

Laboratory Procedure Manual

Analyte: **Complete Blood Count**

Matrix: Whole Blood

Method: **Beckman Coulter DxH-800 Analyzer**

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As performed by: The National Health and Nutrition Examination Survey
Mobile Examination Center

Contact: Renee Storandt, Laboratory Director

Important Information for Users

The National Health and Nutrition Examination Survey periodically refines these laboratory methods. It is the responsibility of the user to contact the person listed on the title page of each write-up before using the analytical method to find out whether any changes have been made and what revisions, if any, have been incorporated.

Public Release Data Set Information

This document details the Lab Protocol for testing the items listed in the following table:

File Name	Variable Name	SAS Label
CBC_J	LBXMOPCT	Monocyte percent (%)
	LBXNEPCT	Segmented neutrophils percent (%)
	LBXEOPCT	Eosinophils percent (%)
	LBXBAPCT	Basophils percent (%)
	LBDLYMNO	Lymphocyte number (1000 cells/uL)
	LBDMONO	Monocyte number (1000 cells/uL)
	LBDNENO	Segmented neutrophils num (1000 cell/uL)
	LBDEONO	Eosinophils number (1000 cells/uL)
	LDBBANO	Basophils number (1000 cells/uL)
	LBXRBCSI	Red blood cell count (million cells/uL)
	LBXHGB	Hemoglobin (g/dL)
	LBXHCT	Hematocrit (%)
	LBXMCVSI	Mean cell volume (fL)
	LBXMCHSI	Mean cell hemoglobin (pg)
	LBXMC	Mean Cell Hgb Conc. (g/dL)
	LBXRDW	Red cell distribution width (%)
	LBXPLTSI	Platelet count (1000 cells/uL)
	LBXMPSI	Mean platelet volume (fL)

A complete blood count (CBC) is performed in duplicate on all study participants (SPs) aged 1 year and older. The CBC is performed on the Coulter® DxH 800 analyzer using the SP's EDTA blood tubes, which are obtained via the phlebotomy component.

The UniCel DxH 800 analyzer is a quantitative, automated hematology analyzer for in-vitro diagnostic use in screening patient populations in clinical laboratories. The UniCel DxH 800 Analyzer provides the following: CBC, Leukocyte 5-Part Differential (Diff), Reticulocyte (Retic), and Nucleated Red Blood Cell (NRBC) on whole blood.

NOTE: The NHANES study does not use the reticulocyte data, and the NRBC is used only for calculating a corrected white blood cell count.

The UniCel DxH 800 Analyzer measures the following parameters:

WBC	White Blood Cell count
UWBC	Uncorrected White Blood Cell count
RBC	Red Blood Cell count (for Whole Blood and Body Fluids)
Hgb	Hemoglobin
Hct	Hematocrit
MCV	Mean Corpuscular Volume
MCH	Mean Corpuscular Hemoglobin
MCHC	Mean Corpuscular Hemoglobin Concentration
RDW	Red Cell Distribution Width
RDW-SD	Red Cell Distribution Width Standard Deviation (SD)
PLT	Platelet count
MPV	Mean Platelet Volume
NE	Neutrophil percent
LY	Lymphocyte percent
MO	Monocyte percent
EO	Eosinophil percent
BA	Basophil percent

NE#	Neutrophil absolute number
LY#	Lymphocyte absolute number
MO#	Monocyte absolute number
EO#	Eosinophil absolute number
BA#	Basophil absolute number
NRBC	Nucleated Red Blood Cell percent
NRBC#	Nucleated Red Blood Cell absolute number
RET	Reticulocyte percent
RET#	Reticulocyte absolute number
MRV	Mean Reticulocyte Volume
IRF	Immature Reticulocyte Fraction
TNC	Total Nucleated Cell (Body Fluids)

In 1956, Wallace Coulter described the Coulter Principle as follows: A suspension of blood cells is passed through a small orifice simultaneously with an electric current. The individual blood cells passing through the orifice introduce an impedance change in the orifice determined by the size of the cell.

Each cell suspended in a conductive liquid (diluent) acts as an insulator. As each cell passes through the aperture, it momentarily increases the resistance of the electrical path between the submerged electrodes on either side of the aperture. This causes a measurable electronic pulse. For purposes of counting, the vacuum used to pull the diluted suspension of cells through the aperture must be at a regulated volume. The number of recorded pulses indicates particle count, and the size of the electrical pulse is proportional to the cell volume. In addition, the system counts the individual cells and provides cell size distribution. The number of cells counted per sample is approximately 100 times greater than the usual microscope count, which reduces the odds of statistical error approximately 10 times.

Historically, Beckman Coulter analyzers housed a flow cell in a Triple Transducer Module (TTM), which was first introduced commercially in the 1980s. The TTM flow cell was the location for detection of the processed samples. The TTM produced three measurement signals—volume, conductivity, and light scatter.

The DxH 800 system replaces the TTM with the Multi-Transducer Module (MTM), which measures additional multiple angles of light scatter, a major improvement over the single light scatter measured by the

TTM. All Diff, NRBC, and Retic analysis occurs in the VCSn module. The VCSn module is responsible for controlled sample preparation and delivery of the prepared sample to the flow cell for analysis of the WBC differential, reticulocyte, and NRBC. The VCSn module includes the Air Mix and Temperature Control (AMTC) and the Multi-Transducer Module (MTM).

In the flow cell, low-frequency direct current measures volume, while high-frequency (RF) current senses cellular internal content through measuring changes in conductivity.

The MTM uses a flow cell to pass particles through a sensing zone, one particle at a time, and a diode laser to illuminate the particles. The illuminated particles both scatter and absorb a portion of the incident light. Sensors strategically placed around the flow cell collect the scattered light of interest. An additional sensor placed in the laser path measures the amount of light removed due to light scatter and absorption. This measurement is called Axial Light Loss.

The SM performs a series of operations on the stored digital raw values received from the flow cell to identify populations and calculate the frequency of cells within each population. The system produces the dataplot displays for visual representation of the Differential, NRBC membership (types of cells), and density (concentration).

The DxH 800 system algorithm uses tools designed for finding optimal separation between overlapping clusters of data.

The algorithm can:

- Adapt to unusual population shifts and overlaps;
- Define highly irregular separation;
- Make subsequent analysis of the identified regions; and
- Correct deficiencies in separation.

In the dataplots, different colors represent different memberships. Shades of colors represent density: dark colors for low density and bright colors for high density, as shown in the following listing:

NRBC analysis		Diff analysis	
NRBC Other*	Red Green	Lymphocyte Monocyte	Blue Green

WBC	Blue	Neutrophil Eosinophil Basophil Non-White Cell	Purple Orange White Red
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* Others include RBC debris, and PLT debris, etc.

Exhibit 6-1 lists each reportable parameter and the method used to obtain the results. A description of the method is also included.

Exhibit 6-1. Reportable parameters and analysis methods

Parameter (reporting units in US-1 format)	Method	Description
WBC	Coulter Principle	White Blood Cell Count or Leukocyte Count <ul style="list-style-type: none"> ■ Measure directly, multiplied by the calibration factor. ■ Corrected for interference if necessary. If no correction is required, then WBC = UWBC. ■ $\text{WBC} = N \times 10^3 \text{ cells}/\mu\text{L}$.
UWBC	Coulter Principle	Uncorrected White Blood Cell <ul style="list-style-type: none"> ■ Measure directly, multiplied by the calibration factor. ■ $\text{UWBC} = N \times 10^3 \text{ cells}/\mu\text{L}$.
RBC	Coulter Principle	Red Blood Cell Count or Erythrocyte Count <ul style="list-style-type: none"> ■ Measure directly, multiplied by the calibration factor. ■ Corrected for very high white count if necessary. ■ $\text{RBC} = N \times 10^6 \text{ cells}/\mu\text{L}$.
Hgb	Photometric Measurement	Hemoglobin or Hemoglobin Concentration <ul style="list-style-type: none"> ■ Transmittance of light at 525 nm through a lysed WBC solution in the Hgb cuvette, compared to the transmittance of the same light through a reagent blank. The system converts this ratio to the Hgb value using a calibration factor. ■ Weight (mass) of Hgb determined from the degree of absorbance found through photo current transmittance expressed in g/dl. ■ Corrected for WBC interference. ■ $\text{Hgb (g/dl)} = [\text{constant} \times \log^{10} (\text{Reference \%T}/\text{Sample \%T})]$.
Hct	Calculated	Hematocrit <ul style="list-style-type: none"> ■ The relative volume of packed erythrocytes to whole blood. ■ $\text{Hct (\%)} = \text{RBC} \times \text{MCV}^{10}$.
MCV	Derived from RBC Histogram	Mean Corpuscular Volume <ul style="list-style-type: none"> ■ The average volume of individual erythrocytes derived from the RBC histogram. ■ The system multiplies the number of RBC in each channel by the size of the RBC in that channel. The products of each channel between 36 and 360 femtoliters (fL) are added. This sum is divided by the total number of RBC between 36 and 360 fL. The analyzer then multiplies by a calibration factor. ■ Corrected for WBC interference. ■ Expressed in fL.

The DxH 800 system includes a Specimen Processing Module (SPM), a Pneumatic Supply Module (PSM), and an SM, precisely integrated to provide process control, data consolidation, and cassette or single-tube delivery of specimens.

Components of DxH 800

The Specimen Processing Module

The SPM is made up of the following functional modules:

- **Specimen Transport Module (STM).** The STM automatically transports specimens, delivering closed-vial and open-vial specimens, which accommodates a wide range of specimen tubes. The STM supports the following:
 - Operator loading and unloading of specimens;
 - Transport and queuing of specimens;
 - Mixing and presentation of specimens; and
 - A Magnetic Transport System to move cassettes containing specimens.
- **Sample Aspiration Module (SAM).** The SAM aspirates from capped specimen tubes (presented via cassette or single-tube presentation) or open vials (single-tube presentation). Body fluids are presented via single-tube, while whole bloods can be presented in either presentation mode. The identification and integrity of samples are verified prior to delivery and transfer to the analytical modules within the system. The SAM design provides for two methods of sample delivery: sample segmentation and sample dispensing. In sample segmentation, aspirated sample is transferred through the BSV where it is segmented for whole blood CBC and body fluid. In sample dispensing, whole blood sample segments are dispensed via the aspiration probe into the mixing chambers on the Air Mix Temperature Control Module (AMTC) for the WBC differential, and NRBC analyses.
- **VCSn Module.** The VCSn module provides the physical processing elements necessary for the Differential and NRBC sample preparation and subsequent measurement. This module includes the Distribution Valve (DV), Air Mix Temperature Control (AMTC) module, Multi-transducer Module (MTM) and their associated electronics and fluidics. Samples prepared at the AMTC are delivered to the MTM where the sample detection occurs.

- **CBC Assembly.** The CBC Assembly provides the physical processing elements necessary for CBC sample conditioning (combining of reagents and the sample segment, mixing, and incubation) and measurement via the aperture bath assemblies, the Hgb assembly, and the electrical signal conditioning circuits.
- Common services consist of the Electronic Supply Module, Pneumatic Services, and Reagent Services (supply and distribution). Common Services provides and monitors electronic power and supplies and monitors the reagent and waste levels as well as the pressure and vacuum.

The System Manager

The DxH 800 SM is responsible for the following:

- Controlling processes, such as analytic and diagnostic procedures;
- Producing test results; and
- Managing data, such as test ordering, result, review and release, quality control, LIS interface, logging, and report generation

The SM includes an LCD flat panel monitor with touch screen capability, a computer with a CD/DVD RW drive running Microsoft Windows operating system, the DxH 800 software, a standard keyboard, and an optical mouse.

Pneumatic Supply Module

The PSM supplies vacuum and pressure to the SPM.

Special Safety Precautions

All specimens may be potentially positive for infectious agents including HIV and Hepatitis B and C viruses. Observe standard precautions. It is mandatory to wear gloves and a lab coat when handling all human blood products and Coulter controls. Dispose of all biological samples in a biohazard container and wipe down all work surfaces with a 10% bleach solution at the end of each session.

The MEC *Working Safely with Hazardous Chemicals* manual contains all Coulter material safety data sheets (MSDS).

Computerization: Integrated Survey Information System (ISIS)

The DxH 800 SM transmits individual SP results to the MEC automated ISIS system. All SP results are reviewed at the DxH 800 SM monitor.

The ISIS hematology module in the laboratory application automatically receives the results, or results are transmitted manually to the hematology module. The laboratory application evaluates the data for completeness and accuracy. The final decision to accept or reject a result is the responsibility of the medical technologist.

All data are backed up and stored at Westat's home office.

Specimen Collection and Preparation

Specimen Collection

- The phlebotomist collects a 3- or 4-ml K2 EDTA (ethylene diamine-tetracetic acid) tube, used for a CBC on all SPs aged 1 year and older, following the established venipuncture protocol and procedures. (A 1-2% dilution effect occurs in this liquid EDTA tube.)
- Sample volume is 165 μ L of whole blood in the closed-vial mode or the single tube presentation mode. The minimum sample volume per tube in the closed-vial mode is 1-ml with the proper proportion of blood to anticoagulant.

Specimen Preparation

- For SPs 1-2 years old, the medical technologist working in the blood specimen-processing workstation initially processes the tube by first taking off whole blood required for various tests in the SP's profile. The medical technologist working in the blood specimen-processing workstation places the specimen on a rocker until the medical technologist working in the hematology workstation can perform the CBC. The CBC should be run as soon as possible; there is no requirement to wait any length of time between drawing the blood and running the CBC.
- There is a dedicated tube drawn for the CBC on SPs aged 3 years and older.
- For SPs aged 3-19, the CBC tube should be given to workstation 2 after the CBC has been resulted and reported. This tube will be spun down for the fluoride vessel.

Procedure for Microscopic Examination

Not applicable. Do not prepare differential microscopic slides.

Reagents and Supplies

DxH reagents, including storage and handling requirements, are listed below:

- Coulter DxH diluent (store at 2-40° C).
 - Coulter DxH diluent is shipped in ready-to-use containers.
 - Opened containers are stable for 60 days. Do not use this product beyond the expiration date.
 - Coulter DxH diluent is a cyanide-free, isotonic buffered saline solution.
 - Coulter DxH diluent dilutes the specimen, is used for rinsing SPM components between sample analyses, and provides a sheath stream to transport the specimen through the flow cell.
- Coulter DxH Lyse reagent (store at 2-40° C).
 - Coulter DxH Lyse reagent is shipped in ready-to-use containers.
 - Opened containers are stable for 60 days. Do not use this product beyond the expiration date.
 - Coulter DxH Lyse is a cyanide-free, CBC lytic reagent that lyses red blood cells for the white blood cell count and works in conjunction with Coulter DxH Diluent to generate a stable hemoglobin measurement.
 - Coulter DxH Cell Lyse is also used to lyse the red blood cells and discriminates nucleated red blood cells from white blood cells.
- Coulter DxH Diff Pack (store at 2–25° C).
 - Coulter DxH Diff Pack is shipped in ready-to-use containers.
 - Opened containers are stable for 60 days. Do not use this product beyond the expiration date.
 - The Coulter DxH Diff Pack consists of the Erythrolyse Lytic reagent and StabliLyse Preservative reagent.

- The Erythrolyse Lytic reagent is a cyanide-free lytic reagent that dilutes the blood sample and lyses red blood cells in preparation for white blood cell measurement in the flow cell.
- The StabiLyse Preservative reagent neutralizes the Diff lytic reagent and preserves the white blood cells for measurement in the flow cell. Together, Erythrolyse and StabiLyse provide the five-part differential.
- Coulter DxH cleaner (store at 2–25° C).
 - Coulter DxH cleaner is shipped in ready-to-use containers.
 - Opened containers are stable for 90 days. Do not use this product beyond the expiration date.
 - DxH cleaner is a cyanide-free, aldehyde-free cleaning agent that degrades residual materials so that they may be flushed from the system with diluent.

NOTE: If any Coulter DxH reagent has been partially or completely frozen, allow the product to warm to room temperature. Mix product by gentle inversion prior to placement on the instrument.

DxH controls, including storage and handling requirements, are listed below:

- Coulter 6C cell control (store at 2–8 ° C).
 - The Coulter 6C cell control is an integrated control that enables monitoring of system performance and calibration status for all directly measured and calculated CBC, Diff, and NRBC parameters. Instructions for use are as follows:
 - Remove 6C cell control vials from refrigerator and warm at ambient temperature for 10 to 15 minutes.
 - Roll the tube slowly between the palms of the hands eight times in an upright position. Invert the tube and slowly roll between the palms of the hands eight times. Then gently invert the tube eight times. Repeat.
 - Run the controls in the cassette presentation on the instrument
 - Return the control tubes to the refrigerator within 30 minutes.
- The Coulter LIN-X Linearity control (store at 2–8° C) is recommended for verification of the reportable range and linearity, and for calibration assessment of the WBC, RBC, HGB, and PLT parameters.
 - Remove Coulter Lin-X Cell control vials from refrigerator and warm at ambient temperature for 15 minutes.
 - Roll the tube slowly between the palms of the hands eight times in an upright position. Invert the tube and slowly roll between the palms of the hands eight times. Then gently invert the tube eight times. Repeat mixing procedure three times.

- Run the Lin-X Cell controls in consecutive order beginning with Level 0 and ending with Level 11. Run controls in cassette presentation on the instrument.
- Level 11 is used to clean the system. The values for this level are not recorded.
- How to run linearity in the MEC:
 - Run each level under a separate repeatability—this is useful since it will calculate the mean for that level of Lin-X.
 - Print out the summary report for each level of Lin-X.
 - Write the level number on the top of each summary report.
 - Document all value on the Coulter Lin-X Control Worksheet.
 - Send worksheet, package insert, and summary reports in the end of stand box to the study manager at the home office in Rockville, MD.
- Coulter Latron CP-X control (store at 2 to 30° C) is recommended for the verification of the system calibration status of the VCSn parameters. Coulter Latron CP-X control checks the alignment of the laser and the flow cell on the DxH 800.
 - Perform daily checks prior to running Latron control.
 - Gently mix Latron CP-X control by inversion five to eight times. Avoid foaming.
 - Run the controls in the cassette presentation on the instrument.
- Coulter S-CAL® Calibrator is traceable to reference methods and recommended for determining adjustment factors to ensure accurate SPM measurements of directly measured CBC parameters. Calibrator results should be monitored with Coulter 6C Cell control.
 - Remove S-CAL from the refrigerator and warm at ambient temperature for 15 minutes.
 - Roll the tube slowly between the palms of the hands eight times in an upright position.
 - Invert the tube and slowly roll between the palms of the hands eight times. Then gently invert the tube eight times. Repeat.
 - Inspect the tube contents to determine if all cells have been uniformly distributed. Repeat the mixing procedure if contents have not been uniformly distributed.
 - Complete entire procedure within 1 hour.

DxH 800 Supplies

- 3-ml K₂ EDTA BD Hemogard Vacutainer® tube (367856)

- 4-ml K₂ EDTA BD Hemogard Vacutainer® tube (367861)
- Tube rocker
- Bleach, 5.25% sodium hypochlorite
- Bottled deionized water
- Plastic squirt bottle
- Cotton gauze pads
- Three-hole paper punch
- Notebook
- Flashlight
- Precision screwdriver set
- CD-RW

Shutdown of DxH 800 System

The DxH 800 SPM, SM, and monitor are connected to an uninterruptible power supply (UPS). In the event of a power outage at your facility, the components will continue to operate for a short time so that you can shut down the system. The printer is connected to the back-up power supply. Shut down the SM as follows:

- Logoff. Select the Logoff utility icon,  then the Exit Workstation button.
- Shut down the operating system by using the routine Windows application.
- Power off the computer. Powering off the computer also powers off the monitor. You do not need to power off the monitor separately. The computer does not need to be shut down on a routine basis. Power off the computer only when circumstances are indicated.

Daily Shutdown

Beckman Coulter recommends that the SPM remain in cleaner for at least 30 minutes every 24 hours. If the SPM has power, and is in Shutdown, but the pneumatics is off, automatic cycling occurs every 24 hours to prevent flow cell and sample line clogging.

- Shutdown can be initiated manually or automatically.
- Shutdown removes diluent from the Unicel DxH 800 and replaces it with cleaner.

- At the end of the time with cleaner, the cleaner is replaced with diluent. Then, the compressor automatically shuts off.

Shutdown at the Mobile Examination Center

- Shutdown will be set automatically:
 - Select Calendar Icon on top of DxH monitor screen.
- From the Daily Checks screen, select the Shutdown button to display the Manual Shutdown dialog box.
 - Select Autoconfiguration at the bottom of the screen.
 - Select Configure Shutdown
 - Check Enable Automatic Shutdown: Fill in hour **07**, Min **00**.
 - Daily.
 - Make sure each of the 7 days is checked.
 - Time in cleaner **0** hour(s) **30** Minutes.
 - OK.
- Daily Checks (formerly known as StartUp) (Menu > QA > Daily Checks) is programmed to immediately follow the StartUp:
 - Select Autoconfiguration at the bottom of the screen.
 - Select Configure Daily Checks.
 - Check Enable Automatic Daily Checks.
 - Choose radio button Perform Daily Checks after Shutdown.
 - OK.
- Latron CP-X control should be run immediately following daily checks.

Cancel Automatic Shutdown

At certain times Automatic Shutdown will have to be cancelled. To cancel Automatic Shutdown:

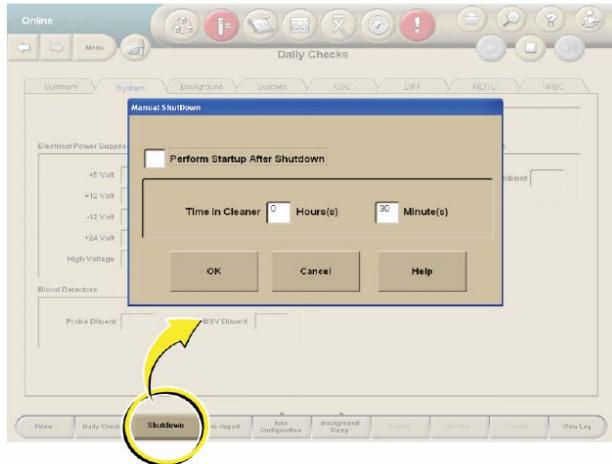
- From the Daily Checks screen, select Auto Configuration.

- Select Configure Shutdown.
- Remove the check mark from the Enable Automatic Shutdown box.

To perform a manual shutdown when Auto Configuration is disabled, please see the information that follows (Section 6.8.4).

Manual Shutdown of DxH Units

- From the Daily Checks screen, select the Shutdown button to display the Manual Shutdown dialog box.



- Select the Perform Startup after Shutdown check box to automatically begin Daily Checks after Shutdown.
- Type in Time in Cleaner 0 Hours and 30 Minutes check boxes to determine the time in cleaner.
- Select OK to begin Shutdown or Cancel to exit the pop-up window without starting Shutdown.

Logon as User

Logging on to the SM:

- Click on the  icon (person with key).
- Type your user name.
- Type your password. If you forget it, ask one of the senior techs to reset it for you.

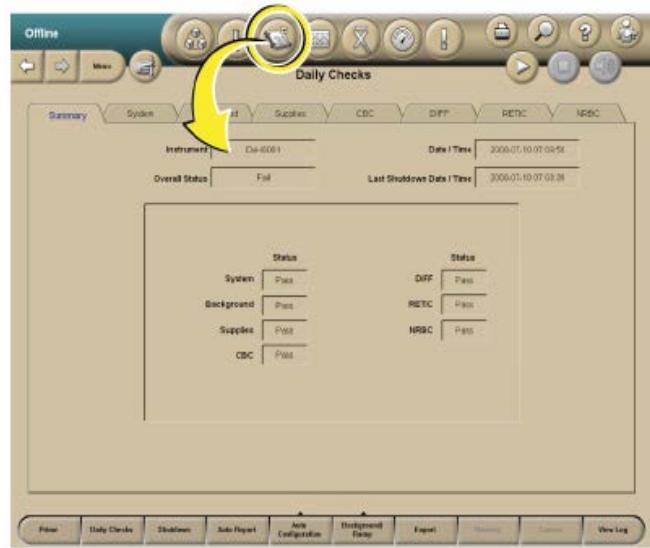
Entering New Operator

- Select Menu button upper left hand corner of DxH 800 screen.
- Then select **Setup** button.
- Select **Operators & Roles** button.
- Select **New Operator** button, enter all information. HINT: do not enter the password you want to use, the first time you sign on you will be asked to change your password. Under operators access you need to select Level 3 in order to do all tasks on the DxH 800.

Run Daily Checks

- Select the Daily Checks button (Calendar icon) from the top of any screen to display the Daily Checks Summary screen with results of the most recent Daily Checks.
- Obtain printout of Daily Checks from printer, initial as Reviewed by and place in Hematology Log Book.
- If Daily Checks passed all criteria, Run Latron Control.
- Running Daily Checks manually if Automatic Daily Check Failed:
 - Select the Daily Checks button (Calendar icon) from the top of any screen to display the Daily Checks Summary screen with results of the most recent Daily Checks.
 - Select the Daily Checks button at the bottom of the screen. A DxH 800 dialog box displays the following:

Are you sure you want to start a Daily Checks procedure? Press OK to continue.



Select OK to run Daily Checks or select Cancel.

Daily Checks Screen

- The results of Daily Checks display on eight tabbed views: Summary (default view), System, Background, Supplies, CBC, Diff, Retic, and NRBC.
- When Daily Checks pass, the Daily Checks icon is neutral. Select the individual tabs to view those results.

If any of the Daily Checks do not pass, the following occurs:

- The Daily Checks icon is red.
- The problematic result is backlit in red on the Summary tab.
- The tab that contains the problematic result has a red indicator.
- If there are any failures, you must Review Daily Checks (Event Logs > General Tab) in order to proceed with further analysis.
- The Daily Checks must pass or be reviewed in order to run specimens.
- From any tab on the Daily Checks screen, select the Review button on the Local Navigation bar to indicate that the Daily Checks results have been reviewed.

NOTE: If Daily Checks pass, the Review button is disabled.

- You have to review only results that are questionable.

- Document on the Troubleshooting Log any action taken to troubleshoot the Daily Checks failure.

Additional Tasks From the Daily Checks Screen

- Select the Histogram button at the right of the screen on the DIFF, RETIC, or NRBC tabs to display the VCSn Ramp Tests Histogram screen.

NOTE: The VCSn Ramp Tests Histogram screen is not for routine use; however, you may at some time be asked to access this screen when on the phone with a Beckman Coulter representative.
- Prime the SPM.
- Prime provides a method to remove cleaner in case an error occurred during a Shutdown cycle.
- Select the Prime button at the bottom of the Daily Checks screen to prime the SPM.
- A DxH 800 dialog box will display the following message: “You have requested to perform a Prime Cycle.”
- Select OK to continue or Cancel.

Quality Control

- Quality control is the routine monitoring of performance and service using commercial or patient controls.
- Controls have known characteristics when run on a given system and are analyzed periodically in the same manner that patient specimens are analyzed.
- The results of analyzed controls are then compared to the known characteristics using statistical methods.
- This comparison allows changes in the SPM performance to be detected.
- You can then take some action if the changes detected are significant.

Frequency of Performing Quality Control

- Beckman Coulter 6C cell control will be run each shift, at the start of the session. The time of QC performance is set to follow the preprogrammed Daily Checks of the analyzers.
- Beckman Coulter 6C cell control is run in the cassette mode on the DxH analyzers.

- Beckman Coulter Latron CP-X control is run once each 24 hours following Daily Checks on the instrument and is run in the cassette mode on the DxH analyzers.
- Beckman Coulter Lin-X will be run once per year or at high elevation stands.
- Calibration with S-CAL will be performed at the start of every stand or when recommended to troubleshoot a problem.

Setting Up a Control File

- Entering 6C cell control lot numbers and expiration dates.
- Menu > QA > QC > More Options > QC Setup > New Control from Barcode > *Scan the 6C Cell Insert Barcode* > Select ALL & Auto Transmit > Select OK.

Setting Up a Latron Control File

- Entering Latron control lot numbers and expiration dates.
- Menu > QA > QC > More Options > QC Setup > New Control from Barcode > *Scan the Latron Insert Barcode* > Select ALL & Auto Transmit > Select OK.

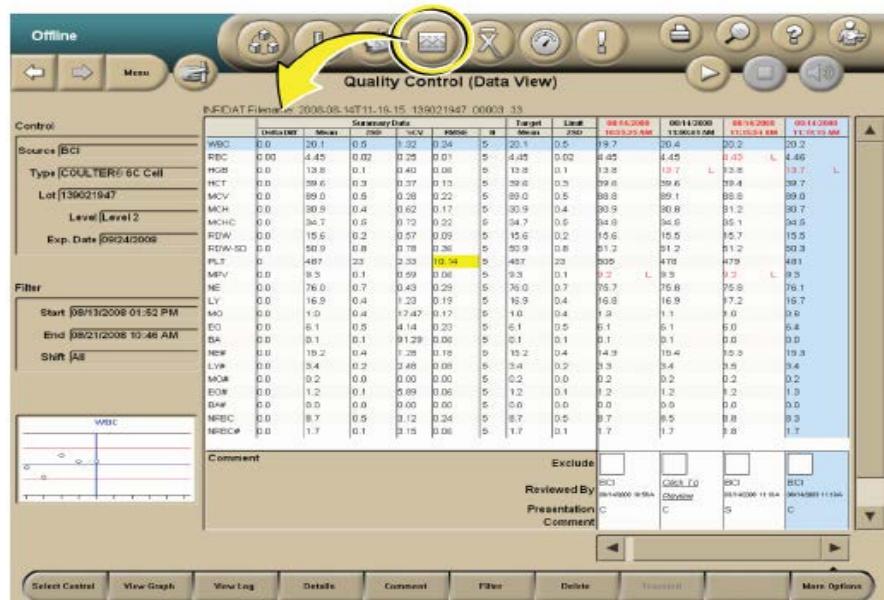
What To Do When a Control Is Out

- When a commercial control is out:
 - Ensure that the control material was mixed properly. If not, mix it according to the package insert.
 - Verify that the control was identified properly. If using a bar code reader, ensure that the bar code labels are clean and positioned correctly. If entering the ID manually, ensure that you typed the correct information.
 - Verify that the assigned set-up information (assigned values and expected ranges) matches either the control package insert or your labs established values. If they do not, contact a senior technologist to change the control's information to match.
 - If the problems above are ruled out, then rerun the control to ensure that the problem was not a statistical outlier.
 - Ensure that the control material was not contaminated by running another vial or level of control.
 - Ensure that there are no errors during the cycle. If necessary, call Beckman Coulter for help in resolution.

- Exclude the results on any out-of-range control by checking the Exclude box when reviewing that control.
- Document action taken in the comment tab on the Coulter screen of affected control.
- When Latron QC is out:
 - Ensure that the control setup information (assigned values and expected ranges) matches the package insert. If it does not, change the control information to match the package insert, then rerun the control.
 - Ensure that the Latron control is not contaminated, is properly mixed, is not expired, and you have a sufficient volume of sample.
 - If necessary, use a new vial of control. Be sure to mix it according to the directions listed above.
 - Ensure that the flow cell is clear by performing the Flush Flow Cell procedure.
 - Rerun the control. If the control is still outside the expected ranges, call Beckman Coulter.
 - Document action taken in the comment tab on the Coulter screen of Latron Control.
 - Check the Exclude box on any Latron results that are out of range.

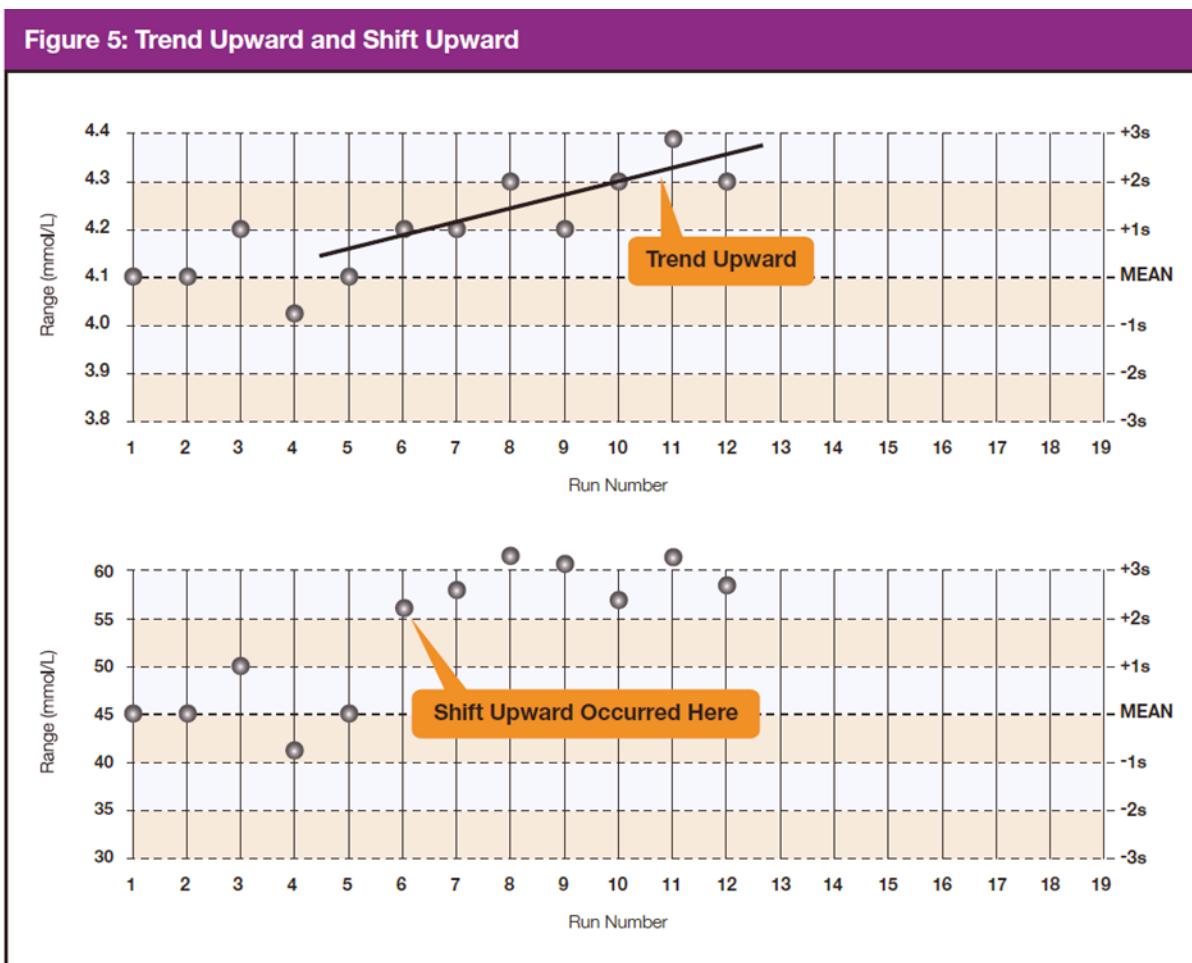
Viewing Control Files – Data View (Menu>QA>QC)

- To view control files on the Quality Control (Data View) screen, select the QC Status icon at the top of any screen.



- The Quality Control–Data View screen displays the most recently analyzed control lot with the most recently analyzed run selected by default.
- If controls have not been reviewed, a dialog box displays a list of them.
- Out of control data as well as the date and time are displayed in red text.
- The Quality Control (data view) screen includes summary data, configuration data, a filter section, QC run data, run status, and one thumbnail Levy-Jennings graph for the selected parameter (row).
- The chief medical technologists will review QC on a weekly basis looking for any outlier results using the Westgard rules listed below. See examples of trends and shifts in QC data (Exhibit 6-2).

Exhibit 6-2. Examples of trends and shifts in QC data



Exhibits 6-3 through 6-7 present the Westgard rules as mentioned earlier.

Exhibit 6-3. Westgard Rule 1_{2s}

Rule 1_{2s}. A single control measurement exceeds 2 standard deviations (SD) of control limits either above or below the mean. This rule is used as a warning rule to trigger careful inspection of the control data.

Figure 6: 1_{2s} Rule

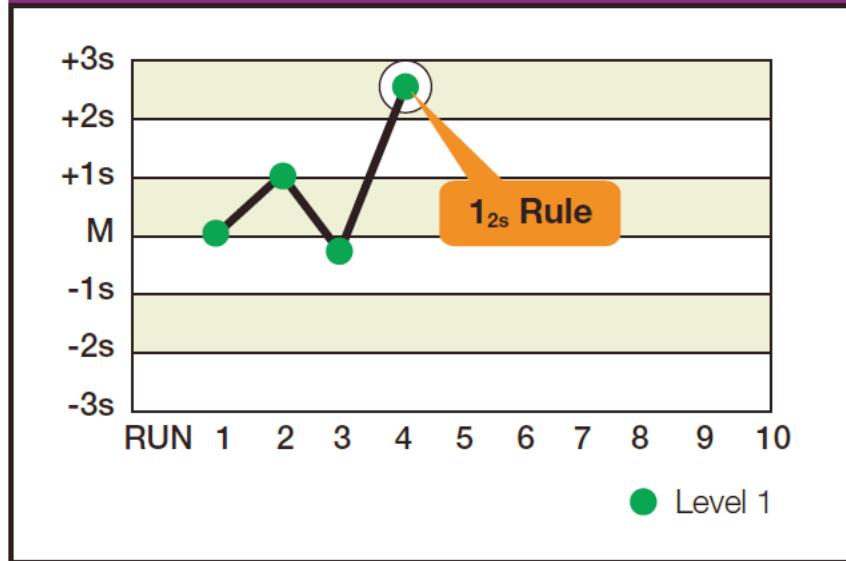


Exhibit 6-4. Westgard Rule 1_{3s}

Rule 1_{3s} . Identifies unacceptable random error or possibly the beginning of a large systematic error. Any QC outside $\pm 3S$ D violates this rule. A run is rejected when a single control measurement exceeds the mean ± 3 control limits.

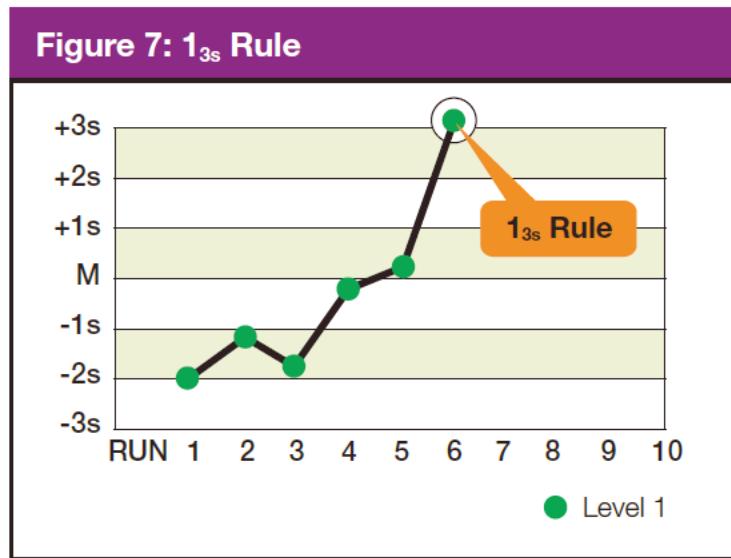


Exhibit 6-5. Westgard Rule 2_{2s}

Rule 2_{2s}. There are 2 rejection criteria for this rule: two consecutive QC results that are greater than 2SD that are on the same side of the mean. Violation within the run indicates that systematic error is present and that it potentially affects the entire analytical curve. Violation across the run indicates that only a single portion of the analytical curve is affected by the error. The control run is rejected with 2 consecutive control measurements are greater than 2 standard deviations of control limits on the same side of mean within or across the run, with this rule.

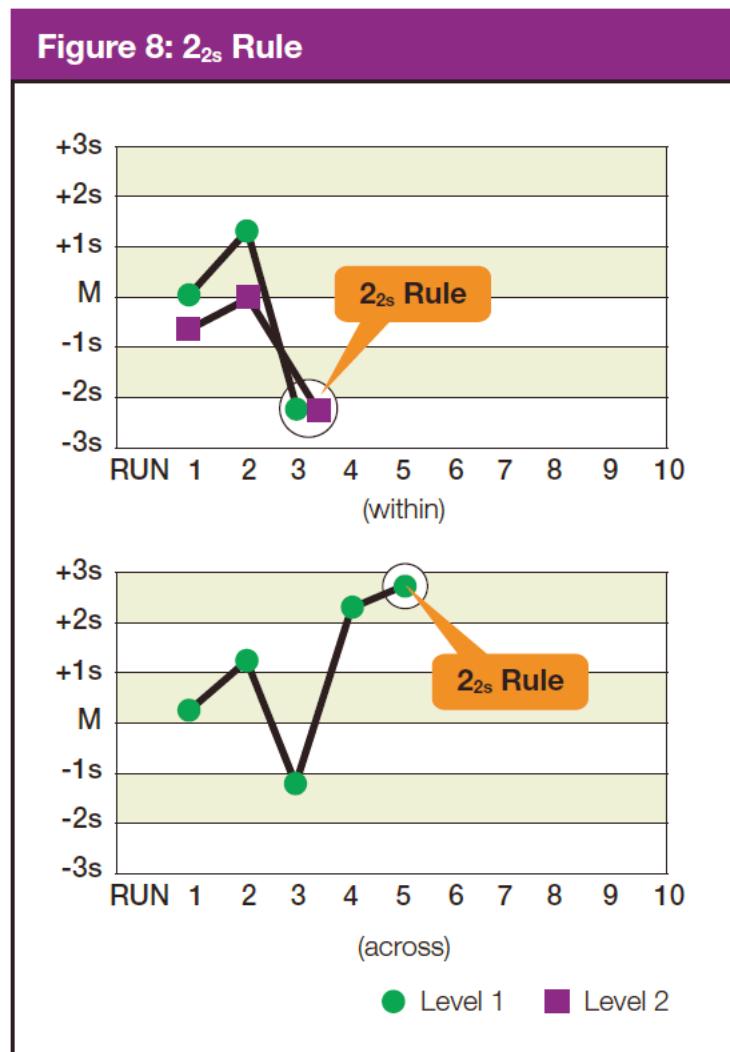
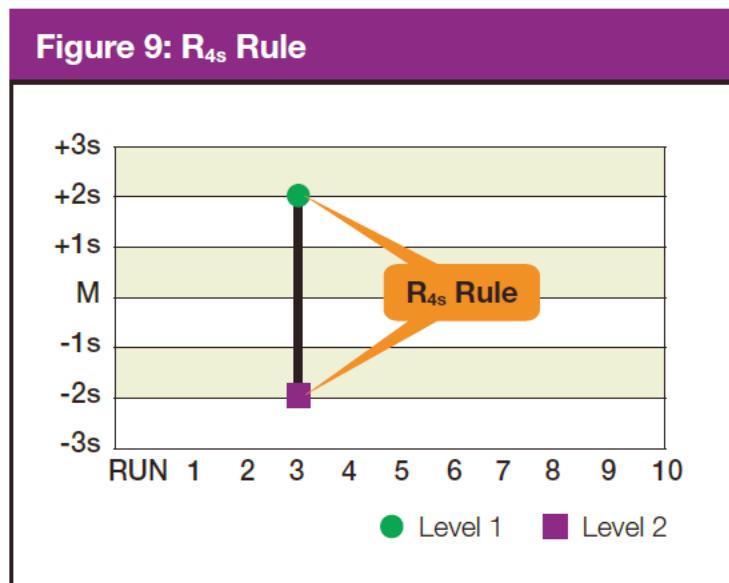


Exhibit 6-6. Westgard Rule_{4s}

Rule 4s. This rule rejects a run if there is at least a 4 SD difference between control values within a single run. For example, Level 1 control is + 2.9 SD above the mean and Level 2 is -1.4 SD below the mean. The total difference between the 2 control levels is greater than 4 SD. This rule identifies random error and is applied only within the current run.



NOTE: Violation of any of the following rules does not necessarily require rejection of the **analytical** run. These violations typically identify smaller systematic error or analytical bias that is not often clinically significant or relevant. Analytical bias may be eliminated by performing calibration or instrument maintenance.

Exhibit 6-7. Westgard Rule 4_{1s}

Rule 4_{1s} This rule is violated with the 4th consecutive control measurement exceeding 1 standard deviation on the same side of the mean. Troubleshooting action includes calling the Coulter hotline to see if other labs are reporting a bias with the same lot number of control. Perform any suggested diagnostic action or recalibrate if suggested by Coulter.

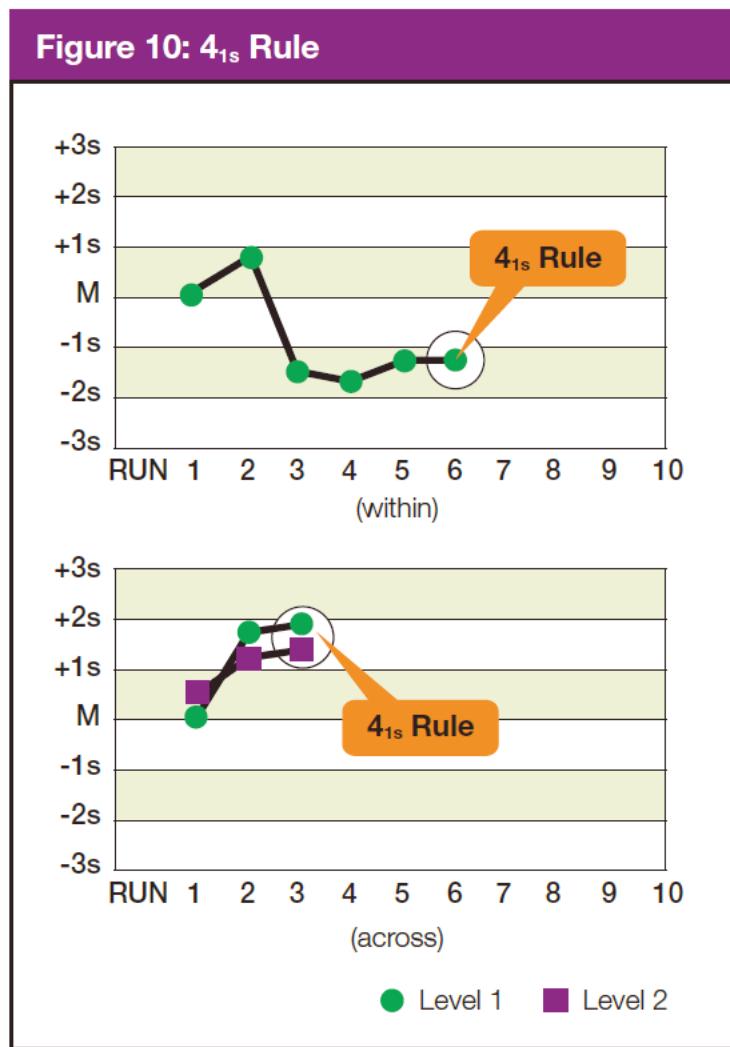


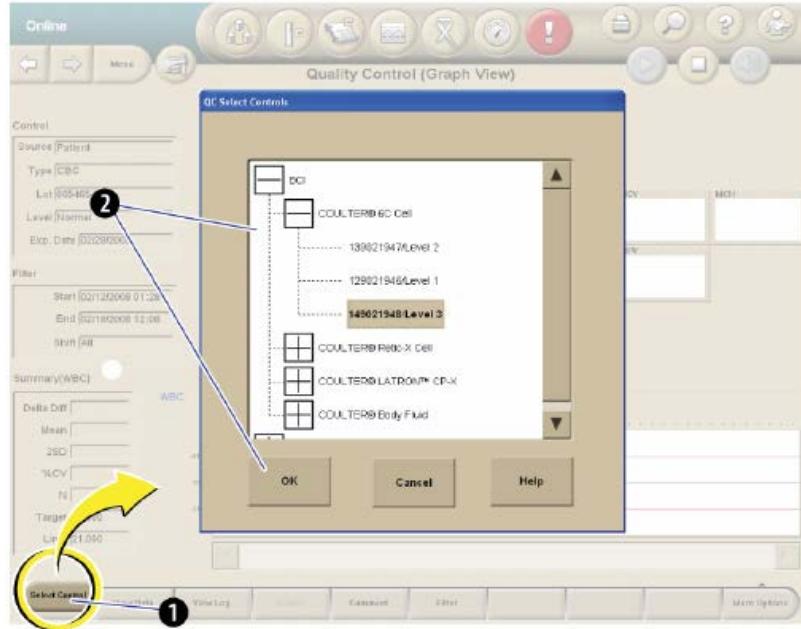
Table 6-2 lists the components seen on the QC Data View screen.

Table 6-2. Components on the QC Data View screen

Component	Description
Delta Diff	The difference between the calculated mean and the assigned target of the parameter within the specified filter. NOTE: If the Extended QC is enabled, and Extended QC limits have been configured, and the equation below is greater than (absolute Delta Diff/BCI Target Value) x 100, is greater than the Systematic Error limit, the Delta Diff will be highlighted in yellow for that parameter if N>=2 and N<15 or in red if N>=15. If the parameter's target is not applicable, N/A displays in this field.
Mean	The calculated mean of the included points within the specified filter.
25D	The calculated SD of the included points within the specified filter.
%CV	The calculated Coefficient of Variation of the included points within the specified filter. NOTE: If the Extended QC is enabled and Extended QC limits have been configured and the CV value is greater than the Random Error limit, the %CV will be highlighted in yellow for that parameter if N>=2 and N<15, or in red if N>=15.
RMSE	Root Mean Square Error (RMSE) displays when Extended QC is enabled. See Figure 4.2. The RMSE is a Single Measurement Error. If the value exceeds the Single Measurement Error limit, the RMSE value will be highlighted in yellow for that parameter if N>=2 and N<15. The value is highlighted in red if N>=15. If the parameter's target is not applicable, NA displays in this field.
N	The number of included points within the specified filter.
Target	The assigned target of the parameter being used in your lab at the time of the control analysis. The target used by Extended QC will be based on what has been configured for Traditional QC (either assigned or Mean to Target values).
(Assigned or Mean)	If Beckman Coulter or manually-entered targets are used, then the label below this heading reads "Assigned;" If means are used, then the label below the heading reads "Means." If the parameter's target is not applicable, N/A displays in this field.
Limit	The traditional expected limit of the parameter in use in your lab at the time of the control analysis.
(Manual, 2SD, or Lab)	If assigned limits are used, then the label below this heading reads "Manual." If SDs or Lab Limits are used, then the label below this heading reads "2SD" or "Lab," respectively.
Date/Time	The date and time of the control analysis.
Exclude	Allows you to exclude the results of that run from the control statistics calculations.
Reviewed By	Displays one of the following: <ul style="list-style-type: none">■ IF the run has not yet been reviewed: A Click to Review link that allows you to review the run.■ If the run has been reviewed: The reviewer's user name and the review date and time.
Presentation	Displays the method of presentation for each run in the control file. <ul style="list-style-type: none">■ C = Cassette Presentation■ S = Single-tube Presentation
Comment	A comment icon  displays in this column if any comments have been added.
Ref. RBC	If the control type is a RETIC only, a REF , RBC heading and numeric value display on the left side of the screen under the Summary Data columns. If the control is RETIC only and the Reference RBC Target and Limit are not set, No Value will display in the Ref. RBC field.

Selecting a Control

- From the Quality Control (Data View) screen or the Quality Control (Graph View) screen, select the Select Control button on the Local Navigation Bar to display the QC Select Controls dialog box.



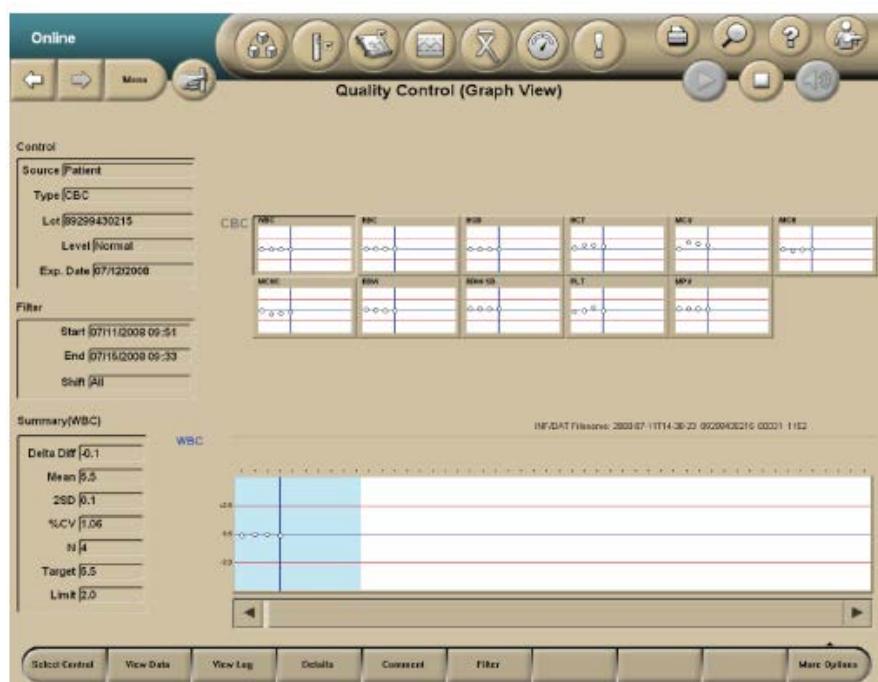
- Highlight the desired control and select OK.
- Exclude and rerun any control that is out of range. Document action taken to correct QC under comments on the Coulter screen in the affected control.

Viewing Control Files Graphically (Menu>QA>QC>View Graph)

From the Quality Control – Data View screen, select the View Graph button OR select a parameter (row) and double-tap the thumbnail Levey-Jennings graph.

The Quality Control (graph view) screen displays the following:

- Up to 31 thumbnail Levey-Jennings graphs, one graph per parameter.
- An expanded Levey-Jennings graph for the selected parameter data.
- Summary data for the selected parameter.



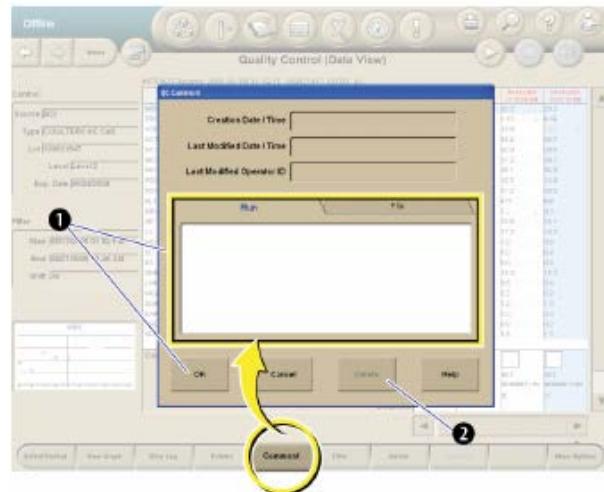
Using and Interpreting the Levey-Jennings Graphs

- The top half of the Quality Control (graph view) screen displays all parameters associated with controls.
 - Levey-Jennings graphs display the latest run points for all parameters.
 - Each graph displays up to 10 points, and these change to reflect the scrolling of the expanded graph.
 - The points shown in the blue shaded window of the expanded graph reflect those shown in the thumbnail graphs.

- The point cursor on the thumbnail graphs is synchronized with the selected run within the data grid and the point cursor in the expanded graph.
- If you select a thumbnail graph, it will be displayed in the expanded graph section on the lower half of the screen.
- Any thumbnail graph's border displays red if it contains a QC Out point.
 - Once all runs in a graph are reviewed, its border will return to normal color, but the QC Out point will remain red in the graph.
 - If the results violate the extended QC Single Measurement Error, the point will be yellow.
- The expanded Levey-Jennings graph at the bottom of the Quality Control (graph view) screen displays all of the results for a selected parameter in the control file.
 - The blue-shaded window on the expanded graph, which contains up to 10 points and the point cursor, determines the points and cursor displayed in the thumbnail graphs.
- The point cursor is a blue vertical line on the graph that reflects the date selected in the Data View.
 - The cursor can be moved left or right by using the scroll bar or by selecting either the data points on the graph or the control run analysis Date/Times in the Data View table.
 - If the cursor moves to a point outside the window, the window shifts so that the new point displays in the window as the furthest right or left point.

Add, Modify, or Delete Comments to QC Results

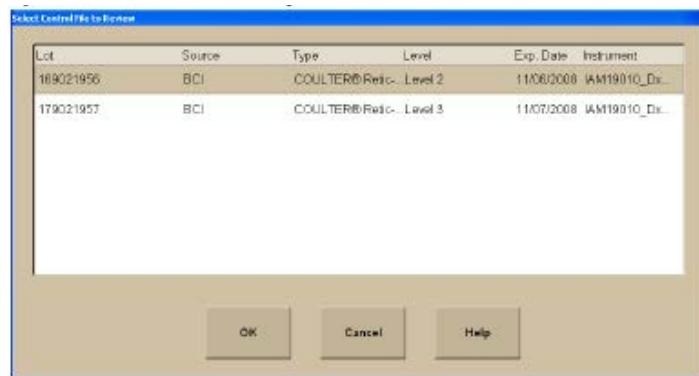
- From the Quality Control (data view) or the Quality Control (graph view) screen, select the Comment button to display the QC Comment Dialog Box.



- The creation date/time, modified date/time, and last modified Operator ID will not be populated until the entry of the comment has been completed.
- To add or modify a comment on a control run, select the Run tab, type in the text box, and select OK.
- To add or modify a comment on a control file, select the File tab, type in the text box, and select OK.
- To delete a comment, select the Delete button.

View Control Files Under Error Conditions

- Under Error conditions, the Quality Control Status icon at the top of the screen is red.
- If more than one lot triggered an error condition, the Select Control File to Review dialog box displays.
- All lots that are OUT are displayed on the dialog box.
- To review a specific log, select the lot and select the OK button.



Sample Analysis

6.12.1 Status

- The SPM must be online to run samples.
- You can view the status of the SPM in the Status Mode area at the upper left corner of any screen, except the home screen.

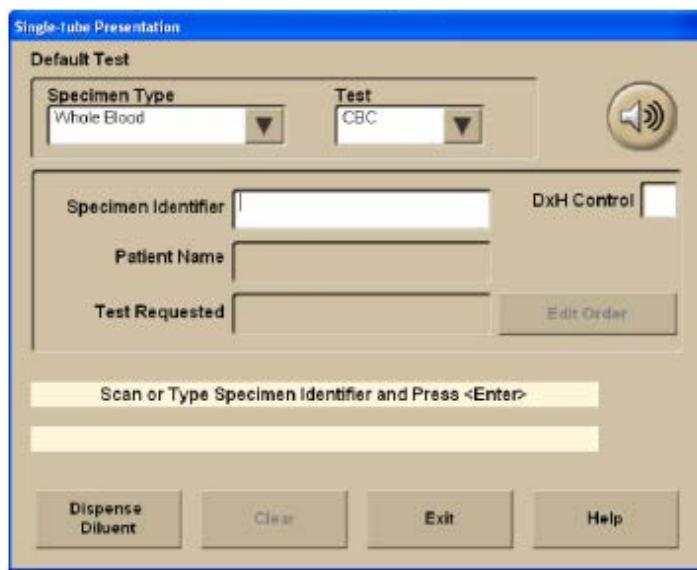


Cassette Presentation

- Ensure that the SPM is set up for the appropriate test for your workflow.
- Ensure that your specimens have been collected and stored properly.
- Load the specimens into the cassettes. Narrow tubes with small internal diameters will require manual premixing prior to analysis to ensure proper cell and plasma distribution and to avoid possible erroneous results. Premix these tubes before placing them in the cassette and then analyze the cassette by placing it in the Stat position of the input buffer.
- Place the cassettes in the input buffer to the right of the SPM. The SPM automatically begins cycling the cassettes.
- After the SPM cycles the samples, review the sample results at the SM. To avoid serious injury, do not place your hand through the cassette presentation opening on the SPM.

Single-Tube Presentation

- Ensure that your specimens have been collected and stored properly.
- Select the Single-Tube Presentation icon  at the top of any screen to display the Single-Tube Presentation dialog box.



- Place the specimen on the bar code reader platform of the Single-Tube Presentation Station with the bar code facing the SPM to allow the Single-Tube Presentation bar-code reader to scan the specimen label. The bar code may also be scanned with the handheld scanner or the Specimen Accession Number may be typed into the Specimen Identifier field.

- Verify the Specimen Accession Number and test request. Acknowledging the ID that displays on the SM screen indicates that you accept the either bar code label read or the manual entry.
- Thoroughly mix the specimen.
- Place the specimen in the correct single-tube position.
- Do not place a closed tube or a 16 mm-diameter tube in the right position of the single-tube presentation station. Doing so could cause incomplete aspiration and an erroneous result.

Handling Alarms

- An audible or visible alarm on the DxH 800 system should be addressed by reviewing the Event Logs on the History Log screen.
 - The Worklist-Custom tab can be used to select from predefined or user-defined filters to set the audible alarms.

Evaluation of Data

Flags

Flags appear to the right of the result:

- For some parameters, flagging occurs as a result of the flagging or editing of other parameters.
- Flags in the following exhibit are shown in order of placement on screens and printouts, with the highest priority flags at the top within each space.
- A yellow background on the screen indicates that results were above or below a reference range.
- A red background on the screen indicates that results exceeded an action or critical limit or that another flag was present.
- Flags appear in one of four positions to the right of the result.
- The flags are listed in order of priority within each space. It is possible to have flags in each of the four positions.

Refer to Exhibit 6-8 to interpret DxH flags.

Exhibit 6-8. Interpretation of DxH flags

Flag and position				Description
1	2	3	4	
e				Result calculated from a manually edited parameter.
+				Result above the measuring range.
-				Result below the measuring range.
R				Review the result. Special handling is required for editing a result flagged with R. Any parameter derived from an R-flagged parameter cannot be recalculated until that parameter is edited. R flags may also indicate that a System Message has occurred. Check the message area on the patient result screen and the History Log > General table for details.
c	L			Low critical limit exceeded.
c	H			High critical limit exceeded.
a	L			Low action limit exceeded.
a	H			High action limit exceeded.
	H			High reference range limit exceeded.
	L			Low reference range limit exceeded.
	P			Partial aspiration detected during sample analysis.
	N			Non-blood sample detected.
	D			Delta check triggered.

Codes

Codes appear in place of results when the system cannot generate results:

- Codes are also called nonnumeric results.
- Codes in the following table are shown in order of the placement on screens and printouts, with the highest priority flags at the top within each space.

Refer to the following list to interpret DxH codes.

= = = =	<p>Analysis was disabled at the configuration level of the SM (Menu > Setup > System > Analysis).</p> <p>For example: IF NRBC is temporarily disabled, any results with an NRBC enumeration in the panel will display = = = = in place of the NRBC values. The = = = = persists in the database after the analysis has been re-enabled.*</p>
xxxxx	<p>Although available on a panel, this parameter was not enabled as a Test (Menu > Setup > Reporting > Tests) at the time of analysis; however, after this analysis, the parameter was enabled as a test.</p> <p>For example: Sample A was analyzed for a CR panel, but the IRF and MRV were not enabled as Tests.</p>

	Later, IRF and MRV were enabled as Tests; therefore, the system will not display the IRF and MRV parameters for CR panel results but, for Sample A, xxxx displays in place of a value for those parameters.
:::::	Flow cell clog was detected.
-----	Total voteout occurred. No average histogram will appear for the affected parameter.
	Incomplete computation. May occur in place of calculated parameters because a voteout or over-range occurred for a primary parameter used in the calculation. Occurs when the instrument cover is opened.*
+++++	Result exceeds the operating range.
?????	Result is outside the range of values that can be formatted for display.
# # # # #	Results were rejected.

Messages

Messages can be results-related or demographic- or status-related:

- Results-related messages:

- Suspect messages (appear in red) are generated by internal algorithms to convey that a clinical condition may exist with a specimen based on an abnormal cell population or distribution.

Refer to the *Unicel DxH 800 Help Manual* onboard the analyzer for a detailed list of all Suspect messages.

- System messages (appear in green) indicate an event occurrence that may affect the operation of a system, requires operator notification, or entry into a History Log.

The majority of system messages are accompanied by an R (review) flag. Some are accompanied by N or P flags.

Refer to the *Unicel DxH 800 Help Manual* onboard the analyzer for a detailed list of all system messages.

- Definitive messages (appear in blue) appear for results based on exceed limits configured as part of an individual flagging set.

Definitive messages can be created by copying reference ranges, or by manual entry of your own message definition.

Refer to definitive messages in the setup chapter of the onboard *Unicel DxH System Help Manual*.

- Demographic/status-related messages.

- Exception Messages.

- If there are any exceptions for a specimen, a comments indicator displays in the System Status Message area below the patient demographics.

- Select the Additional Data button to view the Exceptions.

- System Status Messages indicate that the instrument was operating in some nonstandard state when a specimen was analyzed. These states are usually the result of some user action. They do not indicate that any problem was seen when the specimen was analyzed; instead, they indicate that the system was being operated in a manner in which some problems might not be detected.

- Lab Action Messages are triggered by Decision Rules programmed in the analyzer.

These messages are listed in the Lab Actions area of the Patient Results screen.

All Specimens

- Misleading results can occur if the specimen is not properly collected, stored, or transported. Beckman Coulter recommends that you follow CLSI or equivalent procedures to ensure proper specimen collection, storage, and transport. Always follow the manufacturer's recommendations when using micro-collection devices for capillary specimen collection.
- Misleading results can occur if specimens contain clots. Always use good laboratory practices for inspecting specimens for clots and verifying results.
- Misleading results can occur if the specimen is not properly mixed. Always use good laboratory practices to ensure that specimens are appropriately mixed. Do not bypass or circumvent the automated mixing process used on the DxH 800.
- When running a test panel, with NRBC analysis enabled, the information from the analysis is used to supplement interference detection, flagging, and correction.

■ WBC and TNC

- NRBCs, giant platelets, platelet clumps, malarial parasites, precipitated elevated proteins, cryoglobulin, microlymphoblasts, very small lymphocytes, fragmented white cells, agglutinated white cells, lyse resistant red cells, unlysed particles > 35 fl in size.
- Elevated WBC counts may have a carryover effect on subsequent leukopenic specimens, within the limits specified by Beckman Coulter. (See the Carryover section in the *Unicel DxH Help Manual* on board the analyzer.)

■ RBC

- Very high WBC count, high concentration of very large platelets, auto-agglutination.
- If hemolysis is occurring in vivo, the instrument RBC may be flagged as low, reflecting the true circulating cells. If, however, the hemolysis is in vitro, the specimen may give falsely low RBC results. Cell counts due to in vitro hemolysis do not represent the number of circulating red blood cells.
- **HGB**—severe lipemia, heparin, certain unusual RBC abnormalities that resist lysing.
- **MCV**—very high WBC count, high concentration of very large platelets, auto-agglutination.
- **RDW**—very high WBC count, high concentration of very large platelets, auto-agglutination.
- **PLT**—giant platelets, platelet clumps, white cell fragments, electronic noise, very small red cells, and red cell fragments.
- **HCT**—known interferences related to RBC and MCV.
- **MCH**—known interferences related to HGB and RBC.
- **MCHC**—known interferences related to HGB, RBC, and MCV.

- **NRBC**—known interferences may be related to the following:
 - Lyse-resistant red cells.
 - Malarial parasites.
 - Very small or multi-population lymphocytes.
 - Precipitated elevated proteins.
- Differential
 - Hypogranular granulocytes, agranular granulocytes, lyse resistant red cells, very small or multi-population lymphocytes, elevated triglycerides, precipitated elevated proteins.
 - A transient basophilia may be observed in samples that have been exposed to high temperatures (90° F or 32 °C). The temporary basophilia should resolve after stabilization at room temperature (72°F or 22° C).

Laser Safety

The Multi-Transducer Module contains a laser. A laser is a unique light source that exhibits characteristics different from conventional light sources.

The safe use of the laser depends upon familiarity with the instrument and the properties of coherent, intense beams of light. The beam can cause eye damage and instrument damage. There is enough power from the laser to ignite substances placed in the beam path, even at some distance. The beam might also cause damage if contacted indirectly from reflective surfaces (specular reflection). The laser on the DxH 800 is covered by a protective housing.

Calibration of the DxH 800

The S-CAL calibrator kit determines the adjustment factors for the calibration of the Coulter DxH 800. Calibration is a procedure to standardize the instrument by determining its deviation from calibration references and to apply any necessary correction factors. Calibration is performed in the closed-vial mode at ambient room temperature range (16-32°C, 60-90°F), using S-CAL as an alternative to whole blood.

Perform Calibration

- At the start of each stand, before you begin analyzing samples;

- After you replace any component dealing with dilution preparation, such as the BSV primary measurement, such as an aperture; and
- If your Beckman Coulter representative suggests that you calibrate.

Verify the Calibration of Your Instrument

- If controls show unusual trends or are outside limits; and
- When room temperature varies more than 10°F (5.5°C) from the room temperature during the last calibration.

Coulter Pre-Start-Up Procedure

Supply List: (1) Diluent; (1) Cell Lyse; (1) Diff Pak; (1) Cleaner; Latron; and 6C Cell Controls.

Arrangements for a Beckman Coulter representative to perform the necessary Pre-Start Up procedures on the DxH 800, prior to the arrival of the team to the stand, will be arranged by the Chief Field Medical Technologist in advance. These pre-start-up procedures for the representative will include:

- Removal of the travel brackets;
- Placement of all reagent lines in the reagents: Diluent, Cell Lyse, Diff Pack, and Cleaner (No RETICS!!!);
- Power up the analyzer;
- “Wetting” the analyzer (full prime of the system); and
- Flow cell adjustment.

A placard will be available for the representative (placed on the right side of the analyzer) with detailed instructions of the tasks that will need to be performed prior to the arrival of the team. The representative will be given the chief technologist’s number and email address in the event of any questions concerning the instructions.

Initial DxH 800 Startup

Perform a daily check after the instrument has been “Shutdown for at least 30 minutes.” Select Menu > QA > Daily Checks > Daily Checks > OK.

Draw three 4-ml EDTA tubes from a person with a normal CBC.

Inventory all Coulter reagents – mark with receive dates. (Once reagents have been opened, mark with an open date and tech initials).

- Log into the DxH SM

**BEFORE DELETING THE PREVIOUS STAND'S DATABASE OR CONTROL FILES,
VERIFY WITH THE CHIEF TECHNOLOGIST THAT IT IS OK TO PROCEED WITH THE
FOLLOWING INSTRUCTIONS.**

- **Delete the database from the previous stand** – Menu >Worklist > Custom > Advanced Search > Insert > Specimen > Analysis Date/Time > Between > Start Date/Time (*Enter MM/DD/YYYY & 24 HR hh:mm:ss that is at least 3 months prior to the current date*) and End Date/Time (*Enter MM/DD/YYYY & 24 HR hh:mm:ss that is 1 day before the current Setup date*) > Select OK > Select Save As (*Create a Filter Name – Stand #:* the stand you are getting ready to begin) > Search > Delete Order > Select All Test Orders in Current Filter > Select OK > Warning Box Will Appear, Select OK.
- **Delete previously used 6C Cell Control Files** – Menu > QA > QC > More Options > QC Setup > Select Previous (Older) Control File (will be highlighted) > Delete Control >OK.

You can only delete control files one at a time.
- **Enter reagent lot numbers and expiration dates** – Menu > Supplies > Setup > *Scan the Reagent Barcodes* > Select OK.
- **Enter 6C Cell Control lot numbers and expiration dates** – Menu > QA > QC > More Options > QC Setup > New Control from Barcode > Scan the 6C Cell Insert Barcode > Select ALL & Auto Transmit > Select OK.
- **Enter Latron Control lot numbers and expiration dates** – Menu > QA > QC > More Options > QC Setup > New Control from Barcode > Scan the Latron Insert Barcode > Select ALL & Auto Transmit > Select OK.
- **Double click the Coulter Icon on the desktop**, and verify that the icon is in the Task Bar (right-hand corner of the screen).
- **Enter 6C Cell and Latron Control Lot Information into ISIS** – Right-click on the Lab Coulter Icon in the Task Bar > Select Expected Values > Scan the Insert Barcode > Press Tab Key > Verify ALL Values > Select OK. Perform for both 6C Cell and Latron Control File Inserts.
- Place QC and Latron package inserts in the Coulter Binder.

Storage, handling, and stability: Sealed vials are stable through the expiration date when stored at 2–8° (35–46°F). S-Cal when opened is stable for 1 hour.

Repeatability, Carryover Check, and Calibration

Repeatability

Supply List: (2) 4-ml EDTA tubes filled with normal blood.

Before you can start or restart the Carryover process, the SPM must be **offline**.

Ensure that you have enough normal whole blood from a **single donor** for a minimum of 10 cycles, and delete any data on the Repeatability screen before starting a new study.

- Use (2) 4-ml EDTA tubes (aspiration probe damage can occur if a specimen tube is pierced more than five times).
- Select Menu >QA > Repeatability > Repeatability Setup:
 - Presentation: Cassette
 - Test Panel: CD
 - Number of Aspirations: 5
 - Select OK and follow the screen prompts.
- Place the two tubes in consecutive positions in a cassette, place the cassette in the input buffer, and Select OK on the DxH dialog box to start the cycle.
- When the cycle has completed, review the results on the Repeatability screen. Use the scroll bar to review all the results. Verify the %CV and the Diff parameters (see limits below). Select Finish.
- Verify that the coefficient of variation (CV) does not exceed the established Repeatability Limits:
 - **WBC** 2.5
 - **RBC** 2.0
 - **HGB** 1.5
 - **MCV** 2.0
 - **PLT** 5.0

- **MPV** 3.0
- Check the low to high difference (bottom line) for the **Diff** parameters with these Limits:
 - **NE%** \leq 4.8
 - **LY%** \leq 4.8
 - **MO%** \leq 3.2
 - **EO%** \leq 1.6
 - **BA%** \leq 1.6

If any of the results are outside the limits, call Beckman Coulter Customer Service.

- If all the results are within these parameters: Print > Select “Finish”, and proceed with Carryover Check.

Use the **%CV** line for CBC parameters only and the Diff line for the differential parameters only. Please see *Chapter 1: System Overview - Performance Specifications and Characteristics* section in the Help Menu for additional information regarding Repeatability limits for acceptability (Table 1.1 and Table 1.7).

Carryover

Supply List: One 4-ml EDTA tube filled with normal blood and three empty 4-ml EDTA tubes.

NOTE: Remove S-CAL from refrigerator to allow time to acclimate to room temperature. Before you can start or restart the Carryover process, the SPM must be offline.

- Fill three empty 4-ml Vacutainer® EDTA tubes with diluent. Select Single-Tube Presentation Icon > Dispense Diluent > Select OK. Place one empty capped EDTA tube in the purple tube holder on the left-hand side of the cradle. *1 ml of diluent is dispensed during this process.* Once completed, “Do you want to dispense more diluent in the same tube?” box will appear > Select No. Remove the filled EDTA tube, and repeat the above steps two more times to fill the 2 remaining empty EDTA tubes with diluent. Select Exit > “Are you sure you want to exit Single-tube Presentation?” >Select Yes.
- Select Menu > QA > Carryover > Carryover Setup:
 - Presentation: Cassette
 - Test Panel: CD
 - Select OK and follow the screen prompts.

- Select OK to start the Carryover procedure.
- Place a cassette in the input buffer with one blood tube followed by three diluent tubes consecutively and Select OK to start the Carryover procedure.
- When Carryover is complete, review the results on the Carryover screen. If any of the Carryover results “FAIL”, repeat the procedure.

If the Carryover results “FAIL” after the second attempt, call Beckman Coulter Customer Service.

- If the status of all parameters is “PASS”: Print.

When performing a Carryover procedure, the calculated percent Carryover and/or Background for each parameter is compared to the Carryover and Background limits for acceptability. Please see *Chapter 1: System Overview - Performance Specifications and Characteristics* section in the Help Menu for additional information regarding Carryover and Background limits for acceptability (Table 1.12 and Table 1.13).

Calibration

Supply List: (1) S-CAL Calibrator.

NOTE: Before you can start or restart the Calibration procedure, the SPM must be offline.

- Allow S-CAL to warm to ambient (room) temperature for approximately 15 minutes.
- Select Menu > QA > CBC Calibration > Calibration Setup. You will be prompted by a dialog box which states: Existing Data will be deleted. Select OK to continue.
 - Number of Aspirations: 11.
 - Presentation: Cassette.
 - Calibrator Type: BCI.
- Select Upload > *Scan the S-Cal Insert Barcode* > Verify ALL Values > Select OK.
- Mix the S-CAL by hand by rolling the tube slowly between the palms of the hands eight times in an upright position. Invert the tube and slowly roll it again eight times. Gently invert the tube eight times. Repeat these actions. When all cells are uniformly distributed, place the calibrator in the cassette.
- Place the cassette in the input buffer and Select OK to start Calibration Procedure.
- Exclude the first run by checking the box beside that run.

- Review the Calibration results.
- If all the results are within the specified parameters: Print > Select Finish.
- If results recommend Calibration (the boxes at the bottom of the calibration screen are check marked) > Select OK.

The background of the Factor %Diff, %CV, and Difference cells changes color when the presented value is out of the normal range as follows:

- Yellow for Difference indicates that the value is out of range, which means that calibration is recommended.
- Red applies only to the %CV and indicates that the statistical value is NOT within range and the system does NOT allow calibration.

When all results are acceptable, the Edit System Recommendations button at the bottom right corner of the screen is enabled. This button allows the modification of the calibration recommended by the system by selecting or deselecting check boxes.

- Verify the Calibration by running controls. Menu > QA > QC > Select Control > *Select the Control that you want to view* > Select OK] Select “Reviewed By” to review controls > Print.

NOTE: Place all printed charts and control inserts into the DxH Logbook, and have all results verified by a Beckman Coulter Representative via a VIP Service Call or an email. Have a copy of the VIP Service Report sent to the chief technologist’s Westat email.

This is the NHANES Coulter Monitor icon. It must be open and running at the start of each session. This icon stores all DxH 800 runs in the ISIS database. Double-click on the Coulter icon, so it displays in the lower right task bar. Once the icon is displayed, the Coulter and the ISIS Laboratory application are communicating with each other.

Run Study Participants

Exhibit 6-9 presents a picture of blood tubes.

Exhibit 6-9. Picture of tubes



- Place tube in the cassette and place in the SPM.
- Run all samples in duplicate. The DxH is now set to automatically rerun SP samples in duplicate, but not controls.

To set DxH 800 for automatic repeat of each SP sample, use the following sequence of steps:

Menu> Set-up>Flagging/Rules>Rules> Select decision rule workbench tab (upper right)>Add Rules>Rule name: “Type “Repeat” at the *> Specimen Type: use drop-down menu and select whole blood>Rule description: “Type automatic repeat if condition RBC<10”> Additional test: Check Rerun box in additional test box>OK. Place analyzer offline>Activate Decision Rules Tab (middle center tab) > Activate Rule (lower left)

- Run samples in the primary mode.

Check to make sure the printer is working properly. Operate the analyzer with the doors and panels closed. Monitor reagent levels.

Review Data and Transmit

- Review the data. Menu>Patient Results.
- Data from the Coulter DxH 800 are automatically transmitted to the ISIS system when the NHANES Coulter monitor icon has been opened on the ISIS screen.
- Use the Worklist screen to sort, retrieve, transmit, and archive data to CD. Transmit data from the Coulter® DxH 800 to ISIS as necessary. Save all data to CD at the end of each stand.

Daily Shutdown

See Section 6.8, pages 6-13 to 6-15.

Prolonged Shutdown

- If the instrument is going to be idle for >72 hours, as in summer or winter 2-week breaks, adjust the shutdown procedure as follows: Menu>QA>Daily Checks>AutoConfiguration>Configure Shutdown> Uncheck Daily, Check only boxes for every other day (Mon, Wed, Fri, Sun)> OK. Ensure that there is sufficient cleaner and diluent for shut-downs during the break time.

Beginning and End of Stand Operations

- Beginning of stand:
 - Arrange for a Coulter service representative to remove all travel brackets and re-wet the system.
 - Follow procedure for Calibration, Repeatability, and Carryover Check.
- End of stand.

NOTE: Call Coulter Support to have an engineer install the travel brackets and perform the travel shutdown procedure for the DxH 800.+ **Before the engineer performs this service,** the following tasks must be completed by the technologist assigned to the Coulter for that stand:

Transmit All Current Stand QC data into ISIS

- Select (QC Icon) > Select Control > Select 6C Cell Control Level 1 > Transmit > Select All Runs in Current Control File > Select OK. The Coulter Icon on the workstation computer will “flicker” to indicate the transmission of data. Once the flickering has stopped, repeat the same steps beginning with Select Control and transmit QC data for 6C Cell Control Levels 2 & 3, followed by the Latron Control File.

Print ALL 6C Cell Control and Latron Files

- Select [QC Icon] > Select Control > Select 6C Cell Control Level 1 > Select [Printer Icon] > Change Report Type to Summary Report > Select [*Control Lot*] and check mark all Current

Stand Controls (Both Latron and 6C Cell Files) > Select [*Print*] All Runs > Select [*Print Options*] Data Report and Graphical Report > Select Thumbnails > Select Print.

- Clip all the reports together with a binder clip and place them in Renee's End of Stand FedEx Box.

Export DxH 800 Data to Three (3) Discs

- DISC 1: IQAP
 - **Export IQAP Data. Insert a blank disc into the disc drive.** Select Menu > Set up > Quality Control > IQAP Export > All DxH Control Lots > Multiple Shifts > CD Recorder > Start > Follow screen prompts.

*Label the disk **IQAP** and include **Stand # and MEC #** and place the disc in Renee's End of Stand FedEx Box.*
- DISC 2: LOGS
 - **Export Log Data. Insert a blank disc into the disc drive.** Select Menu > Logs > Export > Select ALL in (1) Event, (2) Data Summary, (3) Maintenance, and (4) Audit Logs > Select and Enter Date Range (Start of Stand to End of Stand) > Select Start. The disc will automatically eject out of the disc drive upon completion.

*Label the disk **Logs** and include **Stand # and MEC #** and place the disc in Renee's End of Stand FedEx Box.*

- DISC 3: DATABASE

- **Export Patient Log (Database).** Insert a blank disc into the drive. Select Menu > Worklist > Custom > Advanced Search > Filter Name (Stand #) > Insert > Specimen > Analysis Date/Time > Between (Start of Stand to End of Stand) > OK > Search > Export > Type CSV > All Results in Current Filter > Destination CD Recorder (G:\) > **Select Start.** The disc will automatically eject out of the disc drive upon completion.

*Label the disk **Database** and include **Stand # and MEC #** and place the disc in Renee's End of Stand FedEx Box.*

Perform Cleaning Procedures on the DxH 800 and Assimilate Paperwork for Shipment to Home Office

- Clean the aspiration probe. Select Menu > Maintenance > Clean Aspiration Probe > [Start]. Once Procedure has Completed Select Finish > [OK].
- Clean the BSV, the Handheld Barcode Scanner, and the STM and wipe the analyzer's exterior with lint-free tissue and deionized water.
 - Complete the Hematology Maintenance Log and include all of the paperwork from the Hematology Notebook, including the following: Daily Check Logs, Package Inserts, Precision Checks, and Calibration Data. This information should be binder-clipped separately into the respective subsections and included in the End of Stand FedEx Box to the Laboratory Component Specialist at Westat. The box can now be sealed and sent with the rest of the shipment.

Service performed by a Beckman-Coulter Representative

- Discard all trash and empty reagent boxes after the representative has finished decommissioning the analyzer.
 - Strap down and secure the DxH and computer monitor for the impending travel.

Coulter Reportable Range of Results

Table 6-3 presents the Coulter reportable range of results.

