PROCEDURE
Corewell Health East - Laboratory Equipment - Trenton

This Procedure is Applicable to the following Corewell Health sites:
Corewell Health Trenton Hospital

Applicability Limited to: N/A

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Functional Area: Clinical Operations, Laboratory

Lab Department Area: Lab - Hematology

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1. Principle

This procedure will serve as a guide for the technologists who operate and maintain equipment used in the laboratory. It contains procedures for start-up, operation, maintenance, function checks and shutdown of the equipment listed, as applicable.

2. Responsibility

Personnel who have completed the competency requirements will perform these tasks.

3. Safety Precautions

All fluids must be handled accordingly to Standard Precautions. Fluids regardless of visual appearance are to be treated as potentially infectious in the same manner as a blood specimen.

4. Laboratory Equipment

A. Cyto-Tek Centrifuge

1. Equipment Needed for the Cyto-Tek Centrifuge
   a. Frosted slides
   b. Cyto-Tek centrifuge
   c. Cyto-Tek Cytocentrifuge Specimen Assembly
      1) Specimen Chamber holder
      2) Specimen Chamber
      3) Filter paper
      4) Specimen Chamber Cap
   d. Sterile transfer pipette
2. Procedure
   a. Assembling the Cyto-Tek Specimen Assembly
      1) Place a properly labeled slide, frosted side up, in the Cyto-Tek specimen chamber holder.
      2) Place a single filter paper on the slide.
      3) Insert the two tabs at the bottom of a new specimen chamber into the corresponding slots at the bottom of the specimen chamber holder.
      4) Align the square hole of the filter paper with the hole on the specimen chamber.

5) Press the top of the specimen chamber back towards the specimen chamber holder until it engages the latch on the top of the holder.
6) NOTE: There is a possibility that the pressure from the completely assembled Cyto-Tek holder can break the slide if it is not properly seated in the holder. If you suspect that the slide cracked or broke open the completed holder and replace the slide.

b. Place specimen into the specimen chamber.
1) Hold the assembled specimen chamber holder vertically and add drops of specimen based on the cellular density chart found in the Corewell Health East - Body Fluid Differentials - Taylor, Trenton, Wayne policy.
2) After the specimen has been added, tightly seal the specimen chamber with the specimen chamber cap.

c. Operating the Cyto-Tek centrifuge.
1) Load the centrifuge by place the specimen chamber holder assemblies into the rotor ensuring that the assembly is aligned completely into the slot.
1. NOTE: Failure to properly align the specimen chamber assembly may result in destruction of the slide or mechanical failure of the centrifuge.
2) Turn the power on for the centrifuge, if not already on, by flipping the power toggle switch to the ON position.
3) With the centrifuge lid closed, press the program button. The program should be set to spin for 5 minutes at 2000 rpm. All fluid specimens are to be cytocentrifuged at this setting.
4) With the program set, press the Start button. This will commence centrifugation of the sample and lock the lid for the duration of the time.

d. Unloading the Cyto-Tek centrifuge.
1) The lid will automatically unlock once the centrifuge has stopped, and an alarm will sound.
a) The alarm can be silenced by either pressing the program button or if no other samples need to be processed, by turning the power off.
2) Open the lid and remove the specimen chamber holders from the rotor by lifting on the sides of the holder so that they do not release the specimen chamber while still inside the rotor.

e. Opening the Specimen Chamber Assembly and removing the slide.
1) Depress the latch on the top of the specimen chamber holder.
2) Once released the specimen chamber will return to its bow shape.
a) At this point lift the specimen chamber out of the tab slots at the bottom of the holder and discard the chamber.
b) Do not reuse the specimen chamber for another specimen.
3) Remove the slide from the holder by inserting a finger into the hole on the back side of the specimen chamber holder and push on the back of the slide holder.
4) Peel the filter paper off the slide, being careful not to disturb the square area where cells have been deposited.
5) Once the slide is dried, it is now ready to be stained in accordance with the appropriate procedure.

3. Maintenance
a. The centrifuge rotor bowl is to be wiped out with a hospital approved disinfectant.
1) Remove the rotor by lifting straight up.
2) Wipe the bowl with an approved disinfectant wipe and let set for the appropriate kill time.
3) Then wipe with a moistened gauze wipe to remove any residue from the rotor bowl.
4) Dry the bowl with a lint free cloth or Kim-wipe.

b. Cleaning of the centrifuge bowl is to be done at least weekly with other centrifuge cleanings or when visible contamination is present.

c. In case of issues and an emergency shutdown is necessary.

d. Turn off the power switch on the front of the centrifuge and unplug from the wall or the back of the centrifuge if unable to reach the wall electrical outlet.

