

SUSTAINABLE HEALTHCARE

WORKING TOWARDS THE PARADIGM SHIFT

**A White Paper by the
Alliance for Natural Health International**

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EXECUTIVE SUMMARY

For more than two decades the orthodox (allopathic or western) healthcare establishment has vigorously attacked the scientific basis, efficacy and safety of the diverse range of modalities befitting approaches that are commonly placed under the banner of that is commonly referred to as complementary and alternative medicine (CAM). Simultaneously, the CAM community, the natural products industry, health freedom organisations and large numbers of consumers and protagonists of CAM, have argued that these attacks are unjustified and have reciprocated by exposing the apparent lack of efficacy and poor safety record of orthodox healthcare. These differences of opinion are so deep-seated that the polarity between the two contrasting approaches has become increasingly reinforced. The relative lack of resources within the CAM community, the natural products industry and the health freedom movement, by comparison with the pharmaceutical industry and orthodox medical system which it supports, means that it is by and large proving very difficult to improve the acceptability of CAM modalities in mainstream healthcare.

All the available indicators suggest that orthodox healthcare, which is dominated by interventions with new-to-nature pharmaceutical drugs, is not sustainable. 'Evidence-based medicine' (EBM) is increasingly being used both as a means of justifying pharmaceutical intervention as the world's dominant approach to healthcare and its ever-wider application to discredit or even outlaw particular CAM approaches.

The Alliance for Natural Health (ANH) proposes that the application of the principles of sustainability to healthcare may be one of the most effective ways of altering the perception of established and emerging CAM modalities from the vantage point of government authorities and the current medical establishment. In addition, such an approach could significantly assist a transition in mainstream healthcare that is characterised by improved take up of biologically compatible modalities, as found within CAM. Such a transition would, among other things, allow for much greater use of preventative approaches, especially among children, young adults and non-diseased sub-populations, better diagnosis of disease, widespread adoption of lifestyle and nutrition-based approaches, greatly reduced dependence on new-to-nature medications and marked changes in medical training. With the identification of scientifically established criteria for sustainability in healthcare, only those approaches meeting the criteria stipulated would be accepted.

Sustainability has become one of the key technological drivers in a range of other industries where social or environmental degradation has been implicated, and it is incongruous that the principles of sustainability have yet to be applied to healthcare.

The ANH, together with its affiliates and strategic partners, is well set to facilitate the transition towards more sustainable and biologically compatible systems of healthcare. The transition will require improved allocation of funding of independent research in academic institutions, extensive public and government-targeted

awareness campaigns and the establishment of scientifically monitored pilot programmes designed to demonstrate both feasibility and sustainability.

A transition towards sustainability would also help to eliminate the existing polarity between orthodox healthcare and CAM approaches and would inevitably prefer those approaches that function harmoniously with biological systems and human metabolism, rather than those that oppose them. Accordingly, more sophisticated systems of risk/benefit analysis, probably based around the emerging field of decision science and cybernetics, will be required to better inform decision-making.

1. BACKGROUND

1.1 Our alienation from nature

One of the most profound lifestyle transitions to have occurred since the ‘industrial revolution’ has been the alienation of humankind from nature. Most of us, particularly in the industrialised world, consume diets that are increasingly dissociated from those with which we have evolved as a species. Many of us express a wide range of intolerances, allergies and sensitivities to food and food ingredients in response to this. These foods and our increasingly sedentary, indoor lifestyles are now the two factors most responsible for chronic diseases such as cardiovascular disease, cancer, obesity and diabetes, which are not only the leading causes of our death, but also place the greatest burden on our healthcare system.

We are surrounded by synthetic substances, in our homes, in the clothes we wear and in the air we breathe. We walk on cement pavements and isolate our feet from the earth through the rubber soles of our shoes or the tyres of our cars. Our species has become ever more dissociated from the animals and plants with which we share our world, most people’s limited knowledge of nature coming not from personal experience of it, but from what they have learned in school or from a television screen.

Our minds are taken up, so much of the time, by things that keep us in a status quo with our industrialised world, with our financial systems and in social communities or ‘nuclear’ families that are increasingly dysfunctional or fragmented. We may be living a few years longer than we did a hundred or so years ago, but most of us do it with the burden of increasing sickness and disability.