Table 6-3. Coulter reportable range of results

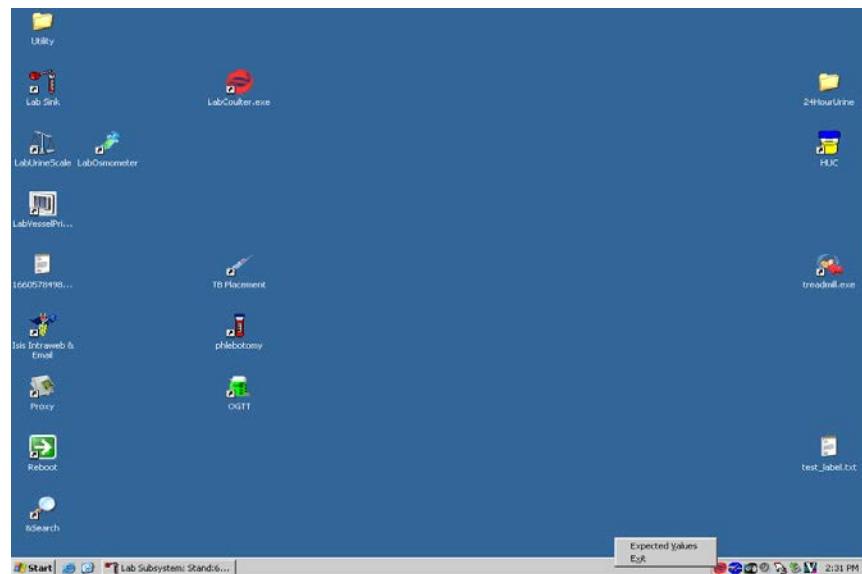
Parameter	Linearity	Limits: The greater of
WBC $\times 10^3$ cells/ μl	0 to 99.9	0.2 or 3.0%
RBC $\times 10^6$ cells/ μl	0 to 7.00	0.05 or 2.0%
Hgb g/d	0 to 25.0	0.2 or 3.0%
MCV fL	50.0 to 150.0	2.0 or 3.0%
Plt $\times 10^3$ cells/ μl	0 to 999	10.0 or 7.0%
MPV fL	5.0 to 20.0	5.0%

Integrated Survey Information System

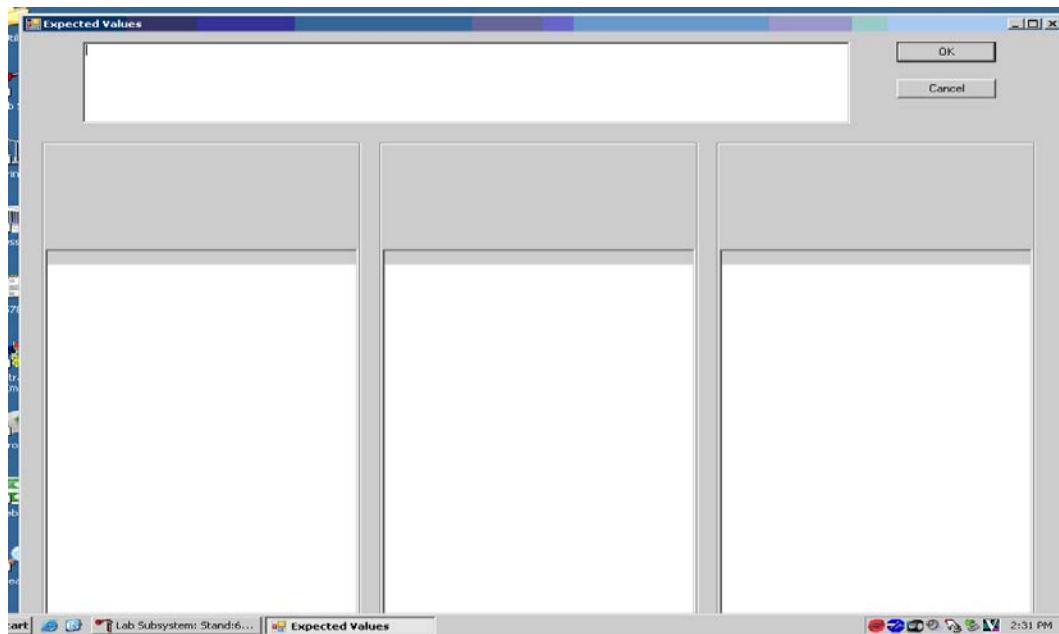
Record 6C Cell and Latron® Lot Numbers in Integrated Survey Information System

The Computerization: The Integrated Survey Information System (ISIS) maintains the capability to download all 6C cell and Latron® control data. The data are used to monitor quality control results. Upload or enter data for each lot number each time a new lot number is put into use. The ISIS uses the same 6C cell control package insert and Latron package insert as the DxH 800.

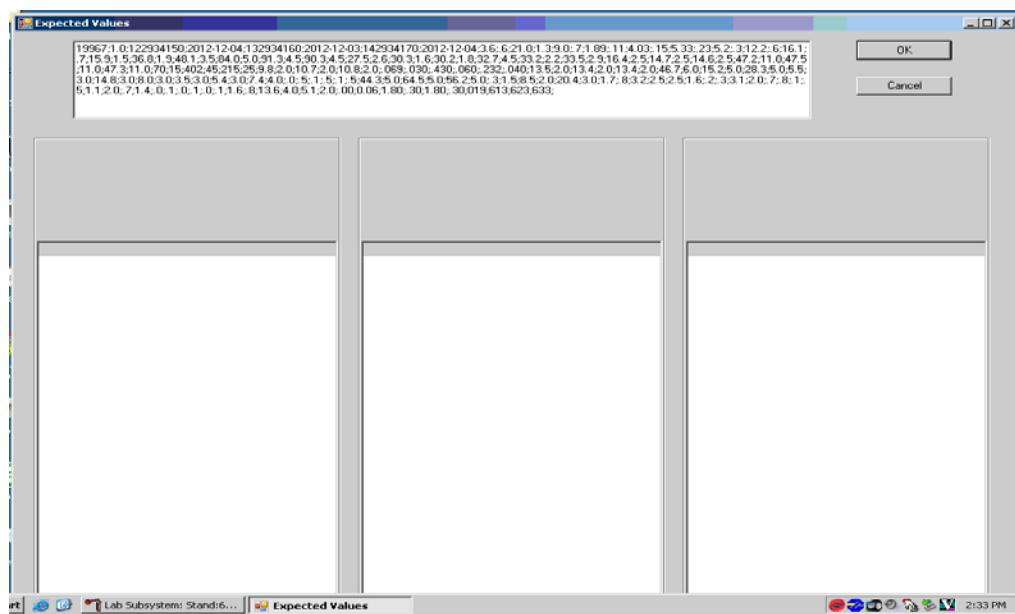
- Access the Coulter QC Lot Info module.
- Right-click on Coulter icon in the bottom right corner of window.



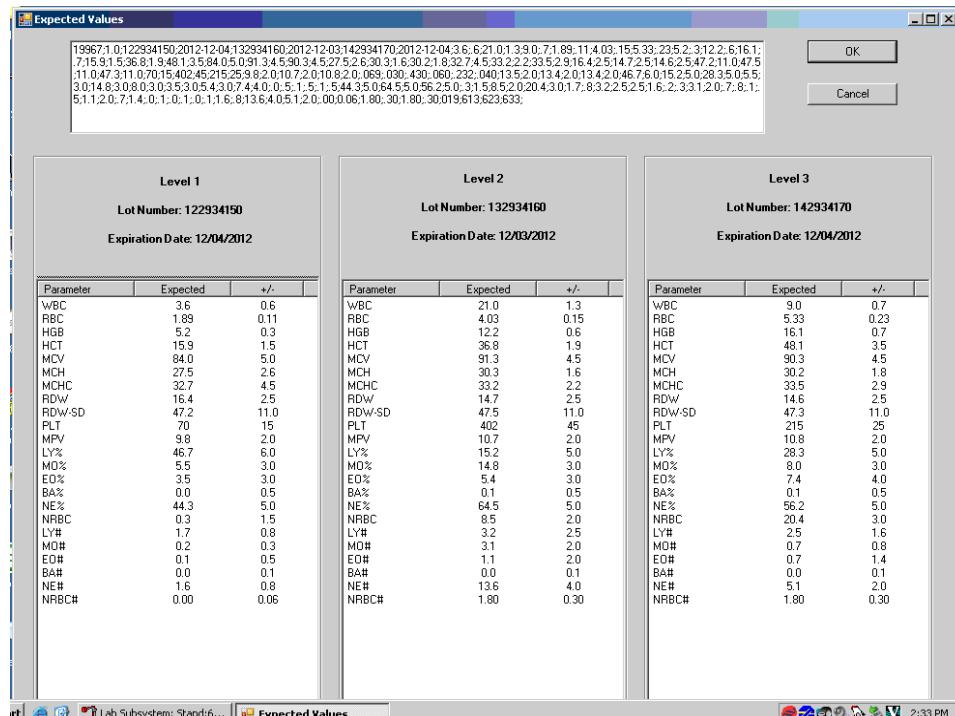
- Click on Expected Values to bring up the Coulter QC Input Screen for 6C cell controls and Latron QC.



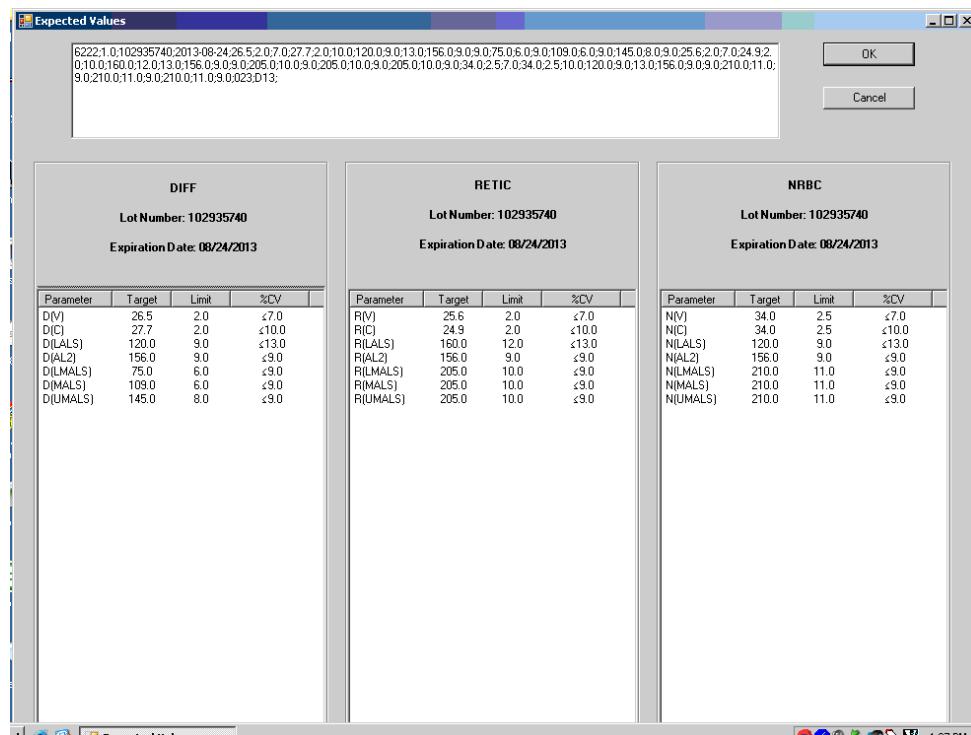
- Make sure cursor is in the top window, scan the bar code on the Coulter Package insert, and wait until data fill in the top window.



- Tab to populate the bottom windows for each level of 6C cell control.



- Screenshot depicting Latron QC expected values for Diff, Retic, and NRBC.



- Check the expected values against the package insert and click OK to save and exit.

Interlaboratory Quality Assurance Program (IQAP)

All instruments participate in Coulter's IQAP program. The IQAP program includes saving results of 6C cell controls, transferring them to a CD, and sending them to Coulter who compares the results to other laboratories. Coulter issues a report that contains a statistical analysis to evaluate performance. Perform this procedure at the end of each stand.

The procedure to download IQAP files to CD follows:

- Slide the CD into the drive and gently close CD holder.
- Menu > QA > QC > More options (bottom of screen) > Export.
- Type: CVS.
- Data Selection: All runs in current control file.
- Folder: CD Recorder Radio Button.

Repeat for each of the three levels of QC.

Reviewing IQAP Peer Group Means (Chief Techs)..

- Use the website - <https://qapweb.beckmancoulter.com/qapweb/>.
- Login.
- Choose the Analyzer (with note that B1 is MEC 3, B2 is MEC 2, B3 is MEC 1).
- Review active pool statistics.
- Put in lot number of 1st level 6C.
- View report.
- Note: Look at Mean and SD (not the assayed value) which is what is on the assay sheet we get. The Mean and SD are the averages for all the labs submitting data for this lot using 800 DXH. The shown SD is 2 SD from the peer mean.
- BACK.
- Use same procedure for remaining lot #.

Proficiency Testing

Evaluation and participation in the College of American Pathologist (CAP) proficiency-testing program is part of the comprehensive quality control program. These survey materials are shipped three times per year and consist of five 3-ml whole blood specimens. Follow all CAP instruction in preparing the materials before performing the test. Run specimens in a manner identical to routine specimens. Fill out the CAP result form, make a copy for the logbook, and send results to CAP.

After the assigned primary medical technologist has tested and recorded results, other medical technologists are to perform the testing and record their results without consultation with primary tech. The secondary techs' results will be sent to the Laboratory Manager as a record of competency testing.

To make barcode labels:

- Utility on Desktop;
- “Dymo test labels”; and
- Highlight the label shown:
 - Click on “Properties” in far upper right
 - Symbology – choose “code 128 Auto”.
 - Data: Barcode delete “Click me” or “0000001” and type in proficiency sample number, i.e. FH6-01
 - Align: Center
 - Size: Medium
 - Show Barcode Text: Below
- Print: will print on dymo labelmaker
- Repeat for all 5 samples;
- Exit out; and
- “No” to “do you want to save?”

To auto print results for proficiency samples:

- Menu> Set Up> Reporting> Auto Report
- box “print Lab Report as Each Analysis is Complete”
- Back out of setup
- BE SURE to uncheck box after you have finished running and printing samples

Run Proficiency samples in cassette (will be run twice under current setup and each result will print separately).

- Average results on NHANES Hematology CAP Results worksheet;
- Computer> MECSTAFF>Lab;
- Save as KitName-KitNumber_YYYY-MMDD_MEC#_Tech Initials_ P (for primary) or S (for secondary operator);
- Enter results on CAP paperwork; and
- Enter results in CAP site on computer using your own personal CAP login:
 - Log in to the CAP site with individual account info.
 - Click on the e-lab solutions suite.
 - On the right side of the screen, click on the Request access to laboratory data link.
 - The screen will open that will ask you to enter the CAP number.
 - Enter – 6910001.

Have another tech proof your computer entry before final send. Take a picture of your worksheet as a copy of your work, print for your records. Place your worksheet with indication of kit number, primary or secondary operator, your name and date in the Heme logbook to forward to Component Manager at end of stand and also email the primary copy to component manager. Record on your annual CAP survey Check Sheet. Indicate if you were primary or seconday operator

Linearity for WBC, RBC, Hgb, and Plt Parameters

Lin-X™ (PN 628029) – The Lin-X™ linearity control verifies the reportable range of Coulter® hematology system parameters for WBC, RBC, Hgb and Plt.

OR

CAP Hematology Calibration Verification/Linearity Survey (LN9) - These materials are shipped once per year and consist of 18 3-ml liquid specimens. Follow all CAP instruction in preparing and running the materials before performing the test. Fill out the CAP result form, make a copy for the logbook, and send results to the Laboratory Manager at the end of the stand.

Run either the Lin-X™ or CAP LN9 survey material:

- At installation;
- At least yearly; and
- Whenever experiencing an altitude change of 1 mile or more between stands.

Principle – Lin-X™ linearity controls are human blood components from which repeated measurements verify the reportable range of Coulter hematology systems. Controls contain 12 vials, ranging from 0-12. Lin-X™ verifies the ranges for the following parameters: WBC, RBC, Hgb, and Plt.

To ensure the accuracy of linearity control ranges, Coulter system calibrates with S-CAL calibrator.

Interpretation of Results and Remedial Action

Sample Person Hemoglobin and Hematocrit Review and Remedial Actions

Review all results to make sure the hemoglobin and hematocrit are acceptable. The hematocrit should be approximately three times the hemoglobin. If an “H&H Does Not Match Flag” pops up on both runs of an SP, repeat run using the EDTA sample from processing, if available, as a check. Report out results if all runs are similarly flagged. Delete all but two of the runs before averaging.

SP Parameter Value Review and Remedial Actions

1. Access the Hematology module or reject a clotted blood tube.

Open the Hematology module.

The Hematology module does not need to be open before running SP samples on the DxH 800. Note the red icon in the lower right corner of the system tray.



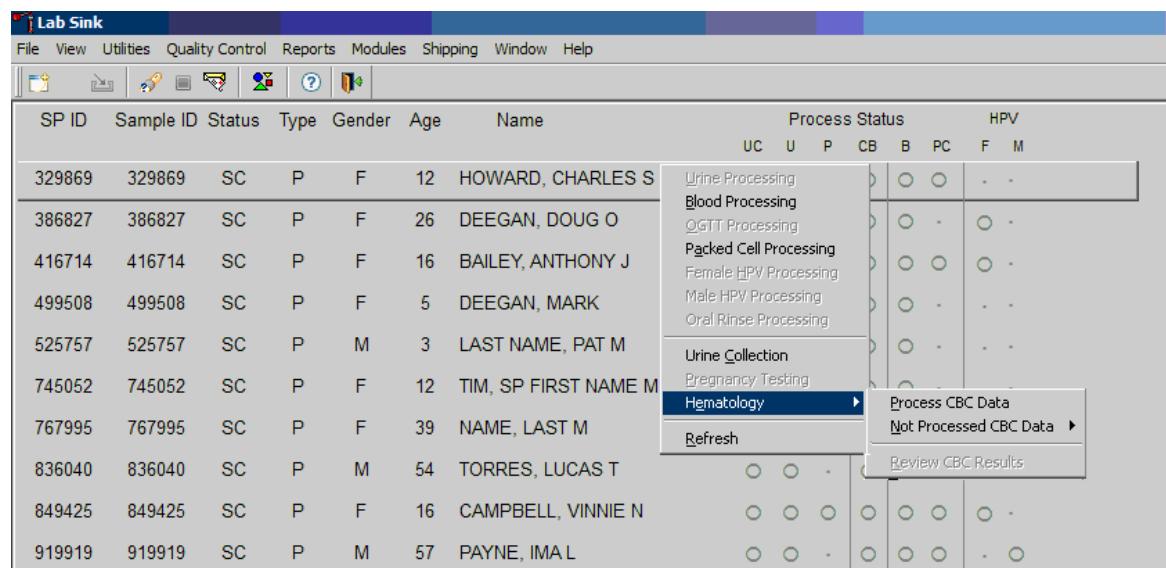
This is the NHANES Coulter Monitor icon. It must be open and running at the start of each session. This icon stores all DxH 800 runs in the ISIS database. Double-click on the Coulter icon on the desktop to open the application.



Open the Hematology module: direct the mouse arrow to Modules, in the top menu bar, left-click, drag the mouse arrow to Hematology, and right-click.

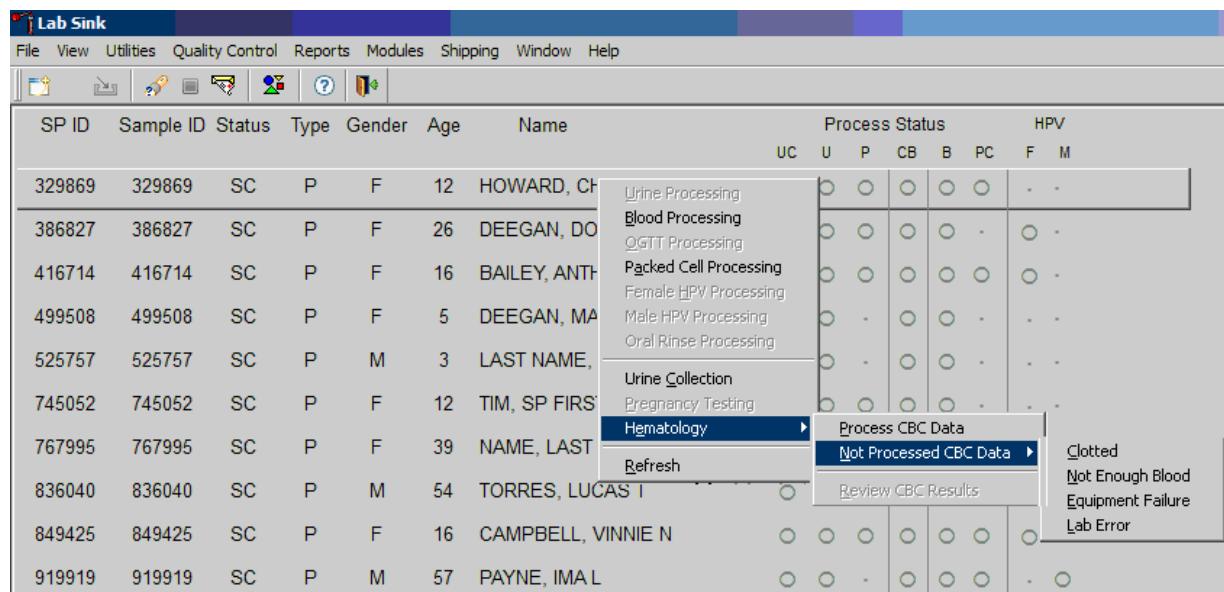
SP ID	Sample ID	Status	Type	Gender	Age	Name	Process Status				HPV		
							UC	U	P	CB	B	PC	F M
329869	329869	SC	P	F	12	HOWARD, CHARLES S	<input type="radio"/>					
386827	386827	SC	P	F	26	DEEGAN, DOUG O	<input type="radio"/>					
416714	416714	SC	P	F	16	BAILEY, ANTHONY J	<input type="radio"/>					
499508	499508	SC	P	F	5	DEEGAN, MARK	<input type="radio"/>	<input type="radio"/>	-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
525757	525757	SC	P	M	3	LAST NAME, PAT M	<input type="radio"/>	<input type="radio"/>	-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
745052	745052	SC	P	F	12	TIM, SP FIRST NAME M	<input type="radio"/>					
767995	767995	SC	P	F	39	NAME, LAST M	<input type="radio"/>					
836040	836040	SC	P	M	54	TORRES, LUCAS T	<input type="radio"/>	<input type="radio"/>	-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
849425	849425	SC	P	F	16	CAMPBELL, VINNIE N	<input type="radio"/>					
919919	919919	SC	P	M	57	PAYNE, IMA L	<input type="radio"/>	<input type="radio"/>	-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Alternatively, open the Hematology module from the heads-up display.



To access the Hematology module, direct the mouse arrow to any SP, right-click, drag the mouse arrow to Hematology then to Process CBC Data, and right-click. Alternatively, use the arrow keys to move up and down the list until a particular SP is highlighted, right-click, drag the mouse arrow to Hematology then to Process CBC Data, and right-click.

Either open the module or reject the specimen and add a reason or comment for every CB record where blood was drawn in phlebotomy AND there are no CBC results.



Open the module (Process CBC Data) or record a reason why the CBC is not being run (Not Processed CBC Data). Select or record a comment for every CBC that is not run. To complete opening or accessing the Hematology module, direct the mouse arrow to Process CBC Data and right-click. To record a reason why a CBC is not being run, direct the mouse arrow to the exact SP's line on the heads-up display, right-

click, drag the mouse arrow to Not Processed CBC Data, and drag the mouse arrow to the correct reason and right-click.

A pop-up window will display. Confirm the selection.

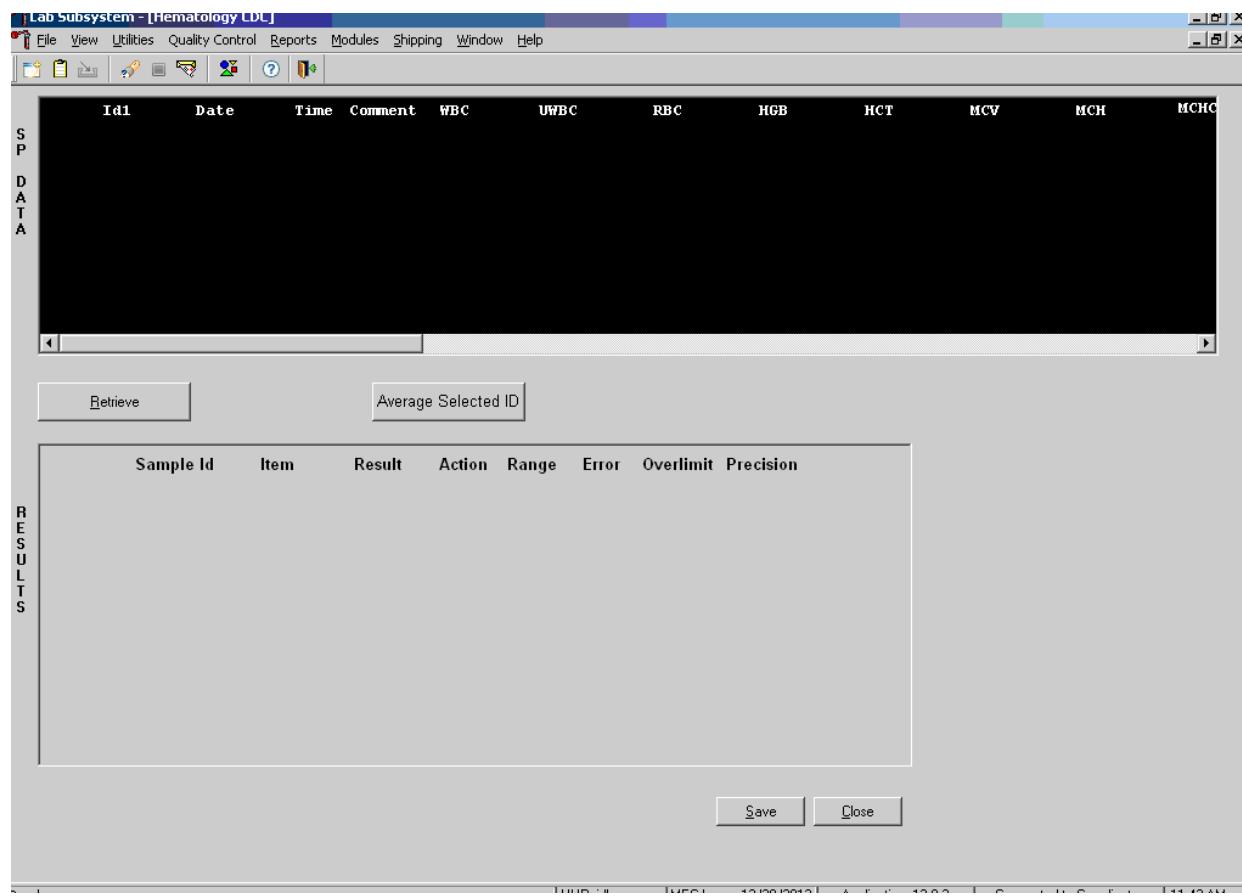
The screenshot shows the Lab Sink software interface. At the top is a menu bar with File, View, Utilities, Quality Control, Reports, Modules, Shipping, Window, and Help. Below the menu is a toolbar with various icons. The main area is a grid table with columns: SP ID, Sample ID, Status, Type, Gender, Age, Name, Process Status (UC, U, P, CB, B, PC), and HPV (F, M). A row for sample 416714 has a tooltip 'CBC Data Not Processed' over the CB column. A pop-up dialog box is centered over the grid, containing a question mark icon, the text 'Would you like to mark sample id 416714 as clotted?', and two buttons: 'Yes' and 'No'.

SP ID	Sample ID	Status	Type	Gender	Age	Name	Process Status						HPV	
							UC	U	P	CB	B	PC	F	M
329869	329869	SC	P	F	12	HOWARD, CHARLES S	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-	-
386827	386827	SC	P	F	26	DEEGAN, DOUG O	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-	-
416714	416714	SC	P	F	16	BAILEY, ANTHONY J	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-
499508	499508	SC	P	F	5	CBC Data Not Processed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-
525757	525757	SC	P	M	3		Would you like to mark sample id 416714 as clotted?						<input type="radio"/>	-
745052	745052	SC	P	F	12								<input type="radio"/>	-
767995	767995	SC	P	F	39								<input type="radio"/>	-
836040	836040	SC	P	M	54	TORRES, LUCAS T	<input type="radio"/>	<input type="radio"/>	-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-
849425	849425	SC	P	F	16	CAMPBELL, VINNIE N	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-
919919	919919	SC	P	M	57	PAYNE, IMA L	<input type="radio"/>	<input type="radio"/>	-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-

A CBC Data Not Processed message text box displays that asks, “Would you like to mark sample id XXXXXX as Clotted/Not Enough Blood/Equipment Failure/Lab Error?” To record a “Yes” response, direct the mouse arrow to the Yes button and left-click, type [Y], or press Enter. To record a “No” response, direct the mouse arrow to the No button and left-click, or type [N]. If a “Yes” response is recorded, the comment is saved to the database. If a “No” response is recorded, no comment is saved to the database. If the record is marked with the selection in the database, then the heads-up display updates to complete (the CB circle fills in black).

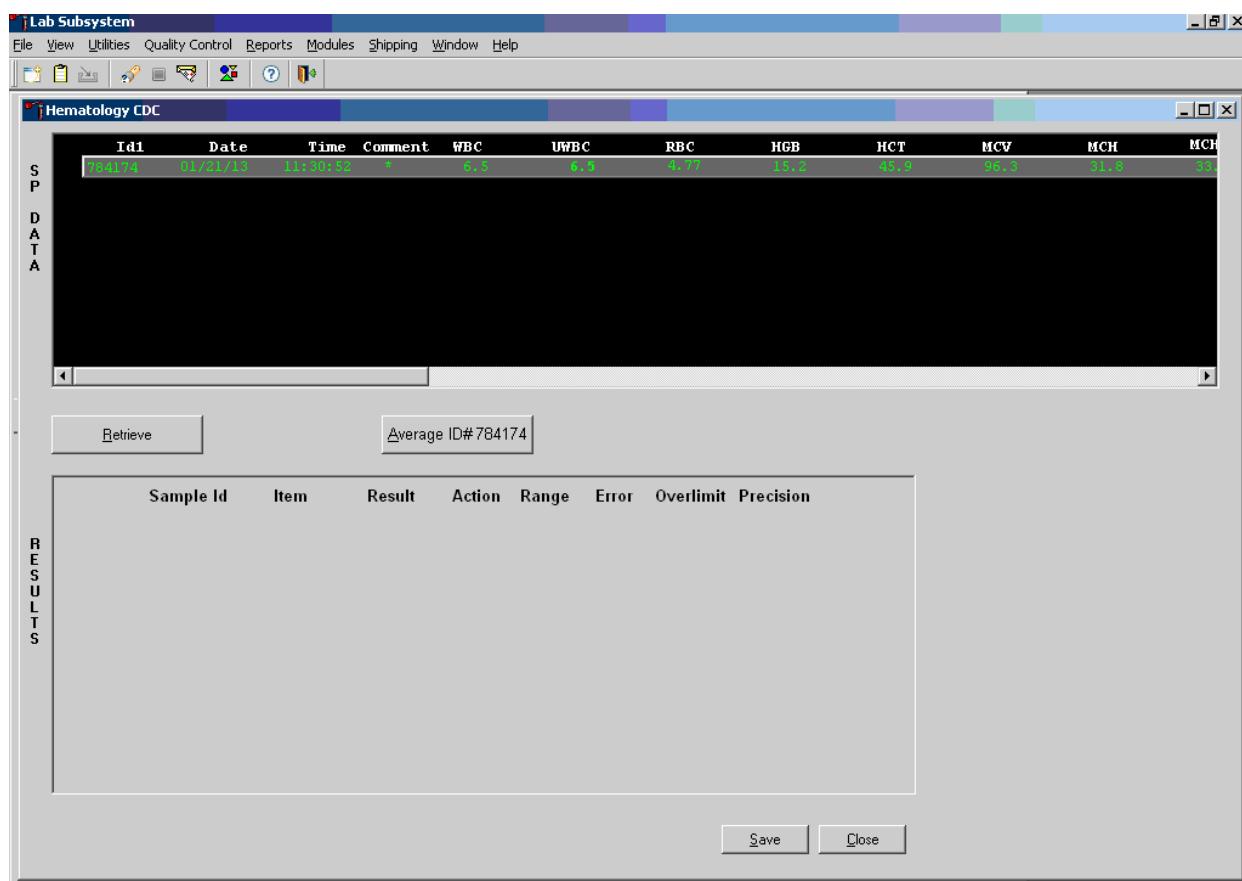
2. Hematology module overview

The CBC results are not automatically populated in the Hematology module. Use the Retrieve button to send the results from ISIS to the Hematology module. Select after each run. Make sure the Coulter DMS host computer icon (HC) is displaying an up arrow (\uparrow) in the DMS bottom tile bar.



After data are retrieved, they display in the top portion of the window, the SP Data section. This section includes the SP ID, the date and time the CBC was run, and columns for each parameter. The bottom portion of the window is the Results section. Results display after the Average Selected ID button is selected.

Review all Coulter data in the SP Data section after they are retrieved.



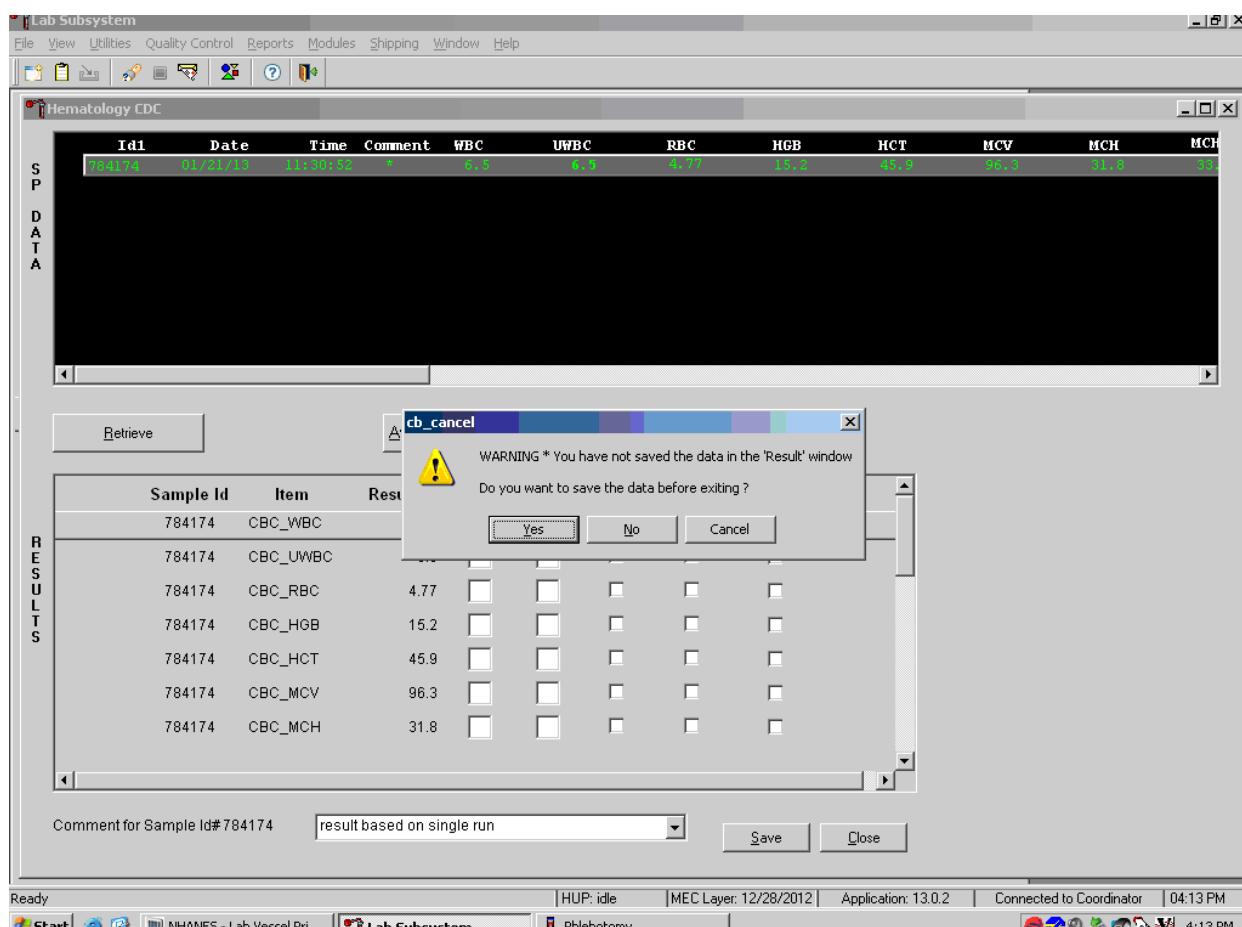
To view SP data for all parameters, direct the mouse arrow to the horizontal scroll bar at the bottom of the SP Data section and drag the scroll bar to the left or right. Alternatively, to view the SP data for all parameters, direct the mouse arrow to the small scroll arrows on the left and right edges of the horizontal scroll bar, and left-click.

Hematology Results section overview. The Result columns include: Sample ID, Item (CBC parameter), Result (Coulter data for a single run or the ISIS-averaged result for multiple runs), Action (CDC-established critical limits), Range (CDC-established reference ranges for both genders and four age groups), Error (Coulter-transmitted instrument errors), Overlimit (Coulter-transmitted result that exceeds the instrument's linearity limit), and Precision (CDC-established values for the difference between any two runs). Checkmarks display in boxes for parameters that have errors, are over limit, or for those that exceed precision limits. An "H" for "high" and "L" for "low" display for parameters that exceed action limits or reference ranges.

Average, evaluate, and save results for all parameters. The SP's results display in the bottom portion of the window after the Average Selected ID button is selected. To view results for all parameters, direct the mouse arrow to the vertical scroll bar at the right side of the Results section and drag the bar up or down.

Alternatively, to view all the results, direct the mouse arrow to the small scroll arrows on the top and bottom edges of the vertical scroll bar, and left-click. Evaluate each parameter for error, overlimit, and precision check marks, and “H” or “L” action limit and reference range flags. To save the result to the database, direct the mouse arrow to the Save button and left-click. After results are saved, they are erased from the screen. To exit without saving the result to the database, direct the mouse arrow to the Cancel button and left-click.

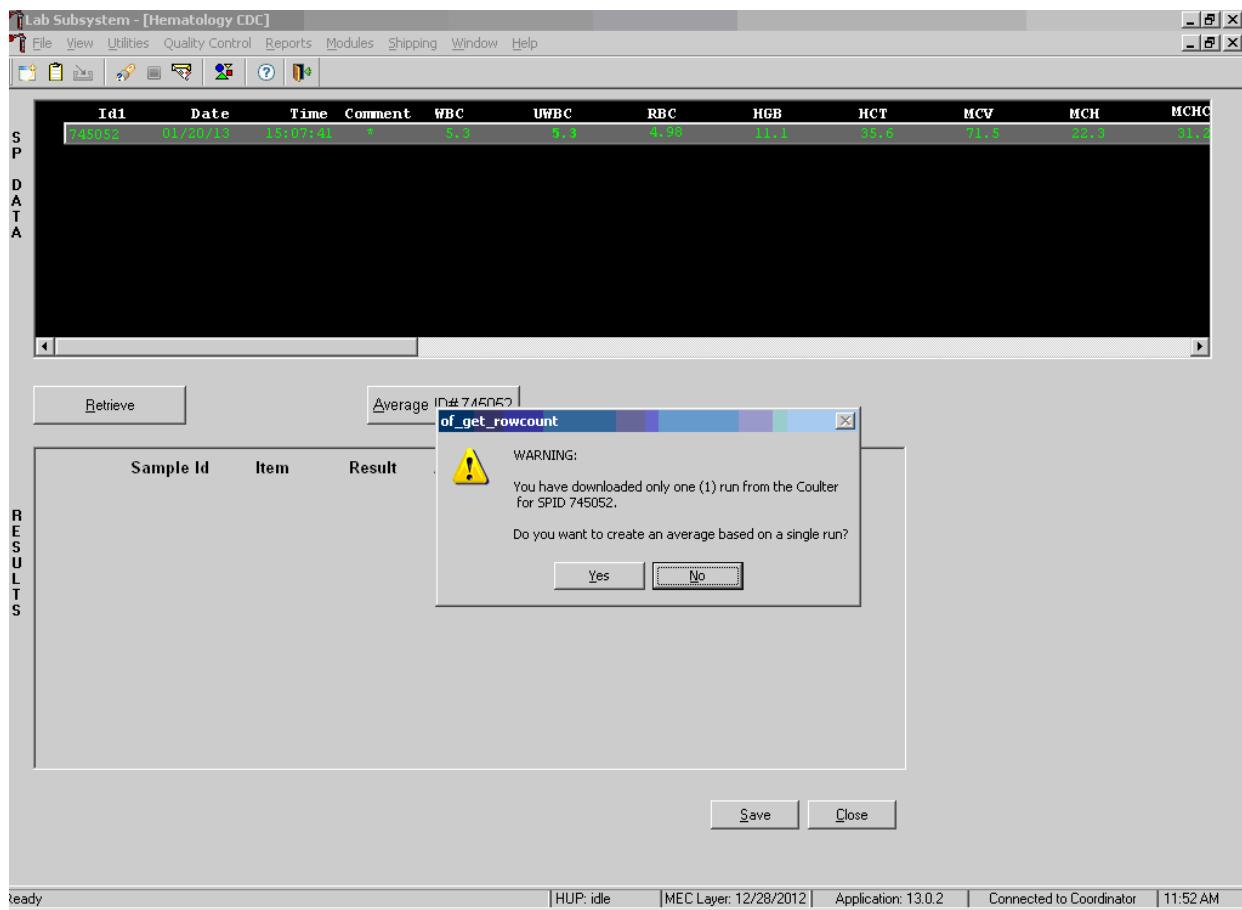
A warning text box displays if the Close button is selected before the results have been saved.



If the Close button is selected before the results are saved to the database, a warning message text box displays that states, “WARNING * You have not saved the data in the ‘Result’ window” and asks, “Do you want to save the data before exiting?” To record a “Yes” response, direct the mouse arrow to the Yes button and left-click, type [Y], or press Enter. To record a “No” response, direct the mouse arrow to the No button and left-click, or type [N]. To cancel the action, direct the mouse arrow to the Cancel button and left-click. If a “Yes” response is recorded, the CBC results are saved to the database and erased. If a “No” response is recorded, no results are saved to the database and the data in the Results section are erased. A Cancel response returns the screen to its previous state.

3. Running samples when only one run is possible

Save results where only one run was possible.



Run samples in duplicate whenever possible. If the whole blood is insufficient, it is acceptable to average and save only one run. To save results where only one run is possible, direct the mouse arrow to the Average Selected ID box and left-click. A warning message text box displays that states, “You have downloaded only one (1) run from the Coulter for SPID XXXXXX” and asks, “Do you want to create an average based on a single run?” To record a “Yes” response, direct the mouse arrow to the Yes button and left-click or type [Y/y]. To record a “No” response, direct the mouse arrow to the No button and left-click, or type [N/n], or press Enter. If a “Yes” response is recorded, the CBC results display in the bottom Results section of the window. A “No” response cancels the action and returns the window to its previous state.

For results where only one run was possible, the Comment box at the bottom of the window defaults to “result based on single run.”

4. Running samples in duplicate

Run all samples in duplicate and average the data.

The screenshot shows the 'Lab Subsystem' software interface for Hematology CDC. The main window displays a table of sample data with columns: Id1, Date, Time, Comment, WBC, UWBC, RBC, HGB, HCT, MCV, MCH, and MCHC. The data shows four rows of samples, each with a different ID (329869, 416714) and two runs (Date: 01/20/13, Time: 15:07:41 and 15:10:19). The 'Comment' column for the first two rows contains an asterisk (*), while the last two rows contain a question mark (?). The 'WBC' and 'UWBC' columns show values of 5.3 and 5.3 respectively, while 'RBC', 'HGB', 'HCT', 'MCV', 'MCH', and 'MCHC' show slightly different values for each run. Below the table, there are buttons for 'Retrieve' and 'Average ID# 416714'. A large 'RESULTS' section is present below the table, which is currently empty. At the bottom right are 'Save' and 'Close' buttons. The status bar at the bottom shows 'Ready', 'HUP: idle', 'MEC Layer: 12/28/2012', 'Application: 13.0.2', 'Connected to Coordinator', and '04:30 PM'.

Whenever a sample is run in duplicate, both results display in the SP Data section. To average these two results, direct the mouse arrow to Average ID#XXXXXX button and left-click.

Results display in the lower section of the window.

The screenshot shows the Lab Subsystem software interface with the following details:

- SP DATA Section:** Displays duplicate samples for sample ID 329869. The first row shows WBC values of 5.3 and 5.3. The second row shows RBC values of 4.98 and 4.99. The third row shows Hgb values of 11.1 and 11.1. The fourth row shows Hct values of 35.7 and 35.7. The fifth row shows MCV values of 71.4 and 71.4. The sixth row shows Mch values of 22.3 and 22.3.
- RESULTS Section:** A table showing detailed results for sample 329869 across various items (CBC_WBC, CBC_UWBC, CBC_RBC, CBC_HGB, CBC_HCT, CBC_MCV, CBC_MCH). The 'Result' column lists values (e.g., 5.3, 4.98, 11.1), and the 'Precision' column indicates whether they fall within CDC established limits (indicated by small squares).
- Buttons and Fields:** Includes 'Retrieve' and 'Average ID# 329869' buttons, a comment field '(none)', and 'Save' and 'Close' buttons.
- Status Bar:** Shows 'Ready', 'HUP: idle', 'MEC Layer: 12/28/2012', 'Application: 13.0.2', 'Connected to Coordinator', and '04:31 PM'.

The differences between duplicate values for WBC, RBC, Hgb, MCV, Plt, NE#, LY#, MO#, EO# and BA# are calculated and evaluated to determine if they are within the following CDC established precision limits (Table 6-4).

Table 6-4. CDC precision limits

Test	Precision limits
WBC	$\pm 0.4 \times 10^3$
RBC	$\pm 0.1 \times 10^6$
Hgb	$\pm 0.4 \text{ g/dL}$
MCV	$\pm 2.2 \text{ fL}$
Plt	$\pm 23 \times 10^3$
NE#	$\pm 0.4 \times 10^3$
LY#	$\pm 0.2 \times 10^3$
MO#	$\pm 0.2 \times 10^3$
EO#	$\pm 0.2 \times 10^3$
BA#	$\pm 0.2 \times 10^3$

If RBC parameters are out of range, evaluate the data for drift. If drift is evident, evaluate the possibility of an instrument malfunction. If any WBC differential absolute number is out of range, check the WBC scattergram for abnormal cell population(s). Evaluate and save results when precision limits are not exceeded.

Sample Id	Item	Result	Action	Range	Error	Overlimit	Precision
329869	CBC_WBC	5.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
329869	CBC_UWBC	5.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
329869	CBC_RBC	4.98	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
329869	CBC_HGB	11.1	<input type="checkbox"/>	L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
329869	CBC_HCT	35.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
329869	CBC_MCV	71.4	<input type="checkbox"/>	L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
329869	CBC_MCH	22.3	<input type="checkbox"/>	L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Evaluate results for all parameters. Evaluate each parameter for error, overlimit, and precision check marks, and "H" or "L" action limit and reference range flags. If there are no check marks in the Precision column (no precision limit was exceeded), save the results to the database. To save the results to the database, direct the mouse arrow to the Save button and left-click. After results are saved, they are erased from the screen. To exit without saving the result to the database, direct the mouse arrow to the Close button and left-click.

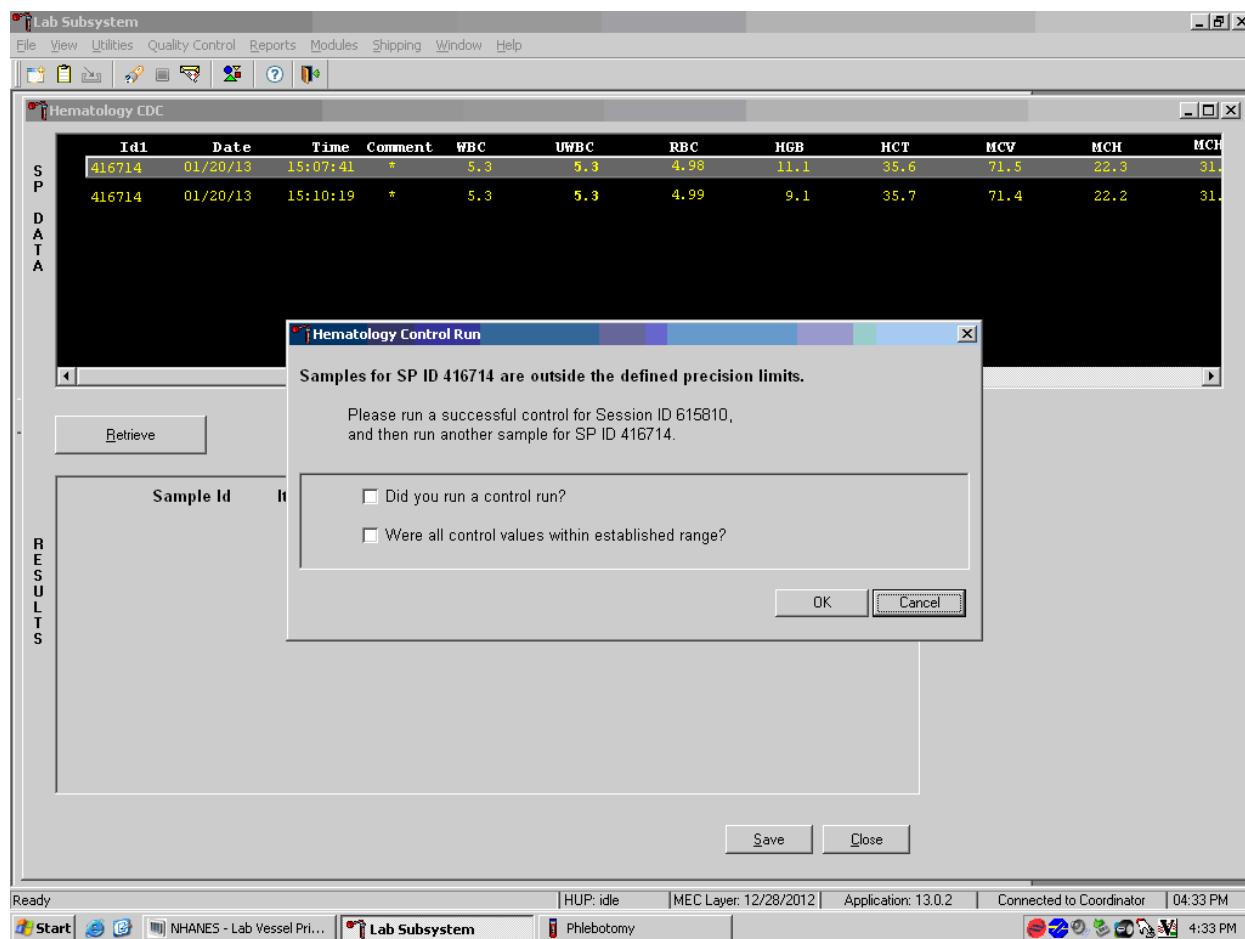
Average, evaluate, and rerun specimens that exceed precision limits.

The screenshot shows the Lab Subsystem software interface. The main window title is "Hematology CDC". The menu bar includes File, View, Utilities, Quality Control, Reports, Modules, Shipping, Window, and Help. The toolbar contains icons for New, Open, Save, Print, and others. The data grid displays hematology results for four samples (S, P, D, A) with ID#s 329869 and 416714. The columns include Id#, Date, Time, Comment, WBC, UWBC, RBC, HGB, HCT, MCV, MCH, and MCHC. The results show values such as WBC 5.3, RBC 4.98, HGB 11.1, HCT 35.6, MCV 71.5, MCH 22.3, and MCHC 31. Below the grid are "Retrieve" and "Average ID#416714" buttons. A vertical "RESULTS" column on the left lists Sample Id, Item, Result, Action, Range, Error, Overlimit, and Precision. At the bottom are "Save" and "Close" buttons. The taskbar at the bottom shows the application is ready, connected to Coordinator, and running at 12/28/2012, 13.0.2 version, 4:34 PM. The system tray icons are visible.

Sample Id	Item	Result	Action	Range	Error	Overlimit	Precision				
S	329869	01/20/13 15:07:41	*	5.3	5.3	4.98	11.1	35.6	71.5	22.3	31
P	329869	01/20/13 15:10:19	*	5.3	5.3	4.99	11.1	35.7	71.4	22.2	31
D	416714	01/20/13 15:07:41	*	5.3	5.3	4.98	11.1	35.6	71.5	22.3	31
A	416714	01/20/13 15:10:19	*	5.3	5.3	4.99	9.1	35.7	71.4	22.2	31

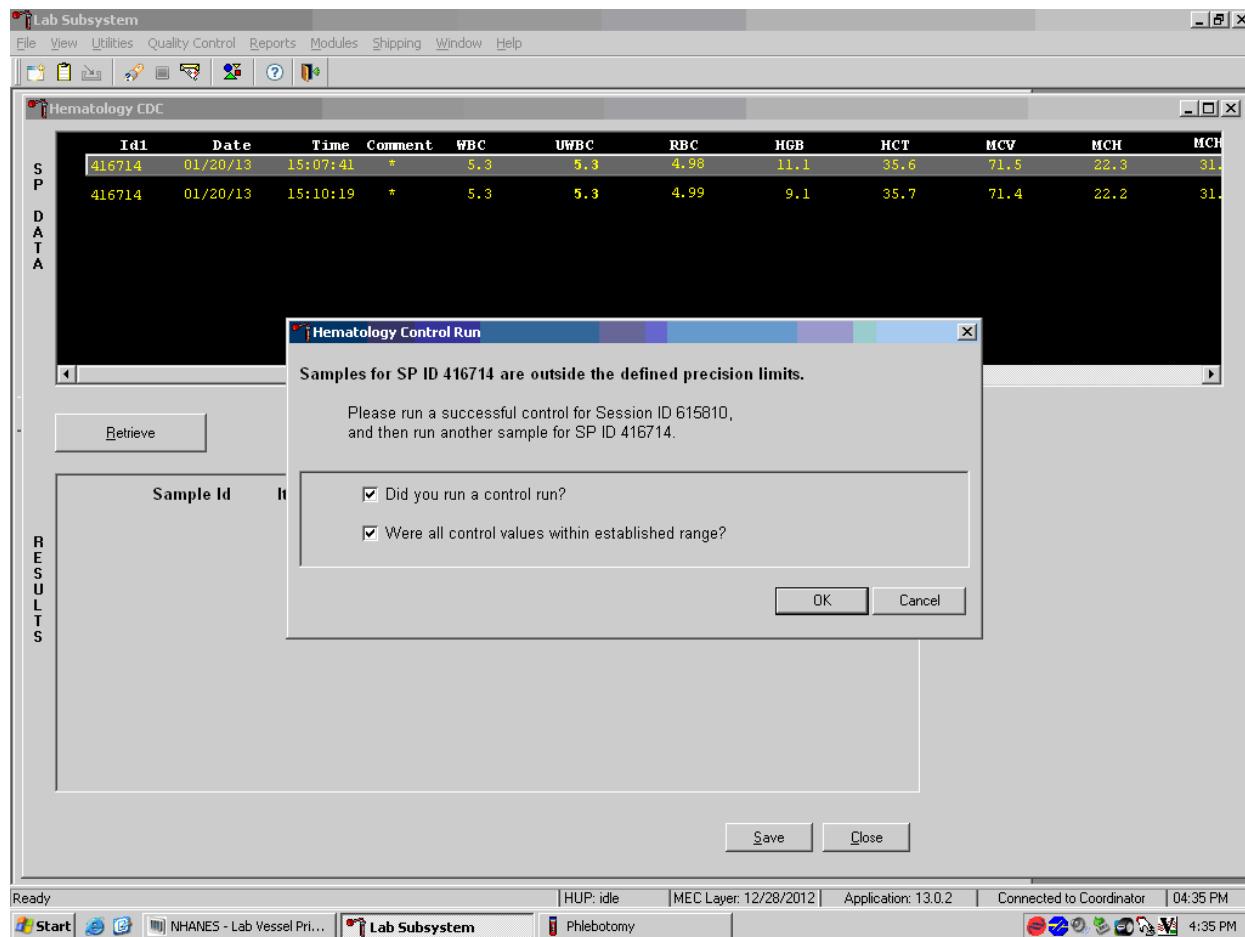
Average the two results by using the mouse to direct the mouse arrow to the Average ID#XXXXXX button and left-click. If, at this point, precision limits are exceeded for any individual parameter, the technologist is prompted to run a control and to evaluate it to determine if all control values fall within the control's established range.

If any parameter exceeds its precision limit, the Hematology Control Run window displays.



The Hematology Control Run window indicates that the “Samples for SP ID XXXXXX are outside the defined precision limits.” It instructs the technologist to “Please run a successful control for Session ID XXXXXX, and then run another sample for SP ID XXXXXX.” If it has been >30 minutes since running the sessions QC (all three levels of 6C Cell control), run any one level of 6C cell control and evaluate the results. Respond to the two questions, “Did you run a control run?” and “Were all control values within established range?” To confirm these actions, direct the mouse arrow to each of the two check boxes and left-click to record the check marks.

Save the responses to the check box questions.



To save these responses to the database, direct the mouse arrow to the OK button and left-click or type Enter. To exit the Hematology Control Run window without saving the responses, direct the mouse arrow to the Cancel button and left-click. As soon as the OK button is selected, the averages display in the Results section of the window.

Evaluate the results displayed in the Results section of the window.

The screenshot shows the Lab Subsystem Hematology CDC software interface. At the top, there is a menu bar with File, View, Utilities, Quality Control, Reports, Modules, Shipping, Window, and Help. Below the menu is a toolbar with various icons. The main window title is "Hematology CDC". The top half of the screen displays a table of results for sample ID 416714, with other samples listed above it. The columns include Id1, Date, Time, Comment, WBC, UWBC, RBC, HGB, HCT, MCV, MCH, and MCHC. The bottom half of the screen shows a detailed results table for sample ID 416714, with rows for CBC_WBC, CBC_UWBC, CBC_RBC, CBC_HGB, CBC_HCT, CBC_MCV, and CBC_MCH. Each row has columns for Sample Id, Item, Result, Action, Range, Error, Overlimit, and Precision. A scroll bar is visible on the right side of this table. At the bottom of the screen, there is a comment field, a Save button, and a Close button. The status bar at the bottom shows "Ready", "HUP: idle", "MEC Layer: 12/28/2012", "Application: 13.0.2", "Connected to Coordinator", and "04:36 PM".

Sample Id	Item	Result	Action	Range	Error	Overlimit	Precision
416714	CBC_WBC	5.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
416714	CBC_UWBC	5.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
416714	CBC_RBC	4.98	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
416714	CBC_HGB	10.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
416714	CBC_HCT	35.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
416714	CBC_MCV	71.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
416714	CBC_MCH	22.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Evaluate each parameter for error, overlimit, and precision check marks, and “H” or “L” action limit, reference range flags, and comment in the above screen. Use the scroll bar to view all results. When there are check marks in any of the Precision columns, meaning that the precision limit was exceeded, rerun the blood sample a third time. If there is insufficient blood to run the CBC again (total of 4 runs, since the instrument is set to run all samples in duplicate), delete the run that caused the precision error. Save one run and comment with based on a single run. (In the above example, delete the second run for SP 416714 and save the first run.) To save the results to the database, direct the mouse arrow to the Save button and left-click. After results are saved, they are erased from the screen. To exit without saving the result to the database, direct the mouse arrow to the Close button and left-click.

Run the specimen again when any precision limit is exceeded or if one run has a comment and the second run does not.

The screenshot shows the Lab Subsystem software interface. At the top is a menu bar with File, View, Utilities, Quality Control, Reports, Modules, Shipping, Window, and Help. Below the menu is a toolbar with various icons. The main window title is "Hematology CDC". The top section displays a table of data with columns: ID#, Date, Time, Comment, WBC, UWBC, RBC, HGB, HCT, MCV, MCH, and MCHC. The data rows show multiple entries for sample IDs 745052 and 767995, with some rows having a yellow background. The bottom section is titled "RESULTS" and contains a table with columns: Sample Id, Item, Result, Action, Range, Error, Overlimit, and Precision. It lists results for CBC_WBC, CBC_UWBC, CBC_RBC, CBC_HGB, CBC_HCT, and CBC_MCV for sample ID 784174. The "Error" column for CBC_WBC shows a checked checkbox, indicating a precision error.

ID#	Date	Time	Comment	WBC	UWBC	RBC	HGB	HCT	MCV	MCH	MCHC
S P	745052	11/19/12	22:33:48	*	5.8	5.8	4.65	14.8	44.0	90.8	30.6
D A T A	745052	11/19/12	22:43:53	*	5.6	5.6	4.64	14.7	44.0	90.9	30.3
767995	01/20/13	15:07:41	*	5.3	5.3	4.98	11.1	35.6	71.5	22.3	
767995	01/20/13	15:10:19	*	5.3	5.3	4.99	11.1	35.7	71.4	22.2	
784174	01/21/13	10:14:12	*	7.0	7.0	4.73	15.0	45.5	96.3	31.6	
784174	01/21/13	11:28:46	*	6.7	6.7	4.81	15.0	45.9	95.5	31.3	
784174	01/21/13	11:30:52	*	6.5	6.5	4.77	15.2	45.9	96.3	31.8	

Sample Id	Item	Result	Action	Range	Error	Overlimit	Precision
R E S U L T S	784174	CBC_WBC	6.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	784174	CBC_UWBC	6.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	784174	CBC_RBC	4.76	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	784174	CBC_HGB	15.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	784174	CBC_HCT	45.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	784174	CBC_MCV	96.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Run the blood sample again. Two additional results will be displayed. Whenever a sample is run more than once, all results in the SP Data section are displayed. Scroll through the top of the SP data window and determine which of the two runs match the best. Delete the 2 outlier runs, which could be the run that caused the precision error or the run that does not/does have a comment, and re-average the two remaining runs.

Complete Blood Count
NHANES 2017-2018

Lab Subsystem: Stand:616 Session:616040 01/28/2011 08:30 am - 12:30 pm

File View Utilities Quality Control Reports Modules Shipping Window Help

Hematology CDC

	Id1	Date	Time	Comment	WBC	UWBC	RBC	HGB	HCT	MCV	MCH
S	530009	11/09/12	14:50:06	*	5.1	5.6	3.96	13.0	37.6	95.1	32.8
P	709532	12/08/12	09:18:14	*	4.0	5.0	4.99	15.5	44.2	88.6	31.1
D	709532	12/08/12	09:20:57	*	4.0	5.0	4.93	15.5	43.7	88.6	31.4
A	721160	11/09/12	14:48:06	*	4.5	5.0	3.96	13.0	37.6	95.1	32.8
A	721160	11/09/12	14:50:06	*	4.5	5.0	3.96	13.0	37.6	95.1	32.8
	748968			Clear This Run	4.5	5.0	3.96	13.0	37.6	95.1	32.8
	748968			Clear ID# 748968	4.5	5.0	3.96	13.0	37.6	95.1	32.8
				Clear All Downloads							
				View Log For ID# 748968							

Retrieve Average ID# 748968

RESULTS

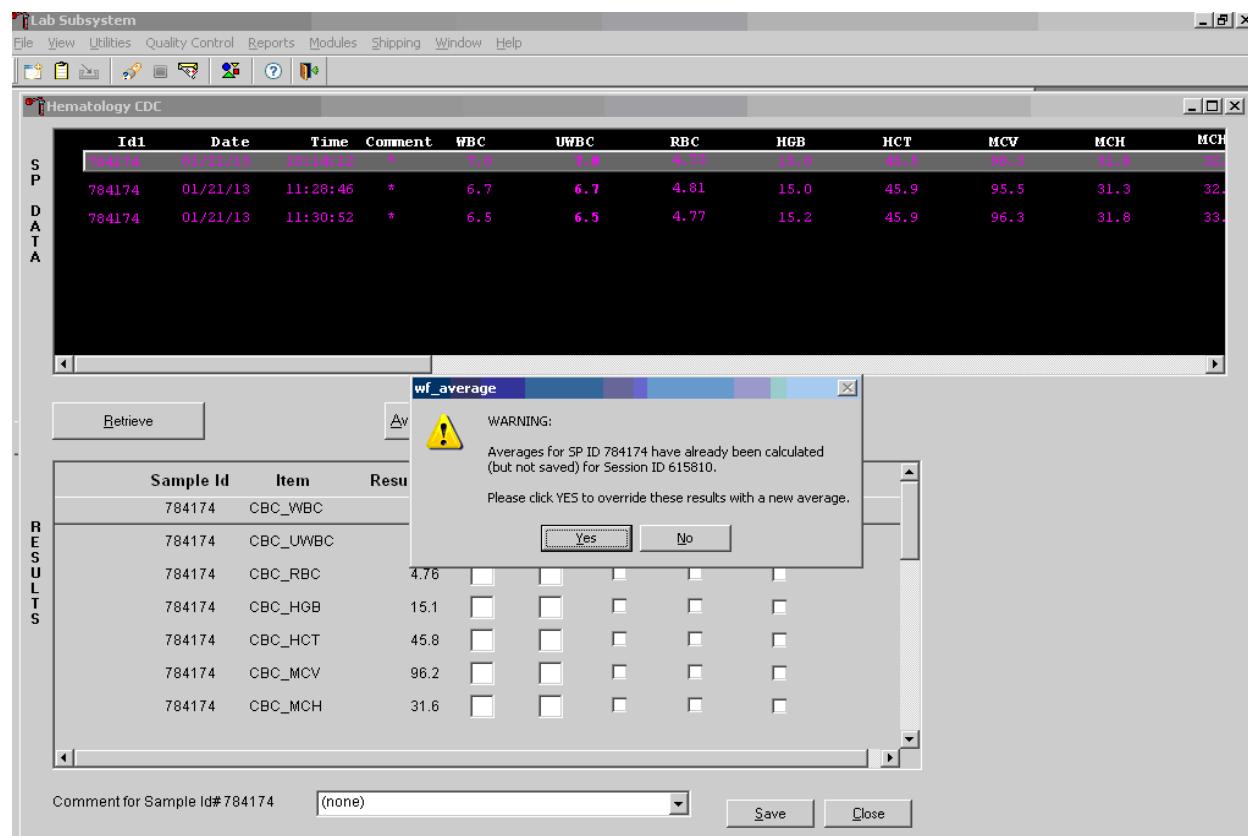
Sample Id	Item	Result	Action	Range	Error	Overlimit	Precision
-----------	------	--------	--------	-------	-------	-----------	-----------

Save Close

Ready | HUP: idle | MEC Layer: 12/28/2012 | Application: 13.0.0 | Not connected to Coordinator | 02:04 PM

After clearing the outlier runs, re-average the two remaining runs and analyze the results.

Override the current averaged results with a new average.



Whenever a sample has previously been averaged, and a new average is calculated, a warning message text box displays stating, “Averages for SP ID XXXXXX have already been calculated (but not saved) for session ID XXXXXX.” The text box instructs, “Please click YES to override these results with a new average.” To override the current average with a new average direct the mouse arrow to the Yes button and left-click , or press Enter. To exit or return to the previous screen containing the previous averages, direct the mouse arrow to the No button and left-click.

Evaluate the new results.

The screenshot shows a software application window titled "Hematology CDC". The window has a menu bar with "File", "View", "Utilities", "Reports", "Modules", "Shipping", "Window", and "Help". Below the menu is a toolbar with various icons. The main area is divided into sections: "Appointments" (SP ID, Sample ID), "DATA" (Sample ID, Item, Result, Action, Range, Error, Overlimit, Precision), and "RESULTS" (Sample ID, Item, Result, Action, Range, Error, Overlimit, Precision). A "Comment for Sample Id# 743545" field contains "(none)". Buttons for "Save" and "Close" are at the bottom right. The "Precision" column in the "RESULTS" section for the last two rows (CBC_MO and CBC_MOC) has no checkmarks.

SP ID	Sample ID	Item	Result	Action	Range	Error	Overlimit	Precision
743545	743545	CBC_BA	0.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
743545	743545	CBC_BAC	0.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
743545	743545	CBC_MO	15.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
743545	743545	CBC_MOC	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If all parameters of the two remaining runs now meet precision limits (there are no check marks in the Precision column), save the results to the database. To save the result to the database, direct the mouse arrow to the Save button and left-click. After results are saved, they are erased from the screen. To exit without saving the result to the database, direct the mouse arrow to the Close button and left-click.

If after four runs precision limits are still not met for any parameter, a comment is automatically attached to the results. Do not run a specimen more than four times.

Lab Subsystem

File View Utilities Quality Control Reports Modules Shipping Window Help

Hematology CDC

ID#	Date	Time	Comment	WBC	UWBC	RBC	HGB	HCT	MCV	MCH	MCHC	
S P D A T A	745052 745052 767995 767995 784174 784174	11/19/12 11/19/12 01/20/13 01/20/13 01/21/13 01/21/13	22:33:48 22:43:53 15:07:41 15:10:19 19:14:12 11:28:46	*	5.8 5.6 5.3 5.3 7.0 6.7	5.8 5.6 5.3 5.3 7.0 6.7	4.85 4.84 4.98 4.99 4.73 4.81	14.8 14.7 11.1 11.1 15.0 15.0	44.0 44.0 35.6 35.7 45.5 45.9	90.8 90.9 71.5 71.4 96.3 95.5	30.6 30.3 22.3 22.2 31.6 31.3	31.6 31.3 31.8
	784174	01/21/13	11:30:52	*	6.5	6.5	4.77	15.2	45.9	96.3	31.8	

Retrieve Average ID# 784174

RESULTS

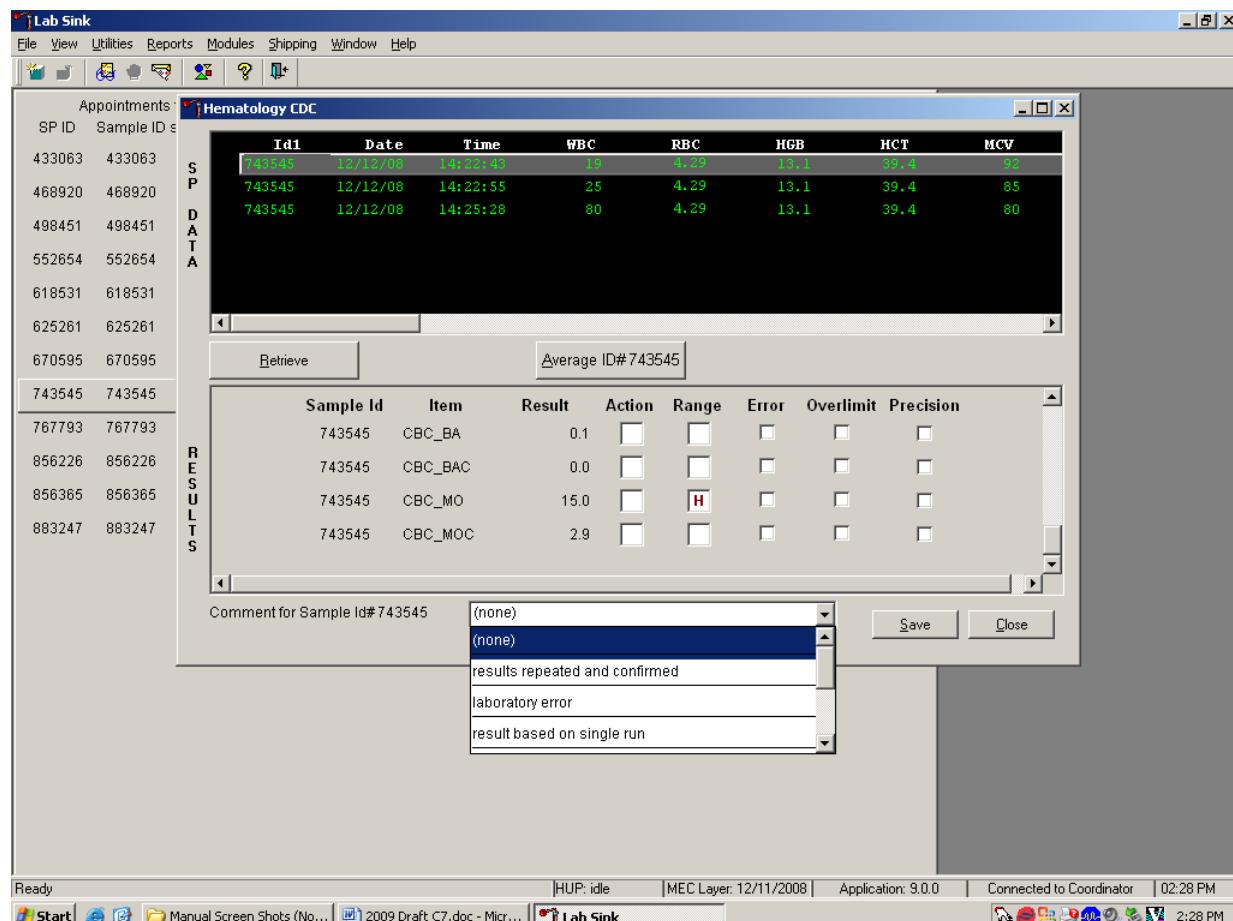
Sample Id	Item	Result	Action	Range	Error	Overlimit	Precision
784174	CBC_WBC	6.9	<input type="checkbox"/>				
784174	CBC_UWBC	6.9	<input type="checkbox"/>				
784174	CBC_RBC	4.76	<input type="checkbox"/>				
784174	CBC_HGB	15.1	<input type="checkbox"/>				
784174	CBC_HCT	45.8	<input type="checkbox"/>				
784174	CBC_MCV	96.2	<input type="checkbox"/>				
784174	CBC_MCH	31.6	<input type="checkbox"/>				

Comment for Sample Id# 784174 (none) Save Close

Ready HUP: idle MEC Layer: 1/30/2013 Application: 13.0.3 Connected to Coordinator 03:46 PM

5. Attaching comments to the results

Enter a comment for any run where results were repeated and confirmed, the equipment failed, or there was a laboratory error.



The screenshot shows a Windows application window titled "Lab Subsystem" with a menu bar including File, View, Utilities, Quality Control, Reports, Modules, Shipping, Window, and Help. The main window is titled "Hematology CDC". It displays a grid of laboratory results for sample ID 784174 across various parameters: WBC, UWBC, RBC, HGB, HCT, MCV, and MCH. Below this grid, there is a table titled "RESULTS" showing detailed results for each parameter. A dropdown menu is open over the "Comment" field for the MCV row, listing options like "(none)", "results repeated and confirmed", "laboratory error", and "result based on single run". At the bottom of the window, there are "Save" and "Close" buttons. The status bar at the bottom of the screen shows "Ready", "HUP: idle", "MEC Layer: 1/30/2013", "Application: 13.0.3", "Connected to Coordinator", and "03:45 PM".

To attach a comment to the results in the database, direct the mouse arrow to the drop-down list on the Comment box, left-click to display the codes, drag the mouse arrow to the most appropriate choice, and left-click. Alternatively, to record a comment, direct the mouse arrow to the drop-down list on the Comment box, click to display the codes, use the up and down keyboard arrows to scroll through the choices or type the first letter of the desired comment code, and when the correct choice is highlighted, left-click.

Exhibit 6-10 presents the comments for the samples and when they are to be used.

Exhibit 6-10. List of comments to be used

Comment	Use when:
Results repeated and confirmed	Any parameter exceeded an action, range, or precision limit and the specimen (blood tube) was run more than once.
Laboratory error	There was a technologist error.
Result based on single run	The quantity of specimen is insufficient to run it more than once.
Equipment failure	The Coulter malfunctioned.
No diff results/diff vote out	The Coulter does not report parameter results for any part of the differential or the instrument reported a voteout for any of the differential parameters.
Clotted	The blood is clotted.
Not enough blood	There is insufficient blood to perform at least one complete aspiration.

Save the result after attaching a comment.

The screenshot shows the Lab Subsystem software interface. At the top is a menu bar with File, View, Utilities, Quality Control, Reports, Modules, Shipping, Window, and Help. Below the menu is a toolbar with various icons. The main window title is "Hematology CDC". The left side has a vertical column labeled "RESULTS" with sample IDs 745052, 767995, and 784174 listed. The main grid displays hematological parameters (WBC, UWBC, RBC, HGB, HCT, MCV, MCH) for each sample. A specific row for Sample ID 784174 on 01/21/13 at 10:14:12 is selected. Below the grid is a "Retrieve" button and a text input field showing "Average ID# 784174". A detailed results table for Sample ID 784174 is shown, listing items like CBC_WBC, CBC_UWBC, CBC_RBC, etc., with their respective values and status indicators. At the bottom, there is a dropdown menu for "Comment for Sample Id# 784174" containing the option "results repeated and confirmed", along with Save and Close buttons. The status bar at the bottom shows "Ready", "HUP: idle", "MEC Layer: 1/30/2013", "Application: 13.0.3", "Connected to Coordinator", and "03:46 PM".

Save the averaged result and update the comment, by using the mouse to direct the mouse arrow to the Save button and left-click. To exit without saving any data to the database, direct the mouse arrow to the Close button and left-click.

6. Using alternative data manipulation choices

Retain data for multiple SPs in the SP Data section of the window.

The screenshot shows the 'Lab Subsystem' application window with the 'Hematology CDC' module selected. The top menu bar includes File, View, Utilities, Quality Control, Reports, Modules, Shipping, Window, and Help. The toolbar below has icons for New, Open, Save, Print, and Help.

The main area is divided into two sections:

- SP Data Section:** A table showing sample data for multiple SPs. The columns include Id#, Date, Time, Comment, WBC, UWBC, RBC, HGB, HCT, MCV, and MCH. The data shows results for SPs 745052, 767995, and 784174 across three different dates.
- Results Section:** A table showing detailed results for Sample ID 784174. The columns include Sample Id, Item, Result, Action, Range, Error, Overlimit, and Precision. The results table lists items such as CBC_WBC, CBC_UWBC, CBC_RBC, CBC_HGB, CBC_HCT, CBC_MCV, and CBC_MCH, each with a result value and status indicators.

At the bottom, there is a comment field: "Comment for Sample Id# 784174" followed by a dropdown menu containing "results repeated and confirmed". There are also Save and Close buttons. The status bar at the bottom displays: Ready, HUP: idle, MEC Layer: 1/30/2013, Application: 13.0.3, Connected to Coordinator, and 03:47 PM.

In general, run one SP in duplicate through the Coulter, retrieve the data, average the result, and save the data to the database. The Hematology module will display data for multiple SPs in the SP Data section. Each individual SP's results or pairs of results are displayed in a different color. To select or highlight any one SP, direct the mouse arrow to the row containing the correct SP ID and left-click.

Average the results for one SP at a time.

The screenshot shows a software application window titled "Lab Sink". The main title bar says "Hematology CDC". The menu bar includes "File", "View", "Utilities", "Reports", "Modules", "Shipping", "Window", and "Help". Below the menu is a toolbar with various icons. The main content area has two tables. The top table is titled "Appointments" and lists sample IDs and dates. The bottom table is titled "Results" and lists test items with their results, action limits, error flags, and overlimit flags. A button labeled "Average ID#743545" is visible between the two tables. At the bottom, there is a comment field "(none)" and buttons for "Save" and "Close".

SP ID	Sample ID	Date	Time	WBC	RBC	HGB	HCT	MCV
433063	433063	743545	12/12/08	14:22:43	19	4.29	13.1	39.4
468920	468920	743545	12/12/08	14:23:55	25	4.29	13.1	39.4
498451	498451	743545	12/12/08	14:25:28	80	4.29	13.1	39.4
856365	856365	856365	12/12/08	14:53:40	41	4.29	13.1	39.4
552654	552654	883247	12/12/08	14:52:45	48	4.29	13.1	39.4
618531	618531	883247	12/12/08	14:53:16	5	4.29	13.1	39.4
625261	625261							
670595	670595							
743545	743545							
767793	767793							
856226	856226							
856365	856365							
883247	883247							

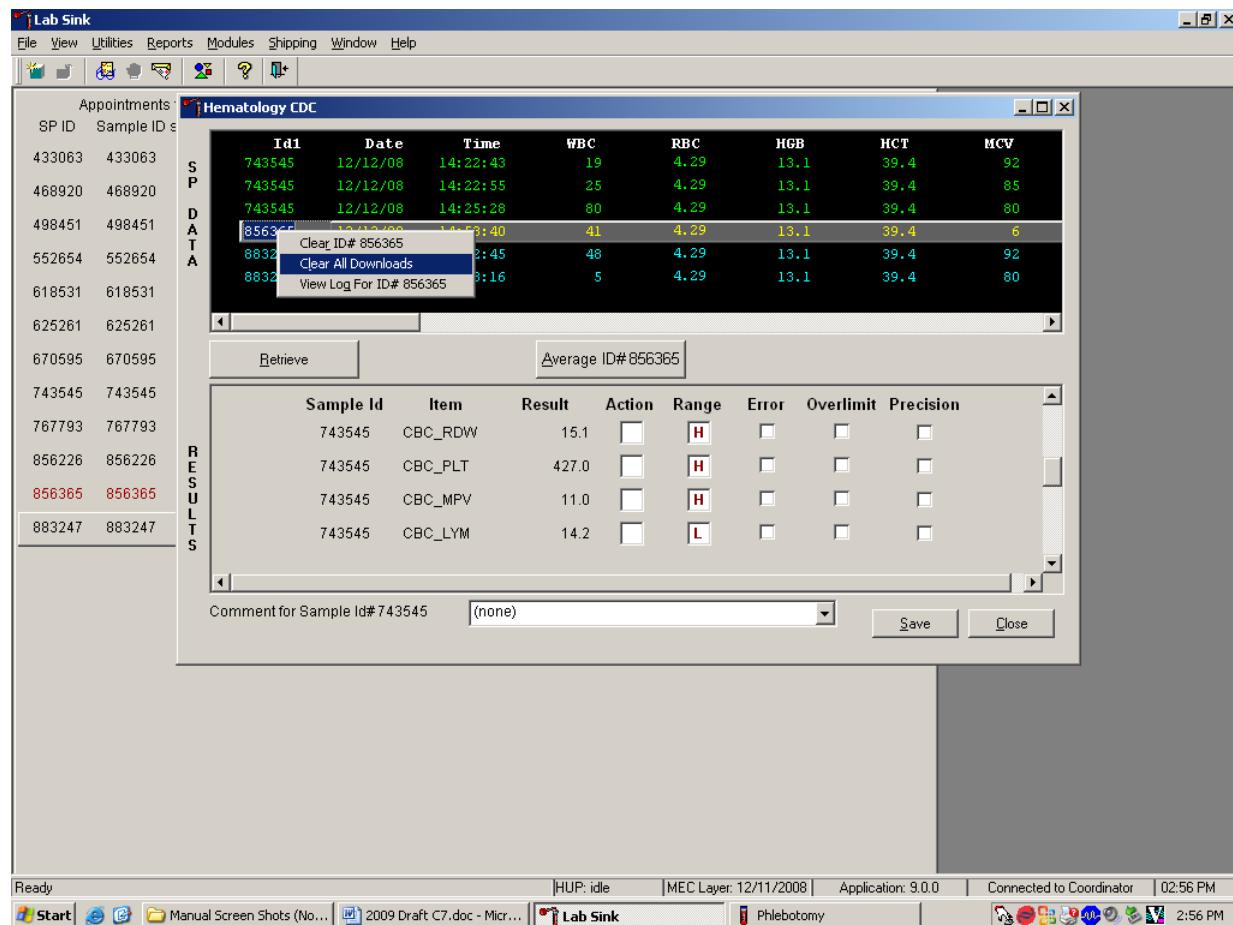
Sample Id	Item	Result	Action	Range	Error	Overlimit	Precision
743545	CBC_RDW	15.1	<input type="checkbox"/>	<input checked="" type="checkbox"/> H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
743545	CBC_PLT	427.0	<input type="checkbox"/>	<input checked="" type="checkbox"/> H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
743545	CBC_MPV	11.0	<input type="checkbox"/>	<input checked="" type="checkbox"/> H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
743545	CBC_LYM	14.2	<input type="checkbox"/>	<input checked="" type="checkbox"/> L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment for Sample Id#743545 (none)

Evaluate each parameter for error, overlimit, and precision check marks, and “H” or “L” action limit and reference range flags. If there are no check marks in the Precision column (no precision limit was exceeded), save the result to the database. To save the result to the database, direct the mouse arrow to the Save button and left-click. To exit without saving the result to the database, direct the mouse arrow to the Close button and left-click. If there are any precision check marks, run a 6C cell control, evaluate the control results, rerun the blood tube a third time, re-average, evaluate, and save the results.

Use alternative data manipulation choices as desired.