B. Centrifuges

1. FisherBrand DashCoag Centrifuge
   a. Turn the power switch on the back of the centrifuge to the OFF position or if unable to unplug from the electrical outlet.
   b. Wait until the centrifuge has fully stopped the rotation cycle before attempting to access the samples inside.
   c. The door may be released in an emergency after the rotor has stopped. If no LED light is on, the unit is not powered, and the lid will not unlock by conventional means. Remove the latch label and use a pen to manually disengage the locking mechanism.

   d. Pull the mechanism towards the control panel and then unlatch and open the lid.
   e. Maintenance
      1) Daily
         a) Check for spills and clean as necessary.
         b) Inspect for cracks or fragments.
      2) Weekly
         a) Clean the interior and unit by wiping them down with a damp cloth. Excessive amounts of liquid should be avoided. Liquid should not come in contact with the motor. After cleaning, ensure that all parts are dried thoroughly.
         b) Inspect rotor for fractures or cracks.
      3) Annually
         a) The Biomedical Engineering department will perform annual electrical, rotor speed, and timer checks on all the centrifuges in the lab.
         b) All data from these checks is available from the Biomedical Engineering department.
      4) If the centrifuge fails to achieve its operating speed goals and time settings, notify any Lead or Manager and place a Biomedical ticket. Biomedical Engineering staff will contact the distributor or manufacturer to obtain repair information and follow up.
2. FisherBrand Dash FLEX 12 Centrifuge
   a. Use: Chemistry
   b. Settings: 4500 rotations per minute (rpm) for 5 minutes
   c. Operation
      1) Place the tubes into the tube holders. Be sure to follow the rules for balanced loads.
      2) Close the lid and turn the lid knob clockwise to its completed stop position.
      3) The digital screen shows the currently selected cycle. To select another cycle, press the UP or DOWN button in succession until the desired cycle is selected.
      4) Pushing the START button on the control panel will start the spin cycle.
      5) When the cycle is completed, the rotor will slow to a complete stop and the lid light will flash.
      6) The unlocking mechanism will engage for 60 seconds allowing entry into the rotor chamber. To unlock after more than 60 seconds have elapsed, press the UNLOCK button. The lid will unlock for another 15 seconds.

7) Turn the lid knob counterclockwise and open the lid. The light will turn off.
8) You may now safely remove the samples.
9) For troubleshooting, review the attached Operator's Manual.

d. Maintenance
   1) Daily
      a) Check for spills and clean as necessary.
      b) Inspect inserts for cracks or fragments.
   2) Weekly
      a) Inspect rotor for fractures or cracks.
      b) Unplug the centrifuge before cleaning.
      c) Use appropriate personal protective equipment.
      d) Apply cleaning solutions with a dampened towel or cloth ONLY. Do not spray or pour cleaning solution directly onto or into the centrifuge. Do not saturate or submerge the centrifuge in water or other cleaning solutions as this will cause damage, create a safety risk and void out the warranty.
      e) ONLY isopropyl alcohol or a 10% bleach solution should be used to disinfect the centrifuge and its accessories.
      f) All surfaces must be dried immediately after cleaning and disinfecting.
   3) Annually
      a) The Biomedical Engineering department will perform annual electrical, rotor speed, and timer checks on all the centrifuges in the lab.
      b) All data from these checks is available from the Biomedical Engineering department.
   4) If the centrifuge fails to achieve its operating speed goals and time settings, notify any Lead Medical Technologist or Laboratory Manager and place a Biomedical ticket. Biomedical Engineering staff will contact the distributor or manufacturer to obtain repair information and follow up.

e. Emergency Release and Shutdown
   1) Turn the power switch on the back of the centrifuge to the OFF position or if unable to unplug from the electrical outlet.
   2) Wait until the centrifuge has fully stopped the rotation cycle before attempting to access the samples inside.
   3) The door may be released in an emergency after the rotor has stopped. If no LED light is on, the unit is not powered, and the lid will not unlock by conventional means. Remove the latch label and use a pen to manually disengage the locking mechanism.

   4) Pull the mechanism towards the control panel and then unlatch and open the lid.

3. Fisher Scientific accuSpin 24C Centrifuge
   a. Use: Chemistry
   b. Settings: 4500 rotations per minute (rpm) for 5 minutes
   c. Operation
      1) Load tubes in a balanced pattern.

