflammatory mediator production.^{7,14} Elmadfa and Kornsteiner cite research by Dimopoulos and by Calder which indicate that decreased production of AA-derived mediators can be achieved by fish oil consumption, leading to postulation that fatty fish has anti-inflammatory effects and may be useful in the prevention and therapy of inflammatory conditions. An Australian study by Hodge *et al.*, cited by Hassed,¹³ found that children who ate fish once a week reduced their chance of developing asthma by one-third compared to those who ate no fish, although evidence for clinical effect of omega-3 supplements in asthma is still unconvincing.

Gastrointestinal health

The mucosal surface of the gastrointestinal system acts not only as a portal and barrier to the entry of ingested substances, but also as an organ of immune surveillance, detoxification and neuro-endocrine modulation. Seventy per cent of immune cells occur in the gut-associated lymphoid tissue (GALT).¹⁷ The ability of the body to maintain healthy gastrointestinal function, and to repair the mucosal barrier is therefore integral to protection from many diseases and disorders. Research also suggests that commensal flora may play a role in immune regulation, depending on the specific antigen, intestinal permeability, degree of inflammation, and maturation of the GALT, particularly in early infancy. Hanaway¹⁷ cites Kelly & Coutts, who postulate that increased prevalence of formula feeding and subsequent loss of critical immunological factors present in breast milk have contributed to the increased incidence of allergy and asthma. This is further borne out by evidence that encouragement of prolonged breastfeeding, specifically in children whose mothers do not have allergic disease, has a protective effect.^{6,11}

The '4R' programme is advocated by many IM practitioners as a critical component of management to optimise gastrointestinal function:¹¹

- **Remove** potentially antigenic foods and additives with a modified elimination diet and eradicate pathogenic bacteria, fungi and parasites with appropriate drugs and/or botanicals. Blood tests for food allergens, e.g. radio-allergosorbent test (RAST), followed by specific IgE may be useful only where a specific allergen is suspected. Stool analysis may identify relevant pathogens.
- **Replace** critical digestive enzymes (such as proteases, lipases, cellulases) and other digestive factors which may be lacking or limited. Gastric analyses, fat absorption tests and stool analysis may verify the need to replace enzymes and other digestive factors.¹¹ Plant-based formulas containing digestive enzymes are readily available.
- **Re-inoculate** with probiotics to re-establish microfloral balance. According to Michail,⁹ probiotics have been shown to modulate the immune system back to a Th1 response, and several *in vitro* studies have suggested a role for probiotics in treating allergic disorders.^{8,9,18} At the same time, Michail⁹ also points out that human trials demonstrate some limited benefit for the use of probiotics in atopic dermatitis, less robust data for benefit in the use of allergic rhinitis, and no role in the treatment of bronchial asthma.⁹ A study by Taylor *et al.*¹⁸ concluded that early probiotic supplementation with *Lactobacillus acidophilus* did not reduce the risk of atopic dermatitis in high-risk infants and was, in fact, associated with increased al-

lergen sensitisation in infants receiving supplements. Kalliomäki *et al.*⁸ point out that choice of probiotic strain, widely variable dosages, timing of interventions, and differing trial designs are important factors in reviewing the evidence, and provide numerous guidelines for further studies.⁹ Anecdotal experience does however suggest that probiotic supplementation may be of benefit to patients and future studies may substantiate this. Various commercial preparations are available and IM practitioners will usually prescribe either a blend of several bacteria, or particular strains of bacteria for different ailments, depending on their particular clinical experience.

- **Repair** by providing nutritional support for regeneration and healing of the gastrointestinal mucosa. Nutrients that may be valuable in mucosal cell differentiation, growth, functioning and repair, include glutamine, essential fatty acids (omega-3), zinc and pantothenic acid.¹¹

Detoxification

The body's complex detoxification systems function to minimise potential damage from exogenous and endogenous sources. It therefore follows that optimal functioning of the organs (liver, kidneys, lungs, skin and intestines) and pathways (lymph, blood, bile, extracellular matrix) of elimination may be essential to the management of most chronic diseases, since overload or imbalance is likely to aggravate and perpetuate chronic illness. It is recognised that diet and lifestyle choices can influence the level of exposure to potentially toxic substances, as well as detoxification function, and various mechanisms for this have been described.^{19,20} Experts continue to debate the validity of evidence for detoxification procedures. Emerging science does however support various links between nutrition and detoxification, therefore diet forms the mainstay of treatment.¹⁹ Regular exercise, massage, sauna, and various nutritional supplements and herbs may purportedly be of benefit to the 'toxic' patient.²⁰

