UW Medicine
HARBORVIEW MEDICAL CENTER

Administrative Policies and Procedures

COMPUTERIZED TUBE SYSTEM 5.48

Division: Administration
Effective Date: 07/1998
Review Date: 06/2013
Reviewer: Becky Pierce

POLICY PURPOSE:

POLICY:

The Computerized Tube System (CTS), also known as the pneumatic tube system, is used to transport certain supplies, records, specimens, blood and blood components, medications, and other small items. The purpose of this policy is to establish initial and emergency procedures, guidelines and limitations for the operation of the system.

PROCEDURE:

I. **Users**

CTS provides rapid transport of items.
This system consists of approximately 25 computerized tube stations. Station numbers are assigned as they are implemented.

II. **Basic Systems/Operating Instructions**

A. **Sending an Item**

1. The message STATION READY indicates your station is ready for sending a carrier. If it does not display this message, see DISPLAY MESSAGES on page 3 of this policy.
2. Place items to be sent in an empty carrier. Ensure that contents are immobilized and/or securely contained. (See policy's Section IV for packaging instructions).
3. Close carrier and ensure that both latches are engaged.
4. Place carrier in dispatcher.
5. Select the destination station number from the Station Directory and enter this number using the keypad. Note: Do not use pens, pencils, or fingernails to push the system keypad.
6. Press SEND. (If the origin station sender suspects a destination miss key, note time so computer can be accessed for transaction log).
7. The message SELECTION ACCEPTED indicates your carrier has been accepted for processing and will be processed as soon as possible.
8. For messages that may be displayed when a carrier cannot be dispatched, see DISPLAY MESSAGES in Section II, D of this policy.
9. If the tracking of sent items is desired, the sender is responsible. Call Engineering for tracking destination in system computer.
10. Special function transaction #71 can be used at the time a carrier is sent to confirm item has reached its destination.

B. **Clearing or Canceling a Transaction**

1. If an error is made while keying an entry, press CLEAR and start over.
2. If a keyboard entry is made to an undefined destination, a short "beep" will sound. Press CLEAR and start over.

3. If you wish to stop a transaction after the SEND button has been pressed and SELECTION ACCEPTED is displayed, press CANCEL. Note: The transaction cannot be canceled if the dispatcher has started to move.
4. If TRANSACTION WAS ABORTED is displayed, press CANCEL and start over.

C. **Receiving an Item**

1. The messages INCOMING CARRIER and INCOMING SECURE CARRIER indicate carriers will be arriving at your station.
2. Remove carriers promptly to prevent receiver bin from becoming full and shutting off station, observing Universal Precautions when a carrier is suspected of being contaminated. Follow the System Spill Procedures for Users contained in this policy, Section V.
3. If carriers, latches or wear bands are damaged, remove carrier from system and call Engineering to pick up for repairs.
4. If RETURN SURPLUS CARRIERS is displayed, send extra carriers to destination "0," extra carriers will then be forwarded to stations in need of carriers.

D. **Carrier**

1. Carrier capacity:

Carrier Size	Content Capacity
6"	7.0 lbs

2. Extra carriers with no return designation should be returned to destination "0." Hoarding carriers will effectively shut down the system. Foam liners will be returned with carrier when available.

The following are other display message possibilities and the appropriate action required.

Message	Action
Station Full	Empty the receiver bin
Station Scheduled Off	Call Engineering
Station Signed Off	See Special Function #83
Station Not In Service	Call Engineering
Traffic Forwarded to "X"	See Special Function #75
Secure Carrier Arrived/	See Special Function #73
Secure Authority Code	
Selection Full/Try Later	Call Destination Station to empty receiver bin
Selection Does Not Exist	Check selection & try again
Selection Scheduled Off	Call Engineering
Selection Signed Off	Call Destination
Selection Not In Service	Try again later, if message persists, call area to assess situation
Selection Not Permitted	Call Engineering
Transaction Aborted	Press "Cancel"/try again
Selection Accepted	No action Required

