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<th>Document Author:</th>
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**Approval*: 
Laboratory Medical Director(s): University Hospitals Medical Director

**Approval and Acknowledgements**
Refer to QPulse system and Document Details report for laboratory director(s)’ electronic signature approval, employee acknowledgment and effective date.
1. **POLICY**
   1.1. Guidance for function of the Critical Care Laboratory (CCL) during down time situations.

2. **PURPOSE OF DOCUMENT**
   2.1. This procedure is to be utilized in the event of laboratory down time situation. Down time refers to the loss of the ability to run, transmit, report, call patient results, etc. This can be due to computer based information malfunction, loss of phone system, loss of power, or loss of the instrument feed water system, etc.
   2.2. Each down time situation is unique in some way. This document is designed to give guidance in each area and not necessarily to be followed precisely which is dependent on the situation occurring.

3. **SCOPE OF DOCUMENT**
   3.1. To be used by Critical Care Laboratory (CCL) personnel in the event of a down time situation.

4. **RESPONSIBILITY**
   4.1. All Critical Care Lead Technologists, CCL Safety Officer, and the CCL Laboratory Manager.

5. **PROCESS**
   5.1. General information for down time caused by loss of the LIS.
      5.1.1. Page the LIS On Call Tech when you realize the LIS is not functioning.
      5.1.2. Set the instruments to Print All sample results (see specific instructions for each area).
      5.1.3. After 15 minutes of LIS down time, call the ED charge nurse to inform them of the situation.
      5.1.4. Fax all ED patient reports to the main ED fax number: 3-4391 and 7E RH (CDU): 366-3162
      5.1.5. Refer to CLM-F13 LIS Down Time Flow Chart for more information concerning calling floors to inform them of the down time situation.
      5.1.6. If an unplanned LIS downtime has occurred and is still down after 45 minutes, page the laboratory manager to inform him or her of the situation.
      5.1.7. Specimens ordered before LIS down time may run as usual but may not transmit from the instrument to file results.
      5.1.8. Label all result printouts with patient information.
      5.1.9. Check all results for critical values and call them and document them on the result printouts.
      5.1.10. Keep results printouts organized in a way that should be easy to understand when things are working again to get results entered into the computer.
      5.1.11. After all down time specimens have been filed, pull a pending log.
      5.1.12. Refer to the individual downtime instructions later in this procedure for additional information on the specific areas of the lab.
   5.2. Requisitioning samples during the LIS down time:
      5.2.1. CPA will be the primary department to fill out the down time labels on the specimens that are dropped off or tubed to the laboratory.
      5.2.2. Label each specimen with a pre-printed CID bar code label (located in the CPA area).
      5.2.3. Labels are generated by the LIS staff. If supplies are low, call 3-8472 for replacements.
      5.2.4. Place a CID label on each specimen tube received.
5.2.5. Write the following information on each label. Obtain the information from the requisition.
   a. Patient Name
   b. Tests Ordered
   c. Nursing Unit (or Patient Location)
   d. Priority – for STAT, Life Threat and ED only. Leave blank if specimen is routine.

5.2.6. Fill out the non-bar code labels and place it on the requisition associated with that specimen. (One requisition can have more than one CID).
   a. Write the last four digits from the CID barcode label from each specimen.
   b. Write the tests that go with each specimen.
   c. Place the label on the requisition.

5.2.7. Hand the barcoded labeled tubes to the appropriate testing area.

5.3. Performing Testing on Samples with Down Time Labels
   5.3.1. Turn all instruments that will be performing testing to print ALL. Any patient sample run during the LIS down time must be printed.
   5.3.2. All patient samples from the Emergency Department (ED) will need to be called during the down time since the results will not be available in IHIS.
   5.3.3. All critical values will need to be called and documented on the paper printouts. The information recorded on the printout must be appended to the results when the LIS is back up.
   5.3.4. Keep the area organized and have a system to know which samples were tested and in what order. When the system comes back up the order the samples were analyzed will be the order that they will come across in the LIS.
   5.3.5. Program the patient sample using the Down Time CID number that is listed on the label.
   5.3.6. See the individual procedures and the down time procedure for further details.
   5.3.7. Store the requisitions in the order that they were run on the instrument. This will facilitate resulting the samples in the LIS when the LIS is back on-line.
5.4. When the LIS is operational:

5.4.1. CPA has to enter the Down Time Patient requisitions into the LIS before results can be filed.

5.4.2. The Hospital Number, Collect Date/Time, Received Date/Time and Tests are entered according to the standard order entry procedure. The CID numbers that were on the labels will need to be manually assigned to the patient samples in order for the results to cross into the LIS.

