INTRODUCTION
Over many decades practitioners and academics working in general practice have built a strong reputation for their commitment to developing innovative approaches to improving the quality of patient care. The orientation of these initiatives has evolved over the years. Until the 1980s, providing high quality patient care was primarily reliant on the personal motivation of individual doctors to achieve explicit standards of practice. Guidelines were developed into practices, and team-based financial incentives were designed and implemented at scale. Over the past decade the focus has shifted again, this time to levers for improvement that operate at a larger organisational level or on the wider health system (Figure 1).

The irony is that such work risks producing exactly the opposite of improvement: resources can be wasted, energy and enthusiasm dissipated, the side-effects of interventions ignored, and in the end little demonstrable positive change may be seen. Jain

THE ADDED VALUE OF SCIENCE
The suggestion that science should play a more prominent role in improvement may not go down well with those of a more practical persuasion. Criticisms of the evidence-based medicine movement from within the general practice community suggest that some people find positivist-based science to be incompatible with an interpretivist epistemological view of the world. But placing a stronger emphasis on scientific principles, particularly the social sciences, does not ignore the reality that improving care for patients utilises many different forms of knowledge, including political pragmatism, intuition, personal experience, and ideology. This is why calls for ‘evidence-based management’ and ‘evidence-based policy-making’ so often fall on deaf ears and why it is important to see improvement as a social activity as well as a technical one.

Nevertheless, by bringing theory, systematic methods, and an ability to generalise to an endeavour, science can help to make improvement more predictable and less wasteful. The rationalism of science and the messiness of practice do not have to be incompatible. Improvement...
of limited resources. These questions helps to make better use of the scientific method to address
around three key empirical questions and what science can give practitioners the tools to
aimed to improve the identification of victims of domestic violence, and to increase the referral rate of
victims to community-based specialist services. They hypothesised that the problem was fundamentally an
educational one: practitioners did not have the relevant knowledge or skills to manage domestic violence.
They therefore based their intervention and implementation plans on learning theory and identified an
evidence-based training intervention from the literature. Committed to rigorous evaluation and led by local
clinical academics, they designed an experimental study that cluster-randomised 48 practices to receive
either the training intervention or to act as controls. They were able to demonstrate a threefold increase in
identification rates and a 22-fold increase in referral rates. The study was published in a reputable journal
and the model promoted proactively and widely among commissioning groups. As a consequence, within
2 years of publication, nearly 20 commissioning groups are now using an evidence-based approach to
promoting care for victims of domestic violence (personal communication, O Feder, 2014).

Box 1. Does it work? Improving care for victims of domestic violence

A group of primary, community, and social care practitioners working in east London wanted to address
the challenge of domestic violence in their community.1 They recognised that the problem is common, has
significant health and socioeconomic consequences, and is poorly recognised and inadequately managed
within general practice. Drawing on academic expertise within the team, they designed an initiative that
aimed to improve the identification of victims of domestic violence, and to increase the referral rate of
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Box 2. How does it work? Understanding compliance in people with diabetes

The treatment of type 2 diabetes mellitus provides an example of the need to understand mechanisms
of action if an improvement intervention is to be effective. Robust guidelines based on strong empirical
evidence have a significant impact on clinical behaviours. Considerable resource is expended on educating
practice nurses, GPs, and patients themselves to ensure that the guidance is followed. Nevertheless, a
significant minority of patients still have poorly-controlled blood sugar levels. Efforts to rectify this, using
financial incentives, benchmarking, and more intensive educational programmes have had some impact
but have not resolved the problem. So why do some patients have such poor blood glucose control? One
answer can be found in a study which explored the health beliefs of people with diabetes.12 Based
on in-depth interviews with 46 people, the researchers discovered that while some were highly focused
on preventing complications, and therefore worked hard to maintain glycaemic control, the behaviour of
others was determined primarily by how they ‘felt’. They rationalised their non-adherence to medical advice
by believing that if there were no symptoms then there could not be any problems. This research provided
new insights to improve the design and implementation of diabetes improvement efforts.

Box 3. How do we make it work better? Using comparative data to facilitate improvement

The work of the Clinical Effectiveness Group based at Queen Mary University, London13 provides a useful
element of this pragmatic question. The team uses its academic expertise to support about 150 practices in
socioeconomically deprived boroughs in east London to use clinical data more effectively to improve
patient care. Focusing on health inequalities and the management of long-term conditions, a team of GP
clinical leads, facilitators, analysts, and researchers work with front-line teams to co-design evidence-
based guidelines and to support their implementation through the development of software tools,
the analysis and benchmarking of data, and the use of practice-based facilitation services. Significant
improvements in the care of patients with atrial fibrillation, diabetes, and chronic obstructive airways
disease have been demonstrated. In addition, the group have used their academic credibility and local
contacts to persuade local specialists to change their prescribing practices thereby reducing the pressure
on community prescribing budgets. As a consequence of a close partnership between academics and
practitioners, and despite the challenging demographic profile, participating general practices in east
London can now demonstrate among the best guideline adherence in the country.14

This question can be illustrated with a study exploring why some people with diabetes have problems controlling their blood
sugar levels (Box 2).

