Procedure
Dignity Health Central Coast Service Area

**SUBJECT**: Beckman DxH Slidemaker Stainer

**ORIGIN**: Hematology

**NUMBER**: 7500.H.22

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| --- |
| **Applies to:** |
| [x]  Santa Maria Campus,Marian Regional Medical Center | [ ] Arroyo Grande Campus,Marian Regional Medical Center | [ ] French Hospital Medical Center |
| [ ] St. John’s Pleasant Valley Hospital | [ ] St. John’s Regional Medical Center |

# Principle:

To provide instructions for slide making and staining on the DxH Slidemaker Stainer.

# Clinical utility:

The DxH Slidemaker Stainer (SMS) is a fully automated slide preparation and staining device that aspirates a blood sample, makes a smear, and delivers fixatives, stains, buffers and stains according to user preferences. Microscopic examination of the stained blood smears can be helpful in determining the hematologic status of a patient.

# Specimen Collection:

If a specimen has been refrigerated, allow it to equilibrate slowly to room temperature (15ºC to 30ºC) before analysis and smear preparation.

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| --- | --- | --- | --- | --- |
| Sample Type | Container | Reagents | Storage Temperature | Stability |
| Whole blood | EDTA purple topEDTA pink topSodium citrate blue top | TruColor Wright-Giemsa Stain (A50832)Wright-Giemsa Buffer (7547181)Methanol ≥99.8%Clipped SlidesDeionized Water | Rm Temp | Prepare smears within 4 hours of collection |

# Calibration:

No laboratory calibration procedures are required for the SMS.

# Daily Maintenance:

## Shutdown is automatically scheduled to be performed daily. Shutdown can also be performed manually.

### To perform manual shutdown select

### From the Daily Checks Screen, select **Shutdown**.

### Select the desired instrument to be shutdown.

### Select the **Perform Daily Checks After Shutdown** to automatically begin Daily Checks after Shutdown.

## Daily checks is configured to run automatically after a shutdown. Daily checks can also be performed by initiating the process manually.

### Select  to display Daily Checks.

### Select **Daily Checks** from the local navigation bar.

### Select **OK** to run Daily Checks or Select **Cancel**

### Review Daily Checks. If Daily Checks pass, the Review button is disabled. If any of the Daily checks do not pass,  is red.

## Clean Stainer Baths and Trays

### Select **Menu**>**Diagnostics**>**Dx Tools**>**Release SAM**

### Select **Slidestainer** tab.

### Select the **Fluidics** option

### Select **Drain and Flush All Baths** from the pull-down list.

### Select **Start** to begin draining the baths and select **Finish** when prompted.

### Remove the Transport Shield and lift the Front Cover.

### Move SAM to the right.

### Remove stainer shield.

### Pull the bath tray release knob to lower the stainer bath tray.

 

### Once lowered, use the handle to pull out the Stainer Drawer.

### Lift up the bath tray and fill each bath with a small amount of methanol and let soak

### Wipe tray and each bath with a lint-free cloth moistened with methanol to remove stain buildup.

### **NOTE:** All baths must be dry before returning to Stainer Tray. Water may interfere with stain quality.

### Return Stainer Bath Tray to the Stainer Drawer.

### Push Stain Drawer until it clicks into position. Do NOT manually raise drawer.

### Replace Stain shield, lower Front Cover, and replace Transport shield.

### Under Diagnostics select **Finish** and place the SMS Online to resume operation.

# Weekly maintenance (and daily):

## Manually Flushing Reagent Lines and Stainer

### Perform steps 1-5 under Daily Maintenance.

### Remove the pickup tube assembly from supply 2 and hold vertically upside-down using gauze to prevent dripping.

### In the **Fluidics** option box, select **Fill Bath 2** and select **Start** to remove the reagent from the line.

### Wait 2 minutes and press **Cancel** to stop the fill process.

### In the **Fluidics** option box, select **Drain Bath 2** and select **Start.** Message will appear that ‘Drain/Fill is in progress. Please wait…’..

### When progress message disappears, transfer pickup tube assembly to the Methanol cleaning bottle.

### In the **Fluidics** option box, select **Fill Bath 2** andselect **Start**.

### Wait 2 minutes and press **Cancel** to stop the fill process.

### In the **Fluidics** option box, select **Drain Bath 2** and select **Start.**

### When message disappears, use gauze to remove the pickup tube assembly from the methanol cleaning bottle, hold upside-down and select **Fill Bath 2** and select **Start**, wait 2 minutes and select **Cancel**.