Use the “Clear All Downloads” function to delete all data for all SPs in the SP Data section.

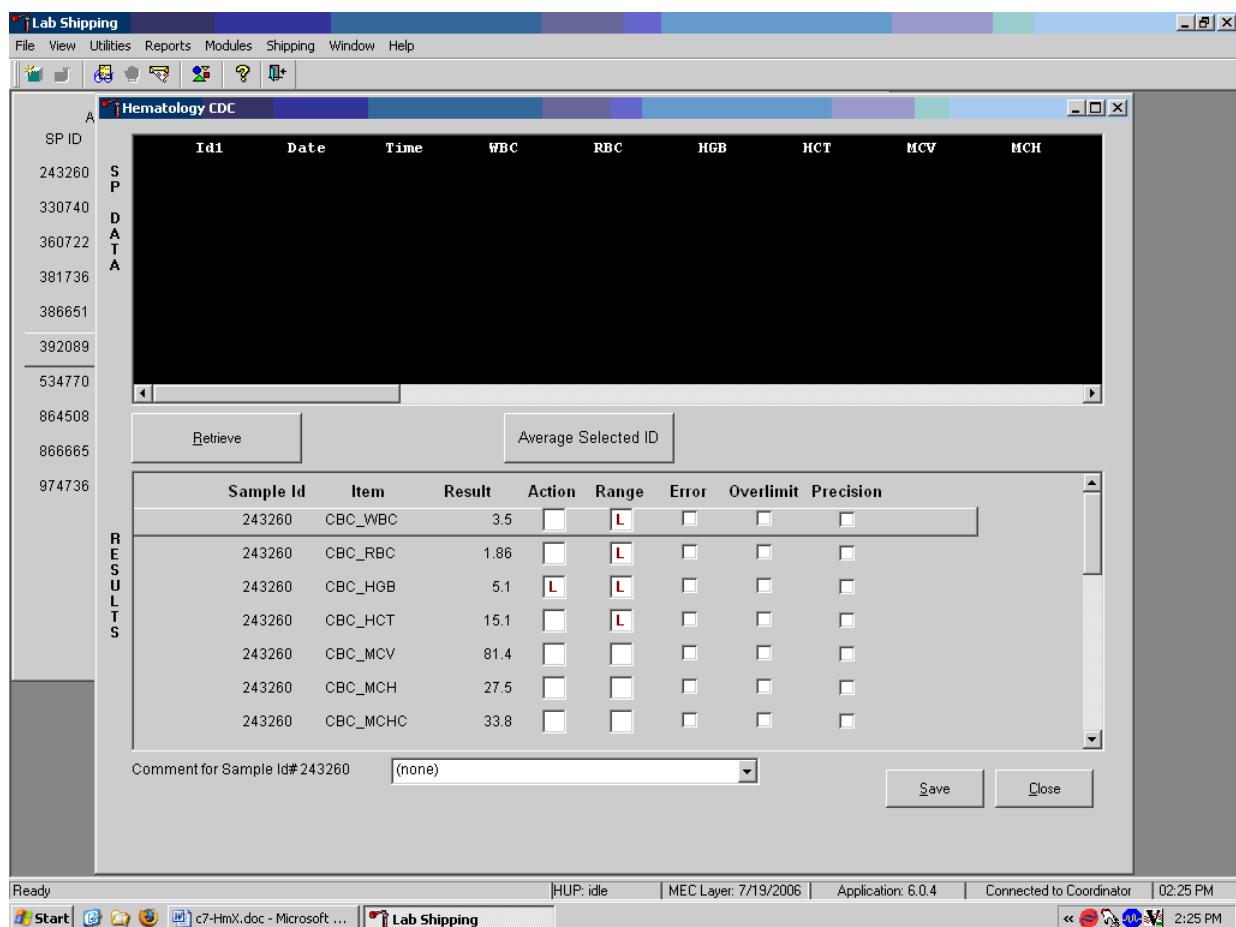


Complete Blood Count
NHANES 2017-2018

The screenshot shows the 'Hematology CDC' data entry screen. At the top, there is a menu bar with options like File, View, Utilities, Quality Control, Reports, Modules, Shipping, Window, and Help. Below the menu is a toolbar with various icons. The main area contains a table with columns: Id#, Date, Time, Comment, WBC, UWBC, RBC, HGB, HCT, MCV, MCH, and MCHC. Several rows of data are listed, with the last row being highlighted. A context menu is open over the last row, displaying options: Clear This Run, Clear ID# 748968, Clear All Downloads, and View Log For ID# 748968. Below the table are two buttons: 'Retrieve' and 'Average ID# 748968'. To the left of the table, the word 'RESULTS' is printed vertically. On the right side of the table, there are 'Save' and 'Close' buttons. At the bottom of the window, there is a status bar with the text: 'Ready | HUP: idle | MEC Layer: 12/28/2012 | Application: 13.0.0 | Not connected to Coordinator | 02:04 PM'.

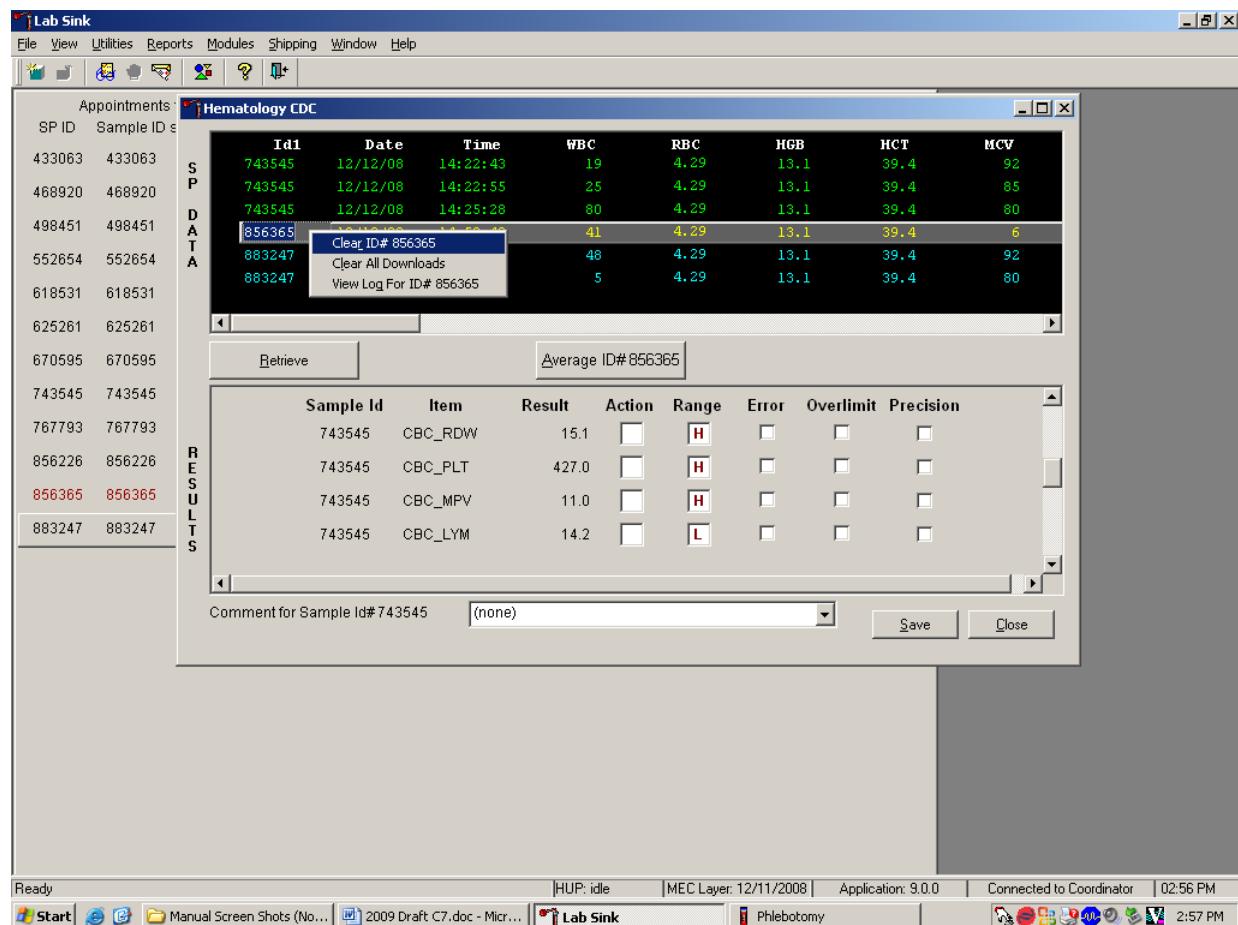
To clear all downloads from the SP Data section, direct the mouse arrow to any row in the SP Data section and right-click to display the alternative data manipulation choices. To select “Clear All Downloads,” drag the mouse arrow to the Clear All Downloads choice and left-click.

Release the mouse button to clear all downloads.



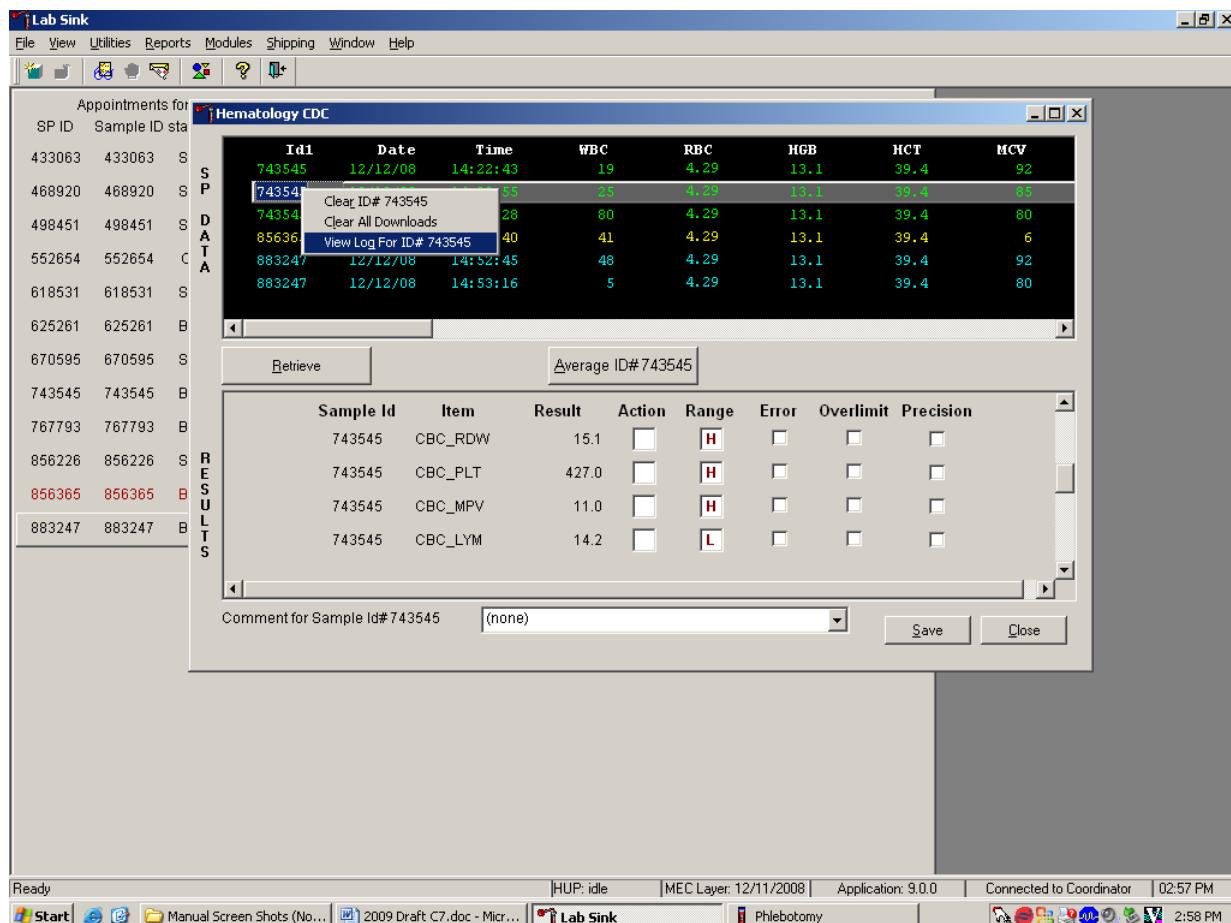
All data in the SP Data section are erased but any averaged result remains in the Results section of the window. To clear the result section, close the Hematology module. To close the Hematology module, direct the mouse arrow to the Close button and left-click.

Use the data manipulation functions to erase or delete one SP's data in the SP Data section.



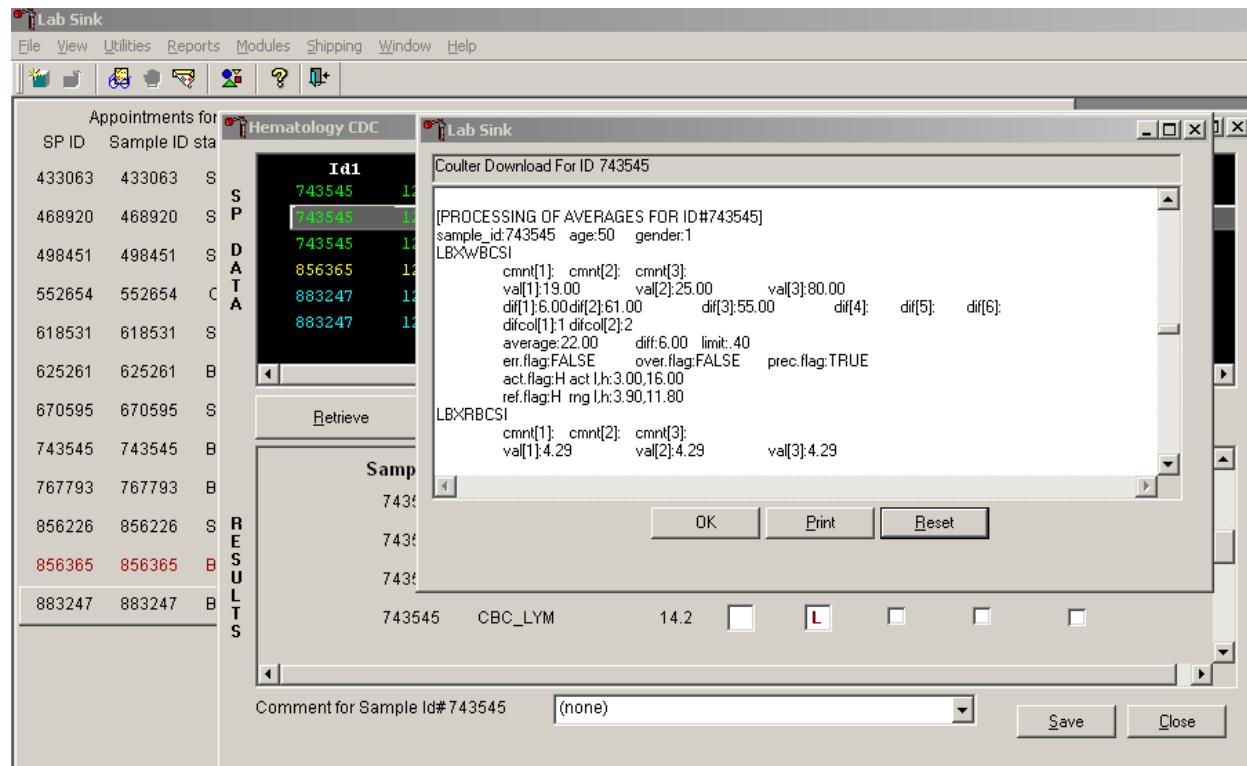
To clear the Coulter downloads for any one SP, direct the mouse arrow to the individual row in the SP Data section, right-click to display the alternative data manipulation choices, drag the mouse arrow to Clear ID#XXXXXX, and right- or left-click. Release the mouse button to clear this download. Retransmit, retrieve, average, and save the data.

Use the “View Log for ID# XXXXXXX” choice to view all Coulter data, averages, and precision limit values for any SP.



To view the detailed log for any one SP's result, direct the mouse arrow to the individual row in the SP Data section and right-click to display the alternative data manipulation choices. Drag the mouse arrow to “View Log for IDXXXXXX” and release the mouse button to view the detailed log for this SP's results.

Review the SP's log.



The SP's log contains detailed information for each parameter and each run. When finished reviewing the information, direct the mouse arrow to the OK button to close the window. To print the log, drag the mouse arrow to the Print button and left-click. To clear the log and close the screen, direct the mouse arrow to the Reset button and left-click, or select Enter.

DxH 800 Suspect Messages

- Suspect messages flag an abnormal cell distribution or population. The system generates these messages according to an internal algorithm. Specific suspect messages indicate some abnormalities that exhibit characteristic cluster patterns. Suspect messages indicate the possibility of a particular abnormality. Not every atypical scatterplot has a corresponding suspect message.
- **Remedial Action.** Rerun the specimen. If the flag is “H&H Does Not Match,” use the SP’s EDTA sample from processing station, if available, as a check for proper tube filling. Delete all but two runs if flags are consistent before averaging and accepting results.

DXH 800 Histogram Interpretations

Exhibit 6-11 presents UniCel DxH 800 Coulter cellular analysis system cell population.

Exhibit 6-11. Cellular analysis images

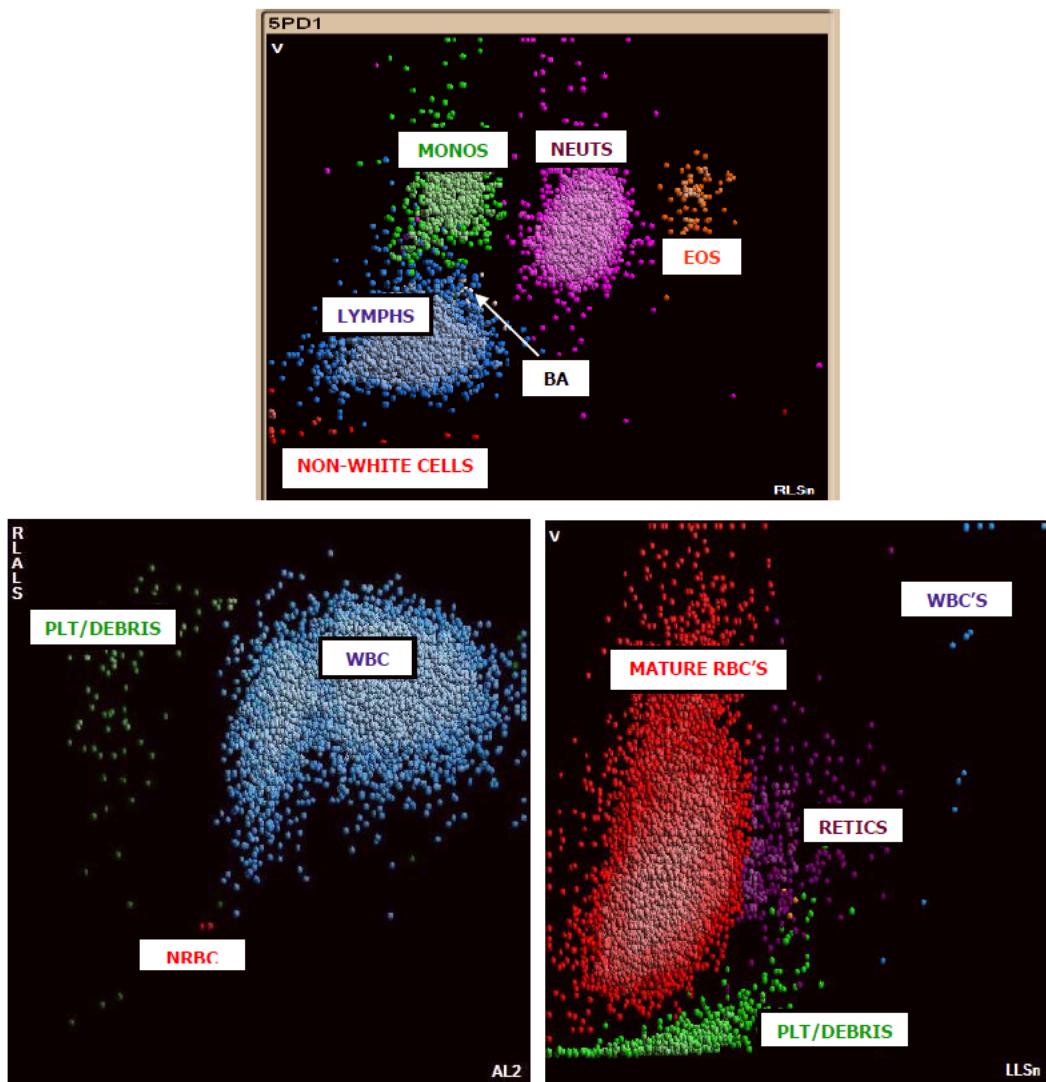


Exhibit 6-12 presents DxH system messages.

Exhibit 6-12. DxH system messages

All System messages are accompanied by "R" (Review) flags. Exceptions are the System Messages associated with an Aspiration error (P Flag) and the Non-Blood Specimen message (N Flag).

SYSTEM MESSAGE DXH	SYSTEM MESSAGE DXH
WBC	PLT
Abn WBC Pattern	Platelet Clumps
Cellular Inter	PLT Carryover
System Event: WBC	PLT Inter: Debris
WBC Carryover	RBC-PLT Overlap
RBC	System Event: PLT
Abn RBC Pattern	NRBC
System Event: RBC	Abn NRBC Pattern
HGB	AL2 Blank Volt: N
HGB Inter: WBC	DataDisc: N
HGB Blank Shift	High Event Rate: N
System Event: HGB	Low AL2 Events: N
MCV	Low DC Events: N
MCV Inter: PLT	Low Event Rate: N
MCV Inter: WBC	Low Events: N
DIFF	NRBC Inter
Abn Diff Pattern	NRBC-LY Overlap
Aged Sample	System Event: N
Data Disc: D	BF
Excessive Debris: D	Abn TNC Pattern
High Event Rate: D	System Event: TNC
High OP Events: D	TNC Carryover
High RF Events: D	P
Low Event Rate: D	Bubbles
Low Events: D	Carryover
Low OP Events: D	No Aspiration
Low RMALS Events: D	Non-blood Specimen
MO-NE Overlap	Partial Aspiration
NE-EO Overlap	Range Error
System Event: D	Unknown Error
Undefined Pop: D	::::: Code
RETIC	Flow Cell Clog: D
Abn Retic Pattern	Flow Cell Clog: N
AL2 Blank Volt: R	Flow Cell Clog: R
Data Disc: R	
High Event: R	
Low Event: R	
Nucleated Cells	
RET Inter: Debris	
RET Inter: PLT	
RET-RBC Overlap	
System Event: R	

Exhibits 6-13, 6-14, 6-15, and 6-16 respectively present red blood cell histogram examples, white blood cell histogram examples, platelets histogram examples, and an image of better abnormal cell detection.

Exhibit 6-13. Red blood cell histogram examples

RBC Histogram Examples

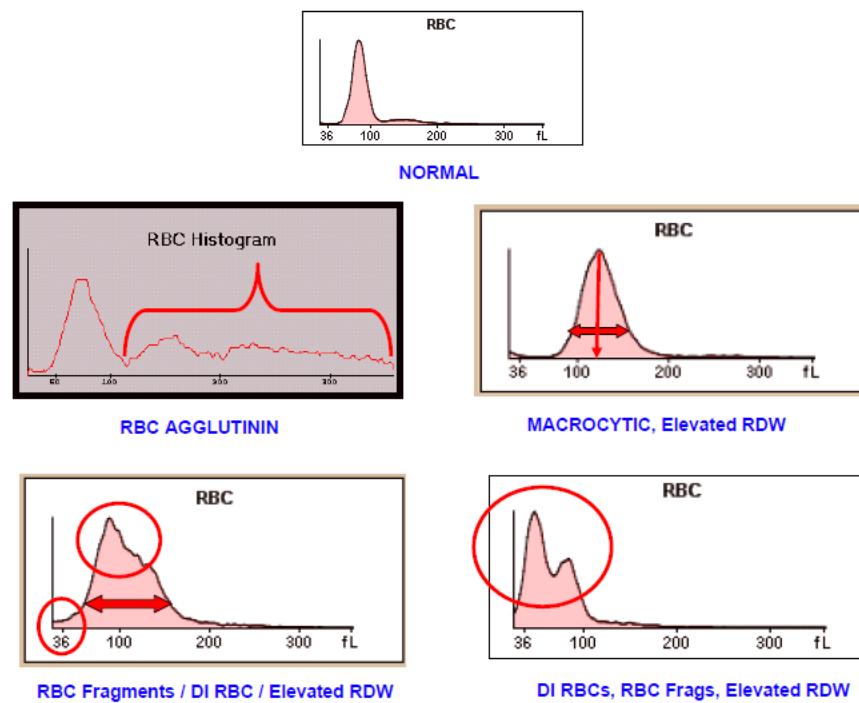


Exhibit 6-14. White blood cell histogram examples

WBC Histogram Examples

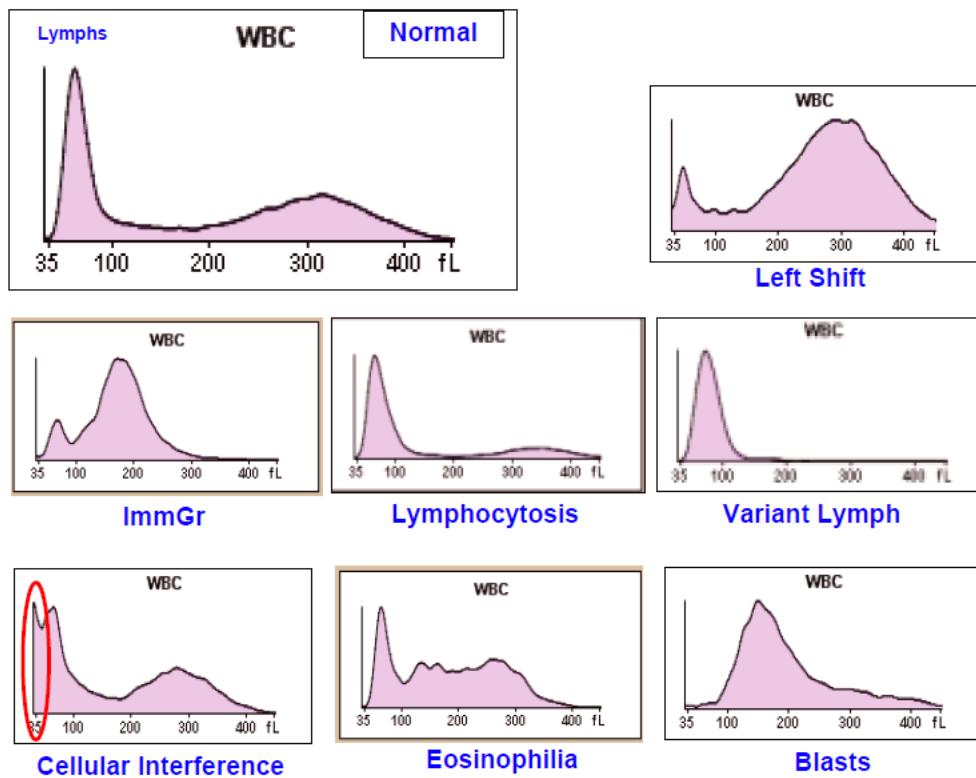
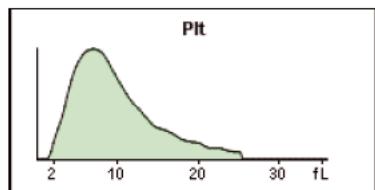


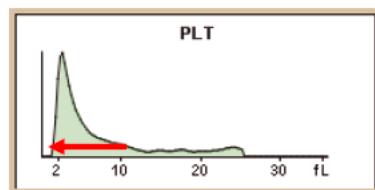
Exhibit 6-15. Platelets histogram examples

PLT Histogram Examples

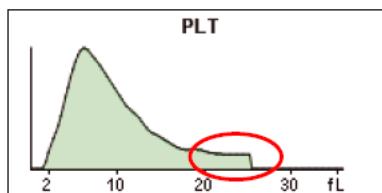
Normal



Small Platelets



Giant Platelets



RBC/PLT Overlap

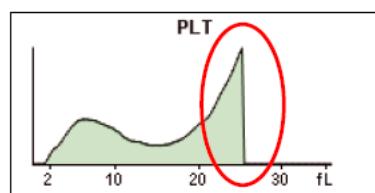
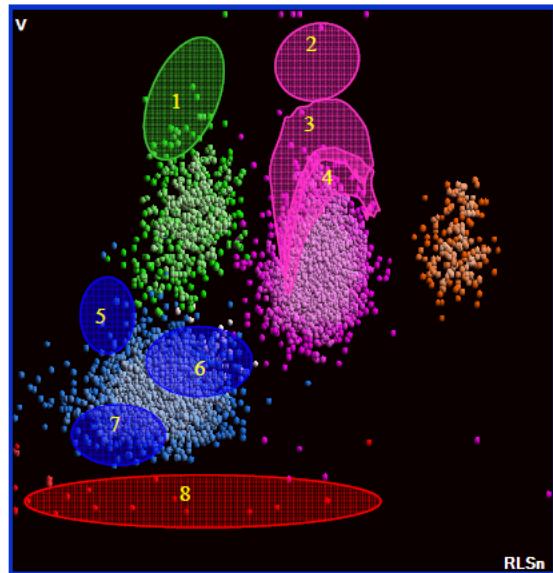


Exhibit 6-16. Image of better abnormal cell detection

Better Abnormal Cell Detection

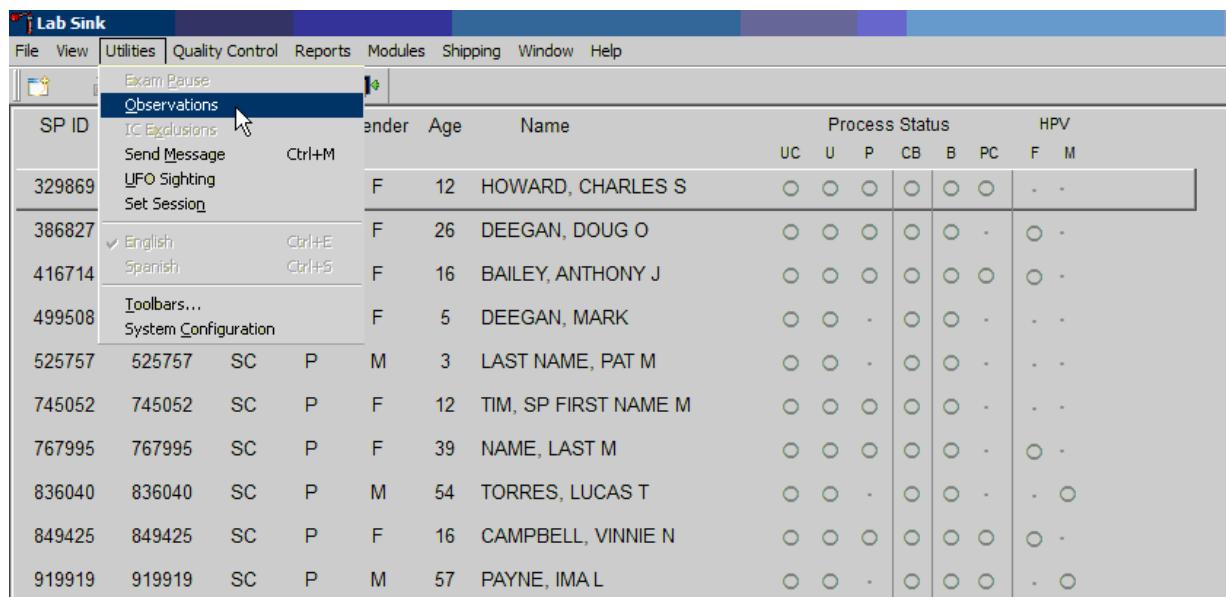


1. MO Blasts
2. NE Blasts
3. Immature Granulocytes
4. Band Neutrophils
5. LY Blasts
6. Variant Lymphocytes
7. Small Lymphs / Low Opacity
8. Non-White Cells

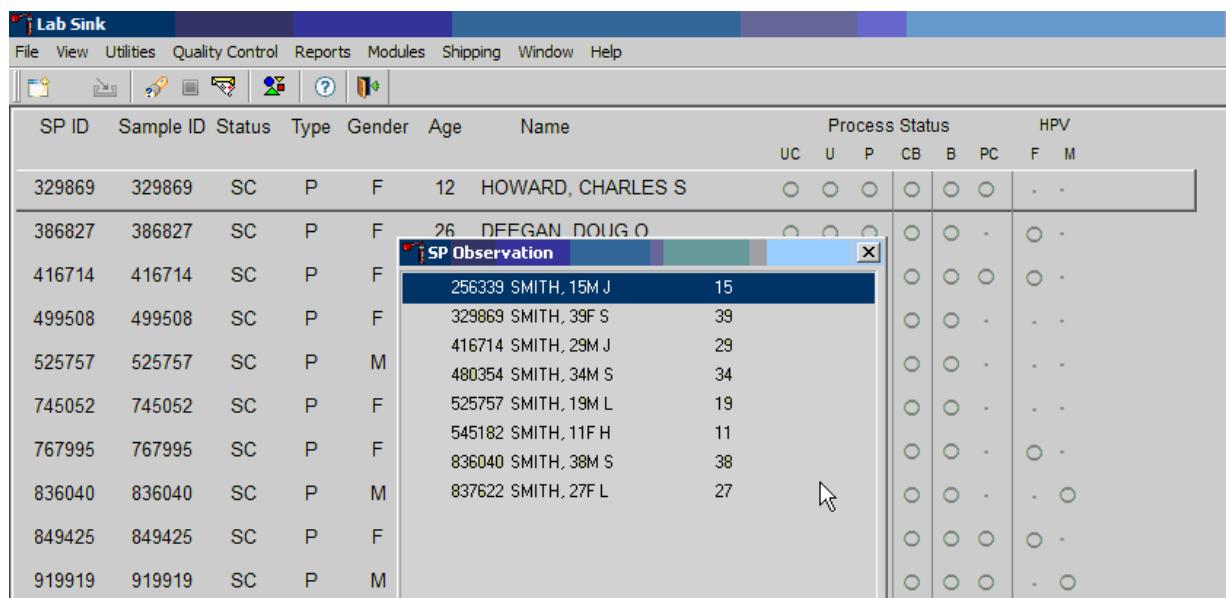
Physician Review

The MEC physician reviews and interprets all CBC results. Results outside action limits flash and transmit to the physician immediately. The physician determines if referral for the SP for treatment is necessary. The medical technologist sends an observation to the physician whenever a critical or action limit is detected for any CBC parameter. This observation includes the date, time, responsible laboratory individual, person notified, and test results.

Send an observation on any SP scheduled into the MEC session. Access the observation function.

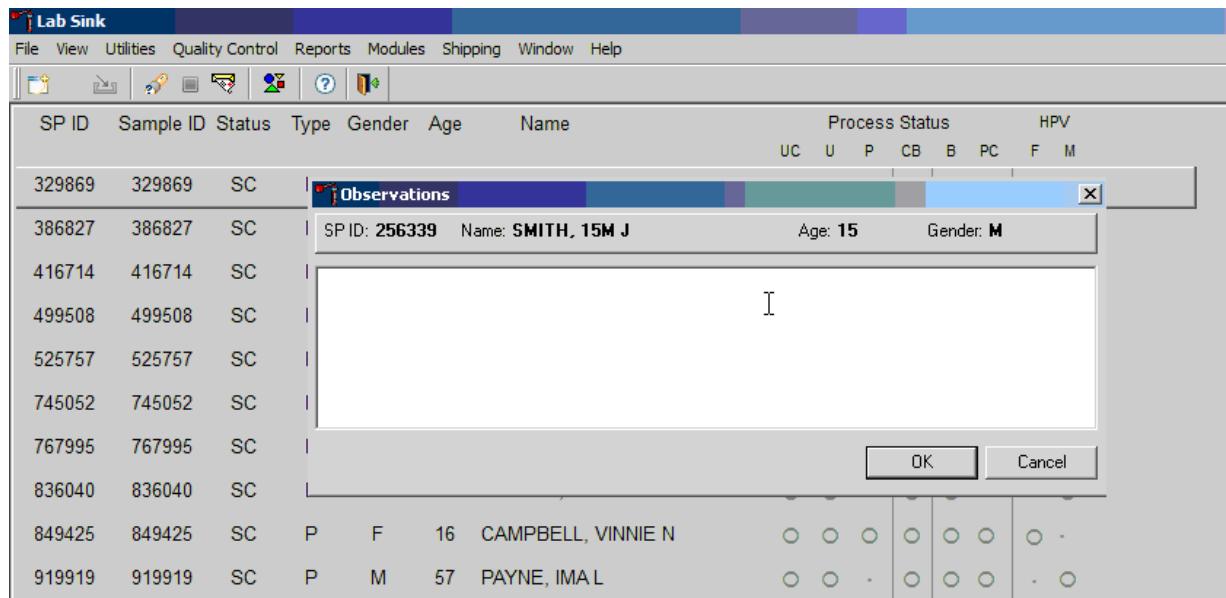


To access the observation function, direct the mouse arrow to Utilities in the menu bar, left-click, drag the mouse arrow to Observations, and left-click. Select or highlight the correct SP.



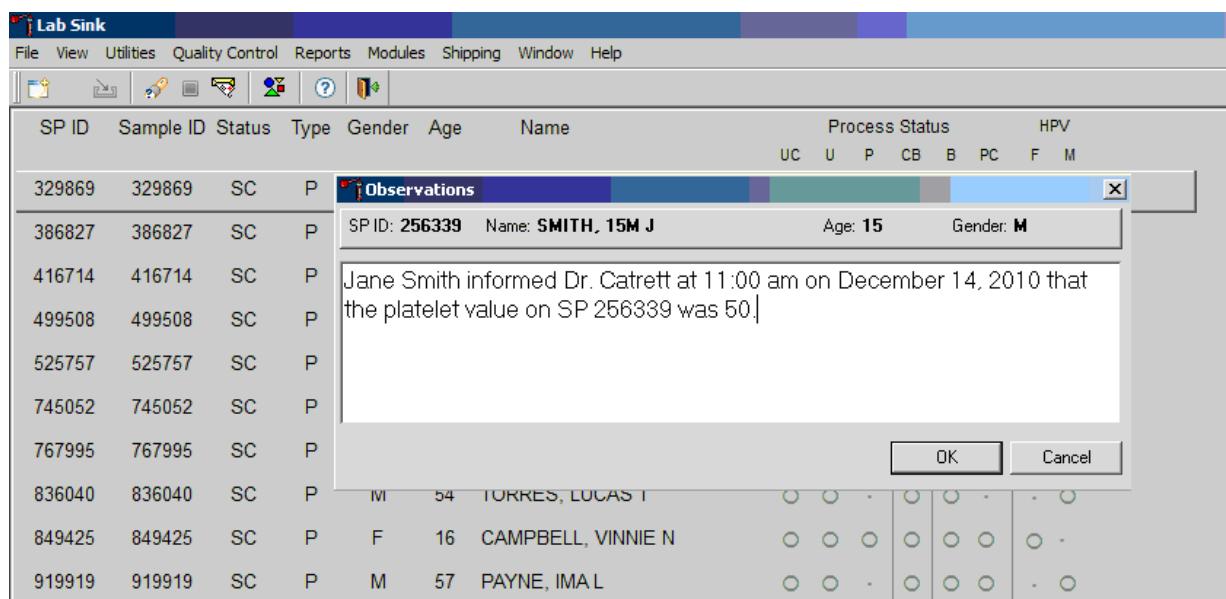
To select or highlight an SP, drag the mouse arrow to the correct SP and left-click or use the keyboard arrows to move up and down the list. Verify that the SP ID, name, and age are correct. Use the scroll bar to view the complete list of SPs. To continue, direct the mouse arrow to the OK button and left-click, or select Enter. To cancel these actions and exit the observation function, direct the mouse arrow to the Cancel button and left-click.

The observation window displays.



The observation window contains the SP ID, name, age, and gender. Type the observation using the keyboard. To send the observation to the physician, direct the mouse arrow to the OK button and left-click, or select Enter. To cancel these actions or to exit the observation window without entering an observation, direct the mouse arrow to the Cancel button and left-click.

Enter the observation on an SP.



Document the date, time, responsible laboratory individual, person notified, and test results, including the parameter.

Limitations of Method: Specimen Rejection, Interfering Substances, and Conditions

This method limits samples to human whole blood.

Specimen Rejection

Reject clotted specimens and recollect if physician requests.

Interfering Substances and Conditions

Because the Coulter directly measures RBC, WBC, Hgb, and Diff percent, it is most important to concentrate on analytes and substances that interfere with these parameters. The Coulter calculates HCT, MCH, MCHC, and DIFF # parameters. The Coulter derives MCV, RDW, PLT, and MPV from RBC or platelet histograms. The following are possible interfering substances or conditions:

- Abnormal BUN, glucose, or sodium levels could affect the MCV.
- Abnormal WBCs could affect lymphocytes, monocytes, and granulocytes.
- Abnormally small WBCs could affect white count, lymphocytes, monocytes, and granulocytes.
- Clumped platelets could affect white count, lymphocytes, monocytes, granulocytes, RBC, MCV, RDW, platelet count, and MPV.
- Cryofibrinogen and cryoglobulin crystals could affect white count, lymphocytes, monocytes, granulocytes, RBC, hemoglobin, platelet count, and MPV.
- An elevated WBC count could affect RBC, hemoglobin, MCV, RDW, platelet count, and MPV parameters.
- Fragile WBCs could affect white count, lymphocytes, monocytes, granulocytes, platelet count, and MPV.
- Giant platelets could affect white count, lymphocytes, monocytes, granulocytes, RBC, MCV, RDW, platelet count, and MPV.
- Hemolyzed specimens could affect RBC, hemoglobin, platelet count, and MPV.
- Lipemic specimens could affect MCV.
- Severely icteric plasma causes increased hemoglobin.
- Nucleated RBCs could affect the white count, lymphocytes, monocytes, granulocytes, and hemoglobin values.
- WBC—certain unusual RBC abnormalities that resist lysing, nucleated RBCs, fragmented WBCs, agglutinated WBCs, any unlysed particles greater than 35 fL, very large or aggregated platelets as when anticoagulated with oxalate or heparin, specimens containing fibrin, cell fragments, or other debris such as pediatric and oncology specimens.
- RBC—very high WBC count, high concentration of very large platelets, agglutinated RBCs, RBCs smaller than 36 fL, specimens containing fibrin, cell fragments, or other debris such as pediatric and oncology specimens.
- Hgb—very high WBC count, severe lipemia, heparin, certain unusual RBC abnormalities that resist lysing, or anything that increases the turbidity of the sample such as elevated levels of triglycerides.

- MCV—very high WBC count, high concentration of very large platelets, agglutinated RBCs, RBC fragments that fall below the 36-fL threshold, or rigid RBCs.
- RDW—very high WBC count, high concentration of very large or clumped platelets as in blood anticoagulated with oxalate or heparin, RBCs below the 36-fL threshold, two distinct populations of RBCs, RBC agglutinates, or rigid RBCs.
- Plt—very small red blood cells near the upper threshold, cell fragments, clumped platelets as with oxalate or heparin, platelet fragments, or cellular debris near the lower platelet threshold.
- MPV—known factors that interfere with the Plt count and shape of the histogram or known effects of EDTA.
- Hct—known factors that interfere with the parameters used for computation: RBC and MCV.
- MCH—known factors that interfere with the parameters used for computation: Hgb and RBC.
- MCHC—known factors that interfere with the parameters used for computation: Hgb, RBC, and MCV.
- Diff Parameters—known factors that affect the WBC count as listed above or high triglycerides that affect lysing.

Reference Ranges

Tables 6-5 and 6-6 respectively present references ranges for blood cell counts for males and females, by age.

Table 6-5. Reference ranges (males)

Age in years	1-5		6-18		19-65		66+	
	2.5	97.5	2.5	97.5	2.5	97.5	2.5	97.5
White blood cell count (SI)	4.3	14.6	3.6	11.5	3.9	11.8	3.8	12.1
Red cell count (SI)	3.98	5.3	4.14	5.78	4.18	5.86	3.57	5.67
Hemoglobin (g/dl)	10.7	14.2	11.9	16.9	13.1	17.5	11.4	17.1
Hematocrit (%)	32.1	41.7	35.3	49.9	38.7	51.4	33.9	50.9
Mean cell volume (fL)	68.2	88.8	75.6	94.6	79.8	99.1	81.4	102.7
Mean cell hemoglobin (pg)	22.3	30.6	25.0	32.3	26.3	34.0	26.3	35.0
MCHC (g/dl)	32.3	35.6	32.3	35.3	32.3	35.3	32.1	35.1
Red cell distribution width (%)	11.4	15.8	11.4	14.0	11.4	14.5	11.8	16.2
Platelet count (%) SI	212	546	179	439	152	386	124	384
Mean platelet volume (fL)	6.1	8.9	6.6	10	6.8	10.1	6.6	10.2
Lymphocyte percent (%)	22.8	68.4	17.5	54.3	16.1	47.9	12.3	46.4
Monocyte percent (%)	4.6	15.2	4.8	13.7	4.4	13.5	4.6	14.0
Segmented neutrophils percent (%)	17.6	67.1	30.3	72.8	37.8	74.6	39.5	78.1
Eosinophils percent (%)	0.7	11.3	0.7	11.5	0.7	8.5	0.6	8.8
Basophils percent (%)	0.1	2.5	0.1	1.6	0.1	1.6	0.1	1.6

Table 6-6. Reference ranges (females)

Age in years	1-5		6-18		19-65		66+	
	2.5	97.5	2.5	97.5	2.5	97.5	2.5	97.5
White blood cell count (SI)	4.3	14.0	3.9	12.2	4.1	12.9	4.0	11.6
Red cell count (SI)	3.96	5.28	3.84	5.24	3.64	5.2	3.51	5.34
Hemoglobin (g/dL)	11.0	14.2	11.2	15.1	10.6	15.6	10.9	15.9
Hematocrit (%)	32.5	41.9	33.5	44.6	32.0	45.9	32.8	47.0
Mean cell volume (fL)	70.2	89.1	74.7	94.9	74.6	98.2	80.3	100.6
Mean cell hemoglobin (pg)	23.3	30.8	24.5	32.6	24.3	33.8	26.4	34.5
MCHC (g/dl)	32.4	35.5	32.3	35.3	32.1	35.3	32.3	35.1
Red cell distribution width (%)	11.3	15.4	11.3	14.8	11.4	16.3	11.6	16.3

Platelet count (%)	SI	215	547	190	446	168	441	155	428
Mean platelet volume (fL)		6.1	8.9	6.6	10.0	6.8	10.2	6.7	10.5
Lymphocyte percent (%)		21.6	68.8	17.2	54.7	14.1	47.6	13.7	46.9
Monocyte percent (%)		4.2	14.4	4.3	12.7	3.8	11.6	4.4	12.8
Segmented neutrophils percent (%)		19.4	69.5	31.9	74.3	39.8	78.1	40.9	78.1
Eosinophils percent (%)		0.6	9.9	0.6	9.9	0.6	7.3	0.6	7.5
Basophils percent (%)		0.1	2.5	0.1	1.6	0.1	1.7	0.1	1.7

Reference ranges for normal values were calculated from the NHANES data set (1999–2004) using 95 percent reference interval(s) determined nonparametrically, through ranking the observations and determining the lower (2.5th percentile) and the upper (97.5th percentile) reference limits. The nonparametric (ranking) method was used because most measured hematology parameters have a skewed, non-Gaussian distribution.

Action Limits

Action limits are a guide to inform the physician that a CBC result(s) is/are abnormal. Since all specimens are run in duplicate, there is no reason to retest the sample.

- WBC male and female (all ages) $< \text{or } = \text{ to } 3 \times 10^3 \mu\text{l}$ or $> \text{or } = \text{ to } 16.0 \times 10^3 \mu\text{l}$
- Hgb male and female (<6 years) $<6.5 \text{ g/dl}$ or $>14.5 \text{ g/dl}$
- Hgb female (>6 years) $<6.5 \text{ g/dl}$ or $>16.0 \text{ g/dl}$
- Hgb male (>6 years) $<6.5 \text{ g/dl}$ or $>18.0 \text{ g/dl}$
- PLT male and female (all ages) $<50 \times 10^3 \mu\text{l}$ or $>800 \times 10^3 \mu\text{l}$

Possible causes of abnormal parameters:

- High RBC, Hgb, or HCT—dehydration, polycythemia, shock, chronic hypoxia
- Low RBC, Hgb, or HCT—anemia, thalassemia, and other hemoglobinopathies
- Low MCV—microcytic anemia
- High MCV—macrocytic anemia, liver disease
- Low WBC—sepsis, marrow hypoplasia
- High WBC—acute stress, infection, malignancies
- Low platelets—risk of bleeding
- High platelets—risk of thrombosis

Specimen Storage and Handling During Testing

Specimen Storage:

- Store specimens capped and place on a rocker at room temperature until processed. If specimens are not run during the session due to excessively high room temperature, place all specimens in a biohazard bag and place bag in a cabinet of a cool room (usually physician's room upper cabinet). Retrieve from this area when specimens can be run—then mix the specimens well before running.
- Run within 24 hours of drawing.

Alternative Method for Performing Test or Storing Specimens If Test System Fails

There is no alternative method for this test. Store EDTA tube at room temperature for no more than 24 hours. Restore the instrument to functionality and then run the specimen after thorough mixing.

Test Results Reporting System: Protocol for Reporting Action Limits

Results outside the action limits are brought to the physician's attention by sending the physician an observation and requesting a decision on "course-to-follow."

All records, including QA/QC data, will be maintained for 6 years. Use only numerical identifiers for SP results.

Quality Control Summary Statistics and Graphs

Chapter 13 includes a separate detailed description of the comprehensive quality control plan. Monitor 6C[®] cell control results for bias and maintain results for the entire study period. Compare all three instruments using the CAP proficiency results.

Troubleshooting

If the Background fails:

- If WBC, RBC, Plt fails—zap apertures, prime sweep flow several times, shutdown as last resort.
- If Differential fails—flush the flow cell.
- If Hgb fails—clean BSV, Prime CBC Module, perform Hgb blank verification, Shutdown.

If the Latron fails:

- D or N(AI2) and/or D or N(Lals) out—unlock DV x 3, flush flow cell x 3.

Setting Shift Times

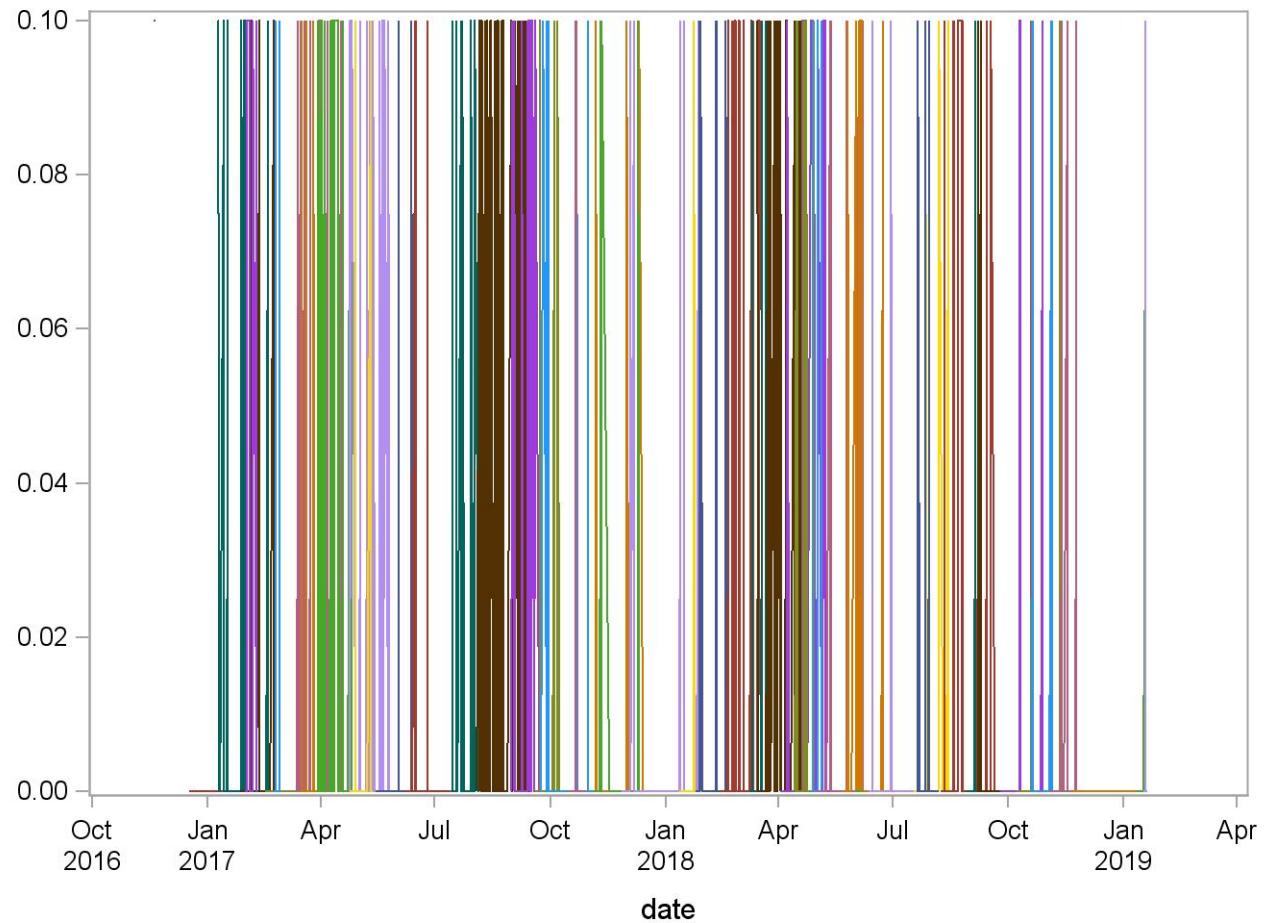
From Main Screen>Click on X with Bar over it (top Menu)> XB setup(Bottom screen)> “Shifts” Tab> In “Multiple Shifts” type 08:00:00 in shift one start box> Type in 13:00:00 in Shift 2 box> Type in 23:00:00 in Shift 3 box>The “to” boxes will auto fill>Save.

Summary Statistics and QC Charts

Please see following pages.

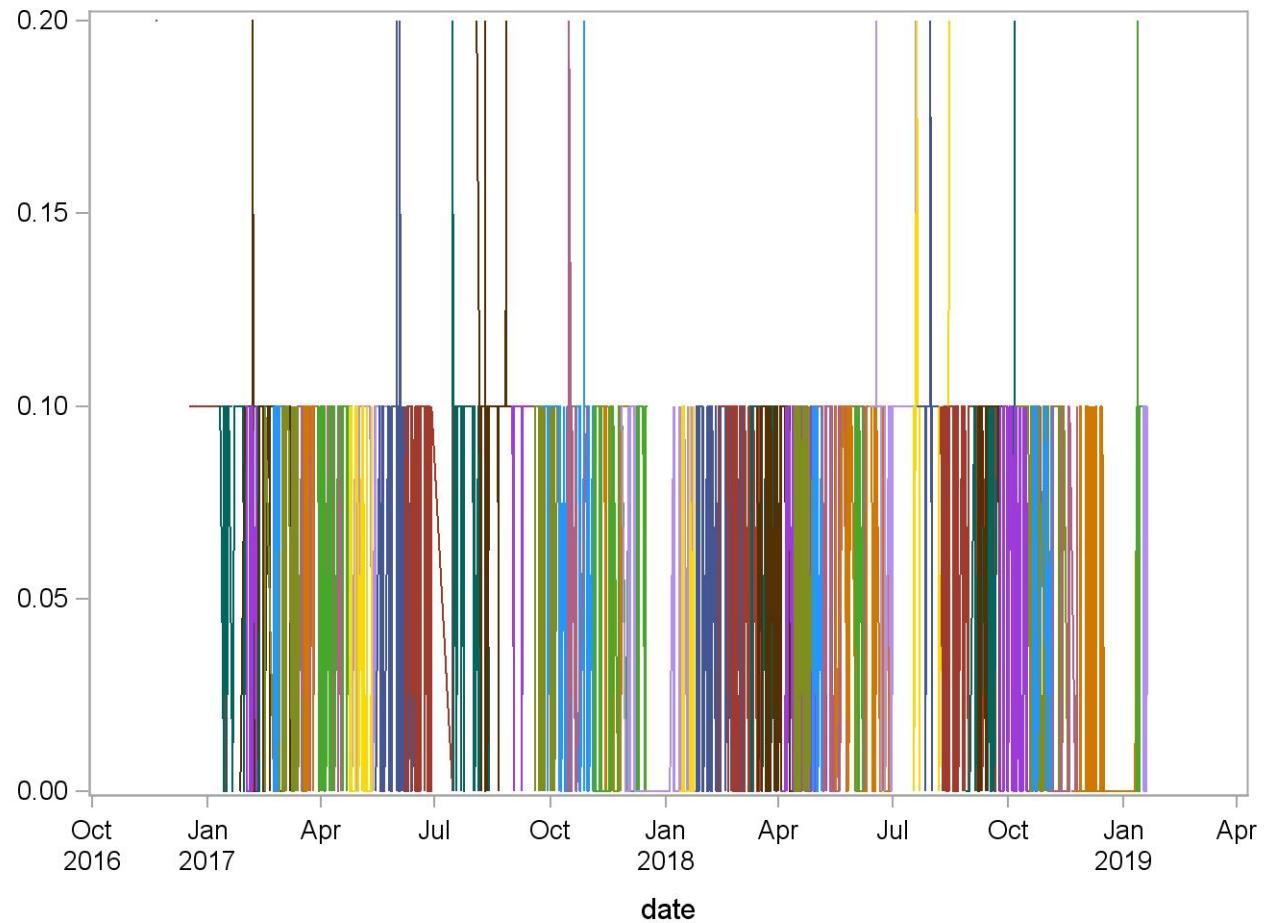
2017-2018 Summary Statistics and QC Chart for Basophils (%) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	0.0000	0.0000	.
123171500	110	09JAN17	18FEB17	0.0136	0.0345	252.8
123171520	113	27JAN17	08MAR17	0.0053	0.0225	424.2
123171530	20	31JAN17	09FEB17	0.0200	0.0410	205.2
123171540	48	16FEB17	21MAR17	0.0000	0.0000	.
123171550	21	23FEB17	27FEB17	0.0143	0.0359	251.0
123171570	57	13MAR17	18APR17	0.0228	0.0423	185.6
123171580	33	17MAR17	29MAR17	0.0091	0.0292	321.1
123171600	60	30MAR17	01MAY17	0.0267	0.0446	167.2
123171610	48	24APR17	26MAY17	0.0313	0.0468	149.9
123171630	37	24APR17	13MAY17	0.0054	0.0229	424.1
123171650	80	15MAY17	17JUN17	0.0025	0.0157	628.4
123171680	67	08JUN17	15JUL17	0.0045	0.0208	465.4
123171730	71	15JUL17	13AUG17	0.0141	0.0350	248.7
123171760	93	03AUG17	15SEP17	0.0333	0.0474	142.2
123171770	40	31AUG17	24SEP17	0.0375	0.0490	130.7
123171790	39	19SEP17	08OCT17	0.0077	0.0270	350.9
123171840	105	24SEP17	16NOV17	0.0048	0.0214	449.4
123171860	22	15OCT17	30OCT17	0.0091	0.0294	323.7
123171890	57	05NOV17	18DEC17	0.0053	0.0225	428.0
123171870	57	06NOV17	17DEC17	0.0053	0.0225	428.0
123171930	71	27NOV17	27JAN18	0.0070	0.0258	365.9
123171970	33	12JAN18	24JAN18	0.0030	0.0174	574.5
123171980	95	25JAN18	03MAR18	0.0053	0.0224	426.5
123172010	129	12FEB18	17MAR18	0.0155	0.0363	234.4
123172030	35	09MAR18	25MAR18	0.0086	0.0284	331.4
123172060	50	15MAR18	18APR18	0.0280	0.0454	162.0
123172080	58	02APR18	13MAY18	0.0207	0.0409	197.5
123172090	34	14APR18	29APR18	0.0206	0.0410	199.3
123172110	20	28APR18	05MAY18	0.0150	0.0366	244.2
123172120	53	01MAY18	11JUN18	0.0094	0.0295	312.8
123172140	54	22MAY18	30JUN18	0.0111	0.0317	285.5
123172150	20	01JUN18	07JUN18	0.0000	0.0000	.
123172160	50	12JUN18	21JUL18	0.0040	0.0198	494.9
123172210	44	18JUL18	15AUG18	0.0068	0.0255	374.0
123172220	39	20JUL18	07AUG18	0.0077	0.0270	350.9
123172240	94	08AUG18	21SEP18	0.0096	0.0296	309.0
123172260	49	28AUG18	07OCT18	0.0020	0.0143	700.0
123172270	26	07SEP18	24SEP18	0.0077	0.0272	353.3
123172300	84	25SEP18	29OCT18	0.0048	0.0214	449.9
123172310	49	08OCT18	17NOV18	0.0061	0.0242	395.6
123172320	30	19OCT18	05NOV18	0.0100	0.0305	305.1
123172340	60	02NOV18	07DEC18	0.0050	0.0220	439.6
123172380	71	20NOV18	12JAN19	0.0000	0.0000	.
123172400	20	11JAN19	19JAN19	0.0050	0.0224	447.2
123172430	16	17JAN19	20JAN19	0.0063	0.0250	400.0



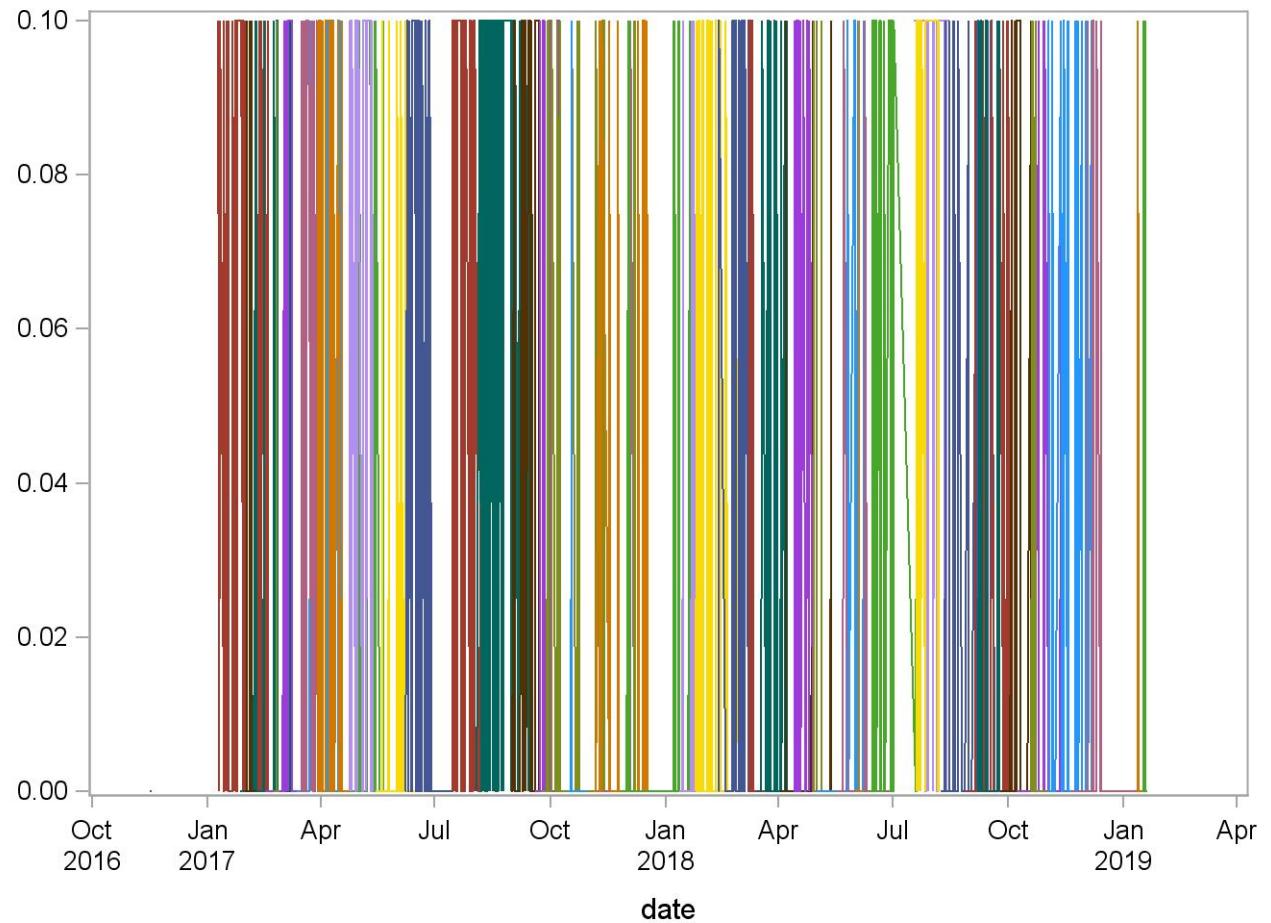
2017-2018 Summary Statistics and QC Chart for Basophils (%) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	0.0846	0.0376	44.4
133181500	78	09JAN17	18FEB17	0.0795	0.0406	51.1
133181520	97	27JAN17	08MAR17	0.0649	0.0521	80.3
133181530	20	31JAN17	09FEB17	0.0550	0.0510	92.8
133181540	50	16FEB17	21MAR17	0.0420	0.0499	118.7
133181550	20	23FEB17	02MAR17	0.0650	0.0489	75.3
133181570	57	13MAR17	18APR17	0.0737	0.0444	60.3
133181580	33	17MAR17	29MAR17	0.0788	0.0415	52.7
133181600	61	30MAR17	01MAY17	0.0721	0.0452	62.7
133181610	49	24APR17	26MAY17	0.0796	0.0407	51.2
133181630	37	24APR17	13MAY17	0.0432	0.0502	116.1
133181650	85	15MAY17	17JUN17	0.0506	0.0548	108.4
133181680	67	08JUN17	15JUL17	0.0597	0.0494	82.8
133181730	71	15JUL17	13AUG17	0.0859	0.0389	45.3
133181760	97	03AUG17	15SEP17	0.0948	0.0335	35.3
133181770	36	31AUG17	25SEP17	0.0944	0.0232	24.6
133181790	41	19SEP17	08OCT17	0.0756	0.0435	57.5
133181840	106	24SEP17	16NOV17	0.0783	0.0437	55.8
133181860	21	15OCT17	30OCT17	0.0714	0.0561	78.5
133181890	61	05NOV17	18DEC17	0.0557	0.0501	89.9
133181870	57	06NOV17	17DEC17	0.0702	0.0462	65.8
133181930	71	27NOV17	27JAN18	0.0380	0.0489	128.6
133181970	34	12JAN18	24JAN18	0.0265	0.0448	169.2
133181980	92	25JAN18	03MAR18	0.0467	0.0502	107.3
133182010	119	12FEB18	17MAR18	0.0454	0.0500	110.2
133182030	89	09MAR18	31MAR18	0.0753	0.0434	57.6
133182060	53	15MAR18	18APR18	0.0642	0.0484	75.5
133182080	57	02APR18	13MAY18	0.0579	0.0498	86.0
133182090	35	14APR18	29APR18	0.0486	0.0507	104.4
133182110	20	28APR18	05MAY18	0.0650	0.0489	75.3
133182120	55	01MAY18	11JUN18	0.0582	0.0498	85.6
133182140	55	17MAY18	30JUN18	0.0509	0.0505	99.1
133182150	21	01JUN18	07JUN18	0.0619	0.0498	80.4
133182160	51	12JUN18	21JUL18	0.0941	0.0369	39.3
133182210	44	18JUL18	15AUG18	0.0977	0.0340	34.8
133182220	40	20JUL18	07AUG18	0.0975	0.0276	28.3
133182240	96	08AUG18	21SEP18	0.0729	0.0447	61.3
133182260	49	28AUG18	07OCT18	0.0776	0.0468	60.4
133182270	26	07SEP18	24SEP18	0.0692	0.0471	68.0
133182300	89	25SEP18	29OCT18	0.0517	0.0503	97.2
133182310	47	08OCT18	17NOV18	0.0617	0.0491	79.6
133182320	30	19OCT18	05NOV18	0.0733	0.0450	61.3
133182350	60	02NOV18	07DEC18	0.0150	0.0360	240.1
133182390	71	20NOV18	12JAN19	0.0310	0.0466	150.3
133182400	20	11JAN19	19JAN19	0.0750	0.0550	73.3
133182430	18	17JAN19	20JAN19	0.0444	0.0511	115.0



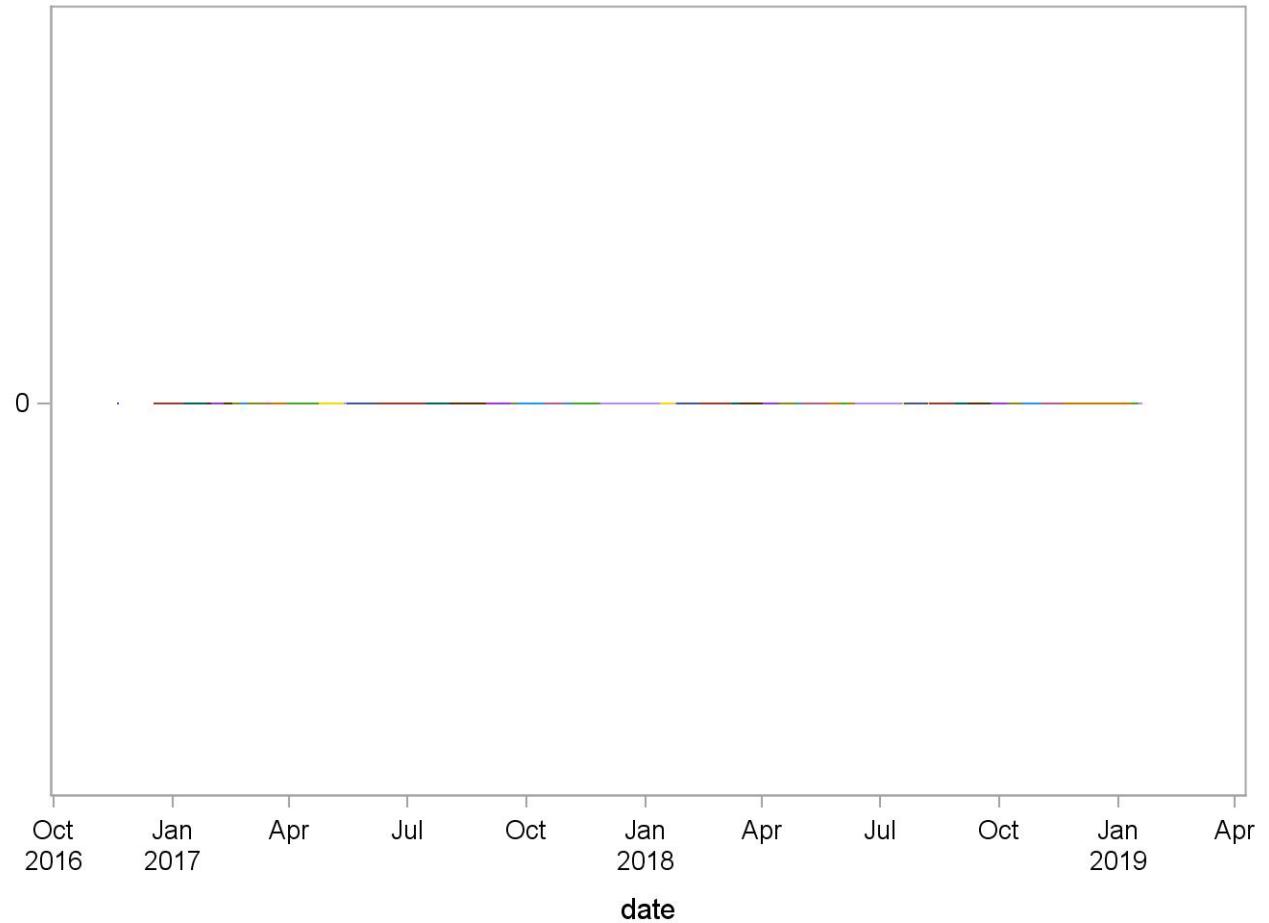
2017-2018 Summary Statistics and QC Chart for Basophils (%) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	0.0396	0.0494	124.6
143191520	58	27JAN17	08MAR17	0.0138	0.0348	252.2
143191530	20	31JAN17	09FEB17	0.0150	0.0366	244.2
143191540	47	16FEB17	21MAR17	0.0170	0.0380	223.2
143191550	21	23FEB17	27FEB17	0.0048	0.0218	458.3
143191570	56	13MAR17	18APR17	0.0286	0.0456	159.5
143191580	33	17MAR17	29MAR17	0.0455	0.0506	111.2
143191600	61	30MAR17	01MAY17	0.0262	0.0444	169.1
143191610	49	24APR17	26MAY17	0.0265	0.0446	168.1
143191630	38	24APR17	13MAY17	0.0605	0.0495	81.8
143191650	80	15MAY17	17JUN17	0.0088	0.0284	325.0
143191680	67	08JUN17	15JUL17	0.0328	0.0473	144.1
143191730	69	15JUL17	13AUG17	0.0551	0.0501	91.0
143191760	92	03AUG17	15SEP17	0.0728	0.0447	61.4
143191770	34	31AUG17	24SEP17	0.0382	0.0493	129.0
143191790	39	19SEP17	08OCT17	0.0231	0.0427	185.0
143191840	103	24SEP17	16NOV17	0.0126	0.0334	264.4
143191860	22	15OCT17	30OCT17	0.0045	0.0213	469.0
143191890	57	05NOV17	18DEC17	0.0158	0.0368	233.0
143191870	56	06NOV17	17DEC17	0.0071	0.0260	363.8
143191930	69	27NOV17	27JAN18	0.0145	0.0355	244.7
143191970	32	12JAN18	24JAN18	0.0094	0.0296	315.9
143191980	91	25JAN18	03MAR18	0.0363	0.0483	133.3
143192010	127	12FEB18	17MAR18	0.0236	0.0426	180.5
143192030	93	09MAR18	31MAR18	0.0204	0.0405	198.4
143192060	48	15MAR18	18APR18	0.0208	0.0410	197.0
143192080	58	02APR18	13MAY18	0.0069	0.0256	370.6
143192090	34	14APR18	29APR18	0.0382	0.0493	129.0
143192110	20	28APR18	05MAY18	0.0150	0.0366	244.2
143192120	52	01MAY18	11JUN18	0.0154	0.0364	236.8
143192140	54	17MAY18	30JUN18	0.0037	0.0191	514.7
143192150	21	01JUN18	07JUN18	0.0048	0.0218	458.3
143192160	51	12JUN18	21JUL18	0.0353	0.0483	136.7
143192210	43	18JUL18	15AUG18	0.0767	0.0427	55.7
143192220	39	20JUL18	07AUG18	0.0795	0.0409	51.5
143192240	92	08AUG18	21SEP18	0.0141	0.0350	247.9
143192260	50	28AUG18	07OCT18	0.0180	0.0388	215.6
143192270	26	07SEP18	24SEP18	0.0462	0.0508	110.2
143192300	86	25SEP18	29OCT18	0.0116	0.0322	277.3
143192310	47	08OCT18	17NOV18	0.0106	0.0312	293.0
143192320	30	19OCT18	05NOV18	0.0167	0.0379	227.4
143192340	61	02NOV18	07DEC18	0.0262	0.0444	169.1
143192380	72	20NOV18	12JAN19	0.0083	0.0278	334.0
143192400	20	11JAN19	19JAN19	0.0050	0.0224	447.2
143192430	18	17JAN19	20JAN19	0.0111	0.0323	291.0



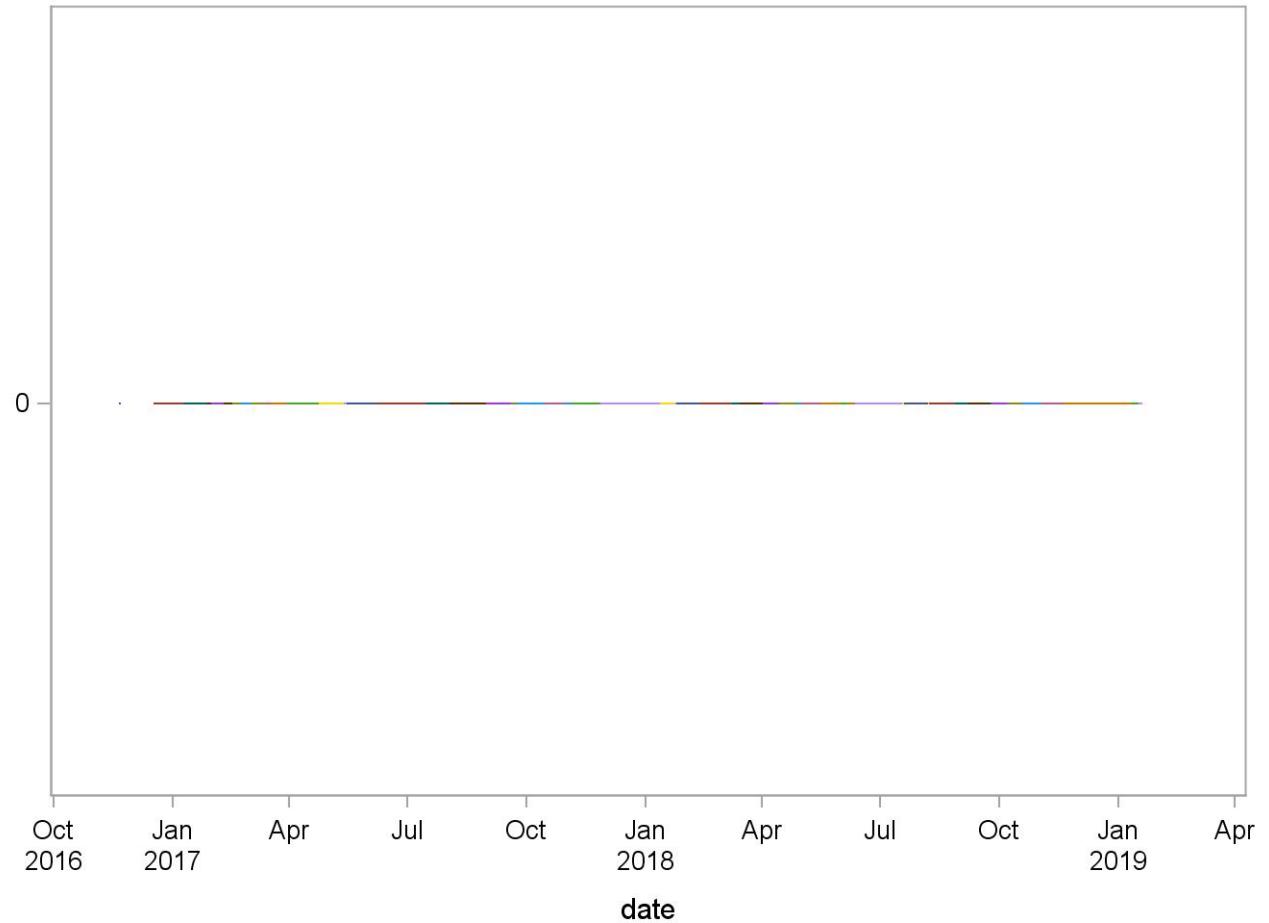
2017-2018 Summary Statistics and QC Chart for Basophils No.(10³ cells/uL) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	0.0000	0.0000	.
123171500	110	09JAN17	18FEB17	0.0000	0.0000	.
123171520	113	27JAN17	08MAR17	0.0000	0.0000	.
123171530	20	31JAN17	09FEB17	0.0000	0.0000	.
123171540	48	16FEB17	21MAR17	0.0000	0.0000	.
123171550	21	23FEB17	27FEB17	0.0000	0.0000	.
123171570	57	13MAR17	18APR17	0.0000	0.0000	.
123171580	33	17MAR17	29MAR17	0.0000	0.0000	.
123171600	60	30MAR17	01MAY17	0.0000	0.0000	.
123171610	48	24APR17	26MAY17	0.0000	0.0000	.
123171630	37	24APR17	13MAY17	0.0000	0.0000	.
123171650	80	15MAY17	17JUN17	0.0000	0.0000	.
123171680	67	08JUN17	15JUL17	0.0000	0.0000	.
123171730	71	15JUL17	13AUG17	0.0000	0.0000	.
123171760	93	03AUG17	15SEP17	0.0000	0.0000	.
123171770	40	31AUG17	24SEP17	0.0000	0.0000	.
123171790	39	19SEP17	08OCT17	0.0000	0.0000	.
123171840	105	24SEP17	16NOV17	0.0000	0.0000	.
123171860	22	15OCT17	30OCT17	0.0000	0.0000	.
123171890	57	05NOV17	18DEC17	0.0000	0.0000	.
123171870	57	06NOV17	17DEC17	0.0000	0.0000	.
123171930	71	27NOV17	27JAN18	0.0000	0.0000	.
123171970	33	12JAN18	24JAN18	0.0000	0.0000	.
123171980	95	25JAN18	03MAR18	0.0000	0.0000	.
123172010	129	12FEB18	17MAR18	0.0000	0.0000	.
123172030	35	09MAR18	25MAR18	0.0000	0.0000	.
123172060	50	15MAR18	18APR18	0.0000	0.0000	.
123172080	58	02APR18	13MAY18	0.0000	0.0000	.
123172090	34	14APR18	29APR18	0.0000	0.0000	.
123172110	20	28APR18	05MAY18	0.0000	0.0000	.
123172120	53	01MAY18	11JUN18	0.0000	0.0000	.
123172140	54	22MAY18	30JUN18	0.0000	0.0000	.
123172150	20	01JUN18	07JUN18	0.0000	0.0000	.
123172160	50	12JUN18	21JUL18	0.0000	0.0000	.
123172210	44	18JUL18	15AUG18	0.0000	0.0000	.
123172220	39	20JUL18	07AUG18	0.0000	0.0000	.
123172240	94	08AUG18	21SEP18	0.0000	0.0000	.
123172260	49	28AUG18	07OCT18	0.0000	0.0000	.
123172270	26	07SEP18	24SEP18	0.0000	0.0000	.
123172300	84	25SEP18	29OCT18	0.0000	0.0000	.
123172310	49	08OCT18	17NOV18	0.0000	0.0000	.
123172320	30	19OCT18	05NOV18	0.0000	0.0000	.
123172340	60	02NOV18	07DEC18	0.0000	0.0000	.
123172380	71	20NOV18	12JAN19	0.0000	0.0000	.
123172400	20	11JAN19	19JAN19	0.0000	0.0000	.
123172430	16	17JAN19	20JAN19	0.0000	0.0000	.



