

Improving diagnostic process and speeding treatment pathways

Philips expands Minicare IVD portfolio for near-patient testing

Advances in in-vitro diagnostics (IVD) point-of-care (POC) technology have made it possible to bring the diagnostic power of the central laboratory to the patient, reducing waiting time and in turn improving outcomes [1]. A good starting point and significant pathological area for the use of IVD POC systems is cardiovascular disease. The World Health Organization predicts the number of deaths from cardiovascular disease to increase from 17 million to 23 million people per year by 2030 [2].

Innovations which accelerate diagnostic process have a key role to play in global efforts to reduce these numbers. For example, at Philips, we have enlisted the power of magnetic nanobeads to deliver a next generation of stable and rapid cardiac markers blood testing for suspected acute cardiac patients on the Minicare I-20 handheld immunoassay device, launched last year. With Minicare I-20, the emergency department (ED) can now run a cTnI test next to the patient, and obtain the result within 10 minutes.

The advantages of robust, accurate POC tests are particularly relevant to clinicians working in the ED and ambulance setting where having access to shortened assay turnaround time may improve outcomes. With near-patient testing, it is no longer necessary to send the blood sample to the hospital laboratory and wait up to 60 minutes for the results to come back.

Reduces crowding and patient waiting times

When patients present with symptoms of a heart attack, there is a critical need to make rapid yet precise decisions. However, only about 10% of patients can be accurately diagnosed as AMI based on an ECG [3]. Most patients presenting with suspected heart attack require blood tests, predominately the gold standard troponin biomarker. Serial testing of cTn is part of the recommended diagnostic protocol that aids in ruling in, or ruling out, Myocardial Infarction (MI). The availability of a sensitive and accurate point-of-care test for cardiac troponin could allow clinicians to reduce the standard serial testing of cTn at presentation and six hours

after to a safe zero-three hour rule out protocol,.

The use of point-of-care testing (POCT) in the ED and ambulance setting to reduce turnaround time for assay results has the potential to improve overall efficiency, by reducing crowding and the length of stay in acute care. Further, for the patient, it can reduce the stress of waiting for their results, and the time to diagnosis and initiation of therapy.

To make the most efficient use of hospital resources, near-patient testing protocols need to be integrated into the acute care workflow and the patient care pathway reorganized, with the full support of the clinical teams and their managers [4]. We are already seeing closer cooperation between clinical teams and the central laboratory, as they recognize the need to help reduce crowding in the ED by supporting the use of POC testing to speed up the delivery of certain blood test results.

BNP assays for rapid ruling out of acute heart failure

Critical cardiovascular disease also covers acute heart failure (AHF), the most common cause of hospitalization in patients aged over 65 years. A brain natriuretic peptide (BNP) test measures the amount of the BNP hormone in the blood. Acute heart failure is a serious condition that accounts for 5% of all emergency admissions in Europe and USA and patients presenting with AHF require immediate treatment [5]. International guidelines recommend the use of the BNP biomarker to rule-out acute heart failure (AHF) in patients presenting with acute dyspnea.



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The ED clinician needs to be able to distinguish AHF as quickly as possible. Minicare BNP is the second cardiac marker assay to be introduced on the Philips Minicare I-20 handheld analyser. It provides the ED clinician with access to a fast and accurate BNP marker test to help rule out acute heart failure patients more quickly. Like the first Philips Minicare cTnI assay, Minicare BNP provides clinicians with lab comparable results, and clinically significant information within 10 minutes. It is expected to be commercially available later this year.

The Minicare I-20 platform and both cardiac marker assays are simple and easy to use by non-laboratory POC staff. Its integrated calibration and fail-safe functionalities ensure the robustness and accuracy needed for confident, on-the-spot decision making for better outcomes.

POC test streamlines workflow

The use of POC tests, however, is not limited to the ED or hospital and there is increasing demand, for example, from clinicians to use POC testing systems for both acute and chronic conditions [6].

While the areas of medicine covered by near-patient testing are exponentially increasing, in each case the objective is the same:

- Speed up the availability of results allowing for on-the spot clinical deci-

sion, so that clinicians can act without delay

- Improve patient satisfaction and reduce waiting time
- Streamline workflow and achieve greater overall efficiency of resources.

Two more extensions to the Minicare family are expected to be available in the second half of 2017:

Minicare H-300* point-of-care thromboelastography system:

to aid in the diagnosis and monitoring of hemostasis abnormalities. In critical care situations, such as a heavy blood loss, trauma or before, during and after surgery, understanding a patient's hemostatic status is critical. Philips will offer a point-of-care hemostasis system that delivers real-time insights in the whole blood hemostasis status of the patient. This novel, small footprint, portable system delivers full results within 15 minutes, with the first results already visible within five. Unlike current hemostasis analysers which are complex to operate, this device is easy to use with minimal training. It is suitable for both the operating room and the ED.

Minicare C-300 clinical chemistry system with an extensive range of chemistry parameters:

Clinical chemistry testing can now be done near-patient with this small benchtop, point-of-care clinical chemistry system for rapid and efficient near-patient testing and diagnosis. Now there's no need to send blood samples to the central lab and wait for them to return. Shorter waiting time for blood test results is likely to improve workflow and the overall patient experience. Within 15 minutes, the Minicare C-300 will deliver results for an extensive range of clinical chemistry parameters, with a good correlation to the central laboratory instruments. It is easy to



operate with limited sample preparatory work required.

Improving patient care

In-vitro diagnostics tests at the point of care provide clinically significant information faster than is possible from the central laboratory. Near-patient testing offers the potential to improve levels of patient' satisfaction with their treatment, while making more efficient use of health-care resources [1]. As a global leader in health technology, Philips is expanding its Minicare family of IVD near-patient testing systems for a range of clinical care settings – from critical care in (pre) hospital acute care to primary care. The Philips message is to develop IVD POC solutions 'ready where you are', enabling near-patient testing to play a key part in improving patient's experience.

References

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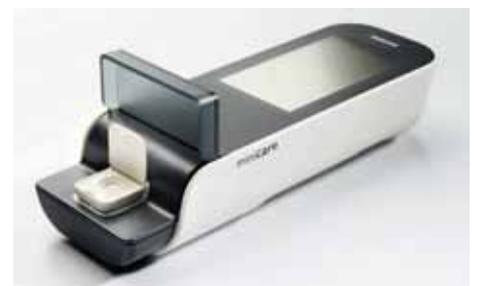
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Minicare H-300



Minicare C-300



Minicare I-20