III. **Items NOT Approved For Transport In The Computerized Tube System**

A. **Clinical Laboratory**

- Urine specimens unless contained in urine vacutainer
- Stool specimens greater than 120mls
- Non-approved urine/stool collection containers
- Cerebral spinal fluid obtained by lumbar puncture (i.e. spinal tap)
- Blood culture bottles unless contained in approved transporter

- Pathology samples
- Formalin and/or alcohol preserved specimens
- Empty blood bags should be disposed of in patient care area. The pneumatic tube system is not used to transport spiked units.
- Blood bags, IV sets, IV solutions that have been implicated in a possible transfusion reaction.
- Drainage bags
- Wet Ice (All specimens requiring ice should be hand delivered).

B. **Pharmacy**

- Chemotherapeutic drugs
- Protein based drugs
- Controlled substances
- Investigational medications
- Leeches
- TPN - total parental nutrition
- A complete list of medications NOT approved for transport in the CTS can be found in the "**Medication Distribution: Delivery of Medications**" policy

C. **Other**

- Drinks or food items
- Contaminated supplies
- Money/checks
- Sharps
- Patient valuables/belongings
- Non-leak tight containers containing liquids

IV. **Packaging**

Potentially infectious items must be contained and transported in a manner that prevents breakage, leakage or contamination of the system. In accordance with Body Substance Isolation Procedures and OSGA Bloodborne Pathogen regulations, all blood and body fluids must be handled as potentially infectious.

Carriers are used by everyone and should remain uncontaminated. As always, gloves must be worn when inserting and removing specimens of blood and body fluids from biohazard bags.

Leakage is primarily due to:

- Improper packaging and non-immobilization of contents
- Use of non-leak tight containers or failure to tighten container lids

To prevent spillage or breakage, remember the following:

- Containment prevents leakage
- Immobilization ensures integrity

A combination of HMC-authorized sealable specimen transport bags, and foam liners will be used to immobilize and package items. See the following for specific packaging procedures:

A. **Urine and Stool Specimens** (Urine only if in vacutainer tube, Stool 120 mls or less in leakproof container)

1. Make sure container cap is secure.
2. Place sealed, labeled specimen in HMC authorized sealable specimen transport bag. (Bags are available on Central Supply Cart).
3. Completely close and seal bag.
4. Place lab requests in external pouch of bag.
5. Place bag in carrier with the appropriate foam liners.
6. Send to lab.
7. Lab will return all foam liners to the carrier before the carrier is sent to destination "0".

B. **Blood Components** (Transporting components to and from Transfusion Support Services)

1. Send "Blood Request" to Transfusion Support Services via pneumatic tube.
2. Blood is placed in carrier with foam liner and sent to requesting patient care area. Transfusion Support Services will notify the receiving unit when blood is dispatched to the destination unit.
3. If blood isn't received by requesting patient care area, Transfusion Support will be notified by patient care area immediately.
4. A search will be initiated by Transfusion Support Services, as the sender.
5. Patient care area will notify Transfusion Support Services when returning unused blood or blood components.
6. Transfusion Support Services will notify the patient care area when blood doesn't arrive in Transfusion Support Services.
7. A search for missing blood will be initiated by patient care area (as sender) when they are notified by Transfusion Support Services that blood has not been received.

C. **Blood Gas Specimens**

1. Remove needle from syringe and replace with Syringe Luer Lock Tip (caps are available on Central Supply Cart and in ABG Kit).
2. Place labeled specimen in HMC authorized sealable specimen transport bag. (Bags are available on Central Supply cart). Do not use ice for transport.
3. Completely close and seal bag.
4. Place Laboratory request in external pouch of bag.
5. Place bag in foam lined carrier.
6. Send carrier to laboratory.
7. Laboratory Medicine will return carrier to Station "0" for distribution.

D. **Blood/Body Fluids - Vacutainer Tubes (CSF from spinal taps must be hand-delivered to lab)**

1. Place labeled vacutainer tubes in HMC authorized sealable specimen transport bag.
2. Completely close bag.
3. Place lab request in external pouch of bag.
4. Place bag in foam-lined carrier.
5. Send carrier to Lab.
6. Laboratory Medicine will return carrier to Station "0" for distribution.

