Are new technologies translatable to point-of-care testing?

Bury, Danielle Elizabeth, Martin-Hirsch, Pierre L, Martin, Francis L and Dawson, Timothy P

Available at http://clok.uclan.ac.uk/21346/


It is advisable to refer to the publisher’s version if you intend to cite from the work. http://dx.doi.org/10.1016/S0140-6736(17)33301-9

For more information about UCLan’s research in this area go to http://www.uclan.ac.uk/researchgroups/ and search for <name of research Group>.

For information about Research generally at UCLan please go to http://www.uclan.ac.uk/research/

All outputs in CLoK are protected by Intellectual Property Rights law, including Copyright law. Copyright, IPR and Moral Rights for the works on this site are retained by the individual authors and/or other copyright owners. Terms and conditions for use of this material are defined in the http://clok.uclan.ac.uk/policies/
Title: Are new technologies translatable to point-of-care testing? More importantly, are they wanted?

Article Type: Correspondence

Keywords:

Corresponding Author: Professor Tim P Dawson, BSc(hons) MB BCh PhD FRCPath

Corresponding Author's Institution: Lancashire Teaching Hospitals NHS Trust

First Author: Danielle Bury, MbCHb

Order of Authors: Danielle Bury, MbCHb; Pierre L Martin-Hirsch, MD; Francis L Martin, PhD; Tim P Dawson, FRCPath

Manuscript Region of Origin: UNITED KINGDOM
Patient feels unwell and goes to GP

Following the consultation, the patient is referred to the hospital under a two week referral

The patient meets with a consultant, is examined, has blood tests ordered to look for tumour markers

Spectroscopy of serum for diagnosis?

Spectroscopy to monitor blood tumour levels for treatment effect or recurrence? Spectroscopy to delineate margins intraoperatively?

Spectroscopy for tumour diagnosis during procedure or during pathological assessment?

A CT scan is ordered to show any tumour or metastases; in conjunction, a biopsy is also performed

Treatment begins and the patient is monitored with scans and blood tests as appropriate

The patient is discussed at the relevant MDT meeting and a diagnosis and treatment plan is then discussed with the patient
LETTER OF GENERAL INTEREST

Are new technologies translatable to point-of-care testing? More importantly, are they wanted?

Danielle Bury MBChB¹, P L Martin-Hirsch (MD)², F L Martin (PhD)¹, Timothy P Dawson BSc(Hons), MB BCh PhD(Wales) FRCPath³

¹ University of Central Lancashire, Fylde Road, Preston, PR1 2HE
² Department of Gynaecology, Royal Preston Hospital, Lancashire Teaching Hospitals NHS Trust, Sharoe Green Lane, Preston, PR2 9HT.
³ Corresponding Author: Professor Timothy Dawson
Address: Department of Neuropathology
Royal Preston Hospital
Lancashire Teaching Hospitals NHS Trust
Sharoe Green Lane
Preston
PR2 9HT
England
Telephone: 01772522140
Fax: 01772522181
Email: Timothy.dawson@lthtr.nhs.uk

Word Count: 388

The authors declare no competing interests and no funding was involved. All authors have contributed equally. No ethics were required for this letter of general interest.
The point-of-care testing (PoCT) market is rapidly expanding and by 2021 it is predicted it will be worth 36.96 billion dollars (1). It has many facets, one of which is tumour/cancer markers. In order to develop a new test for clinical use, a biomarker needs to be identified and a quick and simple detection method developed. This then goes through many steps before clinical use including the all-important step – can it detect cancer earlier than current methods?

As variants of emerging technologies such as vibrational spectroscopy or nuclear magnetic resonance (NMR) spectroscopy show promise, there are hopes these approaches could be used in the clinical forum. However, the point at which these might fit into the diagnostic pathway remains unclear (Figure 1). For example, vibrational spectroscopy has had many proof-of-concept studies, looking at a variety of uses, including biofluids (2). The uptake of this technology has been slow in the clinical environment (3). It has not yet improved on current clinical methods, with cases misclassified and malignancy missed (4).

No clear usage has been found that is superior to the current clinical practice of intraoperative frozen sections and formal histopathological examination. It is clear that the scientists developing these technologies need direction. With the Government’s push to reduce the time to diagnosis of cancer patients, will PoCT be a useful adjunct or are the sensitivities and specificities sub-optimal? The current clinical pathway allows for a specialist-led personalised plan for patients (see Figure 1), focusing on the patient - PoCT puts diagnosis back in the GP’s surgery and places a lot of pressure on the GP to deal with hopes and expectations currently handled by a practiced secondary care team. Not only will their information be limited to a simple PoCT indicator, no radiology would be available nor is an appropriate oncology clinician available to give treatment information.

Therefore it is difficult to see how technology designed to circumvent the diagnostic process and provide instant answers fits into the current clinical pathway. Whilst point-of-care testing is crucial in some areas surrounding cancer diagnostics, careful thought is required to ensure that precious research funding is correctly distributed for the development of clinically-useful tools in the areas that need and require them. This will only be possible with open communication between scientists and clinicians; neither can make new technology work alone.
References


Figure Legend:

Figure 1; The current patient pathway for suspected malignancy with areas spectroscopy may be able to provide input.

Declaration of Interests:

The authors declare no conflicts of interest.