Supplements

- **Quercetin** is a bioflavonoid found in apples, buckwheat, onions, and citrus fruits which, according to Otsuka *et al.*, cited by Horwitz,⁷ and others, appears to stabilise the membranes of mast cells and reduce the release of preformed histamine *in vitro*.⁷ According to Horwitz,⁷ quercetin is commonly recommended for use during the allergy season, or even year-round for those with perennial allergies, since its action appears to be primarily preventative in nature.⁷ He recommends a dose of 400-600 mg of a coated tablet 1-3 times daily between meals. This dose may be adjusted according to clinical response. No specific precautions or contraindications apply.⁷
- **Magnesium** is often a routine standard of care in the emergency treatment of asthma, because of its anti-inflammatory properties and relaxant effect on smooth muscle. Some published reports note an improvement in asthma symptoms in patients with higher magnesium intake.^{7,11} Low-dose supplements (400 mg of magnesium glycinate) may have a role to play in the management of asthma.^{7,11}
- Other nutritional supplementation such as vitamin C (500-1000 mg), selenium, glutamine, zinc, pantothenic acid and omega-3 fatty acids, as well as probiotics, may be of value as indicated earlier in the text.

Botanicals

- **Stinging nettle (*Urtica dioica*)** has apparently been used as an anti-allergy preparation by some IM prac-

tioners for many years.⁷ The 'hair' and leaves of this plant apparently contain histamine, serotonin, acetylcholine and 5-hydroxytryptamine compounds, which are associated with allergic manifestations.⁷ Various theories have been proposed for its antihistaminic properties⁷ and one randomised, double-blind study found that 57% of patients rated it effective in relieving allergic rhinitis symptoms, while 48% said that it equalled or surpassed previously used allergy medications in its effectiveness.⁷ Recommended dosage is usually 300-350 mg of a freeze-dried extract used 1-3 times per day, or as needed. Rare allergic reactions and possible mild gastrointestinal irritation have been reported.⁷

- **Other herbs** that look promising based on a review of various trials, include garlic, dried ivy leaf extract, ginkgo biloba, ephedra, boswellia, some Ayurvedic Indian herbs (e.g. Albizia and Coleus) and thyme extract.⁷ Herbs such as slippery elm, fenugreek, devil's claw, angelica sinensis and licorice, purportedly also have antioxidant and anti-inflammatory properties. Herbal medicines can have interactions with pharmaceutical drugs and should only be prescribed by appropriately trained practitioners.

Mind-body therapies

Numerous studies document the value of mind-body approaches to many allergic conditions.^{2,7,13,18} Lehrer's review of 185 references (cited by Hasset¹³) concluded that panic and negative emotions affect asthma, producing hyperventilation, increased autonomic lability, autonomic arousal, bronchoconstriction, and poor health behaviours.¹³ Family stress and a range of psychosocial factors are predictive factors in increased likelihood of genetic disposition to asthma and paediatric asthma deaths.¹³ Stress, via increased serum cortisol, is considered pro-inflammatory and stress reduction through techniques such as meditation and yoga may help to decrease the frequency and intensity of allergic reactions.^{13,21} Relaxation techniques such as breathing exercises have been associated with positive effects on inflammatory illnesses including asthma and rheumatoid arthritis.¹³ According to Hasset,¹³ yoga breathing exercises, when taught by a trained yoga therapist, have been associated with significantly less asthma attacks per week, improved scores for drug treatment and improved lung function. Hasset¹³ also cites evidence that biofeedback and hypnotherapy have been associated, in some reviews, with reduced hospital admissions and reduced need for prednisolone. A meta-analysis by Devine, cited by Hasset,¹³ revealed that psycho-education (education, behavioural skills, cognitive therapy and counselling) reduced asthma attacks and was associated with better lung function, adherence to treatment, utilisation of health care, psychological wellbeing and use of medication.¹³

Other

- Standard recommendations are to reduce exposure to mould, pollen, dust mites, dander and other environmental allergens.
- Neti pots, small 'teapot-like' devices available in health stores, are purportedly excellent for use as saline irrigators. This removes particle allergens from sensitive mucous membranes and has been shown to decrease the inflammatory mediators histamine and leukotriene C4.²²
- Anecdotal evidence suggests a place for chiropractic, homeopathy, massage, biochemical tissue salts, and qigong in the management of asthma and allergies.¹³ Further rigorous studies are needed to confirm these results.

