

Debate & Analysis

Seeing with new eyes:

what can general practice learn from the science of improvement?

GPs have a deserved reputation for their ability to respond and adapt to the ever-changing needs, demands and expectations that they experience in their daily work. Viewed from a historical perspective, the changes that they have been exposed to have been largely incremental in nature and scale. However, social and technical changes in the future are likely to be of a different magnitude to those in the past. Unless GPs develop the capacity and capabilities to deal with these changes, then patient care, the health of communities, and the central role of professionalism will all suffer. The science of improvement, which enables a new way of looking at the world as well as a new knowledge base and set of skills, is presented as a solution to the challenge of dealing with change.

BACKGROUND

At the turn of the 20th century, when the great sailing vessels that had since earliest times plied trade around the globe looked to be superseded by steam ships, an American trading company launched the largest sailing ship that has ever been built. The *Thomas W Lawson* was a remarkable vessel, seven masts and 145 metres in length. But she was too big. Her draft was too great to enter most ports and she yawed in light wind conditions. Her crew called her 'the bath tub'. Just 5 years after her launch she sank in winter storms off the Isles of Scilly and all but two of the crew drowned.

The story of the *Thomas W Lawson* provides insights into how people respond to change. How do we differentiate incremental change from radical, groundbreaking change? How do we know when 'more of the same' isn't good enough? Are there lessons here for how general practice should respond to change?

The constantly changing face of health care repeatedly challenges general practice, a speciality that has so often in the past been simultaneously energised and threatened by change. General practice has a deserved reputation for its ability to adapt and evolve in response to external pressures. In recent decades GPs have responded to the benefits of organising at a larger scale, the need to design new approaches to training and learning, the advantages of adopting a more systematic approach to providing care for long-term conditions, and the exceptional potential for

patient records provided by advances in information technology. General practice never stands still and this is one of its great strengths.

But is this ability to react to change going to be enough to assure a future for the speciality? What are the equivalents of the steam ships for general practice, the game-changing and groundbreaking changes that our discipline might have to face in the next few decades? And how prepared are GPs to deal with changes of this scale?

BIG CHANGES ON THE HORIZON

It isn't an easy task to identify examples of game-changing transformations that might impact on general practice in the next 30 years. The Danish Nobel Prize-winning physicist, Niels Bohr, once said: 'Prediction is very difficult, especially about the future'. Too often we underestimate the magnitude of what is going on around us, like the Commissioner of the US Patent Office who, in 1899, predicted that everything that could be invented, had already been invented. We are also inclined to overestimate the impact of concurrent change. Take the most recent economic recession which looks dramatically bad if viewed over a 10-year period, in terms of the decline in gross domestic product (GDP) that occurred in 2008. But when viewed from a step back, say over the last 100 years, the most recent recession becomes just a tiny blip against a background of inexorable growth in GDP

The Thomas W Lawson.



which dwarfs even the great recession of the 1920s and 1930s. And when viewed from further back, say over the last 200 years, it looks different again as we see a steep increase in the rate of growth in the latter part of the 19th century as a result of the industrial revolution and the shift from an agrarian economy.

So, accepting that prediction is hard, let me suggest three changes that I think may have a major impact on the ways in which GPs will operate in 30 years time.

First, I predict that the concept of what it means to be a doctor, to be a member of the medical profession, will look very different in three decades time. By and large, we are clear about our current purpose and our role in the health system. It is the role that we have been trained to fulfil. Our job is primarily to look after the individual patients for whom we are responsible. Usually this requires us to make a judgement and then to respond with a solution. Sometimes this solution is a social intervention, sometimes a technical one, sometimes requiring action, sometimes considered inaction. We are the experts and this is recognised by society in terms of the trust and the rewards that come our way.

I predict that in the future, society will want far more of us. The current health reforms in England, which encourage clinicians to take responsibility for commissioning,¹ represent just the first of many challenges to the traditional role of the doctor. We will be expected to be much

more explicitly accountable to patients, peers and employers. We will be expected to accept responsibility for all dimensions of quality — not just the traditional clinical ones but also efficiency and equity. We will be expected to understand how the health system works and play a leading role in making all parts of it work better. We will be expected to contribute explicitly to building the evidence base about how to improve patient care. We will be expected to work much more effectively with a wide range of other health professionals and managers. And, as the English health reforms have outlined, we will be expected to operate within a much more heterogeneous set of structures, governance, and funding arrangements than currently exists.

Second, I predict that patients will be a lot more informed about, and less willing to tolerate, poor quality care. Little more than 20 years ago, many clinicians did not accept that a significant proportion of the variation in practice and the outcomes of their actions were both unacceptable and actionable. Advances in how we measure and report on quality of care have changed this and clinicians, managers, and policy makers are slowly engaging with the challenges. But what would be the consequences of patients knowing that they had a one in 10 chance of suffering iatrogenic harm when admitted to hospital;² or that, on average, doctors perform about half of what we would all accept as good professional practice?³ In 30 years time, patients are likely to be much more active consumers of their health care, searching out the 'best' and ignoring or demanding improvements in the worst performers.⁴ Doctors will be judged not only on how personable or humane they are, but also judged routinely on how competent they are. Deeply embedded problems with quality of care, which have proved intractable to most solutions so far, might be rectified by 'patient power'.

