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Handling and Transport of Clinical Specimens Procedure

Introduction and Aim

This procedure outlines the practices that enable the safe collection, transport and delivery of clinical specimens and samples.

The procedure:

- identifies the safe practice requirements in relation to the handling of specimens so reducing the risk of cross infection to service users/patients, sample takers, couriers, visitors and healthcare workers.
- outlines the necessary regulation and requirements for transport of specimens.
- identifies safe procedures to follow for spillage or exposure injury.
- ensures specimen preservation and reduces the need for repeat specimens.

Linked Policies, Procedures and Written Control Documents

[All corporate policies and procedures are available on the Public Health Wales website](#)

Available from [Risk Management, Health and Safety and Estates Policies - Public Health Wales \(nhs.wales\)](#):

- Health and Safety Policy
- Moving and Handling Procedure
- Personal Protective Equipment Procedure

Available from [Clinical Governance and Infection Control Policies - Public Health Wales \(nhs.wales\)](#):

- Infection Control Policies and Procedures

Plus:

- NHS Wales Health Collaborative (2017) Service Specification for National Transport.
- Service-specific Standard Operating Procedures – referred to in the body of the document.

Legislation and guidance:

- The Management of Health and Safety at Work Regulations 1999;

- The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (Amendment) Regulations (2011);
- International Air Transport Regulations
- The Use of Transportable Pressure Equipment Regulations (2011);
- Control of Substances Hazardous to Health (COSHH) 2002 (as amended) (HSE);
- The Road Transport Accord Dangereux Routier (ADR) (2017);
- Guidance on the Regulations for the Transport of Infectious Substances 2021-2022 (World Health Organisation);
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- "Safe working and the prevention of infection in clinical laboratories and similar facilities" (2003) (HSE);
- "Biological agents: Managing the risks in laboratories and healthcare premises" (2005) (HSE).
- NHS Wales Health Collaborative (2017) Service Specification for National Transport.

Scope

This procedure is applicable to all staff responsible for the collection, handling and transportation of specimens in Public Health Services (Screening, Health Protection and Microbiology Divisions).

This specifically includes:

- Breast Test Wales – Breast biopsies for Histology.
- Cervical Screening Wales (CSW) - Cervical specimens
- Bowel Screening Wales (BSW) - Faecal occult blood Fit sample. ¹
- Microbiology Division - Blood, body fluids and tissues, isolates and culture microorganisms.
- Health Protection Division - Microbiological samples required for investigating cases and outbreaks.

Equality and Health Impact Assessment	An Equality, Welsh Language and Health Impact Assessment has been completed and can be viewed on the policy webpages.
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¹ Faecal occult bloods are received in liquid Fit sample which are transported as category B UN3373.

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Disclaimer

If the review date of this document has passed please ensure that the version you are using is the most up to date either by contacting the document author or the [Board Business Unit](#)

Summary of reviews/amendments

Version number	Date of Review	Date of Approval	Date published	Summary of Amendments
1	1 April 2015	1 October 2009	1 October 2009	Yellow 11 – Policy for the Handling and Transport of Clinical Specimens (original document). Velindre NHS Trust Policy transferred to Public Health Wales on 1 October 2009.
2	May 2019	September 2019	26 May 2022	Yellow 11 – Policy for the Handling and Transport of Clinical Specimens (Version 1) reviewed. PHW75/TP01 Document re-developed as a procedure under the Health and Safety Policy, now PHW10/TP15
3	Sept 2023	24/06/2024	23/04/2025	Contents updated to include requirements set out in the Service Specification for National Transport. Weblinks checked/updated.

1 Introduction

This procedure sets out the arrangements and practices that enable the safe transport and delivery of clinical specimens and samples.

The UK Government Department for Transport (DfT) (2012) defines infectious substances, (for transport purposes) as:

“substances which are known or reasonably expected to contain pathogens e.g. micro-organisms, plasmids and other agents such as prions which can cause disease in humans.”

There are five steps involved in the safe transport of infectious material. These are:

- Classification
- Packaging
- Labelling/collection
- Storage
- Transportation.