E. **Blood Culture Bottles (Do not send any other specimen in the same carrier.)**

1. Place bottle(s) in an approved blood culture bottle transporter.
2. Snap transporter closed.
3. Place transporter in large HMC-authorized sealable specimen transport bag.
4. Completely close bag.
5. Place lab request in external pouch of bag.
6. IMPPORTANT: Place bagged transporter in carrier lined with 2 pieces of foam.
7. Send carrier to Lab.
8. Laboratory Medicine will return carrier and empty blood culture transporter to the station that sent it.

F. **Culture Specimens** (Swab transport systems, sterile containers less than 150 mls)

1. Specimen must be securely contained in primary container. Note: Do not send needle attached to syringe. Remove needle and replace with Syringe Luer Lock Tip cap. (Caps are available on Central Supply Cart).
2. Place sealed, labeled specimen in HMC-authorized sealable specimen transport bag.
3. Completely close and seal bag.
4. Place lab request in external pouch of bag.
5. Place bag in foam lined carrier.
6. Send Carrier to Laboratory.
7. Laboratory Medicine will return the carrier to Station "0" for distribution.

G. **Medications**

1. Make sure primary container is properly sealed and labeled.
2. Place container and necessary paperwork in bag
3. Secure bag.
4. Place bag in foam lined carrier.
5. Send to Patient Care area.

6. Patient Care area will return excess carriers to Station "0" for distribution.

V. System Spill Procedures

A. Procedure for Users

Note: Always use Body Substance Isolation Procedures (gloves and other barrier devices as needed) when handling carriers that may be contaminated.

1. Stop sending carriers from the station where the contamination was first noticed and initiate EMERGENCY SHUTDOWN. From any Nursing Unit, call the Laboratory to initiate an EMERGENCY SHUTDOWN. Call 3451.
2. Call Engineering, if no answer dial ("0") to page the shift supervisor.
3. Provide Engineering with the following information:
   a) Receiving station's number
   b) Sending station's number (if known)
   c) Type of spill (specimen type and suspected amount)
   d) Time the contaminated carrier arrived (or was first noticed)
   e) Number of contaminated carriers that have arrived.
4. Engineering will notify switchboard to page overhead that CTS is down.
5. Discard the specimen and secondary containment bag or pouch if unable to be cleaned or salvaged.
6. Remove contents of carrier using protective clothing and equipment. Discard foam inserts.
7. Call the sending station and request another specimen. Also notify the nurse manager or department manager of incident.
8. Contact Central Services for decontamination. Place the carrier in a biohazard waste bag and deliver to Central Services.
9. Approved disinfectants:

- Carrier Liners: Steam autoclave 270 degrees for 5 minutes, dry for 1 minute at 270 degrees; hospital approved germicide or OMNI II solution.
- Plastic Carriers: Hospital approved germicide or, OMNI II solution.

Note: Do not autoclave plastic carriers as high temperatures will cause damage.

Engineering is responsible for decontamination of the system and will return the system to service when cleaning is completed. When system is returned to service, Engineering will notify the switchboard to page that the system is functioning.

Contact Environmental Services for any spill and decontamination outside of the station (Example: carpet cleaning).

Engineering will report all spills to Infection Control.

B. Engineering Action

Immediately verify that the system has been shut down. The system can be turned off at the System Control Center (SCC) call Lab at 3451.

Notify Switchboard to page that CTS is down. Switchboard will notify transportation that the system is down.

From the system transaction printout, verify from which station the carrier was dispatched and when. Use the riser diagram to determine the route that the carrier traversed from the source station to the destination station. Use the transaction printout to determine if other transactions used that route or any part of it before the system was shut off.

- Determine from the "System Traffic Display" if any transactions are in process, when the system was shut off, used that route or any part of it.
- If any of these transactions used the same route or any part of it, determine their source and destination stations and cleanout those routes in addition to the route in which the spill occurred.