Third, I predict that new technologies will transform the dynamic between doctors and patients. The current dominant model of care delivery requires patients and doctors to meet face to face, for a short period of time, with minimal preparation and only a little more follow-up. This model has barely changed for centuries and is oriented around the needs of those providing the service rather than those receiving it. It is an

inefficient and ineffective use of a precious resource — the personal interaction between two people — and a massive inconvenience to patients.

In 30 years time 'the consultation' will be defined more broadly and will be based around an asynchronous model of interaction. A patient with diabetes will use their smart phone to prepare for a consultation. An avatar doctor will take a history, the phone camera will be directed by the patient to take a picture of their leg ulcer or sore throat. Home-based mobile diagnostic and monitoring devices will record pulse, blood pressure, peripheral sensation, and blood glucose. All of this information will then be transmitted to the doctor who will record a video message back to the patient letting them know how things are progressing and the patient will pick this message up between meetings at work. Either the patient or the doctor may decide that a face-to-face consultation is required, for which both parties will be well prepared.

More generally, access to information will change the meaning of the word 'expert'. People who have never met, both patients and health professionals, will share their expertise and experiences and build knowledge and wisdom together using social media, such as Facebook or Twitter. This knowledge will be of a different nature to that created by doctors. The technology to facilitate all of these processes already exists and is neither sophisticated nor expensive.

HOW SHOULD WE RESPOND?

If these predictions come true, health care will look very different in 30 years time. Such changes cannot be seen as evolutionary if viewed through a historical lens. Indeed, if enacted, in medical terms they will be the equivalent of the discovery of antibiotics or the development of anaesthetics: developments that have transformed the nature of medical practice. But are GPs

adequately trained to recognise and deal with changes of such magnitude? While a minority will be excited by the challenge, I suspect that the majority will be deeply unsettled, even threatened. How can GPs avoid the *Thomas W Lawson* challenge of adapting to short-term events but missing the big picture?

We train our doctors in basic medical sciences and in the clinical method to care for patients who have, or think they have, something wrong with them. As a consequence, we feel capable, if not always comfortable, operating within the boundaries of our consulting rooms. But this interaction is happening within a wider series of contexts that lie beyond the consulting room door, including the multidisciplinary team, the organisation, the local health economy, the NHS, and the political and policy environments. Therein lies a paradox: to practice medicine requires doctors to have a narrow, even parochial, take on life because at the time of the interaction patients don't want their doctor to be distracted by the wider environment. But the stark reality is that if doctors are not able to influence that wider environment, then what they can achieve for their individual patients will be limited.⁵ GPs know this in their hearts but they often manifest this understanding by externalising the problem — it's the PCT that won't let me do this, or the NICE guidance that won't let me do that, or government policy that won't let me do the other. We feel impotent in the face of the bigger system and we attribute control, or sometimes blame, to others.

To address this challenge doctors need to think differently. As Albert Einstein ruefully said, 'You can't solve a problem with the same mind that created it'. I will illustrate this with a fascinating example of how radically reframing a problem impacts on both the nature of the solution and the results.⁶ In the 1980s a terrible famine hit

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parts of rural Vietnam and the international charity Save the Children was asked to find a solution. It responded in a way that aid agencies have found so effective in the past. Save the Children launched an appeal in developed countries, used the donations to buy food, and put in place the most sophisticated logistics to get the food to remote rural villages. But they soon discovered that this had little impact on the rates of childhood malnutrition.

The charity called in Jerry Sternin, Professor of Nutrition at Tufts University, to help. Sternin and his wife spent a few months travelling around the villages and closely observing what was going on. The most striking observation was that within each village, well-nourished children were living alongside poorly nourished children. He noticed that the mothers of the well-nourished children were breaking with locally-accepted wisdom in a number of different ways; he called them 'positive deviants'. Unlike other mothers, they fed their children even when they were ill with diarrhoea; they gave them many small meals a day rather than one or two big ones; and they added sweet potato greens to the children's rice, even though this was regarded as a low class food. Sternin encouraged the mothers to talk to each other and the ideas spread and took hold. In just 2 years malnutrition rates dropped by between 65 and 85 per cent.