5.4.3. The “Assign Accession/HIS/Requisition Numbers” box will need to be check marked.

5.4.4. Click on “Auto Assign Acc #”. An accession number will appear in the yellow box to the right of the test order.

5.4.5. Write the accession number on the requisition for future reference.

5.4.6. Click on the box beside “Manually Assign Container ID’s”. A check mark will appear in the box.

5.4.7. Click the on screen “Save” button.

5.4.8. The “Manually Assign Container Id’s” window will appear.

5.4.9. The ordered tests will appear in the “Order Code” field and the “Container ID” field will be highlighted in yellow.

5.4.10. Type in the CID number, from the requisition label, for each test ordered. Click on the “Add” button. Repeat until all tests have been assigned CID numbers. (Note: If all tests go onto one CID, click on the add button for each test. The CID number doesn’t need to be retyped each time.)

5.4.11. Click on “OK”.

5.4.12. Repeat for all requisitions that were generated during the LIS down time. When all requisitions are completed, resume the normal order entry process.

5.4.13. File samples from Down Time Labels after computers are back up.

5.4.14. After CPA enters the down time requisitions go into the LIS and the cups with the CID numbers that were run during the down time will come across.

5.4.15. In some cases, the CID number will need to be retyped in order for the results to come across.

5.4.16. Any specimens that had a barcode generated from before the down time should automatically cross the interface without retyping the CID number.

5.4.17. Make sure to modify the results with the information of to whom results were called during the down time, either in general or for critical values.

5.4.18. Store all paper printouts from the down time in the appropriate boxes where other instrument printouts are stored.

5.5. Racking Tubes

5.5.1. When you are manually racking down time label tubes a pop up box will ask for the specimen tube type. Enter TG, SST, Lav or B depending on what tube type is being racked.

5.6. Area Specific Instructions

5.6.1. Coagulation Area

a. STA-R Max coagulation instruments automatically print all patient data.

b. Print a Routine Coag Down Time Log (log sheet) from Q-Pulse (CLM-F14).

5.6.1.b.1. Use this log to write down the tests that are being ordered on each CID number. This information will be needed to order the tests after the instrument scans the down time sample barcode label after loading. The log can also be utilized to organize and keep track of results. Ensure the log gets stored with the instrument printouts.
c. Ordering tests and running patient specimens on the STA-R Max.
   5.6.1.c.1. Tests must be loaded manually onto the coagulation instruments. If large batches are
   received, process and analyze specimens according to their priority.
   5.6.1.c.2. Preferably, all specimens should be run on STA-R Max (Max 1) and/or STA-R Max 2
   (Max 2) during the down time. Set up STA-R Max 3 (Max 3) only if Max 1 or Max 2 is
   down.
   5.6.1.c.3. On Max 1 and Max 2 it is necessary to “disconnect” the STA-R Max software from the
   automation line in order to load multiple racks onto the tray at one time (see Stago STA-
   R Max Quick Guide, CRG-8, Section 3.4). After the LIS comes back up, restart the
   automation line (see See Stago STA-R Max Quick Guide, CRG-8, Section 3.5).

d. Running routine specimens:
   5.6.1.d.1. See Stago STA-R Max Procedure (CRG-7, Section 8.5) for instructions. Note: The
   instructions apply for all STA-R Max analyzers that are not connected to the Automation
   line.

e. Running stat specimens:
   5.6.1.e.1. See Stago STA-R Max Procedure (CRG-7, Section 8.3 for instructions. Note: The
   instructions apply for all STA-R Max analyzers that are not connected to the Automation
   line.