2) Close the lid by pressing down on it lightly or on both sides of it. Note: The lid should audibly click into place.
3) Press the START key on the control panel. The centrifuge accelerates to the pre-set speed with the time display active.
4) As soon as the speed drops to zero, the message RUN COMPLETED will appear in the display. By pressing the OPEN key, you can open the lid and remove the centrifuged samples.
5) You can also stop the centrifuging program manually at any time by pressing the STOP key.
6) For troubleshooting, review the attached instruction manual.

d. Maintenance
   1) Daily
      a) Check for spills and clean as necessary.
      b) Inspect for cracks or fragments.
   2) Weekly
      a) Inspect rotor for fractures or cracks.
      b) Clean the interior and outside unit. DO NOT USE BLEACH
      c) Open the centrifuge.
      d) Turn off the centrifuge.
      e) Pull out the power supply plug.
      f) Grasp the rotor with both hands and lift it vertically off the centrifuge spindle.
      g) Remove the centrifuge tubes and adapters.
      h) Wipe the rotor and accessories with a cloth dampened with alcohol.
      i) Rinse the rotor and accessories thoroughly with water.
      j) Dry all the rotors and accessories thoroughly after cleaning.
   3) Annually
      a) The Biomedical Engineering department will perform annual electrical, rotor speed, and timer checks on all the centrifuges in the lab.
      b) All data from these checks is available from the Biomedical Engineering department.
   4) If the centrifuge fails to achieve its operating speed goals and time settings, notify any Lead Medical Technologist or Laboratory Manager and place a Biomedical ticket. Biomedical Engineering staff will contact the distributor or manufacturer to obtain repair information and follow up.

e. Emergency Release and Shutdown
   1) In case of emergency, Centrifuge can be stopped by pressing the [STOP] button on the front of the centrifuge, turning off the power switch on the back of the device, or disconnecting the power supply.
   2) The door may be released in an emergency after the rotor has stopped. Remove the power supply. On the right side of the housing is one white plastic plug which you can pry out of the side plate with a screwdriver. Pull the release cord attached to it to trigger the mechanical door release. The door will open, and samples can be removed.

4. EKF Diagnostics Micro12 Microcentrifuge
   a. Use: Chemistry Microtainers
   b. Settings: at least 5000 rotations per minute (rpm) for at least 3 minutes
   c. Operation
      1) Load microcentrifuge tubes in a balanced pattern.
      2) Close the lid, making sure that the interlock has been engaged.
      3) Turn the Speed knob to the desired speed setting. The knob scale is directly proportional to the speed – a setting of 9 corresponds to 9000 rpm, a setting of 13 corresponds to a speed of 13,000 rpm, etc.
      4) Operation of the centrifuge begins when the timer knob is turned clockwise to set a run time. For running times less than 5 minutes, turn the knob clockwise past the

halfway point and then counterclockwise to the desired time. For running times longer than 5 minutes, turn the knob to the desired time.

5) When the preselected time expires, the centrifuge will stop automatically. To stop the centrifuge prior to the expiration of set time, turn the timer knob to the zero position.
6) For troubleshooting, review the attached manual.

Note: The timer knob may be turned in either direction during operation of the centrifuge without damage to the timer mechanism.

d. Maintenance
   1) Daily
      a) Check for spills and clean as necessary.
      b) Inspect for cracks or fragments.
   2) Weekly
      a) Clean the interior and unit by wiping them down with a damp cloth. Excessive amounts of liquid should be avoided. Liquid should not come in contact with the motor. After cleaning, ensure that all parts are dried thoroughly.
      b) Inspect rotor for fractures or cracks.
   3) Annually
      a) The Biomedical Engineering department will perform annual electrical, rotor speed, and timer checks on all the centrifuges in the lab.
      b) All data from these checks is available from the Biomedical Engineering department.
   4) If the centrifuge fails to achieve its operating speed goals and time settings, notify any Lead Medical Technologist or Laboratory Manager and place a Biomedical ticket. Biomedical Engineering staff will contact the distributor or manufacturer to obtain repair information and follow up.

e. Emergency Release and Shutdown
   1) In case of emergency, centrifuge can be stopped by turning off the power switch on the front of the device or disconnecting the power supply.
   2) The door may be released in an emergency after the rotor has stopped. Remove the power supply. Remove the plastic plug, located on the left side of the unit, below the quick button. Pull the cord (attached to the plug) to open the lid lock manually. The door will open, and samples can be removed.

5. Silencer S2110E Automatic Digital Desktop Centrifuge
   a. Use: Urines and Spinal Fluids
   b. Settings: 1800 rotations per minute (rpm) for 5 minutes
   c. Operation
      1) Open the lid and load samples in a balanced fashion.
      2) Close the lid and press the Start Switch. The lid lock will engage, Speed Display will display actual speed, the Lid Interlock LED will turn off and the centrifuge will accelerate to the set speed. Upon reaching the set speed, the time will start counting down and the Time Display will display the time remaining. Once the rotor is in motion, the lid cannot be opened until the rotor has stopped.
      3) When the set time has elapsed, the centrifuge will decelerate to a stop.
      4) When the rotor has come to a complete stop, the lid lock will release, and the Lid Interlock LED will be illuminated.
   d. Maintenance
      1) Daily
         a) Check for spills and clean as necessary.
         b) Inspect for cracks or fragments.
      2) Weekly
         a) The interior can be cleaned with disinfectants such as bleach, followed by a clear water rinse and wipe. The interior must be rinsed and dried thoroughly before using the centrifuge. Use water sparingly when rinsing, as the motor seal is not watertight.

b) The exterior should be kept clean with the use of mild soap and a damp (not wet) lint-free cloth. The centrifuge must be dried thoroughly before using.
c) Clean exterior, bowl and carriers with soapy water and disinfectant as needed.