In our attempt to recover our health, the majority of our population are reliant on a healthcare system that is dominated by the use of patented pharmaceutical drugs, the likes of which human bodies and cells have never been exposed, save for in the last few decades.

Putting this into evolutionary perspective, if we liken the evolution of the human species over the last half a million years to a 24-hour clock, it is less than a tenth of a second ago that we have seen the development of the petrochemical industry in the post-WWII period. It is this industry that has, in turn, spawned the pharmaceutical,

chemical and agro-chemical industries that have become such dominant industrial forces in today's world.

1.2 The evolution of healthcare

For many thousands of years we managed our health by controlling our alignment and interaction with nature as well as, for many, by calling on, for sake of a better term, spiritual energies. The knowledge born out of centuries of successes and failures, of trial and error, was passed down, generation to generation, allowing for steady evolution of these healthcare systems. Some of these great healthcare traditions are still alive today in various parts of the world, while many have become extinct. Surviving traditions include Ayurveda, Unani, Traditional Chinese Medicine, and a multitude of diverse healthcare traditions still existent in Japan, South-East Asia, southern Africa, South America and elsewhere. Many of these still rely on mind-body-spirit interactions, but owing to the complexity of these interactions, such approaches have not been particularly amenable to evaluation by evidence-based medicine (EBM) so have been largely rejected by orthodox healthcare. Because of this, these traditions are now more under threat than at any other time in their history.

Various elements of these traditions have been incorporated into a large range of modalities which are commonly positioned under the complementary and alternative medicine (CAM) umbrella. The modalities include nutritional and phytonutrient therapies, acupuncture and acupressure, herbal medicine, homeopathy, energy medicine, aromatherapy, as well as a wide range of massage traditions and manipulative therapies. Nutritional medicine or therapy, although a more recent development, is often considered as a CAM modality despite nutrition and dietetics being acknowledged branches of orthodox medicine.

In the minds of many, healthcare is now subject to a duality, in which the multitude of options have been whittled down to two categories or options: 'orthodox medicine' and CAM. Of these, orthodox medicine has become by far the dominant system in the majority of the world and is often the only form of healthcare taught to those to whom many of us entrust the management of our health, namely physicians.

2. SUSTAINABILITY IN HEALTHCARE

2.1 How sustainable is orthodox medicine?

Never before have so many drugs been used in an attempt to re-establish health and wellbeing in human beings. Americans on average make over 1.1 billions visits to physicians or hospital outpatients departments annually, amounting to an average of around 3.8 visits per person.¹ About 65% of all patient visits to physicians result in drugs being prescribed.² Over 3 billion prescriptions are filled each year,³ averaging around 10 prescriptions for every person in the USA annually. With an average cost of \$54.34 per prescription in 2007,⁴ the annual cost of these prescriptions is about US\$165 billion, the equivalent of \$550 for every American each year. Adverse drug reactions (ADRs), which increase exponentially in those taking 4 or more different medications,⁵ are now the fourth leading cause of death in the USA,⁶ putting them in front of pulmonary disease, diabetes, AIDS, pneumonia, accidents, and motor vehicle deaths.⁷ It has been estimated that in the UK, adverse drug reactions cost the country's National Health Service £2 billion (US\$3.9 billion) annually.⁸ A recent Swedish study has revealed that 3% of Swedes die from adverse drug reactions, making them the seventh most common cause of death in the country.⁹

In the USA, if the estimated 98,000 deaths associated with preventable medical and surgical injuries in hospitals,¹⁰ as well as the estimated 90,000 deaths associated with preventable infections in hospitals¹¹ are added to the estimated 106,000 deaths from

¹ Schappert SM, Burt CW. Ambulatory care visits to physician offices, hospital outpatient departments, and emergency departments: United States, 2001-02. *Vital Health Stat 13*, 2006; (159): 1-66.

² Schappert SM. Ambulatory care visits to physician offices, hospital outpatient departments, and emergency departments: United States, 1997. National Center for Health Statistics. *Vital Health Stat 13*, 1999; (143): i-iv, 1-39.

³ FDA: http://www.fda.gov/FDAC/features/2000/100_online.html.

⁴ <http://www.drugs.com/news/generic-slow-rise-costs-saving-5-2-billion-2007-7843.html>.