Standard Infection Control Precautions apply and all relevant Public Health Wales policies and procedures should be adhered to, to ensure staff protection and to prevent exposure injury occurring. Any sample, unless it is known or reasonably believed to contain infectious substances of Category “A”, should be regarded as Category “B” as a minimum to prevent inadvertent transport of infectious material from which legal penalties may result (see **Appendix 1**).

Samples intended for travel by aeroplane are subject to IATA regulations which requires; specific packaging, staff packaging the sample to be IATA accredited and an airways bill to be completed. Further information is found in MDHSGUID 011 (Microbiology Division).

Samples sent on dry ice require specific labelling to be applied and an accredited courier for transport.

2. Roles and responsibilities

The operational authority for specimen management lies with the clinical/ departmental / laboratory managers and individual staff of those services generating or processing specimens.

2.1 Laboratory/Service Managers

All Laboratory/Service Managers will ensure:

- Safe systems are in place to facilitate implementation and compliance monitoring with this procedure for staff, including all agency or external contractors.
- Adequate resources of equipment, materials and process.
- There has been an assessment of risk performed in all services/department areas in relation the collection, handling and transportation of specimens against the regulations and requirements detailed in this procedure.
- All associated incidents or injuries are managed in accordance with reporting and investigation procedures and Health and Safety regulations .
- Staff have been adequately trained and assessed as competent to undertake the necessary tasks and role associated with specimen handling and transport.
- There are Standard Operating Procedures (SOPs) in each service which details compliance with this procedure that does not deviate from the regulations and guidance.
- Employees are notified of this procedure and know how to access and understand the contents and any local procedures derived from it.
- Annual audit of compliance with procedure and local SOPs and technical details are undertaken.

2.2 Staff

All staff will ensure:

- They understand their responsibility for their own practice and compliance with the Health and Safety at Work Act and associated PHW policies .
- Maintain competence skills and knowledge in how to safely handle, package and transport specimens in accordance with the appropriate regulations and requirements stated in this procedure.
- Report via Datix Incident management system any, labelling errors, loss, spillage, injury or inappropriate transport of clinical specimens.
- Comply with this procedure and not deviate from the regulations detailed in local SOPs and technical detail documents.
- Be aware of, and have access to, this and related infection prevention and control policy/procedure documents
- Be up to date with their occupational vaccination schedule.
- Ensure that all packaging is correctly applied for the purposes of transport to comply with necessary regulations.

- If receiving specimens/samples, to be aware of any signing or handover requirements for the organism/sample involved.

If in any doubt they must consult with their line manager, Occupational Health Department or those responsible for Infection Prevention and Control in Public Health Wales.

2.3 Health and Safety Managers

Those responsible for these areas will ensure:

- The provision of expert advice and training on the application of this procedure in relation to health and safety.
- The provision of expert advice in the risk assessment of procedures and protocols of specimen-related tasks.
- Quality assurance regarding certification of conformity.
- Oversight and management of any incidents.

2.4 PHW Lead Nurse for Infection, Prevention and Control

- Engagement with staff to develop systems and processes that lead to sustainable and reliable improvements in relation to the application of infection prevention and control within the PHW laboratories, screening services, and other clinical services, including the protection of PHW staff and service users.
- The provision of expert advice and training on the application of this procedure in relation to infection prevention and control.

2.5 Infection Prevention and Control Teams within Health Boards hosting Microbiology Laboratories

- Engagement with staff to develop systems and processes that lead to sustainable and reliable improvements in relation to the application of infection prevention and control within the health board environment, in particular in relation to the management of patients, their environment and any sample taking in this space.
- The provision of expert advice and training on the application of this procedure in relation to infection prevention and control.

