

# Integrative medicine to tackle the problem of chronic diseases

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## ABSTRACT

This article summarizes important ways that integrative medicine can contribute to resolving the global health crisis with special reference to the US. Research using modern methods of analysis of cellular changes at the epigenetic level has shown that diet and lifestyle interventions greatly improve the state of patients' health. Estimates have been given that up to 75% of all US health costs can be saved by these methods, particularly if applied preventatively. It is thus vital that active steps are taken to implement such programs, to reduce costs to citizens and society alike, as well as to Government.

**Key words:** Chronic disease, diet, epigenetics, health care crisis, integrative medicine, lifestyle.

## INTRODUCTION

It is almost proverbial to state that, with almost 20% of the average citizen's life spent chronically ill, the American dream is now marred by poor quality of life in old age. At the cost of enormous research efforts in many countries in the last 50 years, medical science has won major extensions of lifespan, but these are all but negated by the failure to tackle the chronic disease problem.<sup>[1-5]</sup> The prospect of spending an average 16 years out of a four score year life expectancy in pain and misery is not pleasant to say the least. Several questions come to mind. How can the human misery involved be averted, or at least diminished? How can its costs be reduced – both for citizens and society, for the individual and for the state? Can anyone concerned with human suffering doubt America's need to enfranchise all its citizens into adequate healthcare?

The Institute of Medicine (IOM)<sup>[6]</sup> states that 'Across the world, improving health is not merely an academic exercise; it is of the utmost importance. We seek to make a real difference in the world by providing advice to decision

makers'.<sup>[7]</sup> It believes that its work can make a significant impact on the health of not just the US, but the whole world. Earlier this year, in conjunction with the Bravewell Collaborative, the IOM hosted a 'Summit on Integrative Medicine and the Health of the Public'.<sup>[8]</sup> A recent article in the Wall Street Journal declared that 'This (meeting) is a watershed in the evolution of integrative medicine, a holistic approach to healthcare that uses the best of conventional and alternative therapies such as meditation, yoga, acupuncture and herbal remedies. Many of these therapies are now scientifically documented to be not only medically effective but also cost effective'.<sup>[9]</sup>

In the US, the coauthor of 'Critical: What We Can Do About the Health Care Crisis'<sup>[10]</sup> former Senate Majority Leader Tom Daschle, in concert with President Barack Obama, has stated that 'To make affordable healthcare available to the 45 million Americans without health insurance, we must address fundamental causes of health and illness, and provide incentives for healthy ways of living rather than reimbursing only drugs and surgery'.<sup>[11]</sup> Their declaration points the way to a new approach to healthcare involving prevention, rather than waiting for the individual to fall sick.

President Obama's election campaign Health Plan<sup>[12]</sup> openly acknowledged that the US is suffering a huge chronic disease epidemic. In proposing a preventive medicine remedy for the crisis, it emphasized, 'An increasing number of Americans are suffering and dying needlessly from diseases such as obesity, diabetes, heart disease, asthma and HIV/AIDS, all of which can be delayed in onset if not prevented entirely'.<sup>[13]</sup>

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Roughly three quarters of U.S. healthcare costs arise from five of the most costly diseases. A high proportion of that 75% is now known to be preventable by changes in diet and lifestyle, respectively, known in Ayurveda as Ahara and Vihara. Key papers by Professor Dean Ornish, Clinical Professor of Medicine at the University of California, San Francisco (UCSF), and founding President of its Preventive Medicine Research Institute have shown this to be true.<sup>[14,15]</sup>

## SCIENCE OF DIET AND LIFESTYLE INTERVENTIONS

To impact the progress of chronic disease, Ayurveda has long held that specific stressors at the root of degenerative processes driving its progress must be identified and removed. It maintains that, once this is done, our bodies' remarkable capacity to begin healing will begin to take effect. The studies by Ornish<sup>[14,15]</sup> specifically support this thesis, which is also supported by other research.<sup>[16-18]</sup> An intriguing question from the perspective of western science is why this should be possible. Allopathic medicine tends to propagate the viewpoint that the only hope for cure of a condition lies in a drug intervention.

If there is now substantial evidence to the contrary (or at least the beginnings of it), it is time to ask such questions as, 'How, in scientific terms, could this be possible?' 'How can the physical body, left to itself in optimal circumstances, eliminate pathology without external assistance?' 'What could make the circumstances optimal?' 'What kinds of disease, and what levels of pathology can be treated by such means?'