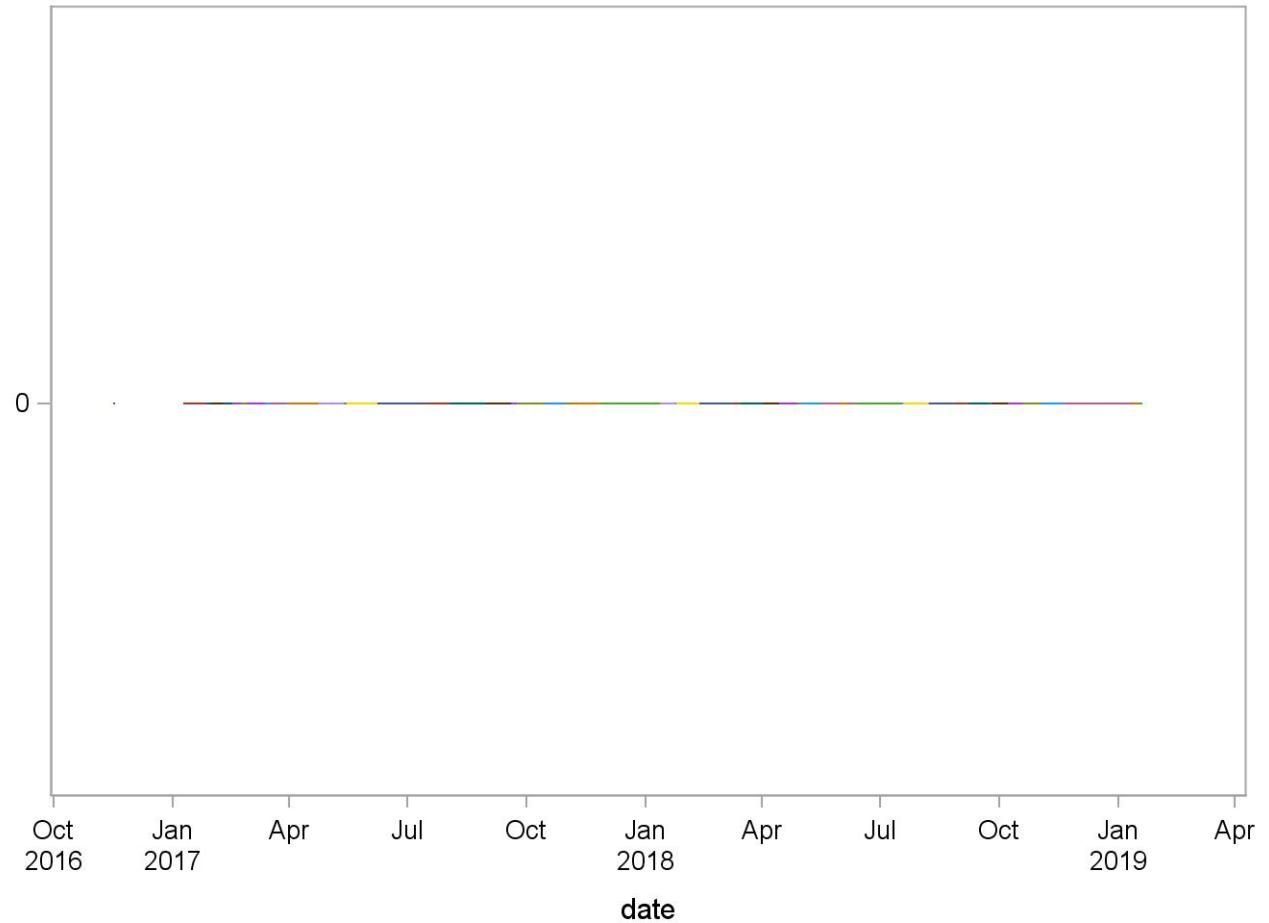
2017-2018 Summary Statistics and QC Chart for Basophils No.(10³ cells/uL) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	0.0000	0.0000	.
133181500	78	09JAN17	18FEB17	0.0000	0.0000	.
133181520	97	27JAN17	08MAR17	0.0000	0.0000	.
133181530	20	31JAN17	09FEB17	0.0000	0.0000	.
133181540	50	16FEB17	21MAR17	0.0000	0.0000	.
133181550	20	23FEB17	02MAR17	0.0000	0.0000	.
133181570	57	13MAR17	18APR17	0.0000	0.0000	.
133181580	33	17MAR17	29MAR17	0.0000	0.0000	.
133181600	61	30MAR17	01MAY17	0.0000	0.0000	.
133181610	49	24APR17	26MAY17	0.0000	0.0000	.
133181630	37	24APR17	13MAY17	0.0000	0.0000	.
133181650	85	15MAY17	17JUN17	0.0000	0.0000	.
133181680	67	08JUN17	15JUL17	0.0000	0.0000	.
133181730	71	15JUL17	13AUG17	0.0000	0.0000	.
133181760	97	03AUG17	15SEP17	0.0000	0.0000	.
133181770	36	31AUG17	25SEP17	0.0000	0.0000	.
133181790	41	19SEP17	08OCT17	0.0000	0.0000	.
133181840	106	24SEP17	16NOV17	0.0000	0.0000	.
133181860	21	15OCT17	30OCT17	0.0000	0.0000	.
133181890	61	05NOV17	18DEC17	0.0000	0.0000	.
133181870	57	06NOV17	17DEC17	0.0000	0.0000	.
133181930	71	27NOV17	27JAN18	0.0000	0.0000	.
133181970	34	12JAN18	24JAN18	0.0000	0.0000	.
133181980	92	25JAN18	03MAR18	0.0000	0.0000	.
133182010	119	12FEB18	17MAR18	0.0000	0.0000	.
133182030	89	09MAR18	31MAR18	0.0000	0.0000	.
133182060	53	15MAR18	18APR18	0.0000	0.0000	.
133182080	57	02APR18	13MAY18	0.0000	0.0000	.
133182090	35	14APR18	29APR18	0.0000	0.0000	.
133182110	20	28APR18	05MAY18	0.0000	0.0000	.
133182120	55	01MAY18	11JUN18	0.0000	0.0000	.
133182140	55	17MAY18	30JUN18	0.0000	0.0000	.
133182150	21	01JUN18	07JUN18	0.0000	0.0000	.
133182160	51	12JUN18	21JUL18	0.0000	0.0000	.
133182210	44	18JUL18	15AUG18	0.0000	0.0000	.
133182220	40	20JUL18	07AUG18	0.0000	0.0000	.
133182240	96	08AUG18	21SEP18	0.0000	0.0000	.
133182260	49	28AUG18	07OCT18	0.0000	0.0000	.
133182270	26	07SEP18	24SEP18	0.0000	0.0000	.
133182300	89	25SEP18	29OCT18	0.0000	0.0000	.
133182310	47	08OCT18	17NOV18	0.0000	0.0000	.
133182320	30	19OCT18	05NOV18	0.0000	0.0000	.
133182350	60	02NOV18	07DEC18	0.0000	0.0000	.
133182390	71	20NOV18	12JAN19	0.0000	0.0000	.
133182400	20	11JAN19	19JAN19	0.0000	0.0000	.
133182430	18	17JAN19	20JAN19	0.0000	0.0000	.



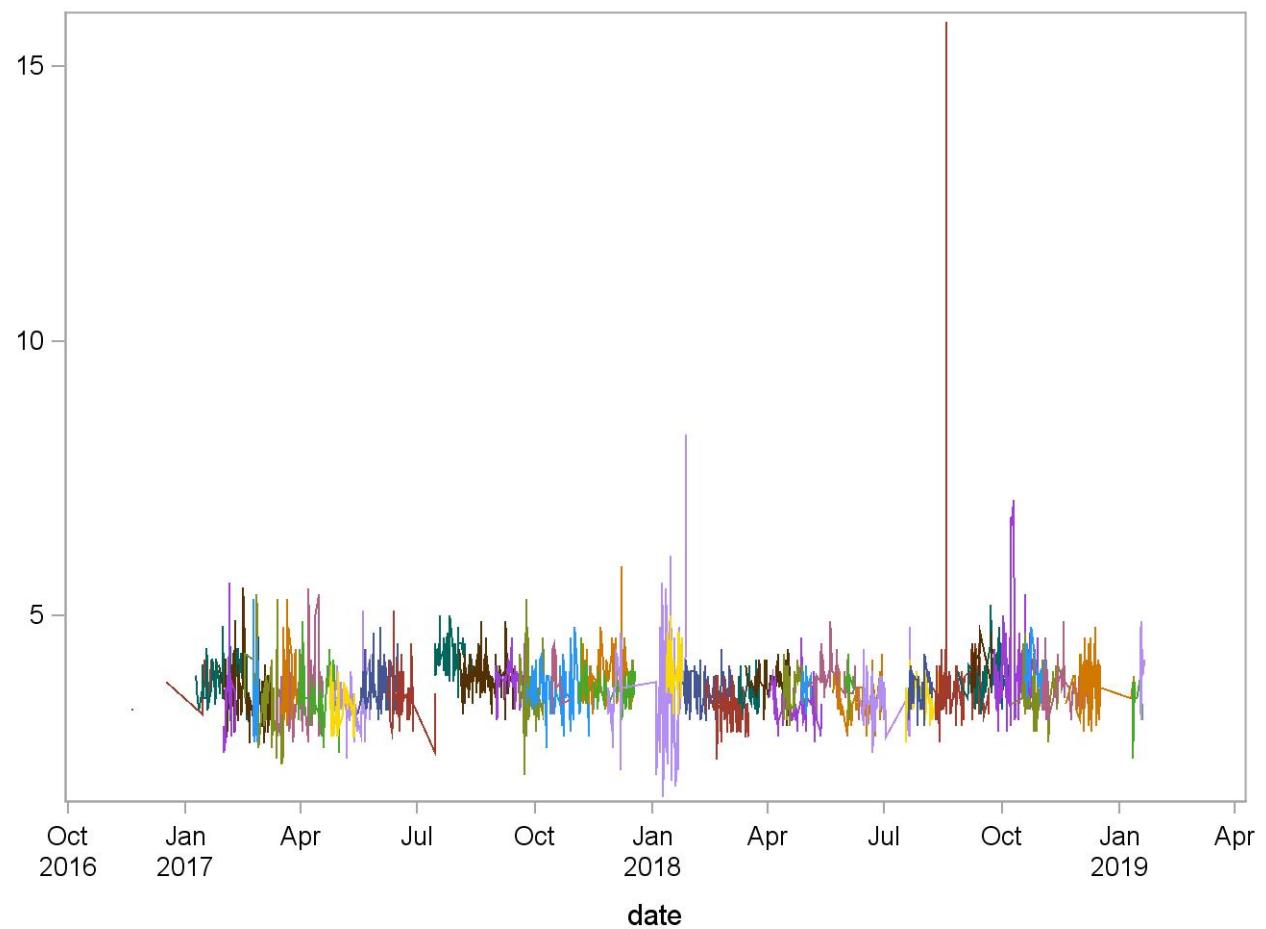
2017-2018 Summary Statistics and QC Chart for Basophils No.(10³ cells/uL) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	0.0000	0.0000	.
143191520	58	27JAN17	08MAR17	0.0000	0.0000	.
143191530	20	31JAN17	09FEB17	0.0000	0.0000	.
143191540	47	16FEB17	21MAR17	0.0000	0.0000	.
143191550	21	23FEB17	27FEB17	0.0000	0.0000	.
143191570	56	13MAR17	18APR17	0.0000	0.0000	.
143191580	33	17MAR17	29MAR17	0.0000	0.0000	.
143191600	61	30MAR17	01MAY17	0.0000	0.0000	.
143191610	49	24APR17	26MAY17	0.0000	0.0000	.
143191630	38	24APR17	13MAY17	0.0000	0.0000	.
143191650	80	15MAY17	17JUN17	0.0000	0.0000	.
143191680	67	08JUN17	15JUL17	0.0000	0.0000	.
143191730	69	15JUL17	13AUG17	0.0000	0.0000	.
143191760	92	03AUG17	15SEP17	0.0000	0.0000	.
143191770	34	31AUG17	24SEP17	0.0000	0.0000	.
143191790	39	19SEP17	08OCT17	0.0000	0.0000	.
143191840	102	24SEP17	16NOV17	0.0000	0.0000	.
143191860	22	15OCT17	30OCT17	0.0000	0.0000	.
143191890	57	05NOV17	18DEC17	0.0000	0.0000	.
143191870	56	06NOV17	17DEC17	0.0000	0.0000	.
143191930	69	27NOV17	27JAN18	0.0000	0.0000	.
143191970	32	12JAN18	24JAN18	0.0000	0.0000	.
143191980	91	25JAN18	03MAR18	0.0000	0.0000	.
143192010	127	12FEB18	17MAR18	0.0000	0.0000	.
143192030	93	09MAR18	31MAR18	0.0000	0.0000	.
143192060	48	15MAR18	18APR18	0.0000	0.0000	.
143192080	58	02APR18	13MAY18	0.0000	0.0000	.
143192090	34	14APR18	29APR18	0.0000	0.0000	.
143192110	20	28APR18	05MAY18	0.0000	0.0000	.
143192120	52	01MAY18	11JUN18	0.0000	0.0000	.
143192140	54	17MAY18	30JUN18	0.0000	0.0000	.
143192150	21	01JUN18	07JUN18	0.0000	0.0000	.
143192160	51	12JUN18	21JUL18	0.0000	0.0000	.
143192210	43	18JUL18	15AUG18	0.0000	0.0000	.
143192220	39	20JUL18	07AUG18	0.0000	0.0000	.
143192240	92	08AUG18	21SEP18	0.0000	0.0000	.
143192260	50	28AUG18	07OCT18	0.0000	0.0000	.
143192270	26	07SEP18	24SEP18	0.0000	0.0000	.
143192300	86	25SEP18	29OCT18	0.0000	0.0000	.
143192310	47	08OCT18	17NOV18	0.0000	0.0000	.
143192320	30	19OCT18	05NOV18	0.0000	0.0000	.
143192340	61	02NOV18	07DEC18	0.0000	0.0000	.
143192380	72	20NOV18	12JAN19	0.0000	0.0000	.
143192400	20	11JAN19	19JAN19	0.0000	0.0000	.
143192430	18	17JAN19	20JAN19	0.0000	0.0000	.



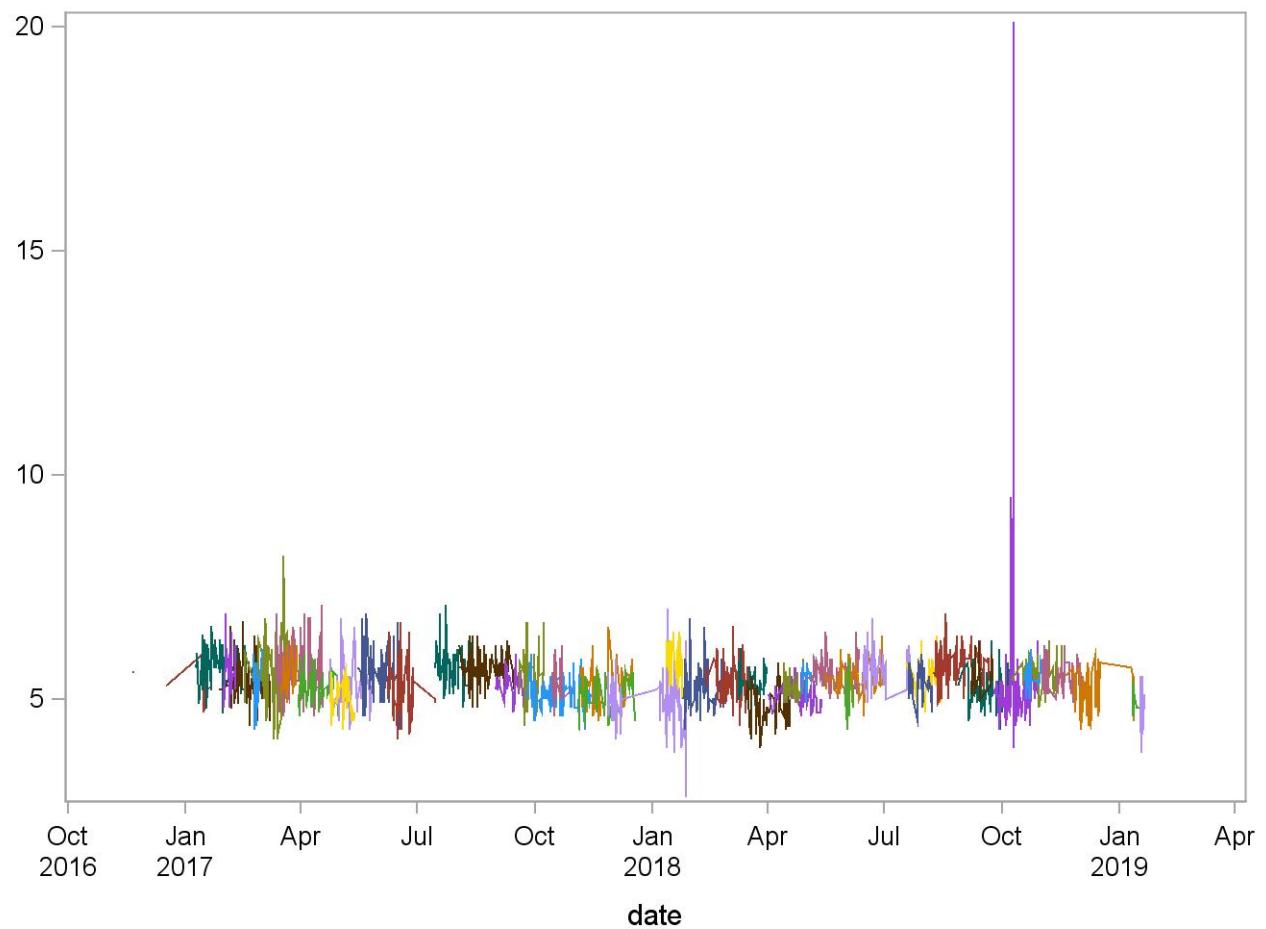
2017-2018 Summary Statistics and QC Chart for Eosinophils (%) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	3.7750	0.3361	8.9
123171500	110	09JAN17	18FEB17	3.8336	0.3769	9.8
123171520	113	27JAN17	08MAR17	3.6212	0.5584	15.4
123171530	20	31JAN17	09FEB17	3.4700	0.6959	20.1
123171540	48	16FEB17	21MAR17	3.5021	0.6596	18.8
123171550	21	23FEB17	27FEB17	3.4762	0.6700	19.3
123171570	57	13MAR17	18APR17	3.5982	0.5768	16.0
123171580	33	17MAR17	29MAR17	3.8303	0.5365	14.0
123171600	60	30MAR17	01MAY17	3.5400	0.4563	12.9
123171610	48	24APR17	26MAY17	3.4583	0.5123	14.8
123171630	37	24APR17	13MAY17	3.3459	0.3437	10.3
123171650	80	15MAY17	17JUN17	3.7313	0.3655	9.8
123171680	67	08JUN17	15JUL17	3.5821	0.4569	12.8
123171730	71	15JUL17	13AUG17	4.2423	0.2882	6.8
123171760	93	03AUG17	15SEP17	3.8849	0.3223	8.3
123171770	40	31AUG17	24SEP17	3.8325	0.3058	8.0
123171790	39	19SEP17	08OCT17	3.6154	0.6564	18.2
123171840	105	24SEP17	16NOV17	3.6495	0.3734	10.2
123171860	22	15OCT17	30OCT17	3.8955	0.3498	9.0
123171890	57	05NOV17	18DEC17	3.7158	0.2840	7.6
123171870	57	06NOV17	17DEC17	3.9491	0.4785	12.1
123171930	71	27NOV17	27JAN18	3.7408	1.1557	30.9
123171970	33	12JAN18	24JAN18	4.1000	0.4451	10.9
123171980	95	25JAN18	03MAR18	3.6284	0.2988	8.2
123172010	129	12FEB18	17MAR18	3.3395	0.2975	8.9
123172030	35	09MAR18	25MAR18	3.6514	0.2639	7.2
123172060	50	15MAR18	18APR18	3.8060	0.2683	7.1
123172080	58	02APR18	13MAY18	3.3603	0.3345	10.0
123172090	34	14APR18	29APR18	3.6412	0.3509	9.6
123172110	20	28APR18	05MAY18	3.7000	0.2656	7.2
123172120	53	01MAY18	11JUN18	3.8075	0.3257	8.6
123172140	54	22MAY18	30JUN18	3.4389	0.3305	9.6
123172150	20	01JUN18	07JUN18	3.7300	0.2319	6.2
123172160	50	12JUN18	21JUL18	3.4240	0.4182	12.2
123172210	44	18JUL18	15AUG18	3.5477	0.3331	9.4
123172220	39	20JUL18	07AUG18	3.6077	0.3098	8.6
123172240	94	08AUG18	21SEP18	3.7947	1.3033	34.3
123172260	49	28AUG18	07OCT18	3.9224	0.3782	9.6
123172270	26	07SEP18	24SEP18	4.1385	0.3151	7.6
123172300	84	25SEP18	29OCT18	3.9464	0.7872	19.9
123172310	49	08OCT18	17NOV18	3.6224	0.4214	11.6
123172320	30	19OCT18	05NOV18	3.9833	0.3217	8.1
123172340	60	02NOV18	07DEC18	3.6933	0.3344	9.1
123172380	71	20NOV18	12JAN19	3.7366	0.4213	11.3
123172400	20	11JAN19	19JAN19	3.3100	0.3655	11.0
123172430	16	17JAN19	20JAN19	3.9938	0.5183	13.0



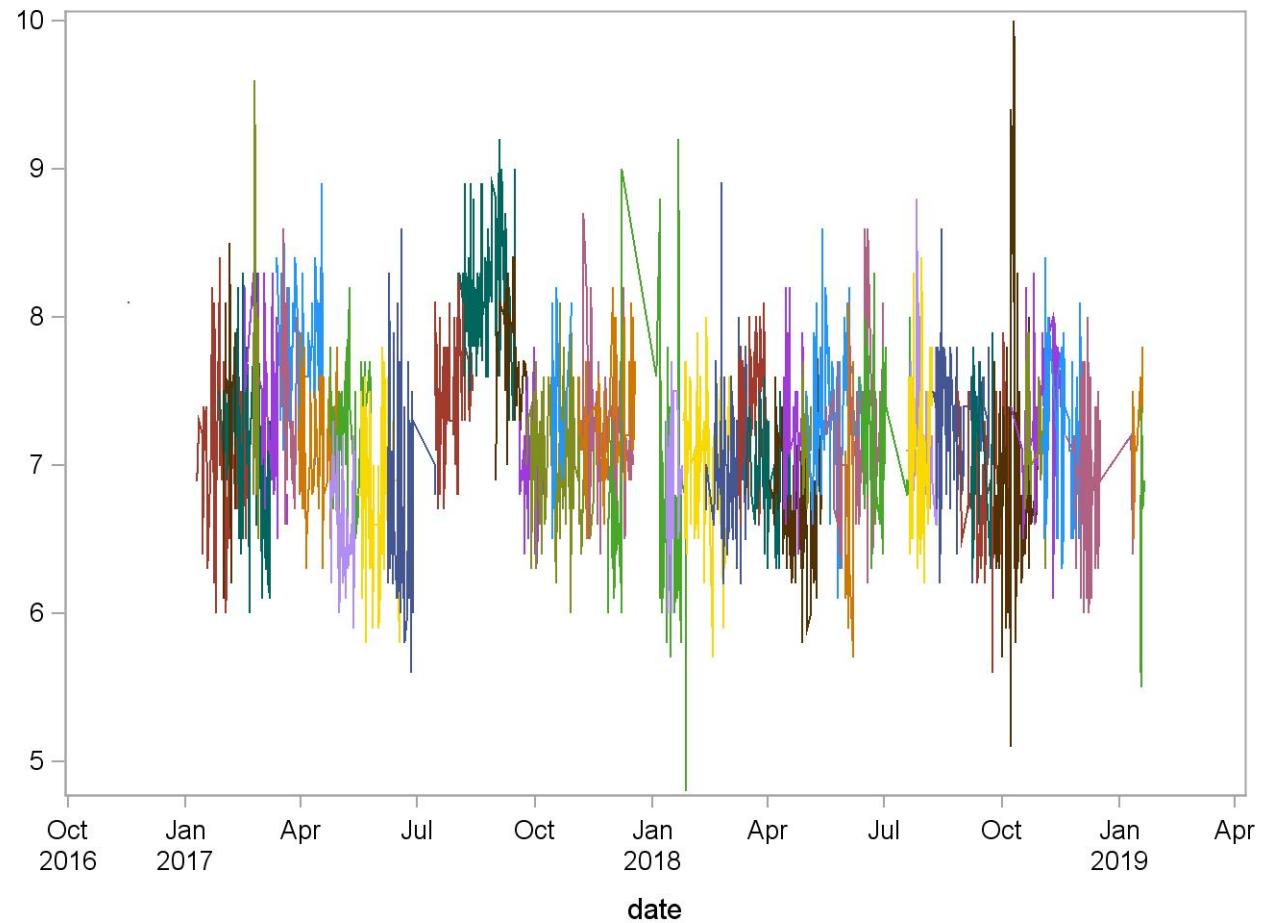
2017-2018 Summary Statistics and QC Chart for Eosinophils (%) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	5.4692	0.5023	9.2
133181500	78	09JAN17	18FEB17	5.7769	0.4781	8.3
133181520	97	27JAN17	08MAR17	5.4330	0.4643	8.5
133181530	20	31JAN17	09FEB17	5.6350	0.5603	9.9
133181540	50	16FEB17	21MAR17	5.5920	0.7687	13.7
133181550	20	23FEB17	02MAR17	5.2150	0.4837	9.3
133181570	57	13MAR17	18APR17	5.6456	0.6577	11.6
133181580	33	17MAR17	29MAR17	5.5970	0.3893	7.0
133181600	61	30MAR17	01MAY17	5.2820	0.3428	6.5
133181610	49	24APR17	26MAY17	5.2265	0.5053	9.7
133181630	37	24APR17	13MAY17	5.0216	0.3425	6.8
133181650	85	15MAY17	17JUN17	5.6024	0.4940	8.8
133181680	67	08JUN17	15JUL17	5.2239	0.5595	10.7
133181730	71	15JUL17	13AUG17	5.7718	0.3929	6.8
133181760	97	03AUG17	15SEP17	5.6155	0.3380	6.0
133181770	36	31AUG17	25SEP17	5.3500	0.3000	5.6
133181790	41	19SEP17	08OCT17	5.6146	0.5503	9.8
133181840	106	24SEP17	16NOV17	5.1283	0.3248	6.3
133181860	21	15OCT17	30OCT17	5.4476	0.4057	7.4
133181890	61	05NOV17	18DEC17	5.1131	0.3403	6.7
133181870	57	06NOV17	17DEC17	5.3105	0.4148	7.8
133181930	71	27NOV17	27JAN18	4.9437	0.6942	14.0
133181970	34	12JAN18	24JAN18	5.8853	0.4039	6.9
133181980	92	25JAN18	03MAR18	5.2696	0.4221	8.0
133182010	119	12FEB18	17MAR18	5.4378	0.4209	7.7
133182030	89	09MAR18	31MAR18	5.3101	0.3042	5.7
133182060	53	15MAR18	18APR18	4.8396	0.4171	8.6
133182080	57	02APR18	13MAY18	5.1140	0.2655	5.2
133182090	35	14APR18	29APR18	5.3286	0.2761	5.2
133182110	20	28APR18	05MAY18	5.4600	0.2437	4.5
133182120	55	01MAY18	11JUN18	5.5491	0.3366	6.1
133182140	55	17MAY18	30JUN18	5.4745	0.3384	6.2
133182150	21	01JUN18	07JUN18	5.1524	0.3723	7.2
133182160	51	12JUN18	21JUL18	5.6471	0.3859	6.8
133182210	44	18JUL18	15AUG18	5.4568	0.3598	6.6
133182220	40	20JUL18	07AUG18	5.3350	0.3142	5.9
133182240	96	08AUG18	21SEP18	5.7510	0.3850	6.7
133182260	49	28AUG18	07OCT18	5.2122	0.4236	8.1
133182270	26	07SEP18	24SEP18	5.5923	0.3532	6.3
133182300	89	25SEP18	29OCT18	5.4820	1.9150	34.9
133182310	47	08OCT18	17NOV18	5.5787	0.3176	5.7
133182320	30	19OCT18	05NOV18	5.5067	0.2959	5.4
133182350	60	02NOV18	07DEC18	5.4567	0.3461	6.3
133182390	71	20NOV18	12JAN19	5.1338	0.4355	8.5
133182400	20	11JAN19	19JAN19	4.9550	0.2305	4.7
133182430	18	17JAN19	20JAN19	4.7667	0.5053	10.6



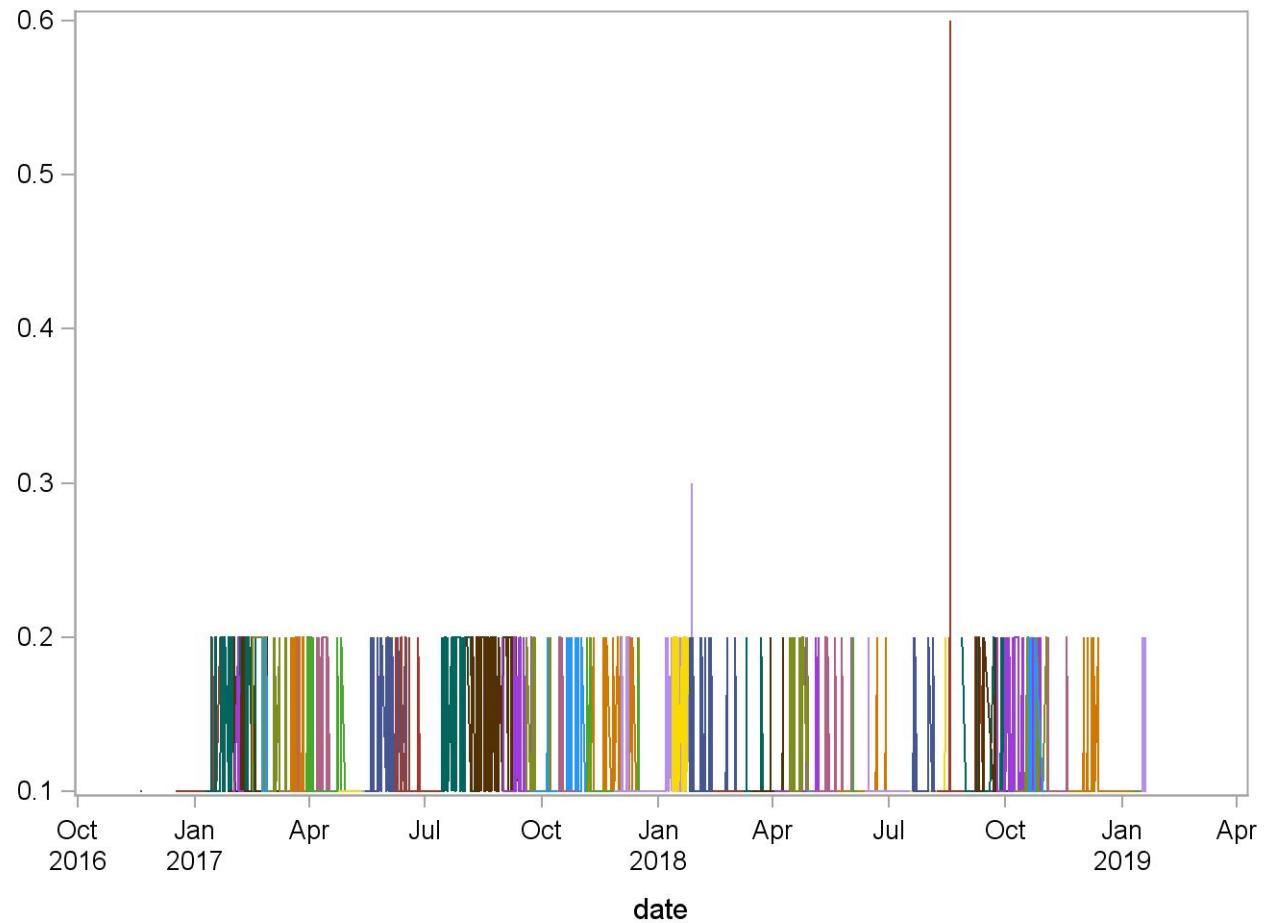
2017-2018 Summary Statistics and QC Chart for Eosinophils (%) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	7.0906	0.5285	7.5
143191520	58	27JAN17	08MAR17	7.1103	0.5751	8.1
143191530	20	31JAN17	09FEB17	7.2350	0.6252	8.6
143191540	47	16FEB17	21MAR17	7.4532	0.4881	6.5
143191550	21	23FEB17	27FEB17	7.4476	0.7033	9.4
143191570	56	13MAR17	18APR17	7.7518	0.4255	5.5
143191580	33	17MAR17	29MAR17	7.5182	0.4700	6.3
143191600	61	30MAR17	01MAY17	7.1557	0.3998	5.6
143191610	49	24APR17	26MAY17	7.2224	0.4119	5.7
143191630	38	24APR17	13MAY17	6.6711	0.3624	5.4
143191650	80	15MAY17	17JUN17	6.8163	0.4827	7.1
143191680	67	08JUN17	15JUL17	6.7373	0.6169	9.2
143191730	69	15JUL17	13AUG17	7.5014	0.3708	4.9
143191760	92	03AUG17	15SEP17	8.1446	0.3943	4.8
143191770	34	31AUG17	24SEP17	7.7206	0.3633	4.7
143191790	39	19SEP17	08OCT17	6.9974	0.3150	4.5
143191840	103	24SEP17	16NOV17	7.0534	0.4221	6.0
143191860	22	15OCT17	30OCT17	7.3545	0.4469	6.1
143191890	57	05NOV17	18DEC17	7.3018	0.3898	5.3
143191870	56	06NOV17	17DEC17	7.2286	0.4827	6.7
143191930	69	27NOV17	27JAN18	6.7522	0.7447	11.0
143191970	32	12JAN18	24JAN18	6.9438	0.4457	6.4
143191980	91	25JAN18	03MAR18	7.0011	0.4223	6.0
143192010	127	12FEB18	17MAR18	7.0520	0.4549	6.5
143192030	93	09MAR18	31MAR18	7.4419	0.3930	5.3
143192060	48	15MAR18	18APR18	6.8896	0.3453	5.0
143192080	58	02APR18	13MAY18	6.7172	0.4309	6.4
143192090	34	14APR18	29APR18	7.2735	0.4259	5.9
143192110	20	28APR18	05MAY18	7.2550	0.2605	3.6
143192120	52	01MAY18	11JUN18	7.3846	0.4936	6.7
143192140	54	17MAY18	30JUN18	7.1889	0.4944	6.9
143192150	21	01JUN18	07JUN18	6.5286	0.5866	9.0
143192160	51	12JUN18	21JUL18	7.1235	0.4475	6.3
143192210	43	18JUL18	15AUG18	7.1442	0.4420	6.2
143192220	39	20JUL18	07AUG18	7.1256	0.5295	7.4
143192240	92	08AUG18	21SEP18	7.2826	0.3836	5.3
143192260	50	28AUG18	07OCT18	6.8680	0.4274	6.2
143192270	26	07SEP18	24SEP18	7.0808	0.4418	6.2
143192300	86	25SEP18	29OCT18	6.9116	0.7452	10.8
143192310	47	08OCT18	17NOV18	7.3021	0.4590	6.3
143192320	30	19OCT18	05NOV18	7.2300	0.3743	5.2
143192340	61	02NOV18	07DEC18	7.1574	0.4664	6.5
143192380	72	20NOV18	12JAN19	6.8694	0.4565	6.6
143192400	20	11JAN19	19JAN19	7.2000	0.3293	4.6
143192430	18	17JAN19	20JAN19	6.5389	0.5337	8.2



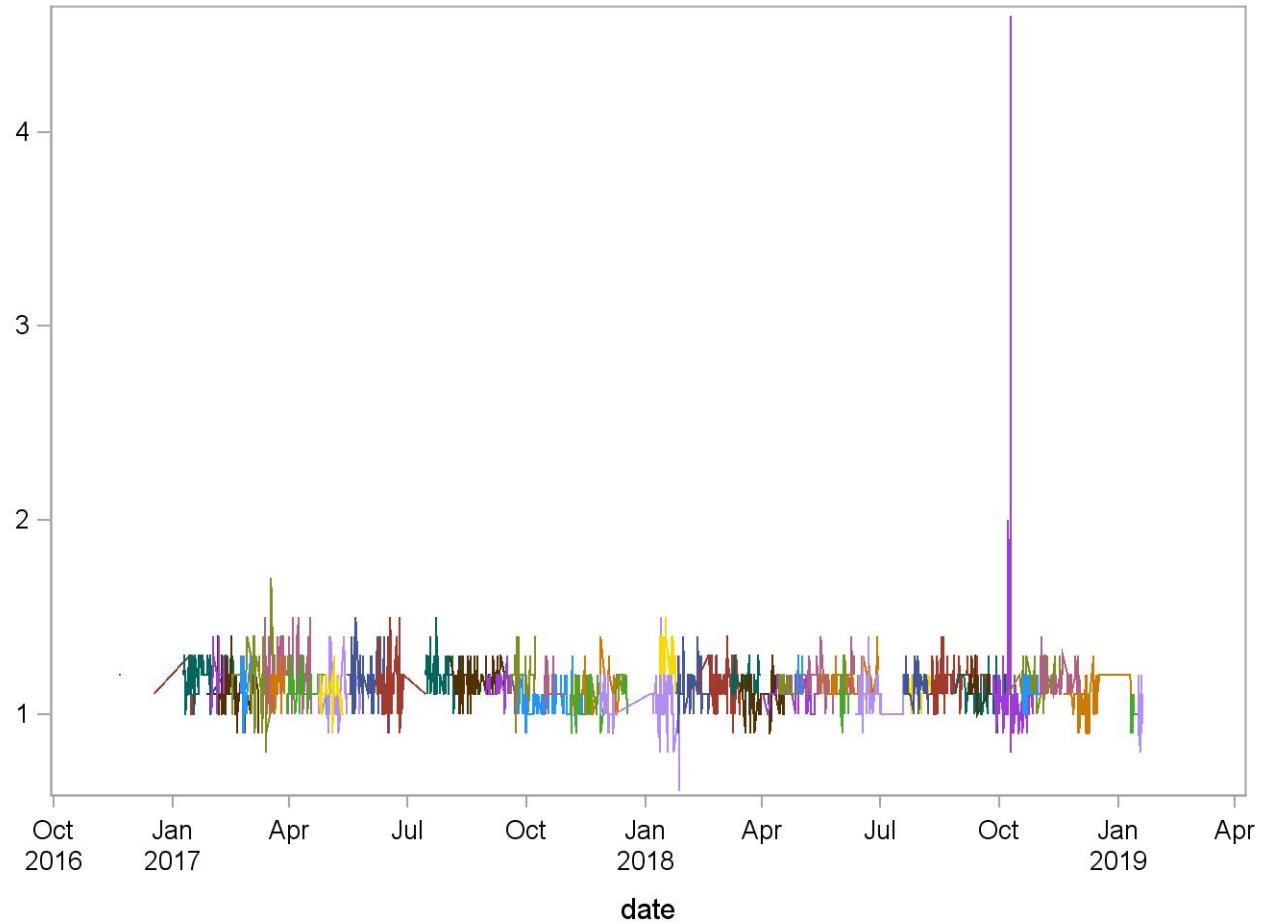
2017-2018 Summary Statistics and QC Chart for Eosinophils No.(10³ cells/uL) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	0.1250	0.0452	36.2
123171500	110	09JAN17	18FEB17	0.1355	0.0481	35.5
123171520	113	27JAN17	08MAR17	0.1124	0.0331	29.4
123171530	20	31JAN17	09FEB17	0.1150	0.0366	31.9
123171540	48	16FEB17	21MAR17	0.1208	0.0410	34.0
123171550	21	23FEB17	27FEB17	0.1143	0.0359	31.4
123171570	57	13MAR17	18APR17	0.1193	0.0398	33.4
123171580	33	17MAR17	29MAR17	0.1273	0.0452	35.5
123171600	60	30MAR17	01MAY17	0.1150	0.0360	31.3
123171610	48	24APR17	26MAY17	0.1063	0.0245	23.0
123171630	37	24APR17	13MAY17	0.1000	0.0000	0.0
123171650	80	15MAY17	17JUN17	0.1263	0.0443	35.1
123171680	67	08JUN17	15JUL17	0.1149	0.0359	31.2
123171730	71	15JUL17	13AUG17	0.1507	0.0504	33.4
123171760	93	03AUG17	15SEP17	0.1527	0.0502	32.9
123171770	40	31AUG17	24SEP17	0.1250	0.0439	35.1
123171790	39	19SEP17	08OCT17	0.1231	0.0427	34.7
123171840	105	24SEP17	16NOV17	0.1086	0.0281	25.9
123171860	22	15OCT17	30OCT17	0.1182	0.0395	33.4
123171890	57	05NOV17	18DEC17	0.1053	0.0225	21.4
123171870	57	06NOV17	17DEC17	0.1316	0.0469	35.6
123171930	71	27NOV17	27JAN18	0.1296	0.0490	37.8
123171970	33	12JAN18	24JAN18	0.1636	0.0489	29.9
123171980	95	25JAN18	03MAR18	0.1126	0.0334	29.7
123172010	129	12FEB18	17MAR18	0.1000	0.0000	0.0
123172030	35	09MAR18	25MAR18	0.1057	0.0236	22.3
123172060	50	15MAR18	18APR18	0.1080	0.0274	25.4
123172080	58	02APR18	13MAY18	0.1069	0.0256	23.9
123172090	34	14APR18	29APR18	0.1324	0.0475	35.9
123172110	20	28APR18	05MAY18	0.1000	0.0000	0.0
123172120	53	01MAY18	11JUN18	0.1132	0.0342	30.2
123172140	54	22MAY18	30JUN18	0.1037	0.0191	18.4
123172150	20	01JUN18	07JUN18	0.1050	0.0224	21.3
123172160	50	12JUN18	21JUL18	0.1040	0.0198	19.0
123172210	44	18JUL18	15AUG18	0.1045	0.0211	20.2
123172220	39	20JUL18	07AUG18	0.1103	0.0307	27.9
123172240	94	08AUG18	21SEP18	0.1128	0.0572	50.8
123172260	49	28AUG18	07OCT18	0.1122	0.0331	29.5
123172270	26	07SEP18	24SEP18	0.1192	0.0402	33.7
123172300	84	25SEP18	29OCT18	0.1226	0.0421	34.3
123172310	49	08OCT18	17NOV18	0.1122	0.0331	29.5
123172320	30	19OCT18	05NOV18	0.1100	0.0305	27.7
123172340	60	02NOV18	07DEC18	0.1067	0.0252	23.6
123172380	71	20NOV18	12JAN19	0.1070	0.0258	24.1
123172400	20	11JAN19	19JAN19	0.1000	0.0000	0.0
123172430	16	17JAN19	20JAN19	0.1250	0.0447	35.8



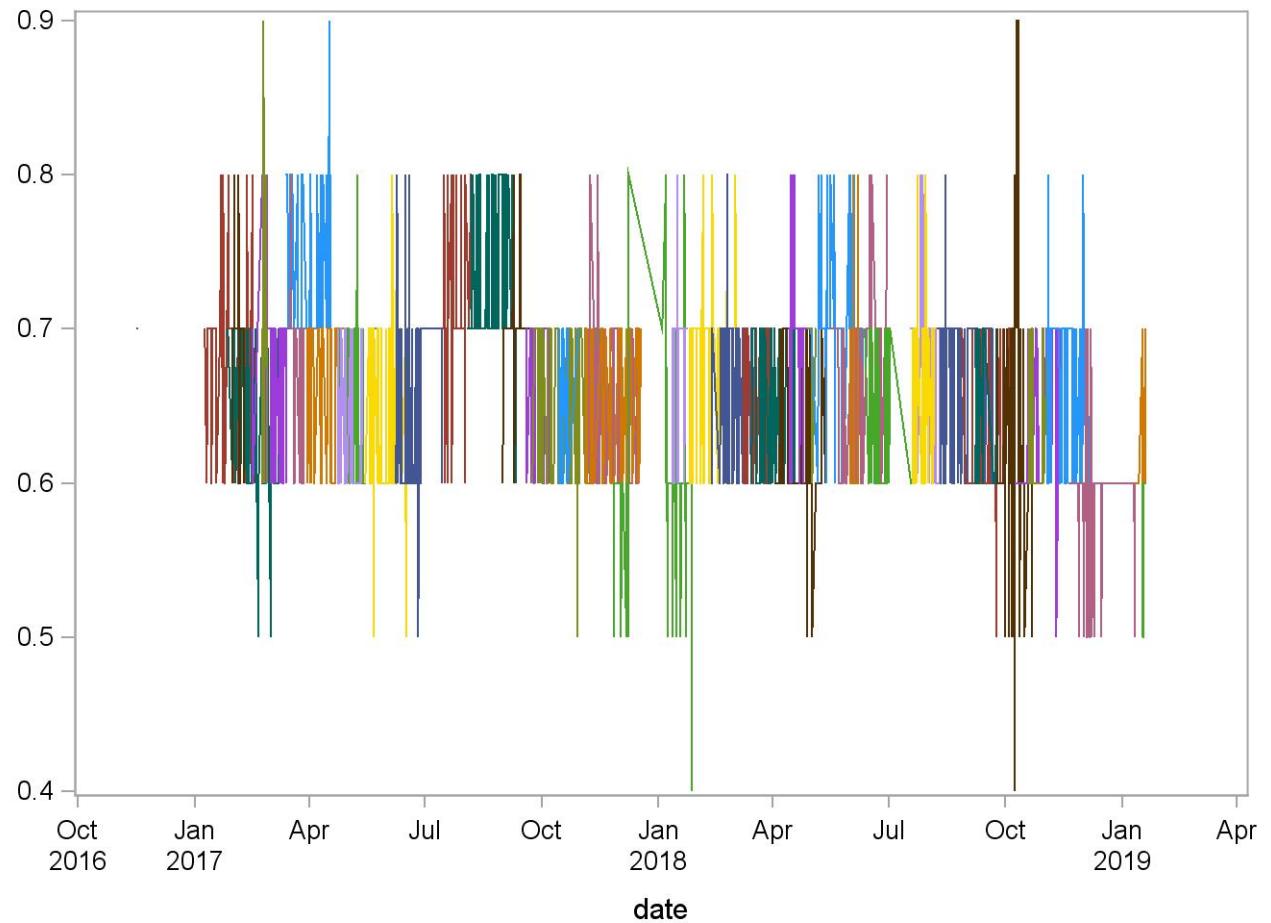
2017-2018 Summary Statistics and QC Chart for Eosinophils No.(10^3 cells/uL) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	1.1231	0.1013	9.0
133181500	78	09JAN17	18FEB17	1.2038	0.0946	7.9
133181520	97	27JAN17	08MAR17	1.1247	0.1021	9.1
133181530	20	31JAN17	09FEB17	1.1950	0.1099	9.2
133181540	50	16FEB17	21MAR17	1.1760	0.1648	14.0
133181550	20	23FEB17	02MAR17	1.1150	0.1182	10.6
133181570	57	13MAR17	18APR17	1.2175	0.1441	11.8
133181580	33	17MAR17	29MAR17	1.1455	0.0794	6.9
133181600	61	30MAR17	01MAY17	1.1328	0.0831	7.3
133181610	49	24APR17	26MAY17	1.1082	0.1134	10.2
133181630	37	24APR17	13MAY17	1.1000	0.0816	7.4
133181650	85	15MAY17	17JUN17	1.1859	0.1114	9.4
133181680	67	08JUN17	15JUL17	1.1463	0.1295	11.3
133181730	71	15JUL17	13AUG17	1.2028	0.0861	7.2
133181760	97	03AUG17	15SEP17	1.1629	0.0782	6.7
133181770	36	31AUG17	25SEP17	1.1472	0.0696	6.1
133181790	41	19SEP17	08OCT17	1.1878	0.1187	10.0
133181840	106	24SEP17	16NOV17	1.0755	0.0803	7.5
133181860	21	15OCT17	30OCT17	1.1476	0.0814	7.1
133181890	61	05NOV17	18DEC17	1.0869	0.0846	7.8
133181870	57	06NOV17	17DEC17	1.1228	0.0887	7.9
133181930	71	27NOV17	27JAN18	1.0493	0.1453	13.8
133181970	34	12JAN18	24JAN18	1.3000	0.0953	7.3
133181980	92	25JAN18	03MAR18	1.1391	0.0889	7.8
133182010	119	12FEB18	17MAR18	1.1605	0.0985	8.5
133182030	89	09MAR18	31MAR18	1.1483	0.0725	6.3
133182060	53	15MAR18	18APR18	1.0830	0.0975	9.0
133182080	57	02APR18	13MAY18	1.1123	0.0629	5.7
133182090	35	14APR18	29APR18	1.1486	0.0562	4.9
133182110	20	28APR18	05MAY18	1.1950	0.0605	5.1
133182120	55	01MAY18	11JUN18	1.1636	0.0802	6.9
133182140	55	17MAY18	30JUN18	1.1727	0.0804	6.9
133182150	21	01JUN18	07JUN18	1.1000	0.0894	8.1
133182160	51	12JUN18	21JUL18	1.0961	0.0894	8.2
133182210	44	18JUL18	15AUG18	1.1523	0.0731	6.3
133182220	40	20JUL18	07AUG18	1.1500	0.0751	6.5
133182240	96	08AUG18	21SEP18	1.1656	0.0856	7.3
133182260	49	28AUG18	07OCT18	1.1061	0.0899	8.1
133182270	26	07SEP18	24SEP18	1.1731	0.0778	6.6
133182300	89	25SEP18	29OCT18	1.1551	0.4429	38.3
133182310	47	08OCT18	17NOV18	1.1723	0.0772	6.6
133182320	30	19OCT18	05NOV18	1.1133	0.0730	6.6
133182350	60	02NOV18	07DEC18	1.1683	0.0854	7.3
133182390	71	20NOV18	12JAN19	1.0549	0.0923	8.7
133182400	20	11JAN19	19JAN19	1.0300	0.0657	6.4
133182430	18	17JAN19	20JAN19	1.0111	0.1183	11.7



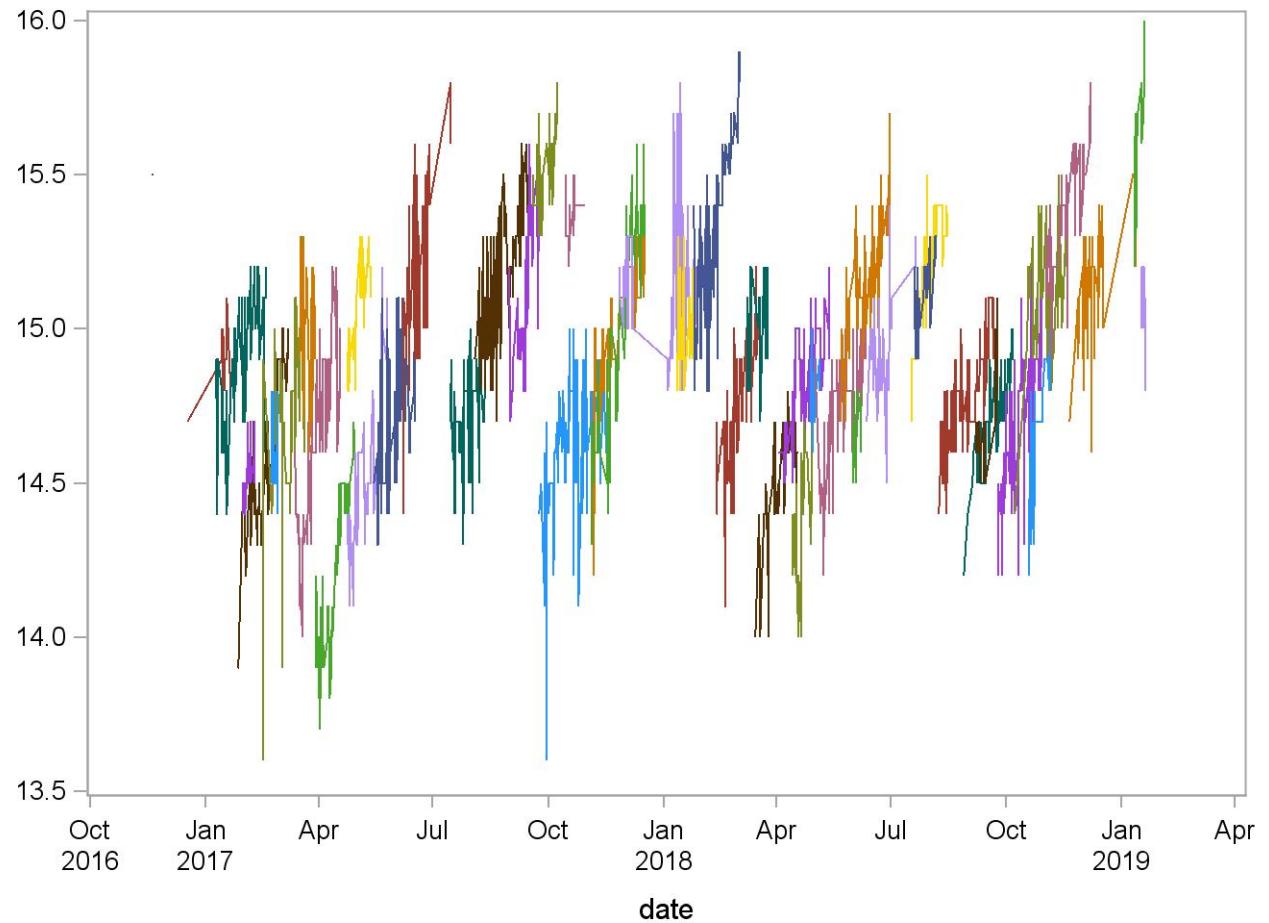
2017-2018 Summary Statistics and QC Chart for Eosinophils No.(10³ cells/uL) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	0.6792	0.0600	8.8
143191520	58	27JAN17	08MAR17	0.6414	0.0593	9.3
143191530	20	31JAN17	09FEB17	0.6850	0.0587	8.6
143191540	47	16FEB17	21MAR17	0.6723	0.0579	8.6
143191550	21	23FEB17	27FEB17	0.6952	0.0740	10.6
143191570	56	13MAR17	18APR17	0.7411	0.0532	7.2
143191580	33	17MAR17	29MAR17	0.6788	0.0485	7.1
143191600	61	30MAR17	01MAY17	0.6689	0.0467	7.0
143191610	49	24APR17	26MAY17	0.6571	0.0540	8.2
143191630	38	24APR17	13MAY17	0.6342	0.0481	7.6
143191650	80	15MAY17	17JUN17	0.6450	0.0593	9.2
143191680	67	08JUN17	15JUL17	0.6403	0.0605	9.4
143191730	69	15JUL17	13AUG17	0.7072	0.0431	6.1
143191760	92	03AUG17	15SEP17	0.7228	0.0447	6.2
143191770	34	31AUG17	24SEP17	0.7029	0.0388	5.5
143191790	39	19SEP17	08OCT17	0.6744	0.0442	6.6
143191840	102	24SEP17	16NOV17	0.6490	0.0522	8.0
143191860	22	15OCT17	30OCT17	0.6455	0.0510	7.9
143191890	57	05NOV17	18DEC17	0.6474	0.0504	7.8
143191870	56	06NOV17	17DEC17	0.6482	0.0572	8.8
143191930	69	27NOV17	27JAN18	0.6101	0.0750	12.3
143191970	32	12JAN18	24JAN18	0.6781	0.0491	7.2
143191980	91	25JAN18	03MAR18	0.6758	0.0524	7.7
143192010	127	12FEB18	17MAR18	0.6701	0.0493	7.4
143192030	93	09MAR18	31MAR18	0.6581	0.0496	7.5
143192060	48	15MAR18	18APR18	0.6479	0.0505	7.8
143192080	58	02APR18	13MAY18	0.6172	0.0464	7.5
143192090	34	14APR18	29APR18	0.6912	0.0514	7.4
143192110	20	28APR18	05MAY18	0.6950	0.0224	3.2
143192120	52	01MAY18	11JUN18	0.7000	0.0560	8.0
143192140	54	17MAY18	30JUN18	0.6648	0.0588	8.8
143192150	21	01JUN18	07JUN18	0.6381	0.0669	10.5
143192160	51	12JUN18	21JUL18	0.6392	0.0493	7.7
143192210	43	18JUL18	15AUG18	0.6744	0.0539	8.0
143192220	39	20JUL18	07AUG18	0.6590	0.0595	9.0
143192240	92	08AUG18	21SEP18	0.6630	0.0507	7.7
143192260	50	28AUG18	07OCT18	0.6220	0.0465	7.5
143192270	26	07SEP18	24SEP18	0.6385	0.0496	7.8
143192300	86	25SEP18	29OCT18	0.6186	0.0744	12.0
143192310	47	08OCT18	17NOV18	0.6426	0.0542	8.4
143192320	30	19OCT18	05NOV18	0.6367	0.0490	7.7
143192340	61	02NOV18	07DEC18	0.6557	0.0563	8.6
143192380	72	20NOV18	12JAN19	0.5889	0.0461	7.8
143192400	20	11JAN19	19JAN19	0.6100	0.0308	5.0
143192430	18	17JAN19	20JAN19	0.5667	0.0485	8.6



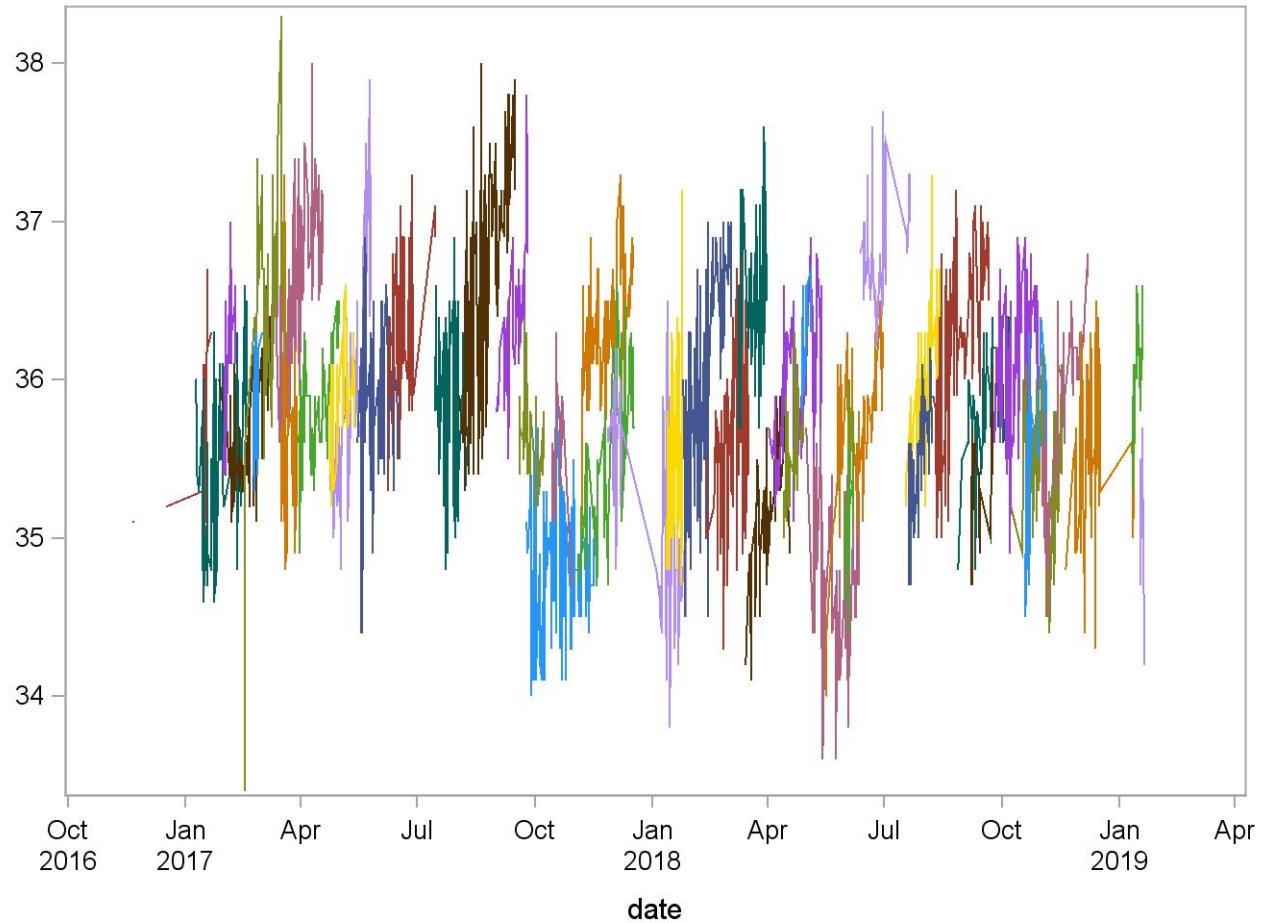
2017-2018 Summary Statistics and QC Chart for Hematocrit (%) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	14.8917	0.1084	0.7
123171500	110	09JAN17	18FEB17	14.8927	0.2075	1.4
123171520	113	27JAN17	08MAR17	14.5708	0.2263	1.6
123171530	20	31JAN17	09FEB17	14.5550	0.1050	0.7
123171540	48	16FEB17	21MAR17	14.7000	0.2982	2.0
123171550	21	23FEB17	27FEB17	14.5905	0.1091	0.7
123171570	57	13MAR17	18APR17	14.6526	0.2916	2.0
123171580	33	17MAR17	29MAR17	14.9818	0.1740	1.2
123171600	60	30MAR17	01MAY17	14.1717	0.2552	1.8
123171610	48	24APR17	26MAY17	14.5833	0.2571	1.8
123171630	37	24APR17	13MAY17	15.0378	0.1460	1.0
123171650	80	15MAY17	17JUN17	14.7038	0.2053	1.4
123171680	67	08JUN17	15JUL17	15.1881	0.2447	1.6
123171730	71	15JUL17	13AUG17	14.7028	0.1665	1.1
123171760	93	03AUG17	15SEP17	15.1409	0.2138	1.4
123171770	40	31AUG17	24SEP17	15.1175	0.2417	1.6
123171790	39	19SEP17	08OCT17	15.5179	0.1189	0.8
123171840	105	24SEP17	16NOV17	14.6171	0.2173	1.5
123171860	22	15OCT17	30OCT17	15.3545	0.0800	0.5
123171890	57	05NOV17	18DEC17	14.9667	0.3587	2.4
123171870	57	06NOV17	17DEC17	15.0140	0.2004	1.3
123171930	71	27NOV17	27JAN18	15.1577	0.2176	1.4
123171970	33	12JAN18	24JAN18	14.9848	0.1372	0.9
123171980	95	25JAN18	03MAR18	15.2726	0.2656	1.7
123172010	129	12FEB18	17MAR18	14.7628	0.1985	1.3
123172030	35	09MAR18	25MAR18	14.9914	0.1502	1.0
123172060	50	15MAR18	18APR18	14.4760	0.1802	1.2
123172080	58	02APR18	13MAY18	14.8362	0.1703	1.1
123172090	34	14APR18	29APR18	14.3706	0.1801	1.3
123172110	20	28APR18	05MAY18	14.8100	0.1021	0.7
123172120	53	01MAY18	11JUN18	14.7472	0.1957	1.3
123172140	54	22MAY18	30JUN18	15.1667	0.1962	1.3
123172150	20	01JUN18	07JUN18	14.6750	0.0967	0.7
123172160	50	12JUN18	21JUL18	14.9640	0.1663	1.1
123172210	44	18JUL18	15AUG18	15.2000	0.1868	1.2
123172220	39	20JUL18	07AUG18	15.1205	0.1196	0.8
123172240	94	08AUG18	21SEP18	14.7500	0.1557	1.1
123172260	49	28AUG18	07OCT18	14.6959	0.1670	1.1
123172270	26	07SEP18	24SEP18	14.6846	0.1541	1.0
123172300	85	25SEP18	29OCT18	14.6671	0.2118	1.4
123172310	49	08OCT18	17NOV18	15.1265	0.1857	1.2
123172320	30	19OCT18	05NOV18	14.6200	0.2280	1.6
123172340	60	02NOV18	07DEC18	15.3567	0.1960	1.3
123172380	71	20NOV18	12JAN19	15.1437	0.1713	1.1
123172400	20	11JAN19	19JAN19	15.5800	0.2191	1.4
123172430	16	17JAN19	20JAN19	15.1063	0.1063	0.7



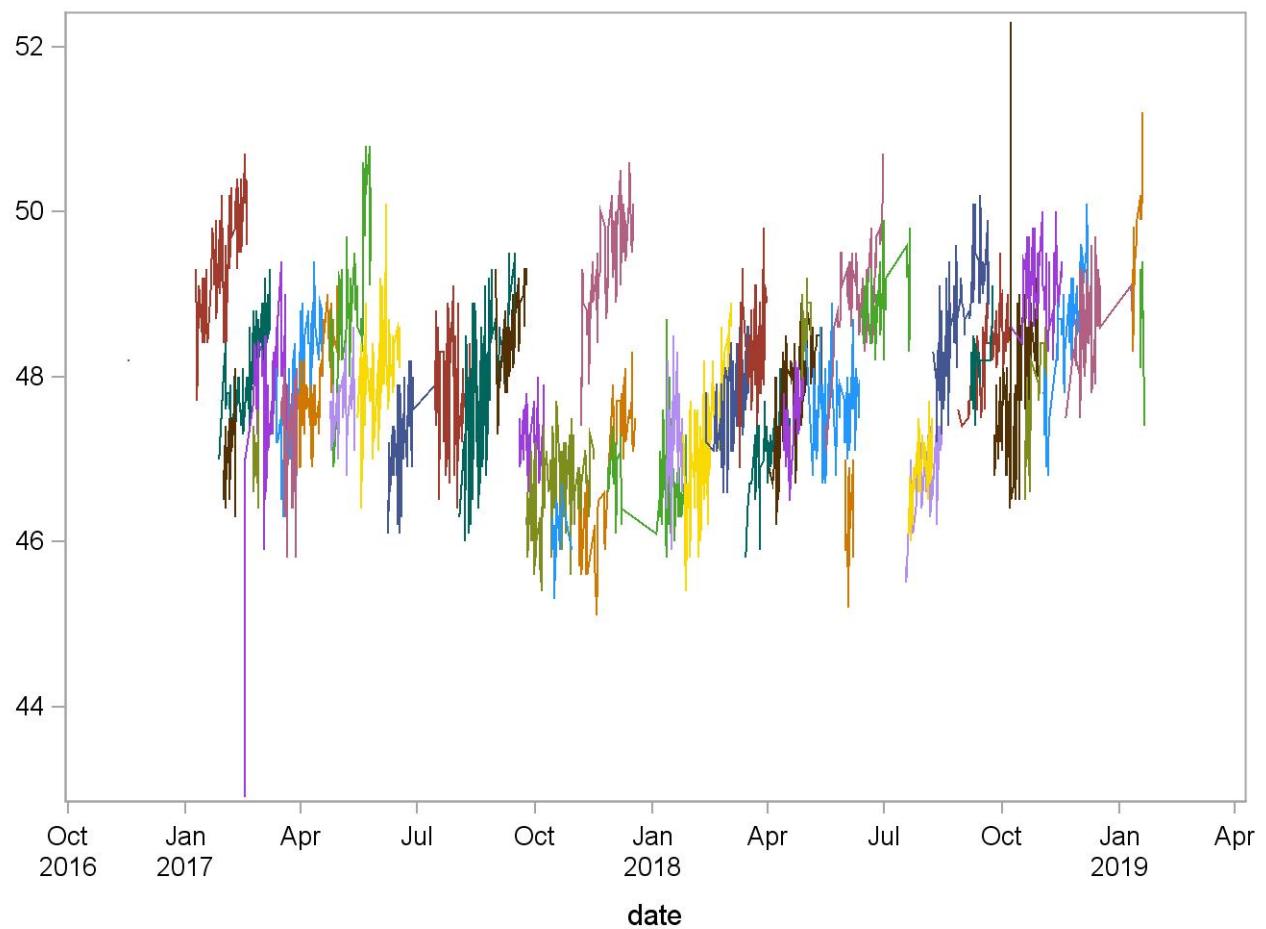
2017-2018 Summary Statistics and QC Chart for Hematocrit (%) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	35.8308	0.4768	1.3
133181500	78	09JAN17	18FEB17	35.3910	0.5314	1.5
133181520	97	27JAN17	08MAR17	35.6124	0.3260	0.9
133181530	20	31JAN17	09FEB17	36.1950	0.4298	1.2
133181540	50	16FEB17	21MAR17	36.4020	0.7945	2.2
133181550	20	23FEB17	02MAR17	35.7500	0.3426	1.0
133181570	57	13MAR17	18APR17	36.6246	0.5607	1.5
133181580	33	17MAR17	29MAR17	35.6000	0.5483	1.5
133181600	61	30MAR17	01MAY17	35.8033	0.3356	0.9
133181610	49	24APR17	26MAY17	35.9265	0.6486	1.8
133181630	37	24APR17	13MAY17	35.8919	0.3361	0.9
133181650	85	15MAY17	17JUN17	35.7776	0.5036	1.4
133181680	67	08JUN17	15JUL17	36.3373	0.4203	1.2
133181730	71	15JUL17	13AUG17	35.8746	0.4458	1.2
133181760	97	03AUG17	15SEP17	36.6608	0.6595	1.8
133181770	36	31AUG17	25SEP17	36.3417	0.4225	1.2
133181790	41	19SEP17	08OCT17	35.6098	0.3239	0.9
133181840	106	24SEP17	16NOV17	34.7792	0.4006	1.2
133181860	21	15OCT17	30OCT17	35.4905	0.3767	1.1
133181890	61	05NOV17	18DEC17	35.4525	0.5201	1.5
133181870	57	06NOV17	17DEC17	36.3316	0.4680	1.3
133181930	71	27NOV17	27JAN18	35.1211	0.5669	1.6
133181970	34	12JAN18	24JAN18	35.4441	0.5930	1.7
133181980	92	25JAN18	03MAR18	35.8826	0.6444	1.8
133182010	119	12FEB18	17MAR18	35.6437	0.5246	1.5
133182030	89	09MAR18	31MAR18	36.4607	0.5001	1.4
133182060	53	15MAR18	18APR18	35.1925	0.3956	1.1
133182080	57	02APR18	13MAY18	36.0018	0.4147	1.2
133182090	35	14APR18	29APR18	35.5229	0.3154	0.9
133182110	20	28APR18	05MAY18	36.2750	0.2468	0.7
133182120	55	01MAY18	11JUN18	34.7509	0.5142	1.5
133182140	55	17MAY18	30JUN18	35.6273	0.5090	1.4
133182150	21	01JUN18	07JUN18	35.1429	0.3668	1.0
133182160	51	12JUN18	21JUL18	36.8569	0.3448	0.9
133182210	44	18JUL18	15AUG18	35.9614	0.4691	1.3
133182220	40	20JUL18	07AUG18	35.4225	0.3563	1.0
133182240	96	08AUG18	21SEP18	36.1615	0.5363	1.5
133182260	49	28AUG18	07OCT18	35.8735	0.3828	1.1
133182270	26	07SEP18	24SEP18	35.3269	0.3232	0.9
133182300	90	25SEP18	29OCT18	36.0656	0.4111	1.1
133182310	47	08OCT18	17NOV18	35.4021	0.4321	1.2
133182320	30	19OCT18	05NOV18	35.4333	0.5523	1.6
133182350	60	02NOV18	07DEC18	35.7600	0.5462	1.5
133182390	71	20NOV18	12JAN19	35.6408	0.4901	1.4
133182400	20	11JAN19	19JAN19	35.9200	0.3679	1.0
133182430	18	17JAN19	20JAN19	35.1889	0.3563	1.0



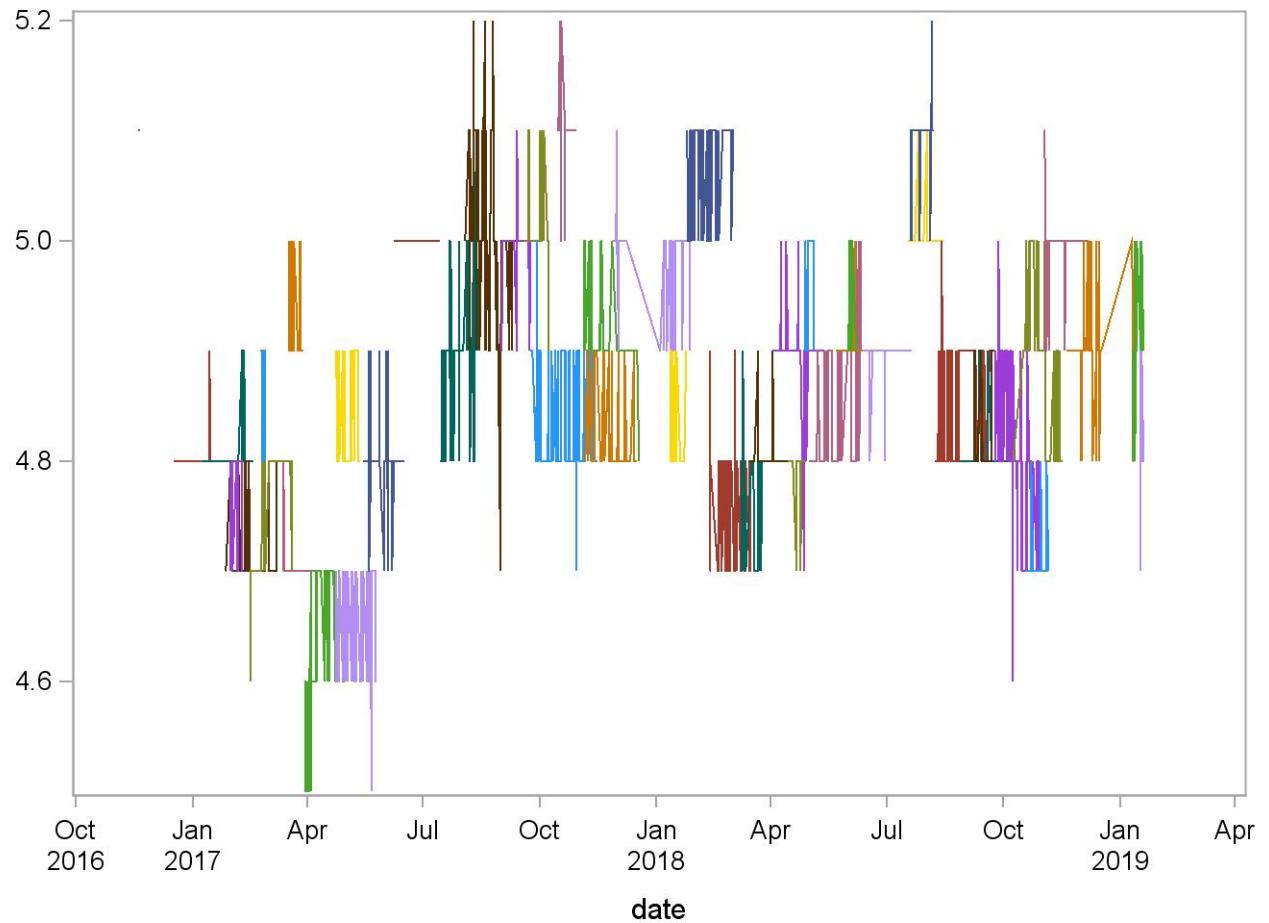
2017-2018 Summary Statistics and QC Chart for Hematocrit (%) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	49.4208	0.6701	1.4
143191520	58	27JAN17	08MAR17	48.0362	0.5693	1.2
143191530	20	31JAN17	09FEB17	47.1050	0.4893	1.0
143191540	47	16FEB17	21MAR17	47.7000	1.1304	2.4
143191550	21	23FEB17	27FEB17	46.9190	0.2909	0.6
143191570	56	13MAR17	18APR17	47.9071	0.7548	1.6
143191580	33	17MAR17	29MAR17	47.1424	0.6666	1.4
143191600	61	30MAR17	01MAY17	47.9164	0.5407	1.1
143191610	49	24APR17	26MAY17	48.9694	0.8142	1.7
143191630	38	24APR17	13MAY17	47.5947	0.3841	0.8
143191650	80	15MAY17	17JUN17	47.9925	0.5776	1.2
143191680	67	08JUN17	15JUL17	47.2313	0.5252	1.1
143191730	69	15JUL17	13AUG17	47.7812	0.5904	1.2
143191760	92	03AUG17	15SEP17	47.8130	0.8514	1.8
143191770	34	31AUG17	24SEP17	48.5618	0.5222	1.1
143191790	39	19SEP17	08OCT17	47.3000	0.3285	0.7
143191840	103	24SEP17	16NOV17	46.6097	0.4637	1.0
143191860	22	15OCT17	30OCT17	46.1091	0.3250	0.7
143191890	57	05NOV17	18DEC17	46.6789	0.7973	1.7
143191870	56	06NOV17	17DEC17	49.3304	0.6310	1.3
143191930	69	27NOV17	27JAN18	46.7580	0.5470	1.2
143191970	32	12JAN18	24JAN18	47.0844	0.5770	1.2
143191980	91	25JAN18	03MAR18	47.0692	0.7841	1.7
143192010	127	12FEB18	17MAR18	47.7039	0.4816	1.0
143192030	93	09MAR18	31MAR18	48.2645	0.6227	1.3
143192060	48	15MAR18	18APR18	47.1646	0.4407	0.9
143192080	58	02APR18	13MAY18	47.8741	0.5809	1.2
143192090	34	14APR18	29APR18	47.4118	0.4340	0.9
143192110	20	28APR18	05MAY18	48.5950	0.3502	0.7
143192120	52	01MAY18	11JUN18	47.6654	0.5141	1.1
143192140	54	17MAY18	30JUN18	49.0093	0.6479	1.3
143192150	21	01JUN18	07JUN18	46.2000	0.5367	1.2
143192160	51	12JUN18	21JUL18	48.9137	0.4157	0.8
143192210	43	18JUL18	15AUG18	46.7907	0.4745	1.0
143192220	39	20JUL18	07AUG18	46.7769	0.4239	0.9
143192240	92	08AUG18	21SEP18	48.6565	0.6202	1.3
143192260	50	28AUG18	07OCT18	48.2480	0.5060	1.0
143192270	26	07SEP18	24SEP18	48.1731	0.3528	0.7
143192300	87	25SEP18	29OCT18	47.7207	0.8087	1.7
143192310	47	08OCT18	17NOV18	49.0915	0.4713	1.0
143192320	30	19OCT18	05NOV18	47.5300	0.5838	1.2
143192340	61	02NOV18	07DEC18	48.3033	0.7840	1.6
143192380	72	20NOV18	12JAN19	48.7444	0.4933	1.0
143192400	20	11JAN19	19JAN19	49.5850	0.7021	1.4
143192430	18	17JAN19	20JAN19	48.8056	0.5150	1.1



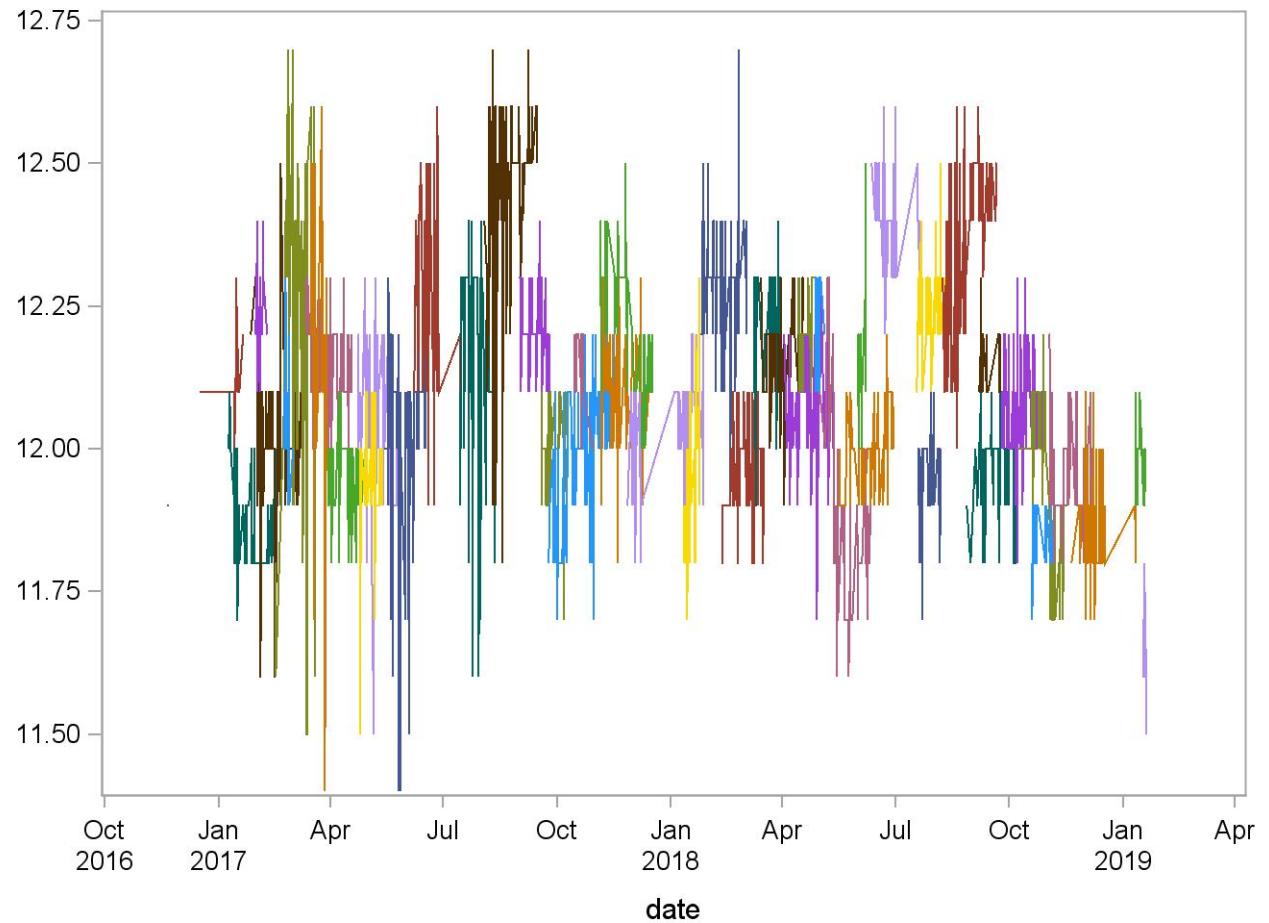
2017-2018 Summary Statistics and QC Chart for Hemoglobin (g/dL) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	4.8083	0.0289	0.6
123171500	110	09JAN17	18FEB17	4.8036	0.0188	0.4
123171520	113	27JAN17	08MAR17	4.7168	0.0376	0.8
123171530	20	31JAN17	09FEB17	4.7600	0.0503	1.1
123171540	48	16FEB17	21MAR17	4.7833	0.0429	0.9
123171550	21	23FEB17	27FEB17	4.8810	0.0402	0.8
123171570	57	13MAR17	18APR17	4.7000	0.0189	0.4
123171580	33	17MAR17	29MAR17	4.9242	0.0435	0.9
123171600	60	30MAR17	01MAY17	4.6167	0.0717	1.6
123171610	48	24APR17	26MAY17	4.6354	0.0526	1.1
123171630	37	24APR17	13MAY17	4.8351	0.0484	1.0
123171650	80	15MAY17	17JUN17	4.8000	0.0390	0.8
123171680	67	08JUN17	15JUL17	5.0000	0.0000	0.0
123171730	71	15JUL17	13AUG17	4.8944	0.0674	1.4
123171760	93	03AUG17	15SEP17	5.0204	0.0802	1.6
123171770	40	31AUG17	24SEP17	4.9900	0.0441	0.9
123171790	39	19SEP17	08OCT17	5.0128	0.0409	0.8
123171840	105	24SEP17	16NOV17	4.8381	0.0526	1.1
123171860	22	15OCT17	30OCT17	5.0955	0.0486	1.0
123171890	57	05NOV17	18DEC17	4.9263	0.0483	1.0
123171870	57	06NOV17	17DEC17	4.8263	0.0444	0.9
123171930	71	27NOV17	27JAN18	4.9761	0.0462	0.9
123171970	33	12JAN18	24JAN18	4.8212	0.0415	0.9
123171980	95	25JAN18	03MAR18	5.0589	0.0495	1.0
123172010	129	12FEB18	17MAR18	4.7643	0.0527	1.1
123172030	35	09MAR18	25MAR18	4.7657	0.0591	1.2
123172060	50	15MAR18	18APR18	4.8040	0.0198	0.4
123172080	58	02APR18	13MAY18	4.9000	0.0375	0.8
123172090	34	14APR18	29APR18	4.7941	0.0239	0.5
123172110	20	28APR18	05MAY18	4.9650	0.0489	1.0
123172120	53	01MAY18	11JUN18	4.8547	0.0607	1.2
123172140	54	22MAY18	30JUN18	4.9019	0.0136	0.3
123172150	20	01JUN18	07JUN18	4.9500	0.0513	1.0
123172160	50	12JUN18	21JUL18	4.8960	0.0198	0.4
123172210	44	18JUL18	15AUG18	5.0068	0.0255	0.5
123172220	39	20JUL18	07AUG18	5.0897	0.0384	0.8
123172240	94	08AUG18	21SEP18	4.8543	0.0522	1.1
123172260	49	28AUG18	07OCT18	4.8082	0.0277	0.6
123172270	26	07SEP18	24SEP18	4.8615	0.0496	1.0
123172300	85	25SEP18	29OCT18	4.8106	0.0708	1.5
123172310	49	08OCT18	17NOV18	4.8816	0.0755	1.5
123172320	30	19OCT18	05NOV18	4.7100	0.0305	0.6
123172340	60	02NOV18	07DEC18	4.9917	0.0381	0.8
123172380	71	20NOV18	12JAN19	4.9070	0.0516	1.1
123172400	20	11JAN19	19JAN19	4.8950	0.0686	1.4
123172430	16	17JAN19	20JAN19	4.8188	0.0544	1.1



