- **PURPOSE:**
  To define the Hematology laboratory staff procedure to follow during scheduled and "crash" LIS computer downtime to maintain timely specimen processing and reporting.

- **POLICY:**
  LIS computer downtime (scheduled and crashes) must remain silent to the Medical/hospital staff. Specimen processing and reporting must continue uninterrupted regardless of computer support functions.

- **DOWNTIME PROCEDURE:**

A. Scheduled Downtime

- Prior to downtime - call pending reports for all areas

B. Unscheduled Downtime

- Call the HELP Desk (688-HELP) - they will notify computer operations (LCODO beeper 688-1619), may have to hit #(pound) key if no response.
- If no resolution is made within 30 minutes, Computer Operations will invoke an official SCC downtime
- Notify Lab Manager if Computer Operations invokes an official SCC downtime
- Downtime < 1 hour:
  - Only stat specimens will be processed
- Downtime > 1 hour:
  - Hourly updates will be provided via the paging system
  - Prioritized routine samples will begin to be processed along with stat samples
- *** For planned extended downtime special procedures and protocols may be implemented

C. Quality Control handling

- **QC is to be run before any patient samples are run**
- Perform necessary QC
- CBC: Run patient controls and commercial controls per usual; confirm results are acceptable before running patient samples.
- Coagulation: Look at QC results from BCS Easy Q libraries and confirm that results are acceptable. Rerun QC, if necessary; do not run patient samples unless QC is acceptable.

- Urinalysis: Printout QC results from Atlas and compare with acceptable ranges in QC Lot # manual. Record confirmatory QC results on Atlas printout. Perform UF QC as usual.
- Fluids: Perform QC counts and record on log sheet and compare with acceptable ranges in QC Lot # manual

D. Specimen Processing (for both scheduled and crashes)

- Samples will arrive at the Pick-up bench. Samples with a Soft label that have not been collected/received will be in racks labeled "not collected/received." Samples with downtime labels will arrive with the patients name, ward and tests ordered hand written on the label. These samples will have #99 numbers. Our copy of the requisition will be filed alphabetically at front bench. For extra labels, use Downtime Link : http://flask.ynhh.org.cgi-bin/labeldup/labeldup.pl

E. Samples to be Faxed or Called

- STAT samples, ER's, ICU's, MEDONC, Smilow Day hospital, and Transplant require a printout and fax with affixed demographic label. Designated supervisor or tech will fax instrument printouts or downtime sheets to STAT locations.
- Samples with critical values will need to be called to floors, regardless of priority. Record who the result was called to, the time and techs initials on designated downtime pre-analytical/critical calllog sheet to be entered into Soft when the system recovers.

F. Bench Responsibilities During Downtime

- **Sapphire**
  - Record the first sample/ sequence # when downtime begins for use at recovery
  - Bloods that have been run should be filed at same instrument in an alphabetized tube tracker rack
  - Run all stat samples on one instrument.
    - Print chartable data sheet for STAT samples, affix downtime demographic label on UPPER RIGHT corner
  - Run all routine samples on the other 2 instruments if Downtime > 1 hour.
  - Review instrument computer for review data/flags to determine is sample must be repeated, have smears made or other tests are indicated.
  - If sample is QNS or clotted; notify sending location for repeat and record on log sheet to be resulted later
  - If sample is normal: file blood in alphabetical rack

- If sample data needs to be reviewed: Forward printout with blood to misc area. Write out review criteria clearly on printout. Once the microscope portion is complete – printout will be filed in the diff area.
- If sample needs to be called due to critical values or stat sample note details of the call on the designated downtime pre-analytical/critical call log sheet.
- Check labels for ESR, RETIC and BSINT
- To facilitate phone call requests – ask for patients last name, find blood in alphabetized rack and use the FIND function of the Sapphire for quick recall
    - For differential/MISC tests – refer to printouts in those areas

- **Miscellaneous**
    - Make smears and perform other tests as indicated on the requisition
    - Use ESR log sheet to record ESR controls and ESR results.
    - Use manual HCT log to record Spun HCT, buffy coats and QBC results
    - Give bloods back to person who's instrument it was ran on
    - Give Sapphire printouts to the diff area
    - OFF SHIFT/ NO MISC PERSON AVAILABLE
        - Sapphire techs make smears at bench with demographic labels
        - Identify and perform any MISC tests

- **Differentials**
    - Perform scans/smears/differentials/platelet counts/WBC counts, NRBC count or review as noted on the printout on the manual counters
    - Record results on printout (include manual diff and morphology, for scan write "ok" next to autodiff)
    - -Note morphology on printout:
      A – Abnormal, M – Marked Abnormal and/or P – Present
    - Make any necessary calls for critical data and record call information on the designated downtime pre-analytical/critical call log sheet.
    - File Sapphire printouts in alphabetical order in a folder to be kept in the diff area

