World Health Organization

MANAGEMENT OF WASTES GENERATED FROM MALARIA DIAGNOSTIC TESTS

MALARIA MICROSCOPY STANDARD OPERATING PROCEDURE – MM-SOP-13

1. PURPOSE AND SCOPE

To describe waste management in laboratories performing malaria rapid diagnostic tests and/or malaria microscopy

This standard operating procedure is intended to supplement existing health care waste management guidelines. It focuses on hazardous health care waste generated during malaria diagnostic testing, including sharps wastes, infectious wastes, chemical waste and non-hazardous waste. National guidelines and policies should be consulted to complement and supplement this document.

This procedure is to be modified only with the approval of the national coordinator for quality assurance of malaria microscopy. All procedures specified herein are mandatory for all malaria microscopists working in national reference laboratories, in hospital laboratories or in basic health laboratories in health facilities performing malaria microscopy.

2. BACKGROUND

Waste materials resulting from malaria diagnostic testing can be infectious or environmentally damaging. Sites should have an organized health-care waste management system to protect the staff, community and the environment. For an efficient, cost-effective waste management system, health personnel should be fully conversant with and trained in the segregation and disposal of different types of health care waste.

Blood is the most important source of HIV, hepatitis B virus, hepatitis C virus and other bloodborne infections in health care personnel. All health care workers should be trained in universal precautions to be used in the collection, handling, transport, treatment and disposal of waste and should be able to identify hazardous (i.e. sharps and infectious waste) from non-hazardous waste and its segregation.

3. SUPPLIES, MATERIALS AND EQUIPMENT

- a sharps container,
- a sharps pit,
- waste bins,
- waste bin liners or colour-coded bags,
- disposable gloves,
- penetration-resistance gloves and
- an autoclave (desirable).

4. PROCEDURE

4.1 Handling and disposing of infectious waste

- Place used "sharps" (i.e. hypodermic needles, lancets and broken glass) in a labelled, puncture-resistant (i.e. made of rigid plastic) "sharps container" with a cover. When the container is three-quarters full, close it and place it in an "infectious waste" container, before autoclaving. Do not leave sharps and infectious waste containers in field collection sites or dispose of them in landfills.
- Place all biohazardous waste other than sharps in specially designated "infectious waste containers", separately from non-infectious waste. Use rigid plastic or metal containers with covers, ideally with a colour code that differentiates them from non-infectious waste containers.

- Use disposable colour-coded bags for infectious waste disposal, ideally with a colour code or shape that differentiates them from non-infectious waste containers.
- Autoclave (steam) or incinerate all infectious material within the laboratory; do not dispose of them in landfills.
- Place any reusable glass- or plastic ware in containers with a decontaminating solution (e.g. 0.1% sodium hypochlorite solution) prepared freshly daily, located at the work station for the appropriate time required for the disinfectant to act. Pour the disinfectant into a container for autoclaving or incineration. The container should also be autoclaved and washed before re-use.
- Thoroughly wash reusable materials with water and disinfectant, rinse with deionized water, and autoclave before use, whenever possible.
- Place decontaminated disposal supplies in infectious waste containers for autoclaving or incineration.
- Cover any spilled biological material with cloth soaked in 0.5% hypochlorite solution, and leave for 15 min before cleaning. Dispose of the contaminated cloth in the infectious waste container.
- Always keep the "dirty" and "clean" areas of the work place separate.

4.2. Segregation and disposal of infectious waste generated from malaria diagnostic tests

Type of waste	Colour-coding and markings	Type of container	Treatment and disposal options
Sharps, i.e. blood lancets, hypodermic needles, broken glass and slides, pipettes and scalpels	Colour-coded, marked "SHARPS", with the biohazard symbol	Puncture-proof container made of rigid plastic	Autoclaving or chemical disinfection, followed by incineration, shredding or recycling
Infectious waste, i.e. blood-collecting devices, used blood tubes and containers, swabs, bandages, gloves, rapid diagnostic test cassettes, unstained blood films	Colour-coded, marked "INFECTIOUS", with the biohazard symbol	Strong, leak-proof plastic bag or container that can be autoclaved	Autoclave at the point of generation, followed by incineration or deep burial.
Chemical waste, i.e. alcohols, methanol, xylene, solvents, sodium hypochlorite, batteries	Colour-coded, marked "CHEMICAL", with the specific hazard symbol (corrosive, toxic, inflammable etc.)	Strong, leak-proof container for collection and safe disposal	Liquid chemical wastes should never be mixed or disposed of down the drain but should be stored in strong leak-proof containers.
Non-hazardous, i.e. paper, cardboard, plastic, packaging materials	No colour-coding or biohazard symbol	Plastic bag	Dispose of and treat like household and general solid waste

4.3. Storage of sharps and infectious non-sharps waste before final disposal

- Do not mix sharps, infectious non-sharps and non-infectious non-sharps waste.
- Clearly mark the storage area for sharps and infectious non-sharps waste with a warning sign, such as "Caution: infectious and sharps waste. Unauthorized persons keep out".
- Do not store sharps and infectious non-sharps waste in patients' rooms or in public areas.

4.4. Disposal of sharps and infectious non-sharps waste:

- Sites should comply with national guidelines.

5. PROCEDURE NOTES

- Make sure that no waste is left untreated. It should not be stored for > 48–72 h, depending on the climate.
- When a sharps container is three-quarters full, it should be closed, placed in an "infectious waste" container and incinerated, with prior autoclaving if laboratory practice requires it. Sharps containers must not be disposed of in landfills.
- All infectious material should be autoclaved or incinerated and not disposed of in landfills.
- Reusable transfer containers should be leak-proof and have tight-fitting covers. They should be disinfected and cleaned before they are returned to the laboratory. If both autoclaving and incineration are used for decontamination, use specific containers, e.g. autoclavable plastic bags that are colour coded to indicate whether the contents are to be autoclaved or incinerated.
- Any reusable materials (e.g. glassware) should immediately be placed in containers, with one for reusable material and one for disposable supplies, containing a decontaminating solution (e.g. 0.5% hypochlorite solution) prepared freshly daily. Containers should be located at each work station, and the reusable materials should remain in contact with the disinfectant for the appropriate time required for disinfection.

Cause of errors

- insufficient care and diligence in categorizing, segregating and safe disposal of waste materials.

6. REFERENCES

WHO. Laboratory biosafety manual. Third edition. Geneva; 2004.

WHO. Safe management of wastes from health-care activities. 2nd edition. Geneva; 2014.

7. DOCUMENT HISTORY

Date (mmm/yyyy)	Version	Comments	Responsible person (First name, last name)
Jan 2016	1	Reviewed and finalized by experts, edited and formatted	Glenda Gonzales, Technical Officer, WPRO