f. Reporting results:
   5.6.1.f.1. Retrieve the results printouts from the STA-R Max printers.
   5.6.1.f.2. Match the CID numbers on the printouts to the information on the log sheet.
   5.6.1.f.3. Label each set of results on the printout with patient’s name, and unit.
   5.6.1.f.4. Call all life-threat and STAT specimens and any critical values.
   5.6.1.f.5. Record the date/time, name and title of person taking the call next to the results on the
   instrument printout.

g. When the LIS is operational and all order entry has been completed by CPA:
   5.6.1.g.1. Any specimens that had a barcode generated from before the down time should
   automatically cross the interface.
   5.6.1.g.2. If results do not cross the interface automatically, it may be necessary to transmit the
   results from Coag Expert. Note: It is not possible to transmit results directly from the
   analyzer to the LIS.
   5.6.1.g.3. Transmit the results from Coag Expert.
      5.6.1.g.3.1. Log into Coag Expert using User Name: mlt and Password: mlt123.
      5.6.1.g.3.2. From the Dashboard, double click on the patient file. Click [Change
      Status]. Click [Validated] and then [Validate]. The results should upload
to the LIS.

h. File all results in function OEM, adding comments for specimens that were called to the floor.
   Check off the names on the downtime log as the results are filed. This will verify that all
   specimens were ordered by CPA, and that all specimens were analyzed and resulted by the lab.

i. Pull a Coagulation pending log and review to ensure all specimens were analyzed during the LIS
   down time.
5.6.2. Hematology Area
   a. Only run Stat and Emergent Specimens unless this will be an extended down time.
   b. Do not use the main feeder to load specimens.
   c. Refer to 5 L HEME-33 Hematology Downtime Policy in Q-Pulse for complete instructions.
   d. Put the XN instruments in offline mode.
   e. Place rack between the bracketed area in front of the instrument.
   f. Run ALL Panels on each specimen.
   g. Print all specimen papers and use the downtime stickers from 5 L HEME folder in Q-Pulse.
   h. When WAM comes back up highlight patients that were ran and resend to LIS.
   i. Resume regular WAM functions.
   j. When the LIS function is restored and all order entry has been completed by CPA:
      5.6.2.j.1. Open Sunquest Laboratories software.
      5.6.2.j.2. Open SMART
      5.6.2.j.3. Click Utilities
      5.6.2.j.4. Click Redownload
      5.6.2.j.5. Input each CID
      5.6.2.j.6. Spot must say “AWAMD”
      5.6.2.j.7. In Test Selection, click the “Add All” button.
      5.6.2.j.8. Click the Download button at the top of the box.
      5.6.2.j.9. All the information will merge in WAM.
      5.6.2.j.10. File as normal.

5.6.3. Differential Area
   a. If the LIS is down:
      5.6.3.a.1. Do manual differentials using a manual differential counter or the offline counter in Sunquest.
      5.6.3.a.2. Write the manual differential results on the instrument printout.
      5.6.3.a.3. When the LIS is operational and all CID numbers are linked in WAM, enter results via the WAM Differential keyboard.
   b. If WAM is down:
      5.6.3.b.1. Order a MDIFF in LIS.
      5.6.3.b.2. Do manual differentials using manual keyboards.
      5.6.3.b.3. If a Pathologist Differential is required, credit the MIDFF with SPD and order the PDIFF.

5.6.4. Urinalysis Area:
   a. Use the Clinitek Advantus to run all samples. The AUWI-PRO System will not be able to download or upload the downtime orders to the system if the LIS is down.
      5.6.4.a.1. The results will automatically print when running samples on the Advantus. If they do not print, press the print results button on the results screen.
      5.6.4.a.2. Take the printouts from the Advantus and perform microscopic analyses.
      5.6.4.a.3. Record the results of the microscopic analyses, along with the patient name, medical record number, and location on Advantus printouts.
5.6.4.a.4. Call any panic values to the nursing unit or patient location. Record the date, time, name and title of person taking the panic result on the Advantus printout.

5.6.4.a.5. Once the LIS is back up, use these printouts to file the results.

