Point-of-care testing: A Novel testing?

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Point of care testing (POCT) is a widely used phrase in recent years in the diagnostic world. It is simply defined as tests performed at or near the site of patient care whenever the patient care is needed [1]. Different names have been used like ancillary testing, bedside testing, near patient testing, decentralised testing etc. Regardless of the name POCT is a diagnostic testing predominantly performed by non laboratory professionals.

The commonly performed procedures at the bedside testing include urine analysis, blood glucose estimation, emergency investigations like serum electrolytes, blood gas analysis, hemostasis function tests like prothrombin time, platelet count, hematocrit etc [2]. Markers of myocardial damage can also be performed at admission in ICU for patients with chest pain to diagnose a case of acute myocardial infarction this will help clinicians to plan treatment.

There are obvious benefits of POCT, it bypasses all of the procedures involved like request for tests, arranging transportation, transfer of results and so on & so forth. At outpatient clinics, emergency wards, ICU, OT etc, POCT helps to make all of the appropriate decisions at a single visit is of major advantage for the patients. The turnaround time for patient would be short, benefit rapid therapeutic turn around time. Potential reduction of preanalytical and post analytical errors. Small sample size required to perform the test [3].

POCT is predominantly performed by non laboratory professionals, who were not trained in such fields like laboratory testing [4]. So, if POCT is to be beneficial, then it should be reliable. Now the question posed in front of us is how reliable is it? What next if it goes wrong? The most common concern for a physician or a surgeon is the reliability of the test result obtained. Concern also arises with POCT is the accuracy and performance of the instruments used, because the responsibility of POCT in critical care is usually assigned to non laboratory personnel [5]. Even with adequate training it is possible that the pressures of clinical environment might result in lapses or violations in the performance of POCT.

The reliability and accuracy of the results can be ensured only by quality control (QC) & quality control.
assurance(QA) procedures.It is the unawareness of significance of QC & QA among people who handle POCT is the cause of decrease in reliability and accuracy of results. Is it possible to ensure quality control at multiple POCT instruments and multiple untrained operators?.The conventional quality control procedures are very cumbersome and time consuming. Therefore the purpose of POCT is discouraged. It is very much certain that many of the hospitals have very poor quality assurance programs and I am afraid non existing [6].One of the approach which can overcome such problem is regular sending of duplicate samples to central laboratory for comparison with POCT results[7].The cost of POCT is more compared to central laboratory testing [8].

Another problem before us is what if the result produced at POCT is incorrect?.The worst case scenario would be the patient suffers a serious or fatal outcome. In US between 1984 to 1992 glucose meter failures were blamed for 24 deaths and 986 injuries according to FDA data[9].Many of the studies have found that simply moving tests from the central laboratory to POCT does not guarantee improved outcomes[10,11].Then individual POCT results must be acted upon promptly under standardised way.Many regulatory bodies have developed standards for the performance and governance of POCT[12,13]. They specify the requirements to organise and manage POCT, instrument selection, operator training, instrument calibration and operation, quality control, external quality assurance, reporting/documentation of results, health and safety measures[4].

In one of the study quality error rates have been analysed, it was found that most(97.3%) of quality errors occurred in the preanalytical and analytical phases[4]. In preanalytical phase it was 32%, analytical phase it was 65.3% and post analytical phase it was 2.7%. Where as in laboratory testing, majority of quality errors occur in preanalytical phase ranges between 31.5% - 88.9%.[14].

To summarise the quality error rates associated with POCT may be considerably higher than central laboratory testing but this information is very important when assessing potential risks and benefits while introducing POCT in hospitals and institutions.

REFERENCES


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