

## CASE REPORT - CLINICAL UTILITY OF POINT-OF-CARE TESTING IN LABORATORY INFORMATION SYSTEM (LIS) EMERGENCY CONDITIONS

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**Introduction and Objectives:** Laboratory information systems (LIS) are integral components of clinical laboratories and they facilitate management of the laboratory's workflow to the Electronic Medical Records (EMR) system. Their objective is to transport, in a seamless fashion, laboratory testing results to healthcare providers for proper patient management. LIS and EMR are computer-based software and they can be subject to many of the malfunctions that modern software face, such as cyberattacks, virus-induced malwares and downtimes. The objective of this case report is to discuss the effectiveness of point-of-care testing in situations where the laboratory and hospital software are dysfunctional or non-operative.

**Case report:** The incidence took place in a tertiary hospital in USA. The hospital's IT department released a note that the laboratory and hospital computers will undergo upgrades starting at midnight of a specific date. This resulted in a downtime mode for both systems, which operated on an intermittent basis for the next 12 hours. The downtime continued throughout the night and into next day until the recall was lifted at 11:00 pm the next day. The total downtime was 36 hours before the service was completely restored. For a period of time during the downtime, the main laboratory was unable to provide in a timely manner laboratory results for the hospital. Therefore, the Laboratory of the Respiratory Care Services Department was contacted to assist with some of the more immediate needs of the organization and help prevent any patient delays in care. The Respiratory Laboratory Point-of-care (POC) systems (pHOx Ultra and CCX blood gas analyzers, Nova Biomedical, Waltham, MA) begin assisting in the processing needs of the organization by providing basic electrolyte and metabolite testing (pH, pCO<sub>2</sub>, pO<sub>2</sub>, Na<sup>+</sup>, K<sup>+</sup>, Ca<sup>++</sup>, Cl<sup>-</sup>, iMg<sup>++</sup>, glucose, lactate, BUN, creatinine) to critical departments of the hospital, such as the Emergency Department (ED) and the Operating Room (OR). All laboratory results were reported via the paper readout, except in the Cardiac OR that read on the 42" screens located in each OR. Total 287 test reports (44 in the ED, 26 in the ORs and 23 in Hospital Floors) were provided by the Respiratory Laboratory POC system during the software downtime.

**Discussion:** POC testing is a valuable tool in the hospital and with its rapid turnaround time can assist healthcare providers in making timely decisions on patient care. In this case, the POC testing proved to be also a valuable contingency tool in situations of unexpectedly long downtime periods of the laboratory and hospital information systems. In these emergency situations, rapid POC testing results can be effective in ongoing, and least disruptive, patient healthcare.