

EDITORIALS

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Skirmish over seven day working

Would more effective leadership of the profession have avoided this debate?

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Doctors have reacted with dismay and anger to the approach taken by the secretary of state for health, Jeremy Hunt, over seven day working and contract renegotiation,¹ with many using social media to remind him that, actually, they regularly work at weekends.²

His challenge to the BMA on contract changes to support seven day working came during a speech that was mostly about a grand vision for the NHS.³ Indeed, it was almost an adjunct to his main message, which described the creation of a more “human” service in which power will shift from politician, doctor, and manager to the patient.

The vision he articulated includes much that will be welcomed by doctors and managers, including a move from access targets to broad quality metrics, fewer targets in return for greater transparency, and a learning culture with much more local autonomy. These all point to a cultural change that is long overdue.

Most will also support the increased use of technology to empower patients and the placing of safety and quality at the heart of the new regulator, while few will argue with his proposal to end the target based regime that has driven the NHS in recent years.

Seven day care was not presented as a vision but as a (controversial) solution to increased hospital mortality at weekends, so why was it in this speech at all? We were told that “our approach to seven day care [is] one litmus test of our commitment” to this new health service, but it certainly came across as a direct challenge to the BMA, if not to the profession as a whole.

The language was different on this topic too. Despite promises to bring about a culture of “self directed improvement,” the secretary of state seemed to have discovered his inner Stalin when he said, “We are ready to impose a new contract if negotiations are not successful within six weeks.”

Doctors are angry at the inference that they lack commitment to the service and to patients, and that they are blocking much needed change. But Hunt seemed to be directing his comments at the BMA, as representatives of the profession and its established traditions, rather than at doctors more generally.



And I'm not happy

Indeed, he quoted doctors in support of his argument, acknowledging that “every weekend swathes of doctors go into the hospital to see their patients, driven by professionalism and goodwill, but in many cases with no thanks or recognition.” He was comfortable stating that the BMA was “not remotely in touch with what [its] members actually believe”; he clearly thinks that some doctors will support his proposals.

As a clinical leader, I have long thought that the medical profession was best placed to address its frustrations with the workings of the health service from the inside, as leaders, rather than from the outside, as critics. The last position is an inherently negative and uninspiring one to occupy, and it is easily misrepresented, but all too often the profession seems to adopt it. Is the time right to examine how our profession is led, so that we can move from the position of critic, to effective influencer?

Doctors tend to be individualistic and not natural followers, and they tend to hold allegiances to smaller groupings such as specialty colleges. Such bodies, like the BMA, tend to have a specified and narrow remit rather than a broader leadership role. This lack of a single,

clearly identifiable leadership of the profession as a whole can be disadvantageous in a world of instantaneous communication of news, debate, and opinions. Hence, the biggest story arising from a speech articulating a positive vision for the service is a damaging public debate about medical contracts of employment. In any other sphere, this would be regarded as a clear public relations failure.

Divide and rule?

The answer to the question of why include the challenge to doctors in his otherwise visionary speech must be that the secretary of state thinks he has popular opinion on his side, and that he can prevail. He may well be right. He is also reported to favour reforming clinical excellence awards and increasing the remuneration of doctors in specialties with onerous out of hours commitments.⁴ Many doctors, let alone the public, will agree with these views, as they do not think the current reward system is fair. Might Hunt think that he is tackling some unpopular vested interests within the profession?

For the profession to get on to the front foot, it needs visible leadership that can make arguments and frame debate as well as show an understanding that healthcare provision must change in ways that the public recognises and can identify with. This leadership must understand, as Hunt does when he talks about operating transparency, candour, and local enablement and empowerment, that change will be driven by imperatives that are irresistible because they reflect broader trends in society.

The contract is a side issue here. Whether doctors win or lose this battle we will surely lose the war unless our positioning, and perceived positioning, in this critical debate about the future of the health service changes. The more important matter is how the leadership culture within the medical profession is developed, and as a consequence how much influence over the future development of the health service is retained. I would argue this should be our urgent priority, and it is where our anger should be channelled.

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- Falls in older people (*BMJ* 2008;337:a2320)
- Preventing osteoporosis, falls, and fractures among elderly people (*BMJ* 1999;318:205)
- Overdiagnosis of bone fragility in the quest to prevent hip fracture (*BMJ* 2015;350:h2088)

The results suggest that balance exercises reduce the chance of moderately severe falls by about 18% over two years

Better balance, fewer falls

Encourage older women to attend balance training

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Falls are a major problem for older people because they are so common and can result in injury and loss of quality of life. Age associated decline in muscle strength and the nervous system can lead to a sense of unsteady walking. In turn, this can lead to a loss of confidence in moving and, for some people, serious falls.

