Contents

Editorial ................................................. 2

News review ........................................... 3

The heart and positive emotion ............... 5
Tony Yardley-Jones

The heart – more than just a pump .......... 10
Maxwell Fraval, Anu Nomie and Pilar Munoz

Healing the heart ................................. 15
Harvey Zarren

A holistic approach to caring for  people with heart failure .......................... 18
Mary Brice

What are you? What am I? ...................... 24
Joanna Macy and John Seed

Systems of flow in the body and on the planet ........................................... 26
Chris Drury

Art, science and an integrative view of the heart ............................................ 28
Philip Kilner

Banking with a heart .......................... 32
Triodos Bank

Salivary cortisol, stress and arousal following kinesthetic meditation ............ 34
Valerie Bullen, Cathrine Fredhoi, William Bloom, Jan Povey, Frank Hucklebridge, Phil Evans, Angela Clow

Matters of the heart: mind-body medicine in cardiovascular disease .......... 39
Kenneth Pelletier

A change of heart .................................... 45
William Bloom

From the frontline ............................... 50
William House

Reviews .................................................. 51

Events .................................................... 52

Unless otherwise stated, material is copyright BHMA and reproduction for educational, non-profit purposes is welcomed. However we do ask that you credit the journal. With this exception no part of this publication may be reproduced in any form or by any other means – graphically, electronically, or mechanically, including photocopying, recording, taping or information storage and retrieval systems – without prior written permission from the British Holistic Medical Association.

Every effort is made to ensure the accuracy of material published in the Journal of Holistic Healthcare. However, the publishers will not be liable for any inaccuracies. The views expressed by contributors are not necessarily those of the editor or publisher.
The heart of the matter

In everyday life and language we associate the heart with love, emotion and compassion. Until lately though, medical science would have none of this, assuming ever since Harvey discovered the blood-circulation that the heart is just a pump. By draining the body of emotion, and placing the mind in the head, high science opened a rift between felt-sense and modern medicine. But the gap is beginning to close. New insights into the heart-brain connection are bringing body and mind back together.

Pre-modern European medicine believed the emotions came from the body; Traditional Chinese Medicine still speaks of the angry liver, the melancholy spleen, the anxious kidney. 1 Though ideas from distant times and far-off cultures carry deep wisdom, it would be a mistake to swallow them whole. Holists need to make post-modern sense of the mind-body; we need a mind-full holistic physiology for our time, and a holistic psychology that is less disembodied. Can science lend a hand here? Our brain-centred culture likens the brain to a computer, but the brain does not work digitally; it uses analogy to relate thoughts, feelings and impulses to one another. Inevitably, emotions are coloured by unconscious memories, for our earliest experiences are beyond recall: bodily experiences of the pressures of being born, infantile sensations from mouth, gut, skin, genitals; and at times, overwhelming feelings of pain, rage, fear. Stephen Porges’ polyvagal theory explains how these intense bodily currents of tranquility or agitation move through the autonomic nervous system system stirring or calming the heart, and that the heart responds by sending intense waves of information to the brain via the vagus nerve. 2 How well we learned to tolerate and make sense of emotions may depend on ‘a good enough mother’ 3, who could bear to hold these torrents and tides of feeling, and so allow a deeply embodied memory bank of calmness, bliss and attachment to form. Allan N Schore 4 explains the neurophysiology of this ‘affect regulation’ process in his important new map of embodied mind and emotional development.

It seems science has begun to make sense of feelings and their bodily origins in heart and brain. In this issue, Tony Yardley-Jones introduces the new field of neurocardiology which views the heart as a potentially powerful source of positive feelings. Max Fravell speculates on the heart’s intelligence and how its hormonal, nervous, rhythmic and electromagnetic outputs may regulate cognition and feeling. The heart, he tells us, is a sensory organ and the rhythmic, regulatory core of our being, rather than just a pump. Harvey Zarren, a cardiologist who shares these views, writes about the importance of exploring physical, mental, emotional, spiritual and tribal needs and discomforts when healing the heart. Mary Brice describes just such an approach in her development of holistic cardiac community nursing.

Joanna Macy and John Seed’s deep ecological invocation of the elements is a reminder of our connectedness with planetary processes. The same flows of love and physicality are powerfully conveyed in Alex Grey’s evocative painting. Chris Drury’s landscape Heart of Reeds and Philip Kilner’s description of his flowform sculptures and high-tech investigations of intricate cardiac blood flow continue the theme. These metaphors of heart and flow are extended in the Triodos Bank’s appeal for a more heartfelt approach to finance.

The last section of this issue reports on new research into the impact of body-oriented meditation on students’ wellbeing. This is yet another piece of evidence in favour of mind-body interventions (MBI), an area overviewed with a particular focus on cardiovascular disease by one of the field’s pioneers – Ken Pelletier. Though he sees MBI as the heart of the matter, William Bloom introduces a note of caution, because ‘a change of heart’ will mean overcoming psychological resistance when introducing self-managed mind-body healthcare.

References
1 Ots T. The angry liver, the anxious heart and the melancholy spleen. Culture, Medicine and Psychiatry 1990; 14, 21-58.

Your editor will be doing his own heart good when he runs his fifth half marathon at Windsor on September 24th. He hopes to crack one hour fifty. Sponsorship donations to the BHMA can be made via the website. Roz Carroll will be talking about Allan Schore’s ideas at the annual BHMA conference on December 2nd.

© Journal of holistic healthcare • Volume 3 Issue 3 August 2006
News review

Book now for BHMA annual conference

This year’s annual BHMA conference is themed Celebrating body and soul – a fresh approach for tomorrow’s medicine. This is a gathering for everyone who has an interest in healthcare, especially BHMA members and their friends and colleagues, to look at how medicine’s contribution to health and wellbeing could be enhanced through embracing the whole person, body and soul.

If medicine leaves out the living body, with all its anguish and sensuality, it won’t be good for anyone: healthcare that’s too in its head is likely to be stressful for all concerned, less compassionate, less able to promote communication or real bodily wellbeing.

The BHMA is a home for all those who believe that there is more to medicine than cells, biochemical pathways and genes. So the conference will look at how the living body’s intelligence and emotion, the rhythms and pulses of life, and the wholeness of existence might offer us a fresh approach for tomorrow’s medicine.

We aim to provide opportunities for you to:
• learn some new ways to care for yourself and your patients
• connect with like-minded people and make new friends
• try some new practical body-centred skills for your work and self-care
• listen to engaging speakers
• learn about the latest developments in holistic healthcare.

An important element of this year’s event will be an exhibition reflecting the range of organisations which form part of the healthcare landscape. Exhibiting at the conference will be:
• healthcare providers
• service providers
• voluntary organisations
• research companies
• networks and partner organisations
• media companies.

The conference is on Saturday 2 December 2006 at the University of Westminster in central London. To register your interest now and get 10% off, contact Diana Brown on 01278 722000, email admin@bhma.org.

‘Unscientific’ therapies: critics taken to task

The BHMA has answered back critics who took advantage of the early summer news lull to attack ‘unscientific therapies’ being provided by the NHS.

A letter in The Times from a group of doctors claimed, among other things, that ‘unproven or disproved treatments are being encouraged for general use in the NHS’. But, says BHMA chair Professor David Peters, the real issues are not about the evidence for homeopathy (though there is far more than they admitted), but about NHS rationing and the erosion of consultants’ power by GPs and NICE. With primary care commissioning coming on stream, hospital specialists expect to lose even more of their traditional right to encourage the flow of high-tech innovation into the NHS, as GPs take the helm.

‘As the debate about NHS resource rationing gains pace, acute NHS trusts are already deeply in the red,’ says Professor Peters. ‘It was no coincidence that the authors launched their salvo as NICE reported on the latest anti-breast cancer drugs (aromatase inhibitors). These costly drugs will save many lives, but it will be difficult for PCTs to cope with the costs. Yet PCTs who hesitate to supply them will face the wrath of women with breast cancer, as well as political pressures from oncologists like the authors of this letter, and the pharma companies wanting to recoup huge development costs.’

It seems the authors targeted complementary medicine – a very minor player in the NHS – as an aspect of healthcare that could be foregone. But fewer than 30% of PCTs fund complementary treatments, usually acupuncture, homeopathy and manipulation or massage, generally for pain management or for supporting recovery from illnesses where conventional medicine has already done its best. In reality the total NHS spend on complementary therapies would hardly cover the cost of a single PCT’s herceptin courses.

If complementary therapies were scrapped, there would be collateral damage for women whose PCT currently fund cancer support units using complementary therapies, such as the one at the Royal London Homeopathic Hospital. Many oncologists have found non-conventional approaches particularly useful in helping their patients cope with cancer and the side-effects of its treatment.

‘If PCTs cave in and decide that only the science of medicine should have a place in the NHS, and that the un-evidenced arts of healthcare must be starved out, it will be a body-blow to holistic primary care and patient choice,’ says Professor Peter.

If you missed it, you can read the letter to The Times at www.timesonline.co.uk/article/0,,8122985,00.html
Homeopathy school’s 25th anniversary

The School of Homeopathy is celebrating its 25th year with founder Misha Norland’s son, Mani, graduating from the school and buying the associated organisation Alternative Training.

Students from all over the world attend the school’s four-year part-time diploma course, or join in its home study programmes. The school has satellites in New York and Athens. ‘We promote an open, shared, experience of homeopathy,’ says Misha.

For more information see www.homeopathyschool.com.

Integrated health associates’ forum

The Prince’s Foundation for Integrated Health is launching a new national professional forum for GPs, nurses, midwives, physiotherapists, osteopaths and chiropractors interested in integrated healthcare.

The Integrated Health Associates (IHA) will work to bring about a change in the healthcare system, encouraging health professionals from all backgrounds to take a whole person approach to the prevention and treatment of illness.

The Foundation and the BHMA will work together on research and education with support from the School for Integrated Health at the University of Westminster.

The Foundation is developing a range of member benefits which will include:

- integrated healthcare delivery support: practical tools for setting up and managing an integrated healthcare service including sample contracts and pro forma templates
- support and learning: opportunities to improve practice and skills through expert and peer learning, interprofessional development, study trips overseas, an annual conference
- and workshops
- policy influence: a powerful network of professionals positioned to influence local and regional health policy
- evaluation: encouraging the use of a standardised health outcomes tool (MYMOP) which will inform the creation of a database to track changes at a local and national level.

The Integrated Health Associates will be launched at an inaugural conference at the Royal College of Obstetricians and Gynaecologists on 21 November. To register your interest in the scheme please visit www.fih.org.uk/whatwedo/IHA or contact Clare Isaac 020 3119 3114, email iha@fih.org.uk.

BHMA member survey

The BHMA has had a healthy response rate of 28% to its membership survey. We have already benefited from the information you have given us: most of you wanted the annual conference to be held on a Saturday and the most popular location was London. So it’s no surprise that this year’s annual conference is to be held on Saturday 2 December at the University of Westminster.

We will publish the survey findings in the November issue of the journal. In the meantime, thank you to all those members who took the time and trouble to respond.

Hypnosis workshops

The success of a new venture for the BHMA in June means it will be repeated in September. The Integrating hypnosis into medical practice workshop facilitated by Ursula James, Visiting Teaching Fellow at Oxford University Medical School, was the first of its kind and feedback was excellent.

The objective of the day was to introduce this often misunderstood tool to practitioners as an add-on for their own practice, and a way of giving patients a method of relaxation and control that they might not otherwise have. The workshop concentrated on the role of self-hypnosis as a stress management and control skill for both the practitioner and patient, and gave an overview of the potential applications of clinical hypnosis in the medical setting, looking at where it fitted in as an addition to treatment, as well as a possible alternative.

This workshop will run again on September 16 and Ursula will be running more comprehensive training courses in clinical hypnosis for BHMA members. If you are interested in details, email ursulajames@thamesmedicallectures.com.

Agriculture, health and wellbeing

What is the relationship between the state of British agriculture and the state of the nation’s health?

The Royal College of Physician’s is offering the chance to examine this at a conference on 26 September.

The last three decades have witnessed unprecedented changes to agricultural practice. Recent decades have re-emphasised the importance of diet for good health; local food production is likely to become a more significant element in the UK diet in the future. The changes in farming practices that dictate current agricultural activity and shape our countryside have occurred primarily as a result of financial pressures, changes in working practices and in society itself.

This conference aims to examine the trends and options available for change to create a sustainable industry and improved human health.

Further information and booking forms are available on-line at www.rcplondon.ac.uk/event, tel 020 7935 1174 Ext. 300/252/436, email conferences@rcplondon.ac.uk.
The heart and positive emotion – from concept to measurement

Tony Yardley-Jones
Director of Occupational Health, Consultant in Occupational Medicine, Royal Berkshire Hospital

I qualified in medicine at Liverpool University and trained in general and neurosurgery before taking up a career in occupational medicine. My interest has been to actively pursue the links between various medical specialities and other groups in order to increase our understanding of the neurophysiology of performance and behaviour.

Based on work with several businesses I am interested in the development of models, techniques and interventions which will enhance individual, team and corporate performance in a world increasingly characterised by change, complexity and ambiguity.

Summary
Throughout history and across diverse cultures, religions, and spiritual traditions, the heart has been associated with spiritual influx, wisdom, and emotional experience, particularly with regard to other-centred, positive emotions such as love, care, compassion, and appreciation. Research provides evidence that the heart does indeed play a role in the generation of emotional experience, suggesting that these long-surviving associations may be more than merely metaphorical. Here a model of emotion that includes the heart, together with the brain, nervous, and hormonal systems, as fundamental components, is reviewed.

Positive emotions and optimal functioning
You feel a deep sense of peace and internal balance. Your senses are enlivened – every aspect of your perceptual experience seems richer, more textured. Surprisingly, you feel invigorated even when you would usually have felt tired and drained. Things that usually would have irked you just don’t ‘get to you’ as much. Your body feels regenerated – your mind clear. Decisions become obvious as priorities clarify and inner conflict dissolves. Intuitive insight suddenly provides convenient solutions to problems that had previously consumed weeks of restless thought. Your creativity flows freely. You may experience a sense of greater connectedness with others and feelings of deep fulfilment.

Most people have at some point in their lives experienced a state similar to that described above. In many cases, individuals report that such ‘magical’ moments, sometimes described as periods of increased ‘flow’ are accompanied by the experience of a ‘heartfelt’ positive emotion. Perhaps it was the feeling of being in love, feelings of gratitude for another’s kindness, appreciation for the majesty of nature, or a sense of fulfilment spurred by one’s own accomplishments.

Presently, a growing body of research is beginning to provide objective evidence that positive emotions may indeed be key to...
optimal functioning, enhancing nearly all spheres of human experience. Positive emotions have been demonstrated to improve health and increase longevity, cognitive flexibility and creativity, facilitate innovative problem solving, and promote helpfulness, generosity, and effective cooperation.

Over the past 10 years, research conducted by Heartmath in California and by its UK partner in Wokingham, Hunter Kane Ltd, has explored how and why positive emotions improve health and performance and, specifically, uncovering physiological correlates of positive emotional states that may help explain these observations. In recent years, the research has concentrated on elucidating emotion-related changes in the patterns of the heart’s rhythmic activity and on understanding how heart-brain interactions affect physiological, cognitive, and emotional processes.

The heart’s role in emotion

Throughout the 1990s, the view that the brain and body work in conjunction in order for perceptions, thoughts, and emotions to emerge has gained momentum and is now becoming more widely accepted. The brain is an analogue processor that relates whole concepts to one another and looks for similarities, differences, or relationships between them. It is nothing like a digital computer, in that it does not assemble thoughts and feelings from bits of data. This new understanding of how the brain functions has challenged several longstanding assumptions about emotions. For example, psychologists once maintained that emotions were purely mental expressions generated by the brain alone. We now know that this is not true – emotions have as much to do with the body as they do with the brain. Furthermore, of the bodily organs, the heart plays a particularly important role in the emotional system. Emotions are thus a product of the brain, heart, and body acting in concert.

Recent work in the relatively new field of neurocardiology has firmly established that the heart is a sensory organ and a sophisticated information encoding and processing centre, with an extensive intrinsic nervous system sufficiently sophisticated to qualify as a ‘heart brain’. Its circuitry enables it to learn, remember, and make functional decisions independent of the cranial brain. Moreover, numerous experiments have demonstrated that patterns of cardiac afferent neurological input to the brain not only effect autonomic regulatory centres, but also influence higher brain centres involved in perception and emotional processing.

One area that has proven invaluable in examining heart-brain interactions is heart rate variability analysis. Heart rate variability (HRV), derived from the electrocardiogram (ECG), is a measure of the naturally occurring beat-to-beat changes in heart rate. The analysis of HRV, or heart rhythms, provides a powerful, non-invasive measure of neuro-cardiac function that reflects heart-brain interactions and autonomic nervous system dynamics, which are particularly sensitive to changes in emotional states. Research findings suggest that there is an important link between emotions and changes in the patterns of both efferent (descending) and afferent (ascending) autonomic activity. These changes in autonomic activity lead to dramatic changes in the pattern of the heart’s rhythm. Since there is often no change in the actual heart rate variability measurement (ie the amount of variability between each heartbeat is almost constant) the significance of the different patterns of heartbeat have been considered.
and cardiovascular system on brain function. This research dates back to 1929 when it was found that stimulation of the vagus nerve inhibited motor activity and prolonged sleep.13

Among the first modern psychophysiological researchers to systematically examine the ‘conversations’ between the heart and brain were John and Beatrice Lacey.14 During 20 years of research throughout the 1960s and 1970s, they observed that afferent input from the heart and cardiovascular system could significantly affect perception and behaviour. Their research produced a body of behavioural and neurophysiological evidence indicating that sensory-motor integration could be modified by cardiovascular activity. One line of their research established relationships between the heart’s afferent signals and reaction times. For example, they showed that decreasing heart rate in the anticipatory period of reaction time experiments quickens reaction times, while increasing heart rate slows reaction times. The Laceys introduced the terms ‘cortical inhibition’ and ‘cortical facilitation’ to describe these effects. Since that time, extensive experimental data have been gathered documenting the role played by afferent input from the heart in modulating such varied processes as pain perception,15 hormone production,16 electrocortical activity, and cognitive functions.17, 18

This research, however, did not generally consider the role of emotion or how patterns of afferent input affect emotional processes. Recent research findings have lent support to a systems-oriented model of emotion that includes the heart, brain, the nervous and hormonal systems as fundamental components of a dynamic, interactive network that underlies the emergence of emotional experience. The model builds on the theory of emotion first proposed by Karl Pribram19, a long time professor at Stanford University, who did pioneering work on the elucidation of the cerebral cortex and who developed the holonomic brain model of cognitive function in which the brain functions as a complex pattern identification and matching system. In this model, past experience builds within us a set of familiar patterns, which are maintained in the neural architecture. Inputs to the brain from both the external and internal environments contribute to the maintenance of these patterns. Within the body, many processes provide constant rhythmic inputs with which the brain becomes familiar. These include the heart’s rhythmic activity; digestive, respiratory and hormonal rhythms; and patterns of muscular tension, particularly facial expressions. These inputs are continuously monitored by the brain and help organise perception, feelings, and behaviour. Recurring input patterns form a stable backdrop, or reference pattern, against which current experiences are compared. According to this model, when an input pattern is sufficiently different from the familiar reference pattern, this ‘mismatch’ or departure from the familiar underlies the generation of feelings and emotions.

