



Government of **Western Australia**
WA Country Health Service

Pneumatic Tube System

Busselton Health Campus



Pneumatic Tube System Procedure

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1. Background

The Pneumatic Tube Conveyor System is used to convey specified items in the safest, most efficient and most effective way possible between Pathology, Pharmacy, X Ray, Ward 1 and 2, Theatre and the Emergency Department (ED).

2. Procedure

2.1 Stations

- Each pneumatic tube station has a combined dispatch/receiving unit.
- A carrier can be loaded without the need to wait for a previous transaction to reach its destination.

2.2 Sending Carriers

- The carrier destination is selected by the keyboard located in the front panel of each station.
- The operator inserts the carrier into the station, inputs the destination code via the keypad and the system sends the carrier.
- The station is 'fully automatic', which means that no further operator input or monitoring is required after the carrier is inserted and the destination entered.

2.3 Slow Transport Mode

- Should a fragile item require sending through the pneumatic tube system, the operator can select the slow transport mode prior to sending.
- This ensures that the carrier is sent at approximately half the speed of usual travel.
- This mode is selected by a function key on the station face.

2.4 Station Features

- The keyboard on the station is membrane covered, and thus is cleanable.
- An audible and visual alarm for carrier arrival, which has adjustable volume and the ability to turn on and off.
- A key press beep (i.e. a beep for every key press) with the ability to turn on and off.
- A LCD display, to display carrier sending and arrival information.
- Each station has a remote indication light provided on the ceiling above the nearest nurse station.
- The display shows receiving stations, sending stations, malfunctions, test sequences, etc.
- The panel is also equipped with LEDs that gives "at a glance" an indication of whether:
 - the station is receiving
 - the line is free
 - the line is busy
 - there is a malfunction.

Each station is equipped with LEDs that indicate the following the following:

- Green LED: indicating that the destination exists and the carrier has been accepted.
- Green LED flashing: indicating that the chosen destination is non-existent or has been switched off. (ERR appears on the display screen alternating with the dialled address.)
- Yellow LED: indicating that the system is in use.
- Red BUTTON on wall beside tube to confirm receipt of canister.
- Red LED: indicating the station has a fault.
- Red LED flashing: indicating that there is a failure in the system. Red LED must flash at all stations.
- Lockable with password or key to prevent carriers being accessed by unauthorised people.

Station Panel Light Indicators	Reason
GREEN	This station is SENDING
YELLOW	This station is RECEIVING
YELLOW - FLASHING	The CARRIER has arrived in the receiving department.
RED Button	Staff member to acknowledge receipt of canister via Red Switch on left side of tube.
RED - UPPER	CARRIER in transit
RED - UPPER - FLASHING	Transmission time exceeded - FAULT Contact Shift Engineer
RED - LOWER	System FAULT- contact Shift Engineer
RED - LOWER - FLASHING	System FAULT- contact Shift Engineer

Fault Message At Station	Fault Description And Remedy
Wrong Selection	The selected station number does not exist. Remove Carrier from send tube and select the correct number then reinsert Carrier.
Out of Use	The destination Station is not receiving incoming traffic –remove your Carrier and ring the destination.
Faulty	The Station and/or System are faulty. Send article by an orderly/PCA. Contact Engineering.
Basket Full	The basket at the destination station is full. Telephone and ask them to clear their basket. Remove Carrier from send tube and reinsert Carrier.



Image 1: Pneumatic tube in Busselton Health Campus

2.5 Baskets

- Receiver baskets for each discharging pneumatic tube stations provided. The basket is a steel 'mesh' type basket with a plastic or powder coating. The basket also contains a cushion for soft dropping of carriers.
- Receiving baskets are capable of accommodating sufficient carriers arriving in sequence to suit the peak traffic of the station.

2.6 Reject Station

- When the system is purged any "lost" carriers within the system they will automatically be directed to the Ward One Station. Similarly, if the System detects more than one carrier (or foreign body) travelling in the tube network and cannot return to sender, and then it will automatically purge to the Ward One Station.

2.7 Priority And Lockouts

- Each station can be locked with a password to prevent carriers from been delivered if the department is unmanned.

2.8 Carriers

- Carrier size is 110mm.
- In addition to carriers there are special cases that go inside a carrier to send blood culture bottles to the lab.
- Foam inserts are also to be used to prevent movement of products being transported in the system.

2.9 What Items Cannot be Sent via Pneumatic Tube System

- Items exceeding **1 kilogram** in weight.
- Glass items not able to be padded adequately to avoid breakage.
- Personal property or valuables including food or sweets
- Any items which require packaging in ice / dry ice.
- “Sharps” for example, needles.

2.10 Pathology Process

Sending pathology specimens:

- Specimens must be clearly and adequately labelled.
- All specimens must be in tightly capped containers in biological hazard bags accompanied by a request form.
- Each carrier must contain a pathology request form relevant to all the specimens in a particular carrier. Specimens unaccompanied by a request form will not be processed.
- Use the foam inserts provided to give added protection to the pathology specimens when they are being transported in the carriers.

