

GENERAL SAFETY PROCEDURES IN THE MALARIA MICROSCOPY LABORATORY

MALARIA MICROSCOPY STANDARD OPERATING PROCEDURE – MM-SOP-11

1. PURPOSE AND SCOPE

To describe basic safety procedures to be observed in the laboratory during blood sample collection and handling, film preparation and staining for malaria microscopy.

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

Laboratory personnel performing microbiological work may be exposed to hazards when handling human tissue and fluid samples. Human body fluids, particularly blood specimens, are potential sources of communicable diseases, such as HIV-1 and -2 infection, hepatitis B and C and haemorrhagic fever viruses (e.g. Ebola), by direct contact with broken skin or mucous membranes. Infection can be acquired by direct contact with blood and other body fluids, accidental inoculation through cuts on the skin by contaminated sharps or contact with contaminated equipment or other inanimate objects. All laboratory and field personnel should assume that all human specimens are potentially infectious and must use universal precautions to avoid exposure to bloodborne infections.

The laboratory supervisor is responsible for ensuring that all personnel are well trained in universal precautions and that the relevant instructions are appropriately displayed in the laboratory.

3. SUPPLIES, MATERIALS AND EQUIPMENT

- laboratory coats or gowns,
- safety glasses,
- 70% ethyl or isopropyl alcohol or 10% sodium hypochlorite,
- detergent,
- hypochlorite solution containing available chlorine at 1 g/L for general use,
- hypochlorite solution containing available chlorine at 5 g/L for blood spillages,
- disposable latex gloves,
- disinfectant or antibacterial liquid soap,
- a sharps container or a puncture-resistant container with a cover for sharps;
- a rigid plastic container with a cover for infectious waste;
- a non-infectious waste container,
- hand towels,
- water and
- an autoclave (desirable).

4. PROCEDURE

4.1. Laboratory or work area

- Provide a clean, tidy, dust-free area with enough space for at least two laboratory technicians or staff working side-by-side.
- Clean or decontaminate work surfaces with 10% bleach (sodium hypochlorite), isopropyl alcohol or 70% ethyl alcohol immediately after a spill and in any case at the end of the working day.
- Label all reagents and stains to be used properly, with the name, date prepared or opened and expiry date, if applicable.
- Clean all glassware and other materials for re-use, such as staining containers, with detergent, rinse with water.
- Keep all supplies and materials in designated drawers or boxes, properly labelled on the outside, in areas free from dust, dirt and insects.
- Pack and transport blood specimens according to the applicable national and/or international regulations.
- Store hazardous chemicals such as methanol in a locked cupboard when not in use.

4.2. Personal protection

- All employees who handle blood samples should be vaccinated according to national policy (e.g. against hepatitis B).
- Use disposable latex gloves when handling human blood, whether in the laboratory or in the field. Wear gloves for all procedures that may involve accidental, direct contact with blood or infectious material. Discard contaminated or perforated gloves.
- Wear a laboratory gown when working inside the laboratory, and remove it before leaving and when outside the laboratory.
- Wear safety glasses.
- Cover skin lesions such as cuts, abrasions, ulcers and dermatitis with a waterproof dressing or band aid before putting on gloves.
- Do not store medicines, cosmetics or food items in the laboratory, and do not apply make-up, insert contact lenses, eat or drink in laboratory work areas.
- Use of mobile phone should not be allowed in the laboratory.
- Remove gloves when using a personal computer or a (fixed) phone in the laboratory.
- Practice proper hand-washing under running water and use a skin disinfectant, antibacterial liquid soap or 70% alcohol before and after work and before leaving the laboratory.
- Read the "material safety data sheet" for each reagent used.

4.3. Safety during blood collection and handling

- Use only disposable lancets, hypodermic needles and syringes. Never re-use them.
- Use micropipettes properly, i.e. never pipette by mouth; use mechanical pipetting devices.
- Open hypodermic needles just before use, and handle them carefully. After use, do not recap, clip or remove needles from disposable syringes. Dispose of the complete assembly in a dedicated sharps waste container.
- While handling blood samples, be careful to avoid producing bubbles and aerosols.

4.4. Management of spills and accidental exposure to potentially infectious blood specimens

- All first aid procedures should be displayed in the laboratory for ready reference and should provide clear instructions for the management of spills and accidental exposure.
- Report any of the injuries and accidents listed below as soon as possible to the laboratory's designated infection control officer or to the laboratory manager, head or person in charge of first aid:
 - spills or accidents involving potentially infectious specimens (e.g. blood, serum, plasma);
 - any blood spill in the eye or on broken skin, cuts with broken glass or punctures with needles or syringes; and
 - any pathological symptoms occurring after an accident.
- Any blood spill should be immediately covered with a paper towel to absorb the spill, and then 5 g/L hypochlorite solution or 70% ethanol should be poured carefully over the towel.
- When intact skin is broken, cut, damaged or punctured by a contaminated needle, remove contaminated clothing, and immediately wash the area vigorously for 15 min with soap and water.
- When the eyes are splashed with blood, immediately flush the eyes thoroughly with water for at least 15 min.
- Refer to the standard safety procedures for immediate advice.
- Seek medical advice if necessary.

5. REFERENCE

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

6. 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