When the input to the brain does not match the existing programme, an adjustment must be made in an attempt to achieve control and return to stability. One way to re-establish control is by taking an outward action. We are motivated to eat if we feel hungry, run away or fight if threatened, do something to draw attention to ourselves if feeling ignored. Alternatively, we can re-establish stability and gain control by making an internal adjustment (without any overt action). For example, a confrontation at work may lead to feelings of anger, which can prompt inappropriate behaviour (eg outward actions such as shouting or violent behaviour). However, through internal adjustments, we can self-manage our feelings in order to inhibit these responses, re-establish stability, and hopefully keep our jobs!

Ultimately, when we achieve stability through our efforts, the results are feelings of satisfaction and gratification. By contrast, when there is a failure to achieve stability or control, feelings such as anxiety, panic, annoyance, apprehension, hopelessness, or depression result. The detail of the model is beyond the scope of this article, however once a stable baseline pattern or programme is established within the brain, the neural systems attempt to maintain a match between the set programme, current inputs, and future behaviours. If the baseline pattern becomes maladapted, the system will still strive to maintain a match to that pattern, even though it is not in our best interest. There are many examples of maladapted patterns. For example, if a child grows up in chaotic surroundings, chaos will become familiar, and therefore comfortable. The child will then automatically take actions that create various forms of chaos in their life in order to maintain a match with the internal programme and thus feel comfortable. Another example of this maladaptation is when people adapt to conveniences (for instance something is usually done for them, they always get what they want). These conveniences can then become expectancies and become taken for granted rather than truly appreciated. Thus, when a situation occurs where individuals do not get what they want or expect, a mismatch occurs and they experience emotional dissonance.

Monitoring the alterations in the rates, rhythms, and patterns of afferent traffic is a key function of the cortical and emotional systems in the brain. Thus, input originating from many different bodily organs and systems is ultimately involved in determining our emotional experience. However the heart, as a primary and consistent generator of rhythmic information patterns in the human body, and possessing a far more extensive afferent communication system with the brain than do other major organs, plays a particularly important role in this process. With each beat, the heart

© Journal of holistic healthcare • Volume 3 Issue 3 August 2006
not only pumps blood, but also continually transmits dynamic patterns of neurological, hormonal, pressure, and electromagnetic information to the brain and throughout the body. At lower brain levels, the heart’s input is compared to references or ‘set points’ that control blood pressure, affect respiration rate, and gate the flow of activity in the descending branches of the autonomic system. From there, these signals cascade up to a number of subcortical or ‘limbic’ areas that are involved in the processing of emotion.

Several lines of research support the perspective that cardiac afferent input exerts an important influence on central emotional processing. For example, validation comes from studies that have investigated the effects of afferent input on the amygdaloid complex – the amygdala and associated nuclei, which play a pivotal role in storing and processing emotional memory and in attaching emotional significance to sensory stimuli. Studies have shown that cardiac afferent activity in the central nucleus of the amygdala is synchronised to the cardiac cycle and is modulated by cardiovascular afferent signals. The importance of changes in the pattern of cardiac afferent signals is further illustrated by the finding that psychological aspects of panic disorder are frequently created by unrecognised paroxysmal supraventricular tachycardia (a sudden-onset cardiac arrhythmia). These arrhythmias generate a large and sudden change in the pattern of afferent signals sent to the brain, which is detected as a mismatch. This mismatch consequently results in feelings of anxiety and panic.

It is interesting to note that when one plots the heart rhythms generated by this type of arrhythmia, they look quite similar to the incoherent heart rhythm patterns produced by strong feelings of anxiety in an otherwise healthy individual. By contrast, coherent heart rhythm patterns, which are associated with sincere positive emotions, are familiar to most brains and evoke feelings of security and wellbeing. If this is the case, then interventions capable of shifting the pattern of the heart’s rhythmic activity should modify one’s emotional state. In fact, people commonly use just such an intervention – simply altering their breathing rhythm by taking several slow, deep breaths. Most people do not realise, however, that the reason breathing techniques are effective in helping to shift one’s emotional state is because changing one’s breathing rhythm modulates the heart’s rhythmic activity.

Heart-brain synchronisation, positive emotion and cognitive performance

Research and case studies have also explored the role of qualitative aspects of heart rhythms and cognitive performance associated with learning in educational settings. It has been found that the character of the heart rhythm associated with positive emotion (so-called cardiac coherence), correlates with significant improvements in cognitive performance. In a recent study by Hunter Kane and CDR Ltd, core domains of cognitive function were assessed using validated psychological tasks. The Cognitive Drug Research (CDR) system, developed by Professor Keith Wesnes and his team, is an automated set of tests which has been widely used in clinical research. Participants in the study trained in techniques devised by HeartMath that enable individuals to generate coherent heart rhythm patterns by generating positive emotion. The figure below shows the power spectrum from HRV analysis before (left) and after the seven week period (right), indicating the degree to which the group were able to achieve coherent heart rhythms as illustrated by the peak and increase in power spectral density at 0.1 Hz, the frequency at which cardiac coherence predominates.

Note: The coherent mode is reflected by a smooth, sine wave-like pattern in the heart rhythms generated from a HRV tracing (referred to as heart rhythm cardiac coherence - not shown here) and a narrow-band, high-amplitude peak in the low frequency range of the HRV power spectrum analysis (shown above), at a frequency of about 0.1 hertz.

Cognitive function testing was performed prior to training, and repeated after the seven weeks of training in the techniques. The group showed a large and highly statistically reliable improvement in overall memory function (p=0.0013). This improvement reflected the ability to store and subsequently retrieve information from both short-term and long-term memory. Another very important finding from this study was that levels of performance at the start of the study showed no relationship to the quality of heart rhythms in terms of cardiac coherence before HeartMath training. However, after seven weeks cardiac coherence patterns became directly and highly statistically reliably related to performance. This relationship of cardiac coherence patterns generated as a result of positive emotions with
cognitive function is a further demonstration of what would appear to be the power of positive emotion in generating afferent inputs from the heart to the brain. A larger trial is currently underway to investigate whether children with ADHD will show similar benefits due to HeartMath training as a possible application of the effect.

These observations further support the concept that the pattern of cardiac afferent input reaching the brain can inhibit or facilitate cortical function significantly beyond the microrhythm of inhibition/facilitation associated with simple changes in heart rate that was first documented by the Lacey's.

In recent years there has been a growing body of data linking positive emotions to the enhancement of human functioning. Collectively, these findings are beginning to substantiate what many people have long intuitively known – that positive emotions not only feel good at the subjective level, but also optimise cognitive capacities and foster good health.

In conclusion, I have tried to characterise a distinct mode of physiological functioning that is associated with the feeling of positive emotion. By initiating a change in heart rhythm patterns, it is often possible to bring about rapid and significant changes in perception and emotional experience. Such 'coherent' heart rhythm patterns as seen on the heart rate variability analysis tracings may be a relatively simple way to provide a potential physiological link between positive emotions and a range of favourable health-related, cognitive, and psychosocial outcomes as documented by an increasing number of research studies.

Positive emotion-focused techniques in the experience of Heartmath and Hunter Kane are easy to learn and use, and appear to be easy to teach among individuals of diverse cultures, age groups, socioeconomic status, and spiritual persuasions. Their studies in organisational, clinical, and educational settings have demonstrated both real-time and long-term improvements in emotional wellbeing, performance, and health-related measures with use of such techniques.

The author would like to acknowledge the Institute of Heartmath, Boulder Creek, California and Hunter Kane Ltd, Wokingham UK and CDR Ltd for permitting the author to reference their work, publications and studies.

Dr Yardley-Jones is a medical adviser to Hunter Kane.

References
The heart – more than just a pump

Maxwell Fraval, Anu Norrie and Pilar Munoz are all members of the faculty of the Sutherland Cranial Teaching Foundation of Australia and New Zealand (SCTF of ANZ). As a result of their clinical experience, and those of fellow faculty members, they worked to develop a program called The rule of the artery which presents a new way of palpating and influencing the circulatory system. The material presented here forms a part of that programme.

As a man thinketh in his heart, so is he. As a woman thinketh in her heart, so is she.

Dr Andrew Taylor Still, the founder of osteopathy, saw the role of the heart as central to human physiology. He felt that it imparted ‘knowledge’ to the blood, an idea further developed by Paul Pearsall who recognised that the heart has memory and ‘a voice which will speak to us if we are prepared to listen’. Are these just pretty metaphors, or is there now scientific evidence that the heart’s information field helps control brain activity, and that it may be encoded hormonally, electrically and rhythmically, to be delivered to the extracellular matrix and ultimately to every cell in the body?

Hydraulic anomalies

Dr Still, the founder of osteopathy, described the heart as ‘the organ in the human body which imparts the attributes of life and knowledge to the blood so that it can proceed correctly with all its work.’ ¹ In Traditional Chinese Medicine the heart is seen as the emperor of the body, and a vessel of Shen – spirit.

But our physiology books still teach (despite scientific advances that refute it) that the heart is a pump and no more. ² Yet this rarely questioned assumption of physiology may not be true. In fact the notion raises some unresolved questions. The vascular bed is approximately 95,000 km long and blood viscosity is about five times greater than that of water. The daily pumping requirement at rest is 8,000 litres with a work equivalence of lifting 50 kg 1.3 km! This is a lot to demand of an average heart weighing 300 gms. ³ The pump concept is difficult to sustain if you consider the flow velocity and transit time of the blood as shown in the diagram below. ⁴

In the capillary bed, pulsations are dramatically decreased and the transit time commensurately increased. So this is not a ‘closed system’ with a pump linked by a return pipe of fixed diameter, but an ‘open system’, with very low pressure prevailing in the vastly extensive capillary bed. We will come back to this anomaly later, as we consider radical ideas about what is actually going on inside the heart.

The flow of blood on the outermost periphery. Flow pulsations are evident in both the arterioles and venules. They are caused by spontaneous pulsation of the arterioles and venules (so-called vasomotion) at frequencies of 0.5 to 20 per minute and have nothing to do with the cardiac cycle. In the actual capillary bed (centre of chart) these pulsations decrease dramatically, to less than 5% of the average flow.

---

**Summary**

Dr Andrew Taylor Still, the founder of osteopathy, saw the role of the heart as central to human physiology. He felt that it imparted ‘knowledge’ to the blood, an idea further developed by Paul Pearsall who recognised that the heart has memory and ‘a voice which will speak to us if we are prepared to listen’. Are these just pretty metaphors, or is there now scientific evidence that the heart’s information field helps control brain activity, and that it may be encoded hormonally, electrically and rhythmically, to be delivered to the extracellular matrix and ultimately to every cell in the body?
The heart-mind-brain connection

In 1985, a new kind of plastic-titanium pump, the ‘Jarvik heart’, was implanted into a number of recipients. The longest survived only 620 days. The ‘hearts’ were not successful; patients experienced strokes, infections, high fevers and in many cases a deep depression. 5 The first recipient was dentist Barney Clark, who was described by his wife after the operation as having ‘experienced periods of despondency and asked to die or be killed’. She said he suffered a significant loss of personality, and described him ‘being like a wall’. The wife of another recipient (Schroeder) made similar remarks: that her husband didn’t seem himself, that he was often barely willing to speak and became increasingly weepy and depressed.

One of the factors that seemed to weigh very heavily on all the recipients of these motorised hearts was that it droned on relentlessly, never changing its pace. More recently, it is been shown that the healthiest hearts beat the most erratically. 6 A number of studies demonstrate how heart rate variability reflects autonomic nervous system balance. 7 (see Yardley-Jones on page 5). A lack of variability apparently increases mortality risk considerably. The emerging field of cardioenergetics suggests that the heart’s varying energy spectrum has an important role in the body-mind’s information system. Perhaps Dr Still’s view of the heart as imparting knowledge to the blood can be seen as presaging the latest theories relating heart rate variability, emotion and our ‘information body’.

Heart and hormones

John and Beatrice Lacey were pioneering researchers who in the 1970s were among the first to explore the exchange of information between heart and brain. Their research suggested that the heart was sending out meaningful messages and that the brain understood and responded to them. Even more revolutionary was their idea that these messages could change the way a person felt and acted. Subsequently neurophysiologists have discovered the neural pathways (among them, afferent fibres in the vagus running from heart to brain) and hormonal mechanism whereby the heart’s information can upregulate or downregulate electrical activity in the brain. The Laceys suggest that the brain constantly updates the heart in order to organise the energy economy of the body. 8 It is now scientifically acceptable to discuss such a thing as a two-way heart-brain conversation.

Since 1983, when a new hormone called atrial natriuretic factor (ANF) was discovered, the heart has been recognised as being an endocrine gland. ANF, a hormone produced by the heart, affects blood vessels, kidneys, adrenal glands and certain regulatory regions in the brain. When the muscular walls of the heart contract, they produce ANF which influences the thalamus, pituitary gland and the limbic system. 9

The heart may be seen, then, as an imprinter copying information from the central nervous system into the blood and distributing it round the body through nerve impulses and neurohormonal messages. But the heart’s information could also be encoded into the electro-magnetic and pressure waves it produces in the blood and blood vessels. Because the blood is such a good conductor of electricity and sound, our heart’s messages travel through the blood to every cell of the body and brain.

Heart-memory and emotions

There are many anecdotes surrounding people who have received heart transplants. Pearsall, after studying the effects reported by heart transplant patients, came to the conclusion that the heart has ‘a voice, and speaks to us if we will listen’. 10 He concluded from his many interviews that the heart has something like a memory. One of the most telling stories is of a recipient who starts to hear a word repeated over and over in his head. When eventually a meeting is arranged between the recipient and the donor’s widow, the widow reveals that the word is a secret codeword she and her deceased husband used after an argument. The code word was ‘copacetic’, and it meant that now everything was OK between them. The couple, driving in the car together, had been having a blazing row when the accident occurred in which the husband was killed. His heart seems to have been very insistent in getting a message to his wife to tell her that even though they had been fighting at the time of his death, everything was ‘copacetic’. Pearsall reminds us that ‘anger … causes perturbations to the heart. An agitated heart shoots platelet bullets through our arteries, scraping and nicking their walls and creating sites for the deposit of vessel-blocking plaque. Anger energy also causes an increase in stress hormones which cause fat cells in our body to release fat into the blood reinforcing the process by which our arteries become clogged’.

The heart has long been associated with our emotional life. Nixon published extensively on the effort syndrome and the importance of our ability to make adaptations related to the performance-arousal curve. 11,12 He points out that adapting well when performance is poor despite high arousal levels means appropriate withdrawal and resetting goals. The psychosocial qualities associated with people who adapt well include good mothering – feelings of being competent and in control, secure, well loved, satisfied
with the achievements, appreciated and supported. The influences associated with poor adaptation (notably in coronary heart disease-prone patients) include migration, poor education, failure at school, poor mothering, struggle in childhood and loneliness. ¹³

The heart’s embryonic development and its haemo-dynamics

The folding of the heart is reflected in the structure of myocardial fibre arrangements first described by Lower in the 17th century. The mature heart’s shape comes about through a complex folding process in the embryonic heart, and considerable effort has gone into identifying the forces responsible. A variety of explanations have been offered ¹⁴:

- that folding occurs simply because the heart tube outgrows the primitive pericardium
- that the peri-cardiac mesenchymal jelly controls folding
- that folding is induced by the haemodynamic forces of the spiraling blood.

Interestingly, as various studies have demonstrated, when you remove the cramped conditions, the jelly or the blood flow, the folding process still occurs. Something else appeared to be controlling the process. Recently, it has been reported that the embryological movement of the heart towards the left, and the liver towards the right, may be controlled by magnetic fields developed in relation to ion pumps set up along epithelial cells operating in the midline which, if interfered with, will distort the expected spatial relationships. ¹⁵ It is possible that these fields also control the folding process of the heart. The diagram from Larsen ¹⁶ below, showing the heart at 29 days, clearly illustrates the spiralling of the heart muscle that takes place in the folding process.

It appears that the spiralling orientation of the heart muscle and its chambers imparts a vortical motion to the blood during systole. ¹⁷ The spiralling interior pattern of the arterial wall continues all the way down into the pre-capillaries. ¹⁸,¹⁹,²⁰ The epithelial arrangement in the vessels through the circulatory wall is consistent with the maintenance of a vortical flow pattern.

Even before the heart begins to function, blood in a very early chick embryo has been observed circulating in a self-propelled fashion and in spiralling streams. ²¹ So it appears that the vortical motion of the blood – like the flow of water in a torrent – may be intrinsic. An observation in favour of the blood having its own momentum was reported by Noble ²² in 1968. By simultaneous pressure measurements in the left ventricle and the root of the aorta of a dog, he demonstrated that the pressure in the left ventricle exceeds the aortic pressure only during the first half of the systole and that the aortic pressure is actually higher during the second half. He found it paradoxical that the ejected blood from the ventricle continues into the aorta despite the positive pressure gradient.

