

# Point-of-Care Testing: Making Innovation Work for Patient-Centered Care

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Chris Price and Andrew St John have followed their book *Point-of-Care Testing for Managers and Policy-makers* with another look at the subject from strategic vision to change management and implementation in *Point-of-Care Testing: Making Innovation Work for Patient-Centered Care*.

In their latest book the authors give their assessment of the current pressures in healthcare. The core of Price and St John's argument is that laboratory medicine is not just one silo within a forest of silos that constitute healthcare and the practice of medicine, but rather, the laboratory professional is an integral part of a team caring for the individual patient.

Furthermore, the core of good healthcare is centered on the patient supported by healthcare professionals. Fragmentation in communication by distance, culture or time – whether it be in the examination and diagnosis (including tests) or in the treatment phase – puts at risk the quality of the relationship between patient and physician/carer.

Point-of-care testing can overcome the potentially disruptive effect of a laboratory-based diagnostic service on the patient-physician/carer relationship.

Healthcare is often seen, certainly by patients as well as practitioners, as being a very science- and technology-based service to society.

Indeed, the Institute of Medicine in its review of healthcare delivery in the United States cited the complexity of science and technology in medicine, as well as constraints in exploiting information technology, as major contributing factors to the poor quality of care.

Furthermore, whilst the history of healthcare is one of incredible discovery and achievement, it is also regarded as a service that is often slow to change.

However, healthcare is now under considerable pressure to consider change as, on the one hand, spending on healthcare continues to rise, whilst there remain inequalities in provision across the world.

Indeed, it has been suggested that the burgeoning technology is one of the reasons for the continuing rise in healthcare costs. One implicit trend in the delivery of healthcare that does contribute to the high cost is the focus of care having moved toward the hospital setting over the past few decades.

The reversal of this trend is a key element in the strategic plans for most developed health economies, with an emphasis on (i) health promotion, (ii) reducing unnecessary referrals to hospital, (iii) reducing length of stay in hospital, (iv) improving the quality of care following discharge to reduce the number of readmissions, and (v) managing long-term conditions in primary care.

There is an additional strategic objective, which is perhaps less clearly articulated, to empower patients to manage their healthcare.

The authors have looked at point-of-care testing (POCT) from the perspective of innovation in healthcare, stressing the importance of an integrated approach to care.

This has highlighted a number of challenges including:

- (i) understanding the process and actions within a care pathway
- (ii) where the use of diagnostic tests (and hence POCT) fit into the care pathway
- (iii) the need to appreciate a test as part of a “test-and-act” intervention, and
- (iv) the changes required in the process when implementing POCT in order to deliver improved outcomes.

It is these changes that are central to the innovation. The authors have described the core of the physician-patient interaction as a cycle of “assess-decide-act”, with the care pathway being a series of iterations of this cycle. Examples of care pathways from the Map of Medicine initiative have been included, where POCT

can be explored at screening, diagnosis and treatment stages in the pathway.

In the third chapter the authors link innovation in diagnostics with the tenets of evidence-based laboratory medicine, namely (i) asking the right question (i.e., understanding the problem), (ii) acquiring the evidence, (iii) appraising the evidence (e.g., for relevance), (iv) applying the evidence, and (v) auditing the process (i.e., performance management).

Additional tools that can also be used when investigating the potential use of POCT are based on modelling – both process and economic. These tools ask important questions about how care is currently delivered, how care will change, where investment will be required and disinvestment achieved, as well as identify the potential outcomes – clinical, operational and economic.

This information can then be used to design studies to generate the research evidence, to appraise the evidence already generated, to assist in the development of the business case and the implementation plan, as well as to performance manage the adoption process.

This approach offers a framework to address the key challenges when introducing POCT, particularly in relation to the thorny issues of process change and investment/disinvestment decisions.

In the fourth chapter the authors advocate a system approach to consider the potential of POCT, involving the use of Lean Thinking, a tool commonly used in reconfiguring healthcare provision.

This approach encourages thinking outside of the conventional healthcare silos and takes into account operational and sociotechnical challenges. The latter is important as POCT can involve a wider spectrum of users, with varying levels of technical competence, including patients themselves.

It also aligns the issue of communication between physician/carer and patient – facilitating integration of the “assess-decide-act” cycle. This introduces additional

innovative technologies, in the sphere of communication, and illustrates the convergence of technologies in the further evolution of healthcare.

It puts the spotlight on the various facets of good communication in providing good healthcare, all built around the development of the Electronic Medical Record.

The integration of informatics into POCT brings with it the controversial observation that as knowledge and experience in clinical practice evolve, rules can be developed and practice made more systematic.

Clinical practice moves from being intuitive, through empirical to precise – the latter seen in the use of clinical decision rules or clinical decision support systems. There are many examples where decisions are already rule-based, and where practice is guided by rules, e.g., in the management of warfarin therapy, and the use of insulin treatment algorithms.

This approach to healthcare is then enhanced with the development of telehealthcare solutions, making care more accessible to both patient and physician/carer.

In the final chapter the authors ask a number of generic questions about the role that diagnostic testing can play in the care pathway, following this with more specific questions about how more rapid delivery of results might impact on the different facets of healthcare, e.g., the process of care, the physician's and patient's attitudes, the benefits to be achieved, where the benefits will be found, etc.

These challenges are then set out for all the stakeholder groups, extending to the provider organization, the commissioner/insurer perspectives and to policymaker attitudes.

There are then practical considerations around organizing a POCT service and the evidence that should be available when considering this approach to testing and care delivery.

These issues are then addressed in a number of clinical scenarios using a common approach: (i) the clinical question – the unmet clinical need, (ii) the patient population and setting, (iii) the expected benefits, (iv) the evidence, (v) the changes in the care pathway and (vi) the challenges in practice.

The scenarios include self-monitoring of blood glucose, self-monitoring and management of anticoagulation therapy, rapid testing for infectious diseases, managing long-term conditions and the use of HbA1c in the management of diabetes, use of D-dimer in primary care in cases of suspected deep vein thrombosis, aiding triage in the Emergency Room with the use of cardiac markers in patients presenting with chest pain, and finally the controversial question of tight glycemic control in the Intensive Care Unit.