While it is beyond the scope of this article to answer such questions fully, it is clear that they must be considered fundamental to the scientific investigation of Integrative Medicine – because in its simplest and earliest definition, Integrative Medicine was simply described as a system of medicine, which regarded the whole person, including body, mind and spirit, to be of fundamental importance; that neglect of this fact does patients substantial damage and can even have a nocebo effect; and because of this, pathology responds better when a Holistic approach is taken, and people are treated as persons, rather than as biochemical machines.

The fact of spontaneous recovery is well known. The placebo effect is now one of the best established effects known to modern scientific medicine – because all random control trials are placebo controlled. Integrative medicine recognizes this, and ensures that patients have the benefit of a placebo effect that they are surely entitled to expect, rather than it being negated for some reason.

The fact that spontaneous recovery is possible is well understood, and certain aspects of how to induce it and

negate it. Recent scientific studies<sup>[14-17]</sup> indicate that it works far more rapidly than previously imagined. But to promote it most effectively, lifestyle factors that have provoked the development of a patient's chronic condition MUST be addressed. The body's natural healing abilities, activated in the placebo effect, can then be promoted. These studies indicate, therefore, that our health and well-being can be vastly improved by integrative medicine. Observing these rules will make significant differences to the power of any therapy, increasing the rapidity with which its influences are felt.

One particular study has reported extraordinary increases in a factor relating to general health. Almost as an aside to the study of prostate cancer,<sup>[14]</sup> further data published in *Lancet Oncology*<sup>[19]</sup> demonstrated associated increases in the activity of telomerase, the enzyme partly responsible for maintaining general health: lengthening telomeres, tail ends of chromosomes, reverses processes associated with disease and aging. As the authors point out, no chemical drug has yet been found that can affect this. Yet, it would appear to be a natural process – appropriate habits of diet and lifestyle, which bring physiological function back into balance and harmony, may suffice to make it happen. No drug is needed!

The parent study to this great discovery was in itself a landmark article,<sup>[14]</sup> using state-of-the-art, high-tech procedures to establish the value of essentially Ayurvedic procedures, Ahara (diet) and Vihara (lifestyle). It used simple interventions that are both low-tech and low-cost: integrative medicine's plant-based diets (like those in Ayurveda) typical of integrative medicine, combined with psychosocial support, and with lifestyle factors often including practice of (essentially Vedic) yoga and meditation.

This style of treatment is essentially equivalent to that used in Ayurvedic Integrative Medicine, where integration is with Yoga! It is now known to stop or reverse etiological progress of many chronic conditions, including: ischemic heart diseases (IHD), hypercholesterolemia, hypertension, obesity, diabetes and even prostate cancer – four of the five conditions mentioned above, which cause most drain on national gross domestic product (GDPs).

Ornish's study showed that the practices incorporated into these treatments can alter regulated levels of expression in hundreds of genes in only a few months.<sup>[14]</sup> Sophisticated 'microchip' technologies find them both turned off, 'downregulated', and turned on, 'upregulated'. Remarkably, genes that are turned up consistently are protective ones, while genes turned down are those associated with disease e.g. cancer, heart disease and inflammation. This constitutes prima facie evidence for the body's natural ability to heal itself, something which all proponents of traditional, natural systems of medicine from Charaka to Nagarjuna and Hippocrates have emphasized.

In some sense this is extended common sense: it has always been held that these things are 'good for you', but to find that they really can make such observable differences at microscopic subcellular levels constitutes, in and of itself, a huge discovery for biomedical science. To find that traditional, common sense remedies have substantial scientifically measurable impact on disease outcomes could presage a vast change in global health policy. It is something that must now be taken into account by governments everywhere, not just in the U.S.

Because biomedicine cannot yet define 'health', 'Healthcare systems' using biomedicine are only disease-care systems. The U.S. spent \$2.1 trillion on medical care in 2007 – 16.5% of GNP, 95% of which was spent on diseases in progress, and only 5% on precautions and active prevention.<sup>[20]</sup> Seventy five percent or more went to treating chronic diseases that are in principle preventable or even reversible.

A penny's prevention is worth a pound of cure. Were Ayurveda Integrative medicine programs to be used systematically for prevention, then costs would surely be vastly reduced. Cardiology examples demonstrate the practical validity of this assertion. American Heart Association data states that in 2006, \$60 billion was spent on coronary angioplasties and \$44 billion was spent on coronary bypass operations:<sup>[20]</sup> \$100 billion on two surgical procedures alone. What hurts most is that New England Journal of Medicine has since published a study<sup>[21]</sup> finding neither prolongation of life nor prevention of heart attacks result when stable patients receive angioplasties and stents. Even coronary bypass surgery only prolongs life in some 3% of those undergoing it. Modern medicine is effectively putting \$100 billion straight down the drain.