Austrian forester Victor Schauberger spent his life observing the way water flows. Recognising the importance of vortical flow ²³, he was able to demonstrate its importance in a number of his hydrodynamic inventions which included the design of more efficient pipes.

In a fascinating article, Marinelli et al ²⁴ point out many of the conceptual problems with the pump model. They highlight stable vortex flow patterns behind the cusps of mitral and tricuspid valves as confirmed by Taylor and Wade. ²⁵ Marinelli et al point out that Brecher ²⁶ conducted an experiment on a dog that demonstrated a region of continuous negative pressure in the ventricle by observing the continuous flow of Ringer’s solution from a vessel outside the heart through a cannula positioned in the left ventricle via the atrial auricle. This further confirms our concept of the persistence of the vortex in the ventricle with its negative pressure centre and positive pressure impulse potential in its swirling periphery throughout the cardiac cycle. Thus the heart as a minimum functional organ consists not only of its tissue but also of the perpetual vortex of blood which provides the perpetual vacuum in its centre that probably helps to pull the blood back to the heart from capillaries and veins. The persistence of the vortex explains the anomaly to engineers of a supposed pump that retains 40% of its charge with each ejection; a pump is expected to eject close to 100% of its charge. As a pump concept it is absurd; as presented herein it is ingenious.

The work of Hauk ²⁷ and Pischinger ²⁸ has demonstrated how a very fine and organised matrix of glycose-amino-glycans, collagen and other factors produce a three-dimensional colloidal network in the
connective tissue of the extra-cellular matrix. The energetic impulses of the circulating blood (and the ‘energetic’ information that may be encoded therein) are delivered to the connective tissue matrix in and around cells. Pollack describes how water is a critical part of the matrix and, as an oscillating dipole, can be structured in layers in relation to the negatively charged polarity of the protein component of the matrix. 29

The structuring process in the glycose-amino-glycans is dynamic: there is a constant shifting between gel and sol within the matrix 30 so that ‘gel islands’ are formed with relatively liquefied channels lying between them as shown in the diagram below.

![Diagram of the extracellular matrix](image)

In his fascinating review of the extracellular matrix, Lee 31 highlights the piezoelectric nature of the matrix, which enables it to transform mechanical stresses into electrical energy. Both Szent-Gyorgi 32 and Becker 33,34 saw the matrix as a liquid crystal lattice with semiconductor properties: when squeezed it pops electrons out of their places and they migrate towards the compression.

Lee highlights the crucial role that calcium ions play as messengers within the matrix as well as intracellularly. 35 Having left the bloodstream, the calcium ions deliver the heart’s code through the harmonic wave motions that are propagated along the matrix. Pienta and Coffey 35 suggest that cells also transfer information between one another through the system that they call the tissue matrix, which includes the extracellular matrix, the cytoskeleton and the nuclear matrix right down to the DNA. Oschman 36 emphasises that cells are not just bags of fluids with the enzymes floating around randomly. In fact the intracellular water itself and the enzymes of the cell are highly organised in this internal structure. He considers it ‘a cytoplasm matrix’ composed of liquid crystal tubes and filaments surrounded by organised layers of water This permits the efficient management of metabolic processes and information transfer.

Relating these ideas to the theories underpinning cranial osteopathy, Lee 31 points out that the ion fluxes oscillate in rhythms ranging from 0.4 to 100 seconds, which may correspond to the inherent motion of the primary respiratory mechanism first identified and elucidated by Sutherland 37, and to slower rhythms subsequently identified by Jealous. The continuity of the intracellular matrix with the microtubules of the cytoskeleton inside the cell enable the piezoelectrically maintained signals to acts as an analog code (varying continuously) transferring information about stress or metabolic need to the cells and triggering an appropriate response.

Tenforde suggested as long ago as 1987 that ‘the cell membrane may be one of the primary locations where applied electro-magnetic fields act on the cell. Electromagnetic forces at the membrane’s outer surface could modify ligand-receptor interactions (eg the binding of messenger chemicals such as hormones and growth factors to specialised cell membrane molecules called receptors), which in turn would alter the conformation of large membrane molecules that play a role in controlling the cell’s internal processes’. Lee extensively discusses the interface between the calcium ion flux and the matrix with its ultimate destination being the cell where it acts as a messenger and activator of metabolic processes at the cell wall as well as intracellularly. 31

As this process of information transduction is better understood, we can expect science to tell us much more about the significance of the elastic forces and electromagnetic fields propagating from the heart. Science, we predict will soon realise that the heart is not simply a pump, but the centre of the body-mind’s information system and perhaps its coordinator.

**References**

The heart – more than just a pump

The British Holistic Medical Association presents...

Enhancing human healing: creative encounter, therapeutic relationship and human transformation

A residential workshop for registered healthcare professionals
Facilitator: Dr. David Reilly FRCP MRCGP FFHom
Friday 27 - Sunday 29 October 2006 • Croydon Hall, Minehead, Somerset

About the workshop

Can we learn to make our relationships, encounters and consultations more healing? Can we learn to better help people heal, transform, be released from their suffering? Can our own creativity and healing be enhanced? My experience is that these things are not just possible, but can become the norm. We will explore this together - as well as other challenging questions like: What is an integrative approach? (or the 5th wave for that matter). In fact, come to that, what is a healing response and how can it be encouraged or disrupted in the people we work with, care for, and in ourselves?

About Dr. David Reilly

David Reilly FRCP MRCGP FFHom is a consultant physician, honorary senior lecturer in medicine and visiting professor, University of Maryland.

He is an inspirational educator whose presentations and workshops are highly valued by healthcare professionals. He was the highest rated speaker four years in a row at the Integrative Medicine Conference organised by the Harvard Medical School. He is often described as a breath of fresh air whose ideas and insights offer new possibilities while remaining clinically relevant.

For further information contact Diana Brown on 01278 722000 or email admin@bhma.org or visit www.bhma.org - news & events page to download the Workshop booking form
Healing the heart

Harvey Zarren
MD, FACC
Medical Director, Healing Your Heart program, NSMC, Union Hospital, Lynn, MA, USA
Assistant Clinical Professor, Tufts University School of Medicine, Boston, MA, USA

I trained in the practice of medicine in 1960s and 1970s at a time when clinical skills were highly valued and my mentors gave permission to be very human in caring. They knew how to relate to patients and colleagues and they spent time doing it well. It is painful to watch medical care becoming more and more test and procedure oriented and less and less about people and quality human experiences of healthcare. I also am appalled by the common failure to prevent cardiovascular disease in the western world. The number one killer of Americans is almost entirely preventable and yet little in the way of prevention is done.

Sir William Osler (1849-1919) practised and taught medicine in Canada, the United States and Great Britain. He is quoted as saying ‘A good physician takes care of the disease; a great physician takes care of the patient’.

In modern western medical care, the quote deserves wide dissemination and constant repetition. The focus of medical care appears to have moved from the quality of the human experience of healthcare to a bottom-line economic approach accompanied by consideration of technology and pharmaceuticals as the only tools for healing. The values of time, repetition, the self-healing abilities of human beings and the importance of the therapeutic use of the relationships between people have been progressively submerged by considerations of economics and commerce. Money rather than wellness is the major visible consideration in modern healthcare.

There are and will continue to be individuals practicing in the healthcare professions who do focus on wellness of people rather than on economics. That dwindling group of practitioners must be recognised and honoured. They often pay an increasingly heavy price in the cost to their personal and family lives. All of us want to be cared for by such individuals when we are sick and suffering. They will pay attention to our experience as human beings dealing with disease. They will take the time to care for us and about us.

In 2006, cardiovascular disease is the number one killer of Americans, taking the lives of almost 2,500 people daily.1 One in three adult Americans has some form of cardiovascular disease. It is estimated that by the year 2020 cardiovascular disease will be the number one cause of death on earth.

Of interest is the fact that cardiovascular disease is almost entirely preventable. There are nine easily measured and potentially modifiable risk factors accounting worldwide for over 90% of the risk of a first heart attack. The nine risk factors include cigarette smoking, abnormal blood lipid levels, hypertension, diabetes, abdominal obesity, a lack of physical activity, low daily fruit and vegetable consumption, alcohol over-consumption, and psychosocial index.2

The cost of cardiovascular disease in the United States in 2006 is estimated to be over 400 billion dollars. (The estimated cost of all cancers in 2004 in the United States was 190 billion dollars.) 1

We only practise medicine in the manner in which we live in a culture.

Key points
1. Modern healthcare has become progressively less about people, wellness and the quality of the human experience of healthcare and more about technology and finance.
2. Cardiovascular disease is the number one killer of Americans and soon of all people on the planet. Cardiovascular disease is at least 90% from modifiable risk factors and yet most effort and investment is in intervention rather than prevention.
3. Time and relationship skills are key to good quality healthcare. There is currently little focus on either.
4. Healing your heart is an example of a people-oriented programme that focuses on wholeness, healing and the effects of supportive relationship and group interaction to enhance the quality of people’s journeys toward wellness.
We have an enormous burden of cardiovascular disease with its mortality, morbidity, human suffering and financial cost and it is mostly preventable and we continue to spend the bulk of our time and efforts in intervention. This is not a focus on wellness, but rather a focus on economics.

The way in which medical care is often practised can be illustrated by a story not uncommon in the US. A 71-year-old woman told me that she had an episode of chest discomfort that caused her to visit her primary care physician who promptly sent her for a cardiac stress test. After the test she received a call telling her that the nuclear scan portion of the test ‘showed something’ and that she needed to have a coronary angiogram. She had the angiogram and a stent was placed in her right coronary artery. Three weeks later her pain re-occurred and she was sent for another angiogram that showed that the stented coronary artery was open with good flow. The cardiologist told her that he did not know the cause of her pain and she should go back to her primary physician. I asked the woman how long she had walked on the treadmill during her stress test. She told me that she had walked for more than 10 minutes. I asked her if she had developed her chest pain on the treadmill and she said no. I asked her why she stopped the test and she told me that the technician had told her that she had gone far enough and that another patient was waiting to have a test. The woman eventually found out that her chest pain was actually from arthritis in her neck.

Attention to the human experience of healthcare requires time and relationship skills. Quality healthcare is best served by taking the time to obtain an adequate history from a patient. An adequate history means that the patient gets to tell enough of their story so that the practitioner has a reasonable idea of what is going on with the patient. The practitioner needs the skill and the time to invite the patient to tell such a story.

Next, a physical examination is carried out to further evaluate the patient. The examination needs to focus on the presenting complaint and can also pick up additional issues that may need to be addressed. Then comes a thoughtful evaluation of what further testing can add to the accuracy of diagnosis.

Through all of the process, the practitioner relates to the patient in a very conscious way, building relationship, building trust, being supportive and fostering the patient’s own healing abilities and resources to deal with whatever issues the patient has brought and to encourage the patient in the experience of life in general. Included in the whole process can be constant motivation and education for prevention of disease. This is to be carried out in addition to efforts to resolve the presenting complaint.

This brief depiction of how quality medical care deserves to be practised will be seen by some as improbable and even impossible at a time when procedures and testing are financially reimbursed far better than time spent with a patient. Furthermore, the potency of modern technology and pharmaceuticals has created an arrogance that dismisses the value of human relationship and interaction in the prevention and treatment of disease.

Healing is a journey towards wellness. Wellness can be thought of as having physical, mental, emotional, spiritual and tribal (or social) aspects. Each person needs nourishment in all of these areas for a healthy life. At any given time one or more of the areas may take precedence in the needs of a given person. Over time all of the aspects of wellness deserve attention. The key factors here are time and attention. As long as time for human interaction is limited in healthcare experiences, the quality of healthcare will decline. In addition, practitioners need to be aware off which aspects of each person’s journey towards wellness need attention at a given moment. Such attention requires the practitioner to be attentive to their own needs.

Mary Oliver, in her poem The Journey, eloquently states, ‘as you strode deeper and deeper into the world, determined to do the only thing you could do – determined to save the only life that you could save.’ Here is a vivid reminder to the healthcare practitioner that being a model for wellness is important. Practitioners need to recognise that on their own journey towards wellness they gain experience and knowledge that allows greater compassion for and understanding of their patients.

In 1990 I helped to create a programme at the Union Hospital, now part of the North Shore Medical Center (NSMC) in Lynn, Massachusetts, USA. The programme was called The healing connection. The healing connection vision statement included establishing respect for the healing qualities connected with interpersonal caring and interaction, and placed people and human interaction in the centre of the healing process for the benefit of both patients and caregivers.

In 1991, under the umbrella of The healing connection, I helped to create the Healing your heart cardiac support group that still meets weekly. It is based on the premise that people are whole with physical, mental, emotional, spiritual and tribal aspects and needs and that time is necessary for healing.

We start seated in a circle and we do a centring experience with guided imagery, then we take hands and we chant OM. Next we do about 45 minutes of yoga. We then re-enter our circle and spend the rest of the time sharing knowledge, experience, feelings and stories. We talk about what has worked on our journeys and about what has not worked. We laugh (a lot) and cry together. We treat each other with respect and compassion.

We also discuss our ‘Omwork’, 10 weeks of core curriculum of facts and information including information about risk factors for heart disease. The
information is handed out in weekly lessons to be looked at at home and then discussed as necessary in class. The information is presented clearly and is kept updated. Of interest is that rarely are there questions about the information during group. Healing your heart has demonstrated (as did my 33 years in practice) that the major barriers to change are not necessarily lack of information. Most people know that high blood pressure, smoking, high blood sugar and cholesterol are bad for their health. The reasons that people often do not make necessary changes in their lives are most commonly related to emotional, spiritual or social issues. Anger, sadness, isolation, lack of connection, poor quality relationships and hopelessness are all common reasons that interfere with useful lifestyle change. These are issues we work on in Healing your heart, and we work on them repetitively, giving people adequate time for expression, understanding and support. Sometimes just learning that others share the same frustrations, fears and experiences is helpful.

The attendees of Healing your heart do very well. They make change. They survive terrible heart disease, even when told ‘Nothing more can be done’. They improve the quality of their lives and their relationships. The learn and grow extensively.

Nancy Long, my co-facilitator, and I work on our own issues by attending Healing your heart. We constantly learn and grow from the sharing by group participants. We constantly work at mindfulness, listening skills and compassion. We also support the group in their efforts for relaxation (ending each yoga session), mindful breathing, non-judgmental interaction and invitational learning. We encourage people to express themselves using the pronoun ‘I’. ‘I believe, I think, I feel’, grants ownership of thoughts and expressions to group participants. Each person gains experience in noticing their feelings, their body sensations accompanying feelings and their response to others.

Healing your heart is not meant to be used as a substitute for usual medical care. The group is meant to support patient-caregiver relationships and to supplement usual care. We do encourage people to use appropriate medications, to have appropriate procedures and to work on their relationships with their caregivers. We encourage people to ask mindful questions and to relate their worries and concerns. We also teach compassion for the stresses and strains on medical professionals. Healing relationships are meant to be two-way with regard for the caregivers needing to be an essential part of such relationships.

Healing your heart is a useful model for the holistic way that healing of the heart needs to be carried out. Healing the heart is not just a matter of medications, procedures and cost controls. Healing the heart is about exploring physical, mental, emotional, spiritual and tribal needs, issues and discomforts. Healing the heart requires more than just the dissemination of knowledge. It requires perspective, individualisation of approaches, opportunities for expression and sharing and the provision of hope. It requires time, repetition and persistence. It most of all requires people interacting with other people in relationships that foster self-healing, mindfulness, compassion, courage and responsibility. It requires good listening skills. It requires good storytelling skills. It requires passion, faith and a sense that people can and will get what they need for healing if they are given a chance.

Modern healthcare needs to change. It needs to focus more on wellness, service and people. It needs to provide appropriate incentives so that well-trained practitioners can and will spend adequate time with patients to provide excellent care and excellent human experiences.

Perhaps everyone involved with healthcare can benefit from the following poem ascribed to an elder of the Hopi Tribe of Native Americans.

There is a river flowing now very fast. It is so great and swift, that there are those who will be afraid. They will try to hold on to the shore, they will feel they are being torn apart and will suffer greatly. Know that the river has its destination. The elders say we must let go of the shore, push off into the middle of the river, keep our eyes open and our heads above the water. And I say see who is there with you and celebrate. At this time in history, we are to take nothing personally, least of all ourselves, for the moment that we do, our spiritual growth and journey come to a halt. The time of the lone wolf is over. Gather yourselves. Banish the word struggle from your attitude and vocabulary. All that we do now must be done in a sacred manner and in celebration. We are the ones we have been waiting for.

References
A holistic approach to caring for people with heart failure

Mary Brice
Heart failure nurse consultant, British Heart Foundation

I began my nurse training at St Thomas’s Hospital, London in 1984 and developed an interest in cardiology on my first ward. I did my cardiac nursing course at St George’s hospital in Tooting. The development of the cardiac liaison post by the BHF in 1996 allowed me to develop my cardiac rehabilitation interest into a more long term approach to care. In December 2004 I joined Croydon PCT as a heart failure nurse consultant where I have commitments to the development of the nursing curriculum with Kingston University, strategic direction for long term condition management in Croydon and a research and clinical commitment.

On Christmas Eve in 2005, Sonia, a 54-year-old care worker, had a myocardial infarction (MI). Three days later an angiogram showed that she had several narrowings in her coronary arteries, two of which were opened by angioplasty and stents. In April 2006 she was again admitted to hospital with shortness of breath and leg oedema to her thighs. She had developed heart failure, confirmed on echocardiography. Her heart was contracting poorly: with each beat only 30% of the blood in the left ventricle was ejected (an ejection fraction of 30% compared with the normal of 60-70%). Sonia has left ventricular systolic dysfunction (LVSD), secondary to ischaemic heart disease.