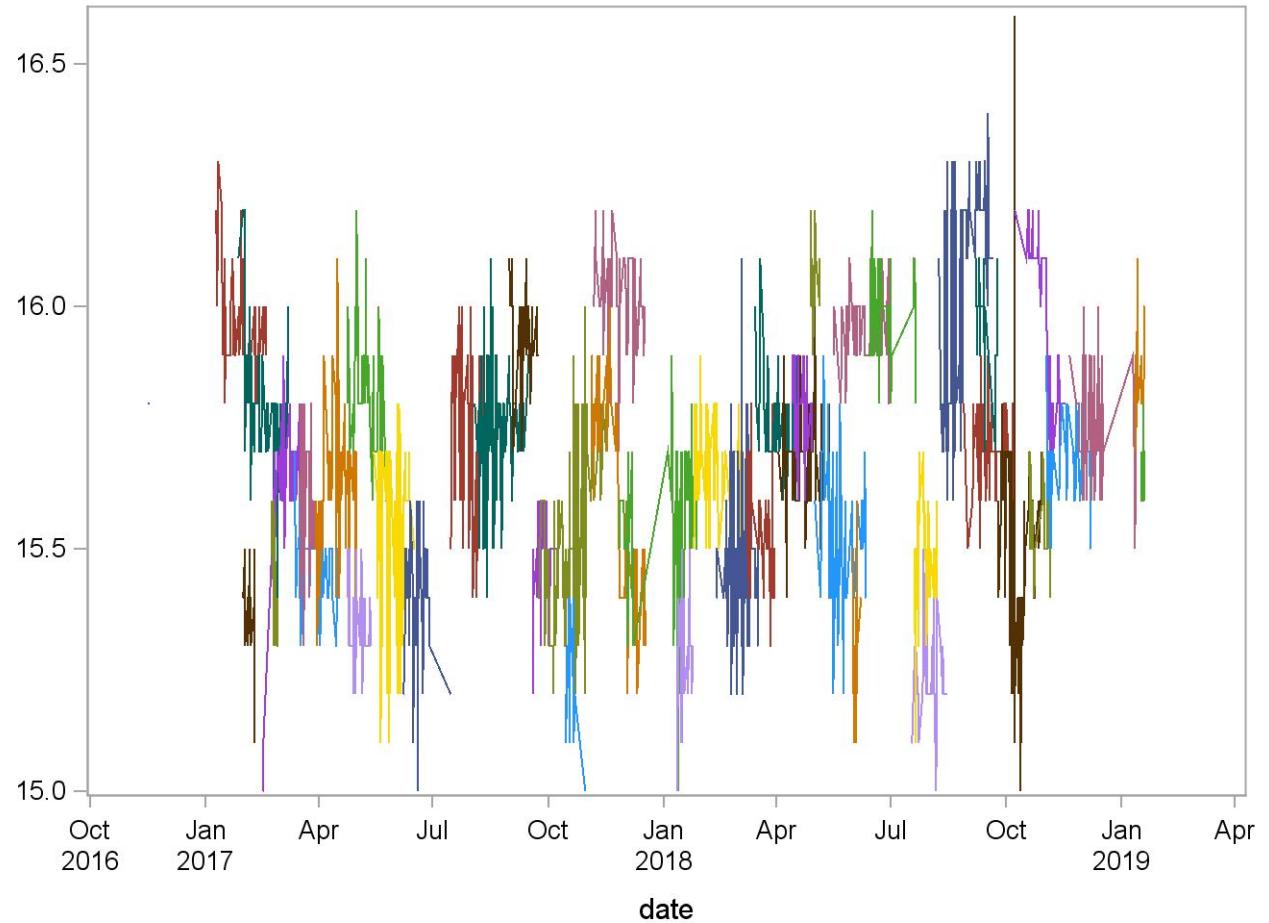
2017-2018 Summary Statistics and QC Chart for Hemoglobin (g/dL) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	12.1308	0.0751	0.6
133181500	78	09JAN17	18FEB17	11.8808	0.0869	0.7
133181520	97	27JAN17	08MAR17	12.0278	0.1337	1.1
133181530	20	31JAN17	09FEB17	12.2350	0.0813	0.7
133181540	50	16FEB17	21MAR17	12.2180	0.2953	2.4
133181550	20	23FEB17	02MAR17	12.0500	0.1051	0.9
133181570	57	13MAR17	18APR17	12.1439	0.0846	0.7
133181580	33	17MAR17	29MAR17	12.1848	0.2399	2.0
133181600	61	30MAR17	01MAY17	11.9525	0.0698	0.6
133181610	49	24APR17	26MAY17	12.0388	0.1706	1.4
133181630	37	24APR17	13MAY17	11.9405	0.1166	1.0
133181650	85	15MAY17	17JUN17	11.9953	0.1845	1.5
133181680	67	08JUN17	15JUL17	12.2836	0.1483	1.2
133181730	71	15JUL17	13AUG17	12.1563	0.1722	1.4
133181760	97	03AUG17	15SEP17	12.4289	0.1826	1.5
133181770	36	31AUG17	25SEP17	12.2194	0.0856	0.7
133181790	41	19SEP17	08OCT17	12.0000	0.0894	0.7
133181840	106	24SEP17	16NOV17	11.9906	0.1159	1.0
133181860	21	15OCT17	30OCT17	12.1429	0.0676	0.6
133181890	61	05NOV17	18DEC17	12.2180	0.1285	1.1
133181870	57	06NOV17	17DEC17	12.1000	0.1000	0.8
133181930	71	27NOV17	27JAN18	12.0282	0.0988	0.8
133181970	34	12JAN18	24JAN18	11.9294	0.1292	1.1
133181980	92	25JAN18	03MAR18	12.2946	0.1009	0.8
133182010	119	12FEB18	17MAR18	11.9655	0.0807	0.7
133182030	89	09MAR18	31MAR18	12.1865	0.0979	0.8
133182060	53	15MAR18	18APR18	12.1566	0.0844	0.7
133182080	57	02APR18	13MAY18	12.0789	0.1031	0.9
133182090	35	14APR18	29APR18	12.1943	0.0639	0.5
133182110	20	28APR18	05MAY18	12.2250	0.0786	0.6
133182120	55	01MAY18	11JUN18	11.8709	0.1781	1.5
133182140	55	17MAY18	30JUN18	11.9964	0.0666	0.6
133182150	21	01JUN18	07JUN18	12.1524	0.1123	0.9
133182160	51	12JUN18	21JUL18	12.4078	0.0891	0.7
133182210	44	18JUL18	15AUG18	12.2523	0.0849	0.7
133182220	40	20JUL18	07AUG18	11.9450	0.0846	0.7
133182240	96	08AUG18	21SEP18	12.3427	0.1492	1.2
133182260	49	28AUG18	07OCT18	11.9653	0.0879	0.7
133182270	26	07SEP18	24SEP18	12.1500	0.0583	0.5
133182300	90	25SEP18	29OCT18	12.0733	0.0946	0.8
133182310	47	08OCT18	17NOV18	11.9234	0.1339	1.1
133182320	30	19OCT18	05NOV18	11.8467	0.0571	0.5
133182350	60	02NOV18	07DEC18	11.9700	0.0889	0.7
133182390	71	20NOV18	12JAN19	11.8803	0.0920	0.8
133182400	20	11JAN19	19JAN19	11.9750	0.0639	0.5
133182430	18	17JAN19	20JAN19	11.6556	0.0705	0.6



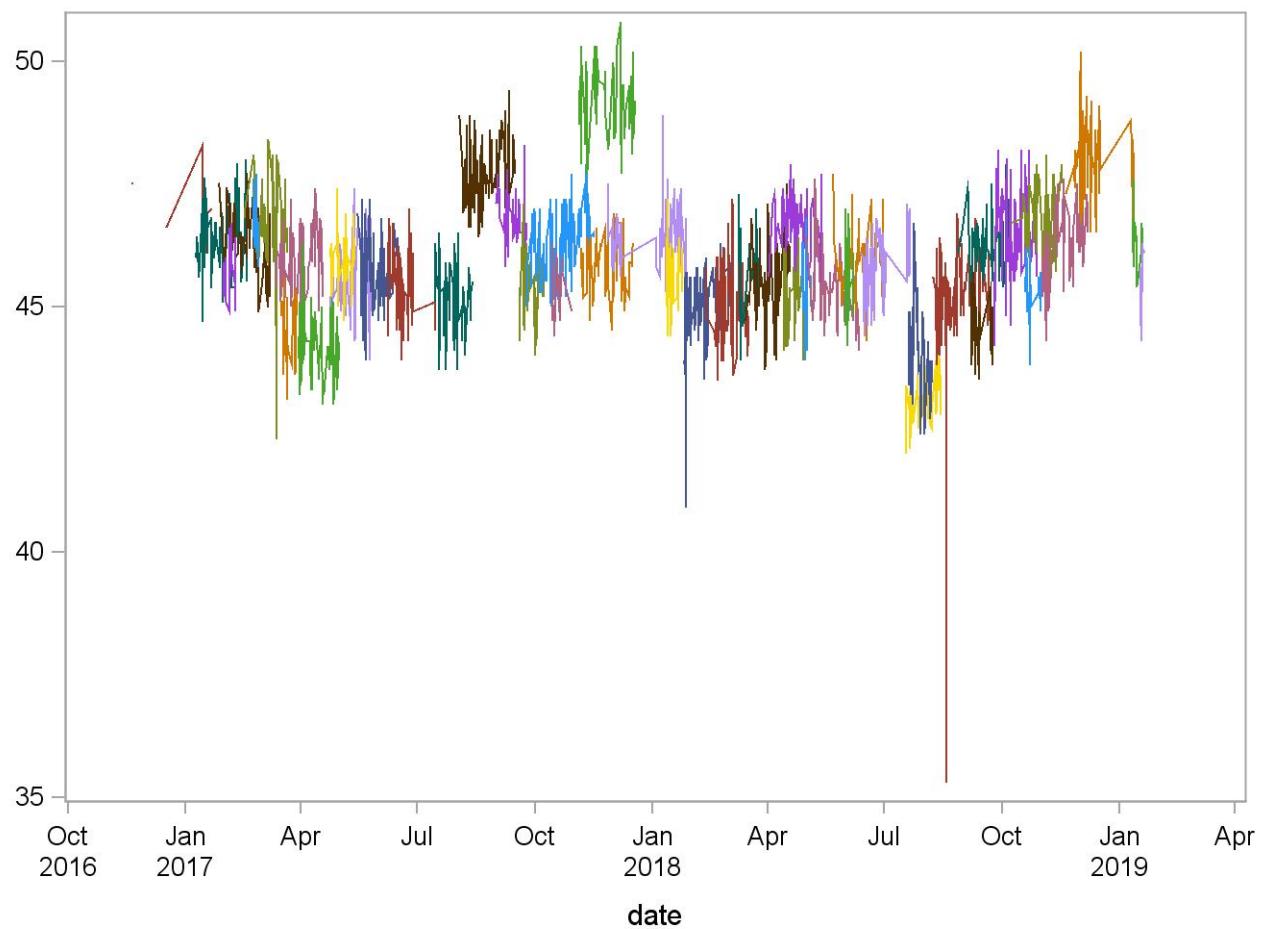
2017-2018 Summary Statistics and QC Chart for Hemoglobin (g/dL) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	15.9717	0.1081	0.7
143191520	58	27JAN17	08MAR17	15.7983	0.1331	0.8
143191530	20	31JAN17	09FEB17	15.3800	0.0894	0.6
143191540	47	16FEB17	21MAR17	15.6085	0.1779	1.1
143191550	21	23FEB17	27FEB17	15.4286	0.1056	0.7
143191570	56	13MAR17	18APR17	15.4643	0.0841	0.5
143191580	33	17MAR17	29MAR17	15.6091	0.1259	0.8
143191600	61	30MAR17	01MAY17	15.5984	0.1408	0.9
143191610	49	24APR17	26MAY17	15.8061	0.1638	1.0
143191630	38	24APR17	13MAY17	15.3684	0.0809	0.5
143191650	80	15MAY17	17JUN17	15.5000	0.1936	1.2
143191680	67	08JUN17	15JUL17	15.4104	0.1182	0.8
143191730	69	15JUL17	13AUG17	15.7275	0.1523	1.0
143191760	92	03AUG17	15SEP17	15.7391	0.1326	0.8
143191770	34	31AUG17	24SEP17	15.9265	0.0963	0.6
143191790	39	19SEP17	08OCT17	15.4667	0.0869	0.6
143191840	103	24SEP17	16NOV17	15.5544	0.1872	1.2
143191860	22	15OCT17	30OCT17	15.2409	0.1098	0.7
143191890	57	05NOV17	18DEC17	15.6211	0.2136	1.4
143191870	56	06NOV17	17DEC17	16.0161	0.1041	0.6
143191930	69	27NOV17	27JAN18	15.5406	0.1826	1.2
143191970	32	12JAN18	24JAN18	15.2875	0.1100	0.7
143191980	91	25JAN18	03MAR18	15.6769	0.0844	0.5
143192010	127	12FEB18	17MAR18	15.4890	0.1590	1.0
143192030	93	09MAR18	31MAR18	15.5312	0.1063	0.7
143192060	48	15MAR18	18APR18	15.7688	0.0971	0.6
143192080	58	02APR18	13MAY18	15.6948	0.1067	0.7
143192090	34	14APR18	29APR18	15.7971	0.0904	0.6
143192110	20	28APR18	05MAY18	16.0700	0.0801	0.5
143192120	52	01MAY18	11JUN18	15.5212	0.1473	0.9
143192140	54	17MAY18	30JUN18	15.9574	0.0742	0.5
143192150	21	01JUN18	07JUN18	15.3333	0.1238	0.8
143192160	51	12JUN18	21JUL18	15.9765	0.0929	0.6
143192210	43	18JUL18	15AUG18	15.2302	0.0914	0.6
143192220	39	20JUL18	07AUG18	15.4590	0.1208	0.8
143192240	92	08AUG18	21SEP18	16.0293	0.2094	1.3
143192260	50	28AUG18	07OCT18	15.7080	0.0900	0.6
143192270	26	07SEP18	24SEP18	15.9654	0.1056	0.7
143192300	87	25SEP18	29OCT18	15.4966	0.2093	1.4
143192310	47	08OCT18	17NOV18	15.9617	0.1701	1.1
143192320	30	19OCT18	05NOV18	15.5433	0.0858	0.6
143192340	61	02NOV18	07DEC18	15.6836	0.0916	0.6
143192380	72	20NOV18	12JAN19	15.7750	0.1135	0.7
143192400	20	11JAN19	19JAN19	15.8550	0.0999	0.6
143192430	18	17JAN19	20JAN19	15.6667	0.0594	0.4



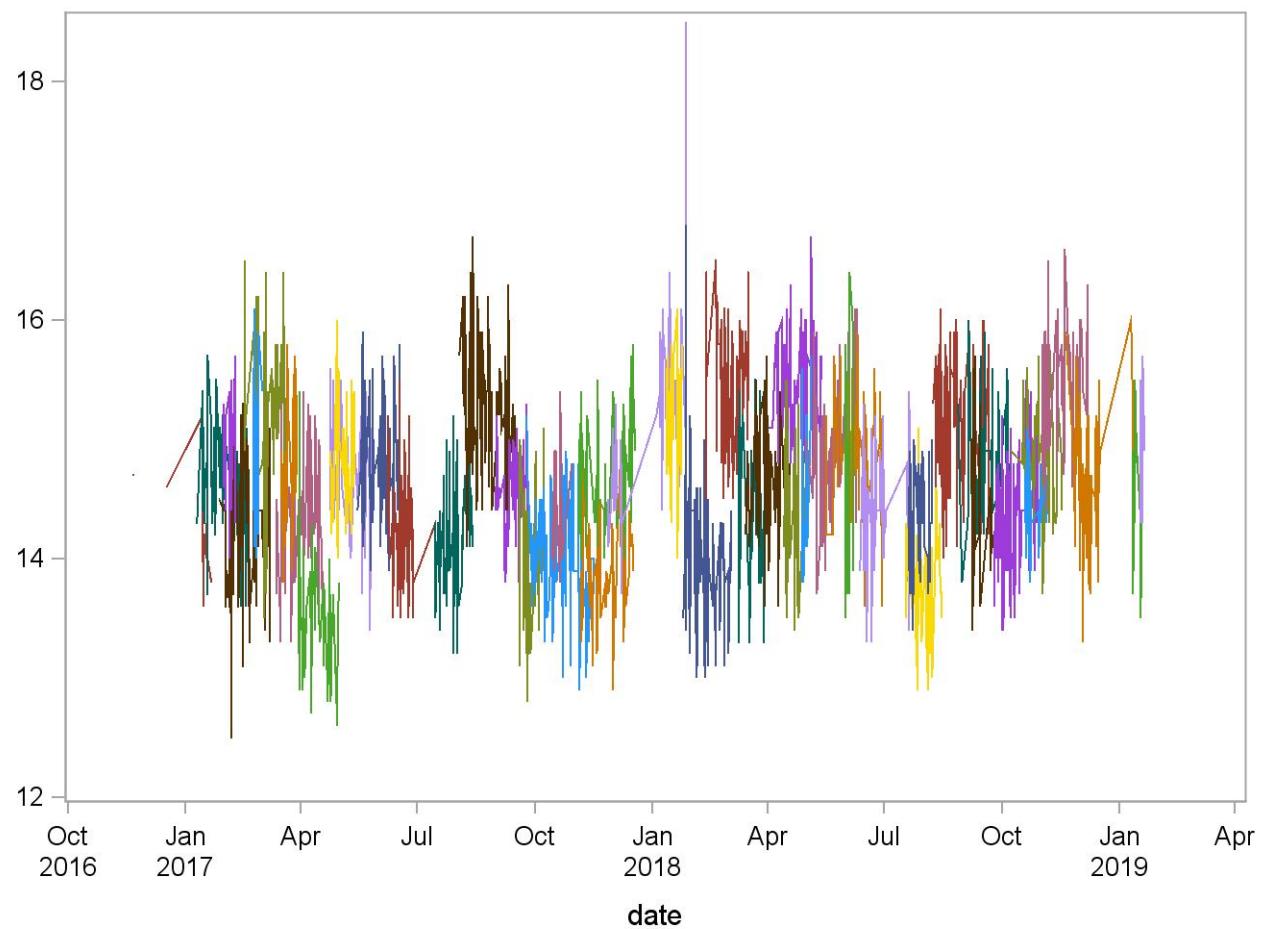
2017-2018 Summary Statistics and QC Chart for Lymphocyte (%) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	46.6417	0.7477	1.6
123171500	110	09JAN17	18FEB17	46.3864	0.6527	1.4
123171520	113	27JAN17	08MAR17	46.2717	0.5957	1.3
123171530	20	31JAN17	09FEB17	45.7450	0.5530	1.2
123171540	48	16FEB17	21MAR17	46.7063	0.9771	2.1
123171550	21	23FEB17	27FEB17	46.6333	0.4851	1.0
123171570	57	13MAR17	18APR17	45.9544	0.6423	1.4
123171580	33	17MAR17	29MAR17	44.4303	0.6322	1.4
123171600	60	30MAR17	01MAY17	44.2700	0.7074	1.6
123171610	48	24APR17	26MAY17	45.5979	0.7283	1.6
123171630	37	24APR17	13MAY17	45.9865	0.5319	1.2
123171650	80	15MAY17	17JUN17	45.6088	0.6742	1.5
123171680	67	08JUN17	15JUL17	45.4955	0.6489	1.4
123171730	71	15JUL17	13AUG17	45.1437	0.6714	1.5
123171760	93	03AUG17	15SEP17	47.7097	0.6143	1.3
123171770	40	31AUG17	24SEP17	46.7400	0.6050	1.3
123171790	39	19SEP17	08OCT17	45.4538	0.6762	1.5
123171840	105	24SEP17	16NOV17	46.3019	0.6867	1.5
123171860	22	15OCT17	30OCT17	45.3545	0.5334	1.2
123171890	57	05NOV17	18DEC17	49.1526	0.7167	1.5
123171870	57	06NOV17	17DEC17	45.8333	0.5739	1.3
123171930	71	27NOV17	27JAN18	46.3366	0.8163	1.8
123171970	33	12JAN18	24JAN18	45.5697	0.6060	1.3
123171980	95	25JAN18	03MAR18	45.0316	0.7439	1.7
123172010	129	12FEB18	17MAR18	44.9767	0.7641	1.7
123172030	35	09MAR18	25MAR18	45.7600	0.6718	1.5
123172060	50	15MAR18	18APR18	45.4980	0.8486	1.9
123172080	58	02APR18	13MAY18	46.6552	0.6122	1.3
123172090	34	14APR18	29APR18	45.1029	0.6543	1.5
123172110	20	28APR18	05MAY18	45.4400	0.6840	1.5
123172120	53	01MAY18	11JUN18	45.3358	0.6859	1.5
123172140	54	22MAY18	30JUN18	45.9500	0.6062	1.3
123172150	20	01JUN18	07JUN18	45.7050	0.7810	1.7
123172160	50	12JUN18	21JUL18	45.6700	0.6704	1.5
123172210	44	18JUL18	15AUG18	43.1114	0.4876	1.1
123172220	39	20JUL18	07AUG18	44.0179	0.8162	1.9
123172240	94	08AUG18	21SEP18	45.1213	1.2080	2.7
123172260	49	28AUG18	07OCT18	46.3367	0.6660	1.4
123172270	26	07SEP18	24SEP18	44.6038	0.6328	1.4
123172300	84	25SEP18	29OCT18	46.5417	0.8639	1.9
123172310	49	08OCT18	17NOV18	46.8735	0.6419	1.4
123172320	30	19OCT18	05NOV18	45.3067	0.4806	1.1
123172340	60	02NOV18	07DEC18	46.2450	0.7563	1.6
123172380	71	20NOV18	12JAN19	47.9831	0.7794	1.6
123172400	20	11JAN19	19JAN19	46.3600	0.4762	1.0
123172430	16	17JAN19	20JAN19	45.2188	0.6369	1.4



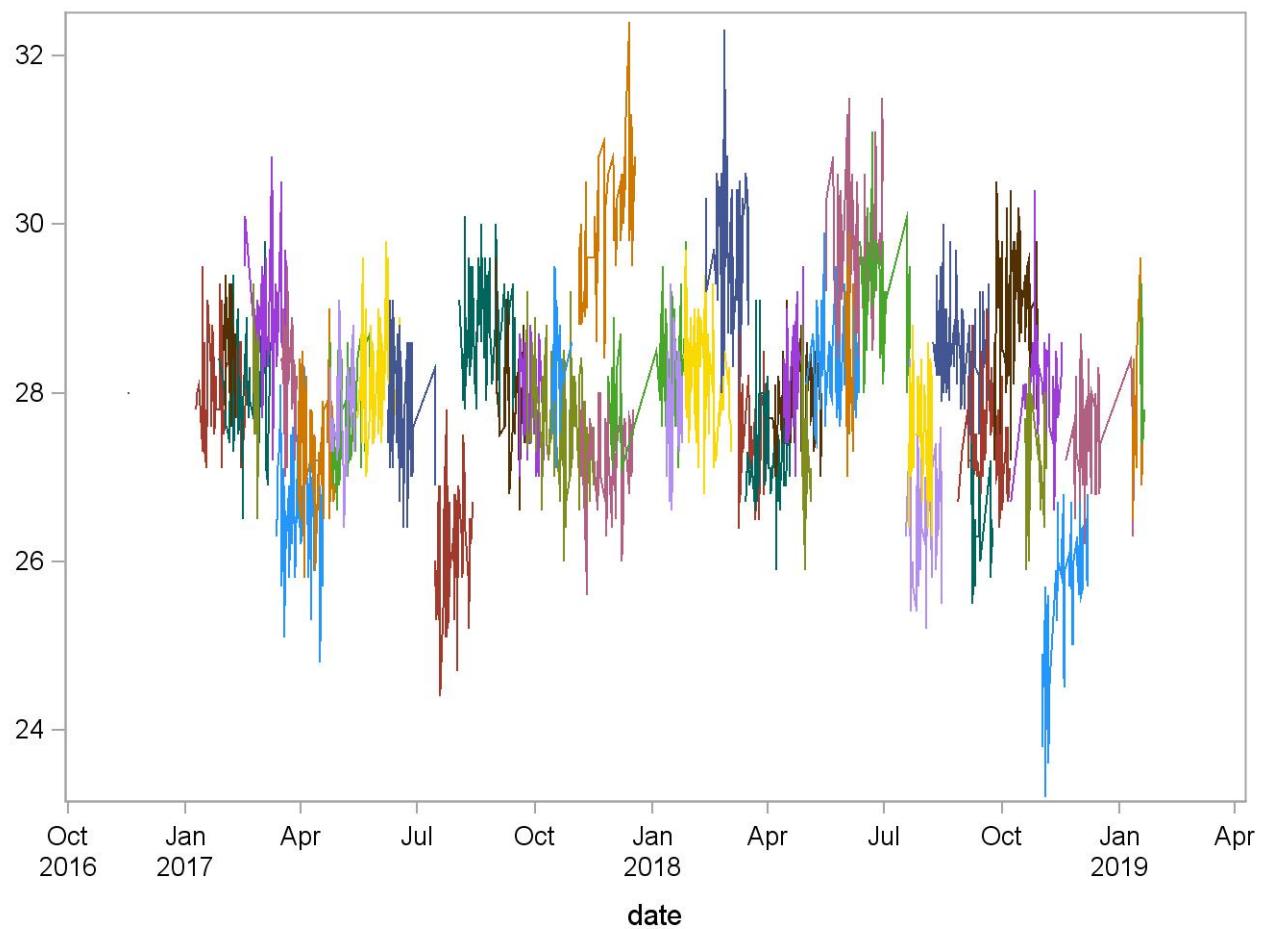
2017-2018 Summary Statistics and QC Chart for Lymphocyte (%) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	14.1538	0.3971	2.8
133181500	78	09JAN17	18FEB17	14.6962	0.4588	3.1
133181520	97	27JAN17	08MAR17	14.3052	0.6778	4.7
133181530	20	31JAN17	09FEB17	14.8700	0.4354	2.9
133181540	50	16FEB17	21MAR17	15.2640	0.6727	4.4
133181550	20	23FEB17	02MAR17	14.9650	0.5761	3.8
133181570	57	13MAR17	18APR17	14.2614	0.4876	3.4
133181580	33	17MAR17	29MAR17	14.6909	0.5126	3.5
133181600	61	30MAR17	01MAY17	13.5148	0.4542	3.4
133181610	49	24APR17	26MAY17	14.6816	0.4702	3.2
133181630	37	24APR17	13MAY17	14.7595	0.4856	3.3
133181650	85	15MAY17	17JUN17	14.8353	0.4633	3.1
133181680	67	08JUN17	15JUL17	14.1716	0.4365	3.1
133181730	71	15JUL17	13AUG17	14.1366	0.4412	3.1
133181760	97	03AUG17	15SEP17	15.2856	0.5089	3.3
133181770	36	31AUG17	25SEP17	14.5056	0.4028	2.8
133181790	41	19SEP17	08OCT17	13.9220	0.5383	3.9
133181840	106	24SEP17	16NOV17	14.0406	0.4497	3.2
133181860	21	15OCT17	30OCT17	14.4333	0.4103	2.8
133181890	61	05NOV17	18DEC17	14.7148	0.4486	3.0
133181870	57	06NOV17	17DEC17	13.9105	0.4354	3.1
133181930	71	27NOV17	27JAN18	15.2310	0.7379	4.8
133181970	34	12JAN18	24JAN18	15.1618	0.5045	3.3
133181980	92	25JAN18	03MAR18	14.0185	0.5770	4.1
133182010	119	12FEB18	17MAR18	15.5202	0.5060	3.3
133182030	89	09MAR18	31MAR18	14.3753	0.5436	3.8
133182060	53	15MAR18	18APR18	14.6642	0.4950	3.4
133182080	57	02APR18	13MAY18	15.4474	0.4637	3.0
133182090	35	14APR18	29APR18	14.3429	0.5537	3.9
133182110	20	28APR18	05MAY18	14.5600	0.5734	3.9
133182120	55	01MAY18	11JUN18	14.9164	0.5540	3.7
133182140	55	17MAY18	30JUN18	14.8527	0.5185	3.5
133182150	21	01JUN18	07JUN18	14.5476	0.7941	5.5
133182160	51	12JUN18	21JUL18	14.4000	0.5404	3.8
133182210	44	18JUL18	15AUG18	13.8432	0.4516	3.3
133182220	40	20JUL18	07AUG18	14.3075	0.4287	3.0
133182240	96	08AUG18	21SEP18	15.1313	0.5250	3.5
133182260	49	28AUG18	07OCT18	14.8000	0.4848	3.3
133182270	26	07SEP18	24SEP18	14.4654	0.5578	3.9
133182300	89	25SEP18	29OCT18	14.3596	0.5024	3.5
133182310	47	08OCT18	17NOV18	14.8553	0.4845	3.3
133182320	30	19OCT18	05NOV18	14.4267	0.3600	2.5
133182350	60	02NOV18	07DEC18	15.4000	0.5304	3.4
133182390	71	20NOV18	12JAN19	14.5930	0.5205	3.6
133182400	20	11JAN19	19JAN19	14.4750	0.5389	3.7
133182430	18	17JAN19	20JAN19	14.9556	0.4301	2.9



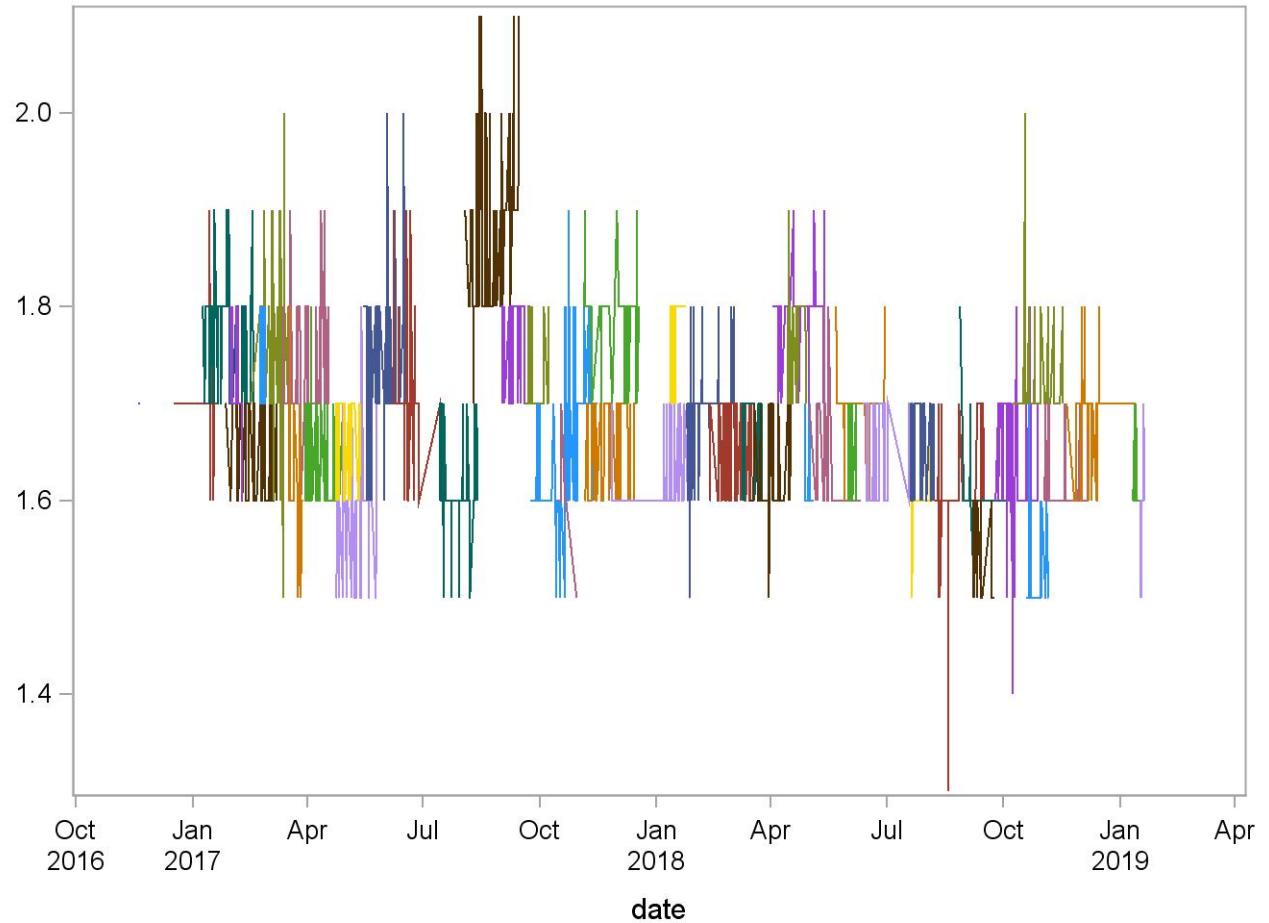
2017-2018 Summary Statistics and QC Chart for Lymphocyte (%) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	28.1434	0.6040	2.1
143191520	58	27JAN17	08MAR17	28.0069	0.6087	2.2
143191530	20	31JAN17	09FEB17	28.4500	0.5889	2.1
143191540	47	16FEB17	21MAR17	28.9128	0.7002	2.4
143191550	21	23FEB17	27FEB17	27.9286	0.6520	2.3
143191570	56	13MAR17	18APR17	26.5679	0.7221	2.7
143191580	33	17MAR17	29MAR17	28.1121	0.5814	2.1
143191600	61	30MAR17	01MAY17	27.4410	0.6487	2.4
143191610	49	24APR17	26MAY17	27.9041	0.5668	2.0
143191630	38	24APR17	13MAY17	27.6158	0.5217	1.9
143191650	80	15MAY17	17JUN17	28.2100	0.5663	2.0
143191680	67	08JUN17	15JUL17	27.7657	0.6602	2.4
143191730	69	15JUL17	13AUG17	26.0899	0.6467	2.5
143191760	92	03AUG17	15SEP17	28.8554	0.5265	1.8
143191770	34	31AUG17	24SEP17	28.0029	0.6341	2.3
143191790	39	19SEP17	08OCT17	27.8026	0.5426	2.0
143191840	103	24SEP17	16NOV17	27.6602	0.6103	2.2
143191860	22	15OCT17	30OCT17	28.3864	0.6650	2.3
143191890	57	05NOV17	18DEC17	30.0018	0.7506	2.5
143191870	56	06NOV17	17DEC17	27.2411	0.5208	1.9
143191930	69	27NOV17	27JAN18	28.2087	0.6530	2.3
143191970	32	12JAN18	24JAN18	27.7656	0.6062	2.2
143191980	91	25JAN18	03MAR18	28.2868	0.6167	2.2
143192010	127	12FEB18	17MAR18	29.6063	0.7962	2.7
143192030	93	09MAR18	31MAR18	27.4387	0.5213	1.9
143192060	48	15MAR18	18APR18	27.3750	0.6248	2.3
143192080	58	02APR18	13MAY18	27.8534	0.4995	1.8
143192090	34	14APR18	29APR18	28.1294	0.5638	2.0
143192110	20	28APR18	05MAY18	27.1400	0.6361	2.3
143192120	52	01MAY18	11JUN18	28.3308	0.5617	2.0
143192140	54	17MAY18	30JUN18	29.7259	0.8152	2.7
143192150	21	01JUN18	07JUN18	28.3762	0.8330	2.9
143192160	51	12JUN18	21JUL18	29.2294	0.6601	2.3
143192210	43	18JUL18	15AUG18	26.6279	0.7995	3.0
143192220	39	20JUL18	07AUG18	27.5615	0.6188	2.2
143192240	92	08AUG18	21SEP18	28.5239	0.5456	1.9
143192260	50	28AUG18	07OCT18	27.4080	0.5699	2.1
143192270	26	07SEP18	24SEP18	26.4115	0.4902	1.9
143192300	86	25SEP18	29OCT18	29.0093	0.6714	2.3
143192310	47	08OCT18	17NOV18	28.0745	0.5724	2.0
143192320	30	19OCT18	05NOV18	27.1933	0.6258	2.3
143192340	61	02NOV18	07DEC18	25.3787	0.8838	3.5
143192380	72	20NOV18	12JAN19	27.5194	0.5422	2.0
143192400	20	11JAN19	19JAN19	27.5500	0.7695	2.8
143192430	18	17JAN19	20JAN19	28.2000	0.5179	1.8



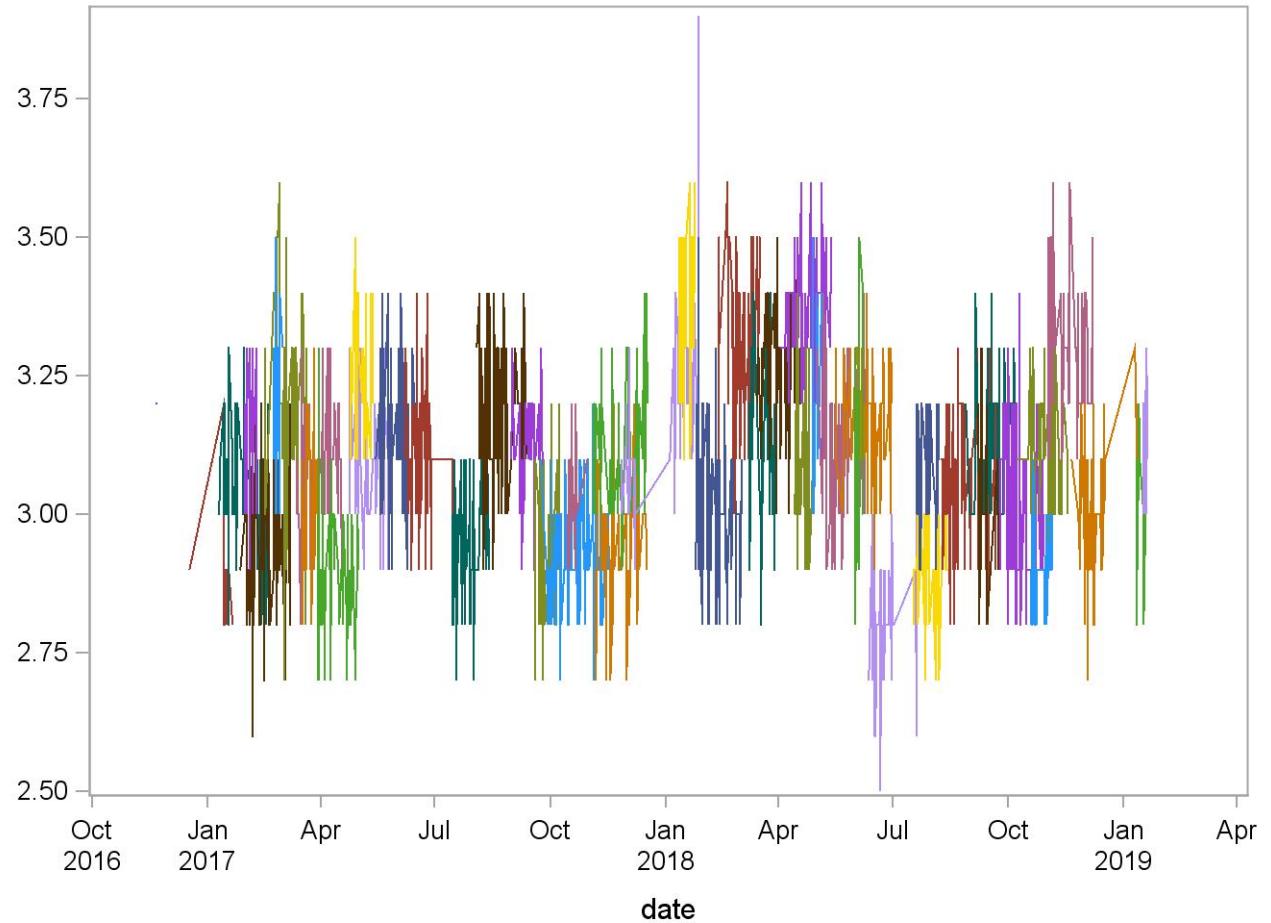
2017-2018 Summary Statistics and QC Chart for Lymphocyte No.(10³ cells/uL) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	1.7083	0.0793	4.6
123171500	110	09JAN17	18FEB17	1.7664	0.0595	3.4
123171520	113	27JAN17	08MAR17	1.6522	0.0502	3.0
123171530	20	31JAN17	09FEB17	1.7200	0.0616	3.6
123171540	48	16FEB17	21MAR17	1.7438	0.0897	5.1
123171550	21	23FEB17	27FEB17	1.7286	0.0463	2.7
123171570	57	13MAR17	18APR17	1.7351	0.0612	3.5
123171580	33	17MAR17	29MAR17	1.6091	0.0522	3.2
123171600	60	30MAR17	01MAY17	1.6433	0.0533	3.2
123171610	48	24APR17	26MAY17	1.5813	0.0734	4.6
123171630	37	24APR17	13MAY17	1.6649	0.0484	2.9
123171650	80	15MAY17	17JUN17	1.7288	0.0750	4.3
123171680	67	08JUN17	15JUL17	1.7000	0.0603	3.5
123171730	71	15JUL17	13AUG17	1.6028	0.0446	2.8
123171760	93	03AUG17	15SEP17	1.8667	0.0864	4.6
123171770	40	31AUG17	24SEP17	1.7650	0.0483	2.7
123171790	39	19SEP17	08OCT17	1.7154	0.0366	2.1
123171840	105	24SEP17	16NOV17	1.6543	0.0747	4.5
123171860	22	15OCT17	30OCT17	1.6045	0.0375	2.3
123171890	57	05NOV17	18DEC17	1.7877	0.0466	2.6
123171870	57	06NOV17	17DEC17	1.6649	0.0481	2.9
123171930	71	27NOV17	27JAN18	1.6169	0.0447	2.8
123171970	33	12JAN18	24JAN18	1.7788	0.0415	2.3
123171980	95	25JAN18	03MAR18	1.6989	0.0399	2.4
123172010	129	12FEB18	17MAR18	1.6589	0.0494	3.0
123172030	35	09MAR18	25MAR18	1.6829	0.0382	2.3
123172060	50	15MAR18	18APR18	1.6300	0.0544	3.3
123172080	58	02APR18	13MAY18	1.7948	0.0394	2.2
123172090	34	14APR18	29APR18	1.7618	0.0551	3.1
123172110	20	28APR18	05MAY18	1.6150	0.0366	2.3
123172120	53	01MAY18	11JUN18	1.6208	0.0495	3.1
123172140	54	22MAY18	30JUN18	1.6963	0.0334	2.0
123172150	20	01JUN18	07JUN18	1.6400	0.0503	3.1
123172160	50	12JUN18	21JUL18	1.6360	0.0485	3.0
123172210	44	18JUL18	15AUG18	1.6000	0.0216	1.3
123172220	39	20JUL18	07AUG18	1.6641	0.0486	2.9
123172240	94	08AUG18	21SEP18	1.6032	0.0451	2.8
123172260	49	28AUG18	07OCT18	1.6061	0.0377	2.3
123172270	26	07SEP18	24SEP18	1.5462	0.0508	3.3
123172300	84	25SEP18	29OCT18	1.6321	0.0697	4.3
123172310	49	08OCT18	17NOV18	1.7184	0.0527	3.1
123172320	30	19OCT18	05NOV18	1.5233	0.0504	3.3
123172340	60	02NOV18	07DEC18	1.6183	0.0390	2.4
123172380	71	20NOV18	12JAN19	1.6831	0.0478	2.8
123172400	20	11JAN19	19JAN19	1.6150	0.0366	2.3
123172430	16	17JAN19	20JAN19	1.5938	0.0443	2.8



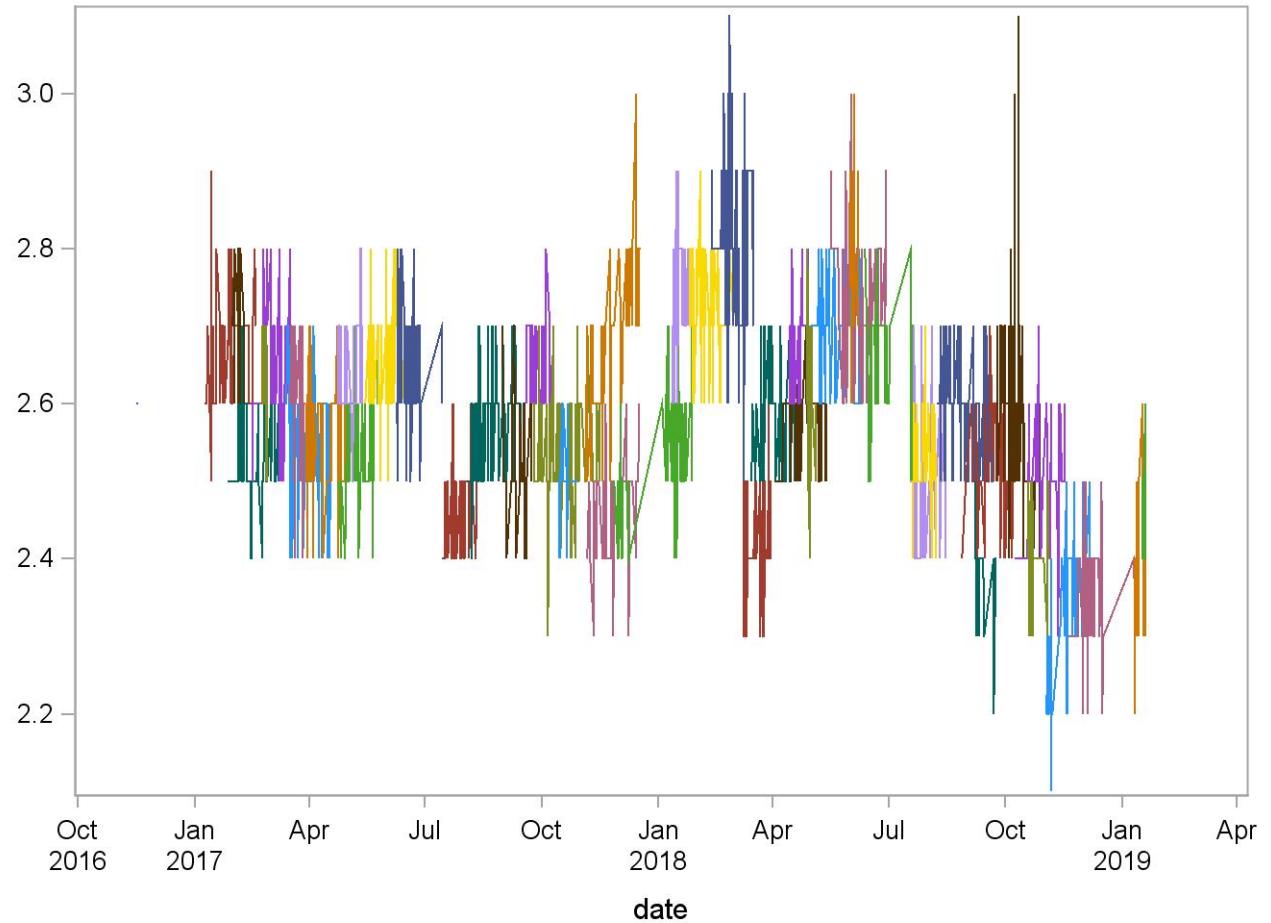
2017-2018 Summary Statistics and QC Chart for Lymphocyte No.(10³ cells/uL) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	2.8846	0.1068	3.7
133181500	78	09JAN17	18FEB17	3.0667	0.1181	3.8
133181520	97	27JAN17	08MAR17	2.9515	0.1415	4.8
133181530	20	31JAN17	09FEB17	3.1400	0.1188	3.8
133181540	50	16FEB17	21MAR17	3.2100	0.1843	5.7
133181550	20	23FEB17	02MAR17	3.2150	0.1348	4.2
133181570	57	13MAR17	18APR17	3.0737	0.1110	3.6
133181580	33	17MAR17	29MAR17	3.0061	0.1144	3.8
133181600	61	30MAR17	01MAY17	2.8885	0.1127	3.9
133181610	49	24APR17	26MAY17	3.1143	0.1137	3.6
133181630	37	24APR17	13MAY17	3.2486	0.1096	3.4
133181650	85	15MAY17	17JUN17	3.1482	0.1151	3.7
133181680	67	08JUN17	15JUL17	3.1090	0.1097	3.5
133181730	71	15JUL17	13AUG17	2.9465	0.1026	3.5
133181760	97	03AUG17	15SEP17	3.1742	0.1148	3.6
133181770	36	31AUG17	25SEP17	3.1139	0.0990	3.2
133181790	41	19SEP17	08OCT17	2.9415	0.1245	4.2
133181840	106	24SEP17	16NOV17	2.9358	0.1071	3.6
133181860	21	15OCT17	30OCT17	3.0333	0.0856	2.8
133181890	61	05NOV17	18DEC17	3.1377	0.1113	3.5
133181870	57	06NOV17	17DEC17	2.9368	0.1159	3.9
133181930	71	27NOV17	27JAN18	3.2183	0.1633	5.1
133181970	34	12JAN18	24JAN18	3.3500	0.1441	4.3
133181980	92	25JAN18	03MAR18	3.0261	0.1291	4.3
133182010	119	12FEB18	17MAR18	3.3328	0.1276	3.8
133182030	89	09MAR18	31MAR18	3.1258	0.1284	4.1
133182060	53	15MAR18	18APR18	3.2660	0.1091	3.3
133182080	57	02APR18	13MAY18	3.3579	0.1068	3.2
133182090	35	14APR18	29APR18	3.0857	0.1287	4.2
133182110	20	28APR18	05MAY18	3.2150	0.1387	4.3
133182120	55	01MAY18	11JUN18	3.1291	0.1315	4.2
133182140	55	17MAY18	30JUN18	3.1691	0.1052	3.3
133182150	21	01JUN18	07JUN18	3.0857	0.1769	5.7
133182160	51	12JUN18	21JUL18	2.7980	0.1191	4.3
133182210	44	18JUL18	15AUG18	2.9136	0.0979	3.4
133182220	40	20JUL18	07AUG18	3.0750	0.0981	3.2
133182240	96	08AUG18	21SEP18	3.0563	0.1150	3.8
133182260	49	28AUG18	07OCT18	3.1327	0.1088	3.5
133182270	26	07SEP18	24SEP18	3.0500	0.1304	4.3
133182300	89	25SEP18	29OCT18	3.0213	0.1327	4.4
133182310	47	08OCT18	17NOV18	3.1170	0.1070	3.4
133182320	30	19OCT18	05NOV18	2.8933	0.0868	3.0
133182350	60	02NOV18	07DEC18	3.3050	0.1268	3.8
133182390	71	20NOV18	12JAN19	2.9930	0.1125	3.8
133182400	20	11JAN19	19JAN19	3.0250	0.1251	4.1
133182430	18	17JAN19	20JAN19	3.1389	0.0916	2.9



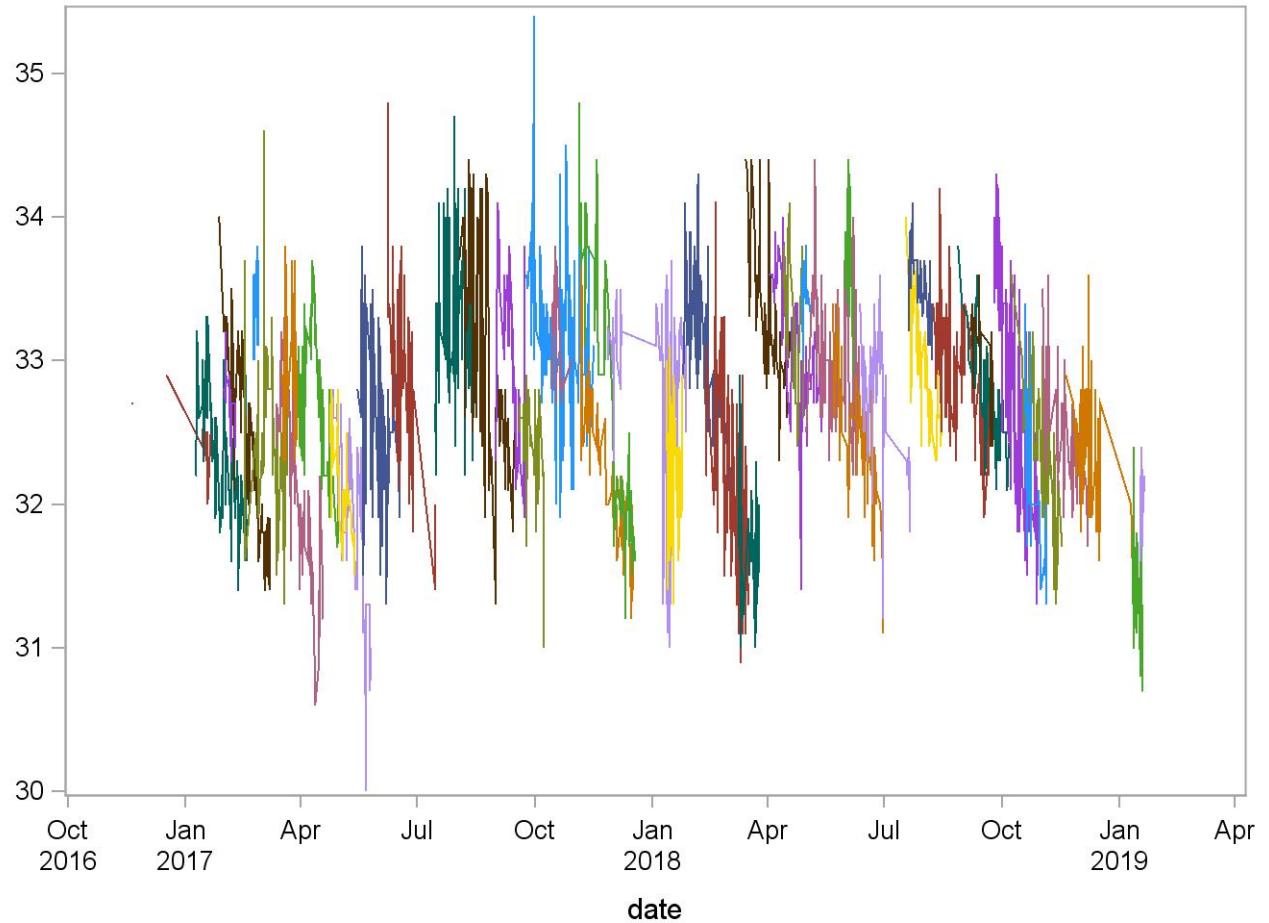
2017-2018 Summary Statistics and QC Chart for Lymphocyte No.(10³ cells/uL) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	2.6811	0.0761	2.8
143191520	58	27JAN17	08MAR17	2.5310	0.0627	2.5
143191530	20	31JAN17	09FEB17	2.7150	0.0745	2.7
143191540	47	16FEB17	21MAR17	2.6298	0.0858	3.3
143191550	21	23FEB17	27FEB17	2.6095	0.0625	2.4
143191570	56	13MAR17	18APR17	2.5393	0.0824	3.2
143191580	33	17MAR17	29MAR17	2.5879	0.0857	3.3
143191600	61	30MAR17	01MAY17	2.5656	0.0704	2.7
143191610	49	24APR17	26MAY17	2.5469	0.0793	3.1
143191630	38	24APR17	13MAY17	2.6368	0.0675	2.6
143191650	80	15MAY17	17JUN17	2.6625	0.0624	2.3
143191680	67	08JUN17	15JUL17	2.6418	0.0742	2.8
143191730	69	15JUL17	13AUG17	2.4609	0.0623	2.5
143191760	92	03AUG17	15SEP17	2.5750	0.0657	2.6
143191770	34	31AUG17	24SEP17	2.5353	0.0812	3.2
143191790	39	19SEP17	08OCT17	2.6436	0.0598	2.3
143191840	102	24SEP17	16NOV17	2.5402	0.0693	2.7
143191860	22	15OCT17	30OCT17	2.5091	0.0610	2.4
143191890	57	05NOV17	18DEC17	2.6754	0.0987	3.7
143191870	56	06NOV17	17DEC17	2.4625	0.0702	2.9
143191930	69	27NOV17	27JAN18	2.5348	0.0819	3.2
143191970	32	12JAN18	24JAN18	2.7250	0.0762	2.8
143191980	91	25JAN18	03MAR18	2.7264	0.0647	2.4
143192010	127	12FEB18	17MAR18	2.8165	0.1052	3.7
143192030	93	09MAR18	31MAR18	2.4215	0.0735	3.0
143192060	48	15MAR18	18APR18	2.5854	0.0743	2.9
143192080	58	02APR18	13MAY18	2.5638	0.0613	2.4
143192090	34	14APR18	29APR18	2.6676	0.0638	2.4
143192110	20	28APR18	05MAY18	2.6050	0.0887	3.4
143192120	52	01MAY18	11JUN18	2.6827	0.0706	2.6
143192140	54	17MAY18	30JUN18	2.7333	0.1009	3.7
143192150	21	01JUN18	07JUN18	2.7762	0.0944	3.4
143192160	51	12JUN18	21JUL18	2.6471	0.0784	3.0
143192210	43	18JUL18	15AUG18	2.5093	0.0895	3.6
143192220	39	20JUL18	07AUG18	2.5282	0.0647	2.6
143192240	92	08AUG18	21SEP18	2.5957	0.0627	2.4
143192260	50	28AUG18	07OCT18	2.5120	0.0689	2.7
143192270	26	07SEP18	24SEP18	2.3731	0.0604	2.5
143192300	86	25SEP18	29OCT18	2.5849	0.1203	4.7
143192310	47	08OCT18	17NOV18	2.5021	0.0707	2.8
143192320	30	19OCT18	05NOV18	2.4033	0.0615	2.6
143192340	61	02NOV18	07DEC18	2.3246	0.0907	3.9
143192380	72	20NOV18	12JAN19	2.3569	0.0668	2.8
143192400	20	11JAN19	19JAN19	2.3750	0.1020	4.3
143192430	18	17JAN19	20JAN19	2.4667	0.0594	2.4



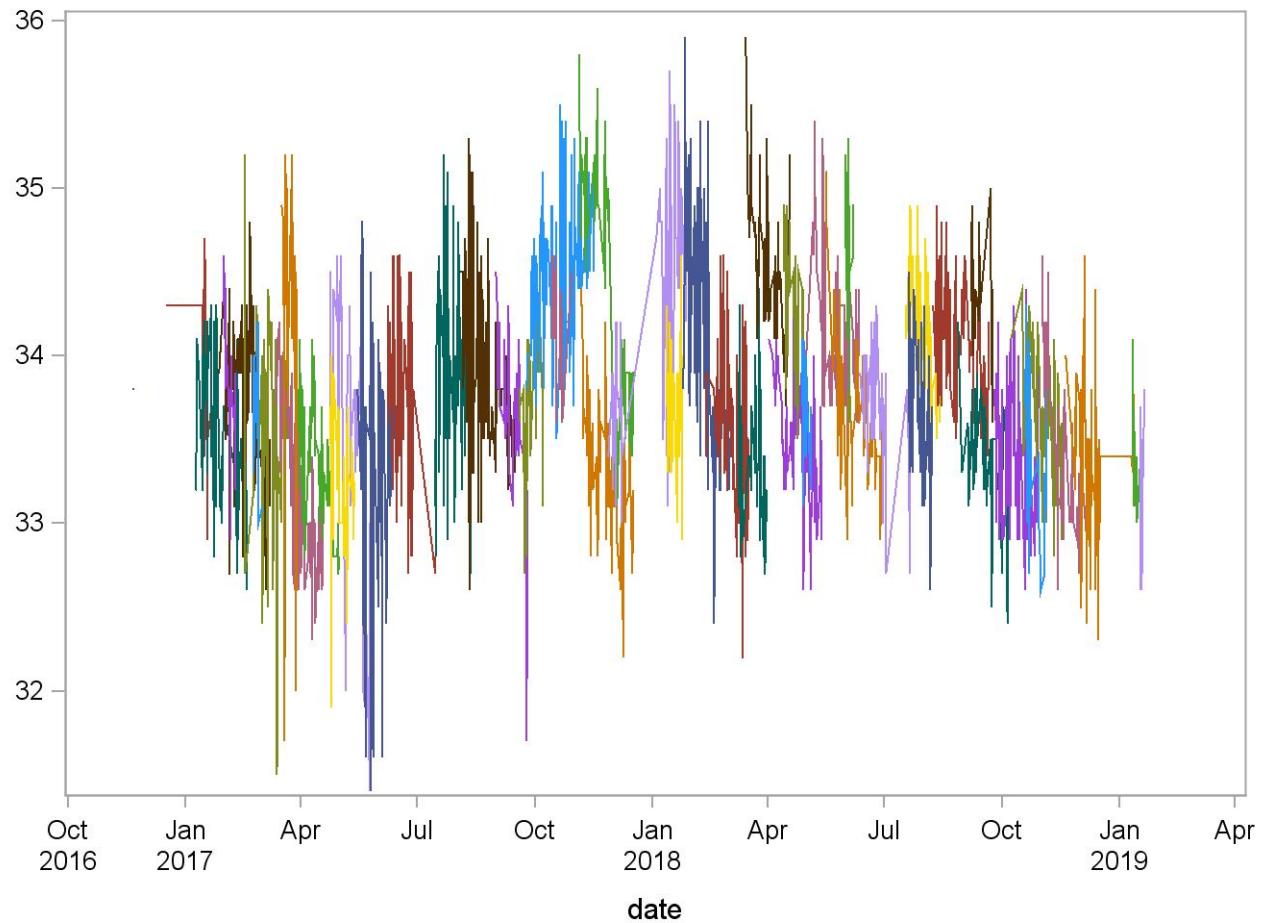
2017-2018 Summary Statistics and QC Chart for MCHC (g/dL) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	32.4583	0.2151	0.7
123171500	110	09JAN17	18FEB17	32.2991	0.4536	1.4
123171520	113	27JAN17	08MAR17	32.4664	0.5855	1.8
123171530	20	31JAN17	09FEB17	32.6700	0.2342	0.7
123171540	48	16FEB17	21MAR17	32.4625	0.6245	1.9
123171550	21	23FEB17	27FEB17	33.3857	0.2372	0.7
123171570	57	13MAR17	18APR17	32.0053	0.6741	2.1
123171580	33	17MAR17	29MAR17	32.8909	0.3956	1.2
123171600	60	30MAR17	01MAY17	32.6033	0.4995	1.5
123171610	48	24APR17	26MAY17	31.8438	0.6311	2.0
123171630	37	24APR17	13MAY17	32.1919	0.3467	1.1
123171650	80	15MAY17	17JUN17	32.6975	0.5270	1.6
123171680	67	08JUN17	15JUL17	32.9582	0.5721	1.7
123171730	71	15JUL17	13AUG17	33.2831	0.5196	1.6
123171760	93	03AUG17	15SEP17	33.1280	0.7595	2.3
123171770	40	31AUG17	24SEP17	32.9375	0.5913	1.8
123171790	39	19SEP17	08OCT17	32.4026	0.3653	1.1
123171840	105	24SEP17	16NOV17	33.1267	0.5332	1.6
123171860	22	15OCT17	30OCT17	33.1500	0.3320	1.0
123171890	57	05NOV17	18DEC17	32.9123	0.9827	3.0
123171870	57	06NOV17	17DEC17	32.2070	0.4582	1.4
123171930	71	27NOV17	27JAN18	32.8465	0.6206	1.9
123171970	33	12JAN18	24JAN18	32.2303	0.4760	1.5
123171980	95	25JAN18	03MAR18	33.1063	0.4922	1.5
123172010	129	12FEB18	17MAR18	32.3171	0.6443	2.0
123172030	35	09MAR18	25MAR18	31.8257	0.4780	1.5
123172060	50	15MAR18	18APR18	33.2780	0.4722	1.4
123172080	58	02APR18	13MAY18	33.0879	0.4381	1.3
123172090	34	14APR18	29APR18	33.3206	0.4368	1.3
123172110	20	28APR18	05MAY18	33.4550	0.2164	0.6
123172120	53	01MAY18	11JUN18	32.9981	0.4983	1.5
123172140	54	22MAY18	30JUN18	32.4019	0.4445	1.4
123172150	20	01JUN18	07JUN18	33.7300	0.3922	1.2
123172160	50	12JUN18	21JUL18	32.6620	0.4398	1.3
123172210	44	18JUL18	15AUG18	32.9455	0.4547	1.4
123172220	39	20JUL18	07AUG18	33.5564	0.2532	0.8
123172240	94	08AUG18	21SEP18	32.9340	0.3789	1.2
123172260	49	28AUG18	07OCT18	32.7735	0.4122	1.3
123172270	26	07SEP18	24SEP18	33.1269	0.2822	0.9
123172300	85	25SEP18	29OCT18	32.7553	0.7179	2.2
123172310	49	08OCT18	17NOV18	32.3388	0.4983	1.5
123172320	30	19OCT18	05NOV18	32.2333	0.5671	1.8
123172340	60	02NOV18	07DEC18	32.5033	0.4226	1.3
123172380	71	20NOV18	12JAN19	32.3775	0.4337	1.3
123172400	20	11JAN19	19JAN19	31.4000	0.4401	1.4
123172430	16	17JAN19	20JAN19	31.8875	0.2277	0.7



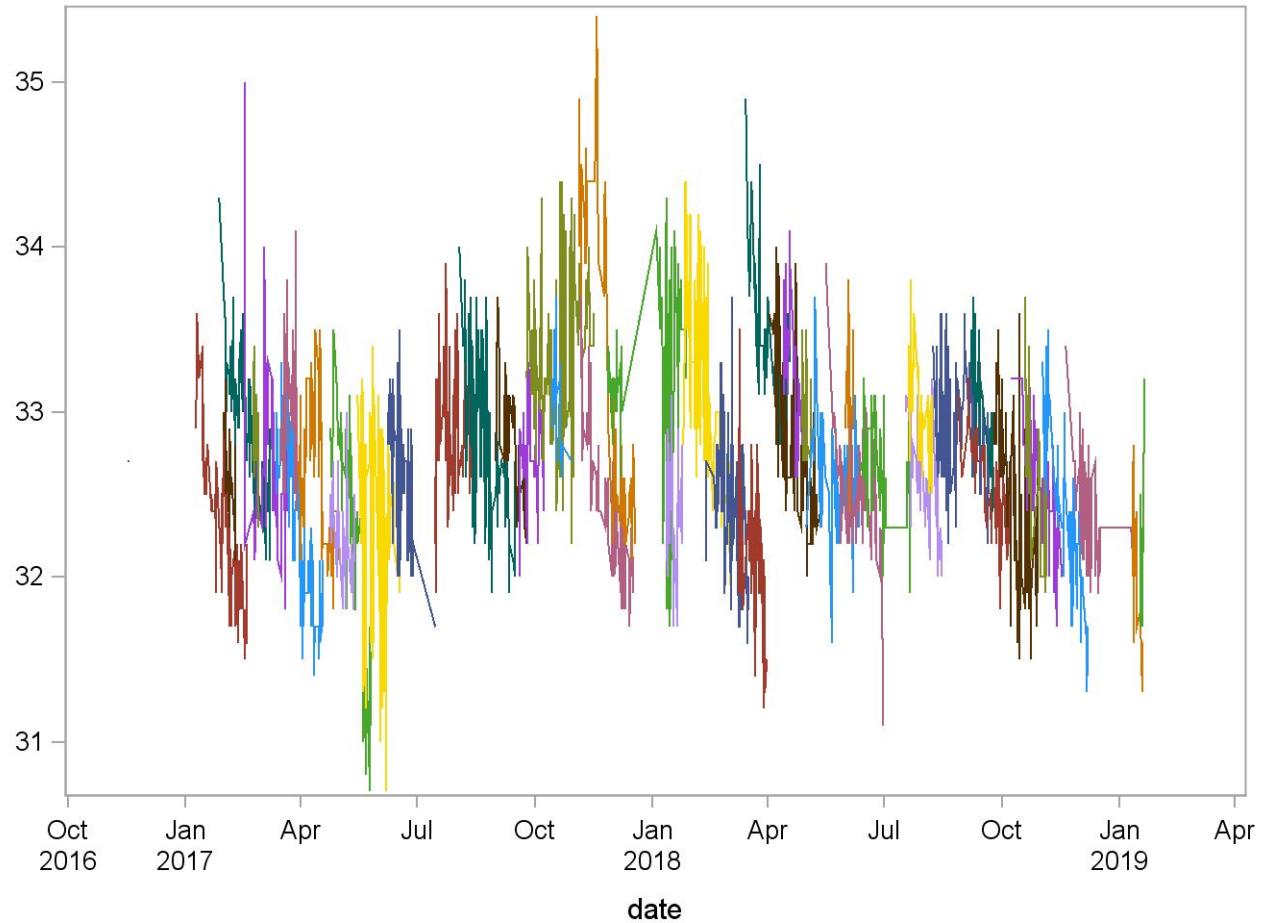
2017-2018 Summary Statistics and QC Chart for MCHC (g/dL) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	33.8231	0.4833	1.4
133181500	78	09JAN17	18FEB17	33.5795	0.4613	1.4
133181520	97	27JAN17	08MAR17	33.7814	0.4508	1.3
133181530	20	31JAN17	09FEB17	33.7950	0.3845	1.1
133181540	50	16FEB17	21MAR17	33.5800	0.7307	2.2
133181550	20	23FEB17	02MAR17	33.7000	0.3403	1.0
133181570	57	13MAR17	18APR17	33.1825	0.4833	1.5
133181580	33	17MAR17	29MAR17	34.2636	0.7424	2.2
133181600	61	30MAR17	01MAY17	33.3541	0.3663	1.1
133181610	49	24APR17	26MAY17	33.5143	0.8581	2.6
133181630	37	24APR17	13MAY17	33.2649	0.3967	1.2
133181650	85	15MAY17	17JUN17	33.5341	0.7922	2.4
133181680	67	08JUN17	15JUL17	33.8119	0.5166	1.5
133181730	71	15JUL17	13AUG17	33.8915	0.5495	1.6
133181760	97	03AUG17	15SEP17	33.9041	0.5252	1.5
133181770	36	31AUG17	25SEP17	33.6222	0.4905	1.5
133181790	41	19SEP17	08OCT17	33.7244	0.4164	1.2
133181840	106	24SEP17	16NOV17	34.4887	0.4310	1.2
133181860	21	15OCT17	30OCT17	34.1952	0.3309	1.0
133181890	61	05NOV17	18DEC17	34.4885	0.7552	2.2
133181870	57	06NOV17	17DEC17	33.3018	0.4422	1.3
133181930	71	27NOV17	27JAN18	34.2549	0.6712	2.0
133181970	34	12JAN18	24JAN18	33.6706	0.3826	1.1
133181980	92	25JAN18	03MAR18	34.2728	0.6852	2.0
133182010	119	12FEB18	17MAR18	33.5824	0.4315	1.3
133182030	89	09MAR18	31MAR18	33.4022	0.3954	1.2
133182060	53	15MAR18	18APR18	34.5415	0.4069	1.2
133182080	57	02APR18	13MAY18	33.5439	0.3606	1.1
133182090	35	14APR18	29APR18	34.3286	0.3383	1.0
133182110	20	28APR18	05MAY18	33.7050	0.2856	0.8
133182120	55	01MAY18	11JUN18	34.1636	0.4322	1.3
133182140	55	17MAY18	30JUN18	33.6745	0.4481	1.3
133182150	21	01JUN18	07JUN18	34.6000	0.4012	1.2
133182160	51	12JUN18	21JUL18	33.6627	0.3605	1.1
133182210	44	18JUL18	15AUG18	34.0773	0.3851	1.1
133182220	40	20JUL18	07AUG18	33.7325	0.3957	1.2
133182240	96	08AUG18	21SEP18	34.1292	0.3446	1.0
133182260	49	28AUG18	07OCT18	33.3469	0.3697	1.1
133182270	26	07SEP18	24SEP18	34.3885	0.3229	0.9
133182300	90	25SEP18	29OCT18	33.4689	0.3568	1.1
133182310	47	08OCT18	17NOV18	33.6702	0.3895	1.2
133182320	30	19OCT18	05NOV18	33.4433	0.5063	1.5
133182350	60	02NOV18	07DEC18	33.4817	0.5287	1.6
133182390	71	20NOV18	12JAN19	33.3535	0.4430	1.3
133182400	20	11JAN19	19JAN19	33.3400	0.3315	1.0
133182430	18	17JAN19	20JAN19	33.1278	0.3561	1.1



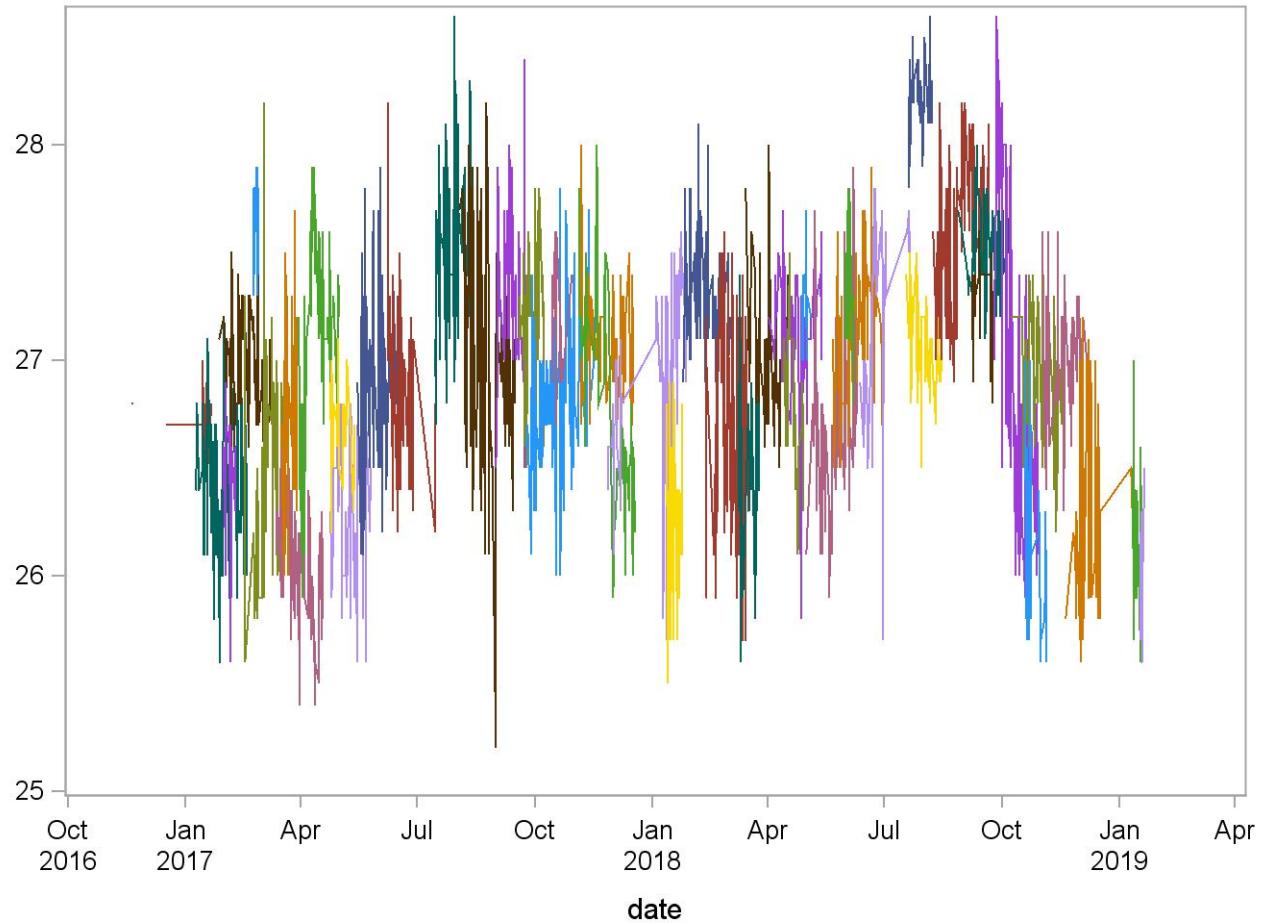
2017-2018 Summary Statistics and QC Chart for MCHC (g/dL) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	32.3283	0.4877	1.5
143191520	58	27JAN17	08MAR17	32.8879	0.4566	1.4
143191530	20	31JAN17	09FEB17	32.6400	0.2683	0.8
143191540	47	16FEB17	21MAR17	32.7383	0.5918	1.8
143191550	21	23FEB17	27FEB17	32.8905	0.2606	0.8
143191570	56	13MAR17	18APR17	32.2964	0.5417	1.7
143191580	33	17MAR17	29MAR17	33.1182	0.3869	1.2
143191600	61	30MAR17	01MAY17	32.5525	0.3735	1.1
143191610	49	24APR17	26MAY17	32.2898	0.7051	2.2
143191630	38	24APR17	13MAY17	32.2842	0.2785	0.9
143191650	80	15MAY17	17JUN17	32.3050	0.6135	1.9
143191680	67	08JUN17	15JUL17	32.6358	0.4052	1.2
143191730	69	15JUL17	13AUG17	32.9217	0.3702	1.1
143191760	92	03AUG17	15SEP17	32.9250	0.4766	1.4
143191770	34	31AUG17	24SEP17	32.8088	0.3545	1.1
143191790	39	19SEP17	08OCT17	32.7026	0.2777	0.8
143191840	103	24SEP17	16NOV17	33.3709	0.4789	1.4
143191860	22	15OCT17	30OCT17	33.0773	0.3085	0.9
143191890	57	05NOV17	18DEC17	33.4825	0.9614	2.9
143191870	56	06NOV17	17DEC17	32.4696	0.4251	1.3
143191930	69	27NOV17	27JAN18	33.2406	0.6314	1.9
143191970	32	12JAN18	24JAN18	32.4688	0.3393	1.0
143191980	91	25JAN18	03MAR18	33.2934	0.6044	1.8
143192010	127	12FEB18	17MAR18	32.4646	0.4076	1.3
143192030	93	09MAR18	31MAR18	32.1882	0.4359	1.4
143192060	48	15MAR18	18APR18	33.4333	0.4117	1.2
143192080	58	02APR18	13MAY18	32.7983	0.4474	1.4
143192090	34	14APR18	29APR18	33.3206	0.3523	1.1
143192110	20	28APR18	05MAY18	33.0550	0.2819	0.9
143192120	52	01MAY18	11JUN18	32.5788	0.3659	1.1
143192140	54	17MAY18	30JUN18	32.5537	0.4608	1.4
143192150	21	01JUN18	07JUN18	33.1667	0.3261	1.0
143192160	51	12JUN18	21JUL18	32.6647	0.3205	1.0
143192210	43	18JUL18	15AUG18	32.5512	0.3217	1.0
143192220	39	20JUL18	07AUG18	33.0538	0.3102	0.9
143192240	92	08AUG18	21SEP18	32.9489	0.3290	1.0
143192260	50	28AUG18	07OCT18	32.5640	0.3193	1.0
143192270	26	07SEP18	24SEP18	33.1385	0.2981	0.9
143192300	87	25SEP18	29OCT18	32.4874	0.4670	1.4
143192310	47	08OCT18	17NOV18	32.5213	0.3730	1.1
143192320	30	19OCT18	05NOV18	32.7000	0.4464	1.4
143192340	61	02NOV18	07DEC18	32.4705	0.5191	1.6
143192380	72	20NOV18	12JAN19	32.3583	0.3080	1.0
143192400	20	11JAN19	19JAN19	32.0050	0.4199	1.3
143192430	18	17JAN19	20JAN19	32.0889	0.3771	1.2



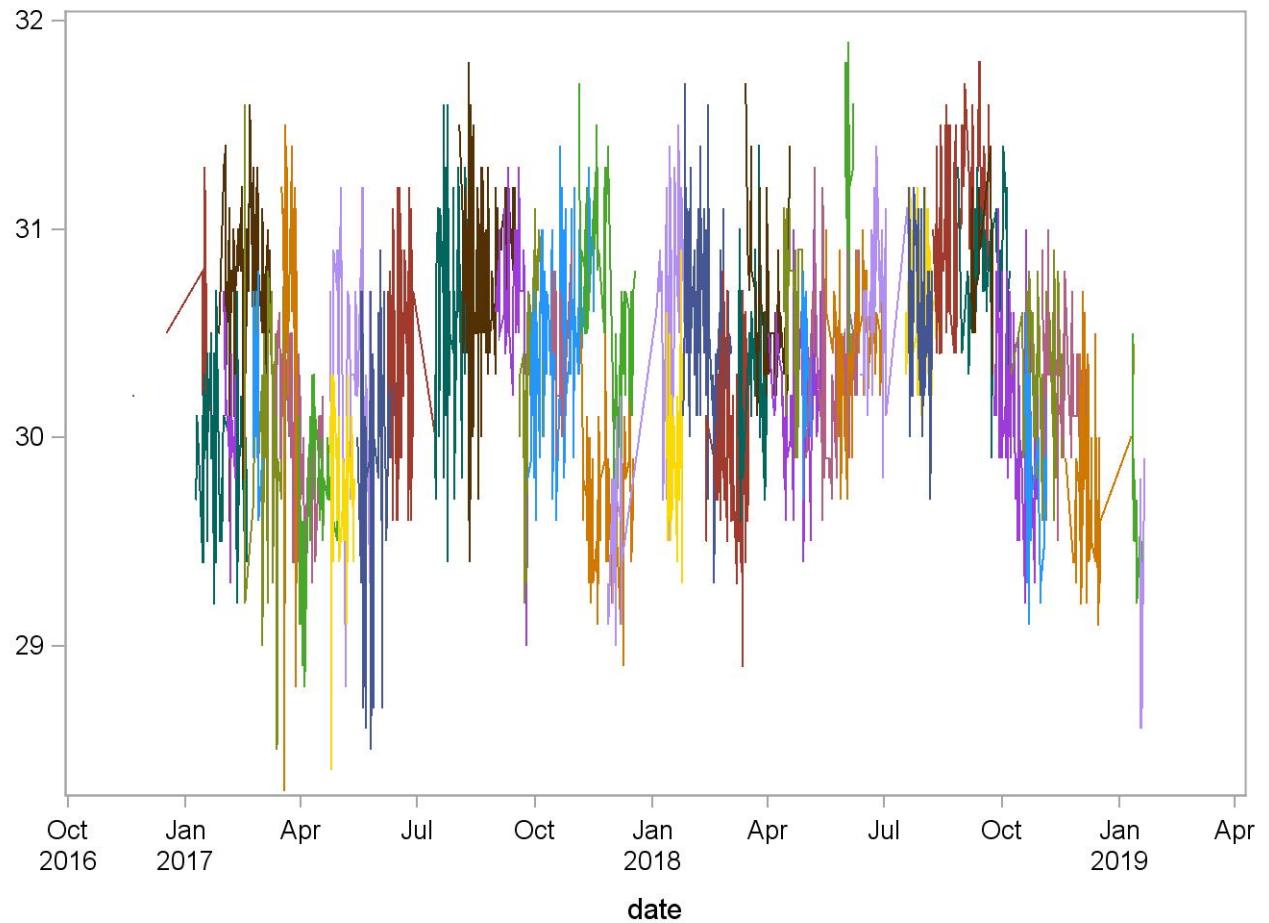
2017-2018 Summary Statistics and QC Chart for Mean cell hemoglobin (pg) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	26.6833	0.1992	0.7
123171500	110	09JAN17	18FEB17	26.4064	0.3368	1.3
123171520	113	27JAN17	08MAR17	26.9566	0.2532	0.9
123171530	20	31JAN17	09FEB17	26.4350	0.3117	1.2
123171540	48	16FEB17	21MAR17	26.5146	0.5231	2.0
123171550	21	23FEB17	27FEB17	27.6286	0.1927	0.7
123171570	57	13MAR17	18APR17	26.0456	0.2934	1.1
123171580	33	17MAR17	29MAR17	26.7212	0.4248	1.6
123171600	60	30MAR17	01MAY17	27.0133	0.4681	1.7
123171610	48	24APR17	26MAY17	26.2521	0.3155	1.2
123171630	37	24APR17	13MAY17	26.7162	0.2180	0.8
123171650	80	15MAY17	17JUN17	26.9125	0.3925	1.5
123171680	67	08JUN17	15JUL17	26.8881	0.3719	1.4
123171730	71	15JUL17	13AUG17	27.5352	0.3791	1.4
123171760	93	03AUG17	15SEP17	27.0968	0.5280	1.9
123171770	40	31AUG17	24SEP17	27.2900	0.4217	1.5
123171790	39	19SEP17	08OCT17	27.1897	0.3076	1.1
123171840	105	24SEP17	16NOV17	26.8486	0.3568	1.3
123171860	22	15OCT17	30OCT17	27.1591	0.2840	1.0
123171890	57	05NOV17	18DEC17	26.8526	0.5089	1.9
123171870	57	06NOV17	17DEC17	27.0649	0.2334	0.9
123171930	71	27NOV17	27JAN18	26.8563	0.4705	1.8
123171970	33	12JAN18	24JAN18	26.2303	0.3771	1.4
123171980	95	25JAN18	03MAR18	27.3095	0.2208	0.8
123172010	129	12FEB18	17MAR18	26.7860	0.4954	1.8
123172030	35	09MAR18	25MAR18	26.5314	0.4206	1.6
123172060	50	15MAR18	18APR18	27.0360	0.3029	1.1
123172080	58	02APR18	13MAY18	27.1345	0.2923	1.1
123172090	34	14APR18	29APR18	26.8176	0.3176	1.2
123172110	20	28APR18	05MAY18	27.2600	0.1957	0.7
123172120	53	01MAY18	11JUN18	26.7434	0.4750	1.8
123172140	54	22MAY18	30JUN18	27.1241	0.3392	1.3
123172150	20	01JUN18	07JUN18	27.3550	0.2874	1.1
123172160	50	12JUN18	21JUL18	27.1140	0.4449	1.6
123172210	44	18JUL18	15AUG18	27.0591	0.2171	0.8
123172220	39	20JUL18	07AUG18	28.2282	0.1701	0.6
123172240	94	08AUG18	21SEP18	27.5553	0.3130	1.1
123172260	49	28AUG18	07OCT18	27.5306	0.2033	0.7
123172270	26	07SEP18	24SEP18	27.2808	0.2020	0.7
123172300	85	25SEP18	29OCT18	27.0329	0.7110	2.6
123172310	49	08OCT18	17NOV18	26.8939	0.3003	1.1
123172320	30	19OCT18	05NOV18	26.1700	0.4027	1.5
123172340	60	02NOV18	07DEC18	26.9800	0.3085	1.1
123172380	71	20NOV18	12JAN19	26.4310	0.4553	1.7
123172400	20	11JAN19	19JAN19	26.1450	0.3818	1.5
123172430	16	17JAN19	20JAN19	25.9750	0.2206	0.8