⁵ Jacubeit T, Drisch D, Weber E. Risk factors as reflected by an intensive drug monitoring system. *Agents Actions*, 1990; 29: 117–125.

⁶ Lazarou J, Pomeranz B, Corey PN. Incidence of adverse drug reactions in hospitalized patients: A meta-analysis of prospective studies. *JAMA*, 1998; 279: 1200–1205.

⁷ <http://www.fda.gov/CDER/DRUG/drugReactions/default.htm#ADRs:%20Prevalence%20and%20Incidence>.

⁸ <http://www.guardian.co.uk/society/2008/apr/03/nhs.drugsandalcohol>.

⁹ Wester K, Jönsson AK, Spigset O, Druid H, Hägg S. Incidence of fatal adverse drug reactions: a population based study. *Br J Clin Pharmacol*. 2008; 65(4): 573-9.

¹⁰ Zhan C, Miller MR. Excess length of stay, charges, and mortality attributable to medical injuries during hospitalization. *JAMA*. 2003; 290(14): 1868-74.

¹¹ Jarvis WR. The Lowbury Lecture. The United States approach to strategies in the battle against healthcare-associated infections, 2006. *J Hosp Infect*. 2007; 65 Suppl 2: 3-9.

ADRs which follow the non-error prescription of medications,⁶ orthodox medicine is unequivocally the third leading cause of death in the USA. The situation appears similar in most other western countries.

Aside from their deleterious effects, a mere 13% of drugs are known to have beneficial effects,¹² while Dr Allen Roses, vice president of genetics for one of the world's largest pharmaceutical companies, GlaxoSmithKline, admitted in 2003 that: "...the vast majority of drugs - more than 90 per cent - only work in 30 or 50 per cent of the people".¹³

Overall, there is a wealth of evidence to suggest that orthodox or allopathic medicine has had very limited success in dealing with the major disease burdens, namely the chronic diseases that play havoc with the over-50s, being cancer, being heart disease, obesity, diabetes and osteoporosis. Additionally, there is a very high price to be paid for western medicine, both in terms of economic cost and the cost of human suffering. Finally, most attempts by mainstream healthcare to avert or reduce the rate of morbidity in our ageing populations have been little more than ancillary in their effect.

Based on an appraisal of cost (human, environmental and financial) and the resultant benefits, as well as cost and challenges facing the development of new drugs, as well as the lack of success of drug-based approaches in dealing with chronic diseases, it is very difficult to consider that orthodox medicine might meet any reasonable definition of sustainability.

2.2 The principle of sustainability

Sustainability has been defined in many different ways, in different contexts. Most definitions refer one way or another to those approaches that provide the best outcomes for the human and natural environments both now and into the indefinite future. Sustainability relates to the continuity of social, environmental, economic and institutional aspects of human society, as well as to all aspects of the non-human environment.

The word *sustainability* (*Nachhaltigkeit* in German) was used for the first time in 1712 by the German forester and scientist Hannss Carl von Carlowitz in his book *Sylvicultura Oeconomica*. Since this time the term has been used extensively in a wide array of different contexts.

¹² *BMJ Clinical Evidence*: <http://clinicalevidence.bmj.com/cweb/about/knowledge.jsp>.

¹³ *The Independent* newspaper (UK), 'Glaxo chief: Our drugs do not work on most patients', 8 December 2003: <http://www.independent.co.uk/news/science/glaxo-chief-our-drugs-do-not-work-on-most-patients-575942.html>.

In 1995, the World Summit on Social Development defined the term as "the framework for our efforts to achieve a higher quality of life for all people", in which "economic development, social development and environmental protection are interdependent and mutually reinforcing components".

Most of us are very familiar with the application of the principles of sustainability to international development issues, to the energy industry, to forestry and even to agriculture. In agriculture, some would argue that organic and biodynamic farming are subsets of the sustainable agriculture. Organic farming principles are already being diluted by pressure from large agri-business interests, as seen in recent guidelines by the Codex Alimentarius Commission on organically produced foods.¹⁴ These guidelines are at odds with the principles appreciated as early as the mid-twentieth century by a group of British farmers, scientists and nutritionists who recognised the importance of soil health and fertility and the direct connection between farming practice and plant, animal, human and environmental health. This group went on to establish the Soil Association in 1946 – a body that has since been at the forefront of triggering the agricultural revolution that has seen organic food become probably the most socially and environmentally responsible option in agricultural production available.