We have known for some time that strength and balance training is effective in preventing falls and improving mobility and confidence.¹ Most studies have covered a maximum of a year, and programmes require investment of time and effort from older people.¹ This is not always a popular option.²

The linked article by El-Khoury and colleagues provides important advances and reassurance and should help older people decide whether investment in exercise is worth it and what type of exercise to invest in.³ The logic of improving balance and unsteadiness to reduce falls is borne out once again in this well conducted trial including women from a broad geographical area of France. As not all falls result in injury or restricted activity, the authors examined whether balance exercise can prevent moderately severe falls that result in soft tissue injuries such as cuts, abrasions, and sprains.³ An answer to this question has eluded us for a while, and the results can be interpreted broadly as showing that balance exercises reduce the chance of moderately severe falls by about 18% over a two year period. The study was not large enough to show a definitive effect on the most serious types of fall (those that result in fracture) but suggests many broader positive benefits, including a sense of improved physical functioning and vitality and a slower rate of decline in mobility tests over time.

The intervention was prescribed and overseen by trained exercise instructors in community settings. The results suggest that one year is good enough, but two years are better. The semi-supervised graded approach where the intensity and complexity of exercises are increased as people

improve was safe. It relied on older women exercising at home and pushing themselves, within reason, to the limits of their balance ability. There was no increase in falls and few adverse events associated with the intervention. Although the Ossébo programme studied is not available in the United Kingdom, similar strength and balance exercise programmes such as the Otago exercise programme, pilates (strength training of the muscles responsible for posture, stretching, and stabilising exercises), and later life training are a good foundation, are widely available, and will, no doubt, evolve in response to this new work.³

Head to head comparisons of different types of exercise are expensive and time consuming but any that do go ahead should recognise that El-Khoury and colleagues have set the bench mark in terms of designing an intervention that can reduce injurious falls over a two year period.³ A definitive clinical trial of pilates, which has a following of around 11 million people in the United States and is common in the UK, might prove a good investment.

Close scrutiny of the number of women approached and the number who eventually

accepted the invitation to participate suggests that balance screening and the offer of exercise do not have mass appeal. This should stimulate us to think more about the way in which society, healthcare professionals, families, and peers generate a shared and appropriate understanding of the risk of falls and the benefits of intervention. Of about 40 000 women on the electoral register approached by El-Khoury and colleagues, only 11% agreed to have their balance screened. As about 30% of people in this age group are likely to be at risk of falling¹ this is a considerable mismatch. Improved knowledge of the benefits of exercise might encourage older people to engage.

Accentuate the positive

General practitioners, families, and friends are influential in encouraging older people to exercise,^{4 5} but they should be aware that older people are much more receptive to positive images of ageing.⁵ Emphasis on functional ability and quality of life is important, along with a sense of fun.⁵ Few older people like to represent themselves as fallers.⁵ Costs and ease of access to programmes are important⁶ but would presumably not have been a barrier within the context of this randomised trial.

Our preference for encouraging uptake of this type of programme is to simplify the eligibility criteria. Performance tests of balance are difficult to implement as they require knowledge, space, and time. Most older people can sense their balance starting to fail, and many of us observe it in everyday life. Developing and encouraging the use of simple self test criteria should be part of the research and development agenda.

In summary, El-Khoury and colleagues report an important piece of work that provides us with further evidence and reassurance that balance exercise is safe for older women who have balance problems. It has important benefits for health and quality of life. As a society, healthcare professionals, families, friends, and peers, we should encourage older women to take up supervised balance exercise programmes and to stick to them for as long as possible.

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● RESEARCH, p 10



Balance training may have avoided this

MARK THOMAS/SPFL

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Hand hygiene (*BMJ* 2001;323:411)

Many interventions to improve hand hygiene work, and those with more components work better than those with fewer

Improving hand hygiene in hospitals—more is better

The WHO-5 bundle is a good place to start, but might work better with optional extras

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Hand hygiene, performed appropriately by healthcare workers, protects patients and providers from infections acquired in hospital; ultimately, good hand hygiene saves lives. Despite this, adherence to hand hygiene guidelines is unacceptably poor.¹ Hospitals worldwide need to tackle this critical patient safety issue. Many hospitals have tried to improve hand hygiene. Few have been unable to achieve sustained improvements.

In a linked paper, Luangasanatip and colleagues sought to identify interventions that improve compliance with good hand hygiene in hospital and to establish their relative efficacy through a systematic review and network meta-analysis.² They excluded study designs at high risk of bias from a thorough literature review of studies published in 1980-2014.