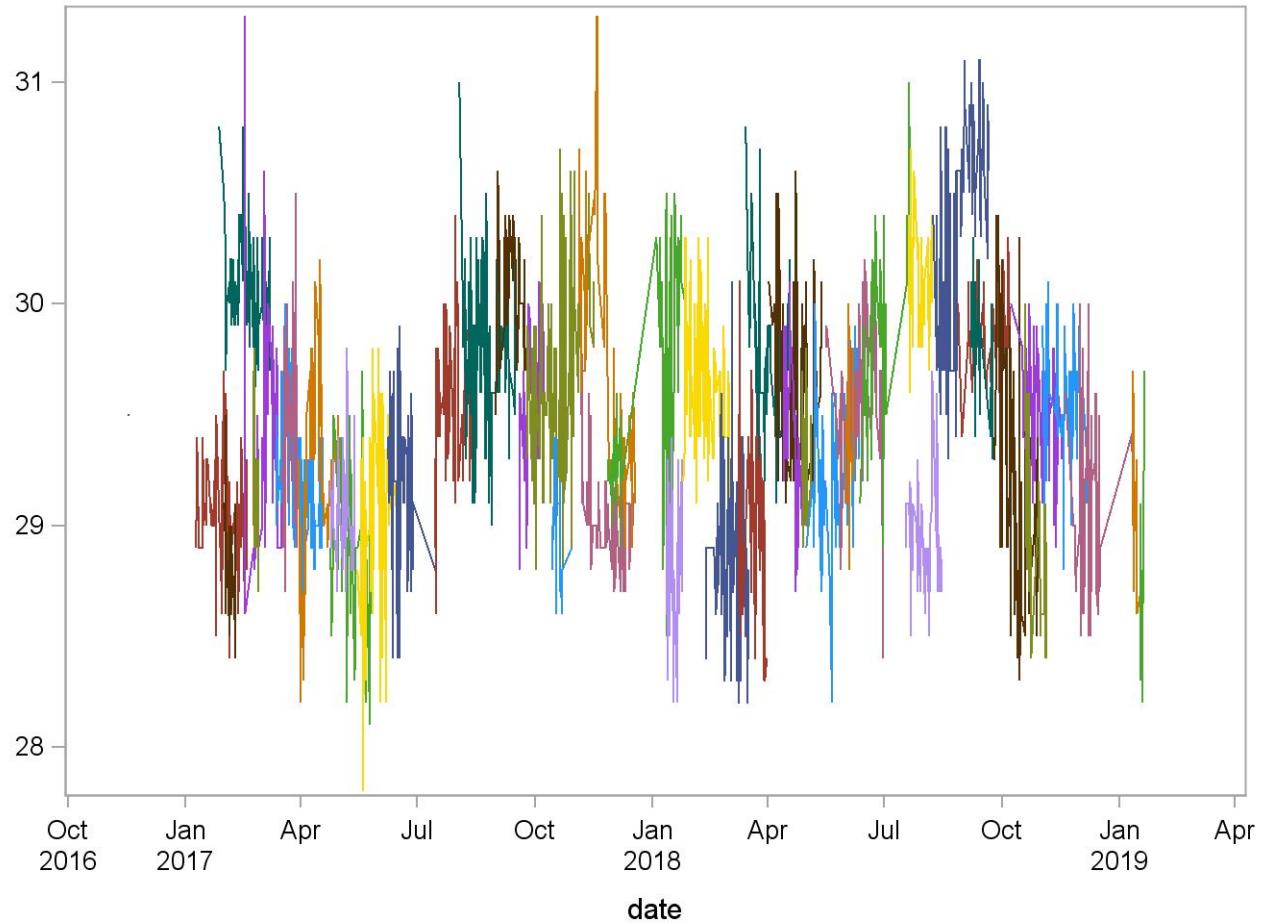
2017-2018 Summary Statistics and QC Chart for Mean cell hemoglobin (pg) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	30.3692	0.4270	1.4
133181500	78	09JAN17	18FEB17	29.9051	0.3678	1.2
133181520	97	27JAN17	08MAR17	30.7598	0.3768	1.2
133181530	20	31JAN17	09FEB17	30.1200	0.3222	1.1
133181540	50	16FEB17	21MAR17	30.1380	0.6279	2.1
133181550	20	23FEB17	02MAR17	30.2650	0.3265	1.1
133181570	57	13MAR17	18APR17	29.9895	0.3395	1.1
133181580	33	17MAR17	29MAR17	30.7000	0.6519	2.1
133181600	61	30MAR17	01MAY17	29.6377	0.3560	1.2
133181610	49	24APR17	26MAY17	30.3531	0.5327	1.8
133181630	37	24APR17	13MAY17	29.7649	0.3537	1.2
133181650	85	15MAY17	17JUN17	30.0071	0.5511	1.8
133181680	67	08JUN17	15JUL17	30.4776	0.4522	1.5
133181730	71	15JUL17	13AUG17	30.5901	0.4733	1.5
133181760	97	03AUG17	15SEP17	30.7732	0.4341	1.4
133181770	36	31AUG17	25SEP17	30.6472	0.3798	1.2
133181790	41	19SEP17	08OCT17	30.3634	0.4684	1.5
133181840	106	24SEP17	16NOV17	30.4972	0.3786	1.2
133181860	21	15OCT17	30OCT17	30.4667	0.2972	1.0
133181890	61	05NOV17	18DEC17	30.7098	0.4549	1.5
133181870	57	06NOV17	17DEC17	29.6842	0.3545	1.2
133181930	71	27NOV17	27JAN18	30.3014	0.6196	2.0
133181970	34	12JAN18	24JAN18	29.9471	0.3719	1.2
133181980	92	25JAN18	03MAR18	30.6011	0.4086	1.3
133182010	119	12FEB18	17MAR18	29.9353	0.3695	1.2
133182030	89	09MAR18	31MAR18	30.3146	0.3798	1.3
133182060	53	15MAR18	18APR18	30.5962	0.3568	1.2
133182080	57	02APR18	13MAY18	30.2491	0.3213	1.1
133182090	35	14APR18	29APR18	30.6486	0.3175	1.0
133182110	20	28APR18	05MAY18	30.3900	0.2827	0.9
133182120	55	01MAY18	11JUN18	30.2909	0.4084	1.3
133182140	55	17MAY18	30JUN18	30.4473	0.2873	0.9
133182150	21	01JUN18	07JUN18	31.3143	0.3454	1.1
133182160	51	12JUN18	21JUL18	30.6235	0.3344	1.1
133182210	44	18JUL18	15AUG18	30.6364	0.3096	1.0
133182220	40	20JUL18	07AUG18	30.6075	0.3533	1.2
133182240	96	08AUG18	21SEP18	31.0406	0.3550	1.1
133182260	49	28AUG18	07OCT18	30.8041	0.3068	1.0
133182270	26	07SEP18	24SEP18	30.8346	0.2637	0.9
133182300	90	25SEP18	29OCT18	30.1756	0.3639	1.2
133182310	47	08OCT18	17NOV18	30.2532	0.3355	1.1
133182320	30	19OCT18	05NOV18	29.8933	0.4362	1.5
133182350	60	02NOV18	07DEC18	30.3033	0.2810	0.9
133182390	71	20NOV18	12JAN19	29.8014	0.3763	1.3
133182400	20	11JAN19	19JAN19	29.6200	0.3270	1.1
133182430	18	17JAN19	20JAN19	29.1556	0.3585	1.2



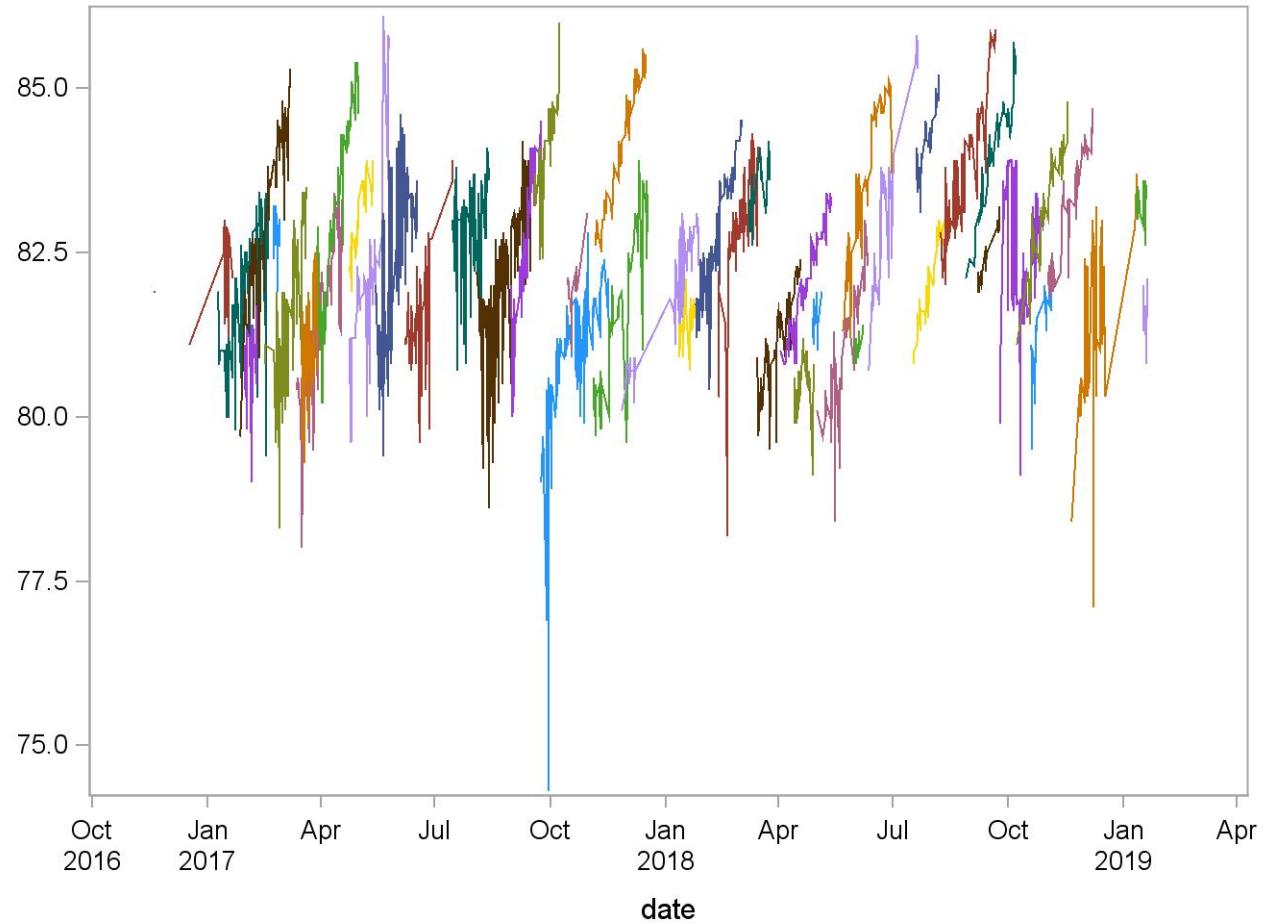
2017-2018 Summary Statistics and QC Chart for Mean cell hemoglobin (pg) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	29.0396	0.2905	1.0
143191520	58	27JAN17	08MAR17	30.0552	0.2590	0.9
143191530	20	31JAN17	09FEB17	28.8500	0.2666	0.9
143191540	47	16FEB17	21MAR17	29.4702	0.5352	1.8
143191550	21	23FEB17	27FEB17	29.1667	0.2799	1.0
143191570	56	13MAR17	18APR17	29.2214	0.3155	1.1
143191580	33	17MAR17	29MAR17	29.4939	0.4062	1.4
143191600	61	30MAR17	01MAY17	29.0967	0.4235	1.5
143191610	49	24APR17	26MAY17	28.8796	0.3995	1.4
143191630	38	24APR17	13MAY17	29.0895	0.2587	0.9
143191650	80	15MAY17	17JUN17	28.9988	0.4098	1.4
143191680	67	08JUN17	15JUL17	29.2119	0.3453	1.2
143191730	69	15JUL17	13AUG17	29.5551	0.3137	1.1
143191760	92	03AUG17	15SEP17	29.7989	0.3202	1.1
143191770	34	31AUG17	24SEP17	30.0412	0.2524	0.8
143191790	39	19SEP17	08OCT17	29.5359	0.3048	1.0
143191840	103	24SEP17	16NOV17	29.7223	0.4201	1.4
143191860	22	15OCT17	30OCT17	29.0091	0.2580	0.9
143191890	57	05NOV17	18DEC17	29.8193	0.5845	2.0
143191870	56	06NOV17	17DEC17	29.0607	0.2484	0.9
143191930	69	27NOV17	27JAN18	29.6522	0.5452	1.8
143191970	32	12JAN18	24JAN18	28.8625	0.3220	1.1
143191980	91	25JAN18	03MAR18	29.6626	0.2991	1.0
143192010	127	12FEB18	17MAR18	28.8740	0.3727	1.3
143192030	93	09MAR18	31MAR18	28.9925	0.4065	1.4
143192060	48	15MAR18	18APR18	29.7271	0.3388	1.1
143192080	58	02APR18	13MAY18	29.6431	0.3742	1.3
143192090	34	14APR18	29APR18	29.4500	0.3008	1.0
143192110	20	28APR18	05MAY18	29.3400	0.2780	0.9
143192120	52	01MAY18	11JUN18	29.2231	0.3740	1.3
143192140	54	17MAY18	30JUN18	29.5870	0.3308	1.1
143192150	21	01JUN18	07JUN18	29.4333	0.3276	1.1
143192160	51	12JUN18	21JUL18	29.7941	0.4017	1.3
143192210	43	18JUL18	15AUG18	28.9279	0.2384	0.8
143192220	39	20JUL18	07AUG18	30.0949	0.2554	0.8
143192240	92	08AUG18	21SEP18	30.3065	0.4390	1.4
143192260	50	28AUG18	07OCT18	29.8400	0.2100	0.7
143192270	26	07SEP18	24SEP18	29.8269	0.2539	0.9
143192300	87	25SEP18	29OCT18	29.2724	0.5430	1.9
143192310	47	08OCT18	17NOV18	29.4979	0.2863	1.0
143192320	30	19OCT18	05NOV18	29.0433	0.4066	1.4
143192340	61	02NOV18	07DEC18	29.5410	0.2807	1.0
143192380	72	20NOV18	12JAN19	29.1778	0.3639	1.2
143192400	20	11JAN19	19JAN19	28.9400	0.3676	1.3
143192430	18	17JAN19	20JAN19	28.6333	0.3515	1.2



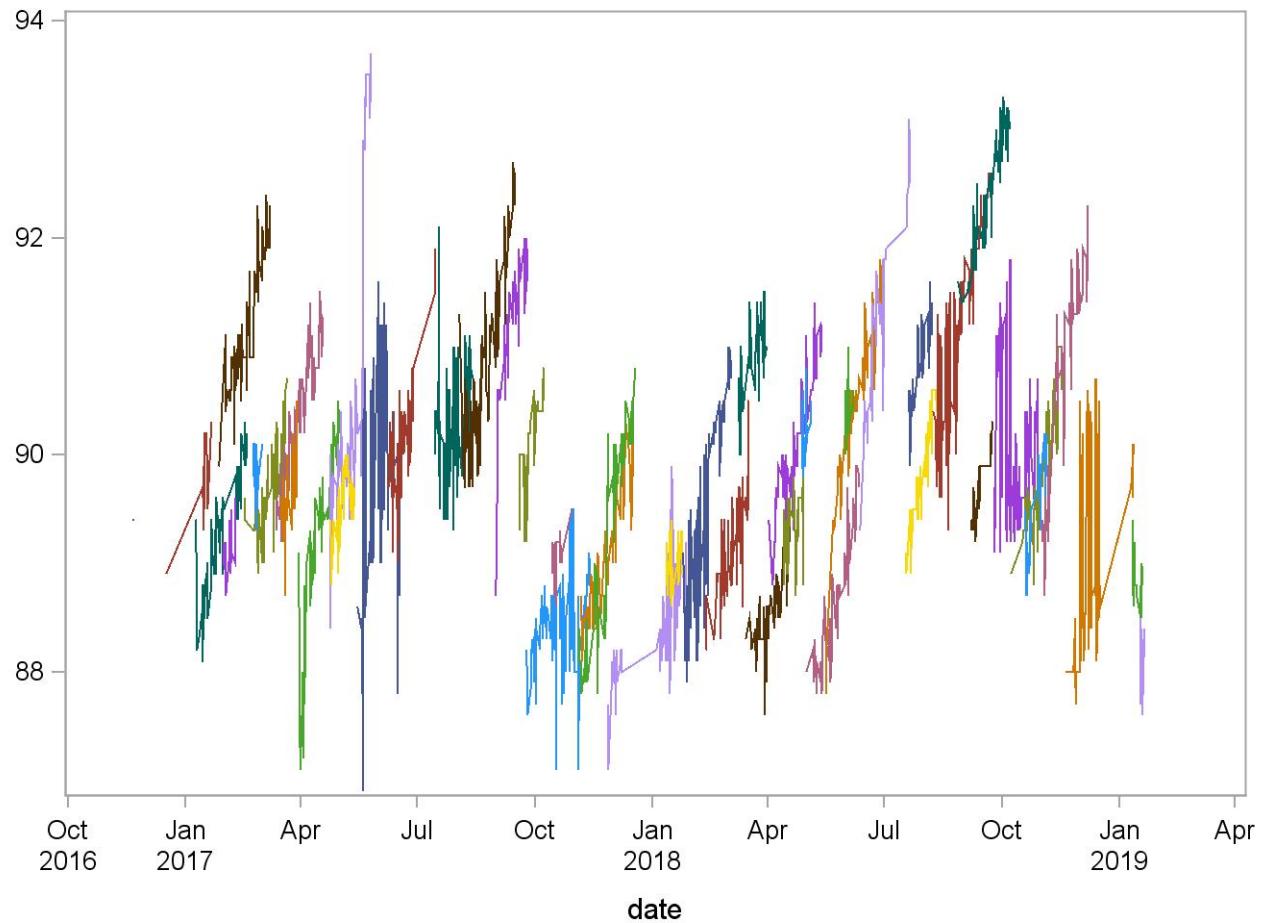
2017-2018 Summary Statistics and QC Chart for Mean cell volume (fL) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	82.2167	0.7614	0.9
123171500	110	09JAN17	18FEB17	81.7564	0.9948	1.2
123171520	113	27JAN17	08MAR17	83.0204	1.1791	1.4
123171530	20	31JAN17	09FEB17	80.9250	0.6439	0.8
123171540	48	16FEB17	21MAR17	81.6604	1.1663	1.4
123171550	21	23FEB17	27FEB17	82.7905	0.2998	0.4
123171570	57	13MAR17	18APR17	81.3930	1.2037	1.5
123171580	33	17MAR17	29MAR17	81.2212	0.7837	1.0
123171600	60	30MAR17	01MAY17	82.8917	1.4556	1.8
123171610	48	24APR17	26MAY17	82.4563	1.5695	1.9
123171630	37	24APR17	13MAY17	83.0135	0.5682	0.7
123171650	80	15MAY17	17JUN17	82.3275	1.2475	1.5
123171680	67	08JUN17	15JUL17	81.5761	0.7673	0.9
123171730	71	15JUL17	13AUG17	82.7620	0.7224	0.9
123171760	93	03AUG17	15SEP17	81.8108	1.1152	1.4
123171770	40	31AUG17	24SEP17	82.8750	1.1302	1.4
123171790	39	19SEP17	08OCT17	83.9308	0.7473	0.9
123171840	105	24SEP17	16NOV17	81.0771	1.0703	1.3
123171860	22	15OCT17	30OCT17	81.9318	0.3933	0.5
123171890	57	05NOV17	18DEC17	81.6070	1.2555	1.5
123171870	57	06NOV17	17DEC17	84.0684	0.9349	1.1
123171930	71	27NOV17	27JAN18	81.7648	0.9076	1.1
123171970	33	12JAN18	24JAN18	81.3970	0.2921	0.4
123171980	95	25JAN18	03MAR18	82.5095	0.9284	1.1
123172010	129	12FEB18	17MAR18	82.8984	0.9459	1.1
123172030	35	09MAR18	25MAR18	83.3743	0.4182	0.5
123172060	50	15MAR18	18APR18	81.2460	0.7161	0.9
123172080	58	02APR18	13MAY18	82.0310	0.7728	0.9
123172090	34	14APR18	29APR18	80.4529	0.3824	0.5
123172110	20	28APR18	05MAY18	81.5200	0.2628	0.3
123172120	53	01MAY18	11JUN18	81.0453	1.0018	1.2
123172140	54	22MAY18	30JUN18	83.7204	1.0680	1.3
123172150	20	01JUN18	07JUN18	81.1000	0.1747	0.2
123172160	50	12JUN18	21JUL18	83.0520	1.1836	1.4
123172210	44	18JUL18	15AUG18	82.1341	0.6534	0.8
123172220	39	20JUL18	07AUG18	84.1333	0.5012	0.6
123172240	94	08AUG18	21SEP18	83.6745	0.9635	1.2
123172260	49	28AUG18	07OCT18	84.0143	0.8259	1.0
123172270	26	07SEP18	24SEP18	82.3500	0.3797	0.5
123172300	85	25SEP18	29OCT18	82.5200	0.9337	1.1
123172310	49	08OCT18	17NOV18	83.2041	0.8162	1.0
123172320	30	19OCT18	05NOV18	81.2000	0.6497	0.8
123172340	60	02NOV18	07DEC18	83.0317	0.8296	1.0
123172380	71	20NOV18	12JAN19	81.6465	1.2293	1.5
123172400	20	11JAN19	19JAN19	83.2800	0.2505	0.3
123172430	16	17JAN19	20JAN19	81.4375	0.3138	0.4



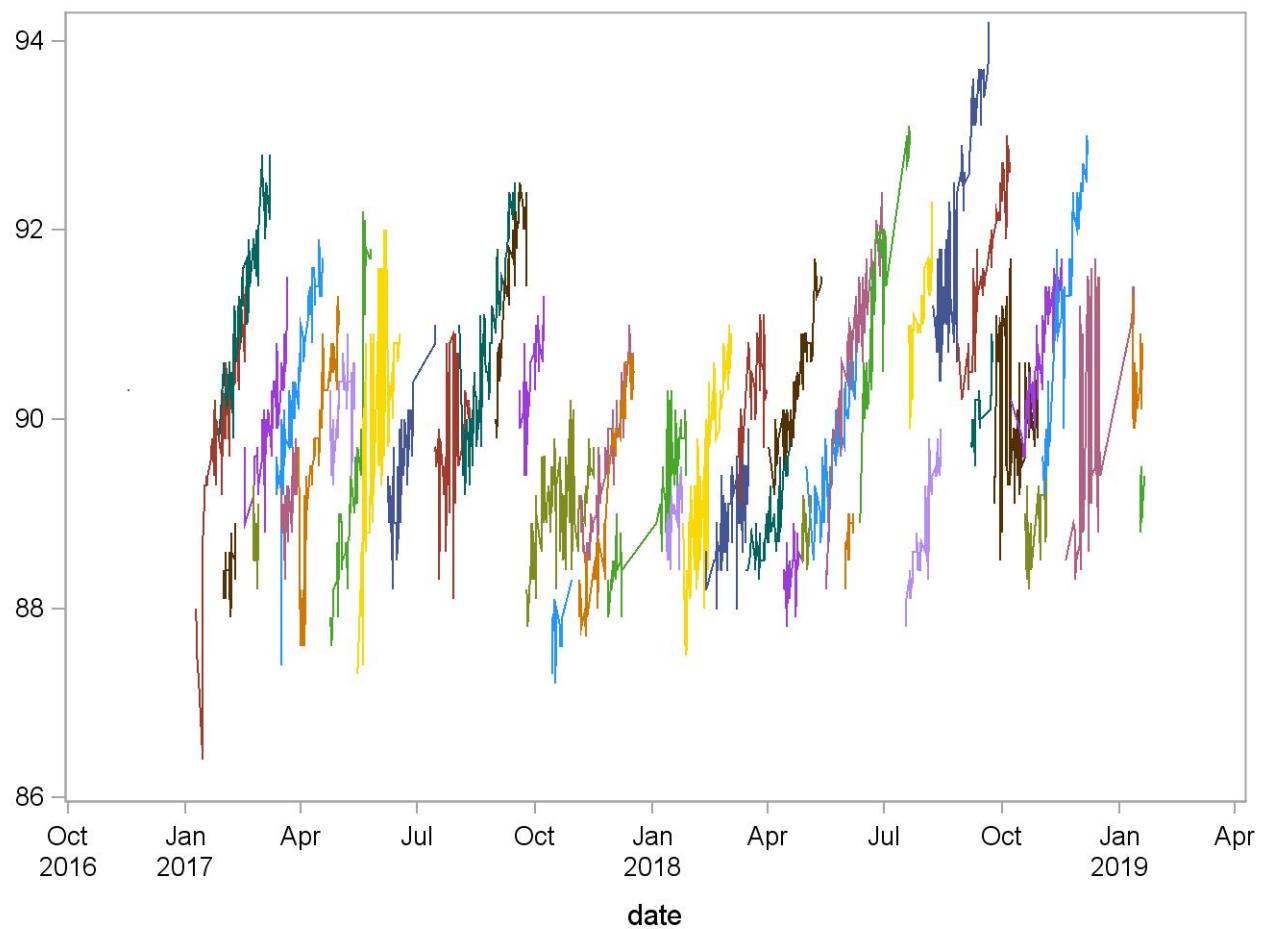
2017-2018 Summary Statistics and QC Chart for Mean cell volume (fL) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	89.7846	0.4059	0.5
133181500	78	09JAN17	18FEB17	89.0897	0.5344	0.6
133181520	97	27JAN17	08MAR17	91.0753	0.5341	0.6
133181530	20	31JAN17	09FEB17	89.1600	0.2415	0.3
133181540	50	16FEB17	21MAR17	89.7760	0.4618	0.5
133181550	20	23FEB17	02MAR17	89.8350	0.2059	0.2
133181570	57	13MAR17	18APR17	90.4035	0.6047	0.7
133181580	33	17MAR17	29MAR17	89.6242	0.3588	0.4
133181600	61	30MAR17	01MAY17	88.8246	0.9978	1.1
133181610	49	24APR17	26MAY17	90.5857	1.3670	1.5
133181630	37	24APR17	13MAY17	89.4622	0.3320	0.4
133181650	85	15MAY17	17JUN17	89.4871	1.1319	1.3
133181680	67	08JUN17	15JUL17	90.1269	0.4650	0.5
133181730	71	15JUL17	13AUG17	90.2535	0.5253	0.6
133181760	97	03AUG17	15SEP17	90.7753	0.7683	0.8
133181770	36	31AUG17	25SEP17	91.1528	0.6971	0.8
133181790	41	19SEP17	08OCT17	90.0220	0.4293	0.5
133181840	106	24SEP17	16NOV17	88.4274	0.4535	0.5
133181860	21	15OCT17	30OCT17	89.0619	0.1962	0.2
133181890	61	05NOV17	18DEC17	89.0738	0.9572	1.1
133181870	57	06NOV17	17DEC17	89.1175	0.5779	0.6
133181930	71	27NOV17	27JAN18	88.4620	0.5161	0.6
133181970	34	12JAN18	24JAN18	88.9676	0.2128	0.2
133181980	92	25JAN18	03MAR18	89.2913	0.8579	1.0
133182010	119	12FEB18	17MAR18	89.1261	0.4145	0.5
133182030	89	09MAR18	31MAR18	90.7449	0.4229	0.5
133182060	53	15MAR18	18APR18	88.5811	0.4109	0.5
133182080	57	02APR18	13MAY18	90.1596	0.5940	0.7
133182090	35	14APR18	29APR18	89.2914	0.3013	0.3
133182110	20	28APR18	05MAY18	90.1900	0.2770	0.3
133182120	55	01MAY18	11JUN18	88.6782	0.6166	0.7
133182140	55	17MAY18	30JUN18	90.4091	0.8147	0.9
133182150	21	01JUN18	07JUN18	90.4286	0.2217	0.2
133182160	51	12JUN18	21JUL18	90.9961	0.8015	0.9
133182210	44	18JUL18	15AUG18	89.9000	0.5486	0.6
133182220	40	20JUL18	07AUG18	90.7700	0.3770	0.4
133182240	96	08AUG18	21SEP18	90.9563	0.8444	0.9
133182260	49	28AUG18	07OCT18	92.3551	0.5272	0.6
133182270	26	07SEP18	24SEP18	89.6538	0.3361	0.4
133182300	90	25SEP18	29OCT18	90.1667	0.7500	0.8
133182310	47	08OCT18	17NOV18	89.8404	0.5323	0.6
133182320	30	19OCT18	05NOV18	89.3633	0.4514	0.5
133182350	60	02NOV18	07DEC18	90.5000	1.0037	1.1
133182390	71	20NOV18	12JAN19	89.3493	0.9270	1.0
133182400	20	11JAN19	19JAN19	88.8650	0.2455	0.3
133182430	18	17JAN19	20JAN19	88.0056	0.2733	0.3



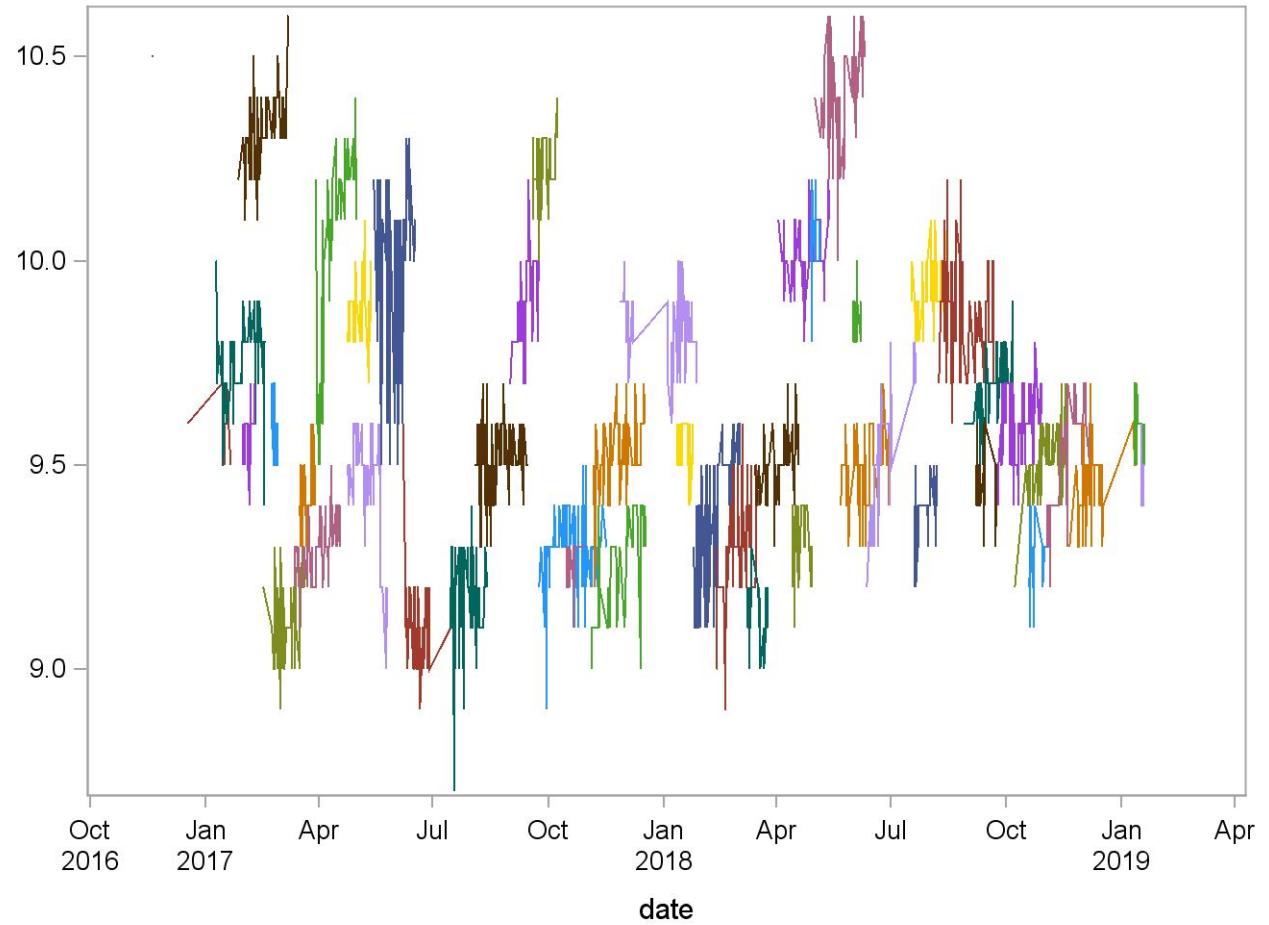
2017-2018 Summary Statistics and QC Chart for Mean cell volume (fL) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	89.8377	1.0195	1.1
143191520	58	27JAN17	08MAR17	91.3776	0.7753	0.8
143191530	20	31JAN17	09FEB17	88.3850	0.2739	0.3
143191540	47	16FEB17	21MAR17	89.9809	0.5628	0.6
143191550	21	23FEB17	27FEB17	88.7095	0.2587	0.3
143191570	56	13MAR17	18APR17	90.5089	0.8935	1.0
143191580	33	17MAR17	29MAR17	89.0636	0.3715	0.4
143191600	61	30MAR17	01MAY17	89.4131	1.1369	1.3
143191610	49	24APR17	26MAY17	89.4612	1.3078	1.5
143191630	38	24APR17	13MAY17	90.0974	0.3935	0.4
143191650	80	15MAY17	17JUN17	89.7800	1.1868	1.3
143191680	67	08JUN17	15JUL17	89.5030	0.5108	0.6
143191730	69	15JUL17	13AUG17	89.7464	0.6045	0.7
143191760	92	03AUG17	15SEP17	90.5130	0.8375	0.9
143191770	34	31AUG17	24SEP17	91.5588	0.6942	0.8
143191790	39	19SEP17	08OCT17	90.3436	0.4828	0.5
143191840	103	24SEP17	16NOV17	89.0757	0.4741	0.5
143191860	22	15OCT17	30OCT17	87.7045	0.2768	0.3
143191890	57	05NOV17	18DEC17	89.0947	1.0249	1.2
143191870	56	06NOV17	17DEC17	89.5375	0.6940	0.8
143191930	69	27NOV17	27JAN18	89.2000	0.6449	0.7
143191970	32	12JAN18	24JAN18	88.8938	0.2895	0.3
143191980	91	25JAN18	03MAR18	89.0901	0.9466	1.1
143192010	127	12FEB18	17MAR18	88.9394	0.4213	0.5
143192030	93	09MAR18	31MAR18	90.0774	0.5335	0.6
143192060	48	15MAR18	18APR18	88.9208	0.4267	0.5
143192080	58	02APR18	13MAY18	90.3741	0.6637	0.7
143192090	34	14APR18	29APR18	88.3735	0.2700	0.3
143192110	20	28APR18	05MAY18	88.7700	0.2273	0.3
143192120	52	01MAY18	11JUN18	89.7231	0.6758	0.8
143192140	54	17MAY18	30JUN18	90.8815	0.9163	1.0
143192150	21	01JUN18	07JUN18	88.7476	0.2182	0.2
143192160	51	12JUN18	21JUL18	91.2020	0.9937	1.1
143192210	43	18JUL18	15AUG18	88.8744	0.5666	0.6
143192220	39	20JUL18	07AUG18	91.0436	0.4406	0.5
143192240	92	08AUG18	21SEP18	91.9967	1.0472	1.1
143192260	50	28AUG18	07OCT18	91.6480	0.7028	0.8
143192270	26	07SEP18	24SEP18	90.0154	0.3541	0.4
143192300	87	25SEP18	29OCT18	90.1161	0.6842	0.8
143192310	47	08OCT18	17NOV18	90.7128	0.6106	0.7
143192320	30	19OCT18	05NOV18	88.8000	0.3543	0.4
143192340	61	02NOV18	07DEC18	90.9770	1.1759	1.3
143192380	72	20NOV18	12JAN19	90.1639	1.0840	1.2
143192400	20	11JAN19	19JAN19	90.4450	0.3531	0.4
143192430	18	17JAN19	20JAN19	89.2333	0.2029	0.2



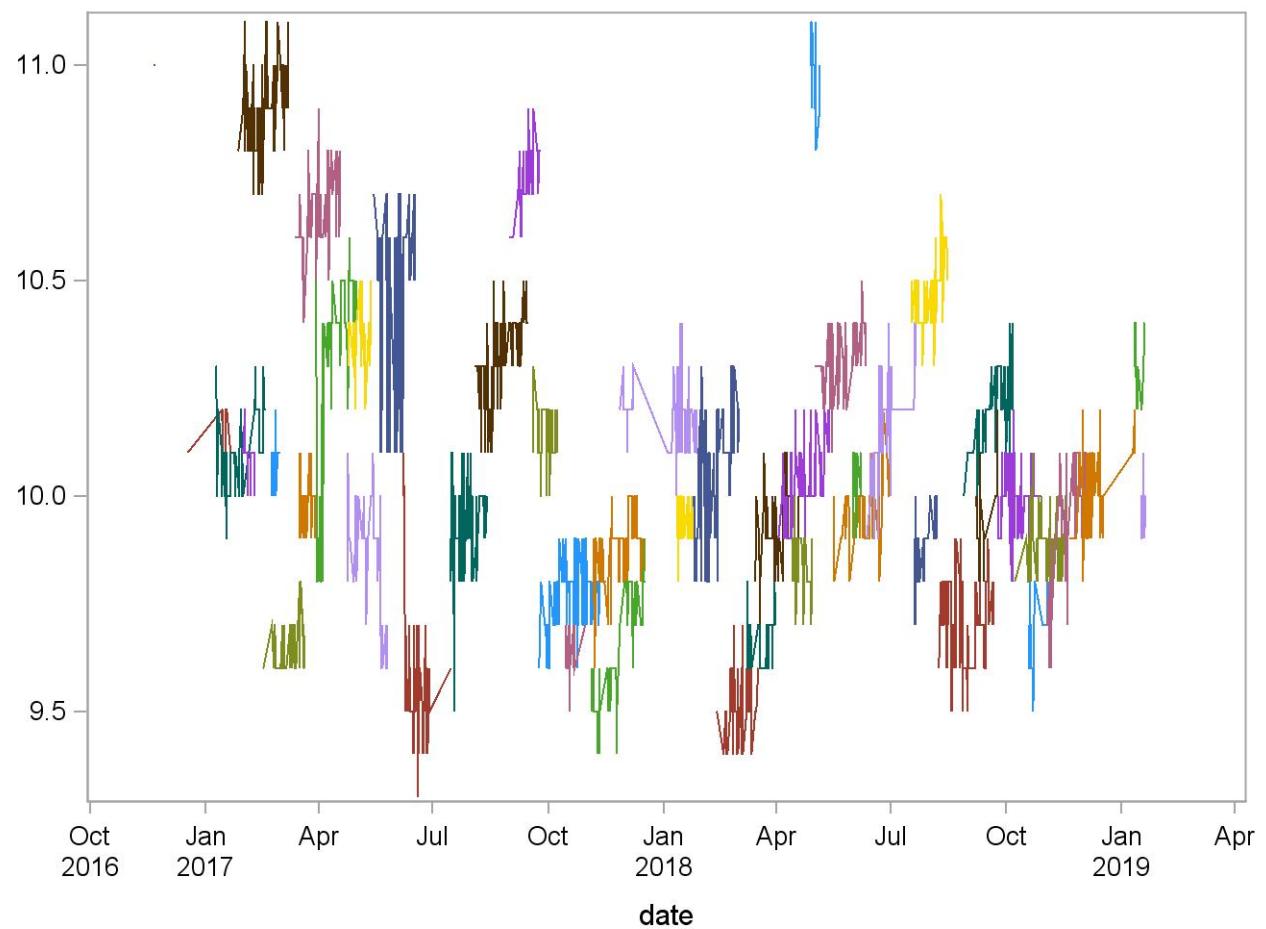
2017-2018 Summary Statistics and QC Chart for Mean platelet volume (fL) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	9.6083	0.0900	0.9
123171500	110	09JAN17	18FEB17	9.7582	0.0952	1.0
123171520	113	27JAN17	08MAR17	10.3265	0.0916	0.9
123171530	20	31JAN17	09FEB17	9.5650	0.0745	0.8
123171540	48	16FEB17	21MAR17	9.1292	0.1031	1.1
123171550	21	23FEB17	27FEB17	9.5810	0.0680	0.7
123171570	57	13MAR17	18APR17	9.2965	0.0801	0.9
123171580	33	17MAR17	29MAR17	9.4424	0.0751	0.8
123171600	60	30MAR17	01MAY17	9.9817	0.2783	2.8
123171610	48	24APR17	26MAY17	9.4354	0.1509	1.6
123171630	37	24APR17	13MAY17	9.8865	0.0787	0.8
123171650	80	15MAY17	17JUN17	9.9475	0.2170	2.2
123171680	67	08JUN17	15JUL17	9.1104	0.1089	1.2
123171730	71	15JUL17	13AUG17	9.1761	0.1101	1.2
123171760	93	03AUG17	15SEP17	9.5118	0.0883	0.9
123171770	40	31AUG17	24SEP17	9.8975	0.1143	1.2
123171790	39	19SEP17	08OCT17	10.2128	0.0833	0.8
123171840	105	24SEP17	16NOV17	9.2895	0.0919	1.0
123171860	22	15OCT17	30OCT17	9.2409	0.0590	0.6
123171890	57	05NOV17	18DEC17	9.2316	0.1311	1.4
123171870	57	06NOV17	17DEC17	9.5298	0.0944	1.0
123171930	71	27NOV17	27JAN18	9.8366	0.0898	0.9
123171970	33	12JAN18	24JAN18	9.5364	0.0603	0.6
123171980	95	25JAN18	03MAR18	9.3379	0.1586	1.7
123172010	129	12FEB18	17MAR18	9.3054	0.1141	1.2
123172030	35	09MAR18	25MAR18	9.1229	0.0646	0.7
123172060	50	15MAR18	18APR18	9.5080	0.0804	0.8
123172080	58	02APR18	13MAY18	10.0172	0.0775	0.8
123172090	34	14APR18	29APR18	9.3176	0.0869	0.9
123172110	20	28APR18	05MAY18	10.0500	0.0889	0.9
123172120	53	01MAY18	11JUN18	10.4075	0.1222	1.2
123172140	54	22MAY18	30JUN18	9.4889	0.0945	1.0
123172150	20	01JUN18	07JUN18	9.8700	0.0657	0.7
123172160	50	12JUN18	21JUL18	9.5120	0.1480	1.6
123172210	44	18JUL18	15AUG18	9.9273	0.0788	0.8
123172220	39	20JUL18	07AUG18	9.3769	0.0706	0.8
123172240	94	08AUG18	21SEP18	9.8702	0.1243	1.3
123172260	49	28AUG18	07OCT18	9.6980	0.0901	0.9
123172270	26	07SEP18	24SEP18	9.4654	0.0797	0.8
123172300	85	25SEP18	29OCT18	9.5953	0.0830	0.9
123172310	49	08OCT18	17NOV18	9.5061	0.0876	0.9
123172320	30	19OCT18	05NOV18	9.2800	0.0761	0.8
123172340	60	02NOV18	07DEC18	9.4967	0.1207	1.3
123172380	71	20NOV18	12JAN19	9.4648	0.0896	0.9
123172400	20	11JAN19	19JAN19	9.6000	0.0725	0.8
123172430	16	17JAN19	20JAN19	9.4750	0.0683	0.7



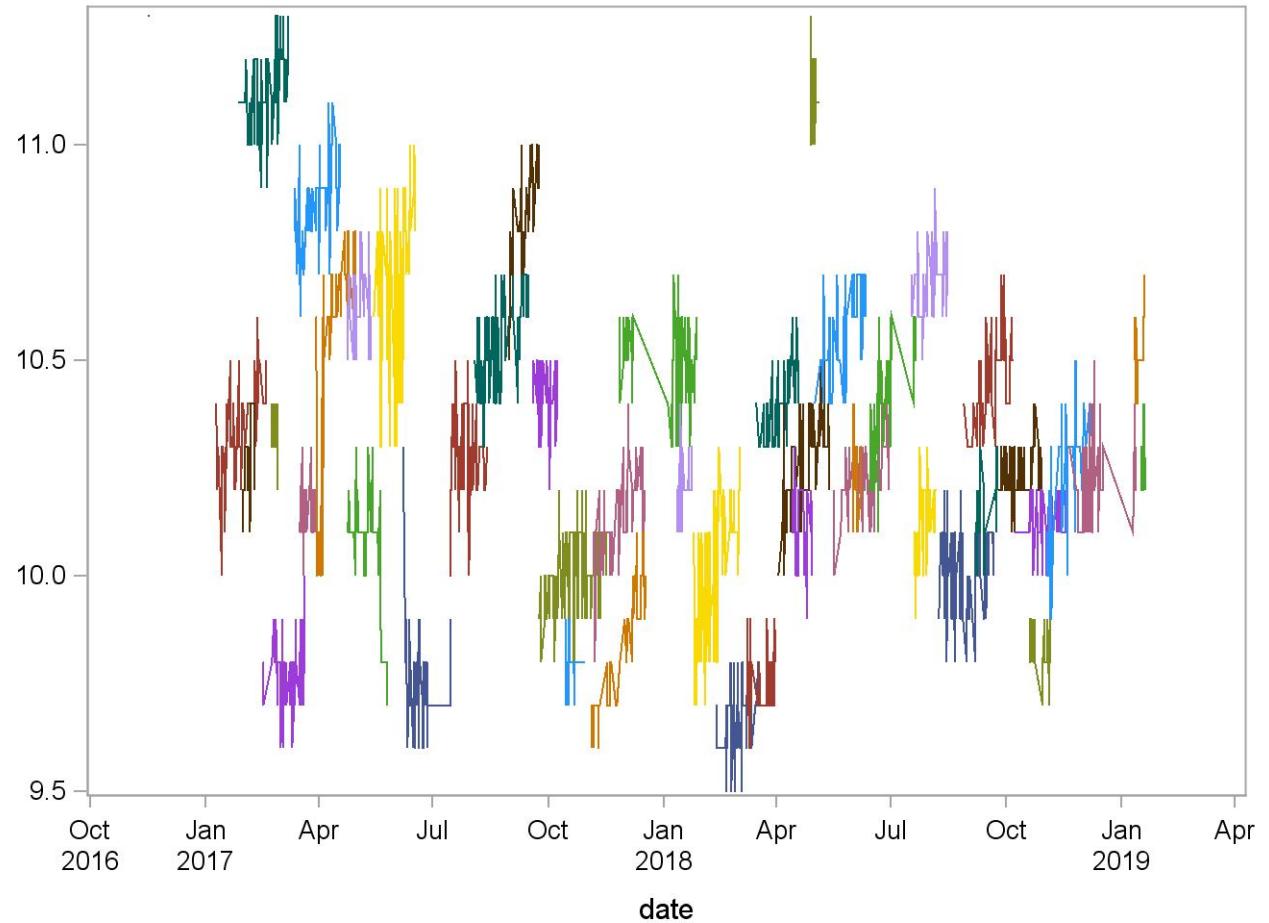
2017-2018 Summary Statistics and QC Chart for Mean platelet volume (fL) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	10.1385	0.0650	0.6
133181500	78	09JAN17	18FEB17	10.0974	0.0897	0.9
133181520	97	27JAN17	08MAR17	10.8938	0.1059	1.0
133181530	20	31JAN17	09FEB17	10.0950	0.0510	0.5
133181540	50	16FEB17	21MAR17	9.6540	0.0613	0.6
133181550	20	23FEB17	02MAR17	10.0850	0.0489	0.5
133181570	57	13MAR17	18APR17	10.6614	0.0940	0.9
133181580	33	17MAR17	29MAR17	9.9818	0.0635	0.6
133181600	61	30MAR17	01MAY17	10.2295	0.2610	2.6
133181610	49	24APR17	26MAY17	9.8653	0.1300	1.3
133181630	37	24APR17	13MAY17	10.3703	0.0702	0.7
133181650	85	15MAY17	17JUN17	10.4612	0.2007	1.9
133181680	67	08JUN17	15JUL17	9.5597	0.1244	1.3
133181730	71	15JUL17	13AUG17	9.9423	0.1009	1.0
133181760	97	03AUG17	15SEP17	10.3093	0.0914	0.9
133181770	36	31AUG17	25SEP17	10.7222	0.0866	0.8
133181790	41	19SEP17	08OCT17	10.1463	0.0711	0.7
133181840	106	24SEP17	16NOV17	9.7679	0.0834	0.9
133181860	21	15OCT17	30OCT17	9.6333	0.0577	0.6
133181890	61	05NOV17	18DEC17	9.6246	0.1312	1.4
133181870	57	06NOV17	17DEC17	9.8667	0.0809	0.8
133181930	71	27NOV17	27JAN18	10.1817	0.0816	0.8
133181970	34	12JAN18	24JAN18	9.9353	0.0544	0.5
133181980	92	25JAN18	03MAR18	10.0283	0.1424	1.4
133182010	119	12FEB18	17MAR18	9.5134	0.0724	0.8
133182030	89	09MAR18	31MAR18	9.6618	0.0574	0.6
133182060	53	15MAR18	18APR18	9.9245	0.0806	0.8
133182080	57	02APR18	13MAY18	10.0386	0.0921	0.9
133182090	35	14APR18	29APR18	9.8429	0.0739	0.8
133182110	20	28APR18	05MAY18	10.9800	0.0834	0.8
133182120	55	01MAY18	11JUN18	10.3200	0.0826	0.8
133182140	55	17MAY18	30JUN18	9.9691	0.0858	0.9
133182150	21	01JUN18	07JUN18	10.0381	0.0669	0.7
133182160	51	12JUN18	21JUL18	10.1157	0.1405	1.4
133182210	44	18JUL18	15AUG18	10.4727	0.0872	0.8
133182220	40	20JUL18	07AUG18	9.8850	0.0736	0.7
133182240	96	08AUG18	21SEP18	9.7083	0.0914	0.9
133182260	49	28AUG18	07OCT18	10.1878	0.0904	0.9
133182270	26	07SEP18	24SEP18	9.9423	0.0902	0.9
133182300	90	25SEP18	29OCT18	9.9922	0.0768	0.8
133182310	47	08OCT18	17NOV18	9.8894	0.0729	0.7
133182320	30	19OCT18	05NOV18	9.6700	0.0750	0.8
133182350	60	02NOV18	07DEC18	9.8867	0.1610	1.6
133182390	71	20NOV18	12JAN19	10.0183	0.0816	0.8
133182400	20	11JAN19	19JAN19	10.3100	0.0718	0.7
133182430	18	17JAN19	20JAN19	9.9778	0.0548	0.5



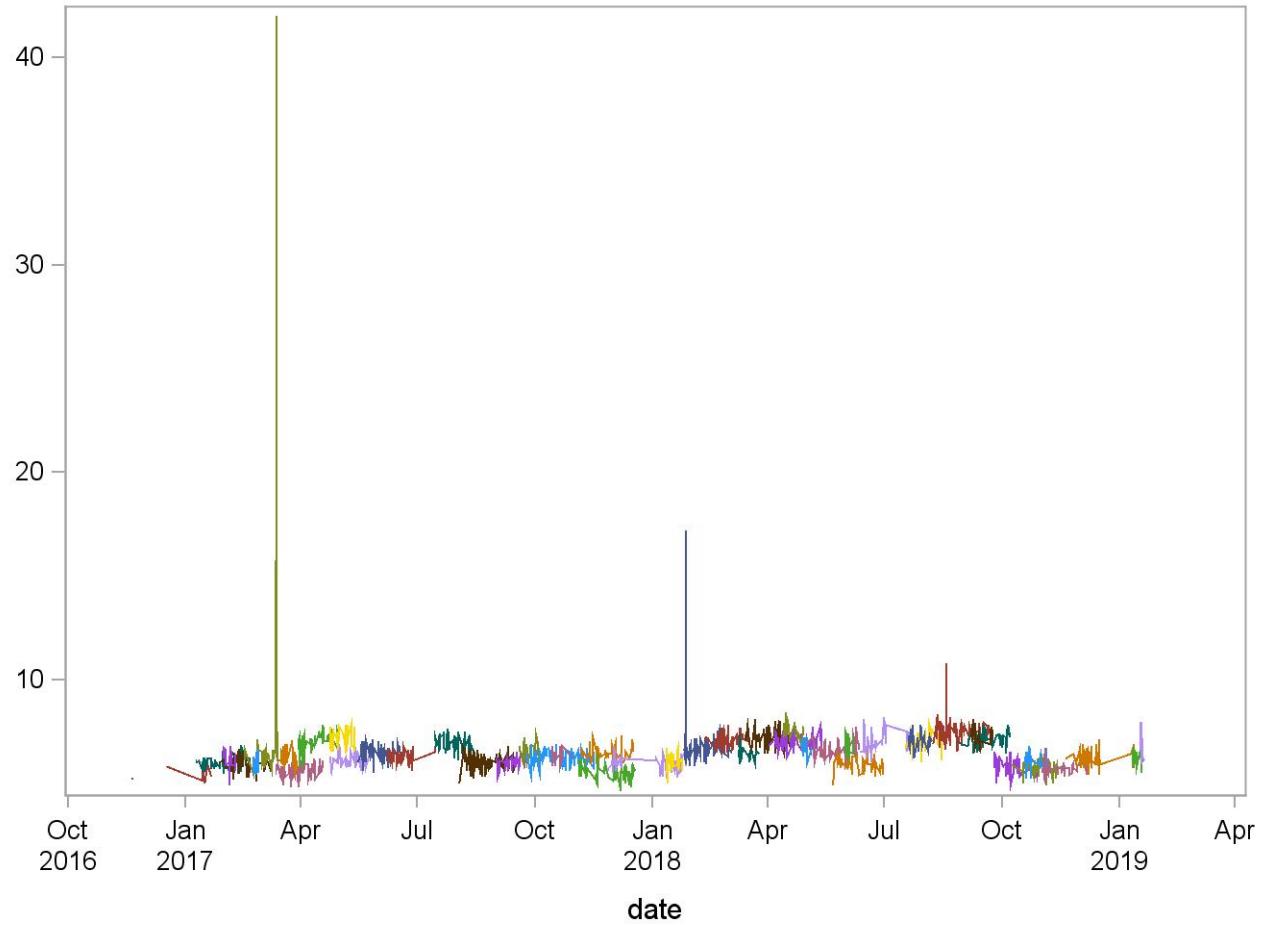
2017-2018 Summary Statistics and QC Chart for Mean platelet volume (fL) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	10.3491	0.1120	1.1
143191520	58	27JAN17	08MAR17	11.1207	0.1005	0.9
143191530	20	31JAN17	09FEB17	10.2650	0.0933	0.9
143191540	47	16FEB17	21MAR17	9.7787	0.0858	0.9
143191550	21	23FEB17	27FEB17	10.3190	0.0512	0.5
143191570	56	13MAR17	18APR17	10.8661	0.1066	1.0
143191580	33	17MAR17	29MAR17	10.1576	0.0663	0.7
143191600	61	30MAR17	01MAY17	10.4672	0.2959	2.8
143191610	49	24APR17	26MAY17	10.0510	0.1474	1.5
143191630	38	24APR17	13MAY17	10.6263	0.0860	0.8
143191650	80	15MAY17	17JUN17	10.6638	0.1924	1.8
143191680	67	08JUN17	15JUL17	9.7522	0.1223	1.3
143191730	69	15JUL17	13AUG17	10.2623	0.1030	1.0
143191760	92	03AUG17	15SEP17	10.5228	0.1028	1.0
143191770	34	31AUG17	24SEP17	10.8471	0.1161	1.1
143191790	39	19SEP17	08OCT17	10.4077	0.0774	0.7
143191840	103	24SEP17	16NOV17	9.9981	0.0918	0.9
143191860	22	15OCT17	30OCT17	9.8000	0.0617	0.6
143191890	57	05NOV17	18DEC17	9.8088	0.1418	1.4
143191870	56	06NOV17	17DEC17	10.1357	0.1017	1.0
143191930	69	27NOV17	27JAN18	10.4913	0.1081	1.0
143191970	32	12JAN18	24JAN18	10.2125	0.0660	0.6
143191980	91	25JAN18	03MAR18	9.9791	0.1581	1.6
143192010	127	12FEB18	17MAR18	9.6748	0.0806	0.8
143192030	93	09MAR18	31MAR18	9.7495	0.0746	0.8
143192060	48	15MAR18	18APR18	10.3958	0.0849	0.8
143192080	58	02APR18	13MAY18	10.2724	0.1196	1.2
143192090	34	14APR18	29APR18	10.1059	0.0851	0.8
143192110	20	28APR18	05MAY18	11.1300	0.0865	0.8
143192120	52	01MAY18	11JUN18	10.5615	0.0993	0.9
143192140	54	17MAY18	30JUN18	10.2241	0.0823	0.8
143192150	21	01JUN18	07JUN18	10.2571	0.0811	0.8
143192160	51	12JUN18	21JUL18	10.3725	0.1372	1.3
143192210	43	18JUL18	15AUG18	10.6884	0.0823	0.8
143192220	39	20JUL18	07AUG18	10.1077	0.0957	0.9
143192240	92	08AUG18	21SEP18	9.9978	0.0983	1.0
143192260	50	28AUG18	07OCT18	10.4600	0.1010	1.0
143192270	26	07SEP18	24SEP18	10.1500	0.0906	0.9
143192300	87	25SEP18	29OCT18	10.2368	0.0612	0.6
143192310	47	08OCT18	17NOV18	10.1277	0.0649	0.6
143192320	30	19OCT18	05NOV18	9.8400	0.0621	0.6
143192340	61	02NOV18	07DEC18	10.2000	0.1549	1.5
143192380	72	20NOV18	12JAN19	10.2167	0.0888	0.9
143192400	20	11JAN19	19JAN19	10.5150	0.0813	0.8
143192430	18	17JAN19	20JAN19	10.2611	0.0698	0.7



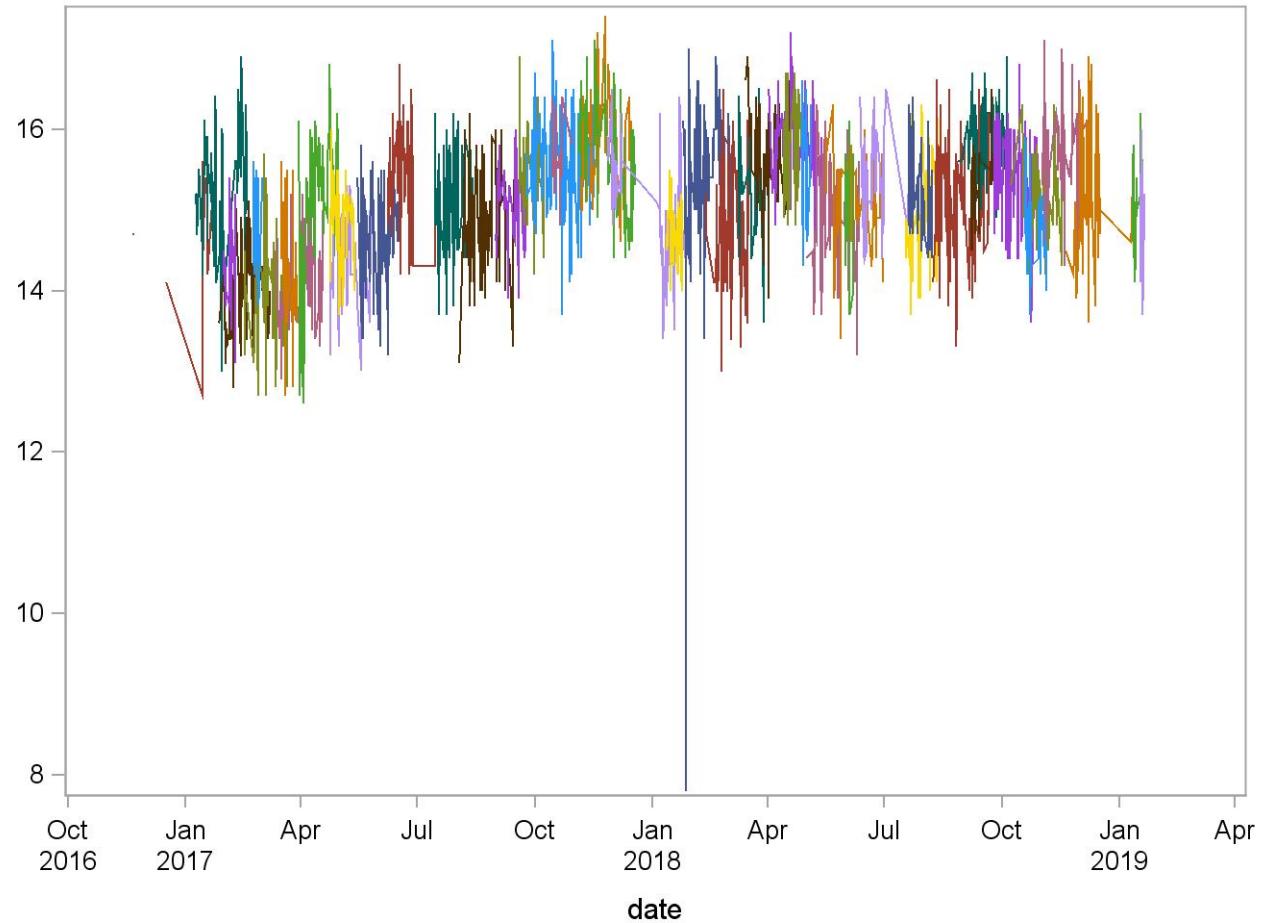
2017-2018 Summary Statistics and QC Chart for Monocyte (%) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	5.4833	0.3486	6.4
123171500	110	09JAN17	18FEB17	6.0091	0.2843	4.7
123171520	113	27JAN17	08MAR17	5.9044	0.3144	5.3
123171530	20	31JAN17	09FEB17	6.0950	0.4322	7.1
123171540	48	16FEB17	21MAR17	7.0583	5.1650	73.2
123171550	21	23FEB17	27FEB17	5.9095	0.3434	5.8
123171570	57	13MAR17	18APR17	5.5982	0.3383	6.0
123171580	33	17MAR17	29MAR17	6.2697	0.3972	6.3
123171600	60	30MAR17	01MAY17	6.9383	0.4400	6.3
123171610	48	24APR17	26MAY17	6.1167	0.3224	5.3
123171630	37	24APR17	13MAY17	7.1459	0.4292	6.0
123171650	80	15MAY17	17JUN17	6.4913	0.3544	5.5
123171680	67	08JUN17	15JUL17	6.2701	0.2714	4.3
123171730	71	15JUL17	13AUG17	6.9042	0.3387	4.9
123171760	93	03AUG17	15SEP17	6.0161	0.3812	6.3
123171770	40	31AUG17	24SEP17	6.0100	0.2827	4.7
123171790	39	19SEP17	08OCT17	6.4949	0.3509	5.4
123171840	105	24SEP17	16NOV17	6.2257	0.3184	5.1
123171860	22	15OCT17	30OCT17	6.3136	0.3182	5.0
123171890	57	05NOV17	18DEC17	5.5070	0.3639	6.6
123171870	57	06NOV17	17DEC17	6.4263	0.3160	4.9
123171930	71	27NOV17	27JAN18	6.0352	0.8184	13.6
123171970	33	12JAN18	24JAN18	6.0303	0.3845	6.4
123171980	95	25JAN18	03MAR18	6.7179	1.1402	17.0
123172010	129	12FEB18	17MAR18	7.0411	0.3028	4.3
123172030	35	09MAR18	25MAR18	6.4600	0.3256	5.0
123172060	50	15MAR18	18APR18	7.1340	0.4420	6.2
123172080	58	02APR18	13MAY18	6.9983	0.3426	4.9
123172090	34	14APR18	29APR18	7.5676	0.3715	4.9
123172110	20	28APR18	05MAY18	6.6900	0.3059	4.6
123172120	53	01MAY18	11JUN18	6.6132	0.3711	5.6
123172140	54	22MAY18	30JUN18	5.9148	0.3472	5.9
123172150	20	01JUN18	07JUN18	6.8250	0.4399	6.4
123172160	50	12JUN18	21JUL18	7.0780	0.4301	6.1
123172210	44	18JUL18	15AUG18	7.0500	0.4134	5.9
123172220	39	20JUL18	07AUG18	7.0513	0.3251	4.6
123172240	94	08AUG18	21SEP18	7.5309	0.5057	6.7
123172260	49	28AUG18	07OCT18	7.1306	0.3362	4.7
123172270	26	07SEP18	24SEP18	7.3038	0.3779	5.2
123172300	84	25SEP18	29OCT18	5.8179	0.3547	6.1
123172310	49	08OCT18	17NOV18	5.6857	0.3116	5.5
123172320	30	19OCT18	05NOV18	6.0900	0.3968	6.5
123172340	60	02NOV18	07DEC18	5.7567	0.3055	5.3
123172380	71	20NOV18	12JAN19	6.1930	0.3770	6.1
123172400	20	11JAN19	19JAN19	6.2250	0.3567	5.7
123172430	16	17JAN19	20JAN19	6.8500	0.5680	8.3



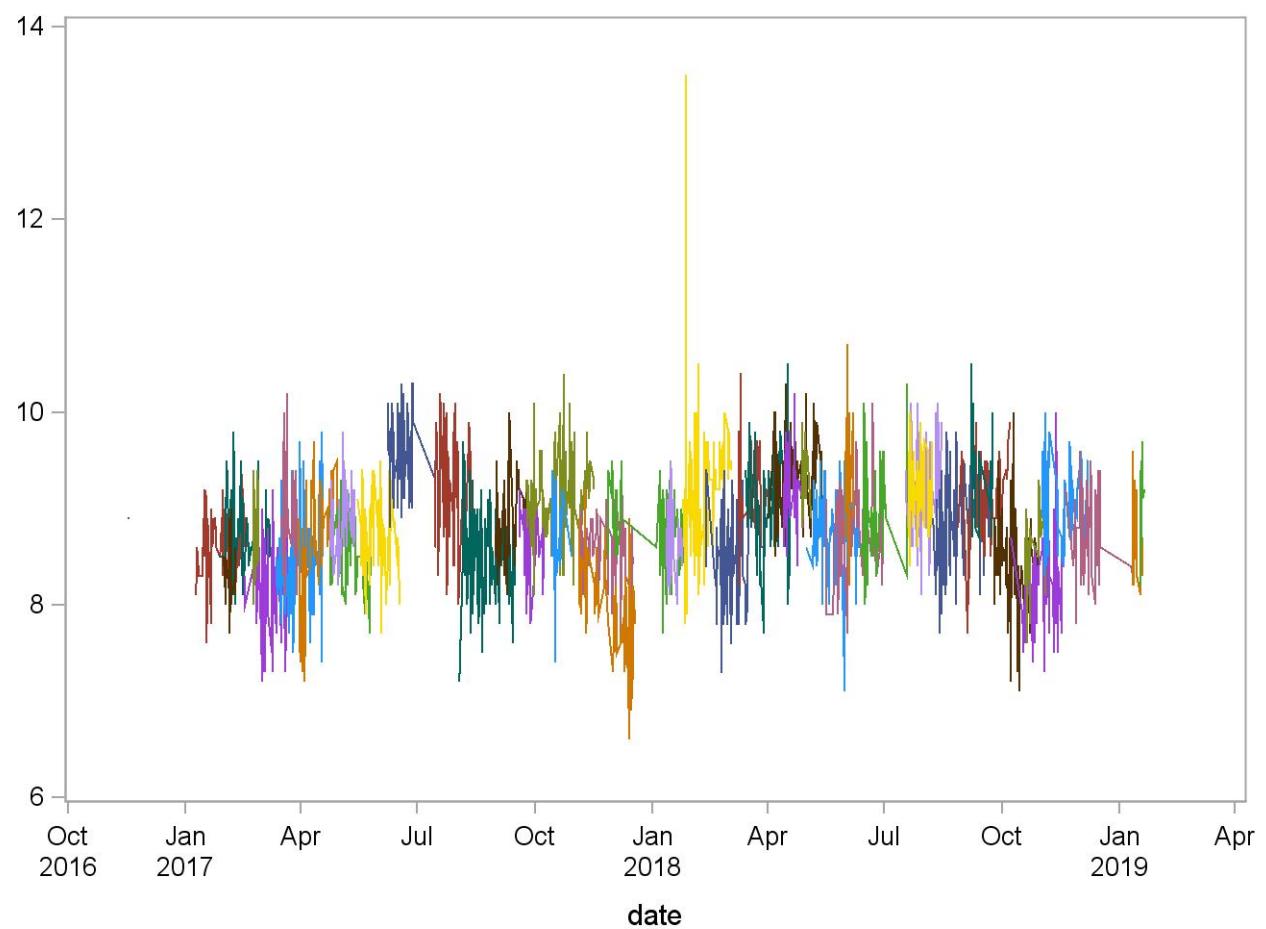
2017-2018 Summary Statistics and QC Chart for Monocyte (%) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	14.7231	0.7661	5.2
133181500	78	09JAN17	18FEB17	15.2321	0.7455	4.9
133181520	97	27JAN17	08MAR17	14.0474	0.5775	4.1
133181530	20	31JAN17	09FEB17	14.2800	0.5662	4.0
133181540	50	16FEB17	21MAR17	13.9780	0.6762	4.8
133181550	20	23FEB17	02MAR17	14.7700	0.5411	3.7
133181570	57	13MAR17	18APR17	14.1667	0.5604	4.0
133181580	33	17MAR17	29MAR17	14.2818	0.7073	5.0
133181600	61	30MAR17	01MAY17	14.8361	1.0742	7.2
133181610	49	24APR17	26MAY17	14.4102	0.6121	4.2
133181630	37	24APR17	13MAY17	14.9081	0.5008	3.4
133181650	85	15MAY17	17JUN17	14.6918	0.5923	4.0
133181680	67	08JUN17	15JUL17	15.5194	0.5671	3.7
133181730	71	15JUL17	13AUG17	15.0662	0.6304	4.2
133181760	97	03AUG17	15SEP17	14.8454	0.6038	4.1
133181770	36	31AUG17	25SEP17	15.0611	0.4924	3.3
133181790	41	19SEP17	08OCT17	15.4390	0.5495	3.6
133181840	106	24SEP17	16NOV17	15.5396	0.6036	3.9
133181860	21	15OCT17	30OCT17	15.7286	0.4429	2.8
133181890	61	05NOV17	18DEC17	15.6869	0.6355	4.1
133181870	57	06NOV17	17DEC17	15.8526	0.5813	3.7
133181930	71	27NOV17	27JAN18	14.7775	1.1704	7.9
133181970	34	12JAN18	24JAN18	14.7559	0.4439	3.0
133181980	92	25JAN18	03MAR18	15.3185	1.0394	6.8
133182010	119	12FEB18	17MAR18	14.7118	0.7407	5.0
133182030	89	09MAR18	31MAR18	15.3933	0.5265	3.4
133182060	53	15MAR18	18APR18	15.7057	0.5783	3.7
133182080	57	02APR18	13MAY18	15.7825	0.5000	3.2
133182090	35	14APR18	29APR18	15.6771	0.6098	3.9
133182110	20	28APR18	05MAY18	15.5250	0.6398	4.1
133182120	55	01MAY18	11JUN18	14.7945	0.6410	4.3
133182140	55	17MAY18	30JUN18	15.1218	0.5616	3.7
133182150	21	01JUN18	07JUN18	14.9952	0.5826	3.9
133182160	51	12JUN18	21JUL18	15.3490	0.5424	3.5
133182210	44	18JUL18	15AUG18	14.9545	0.6736	4.5
133182220	40	20JUL18	07AUG18	15.2750	0.5504	3.6
133182240	96	08AUG18	21SEP18	15.1177	0.6795	4.5
133182260	49	28AUG18	07OCT18	15.8082	0.5263	3.3
133182270	26	07SEP18	24SEP18	15.3077	0.4758	3.1
133182300	89	25SEP18	29OCT18	15.4180	0.5828	3.8
133182310	47	08OCT18	17NOV18	15.2149	0.5133	3.4
133182320	30	19OCT18	05NOV18	14.7800	0.5068	3.4
133182350	60	02NOV18	07DEC18	15.6733	0.5836	3.7
133182390	71	20NOV18	12JAN19	15.3577	0.7143	4.7
133182400	20	11JAN19	19JAN19	15.1250	0.5437	3.6
133182430	18	17JAN19	20JAN19	15.0000	0.5980	4.0



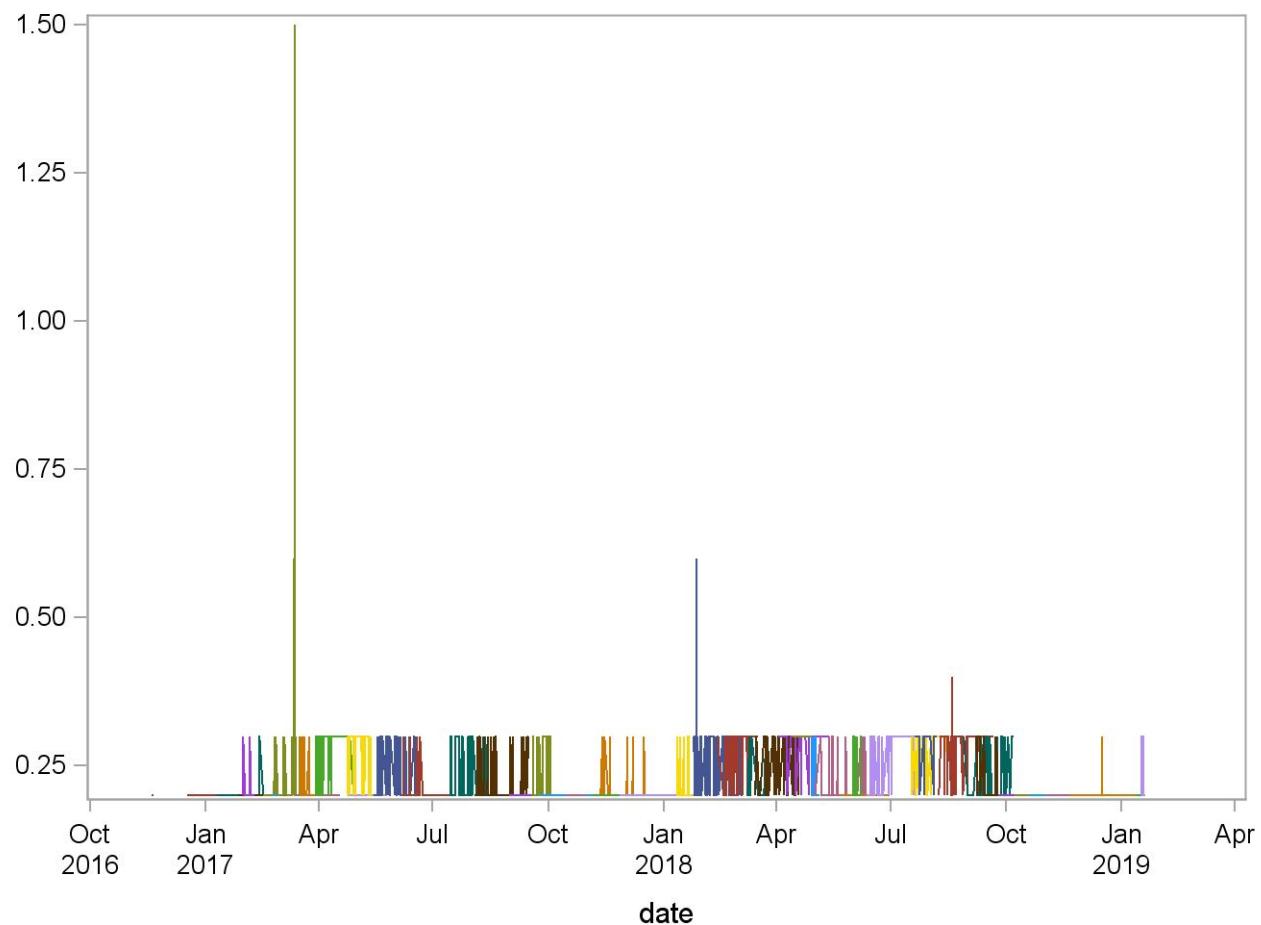
2017-2018 Summary Statistics and QC Chart for Monocyte (%) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	8.6208	0.3516	4.1
143191520	58	27JAN17	08MAR17	8.6724	0.4200	4.8
143191530	20	31JAN17	09FEB17	8.3100	0.3432	4.1
143191540	47	16FEB17	21MAR17	8.0745	0.4954	6.1
143191550	21	23FEB17	27FEB17	8.7952	0.4006	4.6
143191570	56	13MAR17	18APR17	8.4821	0.5316	6.3
143191580	33	17MAR17	29MAR17	9.1091	0.5033	5.5
143191600	61	30MAR17	01MAY17	8.5672	0.6397	7.5
143191610	49	24APR17	26MAY17	8.5408	0.3517	4.1
143191630	38	24APR17	13MAY17	8.8763	0.3522	4.0
143191650	80	15MAY17	17JUN17	8.7163	0.3925	4.5
143191680	67	08JUN17	15JUL17	9.5343	0.3625	3.8
143191730	69	15JUL17	13AUG17	9.1841	0.5147	5.6
143191760	92	03AUG17	15SEP17	8.5217	0.4516	5.3
143191770	34	31AUG17	24SEP17	8.8706	0.4596	5.2
143191790	39	19SEP17	08OCT17	8.6718	0.3137	3.6
143191840	103	24SEP17	16NOV17	9.1301	0.4374	4.8
143191860	22	15OCT17	30OCT17	8.6864	0.4497	5.2
143191890	57	05NOV17	18DEC17	7.9807	0.5019	6.3
143191870	56	06NOV17	17DEC17	8.5982	0.3550	4.1
143191930	69	27NOV17	27JAN18	8.8101	0.3723	4.2
143191970	32	12JAN18	24JAN18	8.6219	0.3608	4.2
143191980	91	25JAN18	03MAR18	9.1429	0.6838	7.5
143192010	127	12FEB18	17MAR18	8.4835	0.4625	5.5
143192030	93	09MAR18	31MAR18	9.1323	0.4307	4.7
143192060	48	15MAR18	18APR18	9.0250	0.5448	6.0
143192080	58	02APR18	13MAY18	9.3500	0.4248	4.5
143192090	34	14APR18	29APR18	9.2441	0.3994	4.3
143192110	20	28APR18	05MAY18	9.3200	0.3222	3.5
143192120	52	01MAY18	11JUN18	8.7538	0.4759	5.4
143192140	54	17MAY18	30JUN18	8.8000	0.5114	5.8
143192150	21	01JUN18	07JUN18	9.2619	0.5792	6.3
143192160	51	12JUN18	21JUL18	8.9647	0.4787	5.3
143192210	43	18JUL18	15AUG18	9.1907	0.5318	5.8
143192220	39	20JUL18	07AUG18	9.2077	0.3989	4.3
143192240	92	08AUG18	21SEP18	8.8674	0.4360	4.9
143192260	50	28AUG18	07OCT18	9.1560	0.4291	4.7
143192270	26	07SEP18	24SEP18	9.3538	0.4384	4.7
143192300	86	25SEP18	29OCT18	8.3465	0.4872	5.8
143192310	47	08OCT18	17NOV18	8.2553	0.5073	6.1
143192320	30	19OCT18	05NOV18	8.5800	0.3498	4.1
143192340	61	02NOV18	07DEC18	9.0557	0.4141	4.6
143192380	72	20NOV18	12JAN19	8.7875	0.3738	4.3
143192400	20	11JAN19	19JAN19	8.6300	0.3881	4.5
143192430	18	17JAN19	20JAN19	9.0778	0.3388	3.7