Today, however, it is possible for foods to be certified organic, whilst not adhering to the principles of sustainability. Increasing amounts of organic food found in major multiples and supermarkets in western countries, much of it carrying very high 'air miles', could hardly be regarded as organic, yet it meets the certification requirements because the use of pesticides and synthetic fertilizers have been avoided during its cultivation or production. Organic farming protagonists, including the Soil Association, are increasingly pushing for a return to sustainable, organic principles based on the development and maintenance of soil fertility and health.

Based on these experiences, and the clear evidence that industry will pay lip service to a concept and exploit any 'wriggle room' left through weaknesses, ambiguity or poor drafting of principles, it is now feasible to develop principles and criteria to tightly define sustainability in relation to healthcare (see Section 2.4).

2.3 The growth of the health freedom movement

There is a common desire among many people in different parts of the world to protect any further erosion of CAM and the use of natural products that are often associated. This desire may emanate from an intrinsic or genetic need in humans to re-connect with nature. The first health freedom organisation established worldwide was the National Health Federation (www.thenhf.com) which was established in the USA in 1955. The American Association of Health Freedom was formed in 1992 following a raid by the Food & Drug Administration on Dr Jonathan Wright's Tahoma

¹⁴ Codex Alimentarius Commission. *Organically Produced Foods*. Third Edition. 2007. FAO/WHO, Rome. (ISBN 978-92-5-105835-0) ISBN 978-92-5-105835-0)

Clinic, well known for its use of nutritional and natural therapies to deal with major diseases such as cancer. The ANH was formed in 2002, initially as a means of preventing bans on hundreds of natural forms of vitamins and minerals by the European Commission, using an approach referred to as ‘good science and good law’. It is now formally affiliated with AAHF, and is engaged in helping to promote ‘natural health’ worldwide. There are presently over 20 non-governmental organisations worldwide that can loosely be described as health freedom organisations and as a group, they constitute—what has become known as—the ‘health freedom movement’. The movement is supported particularly by hundreds of thousands of health-conscious consumers and citizens around the world with concerns over threats to natural health issued by the medical establishment, the pharmaceutical industry, biased scientists and an often biased media. The primary purposes of the movement is to help protect and promote natural health, to defend the diverse range of modalities that constitute CAM in the face of attacks by the orthodox medical establishment and related interests, and to expose weaknesses of pharmaceutically-based, allopathic approaches to medicine.

The health freedom movement, although continuing to grow, is nevertheless quite fragmented. The more cohesive elements of it tend to work in collaboration with those sectors of the natural products industry committed to the development, marketing and sale of therapeutic health products. The health freedom movement parallels, in many respects, the environmental movement, although it lags behind some two or so decades. It has, we believe, the potential to expand and grow in credibility to a level equivalent to that of the environmental movement.

Some of the major constraints acting to limit the development of the health freedom movement include:

- Inadequate resources, both financial and human
- Lack of adequate scientific, medical and legal support
- Regular attacks from the modern medicine establishment, the pharmaceutical industry, some academics and elements of the media

The ANH proposes that the adoption of the concept of sustainable healthcare (see Section 2.4) by the existing health freedom movement could lead to substantially improved effectiveness, cohesiveness and collaboration. It would likely go a long way to preventing limited resources being squandered on many of the present campaigns that have sometimes done little more than reinforce the divide between CAM and orthodox medicine. It would also focus the movement’s attention on healthcare generally, focusing on positive transition, rather than on the exposure of problems that inevitably triggers further attacks against the movement. In addition, the promotion of sustainable healthcare could potentially enable the health freedom movement to gain support from organizations that, whilst already promoting the application of sustainability to issues such as the environment, energy and agriculture, are not currently engaging on healthcare issues. Possible examples of such organizations would include Greenpeace and Friends of the Earth.

By fostering this approach, its protagonists among the health freedom movement will be likely to be viewed more seriously and sympathetically by governments, in turn continuing to grow the credibility and influence of the movement.