Their review covered 41 studies that met eligibility criteria, 31 of which were published after 2009, including five of the six randomised controlled trials. Most of the evaluated interventions were “multi-modal” or “bundled” interventions that included several different components; only six studies evaluated single interventions. The multimodal interventions included at least two of system change, education, feedback, reminders, institutional safety climate, goal setting, incentives, and accountability. The most common bundled intervention studied was the five component intervention developed by Pittet and colleagues³ and recommended by WHO.⁴ WHO-5 comprises the first five interventions listed above.

The short answer seems to be—just about everything and the more components the better. All the randomised trials that compared an intervention with standard care reported better hand hygiene in the intervention group (although in some cases the increase was modest). The interrupted time series studies either compared an intervention with no intervention/standard care or compared a “bigger” intervention that included more components with a “smaller” intervention with fewer components. In almost all studies, compliance with hand hygiene improved after the introduction of new compo-



JOHN COLE/SP/L

Just about all interventions work

ments. In two trials that compared WHO-5 plus goal setting with WHO-5 alone, both options improved hand hygiene relative to baseline. WHO-5 with added goal setting looked significantly more effective than WHO-5 alone when the trials were combined in a meta-analysis.

The authors also performed a network meta-analysis, using data from 18 interrupted time series analyses. Network meta-analysis uses both direct and indirect comparisons to establish the relative efficacy of different options (for example, if A is better than B, and B is better than C, then A is better than C). They classified interventions into four groups for analysis: no intervention, single interventions, the WHO-5 bundle, and WHO-5 “plus” with added goal setting, incentives, or accountability.

Although confidence intervals overlapped, the results suggest that WHO-5 plus improves hand hygiene more than WHO-5 alone; that the WHO-5 bundle works better than single interventions; and that single interventions work better than nothing (or standard care). Both WHO-5 plus and WHO-5 were significantly better than no intervention.

Taken together, these results suggest that many interventions to improve hand hygiene work, and that those interventions with more components work better than interventions with fewer components. Luangasanatip and colleagues also identified several studies that associated improved hand hygiene with reductions in infection rates; this was not the primary objective of the review, however, and the quality of the evidence for outcomes on infections was poor.²

This study had limitations, which are well described by the authors and not likely to change the overall findings. A few further points require consideration, however. Firstly, many of the included studies used direct human observation to measure compliance with hand hygiene. Direct observation is prone to observation bias (otherwise known as the Hawthorne effect, or the tendency for people to behave differently when observed) and can inflate estimates of compliance by twofold to fourfold.^{5 6}

“More is better” or “new is better”?

Secondly, some of the improvements seen with multimodal interventions could have been because of the novelty of the intervention, and it is unclear whether “more is better” or just that “new is better.” I suspect that both are true. Finally, we should be cautious when assuming that the individual components in different studies are comparable. For example, feedback can be directed at the individual or group level; can be provided monthly or in real time; can be presented in a face to face meeting with an important role model or arrive anonymously via an email. Each of these choices could alter the efficacy of feedback as an intervention.

Luangasanatip and colleagues have identified several interventions that can be used to improve the hand hygiene practices of healthcare workers in hospitals, if implemented appropriately.³ They have also confirmed that WHO-5 is effective, works better than single component interventions, and represents an excellent starting point for hospitals trying to achieve better hand hygiene and improve patient safety. For facilities that have not achieved adequate hand hygiene despite WHO-5, we now have evidence that adding goal setting, incentives, or accountability can result in further improvement.

Despite the clear direction the results of this review sets out for us, there is still work to be done designing interventions that are better still, developing reproducible and unbiased measures of compliance, and most importantly gathering evidence linking better hand hygiene with the outcome that matters most—a reduction in healthcare associated infections.

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Before pulse wave velocity is incorporated into risk calculators, validation is required in large cohorts of unselected people

Aortic stiffness as a cardiovascular risk predictor

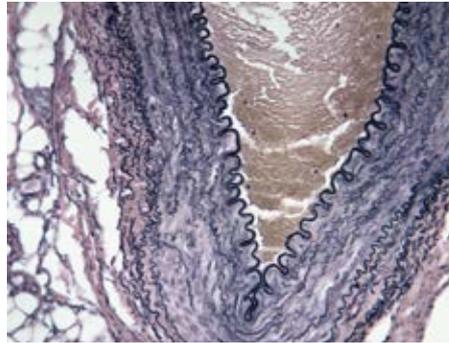
A promising biomarker likely to be most useful in younger adults with low to moderate risk