CONCLUSION

The emphasis on recognising fundamental clinical imbalances and optimising physiological function to address chronic and inflammatory disease is a valuable addition to a disease-oriented, pathology-based approach. The importance of nutrition and the supportive role of supplements, herbs and mind-body approaches advocated by the IM approach have much to offer the primary care practitioner, particularly with regard to the way management of chronic disease is perceived.

Declaration of conflict of interest

The author declares no conflict of interest.

REFERENCES

1. Consortium of Academic Health Centres for Integrative Medicine, 2004. www.imconsortium.org/about/home.html [Accessed 25 May 2010].
2. Rakei D, Weil A. Philosophy of integrative medicine. In: Rakei D, ed. *Integrative Medicine*, 2nd ed. Philadelphia: Saunders Elsevier, 2007.
3. Visagie C, Sapa. Traditional healers and medical schemes. Health24 articles, 2009. <http://www.health23.com/natural/General/17-2898,51174.asp#> [Accessed 24 February 2010].
4. Pizzorno JE Jr, Snider P. Naturopathic medicine. In: Micozzi MS, ed. *Fundamentals of Complementary and Integrative Medicine*, 3rd ed. St Louis, Missouri: Saunders Elsevier, 2006: 236.
5. Liu AH. The allergic march of childhood. *MedSci Update* 2006; 23: 1-12.
6. Potter PC. Inaugural lecture: allergy in Southern Africa. *Current Allergy & Clinical Immunology* 2009; 22: 156-161.
7. Horwitz R. The allergic patient. In: Rakei D, editor. *Integrative Medicine*, 2nd ed. Philadelphia: Saunders Elsevier, 2007: 359-366.
8. Kalliomäki M, Antoine J, Herz U, Rijkers GT, Wells JM, Mercenier A. Guidance for substantiating the evidence for beneficial effects of probiotics: prevention and management of allergic diseases by probiotics. *J Nutr* 2010; 140: 713S-721S.
9. Michail S. The role of probiotics in allergic diseases. *Allergy, Asthma & Clinical Immunology* 2009; 5(1): 5-11.
10. Horwitz RJ, Lin RY. Integrative approach to allergy. In: Klinger B, Lee RA, eds. *Integrative Medicine: Principles for Practice*. New York: McGraw-Hill, 2004: 371-395.
11. Lukaczer D. The '4R' program. In: Jones DS, editor-in-chief. *Textbook of Functional Medicine*. Gig Harbor, WA: Institute of Functional Medicine, 2006: 462-468.
12. Enrique E, Cistero-Bahima A, Bartolome B, et al. *Platanus acerifolia* pollinosis and food allergy. *Allergy* 2002; 57: 351-356.
13. Hasset C. An integrative approach to asthma. *Australian Family Physician* 2005; 34: 573-576.
14. Elmadfa I, Kornsteiner M. Fats and fatty acid requirements for adults. *Ann Nutr Metab* 2009; 55: 56-75.
15. Wenzel SE. Arachidonic acid metabolites: mediators of inflammation in asthma. *Pharmacotherapy* 1997; 17: 3S-12S.
16. Chen S. Natural products triggering biological targets – a review of the anti-inflammatory phytochemicals targeting the arachidonic acid pathway in allergy, asthma and rheumatoid arthritis. *Curr Drug Targets* 2010; 18. [Epub abstract ahead of print].
17. Hanaway P. Balance of flora, GALT, and mucosal integrity. In: Jones DS, editor-in-chief. *Textbook of Functional Medicine*. Gig Harbor, WA: Institute of Functional Medicine, 2006: 444-452.
18. Taylor AL, Dunstan JA, Prescott SL. Probiotic supplementation for the first 6 months of life fails to reduce the risk of atopic dermatitis and increases the risk of allergen sensitisation in high-risk children: a randomised controlled trial. *J Allergy Clin Immunol* 2007; 119: 184-191.
19. Bland J. Managing biotransformation: introduction and overview. *Altern Ther Health Med* 2007; 13: S85-S87.
20. Hyman M. Systems biology, toxins, obesity, and functional medicine. *Altern Ther Health Med* 2007; 13: S134-S139.
21. Laube BL, Curbow BA, Costello RW, et al. A pilot study examining the relationship between stress and serum cortisol concentrations in women with asthma. *Respir Med* 2002; 96: 823-828.
22. Georgitis JW. Nasal hyperthermia and simple irrigation for perennial rhinitis: changes in inflammatory mediators. *Chest* 1994; 106: 1487-1492.