

# HeartMath in UK healthcare: Does it add up?

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A career-long interest in compassionate care and compassion fatigue in healthcare staff led me to an interesting discovery while visiting a Magnet Hospital in the USA. Every aspect of the hospital felt 'compassionate', the emotional capacity and care of the staff for their patients and each other was overwhelming. The difference was HeartMath, and so our journey to bring HeartMath to the NHS in England began. My own personal experience and the results of our pilot project further supports that if we look after our staff they will be better equipped to look after our patients.

Kay Riley

With a professional background in occupational therapy, I realised the benefits of including a variety of stress management techniques in working with people with acute and chronic illness. When Kay asked me to be involved in delivering the HeartMath pilot project I was originally intrigued by the scientific research that supports the benefits of the programme. However, as I delivered the programme to our staff I not only directly benefited from implementing the techniques into my own life as a means of supporting my wellbeing, but also believe that HeartMath has significant potential to support our delivery of compassionate care.

Deanna Gibbs

### Summary

*Stress and burnout have been identified as key barriers to the provision of compassionate care. This paper describes a pilot project that evaluated the delivery of an innovative approach to improving staff wellbeing. Detailing the experience of providing the HeartMath Revitalising Care programme for the first time in an NHS Trust in England, we describe the delivery of the programme, the evaluation of the impact on staff wellbeing, and recommendations for future provision.*

### Introduction

Stress, depression and burnout among hospital staff have been identified consistently as key barriers to the provision of compassionate care (Firth-Cozens and Cornwell, 2009). In 2010, Barts Health NHS Trust identified the provision of compassionate care as a key objective for the coming year.

The issue of stress and burnout among healthcare providers has been extensively researched (Aiken *et al*, 2002; Vahey *et al*, 2004; Balogun *et al*, 2002; Reader *et al*, 2008). Burnout is a colloquial term commonly used to describe a state of mental and emotional exhaustion in the workplace. Burnout results from high levels of occupational stress, and is associated with negative attitudes, emotions and behaviours towards one's work. Associations have been made between levels of burnout and staff turnover;

absenteeism, poor organisational commitment, low job satisfaction and coronary heart disease. Burnout among healthcare professionals has also been shown to affect the quality of care provided to patients (Reader *et al* 2008).

Stress and burnout among healthcare providers has been attributed to:

- individual causes (eg high self-criticism, making errors, decreased empathy, and the emotional labour of healthcare)
- quality of team working (eg clarity of team objectives, role delineation, communication styles, mutual respect)
- organisational causes (eg high workload, time pressures, low autonomy and participation in decision-making, role conflict, lack of social support and lack of feedback).

(Firth-Cozens and Cornwall 2009).

The aim of this pilot project was to introduce a programme aimed at improving staff wellbeing using an education model that would equip staff to manage their work and personal stress more effectively. It was envisaged that improving staff wellbeing would be a key contributor to the objective of embedding compassionate care within Barts and the London NHS Trust.

## Project details

The HeartMath Transforming Stress/Revitalising Care Programme is a well-researched intervention with a track record of providing hospital leaders, nurses, doctors and staff with a set of ideas and techniques which have been scientifically validated. The techniques are easily learnt and implemented and have proven effective and popular with staff in healthcare settings.

Burnout among healthcare professionals has been shown to affect the quality of care provided

The project provided staff education on HeartMath techniques which have been found to assist the self-regulation of emotional responses and increase 'personal coherence'. The HeartMath technology provides real-time feedback on heart rate variability (HRV). HRV is a reliable indicator of the balance between sympathetic and parasympathetic nervous system activity. The HeartMath programme provides biofeedback on HRV through a handheld emWave device which picks up the user's pulse, and processes the data to provide immediate visual biofeedback on HRV. In this way the emWave makes visible the moment-to-moment physiological impact of a simple cognitive and breathing technique designed to regulate HRV, by reducing sympathetic nervous system over-arousal and boosting parasympathetic activity. With regular practice these techniques appear to build 'personal coherence' and support greater autonomic stability. This shift is associated with positive change in nervous, cardiovascular, hormonal and immune function, performance, perceived stress, emotional stability, sleep health and wellbeing (McCraty and Childre 2010). When implemented widely in healthcare and other corporate settings the programme has been shown to increase overall staff resilience (McCraty and Childre 2010). In addition to resilience, HeartMath interventions in hospital settings have achieved results by:

- increasing staff retention
- improving patient satisfaction
- enhancing communications
- boosting employee morale
- enhancing team performance at both staff and leadership levels
- reducing costs significantly (HeartMath LLC 2011)

The HeartMath Revitalising Care programme has been used in a variety of hospital settings in the USA, including

Duke University Health System, Kaiser Permanente Medical Centres, and the Mayo Clinic. In the UK HeartMath has been introduced into large companies including GlaxoSmithKline. However, the HeartMath Revitalising Care programme at Barts and the London NHS Trust was the first time that this programme has been piloted in an acute hospital setting in England. Evaluation of this pilot aimed to give the Trust information sufficiently robust to establish the feasibility of providing the programme across the whole organisation.

## Project objectives

The objectives of the pilot project were:

- to implement the HeartMath Revitalising Care Programme in four pilot sites within Barts and The London NHS Trust
- to objectively evaluate the impact of participation in the project on individuals in relation to the reporting/measurement of emotional vitality, organisational stress, emotional stress, physical stress, and blood pressure
- to objectively evaluate the impact of the project on organisational factors including staff retention and turnover, absenteeism and service user complaints.

## Project design

### Education provision

In order to deliver the HeartMath Revitalising Care programme, seven Trust staff participated in a one week train-the-trainer programme which provided the elements required to deliver the programme as per the licensed agreements. The training team incorporated both clinical (three matrons) and non-clinical (four HR/corporate nursing) staff as trainers.

### Pilot areas

The programme was offered to staff in four discrete areas of Barts and The London NHS Trust:

- cardiac ward, St Bartholomew's Hospital
- medical and surgical oncology ward, St Bartholomew's Hospital
- acute admissions unit, Royal London Hospital
- outpatient reception staff, Royal London Hospital.

Staff working in each of these areas were invited to participate in the programme. Senior sisters/charge nurses for each area facilitated this by managing their rostering requirements to help release staff from the ward to attend.

Participation involved attending a one-day training programme where staff were shown the scientific background to HeartMath, and taught self-regulatory strategies and techniques. All of the staff who participated in the project also received training on how to use the emWAVE2 – a handheld instrument that provides feedback on heart rate variability. Two weeks after completing the initial

training, staff were invited to attend a two-hour follow-up workshop to review their experiences of using the techniques, and explore ways of integrating the techniques into work and home lives. In addition a final technique was taught. So they could better support staff-engagement within their areas, key members of the leadership teams for each pilot area were invited to attend a one-day workshop introducing the HeartMath intervention.

**Staff involvement**

All staff in each of the pilot areas were encouraged to participate in the programme. It was envisaged that as each area involved between 30–50 people the pilot might engage with 150–200 in total. However numbers recruited were lower than anticipated (due to a number of vacancies in staff establishments) and only 103 staff enrolled into part one workshops. A further 16 staff attended the leadership workshop.

A series of 11 part one and part two workshops were provided throughout August–October 2011. Of the 103 staff initially enrolled in the workshops, 97 staff attended a part one workshop, and 52 attended a part two workshop.

**Project evaluation**

**Evaluation procedures**

Evaluation of the project was conducted using pre- and post-measures. Individual performance measures were recorded at two time points:

- T1: Initial attendance at the part-one HeartMath training workshop
- T2: Attendance at the part-two workshop (two weeks later).

Individuals completed the Personal and Organisational Quality Assessment – Revised 4 Scale (POQA-R4), which is a written questionnaire with four subscales (emotional vitality, organisational stress, emotional stress and physical stress). POQA-R4 has been used this way in a range of studies evaluating the effectiveness of the HeartMath programme. Returned questionnaires were anonymised before analysis was undertaken.

Previous research with hypertensive employees suggests HeartMath self-regulatory techniques may reduce blood pressure (McCarty *et al* 2003). So in this study participants known to have elevated blood pressure were able to have their blood pressure recorded at the part one workshop. Individuals were responsible for scheduling a follow-up OH clinic appointment for a repeat measure six weeks later and for confirming whether they wished their anonymised readings to be included in the overall project evaluation.

The study was able to access existing standard Trust reporting mechanisms and dashboards to obtain data relating to certain organisational factors.