Sonia has multiple risk factors for coronary heart disease and other important health problems. She smoked 50 cigarettes a day, which she stopped for three months. Since her heart failure she has smoked 10 a day. She is obese with a body mass index over 30. She has type two diabetes with diabetic eye disease currently treated with laser and she is taking maximum tablet therapy for her diabetes. Her total cholesterol level was quite good at 4.6 mmol/l, but she was already on statin therapy at the time of her infarct. She had breast cancer in 1983.

Socially, Sonia has very little support; she is divorced and her adult children are ‘occupied with their own problems’. She works as a carer with social services, on a low income living alone in a flat and paying a mortgage. Her most recent partner left four years ago. In recent years she has had a number of bereavements of key family and friends leaving her isolated as well as bereft. Sonia is just the sort of patient the British Heart Foundation heart nurse team aims to help.

In 2004 Croydon PCT received Big Lottery funding through the British Heart Foundation to appoint a nursing team to develop a community-based heart failure nursing service. The team works alongside GPs and the broader community multidisciplinary team with links to the secondary care teams, principally cardiology, elderly care medicine, and renal medicine. Close links have also been established with the palliative care team from nearby St Christopher’s.

Summary
The British Heart Foundation is pioneering a community-based heart failure nursing service. Where patients have complex needs, nurses adopt a case manager role to coordinate services and provide a holistic approach. How this works is illustrated with two cases, one involving palliative care.
Hospice with regular joint team meetings. As in other community nursing teams, the BHF heart nurse team uses a single holistic assessment tool to plan and guide care. Where complex needs are identified the nurses adopt a case manager role to coordinate the care of the patient and to provide the patient and their carers with support and advocacy if required.

The initial BHF heart nurse team specialist assessment, consisting of evaluation of heart failure signs and symptoms, angina symptoms, weight change and haemodynamic status, concluded that Sonia had stable heart failure (NYHA 2) with mild ankle oedema, poorly controlled hypertension and mild renal impairment. She does not have angina and she did not have any chest pain prior to her MI, which is more common in diabetics.

Table 1

**New York Heart Association classification of heart failure symptoms.**

<table>
<thead>
<tr>
<th>Class</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>No limitations. Ordinary physical activity does not cause fatigue, breathlessness, or palpitation. (Asymptomatic left ventricular dysfunction is included in this category)</td>
</tr>
<tr>
<td>II</td>
<td>Slight limitation of physical activity. Comfortable at rest. Ordinary physical activity results in fatigue, palpitation, breathlessness, or angina (symptomatically ‘mild’ heart failure).</td>
</tr>
<tr>
<td>III</td>
<td>Marked limitation of physical activity. Although comfortable at rest, less than ordinary physical activity will lead to symptoms (symptomatically ‘moderate’ heart failure).</td>
</tr>
<tr>
<td>IV</td>
<td>Inability to carry out any physical activity without discomfort. Symptoms of congestive cardiac failure are present even at rest. With any physical activity, increased discomfort is experienced (symptomatically ‘severe’ heart failure).</td>
</tr>
</tbody>
</table>

The single assessment overview highlighted moderate anxiety and depression scores, several diabetic complications, most critically newly impaired vision, and social isolation with no identifiable ‘support’ networks. Sonia has not worked since December 2005 which has affected her income, and her recent loss of vision has effectively confined her to her house. She regularly refers to her experiences with breast cancer as a ‘fight’ and sometimes feels that she does not have the energy to fight her current illnesses. Through the holistic assessment tool, the BHF heart nurse team has a better understanding of her perceptions about her illnesses and social situation. With reflective listening and open questioning, we have explored Sonia’s feelings and expectations and feel better placed to support her and help her to modify her expectations.

The traditional medical model approach to healthcare delivery has led to the development of complex pathways of care where patients have multiple hospital appointments, see different specialist professionals for each separate problem and have problems neglected when there are no obvious specialist solutions. Recent emphasis on the pro-active management of long term conditions has suggested that a more generalist approach is preferable from the user’s perspective and is more realistic in understanding the interaction between different coexisting conditions, leading to improved outcomes. 2 - 5

Studies suggest that as many as a third of people over 65 years with heart failure have five or more co-existing non-cardiac conditions 6 making frequent readmission to hospital more likely. 7 Heart failure is a complex syndrome of signs and symptoms for which there are a number of different causes and exacerbating factors and it is most prevalent in a population which is more likely to have a number of co-morbid conditions.

The age/gender profile of people with heart failure (Table 2) highlights its increased prevalence in older people in whom co-morbidities are likely to be present. This data is likely to under-represent the size of the problem experienced in practice, because diastolic or ‘preserved left ventricular function’ heart failure was excluded.

Table 2

**Prevalence of definite heart failure, by sex and age, 1995/99, West Midlands**

<table>
<thead>
<tr>
<th>Age group</th>
<th>% men</th>
<th>% women</th>
<th>% all</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-54</td>
<td>0.3</td>
<td>0.0</td>
<td>0.2</td>
</tr>
<tr>
<td>55-64</td>
<td>2.7</td>
<td>0.9</td>
<td>1.8</td>
</tr>
<tr>
<td>65-74</td>
<td>4.2</td>
<td>1.7</td>
<td>2.9</td>
</tr>
<tr>
<td>75-84</td>
<td>7.3</td>
<td>6.6</td>
<td>6.9</td>
</tr>
<tr>
<td>85+</td>
<td>21.7</td>
<td>11.6</td>
<td>15.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3.0</td>
<td>1.7</td>
<td>2.3</td>
</tr>
</tbody>
</table>

From: www.heartstats.org 8
Sonia is unusual in only one aspect, that she is under 65. That she has a number of needs in terms of co-morbidities, psychological and social support is not unusual, and therefore achieving positive outcomes in terms of lifestyle change and health maintenance becomes complex.

A case management approach to care delivery for patients with long term conditions and complex needs has been identified as an objective in order to deliver more pro-active and effective care, and ultimately reduce the cost of long term conditions to the health service, since those with complex needs have been shown to be the highest users of healthcare services.

Diagram 1

Level 3: Case management
Requires the identification of the very high intensity users of unplanned secondary care. Care for these patients is to be managed using a community nurse or other professional using a case management approach to anticipate, co-ordinate and join up health and social care.

Level 2: Disease-specific case management
Involves providing people who have complex single need or multiple conditions with response specialist services using multi-disciplinary teams and disease-specific protocols and pathways such as the National Service Frameworks and Quality and Outcomes Framework.

Level 1: Supported self care
Collaboratively helping individuals and their carers to develop the knowledge, skills and confidence to care for themselves and their condition effectively.

DoH 2005

There is not a single consensus descriptor of what case management is, but the ethos is to coordinate and manage the care of identified patients with complex needs, in partnership with the patient and their carers. Sonia’s needs were exaggerated by the fact that she did not have a carer. She wanted to know more about what she could expect regarding her sight in the future and to get advice from a welfare rights agency regarding her immediate financial problems. Her state of mind was negative, she felt impotent and isolated and felt that she could no longer control the events that happened to her. The role of the heart failure nurse specialist therefore became one of navigating through the complicated health and social welfare systems, while monitoring the heart failure and ensuring optimum drug therapy.

As with long term conditions themselves, the trajectory of case management is like a roller coaster with peak periods of stable management interspersed with trough periods of instability where greater intervention or support is required. These crises may be triggered by events occurring in either the psychological, social, spiritual or physical domains. Similarly, if issues in these areas are resolved, patients can move out of active case management, or be stepped down, either temporarily or permanently. Therefore whether Sonia needs long term case management remains to be seen; it is dependant on the support that is built around her and the outcome of the interventions she is currently undergoing. Is the heart failure nurse

“Through the holistic assessment tool, the BHF heart nurse team has a better understanding of her perceptions about her illnesses”

“A case management approach to care delivery has been identified”

the best placed person to provide this role? Future research is required to establish who is best placed to case manage. It may be that this will become the sole domain of the community matron. The current recommended structure for those at level three of the long term conditions triangle suggests that community matrons should manage those with more than one long term condition. However, it seems logical that if a healthcare professional of any description has the skills outlined in the case management competency document, they should coordinate the care of individuals with complex needs with whom they have regular contact. Placing the BHF heart nurse team in the multidisciplinary community team enables them to work alongside professionals with different skills, either on a consultancy basis or through joint management. The case of Frank illustrates working with palliative care.
Frank was 86 and had lived alone in his two-storey Victorian semi-detached house since his wife, who has dementia, was taken into long term care. He understood his conditions very well and valued being involved in the decisions being made about his medical care and he was often disappointed and frustrated when he felt that this did not happen.

Frank had heart failure due to LVSD caused by ischaemic heart disease. He was the second referral to the BHF heart nurse team in Croydon. His diagnosis was made in 2001 following an MI. He was referred to the team in 2005 after his third admission with uncontrolled heart failure. He also had moderate renal dysfunction, chronic anaemia, enlarged prostate, previous bladder cancer (the treatment of which had caused ulcerative colitis) and a history of depression. It has been acknowledged that diagnosing dying in heart failure patients is very difficult. \(^{10}\) The heart failure palliative care framework \(^{11}\) has suggested that the presence of two out of the four following criteria for placing patients onto the supportive care register:

- NYHA III or IV
- patient is thought to be in the last year of life by the care team
- patient has repeated hospital admissions with symptoms of heart failure
- patient has difficult physical/psychological symptoms despite optimal tolerated therapy.

Good communication is needed between the heart failure nurse team and the cardiologist to ensure that patients are given information about their prognosis to enable discussion about, and preparation for, end of life care. In general, heart failure does not carry the same negative connotations for patients as cancer despite its unfavourable comparison with many cancers.

Following a hospital admission in the summer of 2005 Frank said that he no longer wanted to go into hospital for treatment. His hospital stays were usually at least two weeks long, and although he lost fluid, his predominant symptoms of breathlessness and fatigue remained and were difficult to control. He knew he was dying and we were able to discuss his end of life care. He wanted to stay at home for as long as possible and he did not want to die in hospital. He was very independent and proud and he did not want carers to come into his home to help him wash and dress. He even continued to do his shopping on his mobility scooter. A referral to the hospice team was made.

### Good communication is needed between the heart failure nurse team and the cardiologist

During the last months of his life the nursing teams from the hospice and BHF heart nurse team coordinated their care and management to alleviate his symptoms, liaising with the GP and gastroenterology team in hospital for advice about controlling his other conditions. A regime of regular morphine was effective in relieving his breathlessness. He attended the hospice day centre regularly where he was able to have an assisted bath and continue working on the story of his life. Above all, the support of the day centre helped him cope with his

---

**One-year survival rates, heart failure and major cancers compared, mid 1990s, England and Wales**

![Graph showing one-year survival rates for various cancers compared to heart failure](image)

*From: www.heartstats.org*
depression and he felt valued and cared for. In the autumn of 2005 he was admitted to the hospice for respite from managing on his own and he died peacefully five days later with his children around him.

The BHF community heart failure nurse team is ideally placed to support people with heart failure and coordinate all aspects of their care. They can also provide guidance to other professionals regarding best practice in managing heart failure on a consultancy basis. They should work as part of a broad multidisciplinary team of professionals from the primary and secondary care setting with whom they can discuss individual patients and reflect on the outcomes of care delivery.

References
11. www.heart.nhs.uk/serviceimprovement/1338/4668/Palliative%20Care%20Framework.pdf

The David Cobbold Essay Prize - £250
This British Holistic Medical Association prize is awarded to the undergraduate health care student who submits the best 1,500 word essay on ‘A good holistic practitioner’. (This can be a research paper, drawn from your own experience or a fictional story). The competition is the first in a series of four enabled by a donation in the memory of David Cobbold, who died of cancer in 2003. The winning essay will be published in the Journal of Holistic Healthcare. The first 25 entrants will receive free membership of the BHMA for one year.

Closing date: 28 February 2007
For further information please contact Diana Brown on 01278 722000, email: admin@bhma.org or visit the BHMA website www.bhma.org to download the entry form.
What are you?
What am I?

Intersecting cycles of water, earth, air and fire, that’s what I am, that’s what you are.

Water – blood, lymph, mucus, sweat, tears, inner oceans tugged by the moon, tides within and tides without. Streaming fluids floating our cells, washing and nourishing through endless riverways of gut and vein and capillary. Moisture pouring in and through and out of you, of me, in the vast poem of the hydrological cycle. You are that. I am that.

Earth – matter made from rock and soil. It too is pulled by the moon as the magma circulates through the planet heart and roots suck molecules into biology. Earth pours through us, replacing each cell in the body every seven years. Ashes to ashes, dust to dust, we ingest, incorporate and excrete the earth, are made from earth. I am that. You are that.

Air – the gaseous realm, the atmosphere, the planet’s membrane. The inhale and the exhale. Breathing out carbon dioxide to the trees and breathing in their fresh exudations. Oxygen kissing each cell awake, atoms dancing in orderly metabolism, interpenetrating. That dance of the air cycle, breathing the universe in and out again, is what you are, is what I am.

Fire – Fire, from our sun that fuels all life, drawing up plants and raising the waters to the sky to fall again replenishing. The inner furnace of your metabolism burns with the fire of the Big Bang that first sent matter-energy spinning through space and time. And the same fire as the lightning that flashed into the primordial soup catalyzing the birth of organic life.

You were there, I was there, for each cell of our bodies is descended in an unbroken chain from that event.

Joanna Macy and John Seed


www.alexgrey.com
Syndrome Acupuncture

with the Beijing University of Chinese Medicine in London

AcuMedic Case Study

How can Chinese Medicine Help Your Patients?

September, 2005
Ms. G P 37, TV Editor London

In August 2004 I was diagnosed as having premature menopause. Prior to that, I had uterine fibroids which were removed in February 2002. After my blood test in August 2004 I was found to be pre-menopausal. My GP told me there was nothing that can be done at this point, my hormone levels were all over the place. I was so sad as the situation felt so hopeless. I so wanted to have babies and now it felt like I had lost the chance forever. Even when I asked if there was someone else I could see for a different opinion, he said not in cases like these.

My Oestrogen level was less than 100
FSH levels = 68.6
LH levels = 34.4

All this came about because of the unbearable stress which was work related. I was experiencing dizzy spells, headaches, sleepless nights and then hot flushes which when they started were relentless and coming in at 30 minute intervals every hour every day for 5 months. I missed my periods. I started gaining weight at an alarming rate. I was feeling depressed, fatigued and a loss of appetite.

By the time Dr. Lily was recommended to me I was in my 48th month with no periods. I went to see a friend of mine who had been seeing Dr. Lily for the same thing and by that time she was pregnant. She didn’t know about my situation until I started flushing in front of her and then I had to tell her. She immediately told me about Dr. Lily’s Chinese herbs and how she helped her and gave me her details.

When I first met Dr. Lily I was in my 6th month without periods and I was very worried, scared and felt hopeless and was not sure if she would be able to help. Dr. Lily was very friendly, warm and she asked all the right questions as the meeting progressed. She examined me and explained the treatment she proposed to use on me in clear detail. She also said that the recovery time for the ovaries was at least 12 weeks.

What a contrast to the experience I had had with my GP as he informed me that women in their menopause are more likely to get better results if they accept their fate and take HRT or similar drugs. I rejected I panicked and I couldn’t imagine myself on that in a million years.

After only three visits having acupuncture and the herb treatment my system started to function again. My periods came back beating the predicted recovery period of 12 weeks.

By November 30th I had another blood test I went to see my GP again to get the results. He was very surprised to see that my wayward body had changed its mind and was behaving normally again. The results were:

Oestrogen levels = well over 100
FSH levels = 16.7
LH levels = 4.7

An incredible improvement to the last test results. The hot flashes disappeared along with the dizzy spells and everything else that came with it. He asked me what caused the change? I said Chinese medicine and acupuncture. Dr. Lily’s confidence, knowledge, holistic approach and her willingness to help and listen to the needs of her patients has helped me to take control of my female being to a level so powerful it’s hard to believe and I’m living proof of what Chinese medicine is capable of achieving.

Venue:
AcuMedic Centre
101-105 Camden High
Street, London NW1 7JN

Course Administrator
+44 (0)207 388 5783 Ext. 215
lisa@acumedic.com
www.acumedic.com
Systems of flow in the body and on the planet

Chris Drury
Land artist

I am categorised as a land artist, but in reality I am interested in exploring connections in the world through a diversity of means and materials. In 1996 on a flight to Japan I came across a photo of a whirlpool taken from Theodore Schwenk’s *Sensitive chaos: the creation of flowing forms in water and air* (a book that hints at but predates chaos and complexity theories). A week later in the Mountains of Shikoku Island, I made a work in small pieces of river stone under a waterfall which echoed that whirlpool. The spiralling form is one to which I keep returning. The heart is formed by the way blood flows, the same is true of rivers and water, and these flow patterns are also found in the formation of galaxies. This repeating of the microcosm in the macrocosm I find endlessly fascinating.

Heart of reeds

Two years after I first came across Theodore Schwenk’s images I turned again to his book *Sensitive chaos* when collaborating with an architect on a design for a new library next to a river. I found a diagram of a cross-section through the human heart. Here was the same whirlpool pattern but in this case it was a double vortex. The ideas generated for this (sadly not completed) project have laid the foundation for a number of other works: for example Heart River, a drawing of the pattern in blood (my own) and mud; and Heart of Stone, a double vortex installation in Welsh slate at Aberystwyth Arts Centre. Heart of Reeds was formally opened in June of this year and is a living, breathing nature installation which connects people and nature. This is its story:

In January 1998 I was standing on Chapel Hill in Lewes, East Sussex, which overlooks the River Ouse and the town. The wetlands nature reserve, known as the Railway Land, next to the river on the edge of the town, was flooded at the time and the tops of grasses and vegetation were forming a pattern in the water. I knew that in this particular area the Railway Land Wildlife Trust (RLWT) had plans to create a reed bed but could not find anyone to fund it. At that moment I realised that if reeds were planted in a pattern you would create a large drawing, visible from this vantage point. With this in mind I did a rough montage drawing and took it to the RLWT and proposed that if they let me design the reed bed we might be able to draw in arts...
funding under a kind of Sci-art program, linking art and ecology, and so an idea was born.