3. Specimen Transportation Procedure by Service

3.1 Microbiology Division

The transport of clinical specimens isolates and cultures are outlined in the following documents available on the [Microbiology Division Quality Management System](#):

- *MDHSGUID 007 Biological Material Sharing Policy*
- *MDHSGUID 008 Guidance on the Transport of Clinical Samples and Microbial Cultures.*
- *MDHSGUID 010 Guidance for Category 'A' Packaging.*
- *MDHSGUID 011 Guidance on Transportation and Packaging of Enhanced Category B Specimens.*
- *MDRA 035 Risk assessment for the biosecurity of transport*

3.2 Screening Division

3.2.1 Breast Test Wales

The collection, handling and transport of clinical breast biopsy specimens are outlined in the following documents available from Breast Test Wales:

- *Instructions for Transporting Breast Test Wales Specimens SOP*

The process for managing Formalin spills is laid out in the Management of Formalin Spills in Breast Test Wales Centres SOP.

3.2.2 Cervical Screening

The collection, handling and transport of cervical specimens are outlined in the following documents available from the Screening Division Laboratory:

- *SDL-0053 Laboratory Procedure Specimen Transport*
- *SOP – 078/TRA Delivery/Collection of Samples for Public Health Wales (LHW) Screening Division*

3.2.3 Bowel Screening

Faecal occult liquid FIT specimens are transported to the laboratory in clearly identifiable envelopes via Royal mail (not required to be UN3373 compliant). The collection, handling and transportation of these is documented in Screening Division Laboratory procedures.

3.2.4 Health Protection

Very few testing kits are handled by Health Protection Staff. In urgent testing situations MMR (Measles, Mumps & Rubella) testing kits are taken

from a PHW office directly to the case by a courier. The courier then takes it to lab directly after. The courier should be aware of their responsibilities as stated in this procedure and should be pre-approved and trained appropriately for the category of specimen that they are transporting.

COVID-19, influenza and MMR testing in 'low-risk' scenarios are requested from off-site, non-PHW companies. The collection, handling and transportation of all the above specimens is documented in the policy and procedure documents of the receiving laboratories. This would include the following document for PHW laboratories:

- *MDHSGUID 008 Guidance on the Transport of Clinical Samples and Microbial Cultures.*

Tuberculosis testing is carried out in Health Boards.

4. Health and Safety

The associated laboratory will have undergone United Kingdom Accreditation Service (UKAS) accreditation and so for specimens transported within the laboratory, reference should be made to individual service laboratory risk assessments.

All Public Health Services that manage and transport specimens must ensure that their SOPs and technical details documents are reviewed regularly, with version control, as per divisional policy and in accordance with the necessary requirements so that staff, service users, couriers or the public are not put at risk from biological or chemical exposure. All staff undertaking duties that involve the handling of specimens must be up to date with required vaccination schedules and undergone role specific infection prevention and control, health and safety training to undertake their role.

5. Packaging requirements

Whether the samples are transported on land, in-house, short haul community transport or long haul transport, all three have a commonality of packaging that will consist of 3 layers, that of the primary container that holds the sample, a secondary container that holds the primary container and an outer container that will withstand the rigours of the journey so as to prevent loss of specimen containment and unnecessary exposure of any individual to potentially infectious substances (**Appendix 2**).

- Infectious substances in Category A may only be transported in packaging that meets the United Nations Class 6.2 specifications and complies with Packing Instruction PI620. Only microbiology laboratories will transport this category of specimen.

- PI650 incorporates all that is needed to make a shipment for Category B infectious substances.
- PI650 is suitable for air travel. Only Microbiology laboratories will transport in this category.

Appendix 3 gives more detail on short-haul and long-haul transportation by road.

6. Spillages

All spills of blood and other body fluids from any source must be removed as soon as possible and the area cleaned and disinfected with the appropriate efficacious decontamination product. Staff need to be trained in this procedure to ensure exposure injury is prevented.

The Courier/Taxi Contractor MUST provide drivers with Spill Kits which must then be carried in the vehicles at all times and drivers must be trained in its use. Couriers/taxis will have documented evidence that all their staff are trained in accordance with regulations stated and that they are carrying the necessary equipment to deal with spillage. Receiving laboratories are recommended to do spot checks, and frequency should be decided by divisions and laid down in local SOPs. Any deviation from the procedure must be reported via Datix system. When procuring transportation services, the commissioner should ensure that the courier is able to meet these requirements.

