Are You Fed-up Waiting for Results?

Get Answers Faster with Point-of-Care Testing

The use of biochemical testing to support clinical decision making has grown extensively. However, in some hospitals certain analytes are still not routinely tested in-house. Patient samples are sent away to a referral laboratory for analysis or are stored and batch tested once or twice a week. This means that it can take several weeks before a result is available. Treatment decisions often have to be made without the benefit of the analyte information, or potentially more invasive and costly procedures must be performed to help determine the most appropriate course of action.

In these situations Point-of-Care (POC) testing can add significantly to the management of patients. By streamlining the diagnostic process it enables rapid results to help to ensure appropriate, more timely treatment decisions are made. In addition to the healthcare benefits, POC testing also offers patients the benefit of direct discussion with their clinician and the determination of an appropriate treatment plan. These factors can significantly reduce patient anxiety that delays from traditional decision making, streamline resource allocation, reduce adverse events associated with infectious diseases, and reduce costs of medical treatment.

Rapid Drug Monitoring

Serum trough levels for biologics are extremely useful in determining effective treatment, as these compounds are prone to either a primary loss of response or a loss of response over time.

Historically testing has been performed by ELISA methods which necessitate batch testing in order to be cost effective. Testing inevitably introduces a delay in obtaining the result which is compounded by the fact that few hospitals run the analysis themselves, most use a referral service which can add further delays of up to several weeks.

Consequently patients may have been administered multiple further drug doses before the delivery can be optimised into the therapeutic window. In a poster presentation by C. Renttsch at ECCO 2018, 77% of patients required dose adjustment based on the serum trough levels achieved after the first dose, with 51% requiring dose reduction and 26% requiring dose escalation. In the absence of timely trough level information these patients are likely to receive subsequent doses without the appropriate adjustment therefore compounding the situation.

Tests can be performed in the laboratory, but when performed by nurses in the clinic they still have a good correlation to the laboratory result (Figure1).

"The test can accurately be performed by a nurse which means that TDM now can be moved from a distant laboratory to the near patient facility like the infusion centre and ensure correct dosing in IBD and other patients on IFX treatment" Lindsjö et al.

The Quantum Blue TDM assays are simple to use and are using a small bench top device. They can be performed in the laboratory or infusion clinic to give quantitative results in an hour. Studies have shown that the results using the rapid method are comparable to the traditional laboratory ELISA test result1.

"Quantum Blue is a good alternative for the conventional ELISA method for the measurement of IFX serum concentrations at trough in IBD." Strik et al.

Faecal Calprotectin POC

Faecal calprotectin concentrations are widely acknowledged to correlate to the degree of mucosal inflammation in the gut. However, results are often not available at the point of decision making.

A recent study by Derwa et al.2 regarding the factors affecting clinical decision making in IBD found that: ‘almost 60% of patients that were referred for investigation had no evidence of mucosal inflammation’. The study went on to conclude that:

"Introduction of routine point-of-care faecal calprotectin testing could, potentially, improve the appropriateness of clinical decision-making, streamline resource allocation, reduce adverse events associated with infectious diseases and reduce costs of medical treatment." Derwa et al.

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"We observed that FC, measured both with fCAL ELISA and the rapid Quantum Blue, was able to discriminate between the different levels of endoscopic activity, as well as to detect the presence or absence of ulcer" Lobaton et al.

"We found that in a referral population of patients with IBD, positive fCAL was significantly associated with abnormal endoscopy, elevated serum CRP low serum Hg, and antiinfliximab albumin" Aye et al.

Rapid

The BÜHLMANN Quantum Blue® is a compact device that can be used in clinics or laboratories to give rapid quantitative results for serum drug levels. This enables rapid triage, helping to facilitate clinical decisions on hospital admission, such as deciding whether the IBD treatment should be intensified. Similarly, in the ambulatory setting, it is crucial when determining whether a patient should undergo endoscopy or not" Moniuszko et al.

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Standardised

For over 10 years BÜHLMANN has specialised in calprotectin testing. It has the broadest range of faecal calprotectin assays available, providing assay for large central laboratories, smaller spoke laboratories, IBD clinics and for patient self-testing at home. Because the assay is all manufactured together they are all standardised, giving consistent results and cut-off values in the various locations (Figure 3).

The Quantum Blue rapid test and an established ELISA method.

Calprotectin, µg/g faeces

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Product Code</th>
<th>Kit Size</th>
</tr>
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<tbody>
<tr>
<td>Faecal calprotectin standard range 30 - 300µg/g</td>
<td>LF-CAL25</td>
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<tr>
<td>Faecal calprotectin high range 150 - 1800µg/g</td>
<td>LF-CH25</td>
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<td>Faecal calprotectin extended range 30 - 1000µg/g</td>
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<td>LF-MRP25</td>
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<td>Ascorbic calprotectin 0.19 – 1µg/ml</td>
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<td>Infliximab serum trough levels 0.4 - 20µg/ml</td>
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<td>Adalimumab serum trough levels 1-3µg/ml</td>
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<tr>
<td>Faecal calprotectin extended range 30 - 1000µg/g</td>
<td>LF-TAD100</td>
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</tr>
</tbody>
</table>

Figure 3. Faecal calprotectin: comparative study of Quantum Blue test and an established ELISA method. By working alongside traditional laboratory methods, POC testing can enhance the service that is provided by developing new pathways of care, supporting timely diagnosis, monitoring and treatment of patients. The Quantum Blue rapid test can be used with a range of assays to give quantitative results in a time frame that can impact the clinical decision:

References:
2. A. Strik et al. Validation of the Quantum Blue Inflimab rapid test in clinical practice of patients with inflammatory bowel disease. ECCO 2018.

Find out more at: www.calprotectin.co.uk/poc
See how point of care testing can impact patient care in your hospital. Contact us to request an evaluation: Email digestive@alphalabs.co.uk