In 2000 we got the money to design it and I worked in collaboration with the RLWT, ecologists, entomologists, the Environment Agency and Lewes District Council which owns the land. The idea of a reed bed on the site was to form a diverse habitat to maximise biodiversity. Biodiversity most often occurs on the borderlands; in this case between water and land. If therefore I could draw a pattern in islands we should, in theory, achieve our objective and the islands would have the added benefit of providing secure nesting sites for birds. I searched around for a pattern which would in some way help to link people metaphorically with wildlife on their doorstep and decided on a pattern which I had been using in other contexts: the cardiac twist. This is a double vortex of tissue at the apex of a heart which allows for the most efficient pumping rhythms and mirrors similar rhythms in the macrocosm. From the heart to weather systems to the formation of galaxies the vortex rhythm links them all, and its complex linearity would make ideal islands.

I made drawings and a model. A reed bed will eventually dry out with the build-up of detritus if it isn’t flushed out by floods or cleared from time to time by man. To allow for this and to give the wildlife the opportunity to move, we designed the reed bed in two halves. Five sluices would control the water levels and fresh water was to be diverted from a spring through the reed bed and out into the water meadows. The drawing and plans were exhibited in a gallery in the town and comments encouraged. Overall the views were very positive, and at a town meeting the vote in favour of the project was virtually unanimous, provided we could raise the money through charities.

By 2005 the money was in place, raised mainly through the Arts Council and Viridor plc, through the landfill tax initiative. My plans and drawings were simplified to meet health and safety standards and put onto computer aided design (CAD) plans. Construction began in the autumn of 2005 and was completed with the planting of reeds in spring of this year. In June, seven years from the moment of conception, Heart of Reeds was opened to the public. From start to finish it has been a collaboration and involved art, science, ecology, medicine, a wildlife trust, two local councils, an arts council, schools and colleges, a waste management company, a brewery, a water company and a large construction company. The whole process has been meticulously documented by the photographer Nicholas Sinclair.

It has also proved to be remarkably popular with the people of Lewes; there is always someone walking a dog on the footpaths or standing on the mound surveying the scene. Already it is becoming interwoven with the fabric of performance and ritual in the town, and was recently used as the site of a dance about recycling. The education project with local schools is ongoing and funds are being sought for an education building on the edge of the nature reserve.

As for wildlife it has proved equally popular. The noise of frogs can be overwhelming and the water is full of other aquatic life. Two kingfishers use it as a feeding ground and a pair of swans are nesting on the south island in full view of the public. Reeds are establishing well and we expect a full cover in three years or so. The site will continue to be monitored and used as a science research laboratory.

www.chrisdrury.co.uk

Chris Drury’s book Silent spaces is published by Thames and Hudson, price £24.95.

References
Art, science and an integrative view of the heart

Philip J Kilner

I have had an unusual medical career. Two years after qualifying, I left medicine for about nine years, finding my way into a field of study that appealed to my senses of form, beauty and truth. I studied sculpture and Flowform design at Emerson College in Sussex and questions about heart form and function that arose from these studies led me back into medical research. I first worked with a heart surgeon at Great Ormond Street Hospital, where I made models related to reconstructive heart surgery, then moved to Royal Brompton Hospital in London, where I still work, after 18 years, as a consultant in cardiovascular magnetic resonance.

Introduction

There seems to have been a renewal of interest in the relevance of art to science, which has been reflected in opportunities for the funding of collaborations between artists and scientists in the United Kingdom. Scientific publications such as Nature, as well as this journal, have published contributions on art in relation to science in recent years. These developments help to foster cross-fertilisation, but I would like to draw particular attention to a genuinely integrative artistic-scientific approach. This is one which continues to be quietly influential across Europe and the United States, at least, and can be traced back through two centuries to Johann Wolfgang von Goethe (1749-1832).

Goethe’s approach to science

Goethe is best known as an outstanding figure of German literature – the author of Faust, other plays and poems, and novels that are among the earliest of their kind. But he has also made lasting contributions as a scientist and philosopher of science, perhaps even more so than Leonardo da Vinci (1452-1519). While Leonardo is now seen as a uniquely gifted artist-scientist of the renaissance, his prolific notes and sketches of natural processes, phenomena and inventions remained largely unknown until the 19th century. And Leonardo lived and worked before William Harvey (1578-1657), René Descartes (1596-1650), Isaac Newton (1642-1727) and other pioneers of modern science – arguably before any real separation between scientific and artistic approaches became the norm.

Goethe was concerned by the potentially dehumanising character of the science of his time. He developed and practised methods appropriate to the complex, transforming natures of organisms, the environment and the human. His approach was based on open, inclusive observation of phenomena, gathered through as many complementary perceptions as possible. Artistic creation or recreation probably played an essential part in the development of his...
capacities for thought and association. He sought awareness of organic wholes and their contexts as well as their specific details. His observations connected through time as well as space, for example when studying the development of plants. And what emerged to illuminate his observations was appropriately mobile thought, guided by what he perceived. His ideas took shape in accordance with the combinations and sequences of phenomena that he observed.

Perhaps this is what we have all done naturally as children playing and beginning to make sense of our surroundings. But we are all too readily schooled out of this openness, gradually noticing less and less beyond what we expect, or are expected to see. Scientifically, there has been a tendency to reckon only with what is measurable and interpretable mechanically – in accordance with the behaviour of mechanisms. The uncertainties of quantum physics, and, on larger scales, of complex, chaotically interacting systems, may have challenged such interpretations. But it seems hard to overcome sequential habits of thought to achieve a more inclusive, contextual awareness. A certain kind of causality is expected, and successfully found in many aspects of organic function, although other aspects continue to elude this kind of interpretation.

Through my own years of medical training I kept up an interest in the arts, particularly painting and sculpture, but this was in my own time, and it seemed to have little relevance to medical work. Then, through one of the Camphill communities and later through Emerson College in Sussex, each founded by followers of Rudolf Steiner (1861-1925), I began to encounter a more integrated artistic-scientific approach. Steiner had, as a young man, edited the scientific writings of Goethe, having based parts of his own doctoral thesis on this material. He was clearly an inspired and inspiring teacher in his own right, but as far as mainstream science is concerned, Steiner’s role as interpreter and propagator of Goethe’s methods has probably had more influence than his later, more explicitly spiritual teachings.

Among those who, after Goethe and Steiner, developed their own phenomenological approaches have been the biologists Louis Bolk, Hermann Poppelsbaum, Wolfgang Schad, Jochen Bockemühl, Brian Goodwin, Craig Holdrege and Jos Verhulst (all of them, and their publications, can be traced through Google). In the physical sciences, Hans Jenny and Theodor Schwenk each produced superbly illustrated books on formative and rhythmic processes in fluids or semi-fluids which have had widespread influence on both artists and scientists, including mathematicians, physicists and biologists who have subsequently worked on complex dynamic systems and chaos theory.

**Flowforms**

An English artist who collaborated with Theodor Schwenk, together with the mathematician George Adams, was John Wilkes. He studied at the Royal College of Art in London, and out of his work with Schwenk and Adams he developed a series of elegantly sculpted surfaces that he called Flowforms, shaped to accommodate and enhance the natural rhythms and vortices of streaming water. Many variants of Flowforms have been designed. There can be pairs, clusters or cascades of Flowform cavities, capable of inducing rhythmic fluctuations in streams passing across their surfaces. In 1980, I was fortunate to study sculpture and Flowform design with John Wilkes, and at this time came up with a very simple variant of the Flowform consisting of a single, asymmetric cavity that could convert continuous inflow to pulsatile outflow through its spontaneous cycle of accumulation and discharge. A pair of such forms is shown in the picture opposite.
For me this discovery was pivotal. The form’s asymmetric, elliptical shape and rhythmic cycle of flow led to my inquiries, over the next 20 years, into the forms and dynamics of flow through heart cavities. There is a somewhat tantalising similarity of shape between one of these forms, viewed from above, and the asymmetric cavities of a relatively simple vertebrate heart, for example that of a fish. If the Flowform is considered as a fluidic oscillator, then the atrium and ventricle of the basic vertebrate heart might be seen as a fluidic oscillator-amplifier. This model would seem to accord, in part at least, with Rudolf Steiner’s provocative assertions that the heart is not a pump, but is set in motion by the currents.9 However, my initial anticipation that this could be shown in living hearts has not exactly been borne out by further years of work. This is partly because the heartbeat in living vertebrates seems to be initiated by myocardial rather than fluid rhythmicity, arising and propagating from the sino-atrial pacemaker region, in embryos as well as adults. But the patterns and dynamics of flow nevertheless play an integral part in the function of the heart, especially, I think, on exercise.

Heart flow research

In order to find out more about flow through living hearts, I moved back into medical research, at first using model-making skills to collaborate with a heart surgeon on the dynamics of flow through certain types of cardiovascular reconstruction performed for severe congenital malformations of the heart.10 But my main interest was in the function of the healthy heart, and I moved on to work with cardiovascular magnetic resonance imaging. Magnetic resonance is a non-invasive technique which allows visualisation and measurement of heart structures and flows in healthy volunteers as well as patients. It also allows mapping of the principal paths of flow through heart cavities. These studies confirmed that flow tends to recirculate asymmetrically in each cavity of the human heart.11 In the atria, at least, the swirling is slightly, but not completely, similar to that in a Flowform. One consequence of this is that blood flow is more stable and less turbulent than it might be if it entered centrally and symmetrically. Another consequence is that its tangential entry and asymmetric recirculation redirects its momentum appropriately for onward passage to the next compartment, given the looped overall arrangement of the heart. And a third consequence of the looped arrangement is that the ventricle recoils, according to Newton’s laws of motion, away from the blood that it accelerates into the aorta, and this direction enhances rather than inhibits the systolic coupling between the ventricles and atria so that the contracting ventricle actively expands the atrium on exercise even more than at rest. These three factors combine, I think, to allow the looped heart of vertebrates to attain an efficient, sling-like mode of action as heart rate and output increase with exercise.

There is a tantalising similarity of shape between these forms, and the asymmetric cavities of a simple vertebrate heart of heart structures and flows in healthy volunteers as well as patients. It also allows mapping of the principal paths of flow through heart cavities. These studies confirmed that flow tends to recirculate asymmetrically in each cavity of the human heart.11 In the atria, at least, the swirling is slightly, but not completely, similar to that in a Flowform. One consequence of this is that blood flow is more stable and less turbulent than it might be if it entered centrally and symmetrically. Another consequence is that its tangential entry and asymmetric recirculation redirects its momentum appropriately for onward passage to the next compartment, given the looped overall arrangement of the heart. And a third consequence of the looped arrangement is that the ventricle recoils, according to Newton’s laws of motion, away from the blood that it accelerates into the aorta, and this direction enhances rather than inhibits the systolic coupling between the ventricles and atria so that the contracting ventricle actively expands the atrium on exercise even more than at rest. These three factors combine, I think, to allow the looped heart of vertebrates to attain an efficient, sling-like mode of action as heart rate and output increase with exercise.

My own part in this collaborative study of heart form and function drew on an ability to visualise three-dimensional form and movement which I had gained through studies of sculpture and Flowform design. But this interpretation of the heart remains fluid-mechanical – it is explained using Newtonian physics. To begin to appreciate the heart’s role as more than mechanical, I have found it interesting, and awe-inspiring to consider the heart as the meeting point and turning point of the circulatory streams of the body as a whole. This is no more than a view of the heart as the central organ of flow – it makes no attempt to consider the functions of the heart muscle, the four valves, the cycle of conduction or the innervation of the heart.

The fluent heart and circulation

The figure opposite shows a magnetic resonance angiogram, which took about six seconds to acquire, representing distribution of contrast agent 20 seconds or so after injection into a vein in the right arm. The contrast has reached the pulmonary arteries, pulmonary veins, the left heart and the aorta. What are not visible, except as a diffuse cloud, are the microvessels of the lungs. They are far too small to be seen individually, the diameter of each capillary being about a fifth of a hair’s breadth or less. The arrangements of capillaries in each organ throughout the body are as varied as the functions of the cells which they serve. In the alveolar spaces of the lungs, the pulmonary capillaries form delicate, densely interconnected networks, exposed on one side to the air. These pulmonary microvessels are of remarkably low resistance. The whole output of the right heart flows through them propelled by less than one fifth of the pressure that the left heart has to generate to deliver the same output through all of the
remaining (systemic) microvessels of the body.

It is a challenge to begin to appreciate the complexity and dynamic beauty of the circulatory system as a whole. With each heartbeat, the blood that refills the right heart has returned by venous branches from all parts of the body. This blood will pass through the right ventricle and pulmonary arteries to the microvessels of the lungs, returning, re-oxygenated, through the pulmonary veins to the left atrium and ventricle, and on to the arterial branches and capillaries of the body. The nearest systemic capillaries are those of the coronaries supplying the muscle of the heart itself, with all others more distant. The journeys to and from different parts take different periods, from a second or two through the coronaries to a minute or more via the leg of a person at rest. The blood perfusing each tissue is exposed to particular local chemistry. The serum and the cells returning to the heart with each beat, therefore, represent a mix of chemistries from the whole body. This mixed blood will, within a minute, be diffusely redistributed through the lungs and then through the body again. Each blood cell passes repeatedly through the right and the left heart, moving out and back by one path or another through the lungs and the body, day and night for the weeks or months of its existence. In its many journeys, a cell is extremely unlikely to travel twice by the same path. Nor will it ever re-meet exactly the same combinations of adjacent cells among the many billions whose path-lines are also weaving through the volume of the body and the curvatures of the heart. The mixing by dispersal and confluence, and through instabilities of flow in the heart, is thorough and continuous.

The heart is a responsive as well as an active organ, responding to and serving the changing needs of the body. The seeping of blood through the capillaries and, at the same time, the flows and counter-flows in the branches of veins and arteries, and the sinuous streams that swirl rhythmically through the heart are awesome in their complexity, continuity and beauty of form. They move fluently, day and night, life-long, maintaining unity in diversity, and continuity through continual change.

References

4. www.camphill.org.uk
5. www.emerson.org.uk
Banking with a heart

Triodos Bank is a fully licensed, commercial bank. We provide a full range of banking services to businesses and charities that value people and the planet, as well as profit. Triodos lends money deposited by thousands of savers across the UK to finance a range of progressive organisations, from holistic health professionals to fair trade companies and environmental initiatives. Our savings customers know exactly where their money’s working, through regular newsletters and an annual list of all its loans. To find out more about our range of business banking services and personal savings accounts visit www.triodos.co.uk or call us free on 0500 008 720.

When you ask a bank for a loan, you expect them to be more interested in how you’ll repay the money than your reasons for borrowing it. You don’t usually expect them to want to know more about your motivations for doing what you do, how you got to where you are now, and where you want to be in the future. An unusual approach perhaps, but Triodos is a very different kind of bank.

At Triodos we work with our heads (to make sure the sums add up), but also from the heart, putting principles before profit and loss. We lend to people who are passionate about the environment, whose work helps individuals regain their health, who produce wholesome organic food or give people with a disability an opportunity for a fuller life.

At first it might seem unthinkable – a bank that isn’t just interested in making money? But take a step back and ask yourself what money really is. If you’ve got a £10 note in your pocket, take it out and have a look at it. What thoughts does it bring to mind? Some may see a quick snack, others a meal; some a t-shirt, others even a complete outfit from a charity shop. Delve a bit deeper and feelings arise. Money can make you feel anxious, guilty, jealous or on top of the world. You might think it’s the root of all evil, or simply that it makes the world go round. Try this with some friends and you will quickly get a plethora of psychological, emotional and cultural attitudes to money.

We’d suggest, though, that what you’re looking at is a piece of paper with the number 10 printed on it. Money is simply a token. Pieces of paper, small lumps of metal or, more frequently these days, numbers on a screen. It’s the way people interact with money, and with each other, that gives the myriad qualities people associate with it.

Money began as a way of communicating, of giving something of equal worth in return for a service or goods; a means of communication between individuals, a way to harness energy and possibilities. At Triodos Bank, those possibilities are inspiring projects that benefit people and the environment and help to preserve our cultural heritage. And they’re financed with the support of depositors who want to see positive change happen with their savings.

When you hand over money to a friend, you might stop to smile, to notice them and how they are, to make sure they are happy with what you’ve given them. This pause for thought helps you remain conscious about the action that’s taking place. But if you’ve ever been turned down for a loan because your credit score was too high, too low, or your...
postcode unfashionable, you’ll know just how frustrating the computer-based money machine that dominates much of our world has become.

Lending at Triodos Bank does involve all the serious stuff you would expect. We are regulated like any other bank. But lending money, in the traditional sense, also involves a set of very human skills including understanding, intuition, appreciation and compassion. It takes a little more time, a bit more conversation, and an understanding of what people are doing and what the potential pitfalls they face are, from their perspective.

"Lending money also involves a set of very human skills including understanding and compassion."

Remaining conscious about the action is key; sparing a moment to think about what impact our money has and how that affects people. At Triodos we only lend your money to businesses and charities we feel genuinely benefit people or the environment. We visit everyone we lend money to. Our charges are based on a fair assessment of the cost to us of doing our work. And our depositors remain in contact with their money and what it’s doing, because every year we publish a comprehensive list of all the organisations we lend money to.

There is a human relationship in every financial transaction, however distant and electronic. But in our fast moving society, it’s rare that we stop to notice it. With computer technology allowing us to make this exchange without a face-to-face meeting, this is exacerbated further. In a conscious interaction we get a smile, a thank you, an acknowledgement. At Triodos Bank, savers enjoy the assurance that their money is being used to give someone a good home, some loving support and guidance towards health.

Just as the suggestion that everyone is inherently healthy has little space in our western medical approach of ‘identify the problem and fix it’, the suggestion that our economy can be of benefit to us all seems unrealistic in the face of a system that seems to benefit a few rich people at the expense of more and more poor people. But money can work for us, instead of us having to work for money. At Triodos there is a genuine interest and enthusiasm for funding progressive initiatives that benefit people and the planet. Our depositors make a fair return. It’s a real win-win situation.