In the event of a vehicle being found without a spill kit, if the driver is happy to continue the journey, they should go ahead and if a spill occurs, they must continue to the destination laboratory IMMEDIATELY. **The producer of the specimen should complete a Datix Incident form on discovery of the missing spill kit**, whether or not a spillage subsequently occurs.

In the event of a specimen spillage, please adhere to any current local standing operating procedures in place. Further guidance on blood and body fluid spills can also be found in the [National Infection Prevention & Control Manual](#) (NIPCM).

The Contractor MUST report any accidents, incidents or spillages of specimens, blood products, controlled drugs and medication to the Authorised Officer IMMEDIATELY.

For any accidents, incidents or spillages of specimens, blood products, controlled drugs and medication, the contractor will participate in any subsequent investigation process the organisation wishes to undertake.

7. Training requirements

The dangerous goods regulations require all personnel involved in transport to undergo appropriate training.

For the transport of Category "B" infectious substances there is a requirement that clear instructions on the use of the packaging are supplied to the user; this is regarded as sufficient "training" for the shipping of these substances. However, if such specimens are consigned with other dangerous goods (e.g. flammable liquids, radioactive materials, liquefied gases, etc.), then personnel must be trained in the correct procedures for their transport and to prevent spillage and/or risk of infection.

All drivers are issued with a **TREM (Transport Emergency) card** (see **Appendix 5**).

7.1 Training requirements for Cat "A" (Microbiology only)

Designated Laboratory staff must have undertaken required training i.e. **MDHSGUID 010 Category A Packaging Competency Assessment**. Guidance documentation is available on the [Microbiology Division Quality Management System](#), as identified previously.

