PHILIPS

Minicare

Acute Care

The next generation handheld Point-of-Care platform in the Emergency Department

Philips Educational Workshop: Monday June 22nd, 17:00 - 18:00, Palais des Congrès de Paris, room 251

The next generation handheld Point-of-Care platform in the Emergency Department

Overcrowding of Emergency Departments is becoming of increasing concern and is associated with adverse healthcare consequences[1,2], including increased mortality, increased length of stay, diversion to other facilities, and patient dissatisfaction. Access to diagnostic services plays a vital role in emergency medicine clinical decision making, and so, time-to-result of blood tests may impact on outcomes. Analysis of patient flows and process simulation has demonstrated that rapid delivery of test results can improve in time-to-decision and intervention, as well as the overall length of stay [1,2]. This development is even further accelerated by the various healthcare reform acts that ask for decentralized care as one of the ways to reduce costs.

Philips is developing the IVD POC Minicare I-20 system* for emergency diagnosis to address these unmet needs.

During this educational workshop the challenges and needs in the Emergency setting will be highlighted and we will focus on how Point-Of-Care Testing can provide solutions.

Preliminary Results from a usability assessment of the Philips prototype Minicare I-20 POC system will be presented. With analysis of time from wake-up to usability, positive patient identification, reagent application, sampling techniques, workflow, sample application, analytical turnaround time and result connectivity.

Preliminary data are presented on the analytical performance of the prototype Minicare cTnI test, currently under development.

Moderators:
Professor Paul Collinson, St. George's Healthcare NHS Trust
Jos Rijntjes PhD, Philips Handheld Diagnostics

1. Am Heart J 2013 Oct;166(4):614–621
2. Am J Emerg Med. 2012 Oct;30(8):1639–49
*** In development. Not currently available for sale.**

Philips Educational Workshop
at EuroMedLab JIB 2015

Our speakers:
Professor Christopher P Price
Professor Paul Collinson
Professor Dr. Volkher Scharnhorst

Benefits of Point-of-Care testing in the Emergency Department

Professor Christopher P. Price

Visiting Professor in Clinical Biochemistry,
Nuffield Department of Primary Care Health Sciences, University of Oxford

Christopher Price is Visiting Professor in Clinical Biochemistry, in the Department of Primary Care Health Sciences at the University of Oxford, and a member of the Oxford Diagnostic Evidence Cooperative. He was previously Professor of Clinical Biochemistry at Queen Mary, University of London, and Director of Pathology at Barts and the London NHS Trust. His main interests are in point-of-care testing as a disruptive innovation, improving health outcomes, and the concept of value applied to technology utilisation in healthcare.

Abstract

Overcrowding of Emergency Departments is becoming of increasing concern and is associated with adverse healthcare consequences, including increased mortality, increased length of stay, diversion to other facilities, and patient dissatisfaction. Access to diagnostic services plays a vital role in emergency medicine clinical decision making and so time-to-result may impact on outcomes. Analysis of patient flows and process simulation has demonstrated that rapid delivery of results can significantly reduce the time-to-result, with consequent improvement in time-to-decision and intervention, as well as the overall length of stay.

Point-of-care testing enables tests to be performed, and clinical decisions made, at the time when the patient is first admitted to the Emergency Department. In patients with serious and life threatening emergency needs this enables immediate treatment, e.g. diabetic crises, heart failure, and drug poisoning cases, with improved clinical outcomes. In other acute situations a condition may be ruled out, and an alternative diagnosis sought, e.g. suspected acute coronary syndrome, and ectopic pregnancy. In these situations rapid access to results can reduce the time to discharge and improve patient flows in the Emergency Department. There is now an increasing use of point-of-care testing as part of the initial triage at the doors of the Emergency Department. In all of these scenarios the patient experience is improved with a reduction in anxiety and inconvenience for the patient.

The improvement in time-to-result with resultant length of stay and time to discharge will have a major influence on both the efficiency and cost effectiveness of the Emergency Department enabling the emergency medicine physicians to focus their attention on those patients with emergency care needs.

Preliminary usability data of the next generation cTnI handheld Point-of Care test: experience from Lab2Go study

Professor Paul Collinson

Consultant Chemical Pathologist and Professor of Cardiovascular Biomarkers, St. George's Healthcare NHS Trust

Paul Collinson MA MB BChir FRCPath MD FACB FRCP edin.EurClinChem. Consultant Chemical Pathologist at St George's Hospital and Professor of Cardiovascular Biomarkers at St George's Medical School. He runs the Vascular Risk management service for the Cardiac Department. He has published over 220 papers and review articles, over 240 abstracts and 15 book chapters. Likes SCUBA diving and photographing sharks. Especially the ones with big teeth.