When we leave out the living, human interaction from our financial world, we take the heart out of banking and the soul out of our economy. Simply make a choice to be conscious of your finances and money can become a useful, beautiful, creative force for positive change.
Salivary cortisol, stress and arousal following five weeks training in
kinesthetic meditation to undergraduate students

The authors wish to thank Triodos Bank who supported this project.

Valerie Bullen, Cathrine Fredhoi, William Bloom, Jan Povey, Frank Hucklebridge, Phil Evans, Angela Clow

Summary

In an investigation designed to explore the impact of a five-week kinesthetic meditation training programme, healthy undergraduate students were allocated to either a control (CG: n=26) or intervention (IG: n=31) group. Salivary cortisol, stress and arousal were measured before and after the five weeks, during which the IG could attend kinesthetic meditation training sessions for one hour each week as well as practice at home with the aid of a CD. There were no statistically significant differences between the groups in demographics or any of the measures at the start of the investigation. Cortisol secretion in the IG group was lower on the day of the final kinesthetic meditation session compared to on a typical day in the same week and the CG measured in the same week. At the end of the five weeks the IG reported more arousal compared to at the start of the programme, whereas the CG reported less. These data confirm that a brief period of kinesthetic meditation training can improve subjective and objective measures of wellbeing.

Introduction

A range of stress management strategies have been developed to enable people to overcome the negative impact of life stress upon mood and health. One of the most studied intermediaries linking stress, mood and health is the hormone cortisol. Cortisol secretion from the adrenal glands is controlled by the brain, which entrains a marked circadian cycle. A healthy pattern of cortisol secretion is characterised by high levels in the morning followed by a steeply declining profile, to low levels in the late evening and middle of the night. High afternoon and evening cortisol concentrations have been associated with high life stress and a range of negative mood and health outcomes. Strategies that can lower levels of cortisol in the afternoon and evening are known to have benefits for wellbeing and health. Interventions like cognitive behavioural therapy, mindfulness-based stress reduction and transcendental meditation have all been shown to relieve some of the negative psychological consequences of stress and correspondingly lower levels of the hormone cortisol.
The strategy used here is best described as a kinesthetic meditation. Students are led through a stilling process into a kinesthetic monitoring of how their bodies, in particular their stomachs and solar plexus, feel. They are then led through several processes in which they sense how their mental focus and attitude can directly affect their physical state. This strategy, developed by one of the authors of this paper (William Bloom), works from a foundation of holistic mind-body healthcare, such as the traditional Taoist (Chinese) medical approach. It differs from other meditation interventions in that it uses no traditional aids, such as mantra or visualisation, but works directly with a self-managed mental attitude in engaged kinesthetic relationship with the body.

It was hypothesised that healthy undergraduate students would secrete less cortisol across the afternoon and evening at the end of a five-week kinesthetic meditation training programme compared to before training and a matched control group tested at the same time. It was also hypothesised that the training programme would decrease self-reported state stress and correspondingly increase self-reported arousal.

Methods

Participants

Fifty-seven healthy undergraduate students (45 female, 12 male; mean ±SD age 34.6 ± 9.9 years) were recruited to participate in the experiment. They were non-smokers, were not taking medication and had no acute or chronic illness. Participants were allocated to either a control or intervention group (CG and IG respectively). The CG consisted of 26 participants (20 female, 6 male) and the IC consisted of 31 participants (25 female and 6 male). There were no statistically significant differences in demographic variables between the groups. Participants received no financial incentive to take part. The ethics committee of the University of Westminster approved the protocol for this study. All participants provided written informed consent.

Materials

State stress and arousal were assessed using the Stress Arousal Checklist (SACL) 10, a 38-item adjective checklist which gives an assessment of both momentary stress and arousal at the time of completion of the questionnaire. Possible scores ranged from 0-19 for each domain, with higher scores indicating greater stress or arousal.

Participants were given full standardised written instructions and a questionnaire which included demographic questions at the start of the study.

For each study day participants received a saliva sampling kit, consisting of a re-sealable plastic bag labelled with the day of study and containing a record sheet, three SACL questionnaires and three numbered Salivettes, saliva sampling devices (Sarstedt Ltd, Leicester, England).

Procedure

Participants attended a detailed briefing session where they received full verbal and written instructions regarding the procedures of the study. This session included a demonstration and practice in the self-collection of saliva as well as an opportunity to complete the demographic questions. After this participants were divided into the two groups and given additional information about the specific requirements for their group.

The study involved a mixed cross-sectional and longitudinal repeated measures design whereby at the end of the five-week investigative period the IG were compared both with themselves at the beginning of the study and with the parallel CG at the end. Both the CG and IG were studied on a normal weekday at the start of the investigation and on a normal weekday at the end, five weeks later. These days were regular university days on which the students attended a lecture between 2 and 3.30pm (the CG and IG were classmates and following the same programme of study); these days are referred to as the pre- and post-investigation typical days. In addition the IG was studied on a further day in the final week of the investigation. This additional study day was when the IG group received their final kinesthetic meditation training session, which ran between 2pm and 3.30pm; this day is referred to as the final intervention day.

Salivary cortisol, stress and arousal following five weeks training in kinesthetic meditation to undergraduate students

Strategies that can lower levels of cortisol in the afternoon and evening are known to have benefits for wellbeing

On each study day participants were instructed to collect saliva and complete a SACL questionnaire at 2pm, 3.30pm (before and after a lecture or intervention) and 8.30pm (at home). During the saliva collection period participants were instructed to take nil by mouth other than water, and not to brush their teeth so as to avoid micro-vascular leakage, for at least 30 minutes prior to each sample collection. Samples were either left at the university immediately after collection or placed in the participant’s home freezer as soon as possible after collection and brought into the university within one
week. All samples were then transferred to the laboratory for storage at -20°C until assay. Participants were asked to fill in a record sheet on each day recording awakening time and actual time of collection of saliva samples (in case they deviated from the required sampling regime). Other than these instructions participants were asked to follow their normal routine.

The intervention

Members of the IG were invited to attend a group kinesthetic meditation training session at the same time (2-3.30 pm) one day a week for five weeks. In addition the members of the IG received a free CD designed to aid home practice in the strategies practiced in the group session. Individual attendance at the weekly sessions as well as intensity of practice between sessions was recorded.

Cortisol assay

Samples were thawed and centrifuged at 3,500 rpm for 10 minutes. Cortisol concentration was determined by Enzyme Linked Immuno-Sorbent Assay developed by Salimetrics LLC (USA). Sensitivity: 0.19 nmol/l (lower limit). Standard range in assay: 0.19-49.0 nmol/l. Correlation of assay with serum: r =0.960, p< 0.0001, n=19 samples. Intra- and inter-assay variations were both below 10%.

Statistical analysis

A three factor (2x2x3) mixed ANOVA was performed on the data set from the typical days with factors of group (IG, CG), week (week 1, week 5) and sample time (2pm, 3.30pm and 8.30pm). When comparing within subject differences in cortisol data from two days at the end of five weeks a two factor (2x3) within-subjects ANOVA was performed, with factors of day (typical day, intervention day) and sample time (2pm, 3.30pm and 8.30pm). For comparison of cortisol data between groups a 2x3 factor ANOVA was performed with factors of group (IG, CG) and sample time (2pm, 3.30pm and 8.30pm). Stress and arousal data was compared pre- and post-investigation using paired t-tests.

Results

Salivary cortisol concentrations

A mixed ANOVA of cortisol data from both groups on the typical days in weeks one and five revealed the expected main effect of sampling time (p<0.001) confirming a marked diurnal decline in salivary free cortisol secretion from 2pm to 3.30 pm and 8.30 pm. In addition there was a significant main effect for week (p=0.047) with no effect for group, indicating that there was an overall increase in salivary free cortisol secretion from week one to week five and there was no difference between the groups at either week (see Figure 1).

However on the day of the final kinaesthetic meditation session, and after a five-week period of practice in the techniques, a within-subjects ANOVA showed that cortisol secretion in the IG tended to be significantly lower than on a typical day in the same week (p=0.07) and was lower than in the CG measured during the same week (p=0.012) (see Figure 2). Of the original 31 participants enrolled in the IG, 25 attended this final group training session, of which 21 supplied saliva samples at all three time points. Of this group the median number of sessions attended was four (average ± SD: 3.6 ± 1.1).
Self reported state stress and arousal

Participants provided measures of self-reported stress and arousal at three time points (2pm, 3.30pm and 8.30pm) on each test day. There was a tendency for both measures to get lower over the course of the day, but measurement times did not interact with any differences between the intervention and control groups over the trial period, so measures from all three time points were analysed as means for each day. Both groups started at similar levels of both stress and arousal at the start of the investigation. However the intervention increased reporting of arousal (\( p = 0.02 \), paired t-test) with no change in reporting of stress at the end of the five-week investigation. In contrast the CG showed a decrease in the reporting of arousal across the five-week study period (\( p = 0.39 \), paired t-test) (see Figure 3). There was no correlational relationship between cortisol concentrations and measures of stress or arousal.

Discussion

Despite no change in levels of self-reported state stress by the end of this five-week investigation on the typical study day the students showed an increase in an objective biological marker of stress: salivary free cortisol concentrations. When studied on a typical weekday, during which the students attended an afternoon lecture, the students who had participated in the group kinesthetic meditation sessions were indistinguishable in relation to both stress measures, at the start and the end of the investigation. In contrast, on the day of the final group training session there was evidence of reduced cortisol levels compared to a typical day in the same week and compared to the control group during the same week. We can conclude from this that benefit derived from kinesthetic meditation sessions was clearly measurable on the day of the session but not detectible on a day when participants were not exposed to the programme.
In addition participation in the intervention group was associated with an increase in self-reported arousal over the five weeks whereas participation in the control group was associated with a fall in arousal over the same time period.

This study has provided evidence of increased levels of measurable stress within an undergraduate student population during the latter half of the autumn term. The ‘typical’ testing days were specifically chosen to be event-free (ie no exams or tests) so we assume that the increased levels of cortisol detected at this time reflects generalised levels of stress rather than related to any specific event occurring on the testing day. This finding is not surprising as academic and workload demands upon the student population do accumulate as the term progresses.

The intervention was shown to be effective in the immediate term by reducing cortisol levels on the day of the final group training session compared to on a typical university day in the same week and the control group measured on the same week. Not all members of the IG attended all five of the available weekly training sessions (median attendance was four sessions, range 1-5). However for the purposes of the analyses, and due to insufficient numbers, all members of the group were analysed as a whole. As a consequence the full impact of the training programme has probably been underestimated as some people may not have fully engaged in it.

“Kinesthetic guided meditation can have an effect upon cortisol levels in healthy young people.”

It has been demonstrated that a range of interventions designed to alleviate stress can have an impact upon levels of the stress hormone cortisol. Adequate training time to enable participants to engage fully with the process and master the skills and strategies employed is likely to be necessary for these affects to generalise to everyday life situations. It would be interesting to undertake a similar study but with an extended training period and measure the impact upon those who adopted kinaesthetic meditation as part of their everyday lifestyle.

References
8 Antoni MH. Stress management effects on psychological, endocrinological and immune functioning in men with HIV infection: empirical support for a psychoneuroimmunological model. Stress 2003; 6, 175-188.
Matters of the heart: an evidence based overview of mind-body medicine in cardiovascular disease

Kenneth R. Pelletier
PhD, MD (hc)
Clinical Professor of Medicine, University of Arizona School of Medicine and University of California School of Medicine (UCSF) San Francisco

Summary
Mind-body medicine should now be considered more conventional than alternative, so widespread is its use. It can help a variety of conditions and trial results should spur practitioners to use MBIs as a firstline choice for moderate hypertension in patients with cardiac heart disease.

Background
A growing awareness of Asian healing systems during the last four decades fuelled research interest in the Mind Body Interventions (MBIs). In the 1970s researchers discovered that practitioners of yoga could regulate physical functions once considered beyond the reach of conscious control, such as electrical activity of the brain, body temperature, heart rate, and blood pressure. Once it was understood that these abilities could be regulated, their clinical application expanded rapidly. Consequently, of all the complementary, alternative medicine (CAM) and integrative medicine interventions, MBIs in medicine are supported by the greatest body of scientific evidence for the greatest number of conditions for the largest number of people. MBIs have also gained the widest acceptance within the conventional healthcare systems and are used extensively worldwide.

Why are mind-body interventions important?
Until the early 1700s, virtually all philosophy and medicine treated body and mind as an integral whole. Modern scientific biomedicine divided them, but helped control many of the infectious diseases that were formerly the major causes of morbidity and mortality. However, the diseases now killing most people in the developed (and increasingly in the developing nations as they adopt western diets) are not infectious, but chronic degenerative diseases, inextricably related to psychological,

lifestyle, environmental, and psychological factors. For heart disease, high blood pressure, cancer, and diabetes, there is no pharmacologic ‘magic bullet’. Therefore mind-body medicine is of particular importance.

Increasingly, stress is being recognised as a major causal factor in both acute disease onset and in chronic disease. Mind-body interventions designed to provide individuals with the skills necessary to manage the inevitable stress of life are widely used to prevent and reverse these deleterious consequences. Mind-body Interventions have been used in a wide array of serious medical and psychological disorders under the direction of a skilled clinician. Mind-body interventions can also be safely used as ‘selfcare’ approaches to mitigate the effects of stress and/or as adjuncts to conventional treatment of chronic disease. In serious chronic disease an alliance of skilled mind-body therapist with active selfcare is likely to be the most effective option.

Mind-body approaches, like many CAM interventions, tend to demand internal, psychological transformation and the active, ongoing involvement of the individual. As William Bloom reminds us in this issue (pp 45-49), such a ‘change of heart’ is never easy. Among the most striking conclusions made by J. Michael McGinnis when reviewing the poor progress made by the United States toward the goals set forth in Healthy People 2000 was his observations that ‘one (central lesson) that seems clear is that it is easier to deliver services than to change behavior, especially when both professional and economic interests are aligned’. 11

Eliciting and sustaining behavioural and lifestyle change plus appropriate pharmacology and/or surgery is still the major challenge for an integrative medicine approach to clinical cardiology.

Because of the difficulty in changing behaviour, mind-body interventions are critically relevant because they deliver relatively simple, structured steps whereby individuals can gradually assume a greater influence upon their own selfcare. Mind-body interventions often focus less on the physical disorder than on the underlying psychosocial issues that need to change in order for people to successfully implement effective selfcare. They provide the behavioural basis for individual change and can act as a foundation for other self care strategies including exercise, nutrition, and even more appropriate use of conventional medicine diagnostics and pharmacology. Mind-body therapies emphasise that the amelioration or cure of a condition may depend not so much on what can be done ‘outside’ the individual, but rather more on ‘inside’ changes in attitude, lifestyle, and the initiation of selfcare behaviours. Mind-body interventions have both general and specific effects since they can improve overall health while making a measurable positive specific impact on conditions and diseases. But MBIs recognise that healing is not always synonymous with complete cessation of all physical symptoms. Healing literally means ‘making whole’. From this perspective, illness can be viewed as an opportunity to reclaim wholeness and completeness, even in the face of ongoing disease. However, this can happen only when the mind and body are functioning as an integrate whole, dynamic healing system. It is not simply ‘mind over matter’, it is rather that mind matters.

Between mind and body

Certain basic principles inform the wide variety of interventions in mind-body medicine. From this perspective, mind, body, and spirit are inter-related not only with each other, but also with the larger social and physical environment. Physical interventions are not solely physical in their effect, but also have an impact on consciousness: exercise, yoga, meditation, dance, relaxation therapies, visualisation and imagery, as well as manipulative therapies, may not only resolve problems in the physical organism, but can also create an enhanced psychological and spiritual sense of wellbeing. Psychological interventions, such as meditation, psychotherapy, or imagery work, can have a demonstrable impact on physical problems such as pain, high blood pressure, and numerous other conditions in addition to their extensive psychological benefits.

An ever-growing body of evidence has demonstrated that psychosocial stress is an important factor in many medical conditions, ranging from coronary heart disease to chronic pain to immune problems. By now most health-conscious individuals are familiar with the concept of the fight-or-flight response, a primitive state of arousal in which the body is mobilised to respond to a perceived physical threat. Unfortunately, in our modern environment mental cues are often perceived as threatening and are capable of eliciting the fight-or-flight response even though they entail no physical threat to the organism. Moreover, psychological stressors may persist and allow the alarm response to remain mobilised far beyond its useful time. Powerful hormones released during this stress response have a specific physical impact on the body, and can contribute to disease. Besides the generalised stress response, other negative emotions have been found to be associated with the risk of chronic disease.

Although the ostensible type A personality, marked by high stress, time pressure, and aggressive behaviour, has not proven to be an entirely reliable predictor of mortality from heart disease, hostility is one type A factor that seems to be predictive of heart attack. In 1995, Mittleman and other researchers at Harvard Medical School interviewed 1,623 patients an average of four days after they had had a myocardial infarction, and had them fill out a personality inventory. They found
that the likelihood of these patients having a heart attack was 2.3 times greater two hours following an episode of anger. 14

Depression is also common in patients who have coronary heart disease, and is associated with a higher incidence of heart disease as well as increased mortality following heart attacks. Such findings have been reported by a team of investigators at the Behavioral Medicine Research Center at Duke University, led by Dr John Barefoot in 1996. They followed 1,250 patients with documented coronary disease for more than 19 years. Among patients considered moderately to severely depressed, mortality from heart problems was 51.4%, as compared with 35.5% in patients who were not depressed and 42.4% in those who were mildly depressed. Mortality from all causes was 78% higher in patients with moderate to severe depression than in those who were not depressed. Of course depression can be a result as well as a cause of physical illness, which confounds the research on the harmful effects of depression.