2.4 Why sustainable approaches to healthcare are needed

Many of us recognise some of the limitations or deficiencies in terms like ‘complementary, ‘alternative’ and ‘integrated’ when applied to healthcare. Although CAM protagonists might clearly appreciate what is meant by these terms – they are open to abuse or they may be interpreted as suggesting that such forms of healthcare or medicine are to be practiced as an adjunct to allopathic medicine. This is obviously not always the case.

One of the biggest constraints of allopathic medicine relates to the over-reliance on new-to-nature molecules as therapeutic agents (see Section 2.1). ‘Natural healthcare’ is a term that is sometimes used to refer to healthcare interventions using natural products or to those approaches that operate compatibly or harmoniously with the human body and with the environment. However, natural healthcare approaches, in these terms, are not necessarily sustainable. By example, if a corporation were to ravage a rainforest in order to harvest a particular herb that was known for its therapeutic properties, this resultant agent would indeed be natural, but the approach would hardly be sustainable.

The ANH first defined the concept of ‘sustainable healthcare’ in 2006. The definition was as follows:

DEFINITION OF SUSTAINABLE HEALTHCARE

A complex system of interacting approaches to the restoration, management and optimisation of human health that have an ecological base, that are environmentally, economically and socially viable indefinitely, that work harmoniously both with the human body and the non-human environment, and which do not result in unfair or disproportionate impacts on any significant contributory element of the healthcare system.

**- Alliance for Natural Health
(Nutrition Practitioner, 2006)**

The ANH has commenced working with a range of experts, doctors and scientists to help develop criteria for sustainability in healthcare. Through its international Scientific and Medical Advisory Board, the ANH is also working towards publishing

concepts, ideas and research on sustainable approaches to healthcare in the peer-reviewed literature.

Just as the notion of ‘sustainable agriculture’ provides the overriding principles that are embodied by ‘organic farming’ or ‘biodynamic farming’, ‘sustainable healthcare’ or ‘biocompatible healthcare’ offer overriding principles that should be met by all those approaches to healthcare that are to be deemed as sustainable and biologically compatible. The term ‘sustainable healthcare’ is not intended to replace existing approaches and delivery systems for healthcare, nor does it automatically exclude licensed, synthetic therapeutic agents, which may range from synthetic vitamin C to more complex synthetic molecules.

Central to any selection of approaches that befit the concepts of sustainability and biocompatibility is appropriate risk/benefit analysis. The ANH has already demonstrated the failings of risk-based approaches as they relate to micronutrients,¹⁵ and it has given detailed justification of why risk/benefit approaches are required.¹⁶ Owing to the complexity of the decision making processes, further complicated by the immense diversity of the human genome, it is likely that such approaches will emerge from the fields of decision science and cybernetics.

It seems likely that approaches to healthcare that presently meet the relatively new branch of medicine that is described as ‘functional medicine’¹⁷, will quite comfortably meet the criteria for ‘sustainable healthcare’. ‘Environmental’ or ‘ecological medicine’¹⁸, seen by some as a branch of functional medicine, as well as the vast majority of modalities presently included under the CAM umbrella, would also be likely to meet the requirements for sustainability.

On wide acceptance of the concept of sustainable healthcare, it may be appropriate to develop, as in the case of agricultural or energy sustainability, systems of certification or authentication for those approaches that meet its criteria.

Sustainable healthcare provides a potentially powerful handle with which to help stimulate the much needed sea change in healthcare. Governments, which have been very receptive to the principles of sustainability as they relate to other industries, are likely to find the use of sustainability criteria of assistance in developing healthcare policies. Criticism and attack of the concept by the orthodox medical establishment may be limited given that the corollary of the concept is systems of healthcare that are unsustainable.

¹⁵ Verkerk RHJ, Hickey S. A critique of prevailing approaches to nutrient risk analysis pertaining to food supplements with specific reference to the European Union. *Toxicology*, 2010; doi:10.1016/j.tox.2009.12.017. [in press]

¹⁶ Verkerk RHJ. The paradox of overlapping micronutrient risks and benefits obligates risk/benefit analysis. *Toxicology*, 2010; doi:10.1016/j.tox.2010.02.011. [in press]

¹⁷ See Institute for Functional Medicine website: <http://www.functionalmedicine.org>.