- **Coagulation**
    - Check for QNS samples – record pre-analytical call on designated downtime pre-analytical/critical call log sheet to be entered upon recovery
    - Record the first sample number when downtime begins for use at recovery
    - Run samples on BCS
    - If a Soft label is on the tube the BCS will run what was ordered

- If a downtime label is on the tube the BCS needs to be programmed to run what's indicated on the label
- Follow protocol for what needs to be repeated
- Fill out downtime data sheets for STAT specimens with demographic label to be faxed
    - Non-stat samples can be filed in alphabetized rack
- Be sure to check samples for a clot when appropriate; if clotted, notify sending location for repeat and record on downtime pre-analytical/critical call log sheet for later calling and comments.
- Call critical values. Record call information on the designated log sheet.
- After samples are run on the BCS, they should be racked in a green rack by each BCS in alphabetical order.

- **Urinalysis**
    - Record the first sample/ sequence # when downtime begins for use at recovery
    - Run all samples in small batches on the Atlas
    - Review results from instrument printout to determine if confirmatory testing needs to be performed (> 7.0 pH do SSA , >= 1.035 specific gravity do Clinitest and/or Microscopic Analysis).
    - Record confirmatory tests on clipboard
    - Run positive urines on UF-1000i
    - Review flagged results for microscopic review (scan or manual) and notate on downtime resulting sheet
    - Spin urines that need to have a microscopic performed
    - Keep unspun urines that have auto verified from UF and Atlas in a separate rack
    - Perform microscopic and record results on manual urine worksheet. Staple macroscopic and auto microscopic results to worksheet.
    - File all completed urines alphabetically
- **Fluids**
    - Follow fluid procedure for chamber counts and cyto smears
    - Use hand clickers for chamber counts and differentials
    - Record results and calculations as usual on log sheets. Put counts and differentials on slips.
    - Call STATs and/or critical results to LIP. Record call information on designated downtime pre-analytical/critical call log sheet.
    - Use specialized fluid forms and downtime labels for STAT samples to fax

G. Recovery after Downtime (for both scheduled and crashes)

***All areas- All instruments will need to restart interfaces (Follow downtime procedure) before data can be released.**

- Samples that arrived at the pick-up bench with a Soft label in the "not collected/received" racks will need to be collected/received by the LAs before results released.
    - Go into Phlebotomy→Receiving and scan in samples with Soft label. Click Save when done. (This can be done by technologist in the event LAs are not available)
- Samples that arrived at the pick-up bench with a downtime label will be accessioned at the front end.
- Once the sample is accessioned it will appear on the appropriate pending list(s) (pull pending to include downtime #99 numbers)
- Enter QC results into Soft Total QC
- Make sure all samples from pendings called prior to downtime have been resulted.
- Follow up on any missing samples.

H. Bench Responsibilities During Recovery

- **<u>Sapphire: Recovery after Downtime:</u>**
    - Supervisor or Lead tech should restart all Sapphire interfaces
    - Determine sample sequence number that corresponds with the beginning of downtime and retransmit to the last sample before recovery
        - From the main sapphire screen:
            - Click Transmit
            - Enter Sequence **from**: **to**: (Enter first downtime number in **from** and the last downtime number run in **to**)
            - Click Transmit Data Log Records for Selected Sequence
    - Open pending list using the downtime label number range, 990000)
    - As downtime numbers are accessioned, patient demographics will appear in instrument menu and the TAT status column will no longer be white
    - Samples that did not auto verify will be pending in the Instrument Menu
    - Verify samples from the instrument based on Sapphire printouts (Note: Data from Sapphire needs to be released first, before manual diffs can be entered.)
    - Enter called to comments for Stats and critical values called to LIP from log sheet
    - Cancel QNS, clotted samples and enter "Called to…" comments from log sheet

- **<u>Miscellaneous: Recovery after Downtime:</u>**
    - Enter ESR results
    - Call pending reports to look for missing samples

- **Diff Area**: **Recovery after Downtime**: **Note:** Do not result differentials until samples are verified from the Sapphire
    - Enter results of tests performed (if entering results for another tech, enter internal comment with their initials)
    - Be sure to change any scans that needed a differential from Scan→Manual Diff for test SCOPE
    - Call pending report for diff area to assure work is complete
    - Enter any critical call comments from downtime log sheet