Among their other benefits, most mind-body therapies have the effect of creating a relaxed state which is the opposite of the state of arousal characteristic of the stress response. Meditation, relaxation techniques, imagery work, hypnosis, and movement therapies such as yoga and qigong can all have the effect of producing a beneficial, biologically regenerative, relaxed state. Cognitive behavioural approaches are also used in stress management: individuals learn to recognise stress triggers and respond to them in a different, more healthful way by restructuring or reframing situations that tend to produce anxiety and stress. Through a wide variety of techniques, people find they acquire a mastery of self-efficacy over previously overwhelming symptoms. This self-efficacy will often generalise to other aspects of the person’s professional and personal life enabling them to make positive lifestyle changes well beyond the alleviation of specific symptoms.

**Mind-body interventions (MBI)**

**Meditation**

Many forms of meditation are currently practiced in the United States. Among the most commonly used and well documented in clinical research is ‘mindfulness’ meditation, a Buddhist-inspired practice which entails maintaining awareness in the present moment of bodily sensations and the flow of thoughts, without passing judgment on them. Concentrative meditation, such as TM, maintains passive attention to a word, bodily process such as breathing, or other stimulus. Meditation is also part of yoga and other physical disciplines that originated in Asia. While there are major philosophical differences underpinning the hundreds of various forms of meditation, there is far more commonality than differences in their neurophysiological, biochemical, and immunological manifestations on a biological level. Findings based predominantly on TM are generalisable to virtually every form of meditation practice and it would be erroneous to dismiss these findings due to an overly zealous or excessively critical bias.

**Imagery**

Imagery implies a flow of thoughts that embodies sensory qualities. As a mind-body therapy, imagery enlists an individual’s imagination in evoking one or more of the senses. Imagery is often incorrectly referred to as visualisation, but it can equally involve the senses of smell, touch, hearing, taste, proprioception, and motion. Many mind-body therapies contain a spontaneous and/or ‘guided’ imagery component. Therapies including biofeedback, hypnosis, desensitisation and aversion techniques, autogenic graining, Gestalt therapy, Jacobson’s progressive relaxation, neurolinguistic programming (NLP), rational emotive therapy, the human givens, and many other approaches all include guided imagery. Meditation that involves focusing on an imagined sound, mantra, or object of contemplation also uses imagery; as do relaxation techniques that include sensory instructions. Imagery is also related to hypnosis in that both elicit similar states of consciousness and have similar applications. In fact, research has found that there is a correlation between the ability to image and the capacity to enter into an altered or hypnotic state.

“Psychological interventions can have a demonstrable impact on physical problems such as pain and high blood pressure”
the kinds of therapeutic interventions that are chosen, insights into the condition, and are surely a significant indication of the person’s subjective experience of their condition. Imagery is also a powerful aid in achieving insight and perspective into a person’s health and making contact with emotions. One way of doing this is to use imagery in a receptive mode, in which the person has an imaginary dialogue with an image that represents their symptoms or illness, and the image communicates information about the meaning of sensations and symptoms.

Imagery work has also been used to put patients in touch with an ‘inner advisor’ who helps them to achieve insight into their medical problems. In psychological rehearsal, imagery is used to prepare for medical procedures such as invasive diagnostics or surgery, helping to relieve pain and anxiety, and to prevent side effects such as those triggered by chemotherapy that may be aggravated by intense emotional reactions. When imagery is used in this way, the patient is generally guided into a relaxed state and then led through a series of images in which the treatment and the recovery process are described in sensory terms, along with the desired outcome. Patients may be encouraged to create their own system of images involving the healing process, or they may be guided through a series of images to relax, divert attention, or diminish sympathetic nervous system arousal. Preparatory imagery work can help patients to experience less pain following surgery by learning to relax the muscles around the incision site; to hasten the return of bowel function; and to prevent excessive blood loss by redirecting blood flow to other parts of the body. Imagery also helps patients prepare for anxiety-producing diagnostic procedures, such as the potential claustrophobia of CAT scans.

**Clinical biofeedback therapy**

This is a training technique in which people learn to consciously regulate bodily functions such as heart rate or blood pressure that are not normally accessible to voluntary control. It applies to any process that measures and reports back information about the system that the individual is attempting to control, with the goal of improving or eliminating a symptom or illness. Most commonly, clinical biofeedback involves measuring muscle tension with electromyographic (EMG) instruments; skin temperature; electrical conductance; electrodermal (EDR) or resistance of the skin; brain waves as measured in electromyographic (EEG) feedback; and/or respiration rate (RR) and/or patterns of respiration with distinct thoracic versus abdominal rates and patterns of respiration. With the development of increasingly sophisticated monitoring devices and multiple channel computerised instrumentation, new possibilities have been opened up for clinical biofeedback training. Now there are sensors that can monitor and feed back the activity of the rectal sphincter to treat incontinence, and of the muscles controlling the bladder for treating urinary incontinence. Other instruments provide for monitoring of oesophageal motility, gastrointestinal functions, and stomach acidity.

**Hypnotherapy**

Hypnosis is a state of selective focusing of awareness, with attention directed to internal rather than external stimulation. In hypnotherapy the individual is guided from ordinary consciousnesses into what is sometimes called a trance state. It is now generally understood that hypnosis is more a state of focused concentration in which the individual is highly responsive to suggestion, and does not necessarily involve trance. Hypnotherapy often uses imagery to modify feelings of pain, anxiety and fear, or to introduce suggestions about therapeutic goals. When the hypnotic state has ended, the subject is expected to practice these new behaviours. Methods of hypnotic induction and specific suggestions and imagery are tailored to meet the needs of the individual client.

> “Imagery is used to prepare for medical procedures such as invasive diagnostics or surgery”

Physiologically the hypnotic state is similar to other forms of deep relaxation, with reduced sympathetic nervous system activity, decreased blood pressure, slowed heart rate, and increased alpha and theta wave activity. When employed by qualified practitioners hypnosis is very safe, but it is a powerful technique that must be used with caution. Individuals with serious psychiatric problems are not appropriate candidates for hypnotherapy. Hypnosis is used by doctors, psychotherapists, dentists, and other healthcare providers to treat a wide variety of medical and psychological problems. It is used to produce analgesia in surgery, to control allergies, reduce stress, and produce healthful changes in behaviour. Hypnosis can be used by itself or in conjunction with other forms of treatment.

**Evidence for MBIs**

To date, one of the most well designed overviews of the applications of these mind-body interventions (MBIs) was conducted by Dr John A. Astin of the Complementary Medicine Program at the California Pacific Medical Center in San Francisco. According to
Astin and his colleagues, drawing principally from systematic reviews and meta-analyses, there is considerable evidence of efficacy for several mind-body therapies in the treatment of coronary artery disease (e.g., cardiac rehabilitation), headaches, insomnia, incontinence, chronic low back pain, disease and treatment-related symptoms of cancer, and improving post-surgical outcomes. We found moderate evidence of efficacy for mind-body therapies in the areas of hypertension and arthritis. Additional research is required to clarify the relative efficacy of different mind-body therapies, factors (such as specific patient characteristics) that might predict more or less successful outcomes, and mechanisms of action. Research is also necessary to examine the cost offsets associated with mind-body therapies. There is now considerable evidence that an array of mind-body therapies can be used as effective adjuncts to conventional medical treatment for a number of common clinical conditions. 15

Applications of mind-body interventions in cardiovascular disease

There is an abundance of evidence of the efficacy of mind-body interventions in many common chronic diseases. Among the areas of MBI where there are extensive RCTs and/or systematic reviews indicating `strong to moderate evidence' of efficacy are cardiovascular disease 16,17 and hypertension. 18 Human and animal studies demonstrate that psychological factors such as depression, hostility, and stress can play a substantive role in the development and progression of cardiovascular disease. 19

Coronary artery disease

In the most recent review examining the role of psychological factors in coronary artery disease, the authors concluded:

`A confluence of pathophysiological and epidemiological studies establish that both acute and chronic forms of psychosocial stress contribute to the pathogenesis of coronary atherosclerosis. These data establish an imperative for enhancing behavioral interventions among CAD-prone individuals.' 19

There is growing research evidence that MBIs may be effective in the treatment of coronary artery disease. A 1996 meta-analysis of 23 randomised trials 16 found that when psychosocial treatments (e.g., relaxation, group and individual psychotherapy, type A behaviour modification, stress-management), were added to standard cardiac rehabilitation, all-cause mortality fell by 41% and there was a 46% reduction in non-fatal cardiac recurrences at two-year follow up. The reduced mortality became non-significant after two years' follow-up. Only three RCTs providing longer term follow-up data were available, but when results from the large, non-randomised Recurrent Coronary Prevention Project were added, the longer term follow-up results for mortality became significant. The authors point out that though the MB interventions were quite diverse – varying in length, target behaviour(s), and specific type of therapy – the results across studies were almost uniformly positive. In fact, the diversity of interventions need not necessarily undermine this meta-analysis; it is equally likely that these consistently positive results in different studies, using different MBIs, suggests that robust phenomena with clear clinical significance are at work.

A more recent meta-analysis 17 examined the effectiveness of health education and stress management interventions in 37 studies. Overall there was a 34% reduction in cardiac mortality, a 29% reduction in recurrence of MIs, and significant positive effects on dietary and exercise habits, weight, smoking, cholesterol, and blood pressure. Data from a recent prospective trial not included in this review found that 94 patients with cardiac heart disease randomised to a stress management intervention experienced fewer recurrent coronary events at five-year follow up compared with those patients receiving usual care. 20 These interventions are relatively simple, low cost, and side effect free. So their demonstrable efficacy is particularly significant for it allows us to elucidate their potentially enormous clinical effectiveness and cost benefit, both as stand-alone therapies and in conjunction with usual-care drug treatment.

Hypertension

The evidence for the efficacy of MBIs in hypertension is still equivocal. Two meta-analyses had questioned the efficacy of relaxation 21 and cognitive-behavioural interventions 22 in treating hypertension. However, a more recent meta-analysis 23 concluded that MBIs, particularly individualised cognitive-behavioural approaches, were comparable with drug treatments in terms of raw effect sizes in reducing both systolic and diastolic blood pressure.

Since then, several randomised trials have suggested the potential efficacy of MBIs in hypertension. A study of 127 older African Americans 18 found that hypertensive patients randomised to a three month trial of transcendental meditation (TM) significantly reduced their systolic and diastolic blood pressure (10.7 and 6.4 mm Hg respectively) compared with those practicing progressive muscle relaxation and an educational
control. A smaller randomised trial of 39 hypertensive patients $^{23}$ achieved significant reductions in medication following a six-week multi-component cognitive-behavioural intervention using temperature biofeedback, progressive muscle relaxation, plus therapy for stress and anger management. Surprisingly, despite these positive findings, there have been no large-scale trials directly comparing MBIs to either self-monitoring of blood pressure or exercise/diet/weight loss interventions. Yet we will need such comparative RCTs to clarify just which elements of MB intervention are actually responsible for the improved outcomes. Nevertheless, in most circumstances hypertension treatment will continue to involve multi-factorial risk interventions – lifestyle, MBI and drugs where needed – as has been the case in virtually all conventional coronary heart disease and cardiovascular disease management. These results should fortify practitioners’ resolve to inform patients with cardiac heart disease, that mind matters, and that MBIs should be first-line choices in mild to moderate hypertension.

**Conclusion**

Because it threatens the status quo, innovation nearly always evokes scepticism if not outright hostility. Prior to the introduction of the stethoscope, doctors pressed their ear directly to the patient’s chest to listen for breathing and heart sounds. When the stethoscope was introduced in France in 1916, critics were concerned that this new unorthodox diagnostic technology would distance doctors from their patients! Perhaps medicine’s former unfamiliarity with the mind-body interventions and research described in this article may have been due to a similar distrust of innovation. Yet mind-body interventions have a far more extensive research base than any other category of alternative/complementary/integrative medicine. This research has clearly demonstrated the most positive impact on the broadest array of conditions for the largest number of patients. Mind-body medicine is now so widely used by the public and by the medical profession that it should now be considered more conventional than alternative. Medicine progresses by making many small deceptively simple innovations, punctuated by occasional true ‘breakthroughs’. The sum total of research into MBIs constitutes a breakthrough by drawing attention to a mind-body connectedness which is so obvious and significant that though long overlooked and underestimated, it must no longer be ignored.

**References**

A change of heart
The dynamics of psychological resistance and emergence in self-managed mind-body healthcare

William Bloom
PhD

Since my childhood I have wrestled with the paradox of an awesome universe and human suffering. My first career was as a novelist, publisher and political activist. After a two-year retreat, I have spent the last 30 years working in the field of multi-faith holistic spirituality, particularly in integrating psychology, healthcare and citizenship. I ride a motorbike and live with my family and many animals in Glastonbury. My books include The endorphin effect and soulution: the holistic manifesto.

Summary
Though the mind-body connection is increasingly recognised as a therapeutic resource, therapies that tap into it can trigger psychological dynamics of resistance. These dynamics affect both the individual who tries to implement mind-body healthcare, and the practitioner who is enabling it. The suggestion of this paper is that mind-body healthcare requires a substantial transformation in an individual’s worldview and sense of identity. Consequently it may be better understood as a dramatic transformational process involving psychological death and birth, rather than the simple acquisition of some selfcare techniques. Therefore practitioners may require particular skills when they seek to guide their clients towards autonomy.

One morning in the autumn of 2005, I was clearing up breakfast dishes in the kitchen when I heard my wife Sabrina gasp and then laugh. I turned to see what was happening. Her hands were holding her lower stomach and she looked pleasantly astonished. I asked her what was going on. She explained.

For three years she had been suffering from a stomach ulcer and had tried various mainstream and complementary approaches to curing it. Early on in the process she had become aware of the possible psychological sources of the ulcer and had spoken several times about her stressful mood and attitude, which possibly triggered the production of the acidic endocrinal conditions that fed the ulcer and caused her pain. Her laughter, she said, was due to the fact that in that precise moment she had witnessed herself changing mood, going into a negative thought pattern and simultaneously her ulcer had begun to hurt. The connection between her thought process and her pain was explicit and, most crucially, recognised.

Her amusement came from three sources: the blatant experiential obviousness of the mind-body pattern – negative thoughts = stomach acid; the promise, now that she fully understood it, that she could possibly self-manage and cure...
the ulcer; and the knowledge that the illness and her witnessing the pattern which triggered its exacerbation were now leading her into a character change that would be good for her. There was insight and there was hope.

This is similar to what is perhaps the best known story in mind-body medicine, described in *Anatomy of an illness*, when Norman Cousins, who had ankylosing spondylitis, realised that ‘ten minutes of genuine belly laughter had an anaesthetic effect and would give me at least two hours of pain free sleep.’ ¹

There is an interesting and poignant paradox here, of which holistic practitioners are aware. In this paradox there is the suffering and pain of the actual illness. But along with it is the delight at the nature and process of self-managed healing. Illness presents itself here not just as an intrusion, but also as a gateway to some enlightenment and personal development. This is part of the tragi-comedy of the human condition. Perhaps at the top of the holistic practitioner’s caduceus, it would be appropriate to place a mask from Greek theatre, one half sad and the other happy.

To be aware of the mind-body connection is, however, not enough. For many inexperienced years I expected people to practise self-management simply because it was logical and worked. But I have become more realistic; more often than not there is a disconnect between intellectually understanding the mind-body methodology and implications, and actually implementing them. For one aspect of the mind, it all makes perfect sense. But for the mind as a whole, for the psychological persona, the information does not compute. People are presented with a strategy that will cure them, but they are psychologically unable to integrate the logical consequences – that they should employ the strategy.

This sabotaging mechanism is, in my experience, as much at work in practitioners as it is in clients. And, of course, it is also writ large in our culture as a whole, as the medical establishment and intellectual hegemony grindingly wrestle with the implications of integrative healthcare.

This lack of congruence between theory and practice, between knowing something and actualising it, was very obvious when we conducted the cortisol study described in this issue (pp 34-38). In this experiment, cortisol levels were measured in saliva samples taken before and after a doing a body-centred meditation. ² In general, the results are favourable towards the technique, showing that the intervention reduces cortisol levels. In terms of progressing the mind-body healthcare project this result is useful. For me, however, leading the intervention, something else very interesting was also taking place. Not reported, but alongside the cortisol testing, one of the paper’s co-authors, Val Bullen, was monitoring other changes. Two of these stand out.

At the beginning and at the end of each session, she asked students to measure how tall they were. Many of them experienced increased height as a result of the intervention. There was excitement around this. The release of stress, students of the spine will immediately recognise, allows the spine to open up and expand into its natural space. For people with many different kinds of challenge, this is significant. As witness to this scene, I was waiting for the coin to drop, for the realisation that this was directly relevant to how they conducted their own lives and healthcare. There was excitement, but no jaw-dropping *ab-ja, eureka* moments. There was the usual disconnect.

There were two women there with whom I also spoke, who suffered from eczema, but experienced relief from its symptoms during and immediately after using the strategy. Not only did the sensations of irritation subside, but the presentation of the eczema on their faces disappeared. Again, there were the obvious implications for self-management and again there was a disconnect. The thirsty horse is led to water but does not drink.

After the cortisol experiment was complete I reflected on the whole event and my heart was particularly touched by the eczema incident. I wondered whether their inability to appreciate the significance of the process was my fault. Perhaps I should have been more explicit and more enthusiastic. Perhaps I should have performed a celebratory war dance drumming, rattling and chanting with the full passion of my heart: *Let the experience in! Its real! You – yes you! – you can control your body chemistry!* I should have danced this communication with all the fury of a tribal healer. *O troubled hearts, you can indeed heal yourselves!* *You can increase your height!* *You can cure your eczema!*

But I did not. I behaved in a manner that was appropriate to our culture and presented myself professionally.

The psychological dynamics that impinge upon autonomous mind-body healthcare need to be carefully addressed. As practitioners, if we do not engage with them we are obviously less than holistic and, strategically, if we do not find a way of coherently...
understanding and managing them, we may sabotage the integration of mind-body healthcare into general practice.

