

1. Title

Guideline on Transport of Clinical Specimens and Infectious Substances

2. Aim

This guidance addresses the pre-analytical stage in handling of clinical specimens, i.e. after collecting the specimens from patients to reaching the laboratory, and includes both within hospital transport and local inter-hospital/laboratory transport of specimens.

3. Introduction

- Clinical specimens and culture stocks of all types pose a health hazard to workers involved in the process of handling and therefore utmost care should be exercised.
- Spills or leakage of substances alone do not generate aerosols and therefore the potential for microorganisms to become airborne during transport is remote.
- Standard precautions (SP) in the hospital setting are designed to reduce the risk of transmission of microorganisms by providing barrier protection. During transport of clinical specimens, SP is represented by the package.
- Hospitals and laboratories should make reference to their operating procedures (e.g. GLP and SOP in the laboratory), prevailing HA guidelines as well as other international guidelines, e.g. CAP 384 and IATA regulations on air transport, where appropriate.

4. Recommendations

A. Staff Training

- a. Hospital must provide necessary training to all staff or other persons involved in the handling of clinical specimens to ensure that they have the necessary knowledge and skills to perform their work safely.
- b. Regular refresher course and update should be provided.
- c. Record and documentation of such training and staff competence in the handling of clinical specimens is required.
- d. Health care workers collecting or handling patient samples must be aware of the risk associated with any procedure and take necessary precautions based on the prevailing guidelines. Precautions against needle-stick accidents, blood and body fluids exposure are particularly important.
- e. Instructions should be given to each staff concerned and displayed at specimen collection points.

B. Packaging of specimen for transport

- a. Clinical specimens must be packaged to avoid leakage and for shock absorption during transport. In general the basic triple packaging system should be adopted.
- b. Triple packaging system
 - (i) All specimens shall be collected in a **primary container** that is watertight and leak proof. The cap should be correctly and securely closed. As far as practicable, the primary containers should be kept in an upright position in a rack during transport.

(ii) The primary containers shall be put into a **secondary container** that is watertight. Several clinical specimens may be placed into one secondary container. Secondary containers have to be cleansed and disinfected if they are to be re-used.

(iii) Examples of secondary containers are:

- Disposable, zip-lock plastic bags;
- Large centrifuge tubes (50 ml) with screw caps.

(iv) A rack to maintain the specimens in an upright position and put into an outer box is acceptable only for within hospital specimen transport.

(v) When sending specimens of **high biohazard risk**⁵ (as advised by hospital Infection Control Team (ICT) or Infectious Diseases Team, or based on other prevailing Guidelines), the primary container should be packed singly, and wrapped with absorbing material in a single secondary container.

(vi) All secondary containers should be put into an **outer container or packaging/box** during transport. The outer container should be made of strong material that can be cleansed and disinfected. The outer container should have the Biohazard warning label (see Appendix I).

(vii) For inter-hospital / laboratory transport, there should be:

- Adequate cushioning materials inside the box so as to absorb shocks during transport, and
- Adequate absorbing material to absorb any spillage should it occur.

(viii) Do not stick the specimen on the request form. Specimen request forms should be put into a separate plastic bag. Alternatively, they can be put in the carrying pocket of the zip-lock plastic bag.

(ix) The outer container, secondary containers and specimen racks for transport should be thoroughly cleansed and disinfected periodically (i.e. at least daily) and when contaminated. Appropriate personal protective equipment (PPE) should be put on when cleaning specimen containers.

C. Proper Specimen Handling during Transport

- a. The outer container (transport box) must be handled gently with care. Throwing or dropping of the transport box is prohibited.
- b. Staff handling these transport boxes should maintain good personal hygiene. Hands should be washed after each session of work, when contaminated or soiled, or after removal of gloves.
- c. Staff must not touch mouth, eyes, nose and mucosal membranes prior to handwashing and definitely not with gloved hands.
- d. Specific PPE, except working uniforms, is not necessary if the packing and handling of transferred specimens and materials is properly followed.

D. Handling of Specimen Leakage and Spillage

- a. Leaking specimens are hazardous to all staff involved in their handling. Such specimens could

be rejected or discarded according to the laboratory practice.

- b. When leakage of fluid content to the outside of the outer container is encountered during transport **within hospital / institution:**
 - i. Report to laboratory staff and / or hospital security immediately;
 - ii. People in the vicinity should be alerted of the hazardous nature of the spill and to stay away from the affected site.
 - iii. The spill should be decontaminated as soon as possible according to the **Spill Clean-up Procedure**.

c. Spill Clean-up Procedure⁵

- i. Staff involved in cleaning up spill should have received the appropriate training.
 - ii. Wear gloves and the appropriate PPE, including disposable gown and face and eye protection.
 - iii. Cover the spill with cloth or paper towels to contain it.
 - iv. Pour over cloth/paper towel freshly prepared solution of:
 - 10,000ppm of sodium hypochlorite (i.e. 1 in 5 dilution of domestic bleach such as Clorox)
 - (Note: alternative disinfectants as advised by local laboratory / Infection Control Team is acceptable)
 - v. After 30 minutes, clear away the materials. Use a dustpan to collect any broken glass or sharps and deposit it into a puncture-resistant container. Discard all the materials as clinical waste in RED bag. Disinfect the dustpan after use.
 - vi. Rinse the area with clean water.
- d. The Spill Clean-up Procedure also applies to decontamination of spillage in other areas such as ward setting.
- e. For pneumatic tube system decontamination, please refer to the manufacturer's recommendation. For further assistance, please seek advice from the hospital Infection Control Team.