Insurers and individuals are spending tens if not hundreds of billions of dollars on dangerous, invasive, expensive and mostly ineffective surgical procedures. At the same time, little or nothing is being spent on preventive medicine. Integrative approaches, like those proven to reverse the build-up of imbalances and so prevent chronic diseases, would have a tremendous effect.<sup>[22]</sup> Conclusion: at least 75% of today's global healthcare costs are not being prudently spent. If this needs to be confirmed, consider results of a study, the 'Interheart Study' published in The Lancet in September 2004.<sup>[23]</sup> The study followed 30,000 subjects from all round the world, concluding that changing lifestyle could prevent at least 90% of all heart diseases!

That bears repetition: the disease that accounts for more premature deaths, and costs Americans more than any other illness is almost completely preventable simply by changing diet and lifestyle.

## CONCLUSIONS

The same lifestyle changes that prevent or reverse heart disease also help prevent or reverse many other chronic diseases as well. Consider chronic pain – lower back pain is the biggest cause of patient reports in primary care – it is one of the major reasons for compensation claims. Studies show it can usually be improved by both Yoga and Chinese medicine,<sup>[24-26]</sup> herbs in the latter usually having less adverse side effects than pharmaceuticals.

The principle behind successful lifestyle intervention is that joy, pleasure and freedom are sustainable, while deprivation and austerity are not. When you eat a healthier diet, quit smoking, exercise, meditate and have more love in your life, your brain receives more blood and oxygen, you think more clearly, have more energy and need less sleep. The result is that brains grow so many new neurons that they become measurably heavier in a relatively short time period. The face similarly receives more blood, its skin becomes less wrinkled and glows more. The heart receives an increased flow of blood: stamina improves, heart disease may even be reversed. When sexual organs receive more blood, potency increases - Viagra itself is a circulation-increasing drug. Are these 'choices'? Who regards this as a choice? 'Who does not want to live better while living longer?'

The primary need is to transmit the vision of possibilities, and to give those in authority confidence that the goods will be reliably delivered. Transmitting vision is the classic role of leadership. The time has come for Integrative Medicine to take a leadership role, and to lay out clearly its possibilities so that its programs can be tested on wide segments of the population.

With the coming of understanding of mechanisms behind CAM treatments, and their strengths and potential, the time for polarity between ancient and modern systems is past. The present imperative is to determine what works best under what conditions - and what does not. Ayurveda's system of dosha prakriti/vikriti analysis predicts which treatments will work best for which individual, and under what circumstances. Given serious government funding in both East and West, scientists will be able to investigate the possible range of validity of Ayurveda's predictions. When that is done, it may be possible to improve health levels greatly, and correspondingly reduce costs.

Physicians of all kinds, Vaidyas and practitioners of all systems can stand united in support of such a program. These are human issues: the treatments being suggested have millennia of practice behind them. Their emergence from tradition means that they are medically effective – this is a principle found in and used by Reverse Pharmacology.<sup>[27]</sup>

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It follows that they will also be cost-effective, something important to Ministries of Finance in every country.

These approaches offer the opportunity for quality healthcare at affordable prices to all those willing to take personal responsibility for their health. It is heartening to see that some Public Health analyses are beginning to suggest planning for preventative healthcare policies.<sup>[28]</sup> Nations, including the U.S. should now plan to make them an integral part of their future health policies.

Ornish's approach to controlling coronary artery disease (CAD) has made his name. He and his colleagues investigated an effectively Ayurvedic Integrative Medicine regimen, finding that they could stop and reverse progress of many diseases. His high achieving background and general orientation are well known;<sup>[29,30]</sup> he is said to acknowledge a debt to Indian wisdom. Could Ayurveda not be at least partly a source of his wide, holistic perspective on preventive healthcare?