Items NOT permitted for transport:

- Alcohol-fixed glass slides bearing smears for histopathology/cytopathology.
- Frozen or chilled items - ice is not to be placed in carriers.
- Blood culture bottles.
- Personal property, valuables , food or drink.
- Large items which may interfere with easy closure of the carrier or which require to be forced into the carrier.
- Heavy items which exceed 1.0kg.
- Hazardous chemicals e.g. formalin.
- Plasma derived blood products stored in glass bottles with a volume of 10mL or greater. This includes, Albumex 4 and 20, Biostate, Intragam, MonoFIX-VF, Prothrombinex-HT and Thrombotrol-VF.

2.11 Transport of Blood and Blood Products

Blood or blood products may not be transported in the pneumatic chute.

2.12 Pharmacy Guidelines

Medications are to be packed into the canister with adequate packing to prevent breakage, and sealed according to the manufacturer's instruction.

Some products are unsuitable for transport via pneumatic tube system. The following are reasons they may be deemed unsuitable:

- Effect on agent being transported.
- Potential loss.
- Potential harm to tube system.
- Potential to harm environment or personnel.

The following items are **NOT** permitted to be sent via the tube system:

- Chemotherapeutic / cytotoxic agents (including oral medications).
- Recordable medications include Schedule 8 and Schedule 4 recordable medications.
- Heavy items (maximum limit is 500g / 500ml to allow for total maximum of 1kg).
- Dyes.
- **ALL** items that the company states "not to be shaken" (e.g. abciximab, albumin, alteplase, basiliximab, cyclosporin solution, darbepoetin, drotrecogin alfa, erythropoetin, etanercept, filgrastim, infliximab, interferon, propofol, somatropin, streptokinase, tenecteplase).
- Insulin.
- Items requiring refrigeration.
- Enoxaparin may not be tubed according to the manufacturer.
- Inhalational anaesthetics.
- Carbonated substances.
- Glass items not able to be padded adequately to avoid breakage.
- Expensive items.

2.13 Location Details

STATION LOCATION	STATION NUMBER	TELEPHONE EXTENSION
Pathology	001	6260
Pharmacy	002	6281
Emergency Department	003	6063
Theatre	004	6161
Medical Imaging	005	6695
Ward 1	006	6121
Ward 2	007	6221

3. Roles and Responsibilities

All Staff

All staff are to ensure agents are appropriate for transport via the pneumatic tube and packed suitably prior to transport. They are to arrange alternative delivery for any items deemed unsuitable for transport via the pneumatic tube.

4. Additional Information

- When stations are unattended (for example, outside normal working hours) they will be “keyed out” which will prevent futile dispatch by the sender. A message to this effect will be displayed on the dispatch station’s control panel.
- Decontamination of soiled carriers is to be managed consistent with universal precautions.
- In situations where, for example, specimens are too large for the carrier or specimens need to be kept chilled by ice, specimens must be transported by the Patient Support Assistants (PSA).
- Orientation for new staff to the use of this System is to be undertaken by colleagues or a supervisor in the work area, in conjunction with this procedure.
- If a malfunction of the System occurs, the station display will show “Faulty”. Contact Engineering.
- Maintenance and service of the System are the responsibility of Engineering, BHC.

5. Contamination

If the BHC Pneumatic Tube system becomes contaminated by a biological sample, please follow these procedures. The extent of cleaning depends on the extent of the contamination.

5.1 Decontamination of the System and Tubing

This procedure is not done routinely. It is generally only necessary if there is evidence of a spill that has contaminated the internal tubing of the system (for example, the outside of the carrier is contaminated with biological fluid). Biological hazard bags and the carrier foam inserts usually contain all spillage.

Steps to follow in the event of contamination of the internal tubing of the system:

- Immediately contact Engineering and request them to **immediately** shut the whole system down.
- Note the sending and receiving stations of the offending carrier, the name and UMRN of the patient whose specimen contaminated the system, the nature of the spill, the suspected amount and the time the spill occurred.
- Identify staff who may have come into contact with the contaminated carrier.
- Notify all areas with a station by either email or phone that the system is unavailable until further notice.
- Identify why the incident occurred. Take appropriate action.
- Pathology is to take the necessary action to decontaminate the system and get it up and running. Wards are to be notified when the system is available to use.

6. Decontamination Procedures

If the BHC vacuum transport system becomes contaminated by a biological sample, please follow these procedures. The extent of cleaning depends on the extent of the contamination.

Carriers

- Discard foam inserts. Soak contaminated carriers in 0.125% bleach (sodium hypochlorite) for one minute. Rinse well with water and air dry.
- Replace foam inserts (supply kept in BHC Pathology Central Specimen Reception).

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