The timeframes and tools for evaluation are summarised in Table 1.

**POQA Pre-post test results**

Personal and organisational quality assessment – revised (POQA-R)

The POQA-R is a self-report inventory designed to reflect certain key psychological and workplace elements that contribute to the overall quality of an organisation’s work. The instrument provides a concentrated yet comprehensive assessment in the two main topic areas listed in Table 2.

Stress has a significant negative impact on employee health and work performance. The personal quality scales directly reflect employees’ day-to-day moods, attitudes and stress related symptoms. The stress symptom items in the POQA-R have been validated as clinically significant correlates of stress. The POQA-R’s organisational quality scales on the other hand are concerned with key organisational factors that influence employee

**Table 1: Evaluation tools**

Assessment	T1 (prior to participation in programme)	T2 (2–6 weeks after completion of programme)	T3 (6 months after completion of programme)
<b>Individual</b>			
POQA-R4	X	X	
Blood pressure*	X	X	
<b>Organisational</b>			
Turnover	X		X
Sickness absence	X		X
Complaints	X		X

\*Blood pressure recordings will only be taken for staff who elect to attend the Trust’s occupational health services

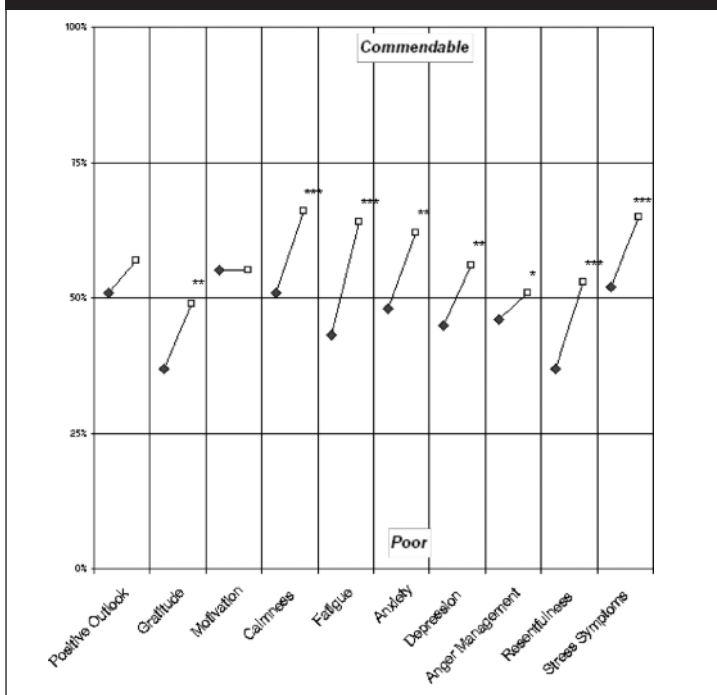
**Table 2: POQA-R personal and organisational qualities**

Personal qualities	Organisational qualities
<ul style="list-style-type: none"> <li>• Positive outlook</li> <li>• Gratitude</li> <li>• Motivation</li> <li>• Calmness</li> <li>• Fatigue</li> <li>• Anxiety</li> <li>• Depression</li> <li>• Anger management</li> <li>• Resentfulness</li> <li>• Stress symptoms</li> </ul>	<ul style="list-style-type: none"> <li>• Strategic understanding</li> <li>• Value of contribution</li> <li>• Manager support</li> <li>• Goal clarity</li> <li>• Job challenge</li> <li>• Work intensity</li> <li>• Time pressure</li> <li>• Freedom of expression</li> <li>• Communication effectiveness</li> <li>• Confidence in the organisation</li> <li>• Work attitude</li> <li>• Morale issues</li> <li>• Productivity</li> <li>• Intention to quit</li> </ul>

