המרכז הרפואי תל-אביב
ע"ש סוראסקי
רפואה מובילה ואנושית

Proposed Study Title	
Study Title	Performance Evaluation Protocol for Sight Diagnostics' OLO CBC Analyzer by Ichilov oncology daily care center.
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Study Information					
Tumor Type	N/A				
Areas of Interest	N/A				
# of Patients	50	Study Duration (Months)	1	Number of Sites	1
Site Names	Sight Diagnostics				

Hypothesis / Overall Objectives

Background:

The Sight OLO is a quantitative multi-parameter automated hematology analyzer intended for in vitro diagnostic use in screening capillary or venous whole blood samples collected in K_2EDTA blood collection tubes, or fingertip samples collected using the Sight OLO test kit microcapillary tubes.

When used with the Sight OLO cartridge, the Sight OLO enumerates the following CBC parameters in whole blood: WBC, RBC, HGB, HCT, MCV, MCH, MCHC, RDW, PLT, NEUT%/#, LYMPH %/#, MONO %/#, EOS%/#, and BASO%/#.

The Sight OLO is indicated for use in point of care and clinical laboratories to identify and classify one or more of the formed elements of blood in children 3 months and above, adolescents and adults.

In case a different intended use is required by the evaluating site, Sight should be informed in advance.

As there are great benefits in performing CBC tests from fingertip in oncologic patients, this study aims to establish OLO's performance accuracy of CBC results for finger prick samples across the OLO reportable range, and particularly around relevant medical decision points. Additionally, the study will evaluate OLO's compatibility to Ichilov oncology daily care center, while focusing on its effect of workflow and turnaround time.

Hypothesis:

The results of this study are expected to show good performance of OLO and its equivalence to the site's standard hematology system - Beckman Coulter DxH800 analyzer - in samples spanned over a wide clinical measuring range and covering medical decision points for WBC, HGB, PLT, and NEUT#. The medical decisions taken for treating chemotherapy patients at the oncology center are expected to remain equal when based on the results given by Sight OLO.

OLO is hypothesized to allow shorter time to CBC results, by minimizing the time period from phlebotomy to results, currently prolonged due to the need to send blood samples from the oncology

daily care center to the central lab. By that, Sight OLO would improve workflow efficiency and provide care to patients in a reliable and accelerated fashion.

Study Description

Provide a concise overview stating the type of study, phase, design, and compounds

Study design:

This evaluation will include two studies:

1. A matrix study will compare a capillary sample collected via finger prick with a venous sample collected into a blood tube, both scanned on OLO.

2. A method comparison study will compare Sight OLO to Beckman Coulter DxH800 using a venous sample collected into a blood tube.

During a period of 2 weeks, approximately 50 whole blood samples will be collected from patients at the oncology daily care center.

Patient Enrollment:

- Each patient participating in the study will firstly fill and sign an Informed Consent Form (ICF). Subjects participating in the study will be rewarded with a coupon for coffee and cake.
- For de-identification purposes, study barcode stickers will be used for all of OLO scans, instead of the original patient identification details. An unblinded form will be used to match the de-identification barcode with the patient identification details (this form will remain at the center and will not be shared externally).
- Patient enrollment will be documented in a designated worksheet, using the study barcode stickers.
- The patient will be asked to rest for at least 15 minutes.

Phlebotomy and Scanning Flow:

During the routine blood collection, an additional venous sample will be collected in K_3EDTA tube as part of the study. The phlebotomy time will be recorded in the worksheet.

The first tube will get a study barcode sticker and remain in the daily care center at a room temperature of 18°C-26°C. The second tube will be sent to the lab to be scanned on Beckman Coulter DxH800, as part of the routine procedure.

Two consecutive finger prick samples will be collected from the 3rd and 4th fingers of the patient's non-dominant hand (in this order) and scanned on OLO, and the time of the first result will be recorded in the study worksheet.

Following two successful finger prick scans, the venous sample (collected previously for the study) will be scanned on OLO.

The following time points will be recorded in the study worksheet:

- Phlebotomy time
- Scanning time on the reference device at the lab.