¹⁸ See British Society for Ecological Medicine website: <http://www.ecomed.org.uk>.

2.5 Some criteria for sustainable healthcare

Following are some of the key criteria and factors that are proposed as a means of achieving sustainability in healthcare:

Quality of Life evaluation

One of the major challenges in evaluating the costs and benefits of a particular regimen or strategy in healthcare, is the attribution, for the sake of comparison, of a common currency that relates to both cost (risk) and benefit. The use of ‘quality-adjusted life years’ (QALYs) and ‘disability-adjusted life years’ (DALYs) are emerging as among the most robust approaches to the evaluation of healthcare interventions.¹⁹ Such evaluations should be applied to a diverse range of healthcare strategies as a matter of urgency, including non-drug, nutritional, and lifestyle approaches, to allow their direct comparison with conventional, drug-based interventions. Of particular importance is the evaluation of disease prevention strategies which prioritise ecologically-based lifestyle approaches including healthy eating (including minimal consumption of processed foods and food additives), reduced environmental chemical and harmful microwave and low-frequency electromagnetic radiation exposure, physical exercise and relaxation. Such evaluations need to be undertaken within a diverse range of socio-economic groupings.

Genomics in sustainable healthcare

Today, in the fields of genomics and epigenomics, we see the rapid development of a branch of science that evaluates the genetic and environmental elements that interact to make us fully human. While the Human Genome Project had revealed by 2003 the structure of the code that defines human life, we still know very little about the meaning of the code, and just how the genome of each individual interacts with the world around us. Understanding the inner workings of the genome is likely to take us beyond existing concepts of EBM, allowing us to see the human as more than just a highly complex machine.²⁰ Many have thus far seen the rapidly expanding science of genomics primarily as a vehicle to facilitate tailored drug development (pharmacogenetics) for cancer, heart disease and other chronic diseases. However, it is likely that further elucidation of the genome’s complex interactions with the natural environment, including with foods and nutrients with which our evolution has been intimately involved for millennia, will in time bring further credence and popularity to more sustainable nutrient and natural product based preventative and curative healthcare strategies.

¹⁹ Sassi F. Calculating QALYs, comparing QALY and DALY calculations. *Health Policy Plan.* 2006; 21(5): 402-8.

²⁰ Henry SG, Zaner RM, Dittus RS. Viewpoint: Moving beyond evidence-based medicine. *Acad Med.* 2007; 82(3): 292-7.

Health monitoring

Any sustainable healthcare system is likely to require that markers for health and wellbeing are monitored regularly. A wide variety of functional tests are already available and are used routinely by practitioners of functional and ecological medicine,²¹ but such diagnostic tests are rarely used by conventionally-trained doctors and health practitioners given that disease prevention or early diagnosis of pre-clinical conditions is in the main not currently prioritised.

Personal responsibility, engagement, equality and incentive

Western healthcare provides little incentive for personal engagement, despite recognition that engagement by the individual is key to a properly functioning healthcare, rather than disease management, system.^{22,23} Unhealthy lifestyles and diets are commonplace, and the existing medical paradigm presently dictates that it is usually only when a disease or disorder presents itself that professional support is sought. In the dominant allopathic model, the patient typically takes little responsibility for his or her health, other than following the advice of the medical doctor to which responsibility has been delegated. In the majority of consultations with doctors, one or more medications are prescribed (see above). In any sustainable system, individual engagement and responsibility is essential. The healthcare system needs to be structured as far as possible to avoid inequalities created by such factors as socio-economic circumstances, early life experiences, geography and ethnicity. Methods of incentivising individual responsibility could be devised, such as by the provision of insurance schemes that offered no claims bonuses for those who have maintained their health and wellbeing, within the limits of their genetic potential, through healthy living. An analogous system is, after all, almost universally used by insurers of motor vehicles, which provides the incentive to avoid making claims.