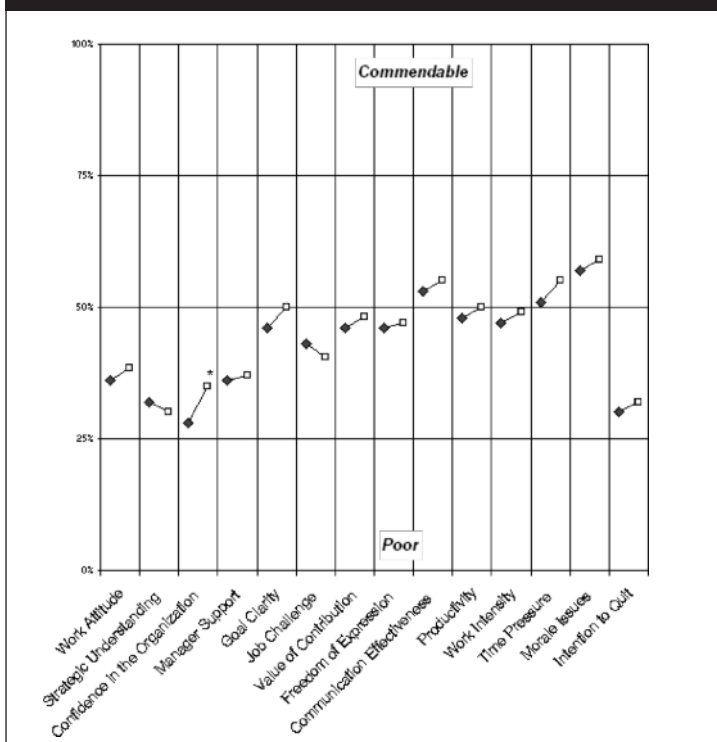
engagement, performance and behaviour, as well as attitudes toward work, and the ability to perform well.

The pre-post POQA-R test results are displayed in Figures 1 and 2.

**Figure 1: Pre-post results: personal qualities (POQA-R normative summary)**



**Figure 2: Pre-post results: organisational qualities (POQA-R normative summary)**



## Summary and interpretation of POQA-R results

### Personal qualities

The summary results for the pre- and post-test POQA-R results showed improvements in all of the personal qualities categories. Motivation was the single exception, but this had the highest pre-test score. In eight of the ten categories these changes were statistically significant, with fatigue and calmness showing the greatest evidence of change.

Table 3 extracts personal qualities scoring items that evidenced the greatest change:

Previous HeartMath intervention studies have demonstrated improvements in personal stress and energy factors, especially so once the program has been implemented more broadly across an organisation. Yet, even in this small scale intervention the significant changes in all areas of this table suggest improvement in participants' well-being, quality of life and potential effectiveness. Such measurable changes occur more quickly for the individual than for the organisation as a whole, and changes in the organisational quality categories are often not evident for several months (Institute of HeartMath, 2011).

### Organisational qualities

However, in larger scale, longer studies of the intervention, additional associated improvements have been found in increased patient satisfaction, improved patient safety, and reduced sickness/absence. It seems that in time, individual improvements in resiliency have a carry-over effect on the organisation, but in the short term the scale of change between the pre-and post-test results for the organisational qualities is smaller than that for personal qualities.

This section of the POQA-R analysis indicates the health of the organisation as perceived by the staff participants. In the pre-test data, 11 of the 14 organisational metrics began in the below average range. These were: work attitude, strategic understanding, confidence in the organisation, manager support, goal clarity, job challenge, value of contribution, freedom of expression, productivity, work intensity, and intention to quit. Only one category, confidence in the organisation (one of the lowest rated in the pre-data) showed a statistically significant improvement ( $p < 0.05$ ).

The starting points of the remaining metrics were in the average to above average range.

in the post-test data, three of the metrics moved into the above average range – communication effectiveness, time pressure, and morale issues. The end points of the remaining metrics are gathered around the average to below average range.

**Table 3**

Personal quality	% pre workshop	% post workshop	% change
I feel optimistic about the future	68	73	5
My life is deeply fulfilling	44	58	14
Appreciative	35	56	21
Peaceful	28	57	29
Calm	38	47	9
Tired	58	27	29
Exhausted	42	19	23
Worried	25	16	9
Depressed	11	4	7
Annoyed	32	19	13
Angry	19	12	7
My sleep is inadequate	40	22	18
Body aches	30	19	11
How stressed have you been in the past month (100-point sliding scale)	41	27	14

Some individual scoring items further illuminates the impact of the HeartMath intervention, showing a difference in the perception of the participants in terms of their alignment with the organisation as a whole, enjoyment of their jobs, feeling supported by management and their co-workers and achieving balance between their work and personal lives (Table 4).

