PHILIPS

Minicare

Acute Care

Minicare Acute:

the next generation handheld Point-of-Care platform applied to the Emergency Department

Philips lunch symposium: Tuesday October 13th, 12:55 – 13:55, Centro Congressi Lingotto, room Sala Londra

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

The American Heart Journal published a review article highlighting the potential benefit of using point-of-care testing (POCT) for natriuretic peptides in the Emergency Departments (ED)[1]. This article followed on from a first publication in the American Journal of Emergency Medicine from the same authors, reviewing the status of point-of-care testing for cardiac troponin in the ED[2]. In summary, the authors acknowledged that the use of POCT for cardiac markers, i.e. natriuretic peptides and cardiac troponin, may facilitate and accelerate the throughput and triage of at-risk patients in the ED. The symposium will provide you with the latest information on the cardiac markers testing in acute settings, and on the new Philips Minicare Acute* POCT solution. Furthermore, the integration of POC testing in a clinic will be discussed, identifying key factors for optimal operations.

“The short turnaround time of the Philips Minicare Acute point-of-care system will allow ED physicians to get cardiac marker test results within the time frame of a patient’s consultation in the ED. Having a sensitive and robust point-of- care system in the ED should improve patient flow and reduce time to discharge, contributing to reduce the overcrowding in emergency departments.”

Veronique Semjonow, MD, Senior Director Medical Affairs, 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 EuSeM 2015

Speakers:
Professor Pierre Hausfater
Professor Paul Collinson
Jeroen Nieuwenhuis

Moderator:
Dr Veronique Semjonow

Need for next generation handheld Point-of-Care tests in the Emergency Department. What challenges can be addressed by IVD Point-of-Care testing?

Professor Pierre Hausfater
Head Emergency Department, Groupe Hospitalier Pitié-Salpêtrière, Paris, France

Formely an internal medicine specialist, Pr Pierre HAUSFATER has been trained in emergency medicine and joined in 1999 the ED of Pitié-Salpêtrière (the biggest of APHP hospital network). His research fields have focused on the usefulness and implementation of biomarkers in the ED. His main concern is to study the place of diagnostic and prognostic biomarkers, in order to optimize the patient's workflow and turnaround time in the ED while ensuring the quality and security of care.

Abstract

The function of the emergency departments (ED) is to take care of a huge variety of patient's complaints in a limited time and among them to diagnose specific diseases, risk-stratify the patients, and for most of them to authorize to go back home. This process can be summarizing as rule in and rule out diseases. Moreover, most of countries have to deal with the overcrowding of their EDs and therefore each of the steps involved in the diagnosis process aims to be shorten. Along with physical examination, the biological exams are the main cornerstone helping the emergency physician to go ahead. As the turnaround time (TAT) of usual biological parameters requisite in the ED takes around 60 minutes for the central laboratory, solutions for point of care testing with significant reduced TAT have been developed. Patients attending the ED with chest pain, dyspnea or SIRS criteria are particularly time, physician and brain consuming in order to rule in or rule out several urgent diagnoses as acute coronary syndrome, acute cardiac failure, pulmonary embolism or sepsis. Therefore there is to date an obvious place for very short TAT POCT for a panel of already validated biomarkers in the ED. In this workshop we will discuss the added value of POCT, the place and timing to be performed in the workflow of ED's patients. More precisely, because POCT will not solve itself (by reducing TAT) the length of stay in ED, it is a major concern to associate POCT with a complete reengineering of procedures within the ED setting, to take full advantage of reduced therapeutic TAT. Through the examples of troponin, natriuretic peptide or sepsis biomarkers, we will explore the potential of POCT to improve the flow of patients in ED, to shorten discharge times, and to reduce costs.

System usability of the minicare cardiac troponin I point of care device.

Professor Paul Collinson

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

Dr P. O Collinson MA MB BChir FRCPath MD FACB FRCP edin FESC. Consultant Chemical Pathologist at St George's Hospital and Professor of Cardiovascular Biomarkers at St George's Medical School. He studied at St Catharine's College Cambridge and subsequently at St Thomas Hospital and the Royal Free Hospital. He was Consultant at the Mayday Hospital, Croydon then transferred to St George's. He runs the Point of Care service for the Laboratory and the Vascular Risk management service for the Cardiac Department. Published over 220 papers and review articles, 240 abstracts and 15 book chapters. Likes SCUBA diving and photographing sharks. Especially the ones with big teeth.

Abstract

Introduction.

The challenge is to deliver laboratory quality sensitive cardiac Troponin measurements using POCT instrumentation which is appropriately compact, portable and simple enough for use in the challenging ED environment to improve workflow.

Methods.

We have performed a preliminary usability assessment covering 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. The device was used by 23 healthcare personnel in the ED in 5 sites in Europe (UK, Austria, France, Germany, Netherlands). Staff used the instrument following training performing all measurements in the ED environment using patient samples. The users were subsequently surveyed using a questionnaire.

Results.

Time to device availability from wake-up was less <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 fingerprint application, capillary application and aspiration using a syringe from a conventional venesection container. Analytical turnaround time was influenced by sample type with a range of 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.
Overall user assessment of the instrument was 95% positive.

Conclusion.

Preliminary evaluation of the minicare instrument shows that the device is suitable for the POCT use in the ED. Further multicentre trials are required to confirm these preliminary findings.

Performance results of the Minicare Acute

Jeroen Nieuwenhuis

PhD MBA, Senior Director Research & Development, Philips Handheld Diagnostics, Eindhoven, The Netherlands

Jeroen joined the Handheld Diagnostics venture in 2009 where he is responsible for research and development, technology roadmap and intellectual property. Prior to joining the Handheld Diagnostics venture he worked from 2005 to 2008 as project leader on the early stages of the Magnotech technology at Philips Research. Jeroen gained broad R&D experience working at the Bosch Research and Technology Center in North America (Pittsburgh, PA), Vienna University of Technology (Austria), and EG&G IC Sensors (Milpitas, CA). He has an MSc in electrical engineering from the Delft University of Technology, a PhD on lab-on-a-chip devices from the Vienna University of Technology and an MBA from the RSM Erasmus University.

Abstract

Point-of-care (POC) diagnostics can add value in the clinical setting by speeding-up clinical decision making to identify at-risk patients more quickly leading to more efficient workflows. In this session we will present the Philips Minicare Acute system under development and discuss how it has been designed to contribute to realizing these efficiency improvements. 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 Acute system is a cardiac Troponin I (cTnI) assay with a turnaround time of less than 10 minutes. This assay has been evaluated 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 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 Acute 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.

Conclusion

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

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