### Select **Drain Bath 2**

### When message disappears, transfer reagent pickup tube assembly back to corresponding reagent supply.

### Repeat steps 1-12 for other supply lines if needed.

### Continue with Daily Maintenance steps 6-12.

## Clean Stainer Fill Probes, Drain Probes, and Level Sense Probes

### Before returning the Stainer bath tray, moisten a lint-free cloth with methanol and clean the fill probes, drain probes, level sense probes and any surfaces soiled with stain.

### Continue with Daily Maintenance steps 13-16.

#  As needed maintenance:

Refer to the Instructions for Use Manual for any As Needed Maintenance.

# Quality Control:

## Frequency

### Each day of use

## Quality Control Material

### Select a CBC specimen with a WBC count of at least 15x109. Prepare a peripheral smear according to procedure. Label the smear with a QC barcode and allow the slide to air dry.

### Stain the QC slide using the Stain Only Cycle to test the smear stain quality.

## Performing Quality Control

### After staining perform and record cell location QC according to procedure.

### Using a microscope observe a smear for proper staining, coloration, and good cell distribution and record on CellaVision/Stainer Log.

### Under the microscope and on CellaVision, properly stained blood films should have the following characteristics:

#### Red blood cells should be pinkish red in color

#### Neutrophils should have nuclear chromatin that is purplish pink-showing dense and light areas clearly with cytoplasm showing azurophilic granules.

#### Lymphocytes should have blue cytoplasm and purplish pink nuclear chromatin.

#### Monocytes should have grayish cytoplasm and purplish pink nuclear chromatin.

#### Eosinophils should have bright orange-red granulation.

#### Basophils should appear with dark black staining large granules.

# Procedure:

## Making and Staining Slides:

### From the DxH SMS Status Screen, select **Make Slide and Stain** for the applicable cassette or Single-Tube presentation or add or edit a test order from the Worklist Slides tab..

### Select the Single-Tube Presentation icon at the top of any screen for single tube.

#### From the Select Instrument dialog box, select the down arrow for the name of the instrument to place in single-tube processing mode and select **OK**

#### 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 or use handheld scanner.

#### If the bar code label is unreadable enter the **Specimen Accession Number** and press **Enter**.

#### Verify the Specimen Accession Number and test request. Thoroughly mix the specimen.

### **NOTE: Make Slide and Stain** or **Make Slide** can also be selected using **EDIT ORDER**

#### Place the specimen into the correct Single-tube position (Left side: closed or open tubes and Right side: open only – microtainer collection vial).

#### Do not place a closed tube or a 16mm diameter tube in the right position of the Single-tube Presentation Station. Doing so could result in an incomplete aspiration and an erroneous result.

#### Retrieve the tube from Single-Tube Station. Select **Exit** and **Yes.**

### Load cassette in input buffer for multiple tubes.

#### After the SPM cycles the samples, ensure cassette(s) move to the SMS for processing

#### Completed cassettes are moved into the SMS Output Buffer.

## Making Slides (No Staining):

### From the DxH SMS Status Screen, select **Make Slide** for the applicable cassette or Single-Tube Presentation.

### Load the specimens into specified presentation (cassette or single-tube).

### Continue with steps 2 or 3 under Making and Staining Slides.

## Stain Only Cycle (staining manually prepared smears):

### Fill an empty basket with slides for a Stain Only cycle as follows:

##### Load the slides with frosted end on top.

##### Load all smears in the same direction facing the back of the next smear.

#####

### Open and pull out the I/O drawer.

### Place the basket back in the I/O drawer in any position from 1 to 6.

### Press the number where the basket is placed.

### Push the drawer in for staining to begin.

### Flashing green light indicates that staining is complete.

#### **NOTE:** Do not stop the stainer from the Detail System Status screen. The stainer will become inactive and slides that are staining will be interrupted without proper removal.

# Results:

## Document maintenance and QC on Cellavision/Stainer Log

## Enter Cell Location in LIS

# Limitation of Procedure:

## Morphological artifacts on the smear could be the result of prolonged storage or inadequate mixing of the blood sample.

## Mechanical problems could result in streaks or smears that are too short, too thick or too thin.

## If peripheral smear finding do not reflect the CBC data; check for sample integrity, proper labeling and if necessary recollect specimen.

## Sample characteristics such as low hematocrits, viscosity, and sample age maybe significant sources of variability.

## Report any stainer issues in the DxH Log. Stating problem, corrections and any reference numbers assigned by service.

# References:

## UniCel® DxH 900 Coulter® Cellular Analysis System and Unicel DxH Slidemaker Stainer II Coulter Cellular Analysis System, Instructions for Use. Revision AB (December 2017) System Manual.