Abstract

Introduction

A prospective multicentre randomised controlled trial has demonstrated that the provision of cardiac troponin (cTnI) testing by point-of-care testing (POCT) can result in significant reduction in the length of emergency department (ED) stay. The challenge is to deliver laboratory quality high sensitivity troponin measurements using POCT instrumentation which is appropriately compact and portable enough in the ED.

Methods

We have performed a preliminary usability assessment of a prototype novel POCT device for the measurement of cTnI in blood, the Minicare, developed by Philips. The assessment covered the following features; time from wake-up to usability, positive patient identification, reagent application, sampling techniques, workflow, sample application, analytical turnaround time and result connectivity.

Results

Time to device availability from wake-up was <3 minutes. Positive patient identification was available by the use of an inbuilt barcode scanner which would accept wristband and three-dimensional barcodes. Barcode scanner response time was <2 seconds in the preliminary studies. The system used totally enclosed reagent cartridges incorporating a sample application port suitable for a wide range of sample application devices. This included inbuilt lot checking and reagent validation. Sampling techniques included finger prick application, capillary application and aspiration using a syringe from a conventional venesection container. Average analytical turnaround time, from sample taking to availability of test result, was < 10 minutes but was influenced by sample type (range 7-12 minutes). Full end to end result connectivity was demonstrated for the instrument from primary patient identification and polling of a hospital information system master index to verify patient demographics to result transfer via third-party middleware to the laboratory information system and electronic patient record.

Subjective user experience found the instrument easy-to-use with straightforward visual step-by-step instructions via an interactive touchscreen. Sample application was of the same degree of complexity as the use of a blood glucose meter. From a health and safety perspective the device isolated biological fluids from the instrument and was straightforward to clean from an infection control perspective.

Conclusion

Preliminary evaluation of the Minicare prototype shows the device is suitable for the POCT testing environment. Further multicentre trials are required to confirm these preliminary findings.

Analytical performance of the cTnI handheld Point-of Care test

Professor Dr. Volkher Scharnhorst

Clinical Chemist, Catharina Hospital Eindhoven

Volkher Scharnhorst received his admission to the registry of clinical chemists in 2004. In 2007, he was appointed head of the clinical laboratory and member of the Medical Ethics Board (METC) of Catharina Hospital. His research focuses on use of biomarkers in diagnosing and monitoring disease with emphasis on improvement of analytical techniques and computer-aided interpretation of test results. In 2012, the Technical University Eindhoven installed him as lecturer and in 2014 as professor in Clinical Chemistry in the Chemical Biology section of the faculty of Biomedical Technology.

Abstract

For point-of-care (POC) diagnostics to add value in the clinical setting analytical performance and integration in the clinical workflow are important. In this session we will present data on how the Philips Minicare system under development performs in these areas.

Applications for this POC system are foreseen in the emergency department where time is of the essence. The first test under development on the Minicare system is a cardiac Troponin I (cTnI) assay with a turn-around time of less than 10 minutes. A prototype assay has been used in a number of studies.

The conditions under which POC tests are performed are typically less controlled compared to the central lab setting and there is usually little opportunity to perform any sample preparation. So it is important that the system can work with whole blood samples. A sample type study was performed on the system where results between plasma, venous and capillary whole blood samples were compared.

The analytical performance should not be compromised when performing a test at the point-of-care compared to when a sample is measured in the central lab. Ideally, imprecision of POC systems should be as good as imprecision of state of the art tests performed in the laboratory. An imprecision study was performed to evaluate the coefficient of variation as a function of cTnI concentration for the protoype Minicare cTnI test.

Finally, after the test is completed quantitative results are presented on the screen of the instrument to enable rapid clinical decision making. The Minicare system offers connectivity to existing middleware systems already available in the hospital. Once incorporated in the hospital IT system the information is accessible for future reference, quality control and processing.

Conclusions

Several studies have been performed to assess the potential of the Minicare system under development to contribute to streamlining and improving laboratory services. The studies demonstrate the potential of the Philips Minicare cTnI assay to realize workflow improvements in the emergency department for patients with chest pain.

How to reach us
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