This study design is illustrated in the study scheme below.

Study Requirements:

- All four scans will be performed within no more than 2 hours.
- All scans should be performed within 8 hours from phlebotomy.
- Venous samples should be collected in K_3EDTA tubes with a minimum volume of 700µL and kept at room temperature of 18°C-26°C throughout the day until the last scan is completed.
- The finger prick samples will be collected using lancets provided by Sight.
- If a finger prick scan is rejected, another sample will be collected from another finger, in the following order: non-dominant 3rd -> non-dominant 4th -> dominant 3rd -> dominant 4th. Up to 4 finger prick attempts will be performed **in total** for the two finger prick scans. If less than 2 finger prick scans are completed successfully, the sample should be excluded from the study. For each successful scan, the corresponding finger will be recorded in the worksheets.
- In case any of the venous scans are rejected, an additional repeat should be performed. Up to 3 attempts will be performed for each sample, and in case a 3rd failure occurs, the sample should be excluded from the study.
- Only 1 reference device should be used throughout this study - Beckman Coulter DxH800.
- A single operator will participate in the study.
- All relevant documents, including forms, worksheet and barcode stickers will be provided by Sight.

Primary endpoint:

Following the initial period of 2 weeks in which the samples will be randomly selected, the results will be evaluated to assess the coverage of the predefined range groups (specified in the study population section), in order to understand the timeframe and the type and quantity of samples required for completion of the study. If needed, a purposeful method for samples collection will be used, according to the missing ranges.

Purposeful Sampling Method - Study Design: A sample will be enrolled according to the result received from the routine CBC test from the same day (on Beckman Coulter DxH800) and incomplete range groups (specified in table 1). Once enrolled in the study, the samples collection and scanning will be performed in the same order as in the initial phase (illustrated in the study scheme below). During the purposeful method, the time to results will not be included in the analysis.

Secondary endpoint:

Once all the predefined range groups are covered, the study will be completed and the results will be analyzed.

Statistical considerations:

Passing Bablok regression analyses will be performed for each measurand between:

(1) The mean value given by OLO for the finger prick samples and the value given by OLO for the venous sample.

(2) The value given by OLO for the venous sample and the value given by Beckman Coulter DxH800 for the venous sample.

Measurands invalidated by either OLO or Beckman Coulter DxH800 will be removed from all analyses.

The time to result will be compared between the time of first available finger prick results (from the scan on OLO) and the time of available venous results (from the routine scan on Beckman Coulter). After study completion, medical records of the enrolled patients will be reviewed to evaluate whether the same clinical decision would have been taken when based on OLO results.

Environmental requirements:

- OLO should be placed on a stable bench (shared with no vibrating equipment) with enough space for the device and an adjacent surface for sample preparation. OLO's physical measurements are: 25.7X32.6X28.7 cm, 10 kg.
- Power supply - OLO is provided with a power supply unit which needs to be connected to a standard grounded power socket.
- Internet connectivity - not mandatory for operation but preferable for remote support and monitoring. LAN connectivity is preferable. Sight can provide 3G/4G dongle for cellular connectivity. It would be best to contact an IT person directly to understand whether there are special compliance requirements when connecting OLO to the local network/internet.
- Each blood tube should be kept at room temperature of 18°C-26°C throughout the day until the last scan is completed. The OLO operating temperature range is 18°C-30°C, relative humidity range is 20%-80%.
- The reference device must be calibrated and approved for use according to the lab standard operating procedures during the entire performance evaluation study. If any calibration process is performed during the study, Sight should be informed, preferably in advance, to be able to take the steps required to avoid interference with the method comparison (such as the removal of the samples scanned before/after the calibration).
- Results from the OLO can be exported as a CSV file through a USB drive and sent via email.

Sharing of results:

- Given this is an early comparison study, results will be shared openly across both parties.
- CSV files with the results of OLO and de-identified PDF files with the results of the reference device should be shared regularly by the study coordinator.
- Study worksheets and enrollment forms will be delivered once completely filled.

