

# Evaluation of the appropriateness of implementing Point of Care Testing in KFSHRC Oncology Clinics

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## **Abstract:**

King Faisal Specialist Hospital & Research Center is a tertiary care hospital where oncology services are one of the specialties of expertise. While Point of Care Testing is a favorable choice to improve the turnaround time of laboratory testing and improve patient care, the appropriateness of screening and the outcomes should be considered before approving the testing in the oncology settings.

A request from medical director of Oncology services to consider implementing POC CBCD and POC Chemistry was evaluated;

Three POC CBCD instruments: ABX Pentra 60 from Horiba Medical; XS-500i & pocH-100i from Sysmex were validated against Reference Method XN-9000, Sysmex. The results correlated excellently from all three instruments against the reference method. The differential did not correlate well except the NEU & LYM.

POC Piccolo/Chemistry analyzer was validated against the Chemistry Reference instrument Cobas 8000 and showed excellent Piccolo shows high precision and stability in its reading.

While the analytical validation results were acceptable to deem the evaluated systems as acceptable POCT applications, the operational aspect of testing and the effect on patient flow were considered to judge the appropriateness of testing.

The identified challenges with POCT practice were addressed:

1. Specimen Type: the required sample will add a waiting time for phlebotomy to draw the necessary amount of blood
2. Operator's Competency: nurses should acquire a solid skill especially in judging the abnormal differential results
3. Comprehensive understanding of the method limitation and interfering substances which are vital when performing the test for a certain population.
4. Result Evaluation: Nurses should be willing to use the laboratory concepts when performing the tests and evaluate different flags and abnormalities and judge them around the clinical decision points.
5. The current evaluated Chemistry Point of Care Testing will give a result in twelve (12) minutes when sample fed into the instrument which means that the expected duration of turnaround time for one patient in that process is no less than 15-20 minutes when considering the sample collection and testing.
6. The number of instruments needed for Chemistry testing should be determined according to the patient flow
7. The Complete Blood Count & Differential (CBCD) test is a complicated test since most Oncology patient population undergoes chemotherapy or radiation that affects bone marrow and generates many abnormalities in such population. Those abnormalities create a flag system which requires a Senior Technologist decision to look at cell morphology and to be verified by a pathologist
8. Flagged results require the capability of learning a complicated flagging system to act on that alert especially with More than 50% of Oncology patients requires a morphological exam.
9. The morphological exams require waiting for Lab confirmation by a senior medical technologist's and a pathologist's interpretations which sometimes require an additional sample from the patient.

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Considering all aspects the request for implementing POC CBCD and POC Chemistry yield no added value with the current workflow.