3) Annually
a) The Biomedical Engineering department will perform annual electrical, rotor speed, and timer checks on all the centrifuges in the lab.
b) All data from these checks is available from the Biomedical Engineering department.

4) If the centrifuge fails to achieve its operating speed goals and time settings, notify any Lead Medical Technologist or Laboratory Manager and place a Biomedical ticket. Biomedical Engineering staff will contact the distributor or manufacturer to obtain repair information and follow up.

e. Emergency Release and Shutdown

1) In case of emergency, Centrifuge can be stopped by pressing the POWER button on the front of the centrifuge, turning off the power switch on the back of the device, or disconnecting the power supply.
2) The door may be released in an emergency after the rotor has stopped. The correct tool must be used for your unit, or the lid safety interlock switch may become damaged. If the interlock switch is damaged the unit can't detect the lid being closed and therefore won't start. To use the release tool:
a) Unplug the centrifuge.
b) Insert the tool completely into the release access port on the left side of the unit (just below the lid locking bracket).
c) Push the handle towards the back of the unit and lift the centrifuge lid.

C. Hematology Specimen Rocker

1. Unico Specimen Rocker Emergency shutdown
   a. Turn the power switch to the OFF position. This switch is located on the back right hand side of the rocker directly above the power cord.

D. Refrigerators and Freezer Emergency Shutdown

1. Thermo Scientific TSG Series model TSG45RPLA (Hematology Refrigerator)
   a. Move refrigerator in order to get to the back of the instrument to unplug from the electrical outlet.
   b. Alternatively, if unable to move the refrigerator the key on the front by the digital display can turn the compressor off by turning to the off position. CAUTION: This does not fully stop electrical current from going into the refrigerator.
2. Thermo Scientific TSG Series model TSG30RPSA (Specimen Storage Refrigerator)
   a. Move the refrigerator in order to get to the back of the instrument to unplug from the electrical outlet.
   b. Alternatively, if unable to move the refrigerator the key on the front by the digital display can turn the compressor off by turning to the off position. CAUTION: This does not fully stop electrical current from going into the refrigerator.
3. Thermo Scientific TSX Series model TSX505SA (Urinalysis Refrigerator)
   a. Unplug the refrigerator from the electrical outlet above the counter.
4. FisherBrand Isotemp 3-door model FBV72RPGA
   a. Carefully move the refrigerator in order to get to the back of the instrument to unplug from the electrical outlet.
   b. The key may also be retrieved from the department leads office and used to turn off the refrigerator by inserting the key into the lock by the digital display and turning to the OFF position.
5. Thermo Scientific TSX Series Freezer model TSX2330FA
   a. Move the freezer away from the wall to access the power cord and disconnect from the electrical socket.

5. Revisions

Entities will reference associated Documentation contained within this document as applicable
Printouts of this document may be out of date and should be considered uncontrolled.

Corewell Health reserves the right to alter, amend, modify or eliminate this document at any time without prior written notice.

6. References

A. Miles Inc., Cyto-Tek Cytocentrifuge Operator's Manual, August 1987.
B. DASH Flex 12 Centrifuge Operator's Manual Rev. G
C. Fisher Scientific accuSpin 24C Centrifuge Instruction Manual, January 2014.
D. EKF Diagnostics Micro12 Microcentrifuge Operator's Manual, 06/2014
E. GFMD Silencer 2110 Automatic Digital Desktop Centrifuge 11/19/2009

7. Procedure Development and Approval

Document Owner:

Laura Judd (Operations Specialist)

Writer(s):

Richard Quick (Medical Technologist Lead), Shani Kastl (Medical Technologist Lead)

Reviewer(s):

Hilary Morey (Medical Technologist Lead)

Approver:

Ann Marie Blenc (System Med Dir, Hematopath), Ashley Beesley (Mgr, Laboratory), Brittnie Berger (Dir Sr, Lab Operations), Christopher Ferguson (Dir, Laboratory Services), Megan Masakowski (Mgr, Division Laboratory), Muhammad Arshad (Chief, Pathology), Sarah Britton (VP, Laboratory Svcs)

8. Keywords

Not Set