Since most planned improvement efforts can have some impact, a more pragmatic question than ‘does it work?’ may be the third empirical question, ‘how do we make it work better?’. Here we move into the most applied end of the improvement science spectrum, where practitioners and researchers work in close partnership, utilising a growing range of participative approaches.57 The emphasis is on embedding academic expertise alongside the expertise of practitioners and through this negotiating a common understanding of the challenges of improvement rather than imposing views of the ‘best’ way of achieving change. An improvement project using benchmarking of performance data in general practice to facilitate improvement in clinical outcomes illustrates this question (Box 3).

REFLECTIONS ON THE NEXT STEPS

In this article we present science-based improvement as the next phase in general practice’s long-term commitment to improving the quality of care for patients and communities. Using practical examples, we show how practitioners who adopt a more scientific approach to improving care tend to demonstrate a number of characteristics; they clearly define their objectives and they utilise theories and conceptual frameworks to describe how they plan to achieve them; they use the published literature to guide decisions about their intervention, their methods of implementation, and the environment within which they are working; and finally they are committed to both formative and summative evaluation of their improvement work in order to create new knowledge to influence future improvement efforts.

Using the science of improvement to guide everyday practice will increase the chances of improvement activities benefiting patients and reduce the risk of wasted time, effort, and money on the part of practitioners and the wider health system. However, a number of significant challenges need to be overcome before Evidence-Informed Improvement becomes the norm.

First, there is a need to build a stronger evidence base for improvement activities in community settings. Much of the evidence used to guide decisions

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Science can give practitioners the tools to plan, implement, evaluate, and embed new approaches more effectively into practice. Building improvement initiatives around three key empirical questions and applying the scientific method to address these questions helps to make better use of limited resources.

The first question, ‘does it work?’, is an important one to avoid wasting time doing something that has no impact. An improvement study examining the management of domestic violence in primary care provides an example of how this question might be addressed (Box 1).

The second question, ‘how does it work?’, addresses the critique that complex social interventions rarely work or don’t work. The most common answer to whether an intervention is effective is ‘it depends’: on the way the initiative is implemented, the skills of the people involved, the resources available, and many other factors. Understanding the mechanisms underpinning how an intervention works, and the facilitators and barriers to change, enables it to be more effectively replicated in other organisations or at other times.7 This question can be illustrated with a study exploring why some people with diabetes have problems controlling their blood sugar levels (Box 2).

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...the choice and implementation of improvement practices on the ground are not often based on best evidence.”

about the organisation and delivery of health services is derived from research undertaken in the hospital sector. General practice is very different from the practice of specialist medicine in terms of values, purpose, structures, and methods. The degree of practitioner autonomy, the resources available to support systematic improvement, the holistic and multimorbid nature of clinical practice, the management of uncertainty, and many other factors are likely to impact on the effectiveness of improvement interventions, and on their associated costs and the risks. Only by investing in more health services research in general practice settings will the effectiveness of improvement work be understood and optimised.

Second, the need for a closer relationship between practitioners and health service researchers is not best served by the current reward systems in the higher education sector. Researchers are more likely to be valued by their institutions for the scientific quality of their publications, their ability to win research grants, and for supervising doctoral students, than for the impact that their work might have on patient care. While this challenge is slowly being addressed by policymakers and by funding bodies, there is still a long way to go before the potential contribution of the academic community to service-based improvement is fully realised.

Third, people who work in primary care will need to be well trained in the science of improvement. Practitioners will increasingly find that expertise in the clinical sciences, the clinical method, and the patient–doctor relationship is no longer enough if they want to deliver the highest quality of care for their patients. In the future, they will need to have a working understanding of the published evidence relating to how health services are organised and delivered, an ability to apply this evidence in practice, to use theory and conceptual models to guide change, and to commit to rigorously evaluating the impact of their work. They will also want to know how to work with the public, health service managers, and academic colleagues to deliver improved care. This is a significant commitment but there is growing evidence that those organisations which invest in building the capacity and the capability of their workforce for systematic improvement achieve better results than those which fail to do so.10

By engaging with the science of improvement, general practice has an opportunity to further build its reputation as a leader in the field of quality improvement, and to more effectively influence the ways in which the health service is structured and delivers patient care.

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... the concept of ‘Evidence-Informed Improvement’ is likely to benefit how health services are organised and delivered in the same way as the evolving evidence-based medicine movement has influenced clinical practice in the past two decades.”

REFERENCES

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