- **Coagulation: Recovery after Downtime:**
    - BCS interfaces will need to be restarted by a supervisor or lead tech only
    - Retransmit samples with Soft numbers and downtime numbers from each BCS:
    - Click Setup
        - Choose all samples under Sample Selection
        - Choose numeric under Sort Samples By
        - Click close
        - Click to highlight all sample data to be retransmitted
        - Click Send (Sample results will black when retransmitted)
    - Check instrument menu for any samples that did not auto verify and post as usual
    - Any samples received with a downtime label will be held in the instrument menu until they are accessioned by the LA's
        - When sample is accessioned the patient demographic will appear in the order and the TAT status will change from white to a color
        - They can they be verified/posted as usual
    - Enter any pre analytical/critical call comments from downtime pre-analytical/critical call log sheet
    - Check pending for any missed sample [call pending to include #99]

- **Urinalysis: Recovery after Downtime:**
    - **Supervisor or Lead Tech should restart both Atlas, Clinitek, and UF1000 interfaces.**
    - **Retransmit results from Atlas**
        - Got to Main Menu
            - #1- Recall Results
            - #1- Routine Test Results
            - #1- Seq # from > Seq # to (seq. # of first sample run to seq. # of last sample run)
            - Search
            - Continue

- Send
- All Results
- Computer
- Done

- Results will autoverify when transmitted
- Any samples received with a downtime label will be held in the instrument menu until they are accessioned by the LA's
  - When sample is accessioned the patient demographic will appear in the order and the TAT status will change from white to a color
  - They can they be verified/posted as usual
- Result confirmatory tests performed
- Double check for additional and/or confirmatory testing
- **Retransmit results from UF-1000i**
  - Highlight all samples to be transmitted
  - Report –> Host
- Results requiring microscopic review will be in instrument menu along with any downtime samples (see above)
- Select scan/manual as usual and post
- Enter microscopic results from manual urine worksheet
- Call pending reports to assure work is complete

- **<u>Fluids: Recovery after Downtime</u>:**

  Enter cell counts and differentials
  - Enter called to comments for STATs and critical values from downtime pre-analytical/critical call log sheet

- **<u>All areas</u>**
  - Make sure all samples from pending reports printed prior to a scheduled downtime are resulted
  - Follow up on any missing samples and record on pending report
  - Sign-off pending report
  - Sign off resulted downtime pre-analytical/critical call log sheets to ensure all comments were entered

I. HISTORY:

H-1 This procedure was written by Jessica Kaul on 6/27/2011.
H-2 This procedure was revised by Donna Fico on 3/20/2012.
H-3 This procedure was revised by Donna Fico on 1/2013.
H-4 This procedure was revised by L. Mendillo 7/2013

Yale New Haven Hospital

Clinical Hematology Laboratory – Downtime Results

Name	
MR#	
SPM#	
Date	
Patient Location	
Fax #	

Macroscopic	**Microscopic**
Color	Epithelial Cells
Appearance	Hyaline Casts
Specific Gravity	WBC
pH	RBC
Protein	Bacteria
Glucose	
Ketone	
Nitrate	
Esterase	
Blood	
Confirmatory Tests:	**Comments:**

UF1000

SCAN_____

MANUAL _____

(Attach ATLAS printout here, UF to back)

DOWNTIME CRITICAL/PREANALYTICAL CALLS BENCH:_____

ACCESSION #	CLOTTED	QNS	CRITICAL VALUE	CALLED TO:	TIME CALLED:	CALLED BY (TECH)	Verified (Post downtime)
EXAMPLE: 540402378			PLATELET, 47	Bob Smith, RN	12:27 PM	BRAWS	LMEND/6:15PM

Routine Coagulation Downtime Reporting Form

PLACE DEMOGRAPHIC LABEL HERE

	REF. RANGES
PT _____	9.9 -12.2 sec
INR _____	0.89-1.10
PTT _____	22.7-30.4 sec
FIBRINOGEN _____	150-434 mg/dL
D_DIMER_____	0.17-0.54 mg/L FEU

*In patients at low risk for DVT/PE a d-dimer of <0.5 mg/L FEU has a negative predictive value of >95% for ruling out DVT or PE

Fluid Downtime Reporting Form

PLACE DEMOGRAPHIC LABEL HERE

		Ref Range
Red Cells/ uL	_____	None Cells/uL
Nucleated Cells/uL	_____	Less than 6 Cells/uL

Differential

Granulocytes	_____	None
Lymphocytes	_____	None
Monocytes	_____	None
Tissue Cells	_____	None
Eosinophils	_____	None
Basophils	_____	None
Other	_____	None
ANC	_____	