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Cardiovascular disease remains the leading cause of death worldwide, despite highly effective preventive treatments. Most current guidelines recommend treatment based on arbitrary thresholds or the risk of a future event. Although the guidelines are effective at identifying those most at risk, in whom to start treatment, many individuals are categorised as moderate-low risk, denied treatment, and go on to have events. This has created considerable interest in refining risk prediction with novel biomarkers, such as C reactive protein and carotid intima-media thickness. Frustratingly, the majority of these add little to risk prediction based on traditional risk factors such as blood pressure, lipids, cigarette smoking, and diabetes.¹

Doctors have used hardening of the arteries, or arteriosclerosis, as a surrogate measure of vascular health for centuries. It makes sense because large arteries have an important role in buffering the cyclical changes in blood pressure caused by intermittent left ventricular ejection. This elasticity keeps systolic pressure low and maintains diastolic pressure. Arterial stiffening raises systolic pressure, which leads to systolic hypertension—the most common form of hypertension in people over 50—and increases the workload of the left ventricle. Concomitantly, diastolic pressure falls, reducing myocardial perfusion and increasing pulsatility, which damages capillaries in high flow organs such as the brain and kidney.

Interest in arterial stiffness waned in the early 1900s with the advent of the sphygmomanometer, which offered a quantitative measure of blood pressure and risk prediction. But a seminal paper by Gerard London's group in 1999 reignited interest, reporting that carotid-femoral pulse wave velocity, a measure of aortic stiffness, was an independent predictor of cardiovascular events and mortality in a relatively small cohort of subjects with end stage renal failure.² Similar findings have since been described in a variety of



Buffer

patient groups and “unselected” observational cohorts. Carotid-femoral pulse wave velocity is most often measured by placing a pressure sensing probe on the carotid artery and then on the femoral artery to measure the time difference in the arrival of the pulse. A tape measure or calliper is used to measure the distance between the two sites. Newer devices use cuffs around one or both arteries and can be used after a minimal amount of training.

Two meta-analyses have examined the potential value of pulse wave velocity in cardiovascular risk prediction.^{3 4} The most recent, an individual participant meta-analysis, reported that it predicts future fatal and non-fatal coronary and stroke events with a hazard ratio (HR) of 1.35-1.54, with a stronger relation in younger people. Adjustment for established risk factors including age, systolic pressure, smoking, diabetes, and cholesterol caused only a modest attenuation in predictive value (HR 1.3). This is similar to the predictive value of systolic pressure (HR 1.3)⁵ and better than that of total cholesterol (1.2), although less than that of smoking (1.8) or diabetes (2.0). The addition of pulse wave velocity to standard risk prediction models improved their performance, particularly in patients at intermediate risk.

Pulse wave velocity a good cardiovascular biomarker

So pulse wave velocity seems to be a good cardiovascular biomarker, adding value to information provided by traditional risk factors, improving risk classification, and predicting all cause mortality, which may relate to its apparent association with measures of physical function and quality of life.⁶ It is tempting, therefore, to postu-

late that stiffening is causally related to cardiovascular disease, independently from other risk factors. However, pulse wave velocity correlates very strongly with age, blood pressure, and the product of heart rate and blood pressure over time.⁷⁻⁹ Therefore, it may simply provide a better measure of average blood pressure than a one-off reading in the clinic, similarly to HbA_{1c} providing a better measure of glycaemic control than a random plasma glucose measurement.

However, the evidence base for pulse wave velocity is much smaller than for other factors, encompassing only about 17 000 people, compared with 10 times that in the Emerging Risk Factors Collaboration's data on lipids⁵ and over one million people for blood pressure. Therefore, before pulse wave velocity is incorporated into existing risk calculators, validation of any new model is required in large cohorts of unselected people. Although the European Society of Hypertension advocates the use of a 10 m/s pulse wave velocity threshold for defining end organ damage, this approach is not supported by any data.¹⁰ Given the strong relation between pulse wave velocity and age, some have called for age dependent reference values,¹¹ but this implies that the rise in velocity with age is normal—a view that looks increasingly untenable.¹²

Another challenge is the myriad techniques for assessing stiffness and various sites of measurement. Devices and indices are not necessarily interchangeable, and there are far fewer data supporting the use of pulse wave velocity measured in other arterial segments (for example, carotid-radial) or derived from single site measurements.

Still, the data on pulse wave velocity are promising. Any value as a biomarker is likely to be in younger people at low-moderate risk, where the number needed to treat could be improved by better stratification. This needs testing prospectively in large cohorts, ideally with randomisation to proved preventive interventions for those at risk. As no drugs for arterial stiffening are currently available we would propose either aggressive modification of traditional risk factors or simply lowering blood pressure—even if it is within the normal range. Such trials will be expensive and time consuming, but primary prevention with better targeting of existing resources is the way to go.

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