E. Inter-laboratory Transport of Specimens

- a) In general, clinical specimens and infectious substances should be transported by courier service operated by hospital, laboratory or other approved agency with trained staff.
- b) An **emergency-kit** should be ready for every specimen transport. It should contain latex gloves, disposable gown, face / eye protections, red bags for waste disposal, disposable absorbent material, disposable cloths/paper towel, 10,000 ppm hypochlorite solution (or acceptable alternative disinfectant) and alcohol hand rub.

c) Under exceptional situations when the courier service is not available, **the public transport, preferably by taxi, could be employed.** Such situations should be limited to an urgent need of transporting a small number of specimens for diagnostic purposes, and the specimens must be properly packed according to the triple package requirement as specified in Section B/2/2.5-2.6.

d) Tracking of Specimens: Label the outer container (transport box) with the followings (see Appendix I):

- Name, addresses and telephone numbers of the sending and receiving laboratories;
- Instructions stating that the outer container should not be opened except by laboratory / authorized personnel and in a laboratory;
- Instructions and persons to contact should an accident happened, or when leakage of contents out of the containers is encountered;
- Instruction to reduce exposure to the public.

e) The sending and receiving laboratories should record and document the boxes of specimens that are transferred on a **“Specimen delivery & reception note”** indicating the number of boxes sent and received (see Appendix II).

f) A content list in a sealed plastic bag inside the transport box may also be included.

g) Staff at reception counter of receiving laboratory should check if there is any discrepancy on the total number of outer containers received as stated in the **“Specimen delivery & reception note”**. Any discrepancy detected should be reported immediately to the personnel in-charge in the sending and receiving laboratories.

h) Handling of Incident:

- The vehicle driver should immediately report all accidents / incidents to the sending laboratory to seek for advice on contingent actions.
- When spillage occurs, the driver should clean up the spillage as soon as possible according to **Spill Clean-up Procedures**. (Follow instructions in Section D/2 and D/3).
- Report to Police when there is a major motor vehicle accident involving the specimen transport van with large specimen spillage.

F. Staff Injury and Sickness Reporting

- a) Any injury sustained while handling patient specimens should be reported to supervisors and injured staff should seek medical treatment where appropriate.
- b) Staff involved in the handling of patient specimens should report any episode of fever and illness via the existing arrangement.

5. Reference

1. Guideline for Inter-hospital Clinical Specimen Handling and Transportation. NTEC. Hospital Authority.
2. Local and International Transport of Biological Materials. Pathology Safety Guidelines.

Pathology Service. Department of Health. HKSAR.

3. WHO post-outbreak biosafety guidelines for handling of SARS-CoV specimens and cultures. WHO 18 Dec 2003.
4. A Practical Guide for SARS Laboratories: From sample collection to shipment. WHO Regional Office for the Western Pacific. 23 Dec 2003.
5. Transport of Infectious Substances Background to the amendments adopted in the 13th revision of the United Nations Model Regulations guiding the transport of infectious substances, 2004 WHO/CDS/CSR/LYO/2004.9
6. WHO/EMC/97.3 Safe Transport of Infectious Substances

Hospital Authority

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Appendix I -- Label on Outer Container

小心：生物危害
CAUTION : BIOHAZARD



小心輕放
HANDLE WITH CARE

寄件化驗所：
Sending
Laboratory：

名稱
Name: _____
地址
Address: _____

電話
Tel no.: _____

收件化驗所
Receiving
Laboratory:

名稱
Name: _____
地址
Address: _____

電話
Tel no.: _____

Attention 注意

1. DO NOT OPEN THIS BOX, except by the laboratory personnel.
除化驗室人員外，請勿開啓此箱。
2. In case of damage or leakage, please notify the sending laboratory, and STAY AWAY from the spillage.
此箱如有損毀或泄漏，請即通知寄件化驗所及與泄漏物保持距離。

Appendix II -- Sample of a “Specimen Delivery and Reception Note”

日期／時間：

請查收以下物品：

（如有錯漏，請即通知寄件化驗所。）

(1)

化驗樣本箱 數目	目的地	收件
個	微生物科	
個	血液科	
個	化學病理科	
個	組織病理科	
個	緊急化驗室	
個	血庫	
個	免疫科	
個	（其他）	

共 個

(2)

其他貨物

共 件

寄件化驗所：

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收件化驗所：

名稱：_____
地址：_____

電話：_____