5.6.5. Body Fluids Analysis Area:
   a. Body fluids will be processed using a manual hemacytometer and follow the priority protocol stated in the Fluid Procedure.
   b. Call any critical values to the floor and document on the fluid card the name and title of the person taking the results and the date and time of the phone call.
   c. Do manual fluid differentials using manual counters and write the results on the printout or fluid card.
   d. Once the fluid differential has been completed, make a copy of the fluid card to use to enter results into the LIS.
   e. Keep the copy and place original yellow fluid card and slides on path tray so as not to delay the review by Heme Path.
   f. When WAM or the LIS is operational and all CID numbers are linked in WAM, enter results via the WAM Differential keyboard.

5.6.6. All Manual Tests in the Blood Gas Area:
   a. Perform the tests and record information on the manual test log sheet for that area using the downtime label CID number instead of the accession number on the sheet.
   b. Call any panic values to the floor and document name, date and time of phone call on the manual test log sheet.
   c. When the LIS has been restored and all order entry has been completed by CPA, file results in the LIS in function MEM.
   d. Review a pending log to ensure that all results have an order and all orders have results.

5.6.7. Blood Gas Instruments in the Blood Gas Area:
   a. The Radiometers do not print automatically. Press the print results button on the patient results screen for every specimen ran during the downtime.
   b. Print out a CLB-F2 Blood Gas Downtime Worksheet from Q-Pulse to record the CUP number from the instrument, the accession number and the patient name.
   c. Keep all requisition forms sent with the blood gas specimens so they can be ordered when the LIS is operational.
   d. Run all blood gas and other samples as usual.
   e. Use the downtime label CID number in the accession number field on the patient information screen. This field MUST have a patient identifier in it or results will not cross when the LIS is operational.
   f. If the specimen does not have a downtime label, fill in the accession number field with the patient’s medical record number.
   g. Fill in the patient name and hospital number on the patient information screen.
   h. While it may not always be possible to do so, try to keep printouts attached to the instrument until the LIS is operational. This will simplify entering results, especially if the LIS is down for an extended period of time.
h. Call all blood gas results. If there are any critical values record the Name, Title and Time called on the printout.

i. When the LIS is operational, requisition all gases that were run while the computer was down. Write the accession numbers on the printouts and the CLB-F2 Blood Gas Downtime Worksheet.

j. The Radiometers will save and send results automatically so results will not need resent manually.

k. Use OEM to file the results, beginning at the cup number where the computer went down. Enter the accession number for the corresponding cup number. Compare the results you are filing with the printouts to make sure they match.

l. Modify any previously called panic values with the information recorded on the printouts.

m. Save all printouts and attach them to the Blood Gas Log sheet at the end of your shift and place in the Fireproof Box.

5.6.8. Chemistry AU Area:

a. When the LIS is down, turn on the automatic printing of reports in Remisol Advance.

b. Go to Environment, then from the drop-down menu select General Setup.

   ![General Setup settings](image)

   c. Put a check in the box next to “Print automatically complete requests” to get printouts. Then click the SAVE Icon on the tool bar.
d. In the event that printing does not start automatically, EXIT and RESTART the Remisol Software.
5.6.8.d.1. On the CLIENT: Select the CLOSE icon at the top right of the Remisol software.
5.6.8.d.2. On the SERVER: Select the CLOSE icon at the top right of the Remisol software.
5.6.8.d.3. On the SERVER: CLICK on the REMISOL icon to reopen the Remisol software.
5.6.8.d.4. On the CLIENT: CLICK on the REMISOL icon to reopen the Remisol software.
5.6.8.d.5. LOG-IN and try to set up automatic print again.

e. During the down time, tube these result printouts to the floors. Fax all ED results to the ED.