### REFERENCES

1. Wagner EH. Chronic disease management: what will it take to improve care for chronic illness? *Eff Clin Pract* 1998;1:2-4.
2. Wagner EH. Managing chronic disease. *BMJ* 1999;318:1090.
3. Wagner EH. Chronic disease care. *BMJ* 2004;328:177-8.
4. Hankey A. CAM Modalities can stimulate advances in theoretical biology. *Evid Based Complement Alternat Med* 2005;2:5-12.
5. Lee BJ, Forbes K. The role of specialists in managing the health of populations with chronic illness: the example of chronic kidney disease. *BMJ* 2009;339:b2395.
6. IOM. Available from: <http://www.iom.edu/>
7. IOM. Available from: <http://www.iom.edu/>: "Making a Difference"
8. IOM. Available from: <http://www.iom.edu/en/Reports/2009/Integrative-Medicine-Health-Public.aspx>
9. Bodeker G, Ong, C.K., Grundy, C., Burford, G., Shein, K. WHO Global Atlas of Traditional, Complementary and Alternative Medicine. Kobe, Japan: World Health Organization- Centre for Health Development 2005
10. Daschle T, Greenberger S, Lambrew J. "Critical: what We Can Do About the Health-Care Crisis", New York, NY: Thomas Dunne Books; 2008.
11. Ref. 10. as quoted in Ref. 9. Available from: [http://en.wikipedia.org/wiki/Health\\_care\\_reform\\_in\\_the\\_United\\_States](http://en.wikipedia.org/wiki/Health_care_reform_in_the_United_States).
12. Available from: <http://www.barackobama.com/issues/healthcare/>
13. Available from: [http://en.wikipedia.org/wiki/Health\\_care\\_reform\\_in\\_the\\_United\\_States\\_presidential\\_election\\_2008](http://en.wikipedia.org/wiki/Health_care_reform_in_the_United_States_presidential_election_2008).
14. Ornish D, Magbanua MJ, Weidner G, Weinberg V, Kemp C, Green C, *et al*. Changes in prostate gene expression in men undergoing an intensive nutrition and lifestyle intervention. *Proc Natl Acad Sci U S A* 2008;105:8369-74. Epub 16.06.08.
15. Ornish D, Scherwitz LW, Billings JH, Brown SE, Gould KL, Merritt TA, *et al*. Intensive lifestyle changes for reversal of coronary heart disease. *JAMA* 1998;280:2001-7.
16. Ornish D, Weidner G, Fair WR, Marlin R, Pettengill EB, Raisin CJ, *et al*. Intensive lifestyle changes may affect the progression of prostate cancer. *J Urol* 2005;174:1065-9.
17. Kallio P, Kolehmainen M, Laaksonen DE, Kekäläinen J, Salopuro T, Sivenius K, *et al*. Dietary carbohydrate modification induces alterations in gene expression in abdominal subcutaneous adipose tissue in persons with metabolic syndrome: the FUNGENUT study. *Am J Clin Nutr* 2007;85:1417-27.
18. Daubenmier JJ, Weidner G, Marlin R, Crutchfield L, Dunn-Emke S, Chi C, *et al*. Lifestyle and health-related quality of life of men with prostate cancer managed by active surveillance. *Urology* 2006;67:125-30.
19. Ornish D, Lin J, Daubenmier J, Weidner G, Epel E, Kemp C, *et al*. Increased telomerase activity and lifestyle changes: a pilot study. *Lancet Oncol* 2008;9:1048-57. Epub 2008.
20. Ornish D, Lin J, Daubenmier J, Weidner G, Epel E, Kemp C, *et al*. Increased telomerase activity and comprehensive lifestyle changes: a pilot study. *Lancet Oncol* 2008;9(11):1048-57.
21. Gershlick AH, Stephens-Lloyd A, Hughes S, Abrams KR, Stevens SE, Uren NG, *et al*. Rescue angioplasty after failed thrombolytic therapy for acute myocardial infarction (REACT Trial). *N Engl J Med* 2005;353:2758-68.
22. The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General. Available from: <http://www.surgeongeneral.gov/library/secondhandsmoke/>, <http://americanheart.mediaroom.com/index.php?s=43&item=843>
23. Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, Lanas F, *et al*. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. *Lancet* 2004;364:937-52.
24. Sherman KJ, Cherkin DC, Erro J, Miglioretti DL, Deyo RA. Comparing Yoga, Exercise, and a Self-Care Book for Chronic Low Back Pain. A Randomized, Controlled Trial. *Ann Intern Med* 2005;143:849-56.
25. Williams KA, Petronis J, Smith D, Goodrich D, Wu J, Ravi N, *et al*. Effect of Iyengar Yoga therapy for chronic low back pain. *Pain* 2005;115:107-17.
26. Furlan AD, van Tulder M, Cherkin D, Tsukayama H, Lao L, Koes B, *et al*. Acupuncture and Dry-Needling for Low Back Pain: an Updated Systematic Review Within the Framework of the Cochrane Collaboration. *Spine (Phila Pa 1976)* 2005;30:944-63.
27. Patwardhan B, Mashelkar RA. Traditional Medicine-inspired approaches to Drug Discovery: can Ayurveda show the way forward? *Drug Discov Today* 2009;14:804-11.
28. Hanusaik N, O'Loughlin JL, Kishchuk N, Eyles J, Robinson K, Cameron R. Building the backbone for organisational research in public health systems: development of measures of organisational capacity for chronic disease prevention. *J Epidemiol Community Health* 2007;61:742-9
29. Available from: <http://www.webmd.com/dean-ornish-md>
30. Available from: <http://www.fatfree.com/diets/ornish.html>

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