

General System Description

“What Is The Pneumatic Tube System?”

The Pneumatic Tube system is a high-speed, air powered, vacuum contained transport system designed to facilitate the delivery of items to and from all areas of the Hospital. Tube stations are strategically located in various patient care units and ancillary departments to provide for the greatest efficiency. At each Tube station there will be a dedicated number of carriers. The carrier is made of heavy duty plastic with a clear window for secure items. Inserts (also called foam liners) are provided to protect the carrier items. The maximum weight that can be transported via tube is 7 pounds.

The pneumatic tube system is an internal delivery system designed to move materials between clinical and support departments. It is referred to as the Quantum System and consists of three key components:

1. **Computer Control Center** - Without interfering with the operation of the system, the computer program gives an operator instant access to status information of all devices in the system by simply pressing a combination of two or three keys. The operator also has instantaneous views of changes in the system as traffic moves to and from stations, through diverters, and in and out of storage operations of any of the individual components. There is a hard copy print out of each transaction and alarm.
2. **Tube Station** - The location where materials are sent and received. Instructions and addressing information is entered by the sender through a key pad, and messages regarding the status of the system are displayed on the Message Window.
3. **Carrier** - This is the plastic device into which items to be transported are placed. Items must be properly packaged, protected by the foam inserts and should not exceed the weight or size limitations specified in this guide. Carriers are propelled through a network of pipes at the rate of 25 feet per second by air which is produced by blowers. The pipe network is divided into zones, which can function independently of each other, making a total system malfunction unlikely.

Carriers & Fillers

There are several types of protective fillers for the carriers. The proper fillers must be used to prevent leaking or breaking of specimen containers.

The following items require Foam Liners or a Zip `N Fold Vinyl Bag:

1. Urine or sputum in screw-top plastic container
2. Vacutainer blood tubes
3. Culturette tubes and swabs
4. Blood culture bottles - placed top to top

Replacement of Carriers

Each station will be provided with three carriers. If you are out of carriers, contact Facilities Maintenance.

Broken Carriers

If you discover/observe a broken or damaged carrier take it out of use and contact Facilities Maintenance for exchange for new carrier.

Leaks or Spills

An employee receiving a carrier that is leaking or that has a broken specimen tube should take special precautions:

1. Leak Within Transport Bag:

- A. Put on gloves and open the carrier and identify the specimen and the patient's name on the label.
- B. If the leak is contained within the transport bag, discard the entire bag and contents in a biohazard container. Notify the department/unit from which it was sent. Arrange for a repeat specimen collection.

2. Leak Outside Bag Within Carrier:

- A. If the specimen spilled into the carrier or on the foam liner, DO NOT send it back through the system. Place all contaminated items including the carrier into a biohazard or red bag and label "Contaminated Pneumatic Tube" and take to Facilities Management for decontamination.
- B. Notify sending department/unit that repeat specimen collection needed.
- C. Any soiling or immediate tube receiving area will be done by the person receiving specimen using Hospital approved product.

3. Spill Outside Carrier:

- A. Notify department Supervisor during normal day shift, weekday hours, who will notify Facilities Maintenance.
- B. During other hours, notify area manager or supervisor, who will notify administrative supervisor, who will notify Facilities Maintenance.
- C. Facilities Maintenance will evaluate system for possible shut down, partially or completely, and will be responsible for decontamination of the system.

4. **A Variance Report** is completed by both the send and receive departments any time a spill or breakage occurs. Completed forms will be forwarded to the immediate supervisor for evaluation and further follow up if needed.

System Failure

If you experience a system failure the following, procedure should be followed.

1. Identify the problem.

2. Call Facilities Maintenance to evaluate the failure and attempt to correct via computer.

Downtime & Whom to Call

1. **Scheduled Downtime** - Scheduled downtime may include shutting the system down for planned maintenance purposes and testing. For scheduled, downtime, user areas will be notified.
2. **Unscheduled Downtime** - Unscheduled downtime may happen when events such as the following occur:
 - A. Power Surges
 - B. Pneumatic Tube System computer failure
 - C. Major spillage within the system
 - D. Blockage within a pneumatic tube system zone
 - E. User areas will be notified.

“Who Takes Care of the System?”

- A. Facilities Maintenance will monitor the efficient operation of the system with the assistance of an off-site Quantum technician.
- B. If any user department observes a problem with the Pneumatic Tube System, call 6-2563.
- C. In the event that the system is disabled for any period of time follow the BACK-UP PROCEDURE for transporting of items.
- D. Facilities Maintenance will maintain records of problems and repairs.
- E. Remove damaged carriers from the system and return to Facilities Maintenance.

Laboratory Guidelines

Proper packaging of lab specimens is imperative to prevent a break or spill.

- A. The Laboratory Department will accept biologic specimens only if they are:
 1. In the correct specimen container.
 2. Labeled correctly with patient full name & hospital number.
 3. In a plastic Biohazard bag.
 4. In a carrier with outer vinyl Zip N’ Fold bag (or)
 5. In a carrier with proper Foam liner
- B. ZIP N’ FOLD BAG Loading Instructions:

1. Insert primary specimen container pouch.
 2. Squeeze out excess air and seal Ziplock.
 3. Place paper work in exterior pocket.
 4. Place pouch in the carrier.
- C. Lab items that CANNOT be transported (irretrievable or difficult to obtain specimens):

- **Spinal Fluid**
- **Joint Aspirates**
- **Peritoneal, Pericardial Fluids**
- **All Specimens in Formalin**
- **Cold Agglutinins**
- **Any Chain of Custody Item**
- **Cryofibrinogen, Fibrinogen, & Special Coagulation Studies**
- **Bone Marrow Specimens**

Pharmacy Guidelines

These guidelines are developed in an effort to maximize effectiveness in patient care by decreasing medication turnaround time. As many medications as possible will be transported via the pneumatic tube system.

- A. The following medications will not be tubed from pharmacy or the nursing station:
- **Chemotherapeutic/Cytotoxic Drugs**
 - **Investigational Drugs**
 - **Hyperalimentation/TPN Fluids**
 - **Lipids and medications in Lipid Mixtures**
 - **Any IV fluid containing Insulin**
 - **Streptokinase**
 - **Urokinase (except the open-cath product)**
 - **TPA**
 - **Immune Globulin**
 - **Expensive Drugs (i.e., Epogen, Neupogen)**
 - **Controlled Substances requiring a sign out sheet or receipt**
 - **Flammable items**
 - **Caustics**
 - **Dyes**
- B. **IV Fluids:** The only IV fluids/piggy backs that will be sent through the tube are first doses, missing doses and non-controlled epidurals. Pharmacy Technicians will deliver subsequent doses during regularly scheduled IV fluid rounds.

- C. **Other Medications:** All other medications (i.e., orals, topicals, non-compounded injectables) will be transported through the tube system. Medications for which there is an immediate need may be tubed individually, however, routine medications will be tubed in batch in order to conserve carriers.
- D. **Removal/Carrier Return:** Medications should be promptly removed from the carrier and placed in the medication room. As to meet the needs of all patient care areas, emptied carriers should be returned to Pharmacy as soon as possible.
- E. **Non-Tubed Deliveries:** Medications that can not be tubed will be routinely delivered by Pharmacy Technicians.
- F. **Returns/Credits:** The tube system will be used for returning unused medications to the Pharmacy, however, the above guidelines for non-tubed medications should be followed.