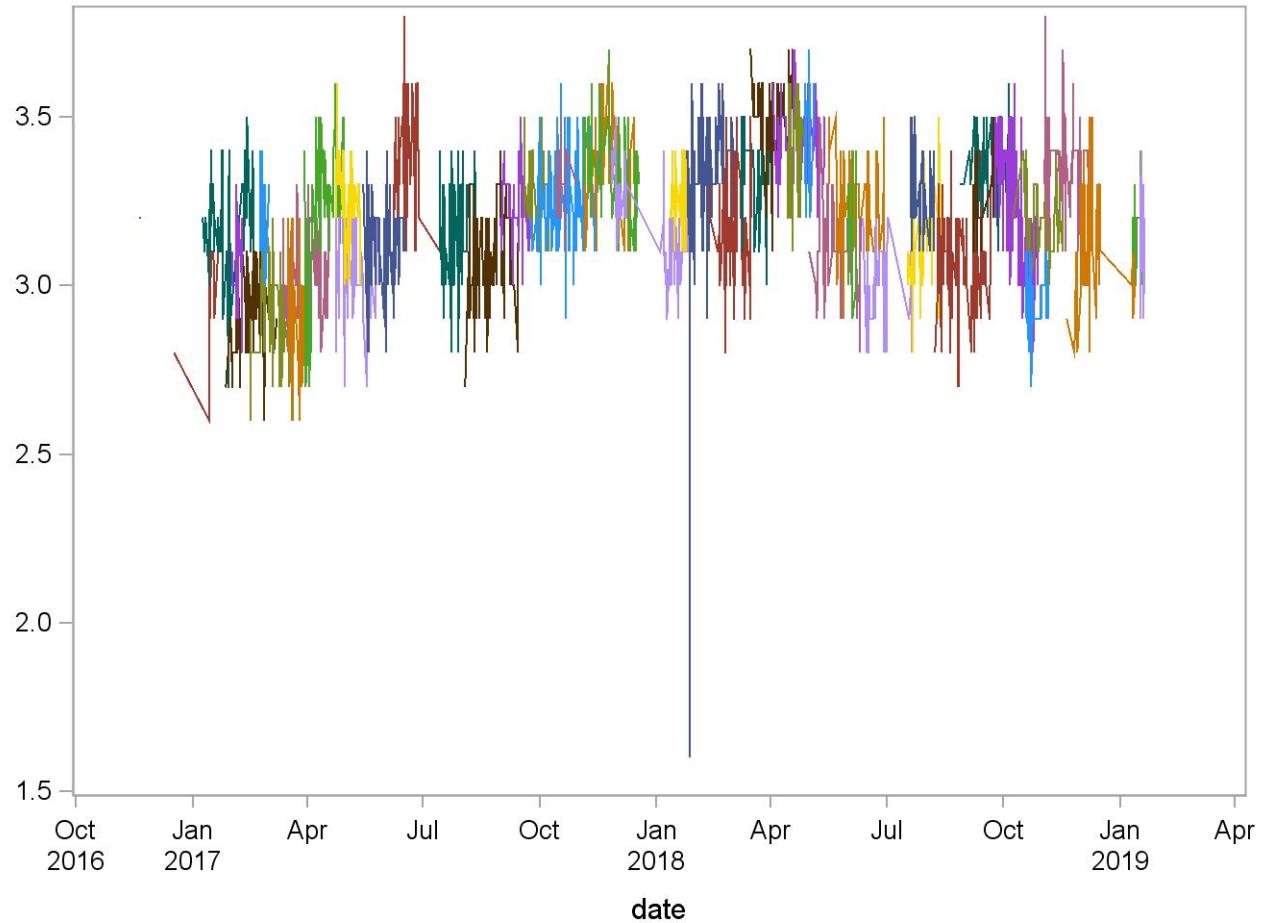
2017-2018 Summary Statistics and QC Chart for Monocyte No.(10³ cells/uL) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	0.2000	0.0000	0.0
123171500	110	09JAN17	18FEB17	0.2018	0.0134	6.7
123171520	113	27JAN17	08MAR17	0.2000	0.0000	0.0
123171530	20	31JAN17	09FEB17	0.2100	0.0308	14.7
123171540	48	16FEB17	21MAR17	0.2438	0.1890	77.5
123171550	21	23FEB17	27FEB17	0.2000	0.0000	0.0
123171570	57	13MAR17	18APR17	0.2000	0.0000	0.0
123171580	33	17MAR17	29MAR17	0.2152	0.0364	16.9
123171600	60	30MAR17	01MAY17	0.2733	0.0446	16.3
123171610	48	24APR17	26MAY17	0.2000	0.0000	0.0
123171630	37	24APR17	13MAY17	0.2703	0.0463	17.1
123171650	80	15MAY17	17JUN17	0.2388	0.0490	20.5
123171680	67	08JUN17	15JUL17	0.2075	0.0265	12.8
123171730	71	15JUL17	13AUG17	0.2338	0.0476	20.4
123171760	93	03AUG17	15SEP17	0.2172	0.0379	17.5
123171770	40	31AUG17	24SEP17	0.2025	0.0158	7.8
123171790	39	19SEP17	08OCT17	0.2308	0.0468	20.3
123171840	105	24SEP17	16NOV17	0.2000	0.0000	0.0
123171860	22	15OCT17	30OCT17	0.2000	0.0000	0.0
123171890	57	05NOV17	18DEC17	0.2000	0.0000	0.0
123171870	57	06NOV17	17DEC17	0.2105	0.0310	14.7
123171930	71	27NOV17	27JAN18	0.2056	0.0333	16.2
123171970	33	12JAN18	24JAN18	0.2152	0.0364	16.9
123171980	95	25JAN18	03MAR18	0.2484	0.0616	24.8
123172010	129	12FEB18	17MAR18	0.2760	0.0429	15.5
123172030	35	09MAR18	25MAR18	0.2143	0.0355	16.6
123172060	50	15MAR18	18APR18	0.2620	0.0490	18.7
123172080	58	02APR18	13MAY18	0.2931	0.0256	8.7
123172090	34	14APR18	29APR18	0.3000	0.0000	0.0
123172110	20	28APR18	05MAY18	0.2200	0.0410	18.7
123172120	53	01MAY18	11JUN18	0.2226	0.0423	19.0
123172140	54	22MAY18	30JUN18	0.2019	0.0136	6.7
123172150	20	01JUN18	07JUN18	0.2450	0.0510	20.8
123172160	50	12JUN18	21JUL18	0.2620	0.0490	18.7
123172210	44	18JUL18	15AUG18	0.2773	0.0424	15.3
123172220	39	20JUL18	07AUG18	0.2923	0.0270	9.2
123172240	94	08AUG18	21SEP18	0.2872	0.0366	12.7
123172260	49	28AUG18	07OCT18	0.2408	0.0497	20.6
123172270	26	07SEP18	24SEP18	0.2615	0.0496	19.0
123172300	84	25SEP18	29OCT18	0.2000	0.0000	0.0
123172310	49	08OCT18	17NOV18	0.2000	0.0000	0.0
123172320	30	19OCT18	05NOV18	0.2000	0.0000	0.0
123172340	60	02NOV18	07DEC18	0.2000	0.0000	0.0
123172380	71	20NOV18	12JAN19	0.2014	0.0119	5.9
123172400	20	11JAN19	19JAN19	0.2000	0.0000	0.0
123172430	16	17JAN19	20JAN19	0.2188	0.0403	18.4



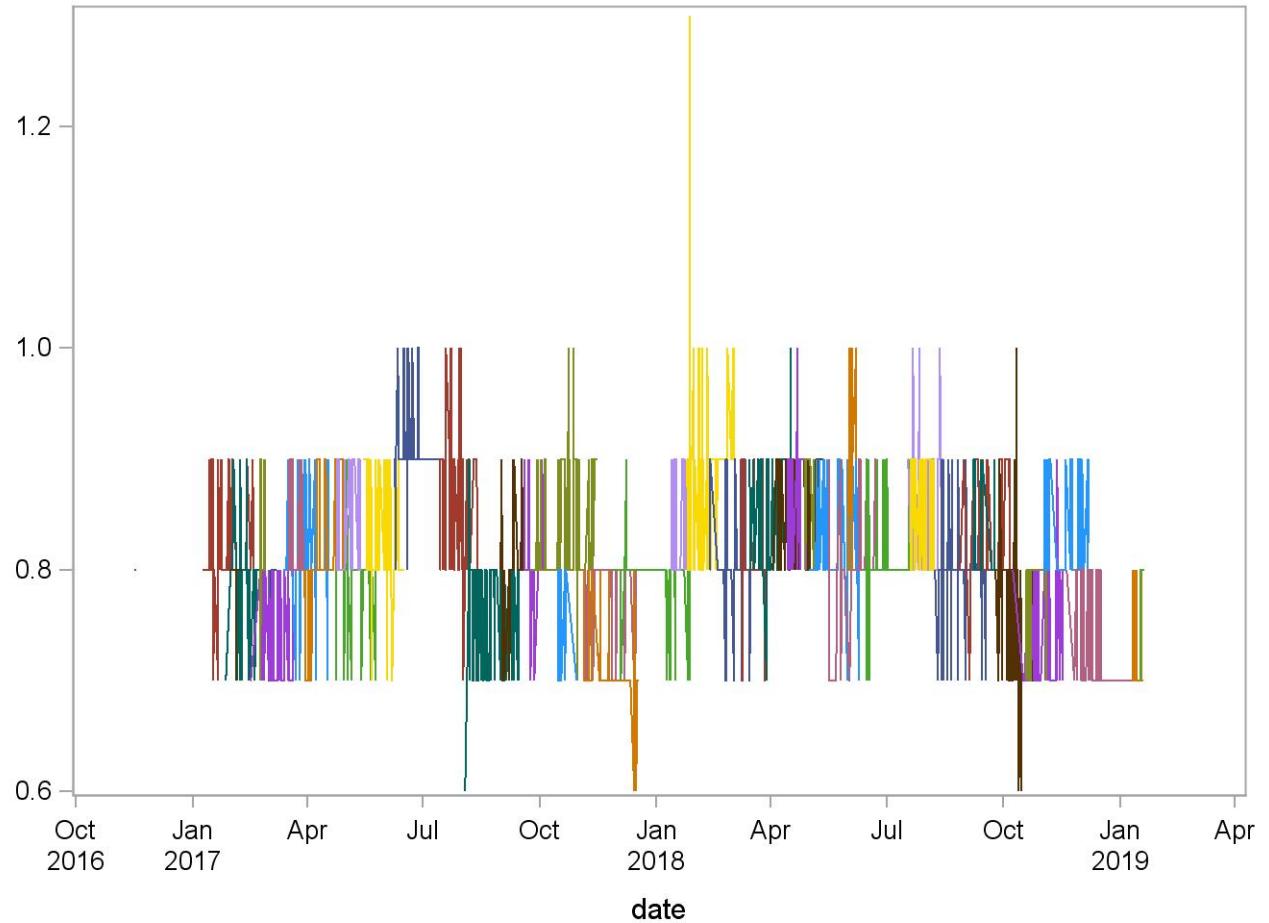
2017-2018 Summary Statistics and QC Chart for Monocyte No.(10³ cells/uL) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	2.9846	0.1519	5.1
133181500	78	09JAN17	18FEB17	3.1821	0.1560	4.9
133181520	97	27JAN17	08MAR17	2.9052	0.1202	4.1
133181530	20	31JAN17	09FEB17	3.0350	0.1226	4.0
133181540	50	16FEB17	21MAR17	2.9280	0.1578	5.4
133181550	20	23FEB17	02MAR17	3.1900	0.1210	3.8
133181570	57	13MAR17	18APR17	3.0579	0.1295	4.2
133181580	33	17MAR17	29MAR17	2.9182	0.1629	5.6
133181600	61	30MAR17	01MAY17	3.1803	0.2414	7.6
133181610	49	24APR17	26MAY17	3.0531	0.1501	4.9
133181630	37	24APR17	13MAY17	3.2784	0.1205	3.7
133181650	85	15MAY17	17JUN17	3.1188	0.1323	4.2
133181680	67	08JUN17	15JUL17	3.4015	0.1387	4.1
133181730	71	15JUL17	13AUG17	3.1423	0.1518	4.8
133181760	97	03AUG17	15SEP17	3.0763	0.1256	4.1
133181770	36	31AUG17	25SEP17	3.2361	0.1125	3.5
133181790	41	19SEP17	08OCT17	3.2756	0.1113	3.4
133181840	106	24SEP17	16NOV17	3.2538	0.1296	4.0
133181860	21	15OCT17	30OCT17	3.3048	0.1024	3.1
133181890	61	05NOV17	18DEC17	3.3557	0.1360	4.1
133181870	57	06NOV17	17DEC17	3.3456	0.1310	3.9
133181930	71	27NOV17	27JAN18	3.1225	0.2368	7.6
133181970	34	12JAN18	24JAN18	3.2618	0.1015	3.1
133181980	92	25JAN18	03MAR18	3.3076	0.2317	7.0
133182010	119	12FEB18	17MAR18	3.1597	0.1492	4.7
133182030	89	09MAR18	31MAR18	3.3551	0.1197	3.6
133182060	53	15MAR18	18APR18	3.5057	0.1231	3.5
133182080	57	02APR18	13MAY18	3.4351	0.1094	3.2
133182090	35	14APR18	29APR18	3.3600	0.1459	4.3
133182110	20	28APR18	05MAY18	3.4250	0.1446	4.2
133182120	55	01MAY18	11JUN18	3.1018	0.1326	4.3
133182140	55	17MAY18	30JUN18	3.2418	0.1329	4.1
133182150	21	01JUN18	07JUN18	3.1952	0.1284	4.0
133182160	51	12JUN18	21JUL18	2.9804	0.1200	4.0
133182210	44	18JUL18	15AUG18	3.1477	0.1438	4.6
133182220	40	20JUL18	07AUG18	3.2850	0.1145	3.5
133182240	96	08AUG18	21SEP18	3.0563	0.1398	4.6
133182260	49	28AUG18	07OCT18	3.3592	0.1153	3.4
133182270	26	07SEP18	24SEP18	3.2269	0.1002	3.1
133182300	89	25SEP18	29OCT18	3.2461	0.1693	5.2
133182310	47	08OCT18	17NOV18	3.2085	0.1100	3.4
133182320	30	19OCT18	05NOV18	2.9667	0.0959	3.2
133182350	60	02NOV18	07DEC18	3.3617	0.1367	4.1
133182390	71	20NOV18	12JAN19	3.1493	0.1585	5.0
133182400	20	11JAN19	19JAN19	3.1650	0.1040	3.3
133182430	18	17JAN19	20JAN19	3.1556	0.1423	4.5



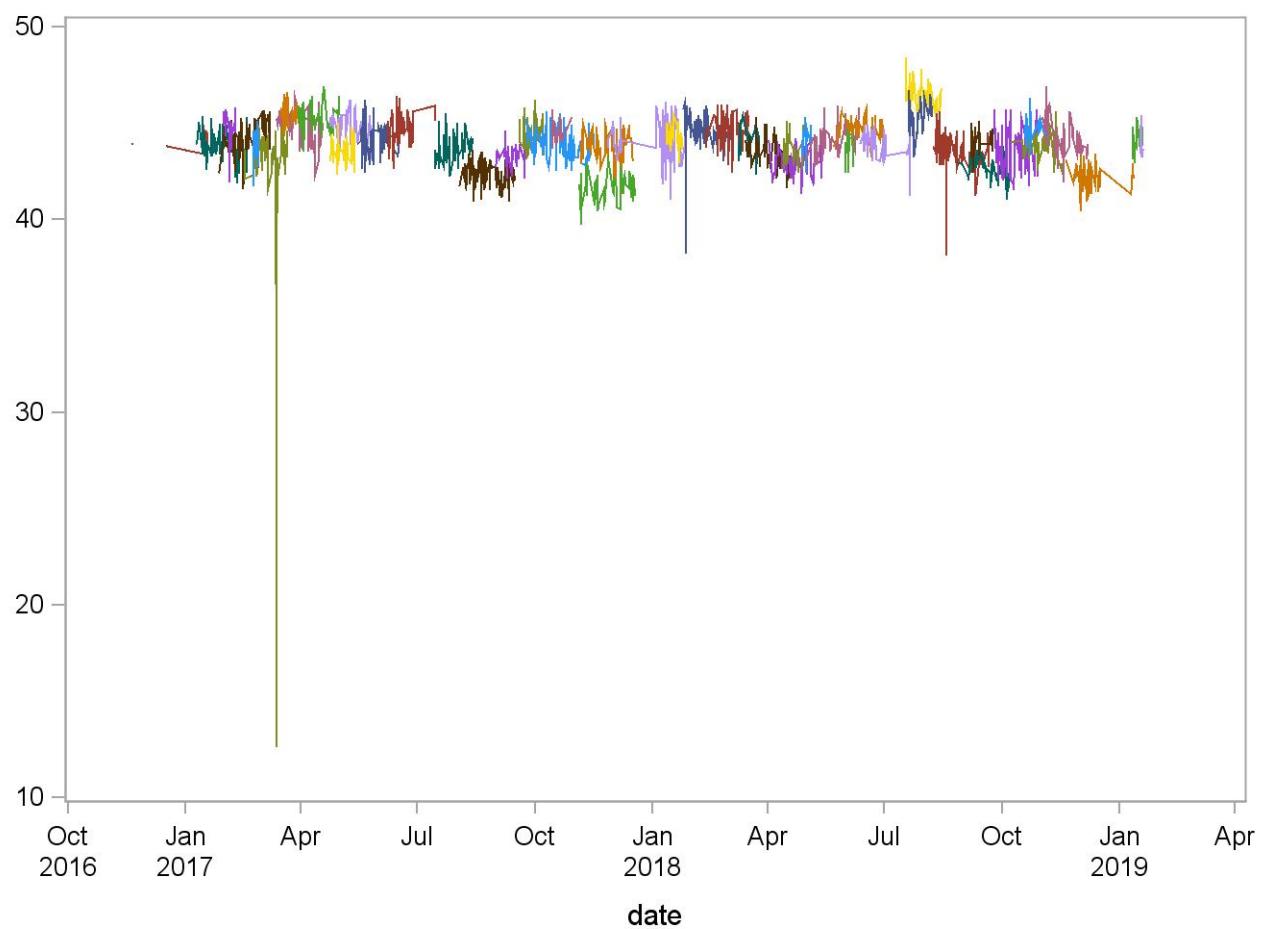
2017-2018 Summary Statistics and QC Chart for Monocyte No.(10³ cells/uL) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	0.8226	0.0505	6.1
143191520	58	27JAN17	08MAR17	0.7897	0.0484	6.1
143191530	20	31JAN17	09FEB17	0.7950	0.0224	2.8
143191540	47	16FEB17	21MAR17	0.7319	0.0471	6.4
143191550	21	23FEB17	27FEB17	0.8238	0.0539	6.5
143191570	56	13MAR17	18APR17	0.8107	0.0493	6.1
143191580	33	17MAR17	29MAR17	0.8364	0.0489	5.8
143191600	61	30MAR17	01MAY17	0.7984	0.0695	8.7
143191610	49	24APR17	26MAY17	0.7878	0.0389	4.9
143191630	38	24APR17	13MAY17	0.8447	0.0504	6.0
143191650	80	15MAY17	17JUN17	0.8188	0.0506	6.2
143191680	67	08JUN17	15JUL17	0.9090	0.0379	4.2
143191730	69	15JUL17	13AUG17	0.8652	0.0638	7.4
143191760	92	03AUG17	15SEP17	0.7630	0.0549	7.2
143191770	34	31AUG17	24SEP17	0.8029	0.0521	6.5
143191790	39	19SEP17	08OCT17	0.8077	0.0422	5.2
143191840	102	24SEP17	16NOV17	0.8392	0.0548	6.5
143191860	22	15OCT17	30OCT17	0.7636	0.0492	6.4
143191890	57	05NOV17	18DEC17	0.7070	0.0417	5.9
143191870	56	06NOV17	17DEC17	0.7839	0.0417	5.3
143191930	69	27NOV17	27JAN18	0.7913	0.0332	4.2
143191970	32	12JAN18	24JAN18	0.8406	0.0499	5.9
143191980	91	25JAN18	03MAR18	0.8791	0.0753	8.6
143192010	127	12FEB18	17MAR18	0.8024	0.0462	5.8
143192030	93	09MAR18	31MAR18	0.8075	0.0423	5.2
143192060	48	15MAR18	18APR18	0.8500	0.0583	6.9
143192080	58	02APR18	13MAY18	0.8569	0.0500	5.8
143192090	34	14APR18	29APR18	0.8765	0.0496	5.7
143192110	20	28APR18	05MAY18	0.8900	0.0308	3.5
143192120	52	01MAY18	11JUN18	0.8269	0.0528	6.4
143192140	54	17MAY18	30JUN18	0.8074	0.0544	6.7
143192150	21	01JUN18	07JUN18	0.9000	0.0632	7.0
143192160	51	12JUN18	21JUL18	0.8157	0.0505	6.2
143192210	43	18JUL18	15AUG18	0.8628	0.0618	7.2
143192220	39	20JUL18	07AUG18	0.8487	0.0506	6.0
143192240	92	08AUG18	21SEP18	0.8000	0.0445	5.6
143192260	50	28AUG18	07OCT18	0.8460	0.0542	6.4
143192270	26	07SEP18	24SEP18	0.8385	0.0496	5.9
143192300	86	25SEP18	29OCT18	0.7465	0.0645	8.6
143192310	47	08OCT18	17NOV18	0.7468	0.0546	7.3
143192320	30	19OCT18	05NOV18	0.7767	0.0430	5.5
143192340	61	02NOV18	07DEC18	0.8328	0.0473	5.7
143192380	72	20NOV18	12JAN19	0.7569	0.0499	6.6
143192400	20	11JAN19	19JAN19	0.7250	0.0444	6.1
143192430	18	17JAN19	20JAN19	0.7944	0.0236	3.0



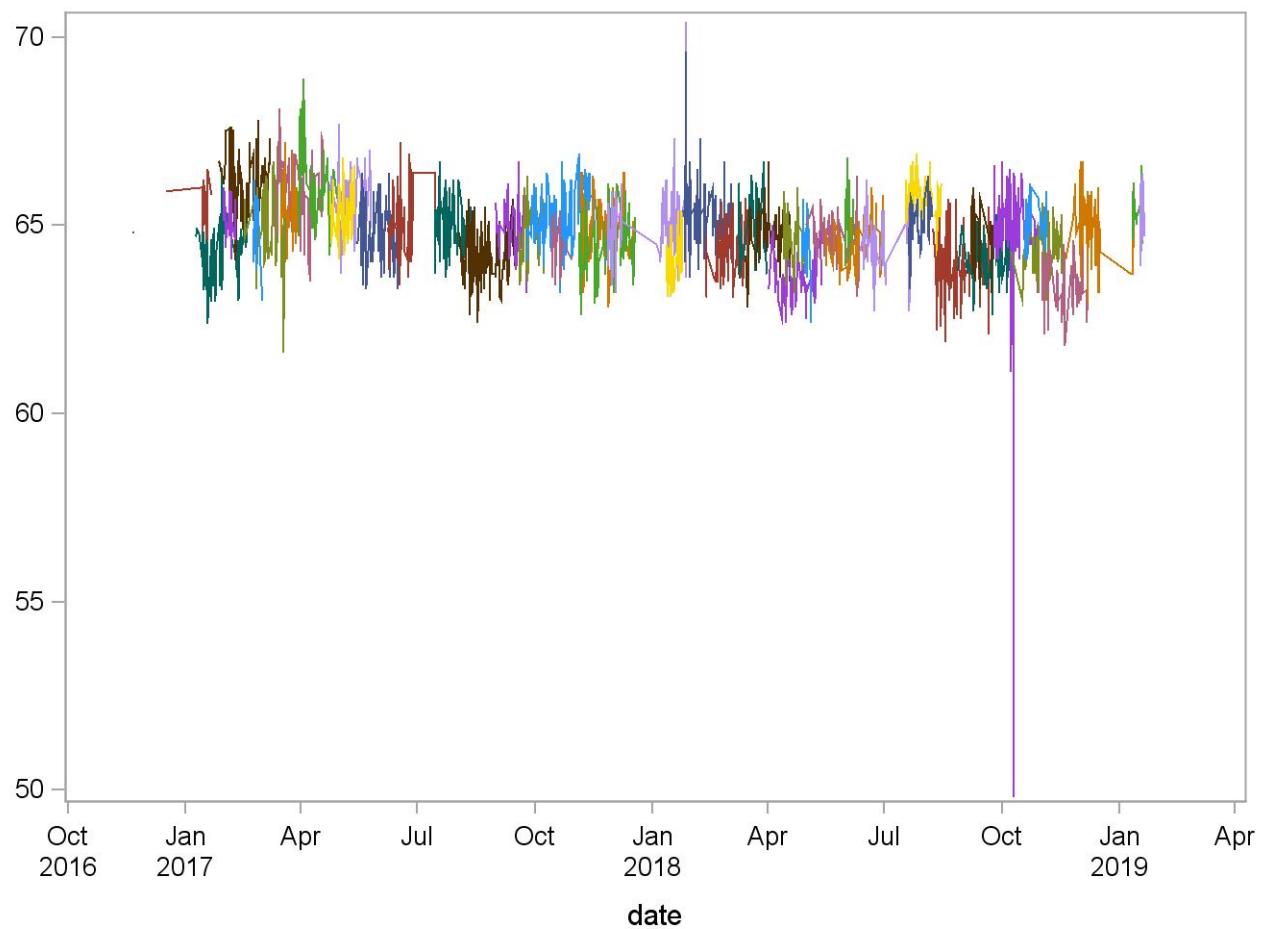
2017-2018 Summary Statistics and QC Chart for Neutrophil (%) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	44.1000	0.4899	1.1
123171500	110	09JAN17	18FEB17	43.7573	0.7530	1.7
123171520	113	27JAN17	08MAR17	44.1973	0.8823	2.0
123171530	20	31JAN17	09FEB17	44.6700	0.9342	2.1
123171540	48	16FEB17	21MAR17	42.7333	4.5311	10.6
123171550	21	23FEB17	27FEB17	43.9667	0.8163	1.9
123171570	57	13MAR17	18APR17	44.8263	0.8176	1.8
123171580	33	17MAR17	29MAR17	45.4606	0.5994	1.3
123171600	60	30MAR17	01MAY17	45.2250	0.6900	1.5
123171610	48	24APR17	26MAY17	44.7958	0.7781	1.7
123171630	37	24APR17	13MAY17	43.5162	0.6521	1.5
123171650	80	15MAY17	17JUN17	44.1663	0.7890	1.8
123171680	67	08JUN17	15JUL17	44.6478	0.7508	1.7
123171730	71	15JUL17	13AUG17	43.6958	0.6724	1.5
123171760	93	03AUG17	15SEP17	42.3559	0.6192	1.5
123171770	40	31AUG17	24SEP17	43.3800	0.5599	1.3
123171790	39	19SEP17	08OCT17	44.4282	0.8176	1.8
123171840	105	24SEP17	16NOV17	43.8181	0.7393	1.7
123171860	22	15OCT17	30OCT17	44.4273	0.5824	1.3
123171890	57	05NOV17	18DEC17	41.6193	0.6770	1.6
123171870	57	06NOV17	17DEC17	43.7860	0.7945	1.8
123171930	71	27NOV17	27JAN18	43.8803	1.4029	3.2
123171970	33	12JAN18	24JAN18	44.2970	0.5736	1.3
123171980	95	25JAN18	03MAR18	44.6168	0.9129	2.0
123172010	129	12FEB18	17MAR18	44.6271	0.7341	1.6
123172030	35	09MAR18	25MAR18	44.1200	0.7368	1.7
123172060	50	15MAR18	18APR18	43.5340	0.7436	1.7
123172080	58	02APR18	13MAY18	42.9655	0.7314	1.7
123172090	34	14APR18	29APR18	43.6676	0.7078	1.6
123172110	20	28APR18	05MAY18	44.1550	0.6637	1.5
123172120	53	01MAY18	11JUN18	44.2340	0.7122	1.6
123172140	54	22MAY18	30JUN18	44.6852	0.5523	1.2
123172150	20	01JUN18	07JUN18	43.7400	0.6886	1.6
123172160	50	12JUN18	21JUL18	43.8240	0.6871	1.6
123172210	44	18JUL18	15AUG18	46.2841	0.7201	1.6
123172220	39	20JUL18	07AUG18	45.3154	0.6964	1.5
123172240	94	08AUG18	21SEP18	43.5436	0.8835	2.0
123172260	49	28AUG18	07OCT18	42.6082	0.6157	1.4
123172270	26	07SEP18	24SEP18	43.9462	0.6906	1.6
123172300	84	25SEP18	29OCT18	43.6893	1.0326	2.4
123172310	49	08OCT18	17NOV18	43.8122	0.6790	1.5
123172320	30	19OCT18	05NOV18	44.6100	0.5857	1.3
123172340	60	02NOV18	07DEC18	44.3000	0.9128	2.1
123172380	71	20NOV18	12JAN19	42.0873	0.6746	1.6
123172400	20	11JAN19	19JAN19	44.1000	0.5938	1.3
123172430	16	17JAN19	20JAN19	43.9313	0.6906	1.6



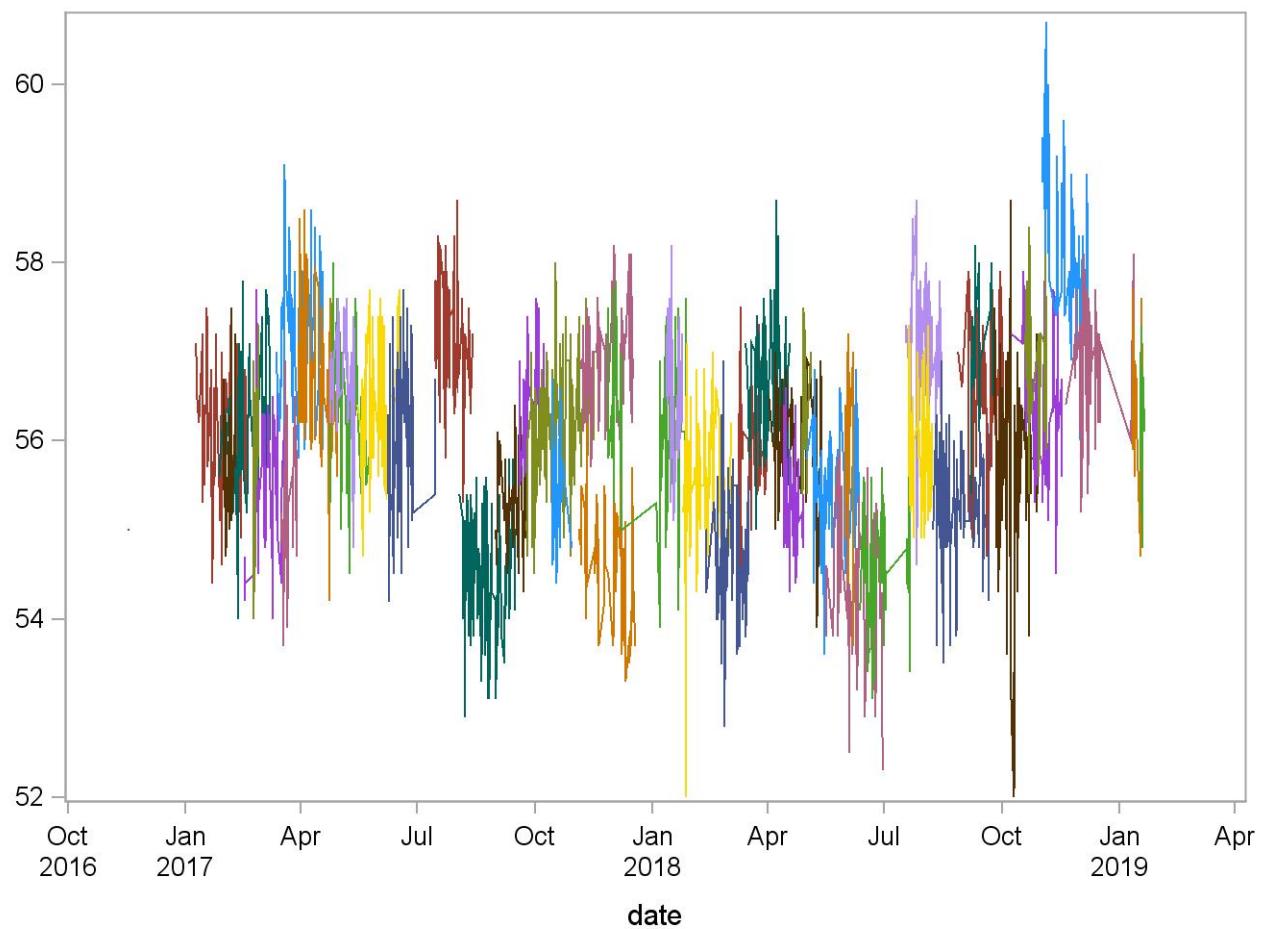
2017-2018 Summary Statistics and QC Chart for Neutrophil (%) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	65.5692	0.6524	1.0
133181500	78	09JAN17	18FEB17	64.2154	0.8297	1.3
133181520	97	27JAN17	08MAR17	66.1495	0.8694	1.3
133181530	20	31JAN17	09FEB17	65.1600	0.5789	0.9
133181540	50	16FEB17	21MAR17	65.1240	1.0313	1.6
133181550	20	23FEB17	02MAR17	64.9850	0.7372	1.1
133181570	57	13MAR17	18APR17	65.8526	0.8395	1.3
133181580	33	17MAR17	29MAR17	65.3515	0.6797	1.0
133181600	61	30MAR17	01MAY17	66.2951	1.0460	1.6
133181610	49	24APR17	26MAY17	65.6020	0.8543	1.3
133181630	37	24APR17	13MAY17	65.2676	0.6721	1.0
133181650	85	15MAY17	17JUN17	64.8200	0.7575	1.2
133181680	67	08JUN17	15JUL17	65.0254	0.7925	1.2
133181730	71	15JUL17	13AUG17	64.9394	0.7102	1.1
133181760	97	03AUG17	15SEP17	64.1588	0.6877	1.1
133181770	36	31AUG17	25SEP17	64.9889	0.7324	1.1
133181790	41	19SEP17	08OCT17	64.9488	0.7769	1.2
133181840	106	24SEP17	16NOV17	65.2132	0.7585	1.2
133181860	21	15OCT17	30OCT17	64.3190	0.5802	0.9
133181890	61	05NOV17	18DEC17	64.4295	0.7807	1.2
133181870	57	06NOV17	17DEC17	64.8561	0.7583	1.2
133181930	71	27NOV17	27JAN18	65.0099	1.1361	1.7
133181970	34	12JAN18	24JAN18	64.1706	0.6525	1.0
133181980	92	25JAN18	03MAR18	65.3467	0.8477	1.3
133182010	119	12FEB18	17MAR18	64.2849	0.7155	1.1
133182030	89	09MAR18	31MAR18	64.8461	0.7255	1.1
133182060	53	15MAR18	18APR18	64.7264	0.6895	1.1
133182080	57	02APR18	13MAY18	63.5982	0.5887	0.9
133182090	35	14APR18	29APR18	64.6029	0.6401	1.0
133182110	20	28APR18	05MAY18	64.3900	0.7573	1.2
133182120	55	01MAY18	11JUN18	64.6818	0.5575	0.9
133182140	55	17MAY18	30JUN18	64.5000	0.6200	1.0
133182150	21	01JUN18	07JUN18	65.2429	0.7263	1.1
133182160	51	12JUN18	21JUL18	64.5098	0.7303	1.1
133182210	44	18JUL18	15AUG18	65.6477	0.6529	1.0
133182220	40	20JUL18	07AUG18	64.9850	0.5798	0.9
133182240	96	08AUG18	21SEP18	63.9271	0.8329	1.3
133182260	49	28AUG18	07OCT18	64.1020	0.6511	1.0
133182270	26	07SEP18	24SEP18	64.5654	0.8015	1.2
133182300	89	25SEP18	29OCT18	64.6888	1.9781	3.1
133182310	47	08OCT18	17NOV18	64.2894	0.6693	1.0
133182320	30	19OCT18	05NOV18	65.2133	0.5519	0.8
133182350	60	02NOV18	07DEC18	63.4550	0.6398	1.0
133182390	71	20NOV18	12JAN19	64.8845	0.8178	1.3
133182400	20	11JAN19	19JAN19	65.3700	0.5877	0.9
133182430	18	17JAN19	20JAN19	65.2333	0.7300	1.1



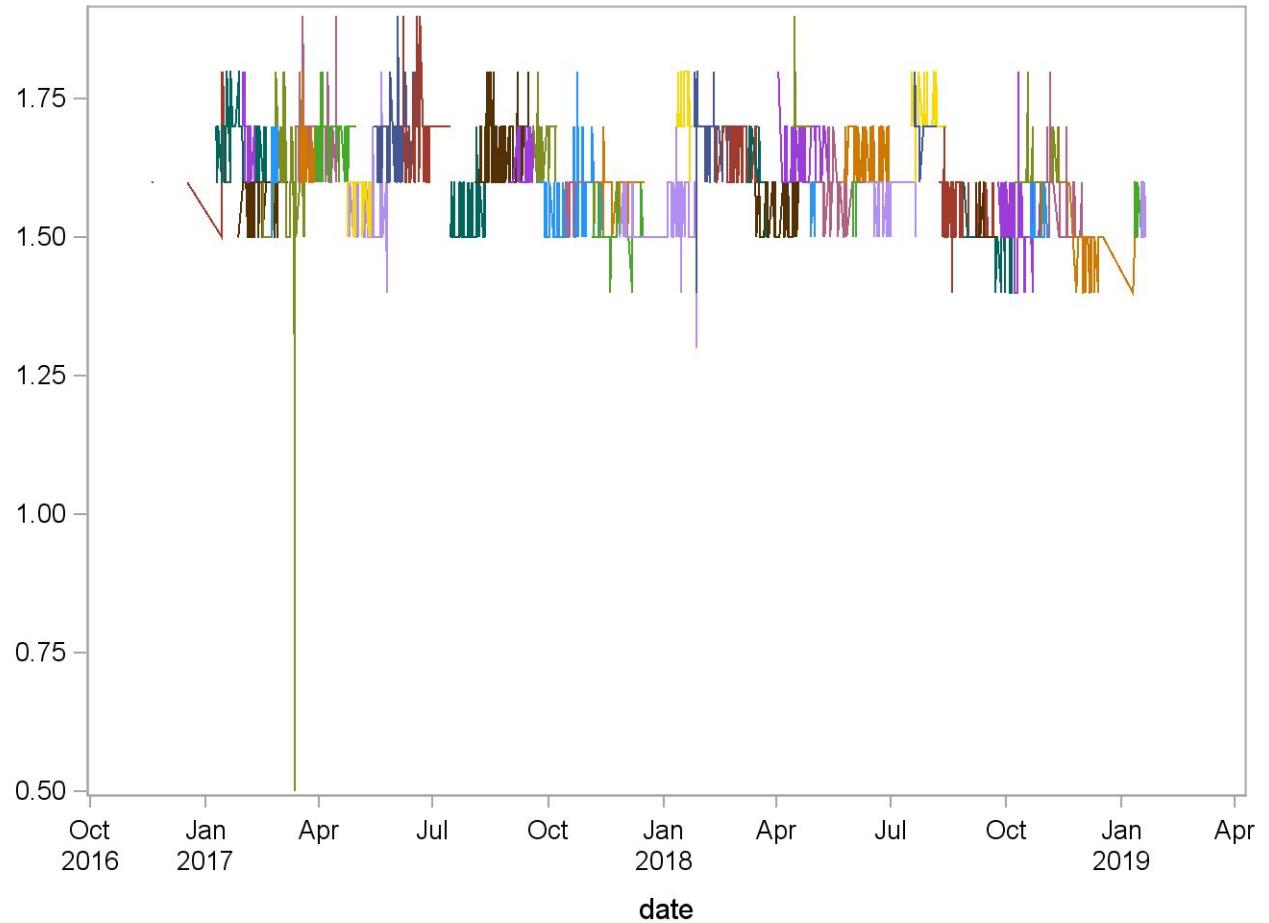
2017-2018 Summary Statistics and QC Chart for Neutrophil (%) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	56.1057	0.7305	1.3
143191520	58	27JAN17	08MAR17	56.1966	0.7434	1.3
143191530	20	31JAN17	09FEB17	55.9900	0.7704	1.4
143191540	47	16FEB17	21MAR17	55.5426	0.7586	1.4
143191550	21	23FEB17	27FEB17	55.8238	0.8227	1.5
143191570	56	13MAR17	18APR17	57.1696	0.7371	1.3
143191580	33	17MAR17	29MAR17	55.2152	0.7404	1.3
143191600	61	30MAR17	01MAY17	56.8098	0.7745	1.4
143191610	49	24APR17	26MAY17	56.3061	0.6485	1.2
143191630	38	24APR17	13MAY17	56.7763	0.5814	1.0
143191650	80	15MAY17	17JUN17	56.2488	0.6743	1.2
143191680	67	08JUN17	15JUL17	55.9299	0.8316	1.5
143191730	69	15JUL17	13AUG17	57.1696	0.6488	1.1
143191760	92	03AUG17	15SEP17	54.4054	0.6645	1.2
143191770	34	31AUG17	24SEP17	55.3676	0.6231	1.1
143191790	39	19SEP17	08OCT17	56.5051	0.5000	0.9
143191840	103	24SEP17	16NOV17	56.1437	0.7053	1.3
143191860	22	15OCT17	30OCT17	55.5682	0.7020	1.3
143191890	57	05NOV17	18DEC17	54.7000	0.6832	1.2
143191870	56	06NOV17	17DEC17	56.9250	0.5782	1.0
143191930	69	27NOV17	27JAN18	56.2145	0.8034	1.4
143191970	32	12JAN18	24JAN18	56.6594	0.7011	1.2
143191980	91	25JAN18	03MAR18	55.5330	0.7234	1.3
143192010	127	12FEB18	17MAR18	54.8346	0.7216	1.3
143192030	93	09MAR18	31MAR18	55.9667	0.5730	1.0
143192060	48	15MAR18	18APR18	56.6896	0.7694	1.4
143192080	58	02APR18	13MAY18	56.0724	0.6104	1.1
143192090	34	14APR18	29APR18	55.3147	0.5774	1.0
143192110	20	28APR18	05MAY18	56.2700	0.5832	1.0
143192120	52	01MAY18	11JUN18	55.5154	0.6515	1.2
143192140	54	17MAY18	30JUN18	54.2815	0.8441	1.6
143192150	21	01JUN18	07JUN18	55.8286	0.8463	1.5
143192160	51	12JUN18	21JUL18	54.6471	0.6272	1.1
143192210	43	18JUL18	15AUG18	56.9605	0.7944	1.4
143192220	39	20JUL18	07AUG18	56.0256	0.6680	1.2
143192240	92	08AUG18	21SEP18	55.3120	0.6719	1.2
143192260	50	28AUG18	07OCT18	56.5500	0.7316	1.3
143192270	26	07SEP18	24SEP18	57.1077	0.6362	1.1
143192300	86	25SEP18	29OCT18	55.7209	1.1310	2.0
143192310	47	08OCT18	17NOV18	56.3574	0.7439	1.3
143192320	30	19OCT18	05NOV18	56.9800	0.7439	1.3
143192340	61	02NOV18	07DEC18	58.3820	0.9712	1.7
143192380	72	20NOV18	12JAN19	56.8153	0.6297	1.1
143192400	20	11JAN19	19JAN19	56.6150	0.7822	1.4
143192430	18	17JAN19	20JAN19	56.1722	0.7529	1.3



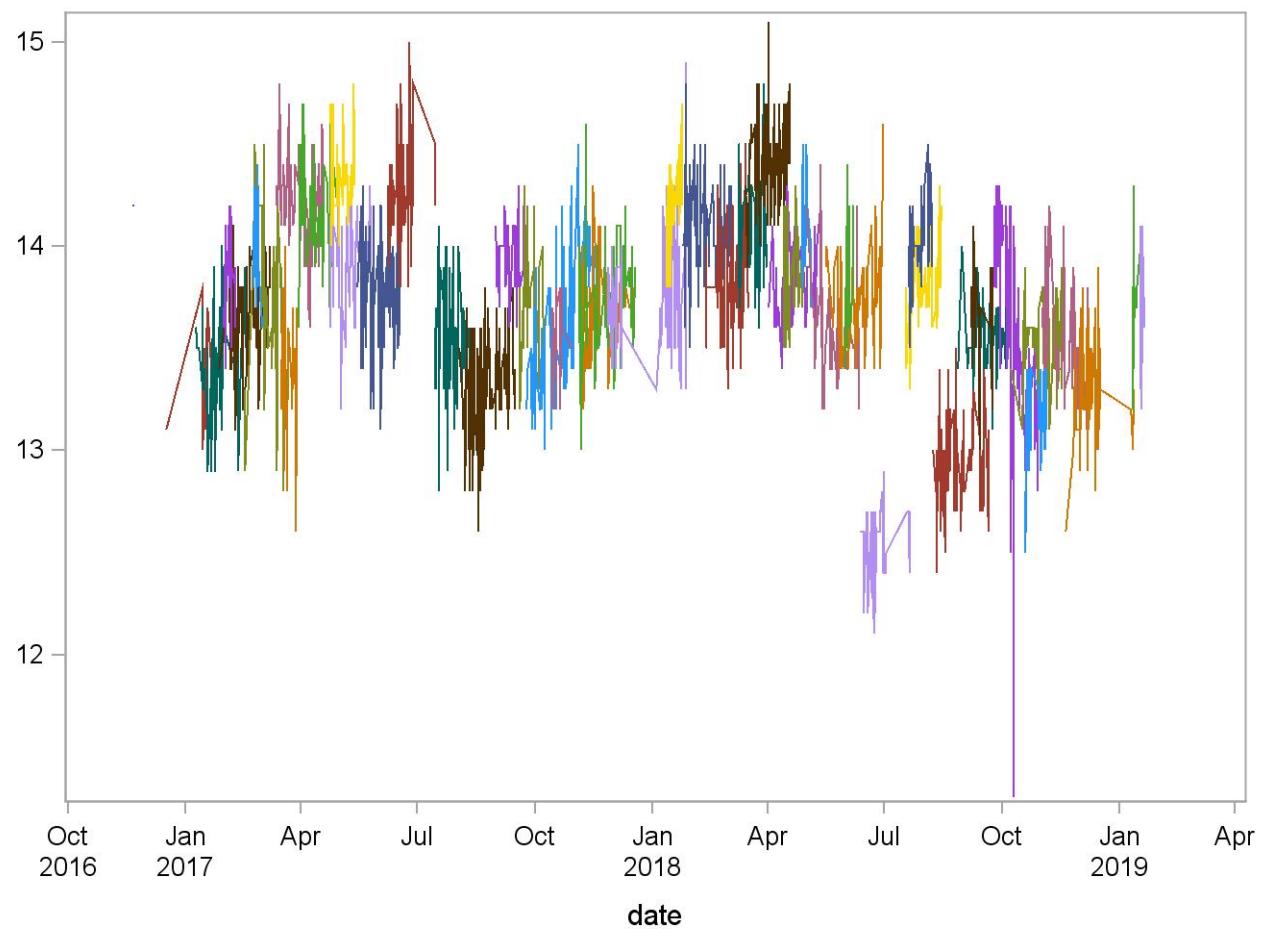
2017-2018 Summary Statistics and QC Chart for Neutrophil No.(10³ cells/uL) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	1.6250	0.0866	5.3
123171500	110	09JAN17	18FEB17	1.6727	0.0557	3.3
123171520	113	27JAN17	08MAR17	1.5805	0.0398	2.5
123171530	20	31JAN17	09FEB17	1.6800	0.0616	3.7
123171540	48	16FEB17	21MAR17	1.5938	0.1803	11.3
123171550	21	23FEB17	27FEB17	1.6238	0.0539	3.3
123171570	57	13MAR17	18APR17	1.6895	0.0618	3.7
123171580	33	17MAR17	29MAR17	1.6424	0.0561	3.4
123171600	60	30MAR17	01MAY17	1.6833	0.0457	2.7
123171610	48	24APR17	26MAY17	1.5479	0.0714	4.6
123171630	37	24APR17	13MAY17	1.5838	0.0374	2.4
123171650	80	15MAY17	17JUN17	1.6688	0.0628	3.8
123171680	67	08JUN17	15JUL17	1.6791	0.0686	4.1
123171730	71	15JUL17	13AUG17	1.5380	0.0517	3.4
123171760	93	03AUG17	15SEP17	1.6516	0.0636	3.9
123171770	40	31AUG17	24SEP17	1.6325	0.0474	2.9
123171790	39	19SEP17	08OCT17	1.6744	0.0498	3.0
123171840	105	24SEP17	16NOV17	1.5667	0.0645	4.1
123171860	22	15OCT17	30OCT17	1.5727	0.0456	2.9
123171890	57	05NOV17	18DEC17	1.5070	0.0371	2.5
123171870	57	06NOV17	17DEC17	1.5877	0.0381	2.4
123171930	71	27NOV17	27JAN18	1.5352	0.0678	4.4
123171970	33	12JAN18	24JAN18	1.7182	0.0465	2.7
123171980	95	25JAN18	03MAR18	1.6863	0.0518	3.1
123172010	129	12FEB18	17MAR18	1.6496	0.0502	3.0
123172030	35	09MAR18	25MAR18	1.6171	0.0453	2.8
123172060	50	15MAR18	18APR18	1.5540	0.0542	3.5
123172080	58	02APR18	13MAY18	1.6534	0.0537	3.2
123172090	34	14APR18	29APR18	1.7088	0.0379	2.2
123172110	20	28APR18	05MAY18	1.5900	0.0308	1.9
123172120	53	01MAY18	11JUN18	1.5925	0.0474	3.0
123172140	54	22MAY18	30JUN18	1.6463	0.0503	3.1
123172150	20	01JUN18	07JUN18	1.5850	0.0366	2.3
123172160	50	12JUN18	21JUL18	1.5820	0.0388	2.5
123172210	44	18JUL18	15AUG18	1.7159	0.0428	2.5
123172220	39	20JUL18	07AUG18	1.7026	0.0280	1.6
123172240	94	08AUG18	21SEP18	1.5436	0.0540	3.5
123172260	49	28AUG18	07OCT18	1.4918	0.0344	2.3
123172270	26	07SEP18	24SEP18	1.5231	0.0430	2.8
123172300	84	25SEP18	29OCT18	1.5190	0.0649	4.3
123172310	49	08OCT18	17NOV18	1.6122	0.0439	2.7
123172320	30	19OCT18	05NOV18	1.5133	0.0346	2.3
123172340	60	02NOV18	07DEC18	1.5567	0.0647	4.2
123172380	71	20NOV18	12JAN19	1.4775	0.0453	3.1
123172400	20	11JAN19	19JAN19	1.5600	0.0503	3.2
123172430	16	17JAN19	20JAN19	1.5250	0.0447	2.9



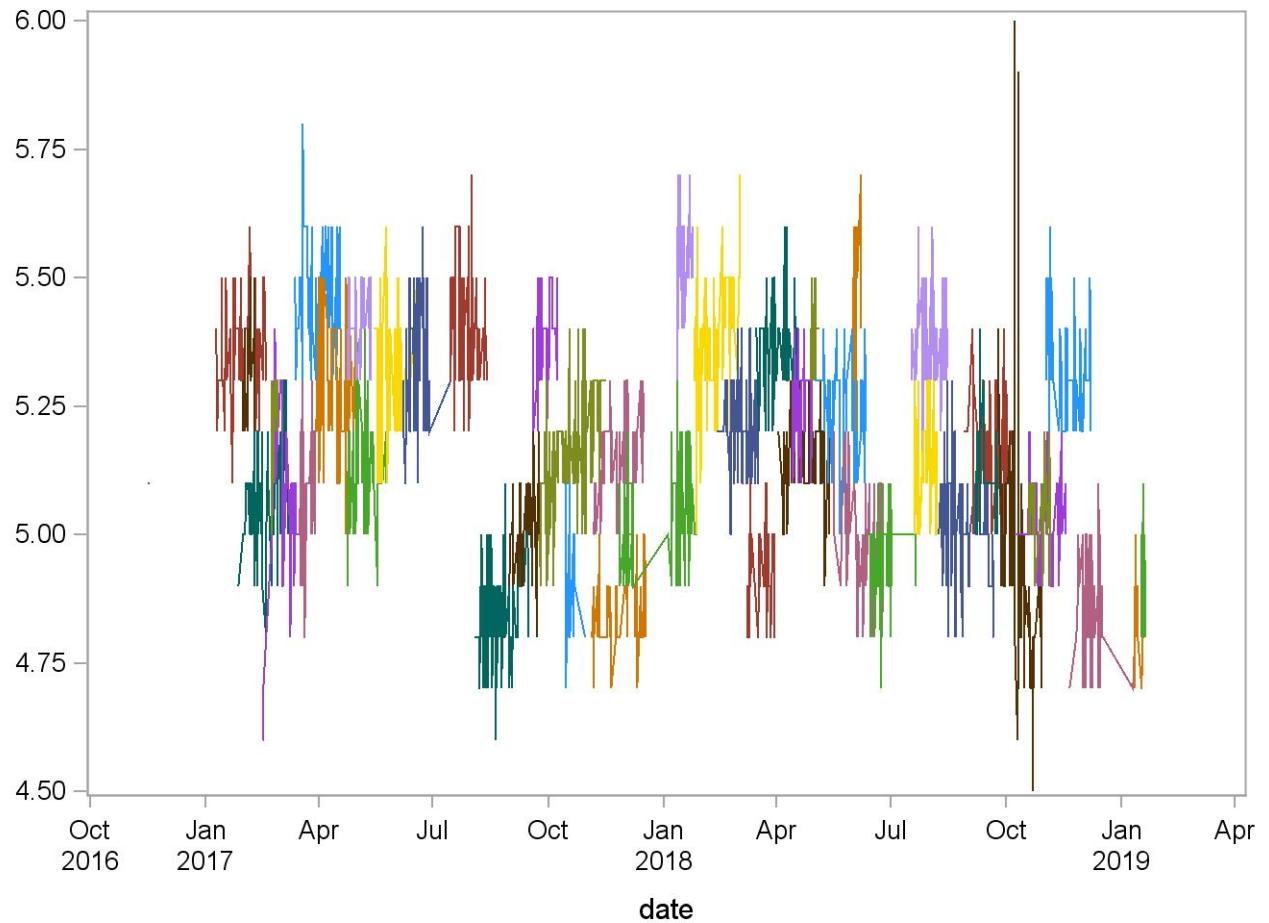
2017-2018 Summary Statistics and QC Chart for Neutrophil No.(10^3 cells/uL) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	13.3769	0.2555	1.9
133181500	78	09JAN17	18FEB17	13.3962	0.2751	2.1
133181520	97	27JAN17	08MAR17	13.6588	0.2444	1.8
133181530	20	31JAN17	09FEB17	13.8500	0.2306	1.7
133181540	50	16FEB17	21MAR17	13.6520	0.4156	3.0
133181550	20	23FEB17	02MAR17	13.9900	0.1997	1.4
133181570	57	13MAR17	18APR17	14.2263	0.2200	1.5
133181580	33	17MAR17	29MAR17	13.3455	0.2970	2.2
133181600	61	30MAR17	01MAY17	14.2098	0.2420	1.7
133181610	49	24APR17	26MAY17	13.9041	0.2327	1.7
133181630	37	24APR17	13MAY17	14.3649	0.2031	1.4
133181650	85	15MAY17	17JUN17	13.7694	0.2664	1.9
133181680	67	08JUN17	15JUL17	14.2701	0.2505	1.8
133181730	71	15JUL17	13AUG17	13.5380	0.2538	1.9
133181760	97	03AUG17	15SEP17	13.3113	0.2457	1.8
133181770	36	31AUG17	25SEP17	13.9556	0.1827	1.3
133181790	41	19SEP17	08OCT17	13.7537	0.2491	1.8
133181840	106	24SEP17	16NOV17	13.6509	0.3273	2.4
133181860	21	15OCT17	30OCT17	13.5238	0.1972	1.5
133181890	61	05NOV17	18DEC17	13.7508	0.2540	1.8
133181870	57	06NOV17	17DEC17	13.7070	0.2069	1.5
133181930	71	27NOV17	27JAN18	13.7507	0.3009	2.2
133181970	34	12JAN18	24JAN18	14.1912	0.2353	1.7
133181980	92	25JAN18	03MAR18	14.1120	0.2223	1.6
133182010	119	12FEB18	17MAR18	13.8328	0.2565	1.9
133182030	89	09MAR18	31MAR18	14.1124	0.2430	1.7
133182060	53	15MAR18	18APR18	14.4245	0.2488	1.7
133182080	57	02APR18	13MAY18	13.8333	0.1893	1.4
133182090	35	14APR18	29APR18	13.8629	0.2088	1.5
133182110	20	28APR18	05MAY18	14.1950	0.2259	1.6
133182120	55	01MAY18	11JUN18	13.5745	0.2374	1.7
133182140	55	17MAY18	30JUN18	13.7836	0.2485	1.8
133182150	21	01JUN18	07JUN18	13.8571	0.2541	1.8
133182160	51	12JUN18	21JUL18	12.5235	0.1762	1.4
133182210	44	18JUL18	15AUG18	13.8341	0.2178	1.6
133182220	40	20JUL18	07AUG18	14.0100	0.2023	1.4
133182240	96	08AUG18	21SEP18	12.9344	0.2146	1.7
133182260	49	28AUG18	07OCT18	13.5939	0.1908	1.4
133182270	26	07SEP18	24SEP18	13.6038	0.2615	1.9
133182300	89	25SEP18	29OCT18	13.6000	0.4897	3.6
133182310	47	08OCT18	17NOV18	13.5213	0.2042	1.5
133182320	30	19OCT18	05NOV18	13.1067	0.2212	1.7
133182350	60	02NOV18	07DEC18	13.6133	0.2709	2.0
133182390	71	20NOV18	12JAN19	13.2972	0.2384	1.8
133182400	20	11JAN19	19JAN19	13.7050	0.2395	1.7
133182430	18	17JAN19	20JAN19	13.6944	0.2555	1.9



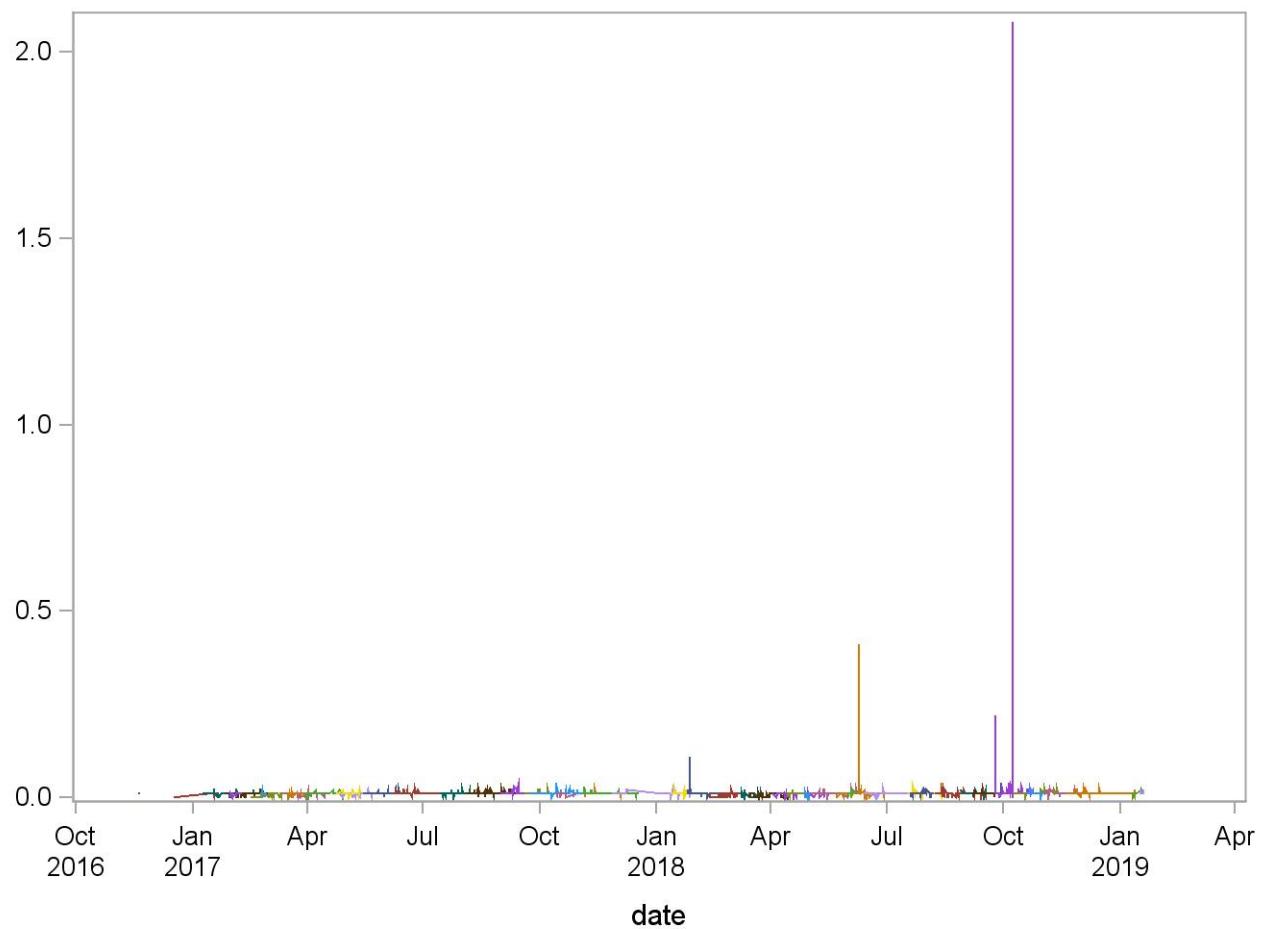
2017-2018 Summary Statistics and QC Chart for Neutrophil No.(10³ cells/uL) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	5.3566	0.0971	1.8
143191520	58	27JAN17	08MAR17	5.0707	0.1060	2.1
143191530	20	31JAN17	09FEB17	5.3350	0.0988	1.9
143191540	47	16FEB17	21MAR17	5.0489	0.1730	3.4
143191550	21	23FEB17	27FEB17	5.2381	0.0805	1.5
143191570	56	13MAR17	18APR17	5.4768	0.1044	1.9
143191580	33	17MAR17	29MAR17	5.0727	0.1281	2.5
143191600	61	30MAR17	01MAY17	5.2984	0.1190	2.2
143191610	49	24APR17	26MAY17	5.1408	0.1059	2.1
143191630	38	24APR17	13MAY17	5.4132	0.0704	1.3
143191650	80	15MAY17	17JUN17	5.3150	0.1104	2.1
143191680	67	08JUN17	15JUL17	5.3269	0.1123	2.1
143191730	69	15JUL17	13AUG17	5.4029	0.1057	2.0
143191760	92	03AUG17	15SEP17	4.8489	0.0978	2.0
143191770	34	31AUG17	24SEP17	5.0147	0.0892	1.8
143191790	39	19SEP17	08OCT17	5.3795	0.0894	1.7
143191840	102	24SEP17	16NOV17	5.1627	0.1098	2.1
143191860	22	15OCT17	30OCT17	4.9182	0.1140	2.3
143191890	57	05NOV17	18DEC17	4.8719	0.0818	1.7
143191870	56	06NOV17	17DEC17	5.1500	0.0853	1.7
143191930	69	27NOV17	27JAN18	5.0464	0.0964	1.9
143191970	32	12JAN18	24JAN18	5.5438	0.0914	1.6
143191980	91	25JAN18	03MAR18	5.3604	0.1114	2.1
143192010	127	12FEB18	17MAR18	5.2063	0.0861	1.7
143192030	93	09MAR18	31MAR18	4.9333	0.0838	1.7
143192060	48	15MAR18	18APR18	5.3646	0.1000	1.9
143192080	58	02APR18	13MAY18	5.1534	0.0842	1.6
143192090	34	14APR18	29APR18	5.2588	0.0857	1.6
143192110	20	28APR18	05MAY18	5.3850	0.0671	1.2
143192120	52	01MAY18	11JUN18	5.2481	0.0918	1.7
143192140	54	17MAY18	30JUN18	4.9889	0.1022	2.0
143192150	21	01JUN18	07JUN18	5.4714	0.1102	2.0
143192160	51	12JUN18	21JUL18	4.9510	0.0880	1.8
143192210	43	18JUL18	15AUG18	5.3814	0.1029	1.9
143192220	39	20JUL18	07AUG18	5.1436	0.0995	1.9
143192240	92	08AUG18	21SEP18	5.0196	0.1051	2.1
143192260	50	28AUG18	07OCT18	5.1740	0.0986	1.9
143192270	26	07SEP18	24SEP18	5.1423	0.0987	1.9
143192300	86	25SEP18	29OCT18	4.9721	0.2453	4.9
143192310	47	08OCT18	17NOV18	5.0255	0.0820	1.6
143192320	30	19OCT18	05NOV18	5.0467	0.0776	1.5
143192340	61	02NOV18	07DEC18	5.3377	0.1019	1.9
143192380	72	20NOV18	12JAN19	4.8556	0.0963	2.0
143192400	20	11JAN19	19JAN19	4.8500	0.0889	1.8
143192430	18	17JAN19	20JAN19	4.9000	0.0970	2.0



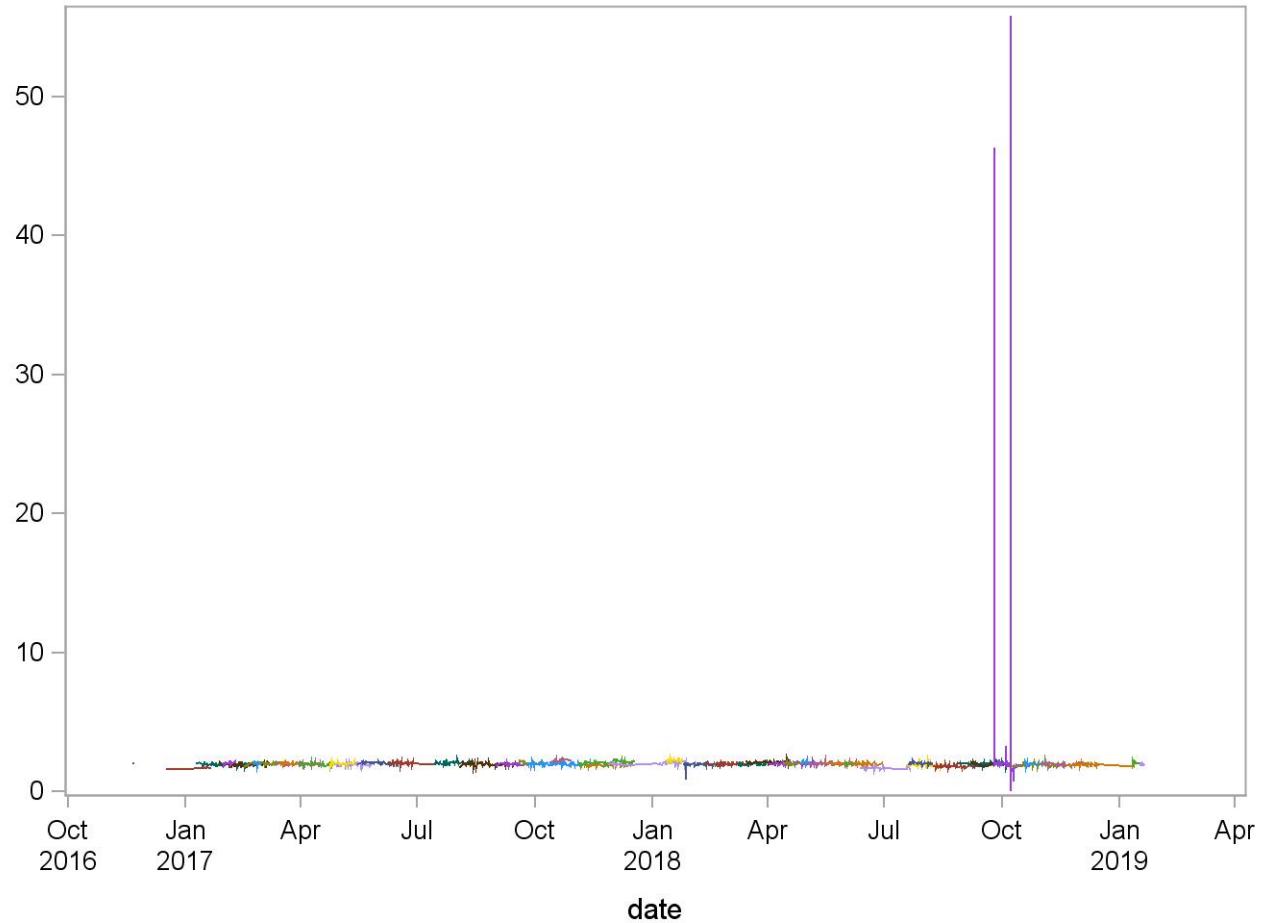
2017-2018 Summary Statistics and QC Chart for Nucleated red blood cells (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	0.0083	0.0039	46.7
123171500	110	09JAN17	18FEB17	0.0097	0.0034	35.4
123171520	112	27JAN17	08MAR17	0.0088	0.0043	48.8
123171530	20	31JAN17	09FEB17	0.0080	0.0041	51.3
123171540	48	16FEB17	21MAR17	0.0071	0.0046	64.8
123171550	21	23FEB17	27FEB17	0.0100	0.0032	31.6
123171570	57	13MAR17	18APR17	0.0084	0.0041	49.1
123171580	33	17MAR17	29MAR17	0.0064	0.0049	76.8
123171600	60	30MAR17	01MAY17	0.0102	0.0034	33.8
123171610	48	24APR17	26MAY17	0.0090	0.0037	41.4
123171630	37	24APR17	13MAY17	0.0114	0.0042	36.9
123171650	80	15MAY17	17JUN17	0.0105	0.0027	25.8
123171680	67	08JUN17	15JUL17	0.0119	0.0043	36.4
123171730	71	15JUL17	13AUG17	0.0100	0.0034	33.8
123171760	93	03AUG17	15SEP17	0.0109	0.0038	35.0
123171770	40	31AUG17	24SEP17	0.0130	0.0069	52.8
123171790	39	19SEP17	08OCT17	0.0108	0.0027	25.1
123171840	105	24SEP17	16NOV17	0.0108	0.0033	30.8
123171860	22	15OCT17	30OCT17	0.0082	0.0039	48.2
123171890	57	05NOV17	18DEC17	0.0105	0.0035	33.2
123171870	57	06NOV17	17DEC17	0.0100	0.0027	26.7
123171930	71	27NOV17	27JAN18	0.0099	0.0032	32.0
123171970	33	12JAN18	24JAN18	0.0106	0.0035	32.8
123171980	94	25JAN18	03MAR18	0.0110	0.0107	97.5
123172010	129	12FEB18	17MAR18	0.0059	0.0051	86.5
123172030	35	09MAR18	25MAR18	0.0060	0.0055	92.2
123172060	50	15MAR18	18APR18	0.0066	0.0048	72.5
123172080	58	02APR18	13MAY18	0.0076	0.0043	56.9
123172090	34	14APR18	29APR18	0.0094	0.0034	36.4
123172110	20	28APR18	05MAY18	0.0065	0.0049	75.3
123172120	53	01MAY18	11JUN18	0.0106	0.0036	34.3
123172140	54	22MAY18	30JUN18	0.0159	0.0548	344.2
123172150	20	01JUN18	07JUN18	0.0095	0.0039	41.5
123172160	50	12JUN18	21JUL18	0.0096	0.0028	29.5
123172210	44	18JUL18	15AUG18	0.0107	0.0045	42.3
123172220	39	20JUL18	07AUG18	0.0095	0.0046	48.1
123172240	94	08AUG18	21SEP18	0.0091	0.0046	49.8
123172260	49	28AUG18	07OCT18	0.0106	0.0032	29.8
123172270	26	07SEP18	24SEP18	0.0104	0.0045	42.9
123172300	84	25SEP18	29OCT18	0.0464	0.2312	497.9
123172310	49	08OCT18	17NOV18	0.0110	0.0037	33.4
123172320	30	19OCT18	05NOV18	0.0107	0.0037	34.2
123172340	60	02NOV18	07DEC18	0.0110	0.0035	32.2
123172380	71	20NOV18	12JAN19	0.0103	0.0041	40.2
123172400	20	11JAN19	19JAN19	0.0100	0.0046	45.9
123172430	16	17JAN19	20JAN19	0.0113	0.0034	30.4



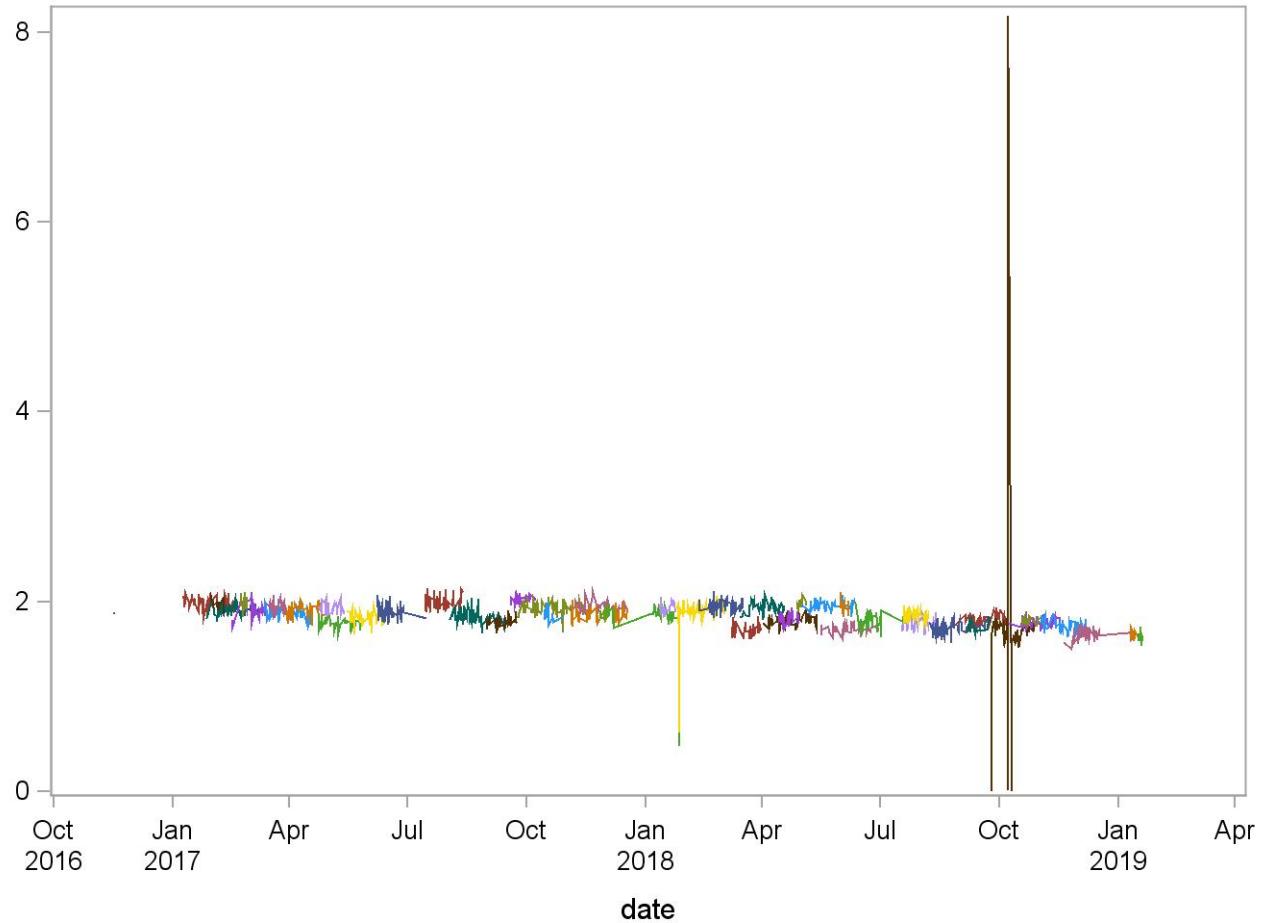
2017-2018 Summary Statistics and QC Chart for Nucleated red blood cells (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	1.7115	0.0557	3.3
133181500	78	09JAN17	18FEB17	1.9427	0.0811	4.2
133181520	97	27JAN17	08MAR17	1.9221	0.1010	5.3
133181530	20	31JAN17	09FEB17	2.0715	0.0847	4.1
133181540	50	16FEB17	21MAR17	2.0086	0.0906	4.5
133181550	20	23FEB17	02MAR17	2.0025	0.0789	3.9
133181570	57	13MAR17	18APR17	1.9719	0.0859	4.4
133181580	33	17MAR17	29MAR17	2.0494	0.0749	3.7
133181600	61	30MAR17	01MAY17	1.9269	0.0787	4.1
133181610	49	24APR17	26MAY17	1.9245	0.0790	4.1
133181630	37	24APR17	13MAY17	2.0184	0.0667	3.3
133181650	85	15MAY17	17JUN17	2.0580	0.0804	3.9
133181680	67	08JUN17	15JUL17	2.0501	0.0727	3.5
133181730	71	15JUL17	13AUG17	2.0673	0.0945	4.6
133181760	97	03AUG17	15SEP17	1.9719	0.0919	4.7
133181770	36	31AUG17	25SEP17	1.9658	0.0765	3.9
133181790	41	19SEP17	08OCT17	2.0293	0.0689	3.4
133181840	106	24SEP17	16NOV17	1.9767	0.0934	4.7
133181860	21	15OCT17	30OCT17	2.2224	0.0800	3.6
133181890	61	05NOV17	18DEC17	2.0767	0.1110	5.3
133181870	57	06NOV17	17DEC17	1.9077	0.0660	3.5
133181930	71	27NOV17	27JAN18	2.0149	0.0995	4.9
133181970	34	12JAN18	24JAN18	2.2224	0.0891	4.0
133181980	92	25JAN18	03MAR18	1.9378	0.1379	7.1
133182010	119	12FEB18	17MAR18	1.9876	0.0777	3.9
133182030	89	09MAR18	31MAR18	1.9744	0.0806	4.1
133182060	53	15MAR18	18APR18	2.1121	0.0728	3.4
133182080	57	02APR18	13MAY18	2.0144	0.0708	3.5
133182090	35	14APR18	29APR18	2.0166	0.0784	3.9
133182110	20	28APR18	05MAY18	2.1220	0.0929	4.4
133182120	55	01MAY18	11JUN18	2.0253	0.0920	4.5
133182140	55	17MAY18	30JUN18	1.9902	0.0827	4.2
133182150	21	01JUN18	07JUN18	1.9657	0.0652	3.3
133182160	51	12JUN18	21JUL18	1.6922	0.0788	4.7
133182210	44	18JUL18	15AUG18	1.9064	0.0969	5.1
133182220	40	20JUL18	07AUG18	2.0228	0.0809	4.0
133182240	96	08AUG18	21SEP18	1.8365	0.0806	4.4
133182260	49	28AUG18	07OCT18	2.0049	0.0883	4.4
133182270	26	07SEP18	24SEP18	2.0104	0.0701	3.5
133182300	90	25SEP18	29OCT18	2.9540	7.3330	248.2
133182310	47	08OCT18	17NOV18	1.9251	0.0886	4.6
133182320	30	19OCT18	05NOV18	1.9767	0.0788	4.0
133182350	60	02NOV18	07DEC18	1.9625	0.0822	4.2
133182390	71	20NOV18	12JAN19	1.9328	0.0734	3.8
133182400	20	11JAN19	19JAN19	2.0160	0.0899	4.5
133182430	18	17JAN19	20JAN19	1.9328	0.0741	3.8



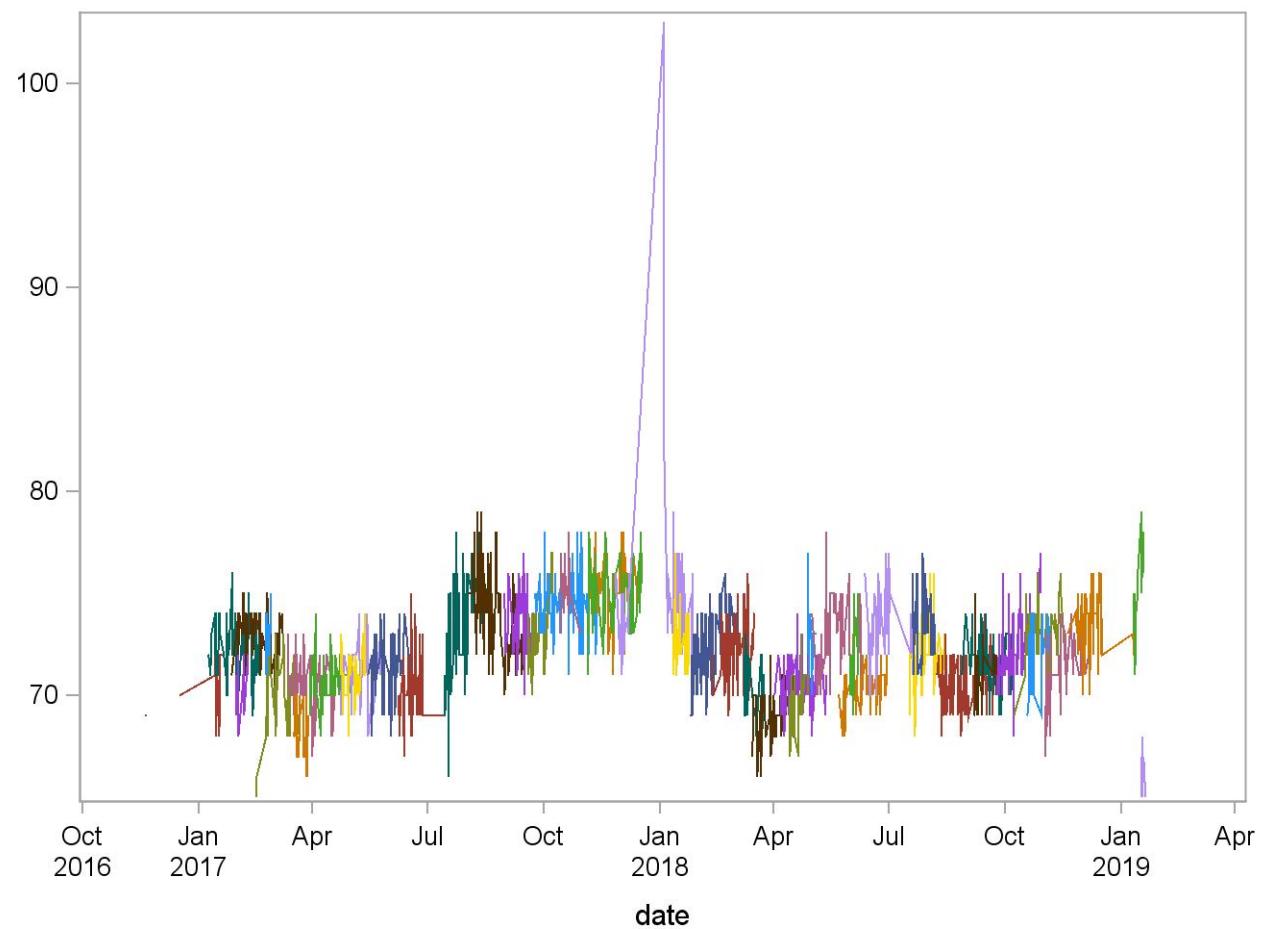
2017-2018 Summary Statistics and QC Chart for Nucleated red blood cells (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	1.9892	0.0613	3.1
143191520	58	27JAN17	08MAR17	1.9243	0.0564	2.9
143191530	20	31JAN17	09FEB17	1.9685	0.0416	2.1
143191540	47	16FEB17	21MAR17	1.9189	0.0725	3.8
143191550	21	23FEB17	27FEB17	1.9786	0.0683	3.5
143191570	56	13MAR17	18APR17	1.8857	0.0634	3.4
143191580	33	17MAR17	29MAR17	1.9470	0.0604	3.1
143191600	61	30MAR17	01MAY17	1.9116	0.0634	3.3
143191610	49	24APR17	26MAY17	1.7769	0.0539	3.0
143191630	38	24APR17	13MAY17	1.9408	0.0530	2.7
143191650	80	15MAY17	17JUN17	1.8358	0.0605	3.3
143191680	67	08JUN17	15JUL17	1.8878	0.0731	3.9
143191730	69	15JUL17	13AUG17	1.9943	0.0665	3.3
143191760	92	03AUG17	15SEP17	1.8457	0.0701	3.8
143191770	34	31AUG17	24SEP17	1.7879	0.0462	2.6
143191790	39	19SEP17	08OCT17	2.0249	0.0377	1.9
143191840	102	24SEP17	16NOV17	1.9417	0.0587	3.0
143191860	22	15OCT17	30OCT17	1.8645	0.0585	3.1
143191890	57	05NOV17	18DEC17	1.8705	0.0634	3.4
143191870	56	06NOV17	17DEC17	1.9470	0.0495	2.5
143191930	69	27NOV17	27JAN18	1.8383	0.2316	12.6
143191970	32	12JAN18	24JAN18	1.9375	0.0526	2.7
143191980	91	25JAN18	03MAR18	1.9020	0.1477	7.8
143192010	127	12FEB18	17MAR18	1.9532	0.0526	2.7
143192030	93	09MAR18	31MAR18	1.6962	0.0599	3.5
143192060	48	15MAR18	18APR18	1.9471	0.0590	3.0
143192080	58	02APR18	13MAY18	1.7971	0.0543	3.0
143192090	34	14APR18	29APR18	1.8312	0.0512	2.8
143192110	20	28APR18	05MAY18	1.9730	0.0404	2.0
143192120	52	01MAY18	11JUN18	1.9590	0.0507	2.6
143192140	54	17MAY18	30JUN18	1.7128	0.0447	2.6
143192150	21	01JUN18	07JUN18	1.9505	0.0586	3.0
143192160	51	12JUN18	21JUL18	1.7869	0.0778	4.4
143192210	43	18JUL18	15AUG18	1.7742	0.0657	3.7
143192220	39	20JUL18	07AUG18	1.8513	0.0560	3.0
143192240	92	08AUG18	21SEP18	1.7315	0.0641	3.7
143192260	50	28AUG18	07OCT18	1.8266	0.0505	2.8
143192270	26	07SEP18	24SEP18	1.7488	0.0691	4.0
143192300	86	25SEP18	29OCT18	1.7012	0.7757	45.6
143192310	47	08OCT18	17NOV18	1.7957	0.0502	2.8
143192320	30	19OCT18	05NOV18	1.8010	0.0391	2.2
143192340	61	02NOV18	07DEC18	1.7556	0.0608	3.5
143192380	72	20NOV18	12JAN19	1.6533	0.0544	3.3
143192400	20	11JAN19	19JAN19	1.6380	0.0361	2.2
143192430	18	17JAN19	20JAN19	1.6306	0.0490	3.0