Like Save the Children, doctors are good at framing challenges with the confines of their training and experiences, but are less good at thinking differently about the

challenges presented by the increasingly complex and often dysfunctional health system within which we work. W Edwards Deming, the doyen of quality improvement, reflected that practitioners in many walks of life have advanced specialist content knowledge but rarely have the necessary general knowledge and skills to create a conducive working environment.⁷ Essentially, being trained in the practice of medicine — even the psychosocial approaches advocated within general practice — is no longer enough. Professional education is still designed to prepare doctors for the time that was, not the time that will be. Paul Batalden, of Dartmouth Medical School, describes doctors as needing to have two jobs: doing what you do, and improving how you do what you do.⁸ There is now an emerging body of knowledge — improvement science — which clinicians need to practice and which is complementary to biomedical knowledge.

IMPROVEMENT SCIENCE

Improvement science draws on a wide range of basic sciences, such as mathematics, engineering, statistics, and behavioural sciences, such as psychology, economics, sociology and anthropology. The term, underpinning theories, methodologies, and methods have been used for decades in the commercial sector, and are now mainstream in most manufacturing and many service industries.⁹ Companies such as Unipart and Motorola have used the science to

produce levels of quality, reliability, and safety that the health service can only dream about. Two decades ago Don Berwick from the Institute for Healthcare Improvement in Boston described how healthcare providers might learn from industry.¹⁰ The ideas were first taken up by a small band of enthusiasts, and they are now being used by a large number of healthcare providers around the world. But the so-called 'industrial' approaches to improvement are not yet embedded in all organisations, in part because we are not yet sure how they can best be adapted and used in the health sector,¹¹⁻¹³ and they seem to have largely bypassed most clinicians.

Improvement science is a practical and applied activity, and in the health field requires a partnership between the academic sector (both research and education) and the service sector (health professionals, managers, policy makers, and, most fundamentally, those who use the health service). The main dimensions of the science and some examples of specific areas of knowledge are described in Box 1. Areas such as patient orientation, multidisciplinary and reflective learning will be familiar to most GPs through exposure to the social sciences in our specialist training. Other areas such as the specialty of leadership and the psychology of change will be familiar in particular to those who are more educationally oriented. But some components of improvement science will be new to many GPs. Systems thinking, reliability, flow, process mapping, and statistical process control are likely to be terms that are unfamiliar to most practitioners.

Most importantly, few clinicians have had an opportunity to draw the different parts of improvement science together in such a way that they can systematically develop a body of knowledge and skills to help their patients, their communities, and the NHS. But overall, there is little that is 'clever' in the science of improvement. As Proust so wisely reflected, 'The real voyage of discovery consists not in finding new lands, but in seeing with new eyes'. Engaging with the science of improvement has the potential to enable clinicians to look at our roles and responsibilities, as far as patients, communities, and the health service are concerned, in a different and liberating way.

Box 1. Components of improvement science

1. The needs and preference of service users	<ul style="list-style-type: none"> • viewing health care from the user's perspective • using tools to understand and respond to users
2. Health care as a process	<ul style="list-style-type: none"> • systems thinking; complexity; process mapping • reliability; lean thinking; flow; spread; sustainability; risk • Plan, Do, Study, Act (PDSA) cycles
3. The nature of knowledge	<ul style="list-style-type: none"> • philosophy of science • measurement; variation • innovation • local versus generalisable knowledge • small versus large scale change • improvement statistics; reporting info; process mapping
4. The wider environment	<ul style="list-style-type: none"> • health system structure and function • organisational culture • historical, social, and political context • health policy; professionalism; accountability
5. Human behaviour	<ul style="list-style-type: none"> • psychology of change; influencing; learning styles • leadership; teamwork; management • multidisciplinary; reflective learning

CONCLUSION

In this article I have attempted to describe how GPs' ability to respond and evolve to external stimuli has been one of our great strengths. But at the same time I have suggested that the changes looming on the horizon, which are massive in scale, could within a relatively short period of time transform the nature of health care and the role of the medical profession. The current health reforms in England represent just a small foretaste of what is to come. If we simply respond to these changes in an evolutionary way, then we will reinforce a victim status, a feeling that we have little or no control over our environment. In doing so, at best, we will be missing out on an opportunity to mould the changes to our patients' benefit. At worst, we will end up with a health system that is unfit to serve the wider needs of patients, communities, and society.

I have suggested that GPs are currently inadequately trained to meet these challenges and that they can address this by learning about the science of improvement and integrating this body of knowledge with their established areas of expertise. Learning about improvement needs to take

place at undergraduate and specialty training levels and as part of continuing professional development. There are a number of resources to draw on, including the work of organisations specialising in the field of improvement science (such as The Health Foundation [www.health.org.uk] and the Institute for Healthcare Improvement [www.ihl.org]), and a growing number of training courses and educational materials.

The practice of medicine has seen dramatic change over the centuries, such as advances in anatomy and physiology in the 16th and 17th centuries, the professionalisation of doctors in the 19th century, and discoveries in the fields of therapeutics and genetics in the 20th century. The science of improvement perhaps presents the next advance to improve the quality of patient care and a way of addressing the *Thomas W Lawson* challenge.

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