Start system and immediately abort a system purge. This procedure will eliminate the spread of contamination to other routes in contaminated zones.

From the SCC, individually schedule "Off" all stations on any zone with one or more contaminated routes.

Assign "Off Dispatch" to any station on contaminated routes. This will allow cleanout carriers to be sent back to the stations from which they were dispatched.

C. **Engineering Decontamination Procedure**

The basic procedure consists of sending a carrier containing the cleanout bottle from station to station until all affected segments of the system have been traversed. This procedure will require one person except when cleaning the interzone lines, which will require two people and telephone communication between them.

1. As the carrier travels through the tubing, the cleanout bottle dispenses the cleaning solution, while the carrier rubbing bands act as swabs.
2. While wearing protective clothing, mix the appropriate cleaning solution (a 10 to 1 dilution of bleach).
3. Fill the cleanout bottle with cleaning solution to within 1/4" of the top holes on bottle.
4. Place the lid on the bottle.
5. While maintaining the upright position of the bottle, place it in a carrier.
6. Close and latch the carrier.
7. Periodically check the level of the cleaning solution. When there is less than an inch of solution left in the bottle, refill it and towel dry the carrier rubbing bands.
8. Disinfect the carpet in each affected station receiver bin as you would any other carpet.
9. After cleaning, a slight amount of cleaning solution may remain in the tubing. This will not affect the system operation.
10. Use diagnostics to cleanout any contaminated interzone lines.
11. Turn the contaminated zones on.
12. Send the cleanout carrier back to yourself from all stations suspected of being contaminated to clean the contaminated routes. Repeat three times at each station.
13. Pulse system twice to dry tubes.
14. Reassign all stations on "off" schedules to their original on/off schedules when cleanout is completed.
15. When the schedules have been entered, the system will be fully operational.
16. Remember, use good judgment in cleaning up after an accident. Use the same precautions you would apply if the spill were out in the open.

VI. CTS System Preventive Maintenance Schedule

A. Scheduled Maintenance

- There is a monthly preventative maintenance service required for system operation. This service will disrupt CTS function and will be scheduled on a regular basis on two consecutive days from 7:00 p.m. - 3:00 a.m. The Engineering Department will notify the user departments a minimum of three days prior to any scheduled down times along with approximate length of time the system will be non-functional. Overhead announcement will be made prior to scheduled downtime by page operator under the direction of the Engineering Department.
- State items requiring immediate transportation are to be handled by the individual area's personnel.
- Transportation will schedule a messenger to transport specimens and other items when the scheduled downtime occurs. The messenger will cover all patient care areas on a once an hour basis.
- The computer controller will notify the page operator when system is functioning so that an overhead announcement can be made.

B. Contingency Plan for Unscheduled Down Time

- Problems should be reported to Engineering.
- Within 15 minutes, user areas will be notified via page operator or phone call.
- Between the hours of 7:00 a.m. and 10:00 p.m. Transportation will dispatch a temporary messenger to transport specimens and other items. The messenger will cover patient care areas with down zone(s) on a one time per hour basis. The first messenger run, in the case of an unscheduled pneumatic tube system down time, will be dispatched within a minimum of one and a maximum of two hours of the first notification of the shut down.
- STAT items requiring immediate transport are to be handled by the individual area's personnel.
- The Engineering Department will notify all user areas that the system is functioning again.

VII. **Special Functions**

Special Functions are transactions, which can be initiated at the station by the user. Special Function codes are available at all CTS stations.

VIII. **Station Directory**

Station Directory is located on each Unit.

CROSS REFERENCE:

None

ATTACHMENT:

None

REVIEW/REVISION DATES:

07/1998, 08/2002, 06/2011 (reviewed), 06/2013

SIGNATURE:

Chief Nursing Officer & Sr. Associate Administrator:	_____	Date:	_____
Medical Director:	_____	Date:	_____
Executive Director:	_____	Date:	_____