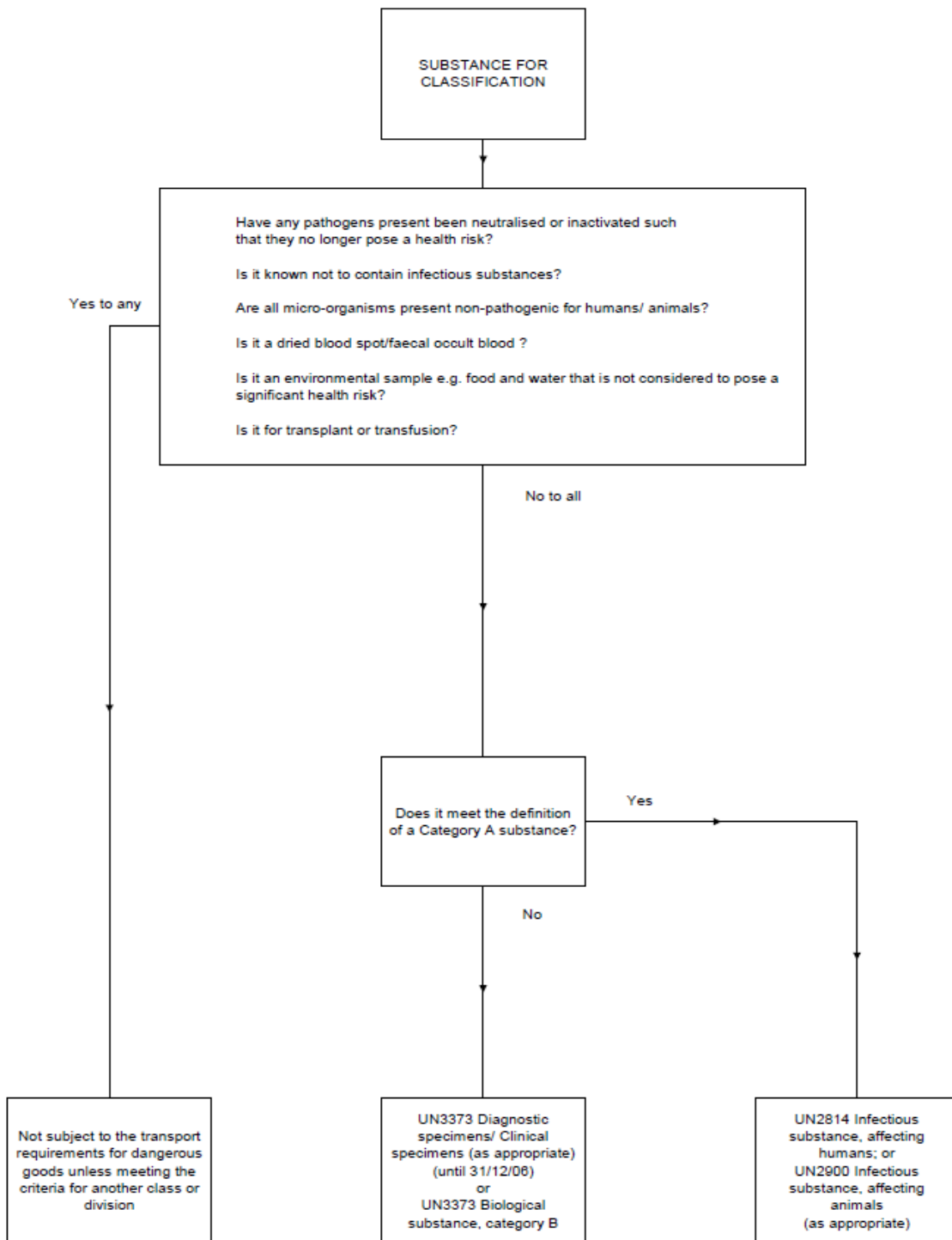
8. Monitoring compliance

Compliance will be measured using review of standard operating procedures and/or technical details procedures, observations, incident reporting and audits. The results of which will be monitored by the Public Health Wales Health and Safety, and Infection Prevention and Control Groups.

Appendix 1

Transport of Infectious Diseases - Department for Transport (DfT)

APPENDIX B: FLOWCHART FOR THE CLASSIFICATION OF INFECTIOUS SUBSTANCES



Appendix 2

Packaging of category "B" specimens

All specimen forms must be filled in correctly, to ensure that all the necessary clinical information is supplied to the laboratory processing the specimen.

- Forms must be signed by the clinician, and name printed, who is making the request for investigation of the sample or by the delegated appropriate nurse. The receiving laboratory may not process any sample which arrives with incomplete documentation or without a signature.
- The specimen in its primary container must be placed in a transport specimen bag (the secondary container) and sealed by means of the integral sealing strip.
- Bags must not be sealed using staples, pins, paper clips etc. Where fold over forms are used (for confidentiality purposes) they should be sealed accordingly.
- If more than one primary specimen container is placed into a secondary bag then there should be sufficient cushioning to prevent contact and possible leakage, and sufficient absorbent material to absorb the total volume of any possible liquid spillage.

For larger specimens where integral forms and bags cannot be used, the specimen should be placed into a robust plastic container (primary) which should then be placed into a large plastic bag (secondary) sealable by an integral sealing strip. The form should then either be placed in a side pocket (if present) or into a plastic envelope, which can be attached to the specimen container.

- There will be a pre-agreed, designated collection/delivery point for specimens.
- This collection/delivery point must ensure the safety of the specimens from tampering or loss.
- A specimen collection/delivery container with entire sides will be placed at each of these points.
- Containers will be sited below eye level and ideally fixed or placed to prevent contents tipping or spilling out.
- It will be the responsibility of the staff from that area to ensure that these containers are regularly cleaned or disinfected with an approved disinfectant.

- The Infection Prevention and Control team should be contacted for advice if the container has been knowingly contaminated; records should be kept of all cleaning/disinfection procedures.
- It is essential that specimen bags are segregated from postal collections.

Using Standard Infection Control Precautions (SICPs), the porter/courier must **transfer** the specimen bags/containers from the specimen collections container held into a specimen carrier container (the outer container) that is suitable for the purpose, prior to being removed from the department / laboratory.

Hand Hygiene procedures must be performed before and after specimen handling.