Study Population

Brief description, setting and key inclusion/exclusion criteria

Inclusion Criteria:

Blood samples will be collected from oncologic patients older than 18 years old arriving at the oncologic daily care center of Ichilov hospital.

The sampling method will initially be randomized, though will aim to include both normal and abnormal ranges of blood counts (according to Beckman Coulter DxH800 as the reference analyzer), while covering wide analytical ranges with balanced distributions, focusing on values around medical decision points. Approximately 30 abnormal samples will be collected, with the ranges to cover specified in table 1 below. Note that a single sample can cover multiple ranges for different parameters. Additionally, approximately 20 normal samples will be collected, while for the purpose of this protocol, normal is defined as samples with values above the ranges specified in table 1 for all parameters (PLT>100X10^3/µL, HGB>12.0g/dL, WBC>4.0X10^3/µL, NEUT#>2.0X10^3/µL), and with no flags on the site reference analyzer.

Table 1 - abnormal ranges

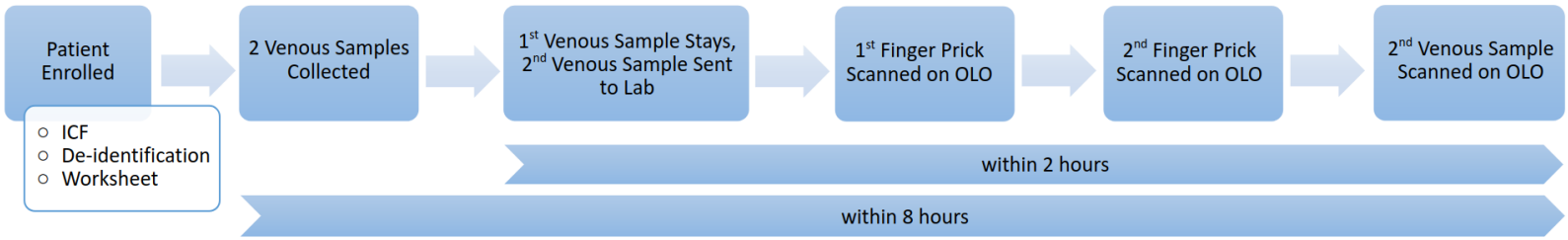
	Range	# of paired samples
PLT	<100X10^3/µL and >50X10^3/µL	2
	<50X10^3/µL and >30X10^3/µL	4
	<30X10^3/µL and >18X10^3/µL	4
	<18X10^3/µL	4
HGB	<12.0g/dL and >10.0g/dL	4
	<10.0g/dL and >4.0g/dL	4
WBC	<4.0X10^3/µL and >2.0X10^3/µL	2
	<2.0X10^3/µL	7
NEUT#	<2.0X10^3/µL and >1.0X10^3/µL	3
	<1.0X10^3/µL and >0.5X10^3/µL	3
	<0.5X10^3/µL	2

Exclusion Criteria:

- Visibly hemolyzed specimens (sample plasma should be checked for hemolysis by technician while selection of specimen from tube racks).
- Visibly clotted specimens (Reasonable to assume that samples processed with clinical reported results are not clotted).
- A sample that is not successfully scanned on OLO within 3 attempts (e.g. rejected due to irregular cell morphology, or microscopically visible hemolysis).

Study Schema

Please insert a graphic study schema or visual representation of trial design



Protocol revision signatures: This study protocol has been reviewed by Sight's key personnel with their signature approval for its use.

Written by: Tahel Naveh, Clinical Evaluation Specialist, Sight Diagnostics LTD	Signature: _____ Date: _____
Reviewed by: Yochay Eshel, VP R&D, Sight Diagnostics LTD	Signature: _____ Date: _____
Approved by: Sarah Levy Schreier, CTO, Sight Diagnostics LTD	Signature: _____ Date: _____

Collaborators Signatures: This study protocol has been reviewed by collaborator's key personnel with their signature approval for its execution.

Approved by: _____, _____, _____, _____ name position section and medical site project role	Signature: _____ Date: _____
Approved by: _____, _____, _____, _____ name position section and medical site project role	Signature: _____ Date: _____