   Main ED Fax #: 3-4391  7E RH (CDU) Fax #: 366-3162

f. Samples that have not downloaded into Remisol will need to be programmed manually in Remisol, including patient information, before running on the AU5822 analyzers. Please remember to enter the patients age or date of birth for proper reference ranges.
g. Remisol LIS Recovery Procedure:
   5.6.8.g.1. When the LIS is operational, turn off the automatic report printing by going into the Environment / General Setup menu in Remisol and uncheck the box that says “Print automatically complete requests” and click the SAVE icon.
   5.6.8.g.2. During the down time results will upload from the instrument to Remisol, but will not cross to the LIS. The results will be held in the instrument TABS to be reviewed. Once LIS is operational and communication is re-established, results will begin to upload to the LIS automatically. The results can be uploaded to the LIS manually by using the Host Transmission Icon on the toolbar of the Remisol.
   5.6.8.g.3. If the Host Communication is not automatically reestablished, the connection can be re-established manually by going to Environment / Reset Communication. Select ASTMH, then click the green check mark. Connection status is shown by the LED lights at the bottom of the Remisol screen. If the ASTMH light is red, the connection is not established, if it is green, it is okay. Hover the cursor over the LED light to show the connection label.
   5.6.8.g.4. Check pending logs to ensure all samples have been ordered and resulted.

5.6.9. Centaur Area:
   a. Set the Centaurs to print all patient results by letting the instrument get to READY state.
      5.6.9.a.1. Select Setup, then Summary from the Centaur main screen.
      5.6.9.a.2. Select Print Options.
      5.6.9.a.3. Select Automatic Runtime Results Report.
      5.6.9.a.4. Select Save.
   b. Run specimens in manual mode
      5.6.9.b.1. Select the WORKLIST icon on the Centaur main screen.
      5.6.9.b.2. Click on the SCHEDULE BY SID.
      5.6.9.b.3. Add Demographics including patient name, PID (medical record number) and location so it will be on the results printout.
      5.6.9.b.4. Click on the SID textbox and type in the CID number and select <Enter>. This data can also be entered by using the barcode scanner.
      5.6.9.b.5. Click on the TEST textbox and type in or select the tests ordered on that sample.
      5.6.9.b.6. Click on SAVE.
      5.6.9.b.7. Load specimens onto the Centaur ensuring the downtime label CID is visible.
      5.6.9.b.8. The Centaur will print multiple patients results per sheet.
      5.6.9.b.9. Review results printouts and call any stat, life-threat or panic value to the nursing unit or patient location. Write the date/time and name and title of the person receiving the call on the results printout.
      5.6.9.b.10. When the LIS is operational and all order entry has been completed by CPA, file results in function OEM.
      5.6.9.b.11. When filing, modify any result called with the date/time, name and title of person receiving the call.
      5.6.9.b.12. Review a pending log to ensure that all results have an order and all orders have results.
5.6.10. Unity Real Time Quality Control Program
   a. If the interface between instrumentation and Unity Real Time is down, quality control results can 
      be manually entered in Unity for the appropriate instrument/analyte and will be evaluated 
      according to the same rules as if the data were received directly from the instrument.
   b. In the event the entire Unity program is non-functional, print out the QC result form from the QC 
      Ranges for computer down time folder in Chemistry and Immunochemistry. The STAR-
      Evolutions will print evaluated QC data directly from the instruments. Hematology QC is 
      evaluated on the XN analyzers. Once Unity is operational again the data points can be entered for 
      the required record retention period.

5.7. If the telephone system is down
   5.7.1. In the event that the phone systems are down and all incoming and outgoing calls within the 
           hospital are compromised, use the black emergency telephone located in the laboratory.
   5.7.2. A current list of emergency phone numbers for the entire hospital system is located on OneSource. 
           Click here to view the list.

5.8. Power outage
   5.8.1. In the event of a power outage, S326 Rhodes Hall has backup electricity.
      a. Lighting will be reduced in the laboratory.
      b. White outlets will have no power.
      c. Red outlets will have a delay in switching over to the backup power, but will have power.
      d. Blue outlets will have no interruption in power. All essential equipment should be connected to a 
         blue outlet.
   5.8.2. Not all rooms on the third floor will have power
      a. The Hematopathology room will be without lights.
      b. The restrooms will be without lights.
      c. Lanterns for backup lighting are stored in the black safety cabinet and most areas have a small 
         flashlight that can be utilized during a power outage.

5.9. Instrument Feed Water Outage
   5.9.1. Contact Evoqua Water Technologies at 800-466-7873. The site number is 0252137994
   5.9.2. Inform the Lead Tech(s) and Laboratory Manager as soon as possible.

6. RELATED DOCUMENTS
   6.1. Refer to QPulse System or Document Detail Report for related Laboratory Policies, Procedures, and 
       Master Forms