However, some of the individual scoring items also clearly demonstrate areas where staff wellbeing is influencing/being influenced by the organisational culture:

- people feel a sense of appreciation for one another – 25% (75% disagree)
- their work is often recognised or appreciated by their superiors – 38% (62% disagree)
- people are free to express their opinions – 35% (65% disagree)
- they are able to speak without fear of consequences – 46% (54% disagree)
- people listen carefully to each other at work – 54% (46% disagree)
- most of the current talk about the organisation is good news – 14% (86% disagree)
- I always know how my supervisor wants me to utilise my time – 56% (44% disagree)

- people’s roles and responsibilities are made clear – 44% (56% disagree)

In summary, the formal POQA-R evaluation clearly shows significant individual benefits for the participants in relation to their well-being. Further, we may infer at least tentatively that the results imply improvements not only in individual wellbeing, resilience and personal effectiveness but also in attitude to and appreciation of organisational qualities.

### Organisational data evaluation

The final part of the evaluation reviewed changes in turnover rates, sickness absence and complaints. In order to take account of seasonal bias, two time periods were reviewed: Jan–March 2011 (pre-programme) and Jan–March 2012 (post-programme). Although there were some marked differences between pre-post test data and between wards/departments, the organisational changes occurring at the time of this data subset make it impossible to attribute any of the changes observed (positively or negatively) to the HeartMath intervention.

### Complaints

The full list of complaints from each pilot area was reviewed, and only those specifically relating to the

**Table 4**

Organisational quality	Pre workshop	Post #2 workshop	% change
Question	%	%	
I am proud of the company I work for	48	54	6
My efforts make a big difference in my organisation	50	60	10
People where I work feel free to express their opinions	24	38	14
I am always highly productive	52	64	12
I feel pressed for time	65	45	20
I feel like leaving this organisation	28	12	16

professions of Trust staff who had attended the HeartMath programme were included (eg in relation to outpatient department complaints, only those specific to outpatient reception staff were considered). No significant differences in frequency/type of complaint from service users were noted across the two time periods.

### Blood pressure

The Trust's occupational health service had made a nurse available to take blood pressure readings for staff attending the training. However, no formal follow-up data is available, mainly because too few staff attended for a follow-up appointment. There are, however, some anecdotal reports from a small number of staff who rechecked their own blood pressure in ward areas and noted a decrease.

### Summary and recommendations

The HeartMath Revitalising Care programme in the Barts and The London NHS Trust resulted in some significant benefits for staff who participated. There was a strong trend of improvement between pre- and post-programme measures on a range of personal health and well-being factors including fatigue, anxiety and depression. The slight trend of improvement in some organisational factors was not significant, possibly because evidence for such changes is not typically evident until there have been several months of sustained programme provision.

There were no positive or negative trends attributable to the HeartMath programme in other internal measures (eg sickness absence, turnover and complaints).

On the basis of the project evaluation, the following recommendations were suggested:

- continued provision of the HeartMath Revitalising Care Programme
- considering ways of targeting staff and developing optimal approaches for delivery of the programme, including:
  - embed the course into the Trust's overall staff learning and development programme rather than using a ward-focused model
  - target groups for particular staff (eg staff in leadership roles, staff providing direct clinical care)
  - further adjust the content of the HeartMath Revitalising Care programme (in collaboration with HeartMath) to make it more resonant for a UK staff population
  - manage internal resources to support further training opportunities
  - position the HeartMath Revitalising Care programme in a broader context of initiatives aimed both at improving staff health and wellbeing, and progressing organisational development.

Further discussions are now underway in the recently merged organisation to consider implementing these

recommendations. In view of the Francis Report's recommendations the NHS as a whole will be considering how best to support staff resilience and underpin the provision of compassionate care.

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## BHMA Student Essay Prize £250



The British Holistic Medical Association prize of £250 will be awarded to the undergraduate health-care student who submits the best 1,500 word essay entitled:

**'The importance of holism in medical care today and ways this can be promoted.'**

The winning essay will be published in the *Journal of Holistic Healthcare*.

This is the seventh student essay prize and this year we invite students to consider the importance of holism in healthcare and provide practical suggestions for its promotion.

**Closing date: 30th June 2013**

Please submit your essay with your name, address, email, university or college course attending and year of study, and send by e-mail to:

**[suhillrise@btinternet.com](mailto:suhillrise@btinternet.com)**