



Improvement Science



Improvement science is a relatively new academic field that aims to identify the best methods for improving the quality and safety of healthcare. It incorporates evidence from many academic disciplines and offers a systematic and evidence-based approach to quality improvement. It is perhaps not surprising that in such a new science, the [definition](#) of 'Improvement Science' is evolving. Deming, one of the founding fathers of quality improvement in engineering and manufacturing, defines it in terms of a set of improvement methodologies. Others define it as the evaluation of quality improvement tools and methods. Marshall who feels the first definition is too narrow has proposed the term evidence informed improvement.

The most challenging stages of effective Quality Improvement are the final 2 in the RCGP QI wheel; implement and embed and sustain and spread. Improvement academics can help to determine what can make these steps more effective. There is a need to ensure that health services research has an impact on quality improvement. An evidence-informed approach to service improvement needs better working relationships between academia and health services.

How to

An aim of improvement science is to determine which improvement methods work and to learn from implementing the improvement. It needs to explore each of the three elements: the intervention, the implementation and the context. The concept of evidence-informed quality improvement will influence the development of services. By introducing scientific principles to quality improvement then methods or tools that are not effective will not be used or will they be used in a manner that will be effective. All involved in quality improvement must be prepared to look at what they are doing. Marshall et al¹ have suggested three questions when developing improvement initiatives:

1. Does it work?
This is important as it prevents wasting time on something that does not work.
2. How does it work?
By looking at the barriers and enablers to the intervention can aid it being replicated elsewhere.
3. How do we make it work better?
This can involve practitioners and researchers working together to negotiate the best way forward rather than imposing a solution.

¹ Marshall M, Baker M, Rafi I, Howe A. What can science contribute to quality improvement in general practice? *BJGP* 2014 **64** no. 622 254-256

People with academic expertise need to work along with practitioners conducting improvement. Some of the academic institutions who previously focused on clinical research have begun to see the importance of this field and can provide researchers to work along with primary care quality improvers.

Marshall² has described three ways of connecting improvement science to service improvement. One way is to have a researcher-in-practice, working on a well-designed service improvement initiative, which would offer the potential for scientific rigour. Another termed “Science-based Service Improvement” is where the research team is involved in every step of the QI wheel that is diagnosis, plan and test, implement and embed and sustain and spread. A further approach is to use a “Rapid Response Evaluation Team” where an academic institution can send in a team at short notice who would then look at existing data or easily collected data. They would look mainly at how the project could be more effective rather than if the intervention worked.

For all involved in quality improvement in primary care we need to engage with Improvement Science so we keep abreast of developments in effective delivery of quality improvement. It forms an important component of our QI Wheel.

² Marshall M. Bridging the ivory towers and the swampy lowlands; increasing the impact of health services research on quality improvement. *International Journal for Quality in Health Care* 2014; 26 (1): 1-5.