Specimen carrier containers

For the majority of samples this should be a lockable² **carrier box** such as a tool box. The outer container should also be lined with sufficient absorbent material.

Specimen **carrier containers** must be appropriate for the specimen being sent, so that they can withstand the stresses, which may be placed upon them and to avoid leakage, which could cause a potential hazard to other members of staff who will have to handle them. It should be made of a smooth impervious material with entire sides which can be easily cleaned and disinfected (ideally autoclavable) and must be able to retain any fluid in the case of a spill. The container must have a secure lid for transport purposes.



The outer carrier container should display the words "Danger of Infection", a "Biohazard" sign and **A UN 3373** sign in a diamond in the following format: the width of the line forming the square must be at least 2 mm, and the letters and numbers must be at least 6 mm high.

It must have a warning sign such as "If found do not open, contact XXXXX". The carriers must be cleaned or disinfected at least weekly by specimen reception staff or immediately if suspected or known to be contaminated.

Records must be kept of this procedure. These carriers should not be used for any other purpose other than carrying specimens. Routine

² 'Lockable' refers to the need to be securable ie with strong good quality clips. The box needs to maintain integrity of contents if dropped from 0.6 metres.

disinfection will be done with disinfectant or wipe according to Public Health Wales policies/procedures.

However, if a specimen/chemical spillage has occurred the appropriate spill kit should be used to absorb any liquid. This should be disposed of and disinfected as per *MDHS 008 Disinfection and Spillage Policy (for Microbiology)* or other local SOP for screening services, ensuring the correct disinfectant is chosen for the type of spillage. A written COSHH assessment should be completed for all chemicals at the point of introduction into the service, and workers should be aware of its contents and adhere to the recommendations within it.

NOTE: Care should be taken choosing an appropriate disinfectant to ensure no incompatibilities occur. For example, do not use chlorine releasing disinfectants on acidic spills e.g. urine, as the two will react to release chlorine gas.

Appendix 3

SHORT –HAUL COMMUNITY TRANSPORT/LONG-HAUL TRANSPORT BY ROAD

Transport of specimens by van/courier

It is responsibility of the sending (producer of specimens) or receiving laboratory/screening service to ensure that the courier responsible (private contractor or Shared Services driver) for the transport of clinical specimens has been adequately instructed, and competent, in the transportation of clinical specimens, as stated in Department of Transport document "Transport of Infectious Substances, Revision 5, February 2011" and PI 650³.

Evidence that the service used complies with regulations should be obtained and kept on record as part of the SLA.

- The laboratory/screening service must ensure the van driver/courier service is able to demonstrate there are:
 - Written instructions on how to deal with a spillage.
 - Have a spillage kit on board.
 - Have been issued with a list of contact emergency telephone numbers in the event of an incident/emergency or delay in transportation which may compromise the integrity of specimens- **Transport Emergency Card (TREM) (Appendix 4)**.
- It is the responsibility of the receiving laboratory accepting specimens from outside their own site, to ensure that the sender is aware of the correct procedures.
- The **sender** needs to know where a supply of the standard containers, labels and transport boxes can be accessed for this service.
- They should also receive written instructions on when and how to use them if deemed necessary.
- It will be the **responsibility** of the **courier** to ensure that they comply with their requirements as stated in the Department of Transport [document 'Guidance Note Number: 17/2012\[Rev.7\]. Transport of Infectious Substances UN2814, UN2900 and UN3373. and PI 650.](#)

³ The Screening Division uses the Welsh Blood Service.

- Carriage of pathological specimens between hospitals and/or GP clinics and the Hospital by road comes under the remit of this guidance.

NB. The transport box must be placed in the boot of any vehicle used by the Service or Hospital or the rear compartment of a hospital van and firmly secured and MUST NOT be transported in the same compartment as passengers.

NB. Mail must not be transported in the same carrier box as specimens. The container must also be appropriately secured in any vehicle.