Let us first be clear about the intellectual argument, lest we think that the tendency to resist mind-body management is due to its theoretical lack of coherence and rigor. In fact, the argument is already won. From Pavlov’s dog onwards the case is proven. There is no doubt that the workings of the mind directly affect the endocrine system. The sound of the bell, associated with food, is sufficient to stimulate digestive juices. There is, of course, no real food, only the neural association. Many neural suggestions – fearful, pleasurable, erotic and so on – trigger endocrinal responses.

I expected people to practise self-management simply because it was logical and worked

In terms of scientific rigor, the proposition that the endocrinal system responds to mental stimuli, regardless of whether the stimuli are real or imagined, is coherent, repeatable and testable. The growing field of PNI and its laboratory experiments, such as the one described in the paper mentioned above, provide measured evidence of the mind-body effect and the efficacy of the many strategies. As a result of these strategies there are specific and measurable results: slowing of heart beat, reduced blood pressure, appropriate carbon dioxide emissions, reduced cortisol and adrenalin, increased endorphins, relaxed tissue, reduced pain, boosted immune system and so on. To the degree also that good science builds upon a previous body of knowledge, the traditional healthcare systems of, for example, Ayurveda and Taoism, provide further substantiating evidence.

There is also a clear commonality at the core of all mind-body strategies. Whatever the specific technique there is the common element of using focused mental attention. This focus can then be directed towards a variety of subjects: a mantra or affirmation, a healing image or prayer, music or sound, the movement of the breath in different areas of the body, the kinesthetic sensation of particular body parts and areas of tissue, and the mood of the mind as it focuses within the body. All of this is to state that the actual strategies themselves are specific and coherent, with little room for ambiguity and, thence, avoidance.

Having asserted the theoretical integrity and methodological coherence of mind-body medicine, we can go on to look at the real reasons why people may not adopt its usage – the psychological resistance.

The psychological resistance has its source, I suggest, in at least five dynamics:

- cognitive dissonance
- difficulties in learning
- paradigm shift
- threat to personal identity
- birth of new consciousness.

*Cognitive dissonance* occurs when information received by the mind does not fit any previous frameworks of cognition and comprehension. Well-known examples of this include US military intelligence, which could not accept reports that the Japanese were planning to attack Pearl Harbor, and African jungle pigmies, who on first seeing an elephant through a telescope assumed it was an insect at the end of the tube. The new information is perceived but not cognised. The whole notion of mind-body self-management when presented to a client is also usually new and it requires a transformation in the usual frame of reference for understanding illness. The usual paradigm of illness is that it is purely something nasty that is done to us and for which we then go to an expert for help. This cognitive framework is well established and mind-body medicine inverts this to suggest that illness is something we may do to ourselves and the healing of which is, to a degree, in our own hands. The neural framework for cognising and integrating this information does not exist.

The whole notion of mind-body self-management requires a transformation in the usual frame of reference

*Learning difficulties* Anyone who has experienced learning a completely new skill or set of concepts is familiar with the time and effort required to grasp them. There is an uncomfortable period before the new framework has integrated and landed, during which all the effort seems wasted. There is little immediate gratification. Moreover, with mind-body strategies, as with other self-management approaches, while it may be easy to practice the strategies carried along by a group dynamic, it is difficult to sustain the practice on one’s own. The normal and usual difficulties in incorporating a new realm of knowledge are exacerbated by a sense of failure and disappointment.

*Paradigm shift* By its very nature of being embedded in culture, society and psychology, a prevailing paradigm resists a new one. Self-esteem, status, and social and financial stability are usually embedded in a prevailing worldview. The established healthcare paradigm, like paradigms in general, is reluctant to give up its leadership and influence. The financial and social investments are obvious, as are those of status. It has
also been extremely successful. To shift this established worldview affects millions of people and billions of pounds of resources. Resistance is natural.

Threat to personal identity This dynamic is, I suggest, the most powerful psychological factor in resisting self-managed healthcare. Self-managed healthcare is more than a concept, more than a pill, more than a visit to a practitioner. It is a new action and a new behaviour. This new behaviour, by its very nature, signifies the appearance of a new self – a self that behaves in this new way. This new self is, in certain ways, diametrically polarised against the old self and its activities directly oppose the old behaviour and old attitudes. This old self is being asked to give way, to transform, to die. This is threatening.

Self-managed healthcare is a new action and a new behaviour

Old behaviours, many of them originating in childhood, many of them compulsive and acted out daily, if not hourly, have furrowed deep neural grooves. They are embedded psychological traits. Transforming them can be an excruciating struggle, equal to those encountered when withdrawing from addictive substances. Thirty years of self-judgment or stoicism, for example, rarely give way gracefully to a more balanced style. These behaviours are firmly cemented into a habitual neural-endocrinal and psychological state.

An individual’s sense of identity is what gives coherence, sense and safety to their location in society and culture. Whatever the school of psychology – from behavioural through psychoanalytic to transpersonal – there is a common understanding that human beings, especially as infants, are insecure creatures who identify with and internalise the behaviour and attitudes of the significant people around them. Once this internalisation has occurred, it provides both a sense of personal coherence and the mode for being securely within their group.

This glue that normally binds people into their everyday sense of identity – their culture, gender, sexuality, religion, nationality, career, politics – is so powerful that people aggressively defend it, attack competitors and will die for it. In many situations, the psychological identity’s instinct to survive is more forceful than the biological instinct. From suicidal political and religious activists through to the men and women who sing marching into war, there is ample evidence that people would often rather die than surrender their cultural personality.6

The transition in healthcare towards self-management, therefore, can entail a battle royal with entrenched psychological resistance, to the point of self-destruction. To this we can add the normal infantile need, when in distress or pain, for healing and comfort rather than a shift into a mature self-responsibility. The personal history of childhood wounding and disempowerment may, understandably, fuel dogged inertia.

But there is even more to this great human drama. The very nature of mind-body methodology implies that there is the birth of new consciousness. In mind-body strategies people are transferring the control centre of their behaviour, away from habitual attitudes and ways of thinking, to a new, witnessing, self-responsible persona and consciousness. There is here the birth of a new self.

In meditation and mindfulness traditions, there is this concept of waking up to reality. In this new consciousness – that of being the witnessing self, and able to choose attitudes and behaviours – the individual finds themself being born again as a new type of creature. They perceive now that the human being they thought they were, is in fact, to a degree, a psychosocial automaton, a creature embedded in conditioned responses. Prior to this awakening, their sense of persona was formed in reaction to ongoing psychosocial constellations of circumstance. This is indeed a transformation, a death and rebirth. And like all birth, time is needed for development and integration. It is not a simple matter of waking up and then being awake forever. There is endless forgetting and falling back into

The extremes of clinical frigidity and new age you-create-your-own-reality cruelty are to be avoided

the unconsciousness of just being a conditioned human creature. There is also the whole delicate business of integrating everything one was into the new state.7

When, therefore, as practitioners of integrated health, we suggest that our companions engage in mind-body self-management, we need to acknowledge the far deeper process we are seeking to initiate. Most sensitively, we need to be present to the poignancy and paradox of the situation. There is discomfort, pain and anxiety, and yet there is the promise of creative transformation and emergence. This is a difficult balance to maintain. The extremes of clinical frigidity and new age you-create-your-own-reality cruelty are obviously to be avoided.

But the practitioner is not alone in seeking to enable self-managed mind-body healthcare. The individual seeking health, as well as possessing all the sabotaging psychological dynamics, is also dynamised by a will to
survive and a will to develop. Just as there is a natural healing dynamic in nature – wounds heal, flesh repairs – so too the psyche itself seeks to emerge, heal and integrate. This is latent in human psychological development. Given the appropriate circumstances people grow.

And often it is illness itself, in its janus-faced paradoxical nature, that acts as midwife to the new persona and consciousness. Pain, fear, disorientation and relentless discomfort all create such constraints and disorientation on the psychosocial self that consciousness, looking for meaning and expression, emerges instinctively into this new persona and dimension. Perhaps there is nowhere else to go. Indeed in many books on death and dying, there are descriptions of that most poignant of events, when a person recognises that their illness is fatal, but nevertheless emerges into such a new and balanced identity that they feel and assess themselves as healed. Their body has not been healed, but their consciousness has. This is what Stephen Levine has described as ‘healing into death’. Thus illness and trauma, even when fatal and painful, may deliver new consciousness.

In conclusion, at the very least we can be aware of the difficulties and paradoxes in using mind-body techniques for self-healing. The resistance we meet in our clients is no different from that which we ourselves experience. The benefits are equally great.

There are so many implications in all this for holistic practitioners. What is certainly needed in the integrative healing community is an explicit and ongoing discussion around how we can best serve the project of enabling self-managed mind-body healthcare. Clinical diagnosis and treatment are very different from acting as midwife to the birth of new consciousness. If we encourage self-management, then we need to do so in a way that is informed, congruent, grounded, authentic and well practiced. Appropriate relational and communications skills are needed. The intellectual and clinical skills need to be balanced with those of the heart. The art of healing the body expands to a more holistic understanding that the growth of consciousness is also within our domain.

I know full well that these are deep issues continually to be explored and reflected upon. Nevertheless, in ending, I cannot resist suggesting that when appropriate we need sometimes to drop our professional demeanour and bedside manner, and be more enthusiastically encouraging – not only to our clients but also to ourselves. Two images come to mind.

The first is of an eccentric rowing coach on a bicycle, madly clattering along the riverside, megaphone to face, hurling instructions and encouragement, devoid of all sense of self or dignity.

The second, to return to an earlier thought, is that of the shamanic healer, dancing, singing and rattling, ecstatic, celebratory and willing the birth of new consciousness, the transformation of the heart.

William Bloom is an educator, author and healer working in the field of holistic spirituality.

www.williambloom.com

References
6 The whole business of how psychological identity is structured and then defends and enhances itself, is fully discussed in William Bloom, Personal identity, national identity and international relations. Cambridge: Cambridge University Press, 1990.
7 This is discussed in all spiritual teachings that address issues such as ‘the dark night of the soul.’ For a contemporary description, see Jack Kornfield After the ecstasy, the laundry. New York: Random House, 2000.
Successive governments have tried and failed to solve the problems of NHS waiting lists and patchy quality. It is now a make or break political issue, which is possibly why the present ‘system reform’ is the most ambitious change since the NHS started in 1948. The concept is simple: introduce competition and create a ‘managed market’. This is, of course, what the Conservative government had tried to do with GP fundholding, in which GP practices held budgets for services and negotiated individually with whichever secondary care (hospital) provider would offer the best ‘deal’. It failed (inevitably in my view) because of the cost of administering so many small contracts and the creation of a ‘two-tier’ health service because practices were in competition.

This system reform is very different. Firstly, most NHS care (primary and secondary) has been carved up into defined ‘packages’ which are coded and priced on a national tariff – a massively difficult bureaucratic task. This ‘payment by results’ (PBR) is already in place in secondary care: the more healthcare a hospital provides, the more money it gets. Second is competition. Primary Care Trusts (PCTs) are required to commission several providers for each possible intervention. Some must be Alternative Providers of Medical Services (APMS) such as private hospitals or new diagnostic and treatment centres as well as the local (or not-so-local) NHS hospitals. Because of the fixed tariff price, competition is on quality and speed only. The patient becomes consumer. We GPs have been asked (as independent contractors we cannot be forced) to offer patients at least five choices of provider, using specially designed ‘choose-and-book’ computer software. The third element: hospitals must balance their books – even in the face of huge ‘historical’ debts.

How is it working? Most GPs refuse to use the choose-and-book system because it doesn’t work well, takes too long, and is an unwanted consumerist distraction. The tariff coding system is vulnerable. For instance ‘coding drift’ – hospitals claiming for more complex (hence more lucrative) care than was actually provided; brief admissions – admitting patients briefly to hospital when not strictly necessary and collecting the higher tariff for an admission. When so many hospitals are sacking staff in the face of enormous debts, the temptation is too great.

PCB may save the day

Now for the wild card that may yet save the day: Practice Based Commissioning (PBC). This is conceptually more complex. From April 2006 GP practices (usually working in clusters) redesign patient care pathways with PCT management backup. Instead of pitching one practice against another, it uses GPs’ generalist experience, their trusted status, their commitment to a community and their relative independence from the main NHS power players to make change happen. A key cost-saving measure in this is for GPs to offer some hitherto secondary care services (through APMS) in the community at less than tariff cost. The possible conflict of interest (patient advocates, commissioners and providers) might be outweighed by innovation – such as offering CAM therapies.

The biggest problem I see is that all the incentives in the PBR system are towards doing more healthcare. The therapeutic, pill-popping society comes of age, and the large corporations laugh all the way to the bank. Perhaps the PBC add-on is a final recognition that Whitehall, in USA style, either cannot, or will not, curtail the power of the corporations and institutions. Enter the GP as honest broker who may be able to put the brakes on runaway costs, but only if enough practices go with it.

So spare a thought for us pioneering GP commissioners – foolhardy fall guys? And if you are a CAM practitioner and you can do it well and do it cheap, there may be an NHS job for you. Ask your GP for details!
Time to go: Alternative funerals: the importance of saying goodbye

Jean Francis
iUniverse, New York, 2004
ISBN: 0 595 31859 2 $15.95

I had a great personal interest in reading this book, especially since my mother had just died four months ago. Even more recently I was involved in the funeral arrangements of the father of a very good friend of mine. These two very different experiences highlighted for me, more than ever just how personal and individual the mourning process is. The ritual of funeral helps us to experience the loss and passing of a loved one and shifts us to a place of acceptance and celebration of life.

But my personal interest didn’t end there. I am a member of a group of people who are setting up a green burial/woodland burial site in Spain. So I was looking forward to reading this book with great expectations.

The book’s structure is very straightforward; a brief introduction is followed by a number of personal stories depicting various alternative funerals. Each story is divided into subheadings of introduction, arrangement, coffin, flowers, transport, location, service/ceremony, refreshments, memorial and reflections, followed by a list of resources used for each individual funeral. (In one story this included how to stop the junk mail arriving in the name of the deceased, as it was upsetting the family.) Some useful addresses and recommended reading can be found in the appendices.

In the beginning the author, Jean Francis, writes that she has been occupied with the subject of death since childhood, ranging from childish fear to a more mature philosophical interest. As a party-planner and caterer of many years, she was present at many funeral services. The loss of her father triggered much reflection and rethinking on the subject. However she never quite makes it clear what exactly her personal motivation for writing this book has been. Is it meant to be sharing of intimate experiences or a collection of suggestions for those interested in alternative funerals? To me the book does not quite achieve the balance between the two.

Jean has appropriately written this book in a gentle and considerate style. However I feel that if it had been structured differently, first discussing options and resources and then using the stories to illustrate, the stories would have had more impact. (This could have also done away with the impersonal subheadings.) The longest and most touching is the account of her own father’s cremation. This is where I felt she did truly become more intimate with the reader, as until then I had missed a real discussion of the sub-title ‘The importance of saying good-bye’.

I am not certain who the targeted readership is. I picked it up because of a very personal interest. Do people want to read stories about other people’s funerals or do they just want some advice on how to realise vague ideas they may already have on the matter? I really don’t know. Fact is, there will be some people out there to whom this book will mean a lot.

Annette Gamblin

Complexity in healthcare and the language of consultation: exploring the other side of medicine

Derek Steinberg
Radcliffe, Oxford, 2005
ISBN: 1 85775 854 4 £29.95

I found this a difficult book to review. I approached it with great interest, expecting it to be very relevant to my work, but found myself disappointed and wondering ‘what is this really about?’.

I think I had been expecting something about the complexity of individuals and the therapeutic relationship but there is very little about that. The author draws a distinction between internal and external systems and his focus is the latter.

The complexity referred to is that of the healthcare system. Coming from his background in adolescent psychiatry, Steinberg describes an approach to consulting which recognises the multi-agency nature of the work and honours the roles of the various protagonists: doctors, nurses, social workers, educators, carers and, of course, the clients. He draws a clear distinction between systems consulting and other kinds of interaction, such as: clinical consultation, psychotherapy, supervision, teaching, liaison and support. There is a chapter on principles and guidelines and several more describing, with illustrative examples, consultation in different contexts such as: organisational groups, teaching, clinical problems. There are also chapters on taking a systems consulting approach with the patient, or even with oneself.

For anyone just getting interested in the subject of complexity and systems theory, there are useful leads into the classic literature.

There was irritating evidence of a lack of proofreading and the indexing was unimpressive – for example I tried to review the various references to ‘language’ and found three items in the...
index, but the section on page 13 where this was first explored was not one of them.

Perhaps I am standing too close. As a therapist from the humanistic psychology stable I take it for granted that clients are equals and I sometimes forget how alien this is to medical colleagues. My style of consulting has always been person-centred, embracing the complexity of life rather than homing in on simple pathology. So Steinberg’s message seems rather obvious – but a timely reminder to me that it still needs to be said.

Richard James

REVIEWS

index, but the section on page 13 where this was first explored was not one of them.

Perhaps I am standing too close. As a therapist from the humanistic psychology stable I take it for granted that clients are equals and I sometimes forget how alien this is to medical colleagues. My style of consulting has always been person-centred, embracing the complexity of life rather than homing in on simple pathology. So Steinberg’s message seems rather obvious – but a timely reminder to me that it still needs to be said.

Richard James

REVIEWS

index, but the section on page 13 where this was first explored was not one of them.

Perhaps I am standing too close. As a therapist from the humanistic psychology stable I take it for granted that clients are equals and I sometimes forget how alien this is to medical colleagues. My style of consulting has always been person-centred, embracing the complexity of life rather than homing in on simple pathology. So Steinberg’s message seems rather obvious – but a timely reminder to me that it still needs to be said.

Richard James

REVIEWS

index, but the section on page 13 where this was first explored was not one of them.

Perhaps I am standing too close. As a therapist from the humanistic psychology stable I take it for granted that clients are equals and I sometimes forget how alien this is to medical colleagues. My style of consulting has always been person-centred, embracing the complexity of life rather than homing in on simple pathology. So Steinberg’s message seems rather obvious – but a timely reminder to me that it still needs to be said.

Richard James

To publicise your event send details to Edwina Rowling at erowling@tiscali.co.uk. Deadline for next issue: 1 October 2006.