Whole body healthcare

Any sustainable system needs to abide by ecological principles, yet these cannot be applied if the body is viewed, as is currently the case from the perspective of the existing western medical paradigm, as a construct of individual sub-units or compartments which work together in a manner that is little different from a highly complex machine. While Eastern and other traditions have always tended to abide by whole body and holistic principles, these approaches have been accepted mainly within the CAM world and have yet to receive sufficient acceptance by the mainstream medical community. The continued evolution of inter-disciplinary and multi-disciplinary medicine is likely to modify this view in due course. The recent development of psychoneuroendocrinology, which now has a dedicated journal in its

²¹ Henry SG, Zaner RM, Dittus RS. Viewpoint: Moving beyond evidence-based medicine. *Acad Med.* 2007; 82(3): 292-7.

²² Crowley P, Hunter DJ. Putting the public back into public health. *J. Epidemiol. Community Health.* 2005; 59: 265-267.

²³ Bell A. Wanless III - Engagement 0? The public's health. *British Journal of Healthcare Management.* 2006; 12(11): 347.

name, is an expression of this, as is the increasing interest in Chinese and Ayurvedic medical systems among mainstream medical universities in the West.

Environmental sustainability

Any sustainable healthcare system must be friendly to the biotic and abiotic environment within which it exists, both locally and further afield. Presently, the seriousness and extensive nature of ADRs on humans, the pollution of waterways by pharmaceuticals and the pillaging of indigenous knowledge and products from rainforests and other natural environments²⁴ are just some examples that are indicative that sustainability of the existing, dominant paradigm is a far cry. There are also significant concerns as to the environmental sustainability of supply of some herbs, fish and krill oils and other natural products supplied by the natural products industry. The wider use of validated sustainability certification marks will undoubtedly help to drive demand away from unsustainable sources of natural products. More balanced and ecologically-based cost/benefit systems of evaluation are urgently required to better evaluate the true cost of any given healthcare intervention or regimen, as well as helping in the selection of more appropriate ones.

Education and training

A radical redevelopment of curricula for healthcare professionals is required, especially in the case of medical doctors, nurses and pharmacists. In addition, because of the need in any sustainable model to emphasise prevention, especially in the young, additional training of specific healthcare professionals would be required. These would need to be specialised particularly in the field of wellbeing management, where primary tools would involve nutrition and diet, exercise, relaxation and other aspects of lifestyle.

Healthcare facilities

Presently most healthcare facilities are designed as places for the treatment or management of disease. In a sustainable healthcare system, although hospitals, clinics and other disease treatment centres would still be required, healthcare facilities with a specific focus on health monitoring and nutritional and lifestyle education, perhaps better described as 'wellness centres', would also be needed to ensure effective and long-term adherence to healthy living approaches.

²⁴ Parry B. *Trading the Genome: Investigating the Commodification of Bio-Information*. 2004. Columbia University Press, New York.

3. CONCLUSION

Sustainability is a robust concept that has proven its worth across a range of different industries including energy, agriculture, forestry and even construction and tourism.

Contemporary healthcare in western countries is presently dominated by use of pharmaceutical drugs – and most indicators would suggest that these approaches have had very limited value in dealing with some of the greatest scourges facing human health, including chronic diseases, psychiatric diseases and even certain infectious diseases. From a cost/benefit perspective, pharmaceutical-based approaches to healthcare do not fare favourably and a sea change is required if mainstream western healthcare is to deal with the ever increasing burden on the healthcare system, particularly given that this burden will be exacerbated by an ageing population.

The dichotomy between CAM and orthodox/allopathic healthcare approaches has led to increased vilification of protagonists of each approach. The use of scientific methods of evaluation that do not lend themselves well to CAM approaches have meant that the ‘medical establishment’ has been able to increasingly marginalise CAM approaches. This has occurred while the establishment has provided no significant improvement in its offering to the majority of the population that is either forced to accept or choose to accept pharmaceutical-based medicine as the most effective and scientifically-validated form of medicine.

Encouraging a paradigm²⁵ shift that requires all forms of healthcare to be bound by principles of sustainability and biocompatibility is likely to be one of the surest means of providing a level playing field for all healthcare modalities. The adoption of sustainable healthcare will greatly encourage preventative approaches to healthcare, those that are based on nutrition and lifestyle changes, and those that are intrinsically compatible with biological systems, both within and outside the body.

²⁵ A paradigm is defined as by the Oxford English dictionary as “A set of assumptions, concepts, values, and practices that constitutes a way of viewing reality for the community that shares them, especially in an intellectual discipline”.