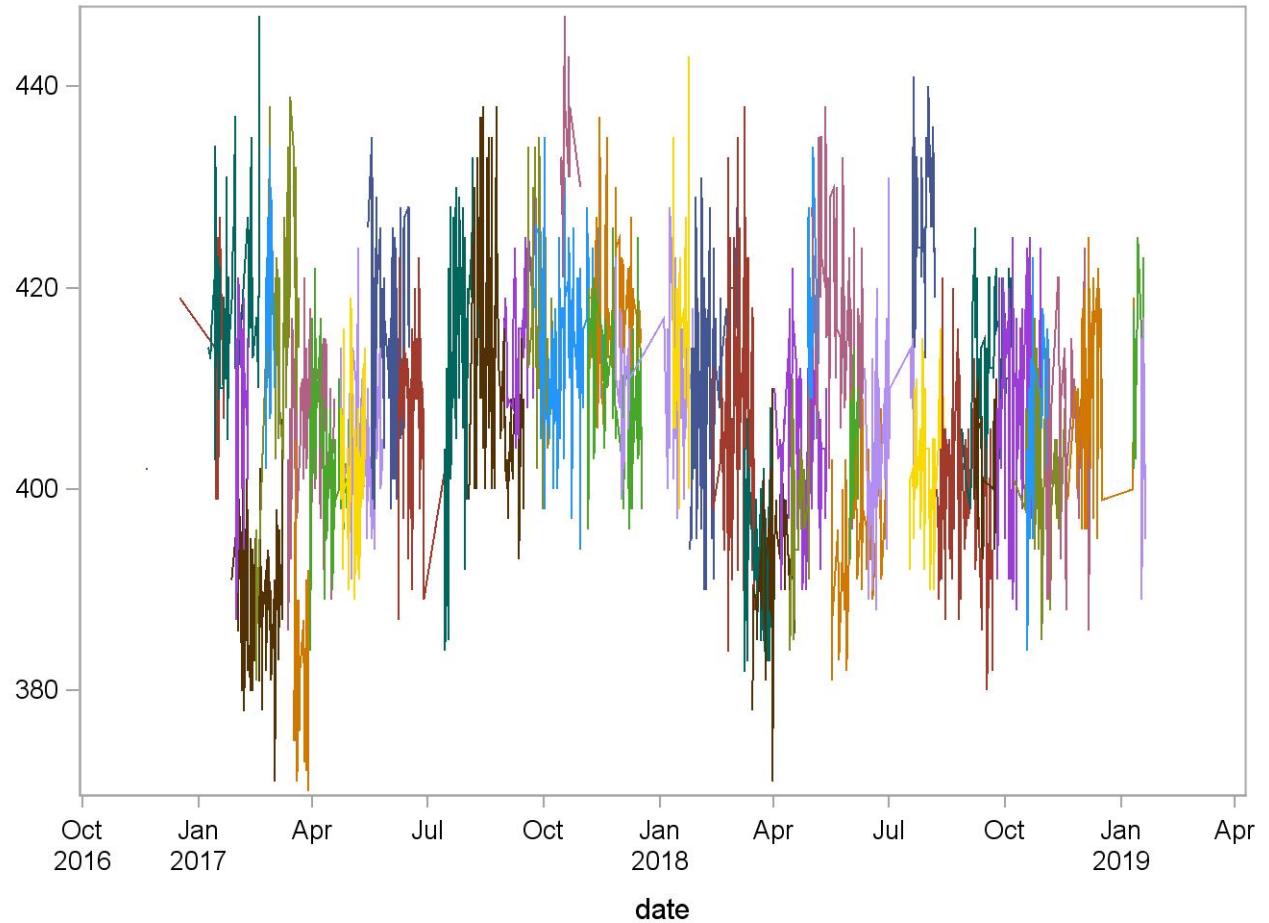
2017-2018 Summary Statistics and QC Chart for Platelet count (10^3 cells/uL) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	70.4167	1.8320	2.6
123171500	110	09JAN17	18FEB17	72.4818	1.4060	1.9
123171520	113	27JAN17	08MAR17	72.9646	1.0850	1.5
123171530	20	31JAN17	09FEB17	70.6500	1.1821	1.7
123171540	48	16FEB17	21MAR17	70.1875	1.7704	2.5
123171550	21	23FEB17	27FEB17	72.9524	1.1609	1.6
123171570	57	13MAR17	18APR17	70.4912	1.3245	1.9
123171580	33	17MAR17	29MAR17	68.2727	1.2317	1.8
123171600	60	30MAR17	01MAY17	70.8833	1.1213	1.6
123171610	48	24APR17	26MAY17	71.3750	1.2820	1.8
123171630	37	24APR17	13MAY17	70.9189	1.2333	1.7
123171650	80	15MAY17	17JUN17	71.3000	1.3350	1.9
123171680	67	08JUN17	15JUL17	70.1493	1.4694	2.1
123171730	71	15JUL17	13AUG17	73.7746	2.2816	3.1
123171760	93	03AUG17	15SEP17	74.3011	2.1406	2.9
123171770	40	31AUG17	24SEP17	73.4750	1.5019	2.0
123171790	39	19SEP17	08OCT17	73.2564	1.5848	2.2
123171840	105	24SEP17	16NOV17	74.7048	1.3440	1.8
123171860	22	15OCT17	30OCT17	75.3182	1.2492	1.7
123171890	57	05NOV17	18DEC17	74.7018	1.7420	2.3
123171870	57	06NOV17	17DEC17	75.3158	1.4899	2.0
123171930	71	27NOV17	27JAN18	75.0141	3.7815	5.0
123171970	33	12JAN18	24JAN18	72.8485	1.3491	1.9
123171980	95	25JAN18	03MAR18	72.1158	1.6686	2.3
123172010	129	12FEB18	17MAR18	72.1318	1.4544	2.0
123172030	35	09MAR18	25MAR18	70.3429	1.3272	1.9
123172060	50	15MAR18	18APR18	69.2000	1.2454	1.8
123172080	58	02APR18	13MAY18	70.7931	1.2809	1.8
123172090	34	14APR18	29APR18	69.7647	1.4987	2.1
123172110	20	28APR18	05MAY18	72.7500	1.5174	2.1
123172120	53	01MAY18	11JUN18	72.7547	1.6973	2.3
123172140	54	22MAY18	30JUN18	70.3889	1.0171	1.4
123172150	20	01JUN18	07JUN18	71.6500	1.7554	2.5
123172160	50	12JUN18	21JUL18	73.1400	1.7958	2.5
123172210	44	18JUL18	15AUG18	71.8409	1.5241	2.1
123172220	39	20JUL18	07AUG18	73.5641	1.5525	2.1
123172240	94	08AUG18	21SEP18	70.6064	1.2112	1.7
123172260	49	28AUG18	07OCT18	71.6939	1.2451	1.7
123172270	26	07SEP18	24SEP18	70.8462	1.4337	2.0
123172300	85	25SEP18	29OCT18	72.3765	1.6760	2.3
123172310	49	08OCT18	17NOV18	73.0204	1.5068	2.1
123172320	30	19OCT18	05NOV18	71.8333	1.6206	2.3
123172340	60	02NOV18	07DEC18	71.3000	1.5655	2.2
123172380	71	20NOV18	12JAN19	73.3380	1.5207	2.1
123172400	20	11JAN19	19JAN19	74.9000	1.9708	2.6
123172430	16	17JAN19	20JAN19	66.1875	0.8342	1.3



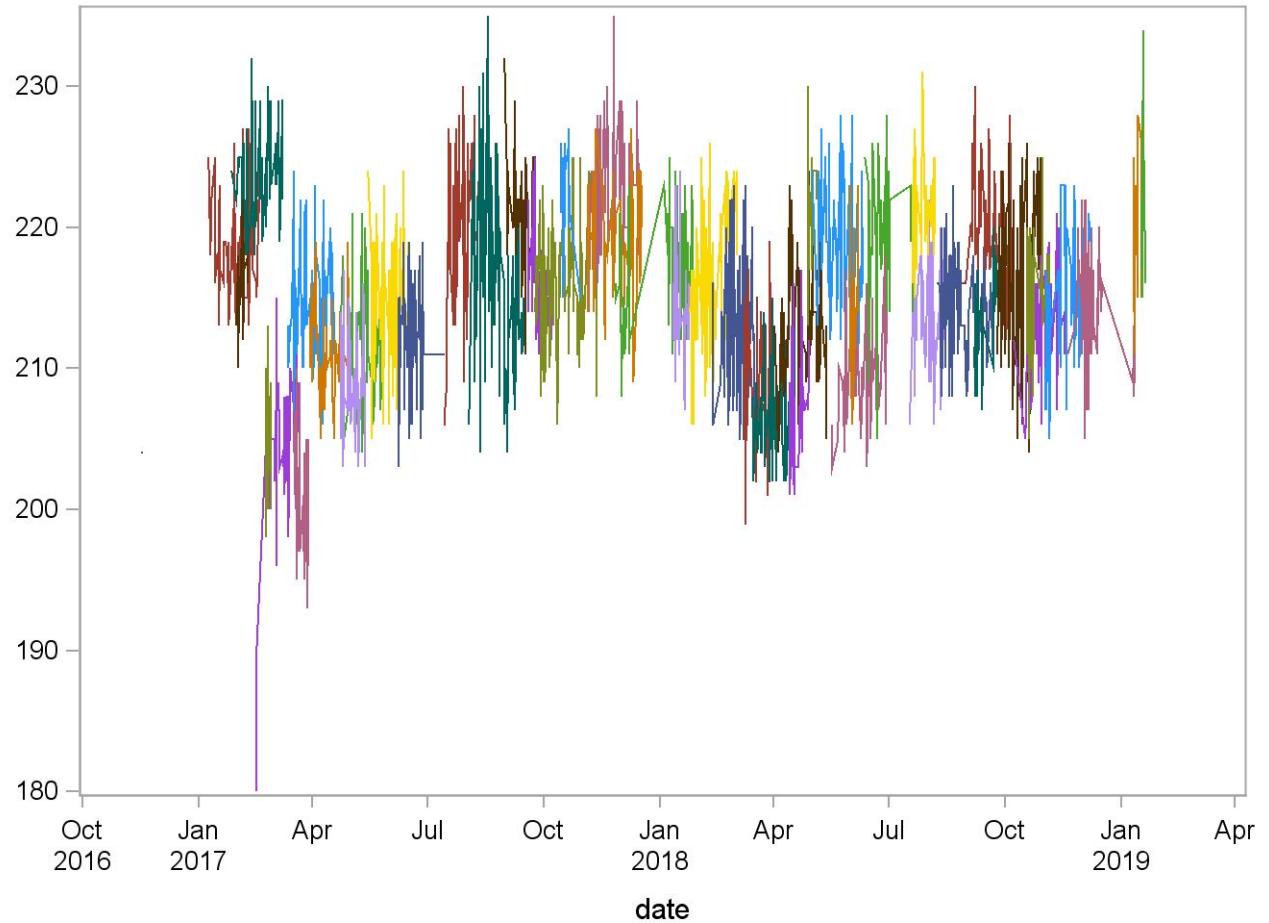
2017-2018 Summary Statistics and QC Chart for Platelet count (10^3 cells/uL) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	414.3846	9.6224	2.3
133181500	78	09JAN17	18FEB17	418.5256	8.8490	2.1
133181520	97	27JAN17	08MAR17	390.0309	6.9048	1.8
133181530	20	31JAN17	09FEB17	408.5500	9.3667	2.3
133181540	50	16FEB17	21MAR17	416.6600	11.5080	2.8
133181550	20	23FEB17	02MAR17	418.9500	8.4197	2.0
133181570	57	13MAR17	18APR17	406.1754	7.4357	1.8
133181580	33	17MAR17	29MAR17	383.5758	8.3143	2.2
133181600	61	30MAR17	01MAY17	404.2131	7.2021	1.8
133181610	49	24APR17	26MAY17	404.4898	6.7550	1.7
133181630	37	24APR17	13MAY17	401.6757	7.4500	1.9
133181650	85	15MAY17	17JUN17	415.4118	8.4025	2.0
133181680	67	08JUN17	15JUL17	406.3433	7.2979	1.8
133181730	71	15JUL17	13AUG17	414.0141	10.5999	2.6
133181760	97	03AUG17	15SEP17	414.1237	11.0880	2.7
133181770	36	31AUG17	25SEP17	416.1111	6.6021	1.6
133181790	41	19SEP17	08OCT17	417.7805	9.6320	2.3
133181840	106	24SEP17	16NOV17	415.2264	7.2746	1.8
133181860	21	15OCT17	30OCT17	434.9524	6.5687	1.5
133181890	61	05NOV17	18DEC17	409.9836	6.9558	1.7
133181870	57	06NOV17	17DEC17	417.7018	7.1912	1.7
133181930	71	27NOV17	27JAN18	411.2254	6.5883	1.6
133181970	34	12JAN18	24JAN18	415.1471	8.8835	2.1
133181980	92	25JAN18	03MAR18	409.3370	9.3565	2.3
133182010	119	12FEB18	17MAR18	407.5126	11.2377	2.8
133182030	89	09MAR18	31MAR18	394.0337	7.0137	1.8
133182060	53	15MAR18	18APR18	393.1887	6.6883	1.7
133182080	57	02APR18	13MAY18	405.8947	7.6431	1.9
133182090	35	14APR18	29APR18	397.0857	6.8142	1.7
133182110	20	28APR18	05MAY18	417.8500	7.0508	1.7
133182120	55	01MAY18	11JUN18	417.3455	9.8191	2.4
133182140	55	17MAY18	30JUN18	397.6545	6.8346	1.7
133182150	21	01JUN18	07JUN18	404.5714	5.5729	1.4
133182160	51	12JUN18	21JUL18	404.9216	9.0528	2.2
133182210	44	18JUL18	15AUG18	401.9773	6.6595	1.7
133182220	40	20JUL18	07AUG18	426.8000	6.8358	1.6
133182240	96	08AUG18	21SEP18	399.5729	7.1492	1.8
133182260	49	28AUG18	07OCT18	413.3061	6.3318	1.5
133182270	26	07SEP18	24SEP18	403.1923	5.5355	1.4
133182300	90	25SEP18	29OCT18	407.0444	9.1245	2.2
133182310	47	08OCT18	17NOV18	402.6170	6.8033	1.7
133182320	30	19OCT18	05NOV18	407.0667	7.2916	1.8
133182350	60	02NOV18	07DEC18	404.4167	8.5277	2.1
133182390	71	20NOV18	12JAN19	410.4225	7.4769	1.8
133182400	20	11JAN19	19JAN19	411.0000	6.5373	1.6
133182430	18	17JAN19	20JAN19	404.2222	7.6739	1.9



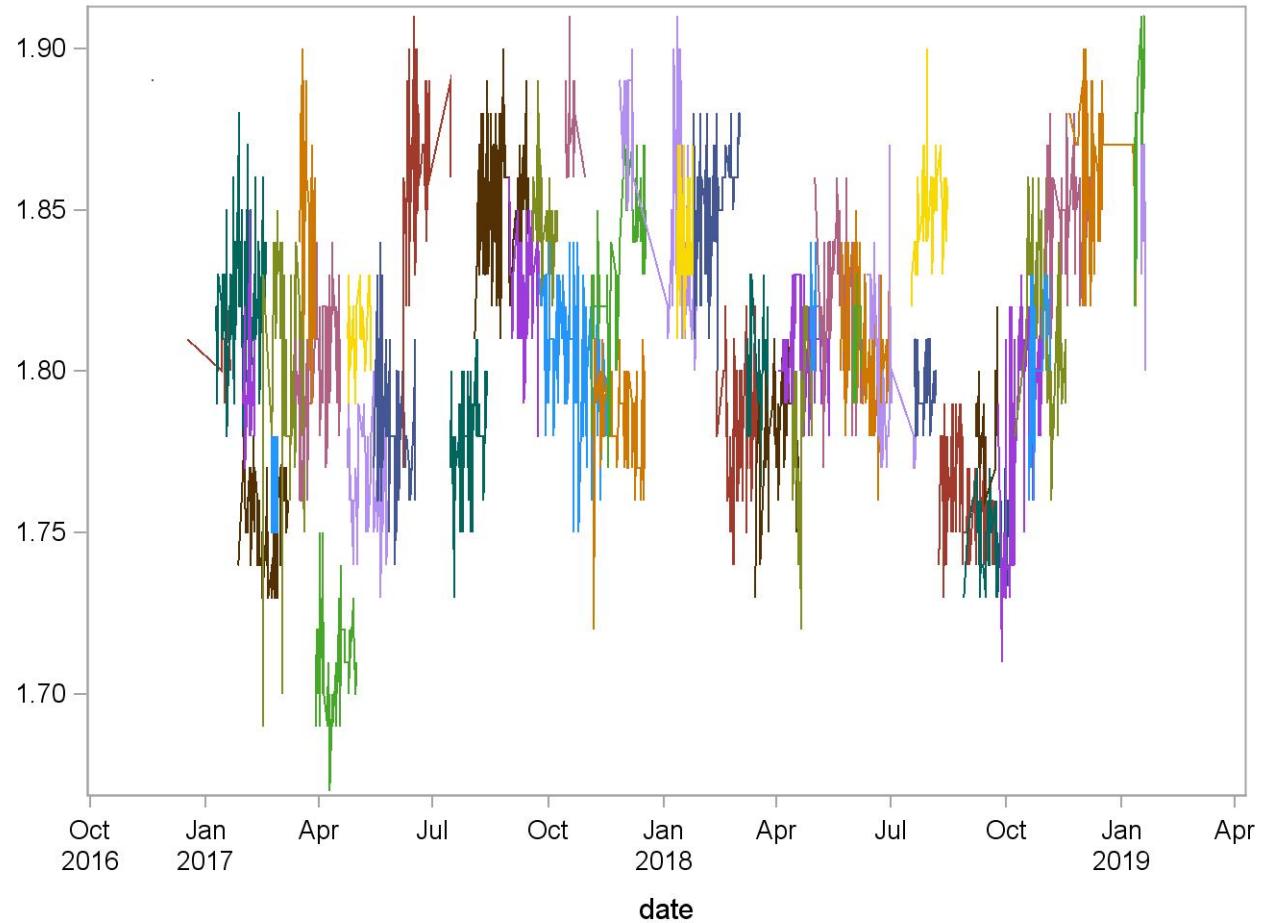
2017-2018 Summary Statistics and QC Chart for Platelet count (10^3 cells/uL) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	219.2453	3.9120	1.8
143191520	58	27JAN17	08MAR17	223.9655	3.3454	1.5
143191530	20	31JAN17	09FEB17	216.5000	3.0865	1.4
143191540	47	16FEB17	21MAR17	204.6383	6.2011	3.0
143191550	21	23FEB17	27FEB17	205.2857	3.6489	1.8
143191570	56	13MAR17	18APR17	214.7500	4.1440	1.9
143191580	33	17MAR17	29MAR17	201.3333	4.2402	2.1
143191600	61	30MAR17	01MAY17	211.9180	3.1848	1.5
143191610	49	24APR17	26MAY17	211.6327	4.1818	2.0
143191630	38	24APR17	13MAY17	208.9737	3.7235	1.8
143191650	80	15MAY17	17JUN17	214.7250	4.2604	2.0
143191680	67	08JUN17	15JUL17	212.9403	3.5670	1.7
143191730	69	15JUL17	13AUG17	219.2029	6.1395	2.8
143191760	92	03AUG17	15SEP17	217.6957	6.5629	3.0
143191770	34	31AUG17	24SEP17	221.5294	4.0018	1.8
143191790	39	19SEP17	08OCT17	216.5128	3.4479	1.6
143191840	103	24SEP17	16NOV17	216.8738	4.0745	1.9
143191860	22	15OCT17	30OCT17	221.4545	3.3908	1.5
143191890	57	05NOV17	18DEC17	219.2281	3.9552	1.8
143191870	56	06NOV17	17DEC17	222.8571	4.0962	1.8
143191930	69	27NOV17	27JAN18	217.2464	3.8517	1.8
143191970	32	12JAN18	24JAN18	214.3750	4.1794	1.9
143191980	91	25JAN18	03MAR18	216.0440	4.5702	2.1
143192010	127	12FEB18	17MAR18	212.6772	4.5928	2.2
143192030	93	09MAR18	31MAR18	209.7204	4.7028	2.2
143192060	48	15MAR18	18APR18	207.1458	3.5848	1.7
143192080	58	02APR18	13MAY18	213.3793	4.3602	2.0
143192090	34	14APR18	29APR18	206.9118	3.9724	1.9
143192110	20	28APR18	05MAY18	221.5000	3.5762	1.6
143192120	52	01MAY18	11JUN18	219.4808	4.3136	2.0
143192140	54	17MAY18	30JUN18	209.8148	3.9145	1.9
143192150	21	01JUN18	07JUN18	214.1429	4.6935	2.2
143192160	51	12JUN18	21JUL18	218.9020	4.7128	2.2
143192210	43	18JUL18	15AUG18	213.7209	4.1134	1.9
143192220	39	20JUL18	07AUG18	221.3846	3.6027	1.6
143192240	92	08AUG18	21SEP18	214.0870	3.1853	1.5
143192260	50	28AUG18	07OCT18	220.2800	3.6199	1.6
143192270	26	07SEP18	24SEP18	212.8846	3.1664	1.5
143192300	87	25SEP18	29OCT18	216.4828	4.9974	2.3
143192310	47	08OCT18	17NOV18	213.0000	3.7706	1.8
143192320	30	19OCT18	05NOV18	214.8333	4.5112	2.1
143192340	61	02NOV18	07DEC18	214.5574	4.6423	2.2
143192380	72	20NOV18	12JAN19	214.4861	3.5918	1.7
143192400	20	11JAN19	19JAN19	220.7500	5.5334	2.5
143192430	18	17JAN19	20JAN19	221.8889	4.8250	2.2



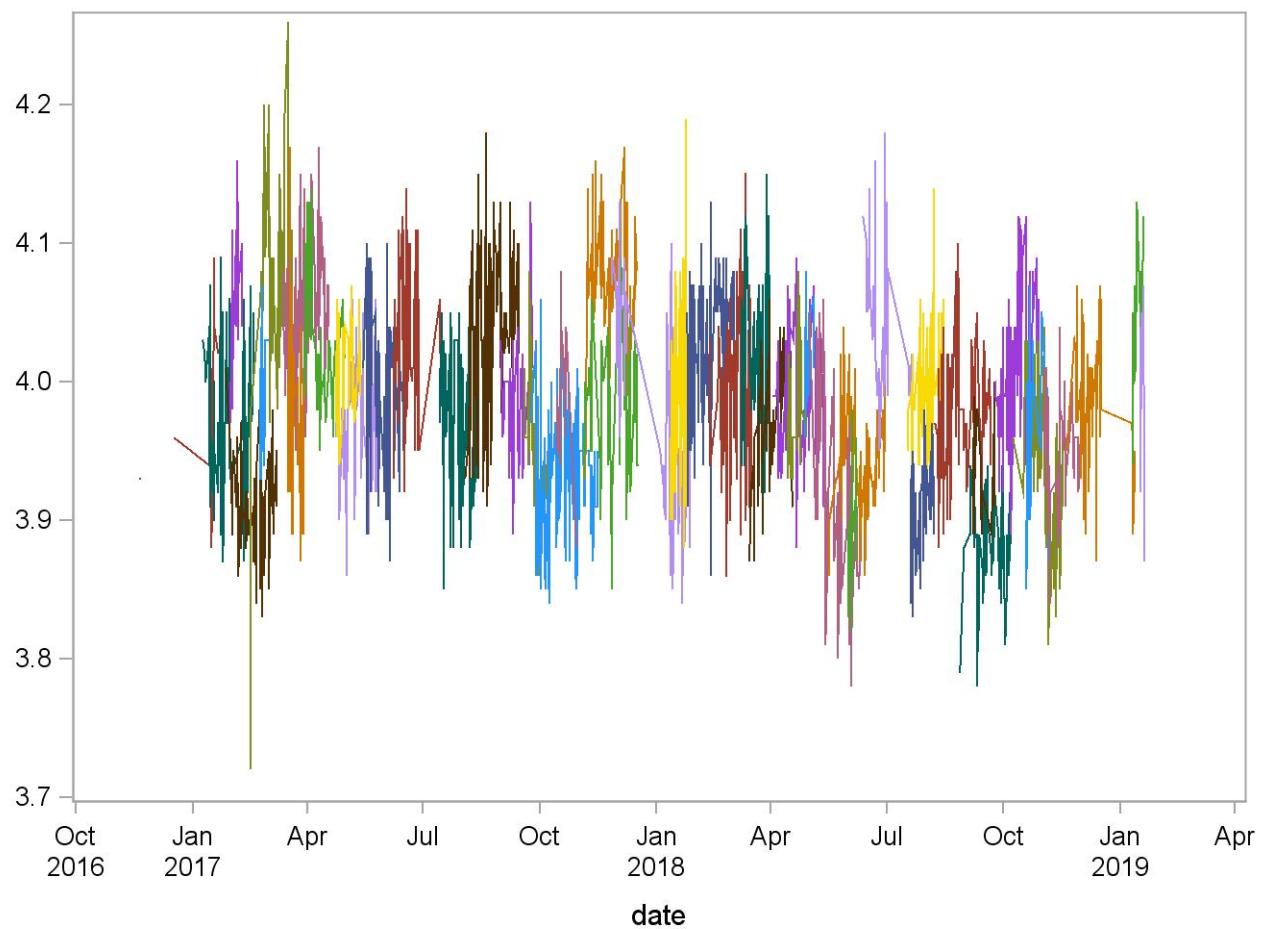
2017-2018 Summary Statistics and QC Chart for Red Cell Count (10^6 cells/uL) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	1.8092	0.0124	0.7
123171500	110	09JAN17	18FEB17	1.8226	0.0216	1.2
123171520	113	27JAN17	08MAR17	1.7542	0.0149	0.8
123171530	20	31JAN17	09FEB17	1.7980	0.0199	1.1
123171540	48	16FEB17	21MAR17	1.8008	0.0354	2.0
123171550	21	23FEB17	27FEB17	1.7610	0.0122	0.7
123171570	57	13MAR17	18APR17	1.8007	0.0203	1.1
123171580	33	17MAR17	29MAR17	1.8458	0.0273	1.5
123171600	60	30MAR17	01MAY17	1.7098	0.0153	0.9
123171610	48	24APR17	26MAY17	1.7688	0.0170	1.0
123171630	37	24APR17	13MAY17	1.8116	0.0112	0.6
123171650	80	15MAY17	17JUN17	1.7861	0.0200	1.1
123171680	67	08JUN17	15JUL17	1.8624	0.0243	1.3
123171730	71	15JUL17	13AUG17	1.7763	0.0152	0.9
123171760	93	03AUG17	15SEP17	1.8510	0.0192	1.0
123171770	40	31AUG17	24SEP17	1.8243	0.0205	1.1
123171790	39	19SEP17	08OCT17	1.8492	0.0155	0.8
123171840	105	24SEP17	16NOV17	1.8030	0.0203	1.1
123171860	22	15OCT17	30OCT17	1.8750	0.0134	0.7
123171890	57	05NOV17	18DEC17	1.8332	0.0231	1.3
123171870	57	06NOV17	17DEC17	1.7861	0.0159	0.9
123171930	71	27NOV17	27JAN18	1.8532	0.0280	1.5
123171970	33	12JAN18	24JAN18	1.8400	0.0179	1.0
123171980	95	25JAN18	03MAR18	1.8511	0.0174	0.9
123172010	129	12FEB18	17MAR18	1.7809	0.0189	1.1
123172030	35	09MAR18	25MAR18	1.7983	0.0171	0.9
123172060	50	15MAR18	18APR18	1.7816	0.0168	0.9
123172080	58	02APR18	13MAY18	1.8084	0.0152	0.8
123172090	34	14APR18	29APR18	1.7850	0.0222	1.2
123172110	20	28APR18	05MAY18	1.8180	0.0128	0.7
123172120	53	01MAY18	11JUN18	1.8194	0.0220	1.2
123172140	54	22MAY18	30JUN18	1.8102	0.0219	1.2
123172150	20	01JUN18	07JUN18	1.8095	0.0128	0.7
123172160	50	12JUN18	21JUL18	1.8022	0.0232	1.3
123172210	44	18JUL18	15AUG18	1.8509	0.0146	0.8
123172220	39	20JUL18	07AUG18	1.7962	0.0094	0.5
123172240	94	08AUG18	21SEP18	1.7623	0.0146	0.8
123172260	49	28AUG18	07OCT18	1.7488	0.0122	0.7
123172270	26	07SEP18	24SEP18	1.7835	0.0135	0.8
123172300	85	25SEP18	29OCT18	1.7779	0.0320	1.8
123172310	49	08OCT18	17NOV18	1.8178	0.0251	1.4
123172320	30	19OCT18	05NOV18	1.8017	0.0220	1.2
123172340	60	02NOV18	07DEC18	1.8485	0.0164	0.9
123172380	71	20NOV18	12JAN19	1.8554	0.0216	1.2
123172400	20	11JAN19	19JAN19	1.8700	0.0277	1.5
123172430	16	17JAN19	20JAN19	1.8550	0.0186	1.0



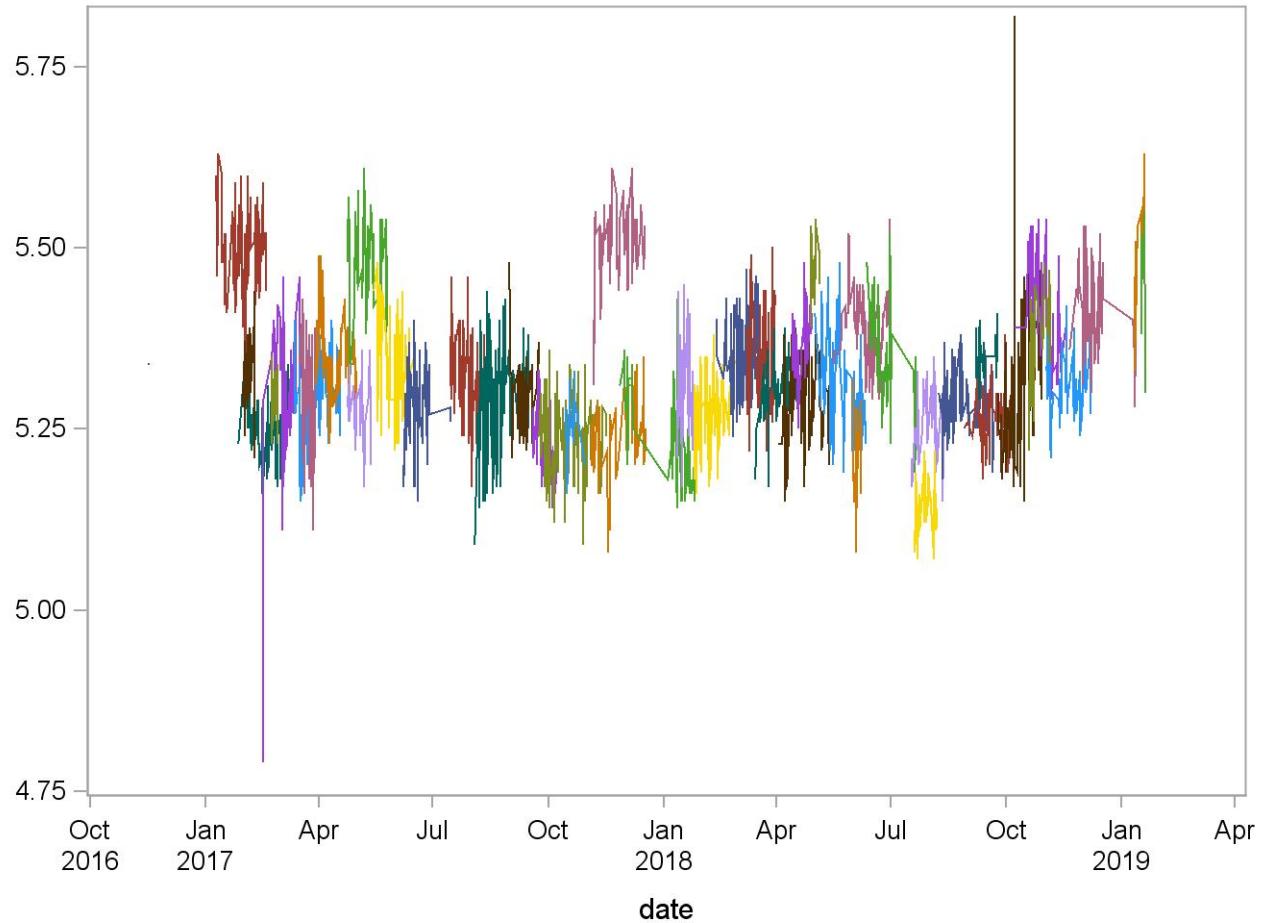
2017-2018 Summary Statistics and QC Chart for Red Cell Count (10^6 cells/uL) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	3.9915	0.0506	1.3
133181500	78	09JAN17	18FEB17	3.9740	0.0573	1.4
133181520	97	27JAN17	08MAR17	3.9107	0.0346	0.9
133181530	20	31JAN17	09FEB17	4.0600	0.0492	1.2
133181540	50	16FEB17	21MAR17	4.0558	0.0917	2.3
133181550	20	23FEB17	02MAR17	3.9800	0.0412	1.0
133181570	57	13MAR17	18APR17	4.0511	0.0520	1.3
133181580	33	17MAR17	29MAR17	3.9712	0.0691	1.7
133181600	61	30MAR17	01MAY17	4.0313	0.0464	1.2
133181610	49	24APR17	26MAY17	3.9665	0.0472	1.2
133181630	37	24APR17	13MAY17	4.0114	0.0328	0.8
133181650	85	15MAY17	17JUN17	3.9974	0.0517	1.3
133181680	67	08JUN17	15JUL17	4.0331	0.0487	1.2
133181730	71	15JUL17	13AUG17	3.9754	0.0464	1.2
133181760	97	03AUG17	15SEP17	4.0385	0.0570	1.4
133181770	36	31AUG17	25SEP17	3.9867	0.0424	1.1
133181790	41	19SEP17	08OCT17	3.9559	0.0492	1.2
133181840	106	24SEP17	16NOV17	3.9328	0.0492	1.3
133181860	21	15OCT17	30OCT17	3.9848	0.0453	1.1
133181890	61	05NOV17	18DEC17	3.9808	0.0461	1.2
133181870	57	06NOV17	17DEC17	4.0765	0.0483	1.2
133181930	71	27NOV17	27JAN18	3.9704	0.0699	1.8
133181970	34	12JAN18	24JAN18	3.9850	0.0709	1.8
133181980	92	25JAN18	03MAR18	4.0191	0.0465	1.2
133182010	119	12FEB18	17MAR18	3.9985	0.0571	1.4
133182030	89	09MAR18	31MAR18	4.0176	0.0581	1.4
133182060	53	15MAR18	18APR18	3.9730	0.0422	1.1
133182080	57	02APR18	13MAY18	3.9942	0.0477	1.2
133182090	35	14APR18	29APR18	3.9786	0.0380	1.0
133182110	20	28APR18	05MAY18	4.0220	0.0295	0.7
133182120	55	01MAY18	11JUN18	3.9193	0.0691	1.8
133182140	55	17MAY18	30JUN18	3.9407	0.0383	1.0
133182150	21	01JUN18	07JUN18	3.8867	0.0375	1.0
133182160	51	12JUN18	21JUL18	4.0506	0.0505	1.2
133182210	44	18JUL18	15AUG18	3.9991	0.0438	1.1
133182220	40	20JUL18	07AUG18	3.9030	0.0352	0.9
133182240	96	08AUG18	21SEP18	3.9758	0.0417	1.0
133182260	49	28AUG18	07OCT18	3.8833	0.0368	0.9
133182270	26	07SEP18	24SEP18	3.9408	0.0357	0.9
133182300	90	25SEP18	29OCT18	4.0004	0.0504	1.3
133182310	47	08OCT18	17NOV18	3.9417	0.0586	1.5
133182320	30	19OCT18	05NOV18	3.9637	0.0603	1.5
133182350	60	02NOV18	07DEC18	3.9512	0.0377	1.0
133182390	71	20NOV18	12JAN19	3.9890	0.0418	1.0
133182400	20	11JAN19	19JAN19	4.0425	0.0494	1.2
133182430	18	17JAN19	20JAN19	3.9989	0.0479	1.2



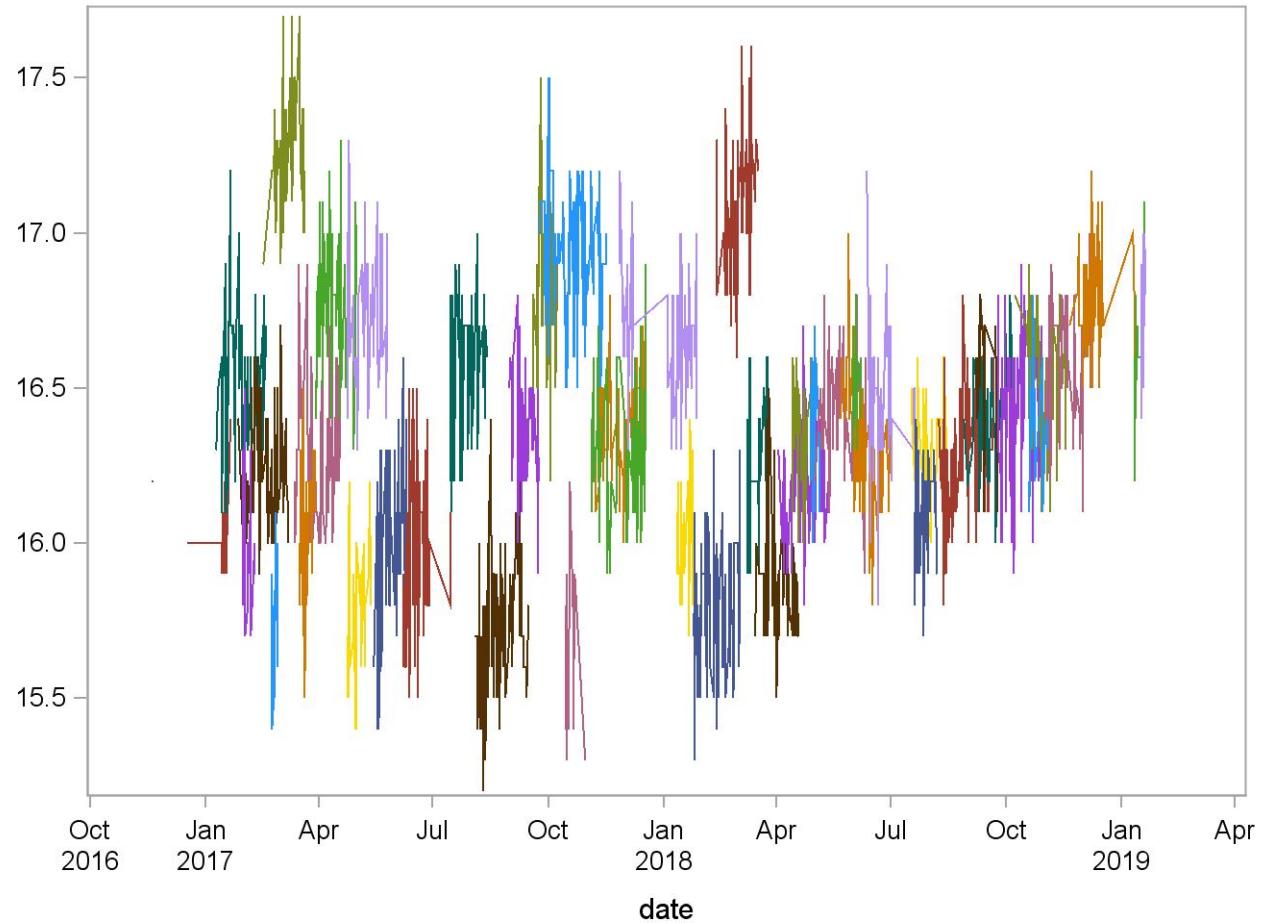
2017-2018 Summary Statistics and QC Chart for Red Cell Count (10^6 cells/uL) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	5.5006	0.0664	1.2
143191520	58	27JAN17	08MAR17	5.2574	0.0442	0.8
143191530	20	31JAN17	09FEB17	5.3305	0.0610	1.1
143191540	47	16FEB17	21MAR17	5.2994	0.1246	2.4
143191550	21	23FEB17	27FEB17	5.2890	0.0360	0.7
143191570	56	13MAR17	18APR17	5.2934	0.0617	1.2
143191580	33	17MAR17	29MAR17	5.2924	0.0879	1.7
143191600	61	30MAR17	01MAY17	5.3589	0.0597	1.1
143191610	49	24APR17	26MAY17	5.4741	0.0637	1.2
143191630	38	24APR17	13MAY17	5.2824	0.0427	0.8
143191650	80	15MAY17	17JUN17	5.3458	0.0596	1.1
143191680	67	08JUN17	15JUL17	5.2775	0.0545	1.0
143191730	69	15JUL17	13AUG17	5.3229	0.0571	1.1
143191760	92	03AUG17	15SEP17	5.2818	0.0725	1.4
143191770	34	31AUG17	24SEP17	5.3041	0.0538	1.0
143191790	39	19SEP17	08OCT17	5.2356	0.0481	0.9
143191840	103	24SEP17	16NOV17	5.2331	0.0552	1.1
143191860	22	15OCT17	30OCT17	5.2564	0.0392	0.7
143191890	57	05NOV17	18DEC17	5.2398	0.0537	1.0
143191870	56	06NOV17	17DEC17	5.5100	0.0524	1.0
143191930	69	27NOV17	27JAN18	5.2416	0.0663	1.3
143191970	32	12JAN18	24JAN18	5.2953	0.0716	1.4
143191980	91	25JAN18	03MAR18	5.2830	0.0492	0.9
143192010	127	12FEB18	17MAR18	5.3640	0.0551	1.0
143192030	93	09MAR18	31MAR18	5.3585	0.0752	1.4
143192060	48	15MAR18	18APR18	5.3044	0.0426	0.8
143192080	58	02APR18	13MAY18	5.2969	0.0614	1.2
143192090	34	14APR18	29APR18	5.3647	0.0473	0.9
143192110	20	28APR18	05MAY18	5.4725	0.0440	0.8
143192120	52	01MAY18	11JUN18	5.3127	0.0716	1.3
143192140	54	17MAY18	30JUN18	5.3931	0.0515	1.0
143192150	21	01JUN18	07JUN18	5.2057	0.0670	1.3
143192160	51	12JUN18	21JUL18	5.3637	0.0702	1.3
143192210	43	18JUL18	15AUG18	5.2651	0.0445	0.8
143192220	39	20JUL18	07AUG18	5.1382	0.0378	0.7
143192240	92	08AUG18	21SEP18	5.2897	0.0430	0.8
143192260	50	28AUG18	07OCT18	5.2638	0.0388	0.7
143192270	26	07SEP18	24SEP18	5.3504	0.0326	0.6
143192300	87	25SEP18	29OCT18	5.2953	0.0977	1.8
143192310	47	08OCT18	17NOV18	5.4115	0.0715	1.3
143192320	30	19OCT18	05NOV18	5.3540	0.0680	1.3
143192340	61	02NOV18	07DEC18	5.3089	0.0474	0.9
143192380	72	20NOV18	12JAN19	5.4064	0.0554	1.0
143192400	20	11JAN19	19JAN19	5.4820	0.0763	1.4
143192430	18	17JAN19	20JAN19	5.4700	0.0602	1.1



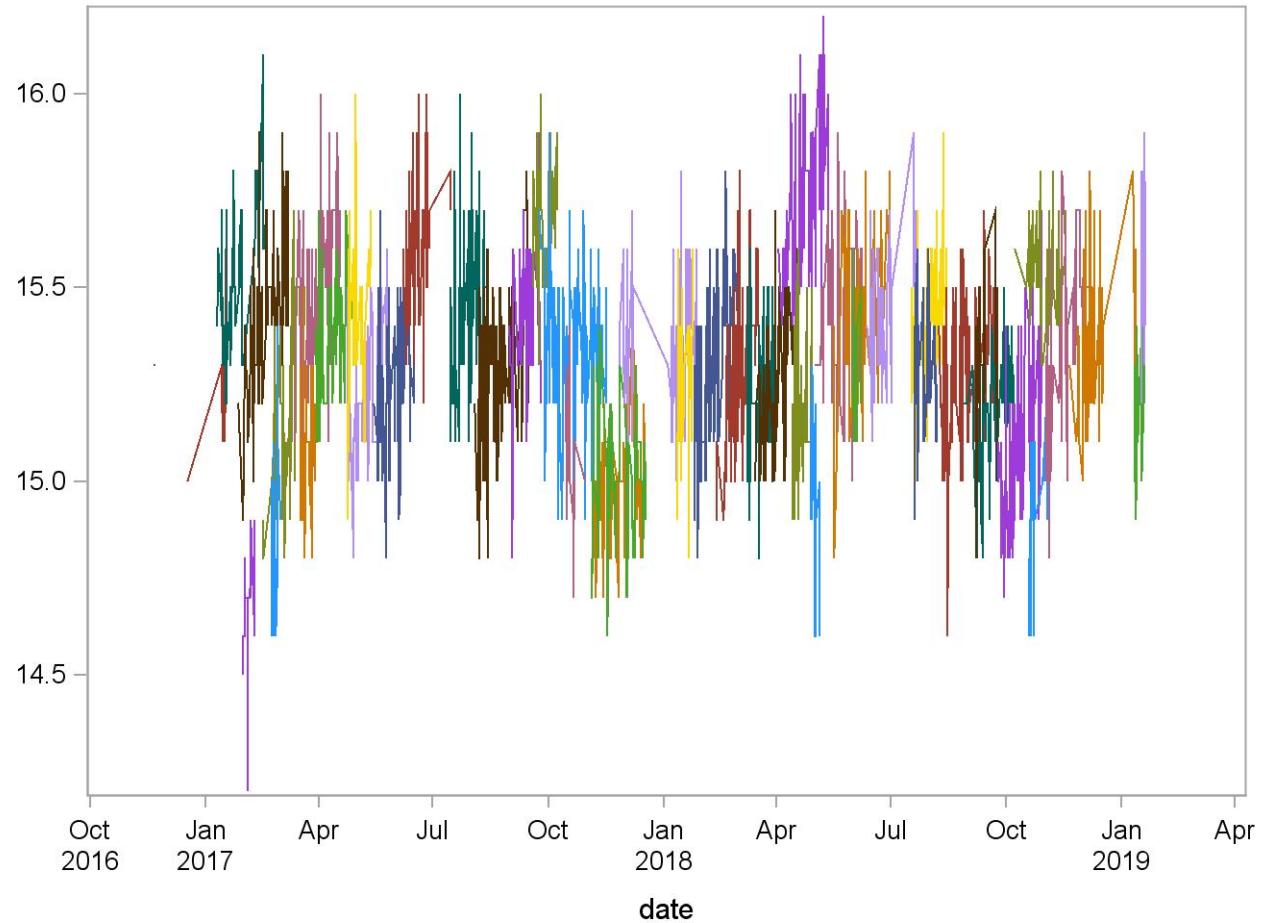
2017-2018 Summary Statistics and QC Chart for Red cell distribution width (%) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	16.0500	0.1567	1.0
123171500	110	09JAN17	18FEB17	16.5182	0.2210	1.3
123171520	113	27JAN17	08MAR17	16.2398	0.1897	1.2
123171530	20	31JAN17	09FEB17	15.9600	0.2088	1.3
123171540	48	16FEB17	21MAR17	17.2688	0.2023	1.2
123171550	21	23FEB17	27FEB17	15.7571	0.1964	1.2
123171570	57	13MAR17	18APR17	16.3018	0.2364	1.5
123171580	33	17MAR17	29MAR17	16.0485	0.2181	1.4
123171600	60	30MAR17	01MAY17	16.7717	0.2108	1.3
123171610	48	24APR17	26MAY17	16.7292	0.2143	1.3
123171630	37	24APR17	13MAY17	15.7892	0.2038	1.3
123171650	80	15MAY17	17JUN17	15.9938	0.2410	1.5
123171680	67	08JUN17	15JUL17	15.9821	0.2528	1.6
123171730	71	15JUL17	13AUG17	16.5662	0.1927	1.2
123171760	93	03AUG17	15SEP17	15.7430	0.2002	1.3
123171770	40	31AUG17	24SEP17	16.3775	0.1993	1.2
123171790	39	19SEP17	08OCT17	16.8128	0.2483	1.5
123171840	105	24SEP17	16NOV17	16.9133	0.1922	1.1
123171860	22	15OCT17	30OCT17	15.6636	0.2421	1.5
123171890	57	05NOV17	18DEC17	16.2947	0.2175	1.3
123171870	57	06NOV17	17DEC17	16.3702	0.1558	1.0
123171930	71	27NOV17	27JAN18	16.6690	0.2025	1.2
123171970	33	12JAN18	24JAN18	15.9879	0.1596	1.0
123171980	95	25JAN18	03MAR18	15.7800	0.1927	1.2
123172010	129	12FEB18	17MAR18	17.0860	0.2057	1.2
123172030	35	09MAR18	25MAR18	16.2914	0.2133	1.3
123172060	50	15MAR18	18APR18	15.8880	0.1891	1.2
123172080	58	02APR18	13MAY18	16.2121	0.1836	1.1
123172090	34	14APR18	29APR18	16.3794	0.1610	1.0
123172110	20	28APR18	05MAY18	16.3850	0.1872	1.1
123172120	53	01MAY18	11JUN18	16.4094	0.1779	1.1
123172140	54	22MAY18	30JUN18	16.3000	0.2128	1.3
123172150	20	01JUN18	07JUN18	16.5250	0.1372	0.8
123172160	50	12JUN18	21JUL18	16.4600	0.2167	1.3
123172210	44	18JUL18	15AUG18	16.3136	0.1579	1.0
123172220	39	20JUL18	07AUG18	16.0590	0.1650	1.0
123172240	94	08AUG18	21SEP18	16.2691	0.1766	1.1
123172260	49	28AUG18	07OCT18	16.4184	0.1692	1.0
123172270	26	07SEP18	24SEP18	16.5423	0.1770	1.1
123172300	85	25SEP18	29OCT18	16.4318	0.2071	1.3
123172310	49	08OCT18	17NOV18	16.5469	0.2022	1.2
123172320	30	19OCT18	05NOV18	16.4000	0.1576	1.0
123172340	60	02NOV18	07DEC18	16.5700	0.1835	1.1
123172380	71	20NOV18	12JAN19	16.7775	0.1700	1.0
123172400	20	11JAN19	19JAN19	16.6300	0.2179	1.3
123172430	16	17JAN19	20JAN19	16.7250	0.1807	1.1



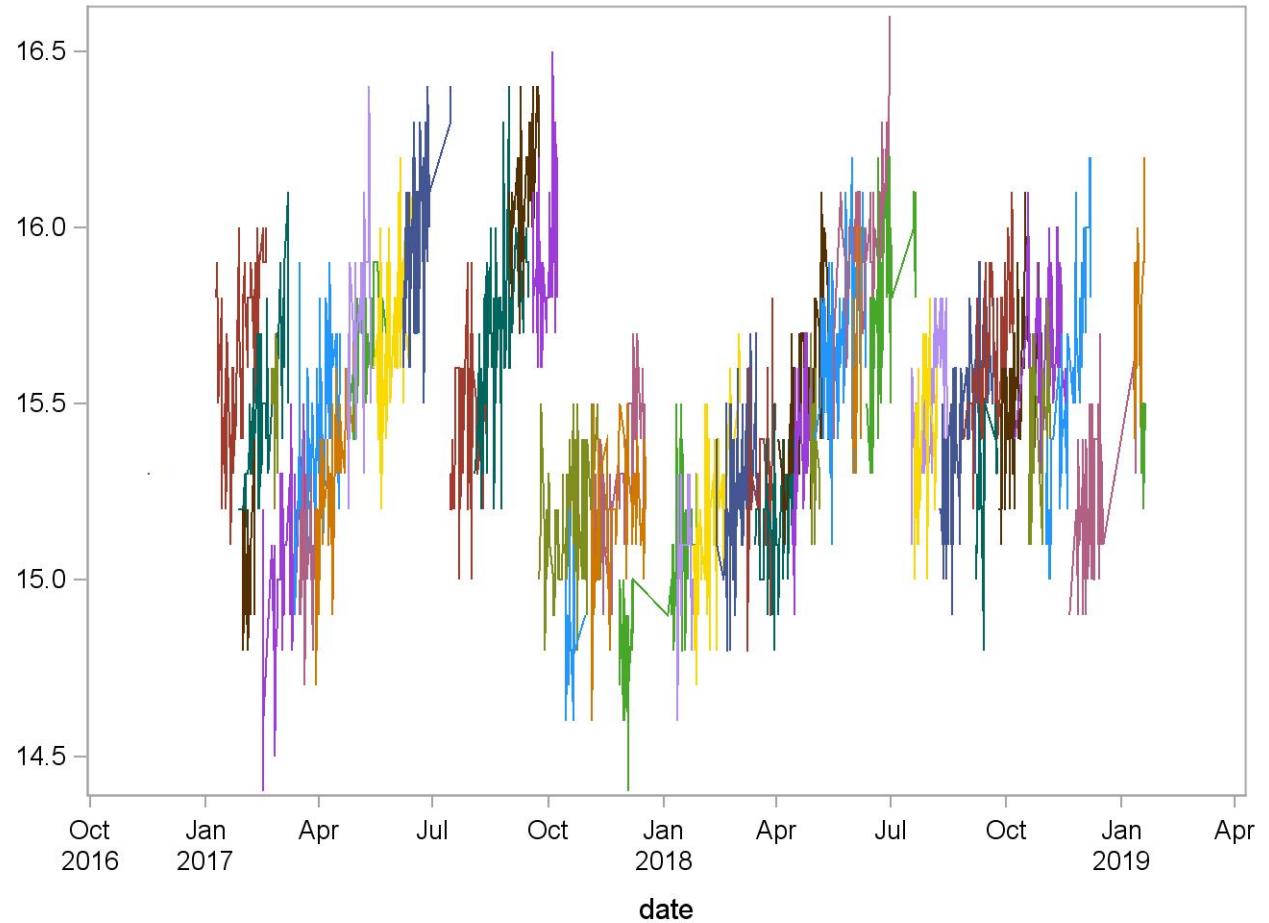
2017-2018 Summary Statistics and QC Chart for Red cell distribution width (%) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	15.2923	0.1605	1.0
133181500	78	09JAN17	18FEB17	15.5077	0.1771	1.1
133181520	97	27JAN17	08MAR17	15.4010	0.2059	1.3
133181530	20	31JAN17	09FEB17	14.6800	0.1542	1.1
133181540	50	16FEB17	21MAR17	15.2320	0.2343	1.5
133181550	20	23FEB17	02MAR17	14.8450	0.2012	1.4
133181570	57	13MAR17	18APR17	15.5035	0.2053	1.3
133181580	33	17MAR17	29MAR17	15.0515	0.1661	1.1
133181600	61	30MAR17	01MAY17	15.3820	0.1533	1.0
133181610	49	24APR17	26MAY17	15.2286	0.1671	1.1
133181630	37	24APR17	13MAY17	15.4162	0.2102	1.4
133181650	85	15MAY17	17JUN17	15.2706	0.1825	1.2
133181680	67	08JUN17	15JUL17	15.6134	0.1774	1.1
133181730	71	15JUL17	13AUG17	15.4521	0.1941	1.3
133181760	97	03AUG17	15SEP17	15.2825	0.2041	1.3
133181770	36	31AUG17	25SEP17	15.4194	0.2054	1.3
133181790	41	19SEP17	08OCT17	15.6780	0.1492	1.0
133181840	106	24SEP17	16NOV17	15.3509	0.1873	1.2
133181860	21	15OCT17	30OCT17	15.0476	0.1537	1.0
133181890	61	05NOV17	18DEC17	14.9967	0.1779	1.2
133181870	57	06NOV17	17DEC17	15.0018	0.1747	1.2
133181930	71	27NOV17	27JAN18	15.3563	0.1654	1.1
133181970	34	12JAN18	24JAN18	15.2529	0.1846	1.2
133181980	92	25JAN18	03MAR18	15.2967	0.1986	1.3
133182010	119	12FEB18	17MAR18	15.2908	0.2008	1.3
133182030	89	09MAR18	31MAR18	15.2337	0.1852	1.2
133182060	53	15MAR18	18APR18	15.2830	0.1978	1.3
133182080	57	02APR18	13MAY18	15.7281	0.1998	1.3
133182090	35	14APR18	29APR18	15.1743	0.1821	1.2
133182110	20	28APR18	05MAY18	14.9850	0.2110	1.4
133182120	55	01MAY18	11JUN18	15.4400	0.1822	1.2
133182140	55	17MAY18	30JUN18	15.4527	0.2035	1.3
133182150	21	01JUN18	07JUN18	15.3000	0.1483	1.0
133182160	51	12JUN18	21JUL18	15.4529	0.1666	1.1
133182210	44	18JUL18	15AUG18	15.4205	0.1850	1.2
133182220	40	20JUL18	07AUG18	15.2800	0.1522	1.0
133182240	96	08AUG18	21SEP18	15.2458	0.1794	1.2
133182260	49	28AUG18	07OCT18	15.1755	0.1652	1.1
133182270	26	07SEP18	24SEP18	15.3115	0.2007	1.3
133182300	90	25SEP18	29OCT18	15.0933	0.1907	1.3
133182310	47	08OCT18	17NOV18	15.5191	0.1313	0.8
133182320	30	19OCT18	05NOV18	14.9500	0.1889	1.3
133182350	60	02NOV18	07DEC18	15.3183	0.2175	1.4
133182390	71	20NOV18	12JAN19	15.3563	0.1730	1.1
133182400	20	11JAN19	19JAN19	15.1700	0.1559	1.0
133182430	18	17JAN19	20JAN19	15.5833	0.1978	1.3



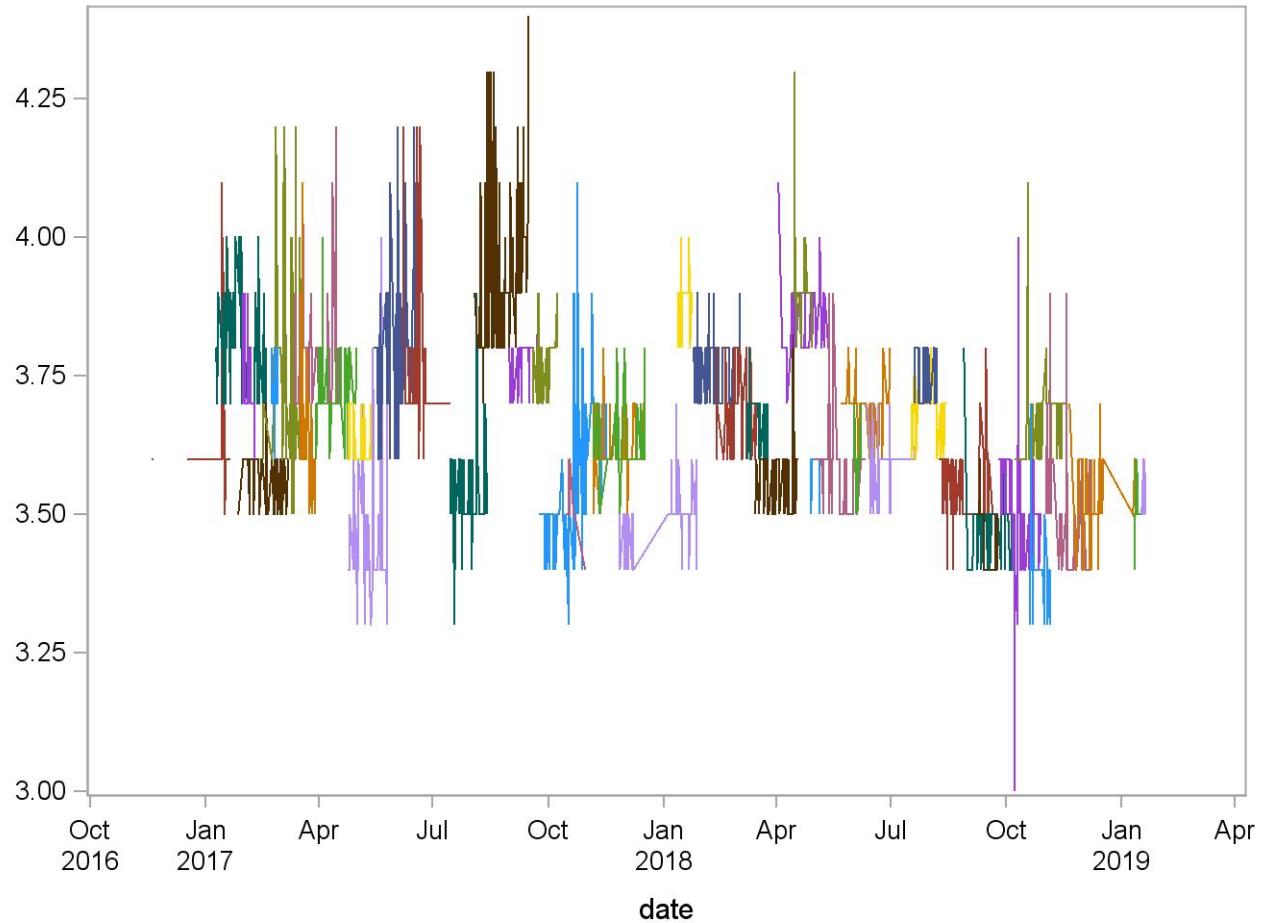
2017-2018 Summary Statistics and QC Chart for Red cell distribution width (%) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	15.6358	0.2427	1.6
143191520	58	27JAN17	08MAR17	15.5155	0.2331	1.5
143191530	20	31JAN17	09FEB17	15.0350	0.1631	1.1
143191540	47	16FEB17	21MAR17	15.0596	0.2374	1.6
143191550	21	23FEB17	27FEB17	15.5048	0.1117	0.7
143191570	56	13MAR17	18APR17	15.4232	0.2248	1.5
143191580	33	17MAR17	29MAR17	15.0667	0.1555	1.0
143191600	61	30MAR17	01MAY17	15.3049	0.1962	1.3
143191610	49	24APR17	26MAY17	15.6816	0.1409	0.9
143191630	38	24APR17	13MAY17	15.7184	0.2323	1.5
143191650	80	15MAY17	17JUN17	15.7050	0.1942	1.2
143191680	67	08JUN17	15JUL17	15.9761	0.2140	1.3
143191730	69	15JUL17	13AUG17	15.4058	0.1870	1.2
143191760	92	03AUG17	15SEP17	15.6859	0.2246	1.4
143191770	34	31AUG17	24SEP17	16.1324	0.1854	1.1
143191790	39	19SEP17	08OCT17	15.8974	0.2071	1.3
143191840	103	24SEP17	16NOV17	15.1757	0.1648	1.1
143191860	22	15OCT17	30OCT17	14.8500	0.1504	1.0
143191890	57	05NOV17	18DEC17	15.1632	0.1829	1.2
143191870	56	06NOV17	17DEC17	15.2750	0.1802	1.2
143191930	69	27NOV17	27JAN18	15.0275	0.2148	1.4
143191970	32	12JAN18	24JAN18	15.0406	0.1682	1.1
143191980	91	25JAN18	03MAR18	15.1802	0.2083	1.4
143192010	127	12FEB18	17MAR18	15.2709	0.1869	1.2
143192030	93	09MAR18	31MAR18	15.2720	0.1896	1.2
143192060	48	15MAR18	18APR18	15.1958	0.1624	1.1
143192080	58	02APR18	13MAY18	15.5086	0.2304	1.5
143192090	34	14APR18	29APR18	15.3529	0.1926	1.3
143192110	20	28APR18	05MAY18	15.3850	0.1755	1.1
143192120	52	01MAY18	11JUN18	15.7000	0.2301	1.5
143192140	54	17MAY18	30JUN18	15.9352	0.2057	1.3
143192150	21	01JUN18	07JUN18	15.5952	0.1857	1.2
143192160	51	12JUN18	21JUL18	15.7627	0.2315	1.5
143192210	43	18JUL18	15AUG18	15.5233	0.1645	1.1
143192220	39	20JUL18	07AUG18	15.3923	0.2082	1.4
143192240	92	08AUG18	21SEP18	15.4152	0.2218	1.4
143192260	50	28AUG18	07OCT18	15.6380	0.1968	1.3
143192270	26	07SEP18	24SEP18	15.2692	0.1619	1.1
143192300	87	25SEP18	29OCT18	15.5023	0.2011	1.3
143192310	47	08OCT18	17NOV18	15.6660	0.1821	1.2
143192320	30	19OCT18	05NOV18	15.4600	0.1886	1.2
143192340	61	02NOV18	07DEC18	15.4820	0.3090	2.0
143192380	72	20NOV18	12JAN19	15.2403	0.1918	1.3
143192400	20	11JAN19	19JAN19	15.7450	0.2164	1.4
143192430	18	17JAN19	20JAN19	15.3889	0.1023	0.7



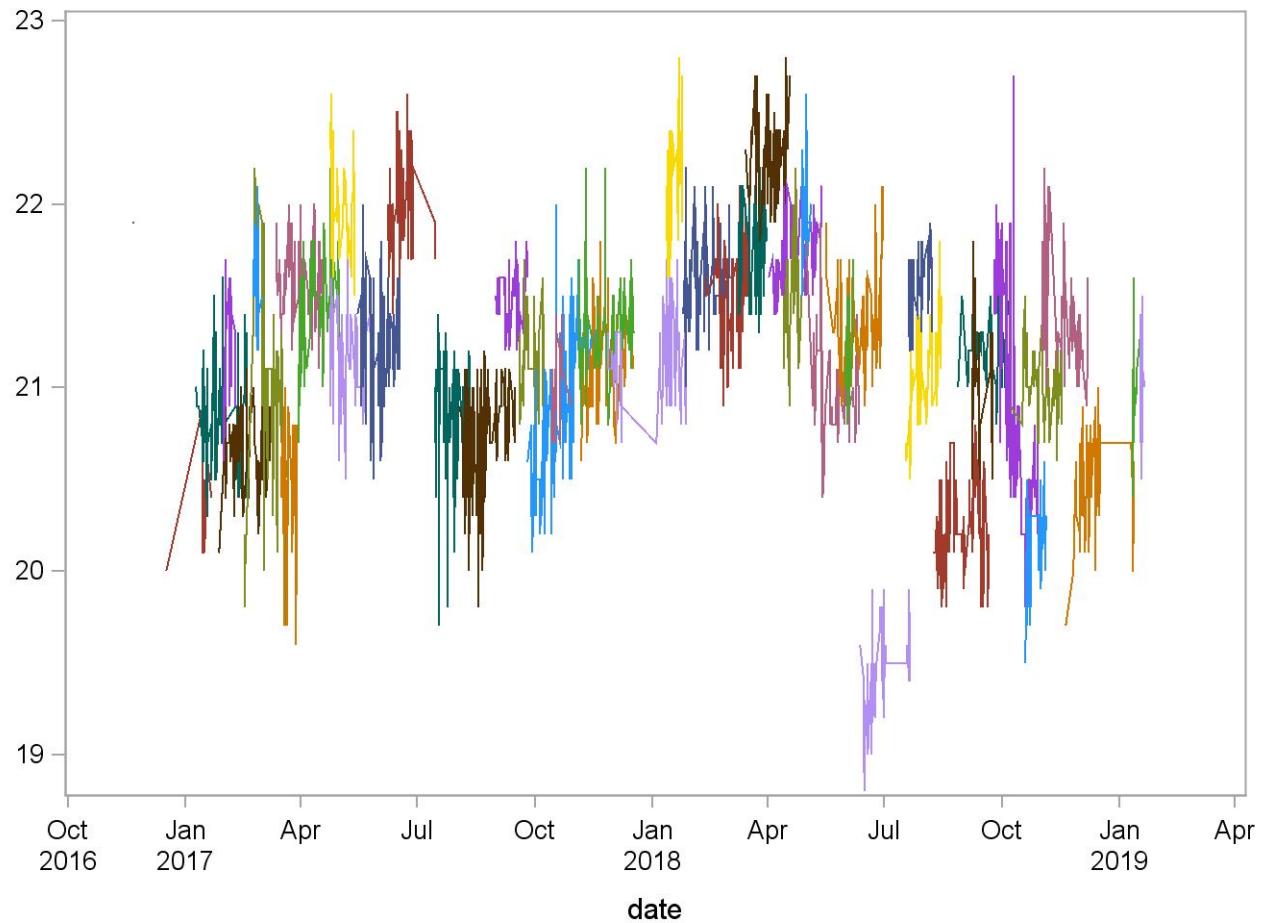
2017-2018 Summary Statistics and QC Chart for White Cell Count(10^3 cells/uL) (Lvl 1)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
123171480	12	17DEC16	21JAN17	3.6583	0.1881	5.1
123171500	110	09JAN17	18FEB17	3.8082	0.0900	2.4
123171520	113	27JAN17	08MAR17	3.5699	0.0498	1.4
123171530	20	31JAN17	09FEB17	3.7450	0.0826	2.2
123171540	48	16FEB17	21MAR17	3.7292	0.1762	4.7
123171550	21	23FEB17	27FEB17	3.7143	0.0478	1.3
123171570	57	13MAR17	18APR17	3.7825	0.1054	2.8
123171580	33	17MAR17	29MAR17	3.6333	0.1137	3.1
123171600	60	30MAR17	01MAY17	3.7233	0.0647	1.7
123171610	48	24APR17	26MAY17	3.4563	0.1319	3.8
123171630	37	24APR17	13MAY17	3.6216	0.0417	1.2
123171650	80	15MAY17	17JUN17	3.7825	0.1290	3.4
123171680	67	08JUN17	15JUL17	3.7448	0.1105	3.0
123171730	71	15JUL17	13AUG17	3.5366	0.0797	2.3
123171760	93	03AUG17	15SEP17	3.9151	0.1489	3.8
123171770	40	31AUG17	24SEP17	3.7825	0.0501	1.3
123171790	39	19SEP17	08OCT17	3.7846	0.0540	1.4
123171840	105	24SEP17	16NOV17	3.5686	0.1332	3.7
123171860	22	15OCT17	30OCT17	3.5136	0.0468	1.3
123171890	57	05NOV17	18DEC17	3.6316	0.0631	1.7
123171870	57	06NOV17	17DEC17	3.6281	0.0590	1.6
123171930	71	27NOV17	27JAN18	3.4944	0.0532	1.5
123171970	33	12JAN18	24JAN18	3.8909	0.0459	1.2
123171980	95	25JAN18	03MAR18	3.7737	0.0550	1.5
123172010	129	12FEB18	17MAR18	3.6938	0.0596	1.6
123172030	35	09MAR18	25MAR18	3.6657	0.0639	1.7
123172060	50	15MAR18	18APR18	3.5660	0.0688	1.9
123172080	58	02APR18	13MAY18	3.8517	0.0655	1.7
123172090	34	14APR18	29APR18	3.9118	0.0808	2.1
123172110	20	28APR18	05MAY18	3.5850	0.0366	1.0
123172120	53	01MAY18	11JUN18	3.5906	0.0791	2.2
123172140	54	22MAY18	30JUN18	3.6907	0.0524	1.4
123172150	20	01JUN18	07JUN18	3.6000	0.0459	1.3
123172160	50	12JUN18	21JUL18	3.5960	0.0533	1.5
123172210	44	18JUL18	15AUG18	3.6977	0.0549	1.5
123172220	39	20JUL18	07AUG18	3.7667	0.0478	1.3
123172240	94	08AUG18	21SEP18	3.5457	0.0634	1.8
123172260	49	28AUG18	07OCT18	3.4837	0.0657	1.9
123172270	26	07SEP18	24SEP18	3.4808	0.0567	1.6
123172300	85	25SEP18	29OCT18	3.4941	0.1116	3.2
123172310	49	08OCT18	17NOV18	3.6776	0.0823	2.2
123172320	30	19OCT18	05NOV18	3.4000	0.0743	2.2
123172340	60	02NOV18	07DEC18	3.5233	0.1079	3.1
123172380	71	20NOV18	12JAN19	3.5141	0.0703	2.0
123172400	20	11JAN19	19JAN19	3.5150	0.0489	1.4
123172430	16	17JAN19	20JAN19	3.5188	0.0403	1.1



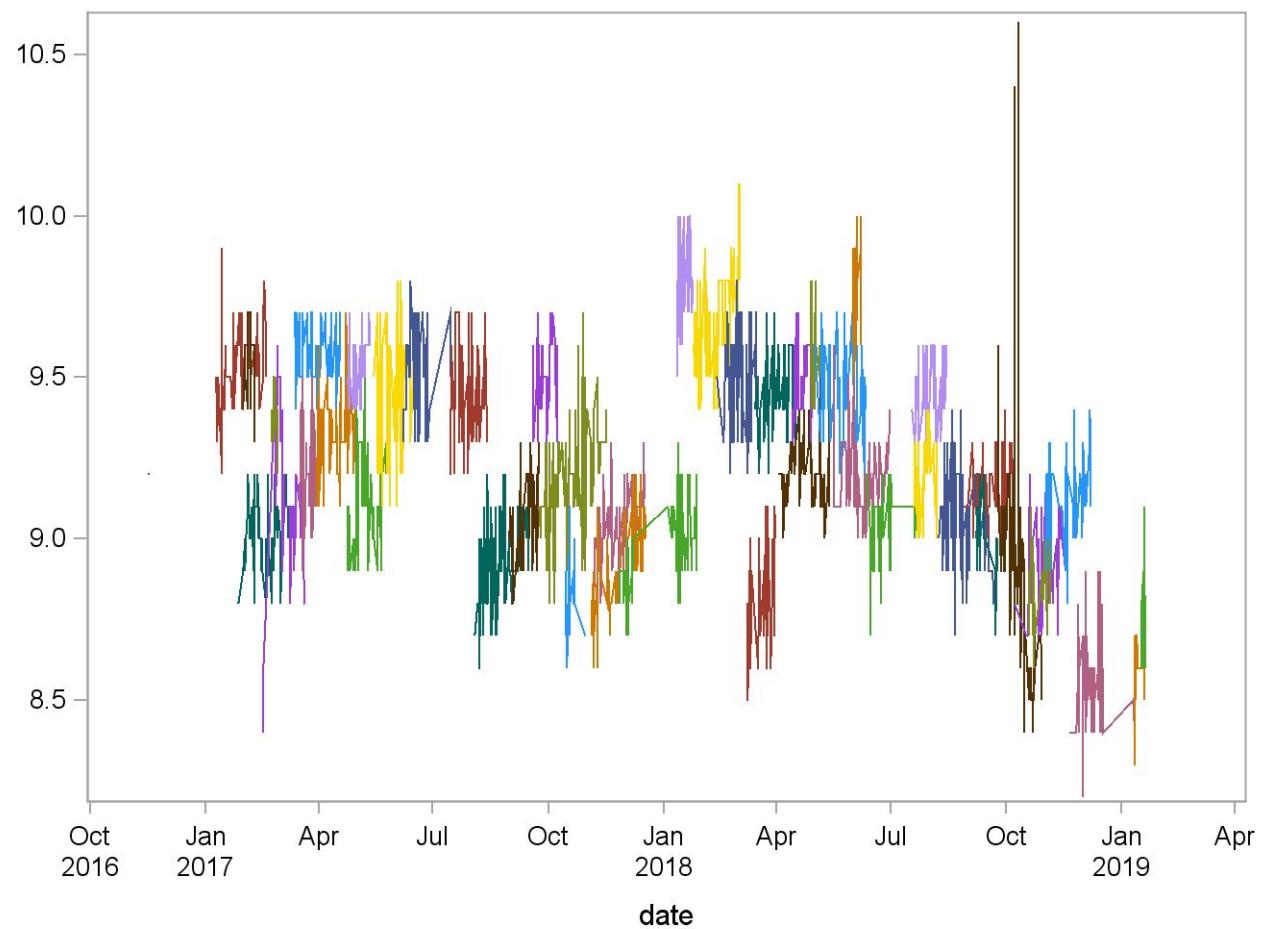
2017-2018 Summary Statistics and QC Chart for White Cell Count(10^3 cells/uL) (Lvl 2)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
133181480	13	17DEC16	21JAN17	20.4000	0.2769	1.4
133181500	78	09JAN17	18FEB17	20.8705	0.2981	1.4
133181520	97	27JAN17	08MAR17	20.6567	0.2121	1.0
133181530	20	31JAN17	09FEB17	21.2400	0.2927	1.4
133181540	50	16FEB17	21MAR17	20.9720	0.5869	2.8
133181550	20	23FEB17	02MAR17	21.5150	0.2207	1.0
133181570	57	13MAR17	18APR17	21.6018	0.2183	1.0
133181580	33	17MAR17	29MAR17	20.4242	0.3623	1.8
133181600	61	30MAR17	01MAY17	21.4213	0.2672	1.2
133181610	49	24APR17	26MAY17	21.2122	0.2595	1.2
133181630	37	24APR17	13MAY17	22.0027	0.2421	1.1
133181650	85	15MAY17	17JUN17	21.2365	0.3066	1.4
133181680	67	08JUN17	15JUL17	21.9552	0.2506	1.1
133181730	71	15JUL17	13AUG17	20.8437	0.3106	1.5
133181760	97	03AUG17	15SEP17	20.7485	0.2818	1.4
133181770	36	31AUG17	25SEP17	21.4833	0.1748	0.8
133181790	41	19SEP17	08OCT17	21.1854	0.2297	1.1
133181840	106	24SEP17	16NOV17	20.9255	0.3995	1.9
133181860	21	15OCT17	30OCT17	21.0190	0.2182	1.0
133181890	61	05NOV17	18DEC17	21.3426	0.2717	1.3
133181870	57	06NOV17	17DEC17	21.1211	0.2534	1.2
133181930	71	27NOV17	27JAN18	21.1479	0.2261	1.1
133181970	34	12JAN18	24JAN18	22.0941	0.3004	1.4
133181980	92	25JAN18	03MAR18	21.5989	0.2251	1.0
133182010	119	12FEB18	17MAR18	21.5126	0.2714	1.3
133182030	89	09MAR18	31MAR18	21.7506	0.2572	1.2
133182060	53	15MAR18	18APR18	22.2792	0.2476	1.1
133182080	57	02APR18	13MAY18	21.7632	0.2023	0.9
133182090	35	14APR18	29APR18	21.4429	0.2593	1.2
133182110	20	28APR18	05MAY18	22.0300	0.2697	1.2
133182120	55	01MAY18	11JUN18	20.9800	0.2690	1.3
133182140	55	17MAY18	30JUN18	21.3727	0.2883	1.3
133182150	21	01JUN18	07JUN18	21.2238	0.2548	1.2
133182160	51	12JUN18	21JUL18	19.4098	0.2508	1.3
133182210	44	18JUL18	15AUG18	21.0727	0.2582	1.2
133182220	40	20JUL18	07AUG18	21.5475	0.1948	0.9
133182240	96	08AUG18	21SEP18	20.2281	0.2165	1.1
133182260	49	28AUG18	07OCT18	21.2143	0.1756	0.8
133182270	26	07SEP18	24SEP18	21.0462	0.3277	1.6
133182300	90	25SEP18	29OCT18	21.0333	0.6217	3.0
133182310	47	08OCT18	17NOV18	21.0234	0.1980	0.9
133182320	30	19OCT18	05NOV18	20.0867	0.2738	1.4
133182350	60	02NOV18	07DEC18	21.4600	0.3248	1.5
133182390	71	20NOV18	12JAN19	20.4986	0.2493	1.2
133182400	20	11JAN19	19JAN19	20.9500	0.2875	1.4
133182430	18	17JAN19	20JAN19	20.9889	0.2610	1.2



2017-2018 Summary Statistics and QC Chart for White Cell Count(10^3 cells/uL) (Lvl 3)

Lot	N	Start Date	End Date	Mean	Standard Deviation	Coefficient of Variation
143191500	53	09JAN17	18FEB17	9.5453	0.1202	1.3
143191520	58	27JAN17	08MAR17	9.0241	0.1113	1.2
143191530	20	31JAN17	09FEB17	9.5400	0.1231	1.3
143191540	47	16FEB17	21MAR17	9.0851	0.2493	2.7
143191550	21	23FEB17	27FEB17	9.3714	0.0902	1.0
143191570	56	13MAR17	18APR17	9.5732	0.0904	0.9
143191580	33	17MAR17	29MAR17	9.1879	0.1673	1.8
143191600	61	30MAR17	01MAY17	9.3328	0.1235	1.3
143191610	49	24APR17	26MAY17	9.1286	0.1528	1.7
143191630	38	24APR17	13MAY17	9.5421	0.0889	0.9
143191650	80	15MAY17	17JUN17	9.4513	0.1684	1.8
143191680	67	08JUN17	15JUL17	9.5269	0.1201	1.3
143191730	69	15JUL17	13AUG17	9.4420	0.1322	1.4
143191760	92	03AUG17	15SEP17	8.9174	0.1289	1.4
143191770	34	31AUG17	24SEP17	9.0647	0.1346	1.5
143191790	39	19SEP17	08OCT17	9.5128	0.1080	1.1
143191840	102	24SEP17	16NOV17	9.1990	0.1601	1.7
143191860	22	15OCT17	30OCT17	8.8409	0.1260	1.4
143191890	57	05NOV17	18DEC17	8.9193	0.1355	1.5
143191870	56	06NOV17	17DEC17	9.0518	0.1160	1.3
143191930	69	27NOV17	27JAN18	8.9913	0.1292	1.4
143191970	32	12JAN18	24JAN18	9.8000	0.1344	1.4
143191980	91	25JAN18	03MAR18	9.6505	0.1417	1.5
143192010	127	12FEB18	17MAR18	9.4961	0.1318	1.4
143192030	93	09MAR18	31MAR18	8.8194	0.1520	1.7
143192060	48	15MAR18	18APR18	9.4583	0.1164	1.2
143192080	58	02APR18	13MAY18	9.2069	0.1041	1.1
143192090	34	14APR18	29APR18	9.5000	0.1015	1.1
143192110	20	28APR18	05MAY18	9.5850	0.1226	1.3
143192120	52	01MAY18	11JUN18	9.4596	0.1332	1.4
143192140	54	17MAY18	30JUN18	9.1963	0.1359	1.5
143192150	21	01JUN18	07JUN18	9.7952	0.1465	1.5
143192160	51	12JUN18	21JUL18	9.0392	0.1078	1.2
143192210	43	18JUL18	15AUG18	9.4605	0.1158	1.2
143192220	39	20JUL18	07AUG18	9.1769	0.1158	1.3
143192240	92	08AUG18	21SEP18	9.0717	0.1417	1.6
143192260	50	28AUG18	07OCT18	9.1560	0.0951	1.0
143192270	26	07SEP18	24SEP18	9.0077	0.1055	1.2
143192300	87	25SEP18	29OCT18	8.9207	0.3628	4.1
143192310	47	08OCT18	17NOV18	8.9213	0.1366	1.5
143192320	30	19OCT18	05NOV18	8.8567	0.1135	1.3
143192340	61	02NOV18	07DEC18	9.1475	0.1233	1.3
143192380	72	20NOV18	12JAN19	8.5625	0.1294	1.5
143192400	20	11JAN19	19JAN19	8.5900	0.1165	1.4
143192430	18	17JAN19	20JAN19	8.7556	0.1294	1.5



Reference

UniCel DxH 800 Coulter Cellular Analysis System Instructions for Use. Beckman Coulter, Inc. Fullerton, CA 92835. www.BechmanCoulter.com.