Packaging – Short Haul

Packaging of short – haul community transported samples must be to the following PI 650 specifications:

The specimen must consist of 3 layers: -

1. A leak proof (liquids) or sift proof (particulate solids) primary container
2. A leak proof/ sift proof secondary container lined with sufficient absorbent material to absorb the whole of the container's content. If more than one primary container is transported in a specimen transport bag the specimens should be separated to prevent contact and possible breakage and leakage of contents. A recommended way to do this is to wrap each primary in sufficient absorbent material to absorb the whole contents of the primary.

For such **short – haul transport** DfT interpretation of PI 650 allows that the secondary container can be a large sealable plastic bag, this bag being lined with sufficient absorbent material to absorb the whole of the contents. DfT allow that compliance with the differential required by PI 650 can be satisfied here, by a record that such a means of packaging has not resulted in a loss of containment (leakage of clinical material out of the secondary container) during transport

3. An outer container to contain the secondary container in such a manner (cushioning material) that will not allow the secondary container to move during transport. It is good practice to line the outer container with absorbent material. The outer container must be of "rigid" construction and most commonly will be the sealed carrier box used for transport. The outer packaging must be of

sufficient strength for its capacity, mass and intended use, with a minimum external dimension of 100mm.

4. Each box must display the **UN 3373** in its diamond, adjacent to which is the proper shipping name "Biological Substance Category B".
5. A warning sign must also state that the box must not be tampered with or opened and a telephone contact number included for emergency purposes.

Packaging – Long Haul by Road

The packaging should consist of three components:

- (i) leak-proof primary receptacle(s);
- (ii) leak-proof secondary packaging; and
- (iii) an outer packaging of adequate strength for its capacity, mass and intended use, and with at least one surface having minimum dimensions of 100 mm × 100 mm.

For liquids, absorbent material in sufficient quantity to absorb the entire contents should be placed between the primary receptacle(s) and the secondary packaging so that, during transport, any release or leak of a liquid substance will not reach the outer packaging and will not compromise the integrity of the cushioning material;

When multiple fragile primary receptacles are placed in a single secondary packaging, they should be either individually wrapped or separated to prevent contact between them.

- It is the responsibility of the receiving laboratory, which accepts specimens from places outside their own site, to ensure that the sender is aware of the correct procedures.
- The sender needs to know where a supply of the standard containers, labels and transport boxes. They should also receive written instructions on when and how to use them if deemed necessary. It will be the responsibility of the courier to ensure that they comply with their requirements as stated in the Department of Transport document "Transport of Infectious Substances, Revision 5, February 2011" and PI 650.
- Carriage of pathological specimens between hospitals and/or GP clinics and the Hospital by road comes under the remit of this guidance. PI 650.

An outer container to contain the secondary container in such a manner (cushioning material) that will not allow the secondary container to move during transport. It is good practice to line the outer container with absorbent material. The outer container must be of "rigid" construction and most commonly will be the sealed carrier box used for transport. The outer packaging must be of sufficient strength for its capacity, mass and intended use, with a minimum external dimension of 100mm.

Appendix 4

TREM (Transport Emergency) Card



TRANSPORT EMERGENCY CARD FOR THE TRANSPORTATION OF DIAGNOSTIC SPECIMENS



-
- **BIOHAZARD MATERIAL**
 - **GROSS HUMAN TISSUE**
-

IN THE EVENT OF AN ACCIDENT OR INCIDENT WHILST TRANSPORTING PATHOLOGY SPECIMENS:

DO NOT OPEN BOX
DO PULL OVER WHEN IT IS SAFE TO DO SO AND CALL THE FOLLOWING NUMBERS FOR ASSISTANCE

DO NOT PANIC. YOU ARE IN NO IMMEDIATE DANGER

IF THERE ARE ANY DELAYS OR OTHER INCIDENTS DURING TRANSPORTATION WHICH MAY COMPROMISE THE INTEGRITY OF THE SPECIMENS OR FOR ANY OTHER EMERGENCIES PLEASE CONTACT:

XXXXXXXXXXXXXXXXXXXX

Core working hours 9 am to 5 pm (Mon-Fri). Out of hours -please contact XXXXX for emergency contact numbers
