Guidance on sampling techniques for laboratoryconfirmation of *Mycobacterium ulcerans* infection (Buruli ulcer disease)



© World Health Organization 2010

All rights reserved. Publications of the World Health Organization can be obtained from WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel.: +41 22 791 3264; fax: +41 22 791 4857; e-mail: bookorders@who.int). Requests for permission to reproduce or translate

WHO publications – whether for sale or for noncommercial distribution – should be addressed to WHO Press, at the above address (fax: +41 22 791 4806; e-mail: permissions@who.int).

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by the World Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization be liable for damages arising from its use.

WHO/HTM/NTD/GBUI/2010.2



Guidance on sampling techniques for laboratory-confirmation of *Mycobacterium ulcerans* infection (Buruli ulcer disease)

Background

Advances in the clinical management of *Mycobacterium ulcerans* infection (Buruli ulcer disease) have shifted options for treatment from surgical management to combination antibiotic therapy. Antibiotic treatment with rifampicin and streptomycin or rifampicin and other oral regimens has made possible decentralized treatment where previously hospital-based surgical treatment was the only option. As a result of these advances, the number of surgical interventions has reduced (today, about 40% of patients are treated without the need for surgery) and recurrences of the infection have fallen to almost zero.

Confirmation of cases using laboratory methods – polymerase chain reaction and direct smear examination – has become a central issue in the overall management of the disease. Although cultures are not essential for diagnosis of the infection and the immediate clinical management of patients, identifying cases of treatment failures and recurrences of infection may require the detection of viable bacilli. Cultures may also be necessary if drug-resistant strains of *M. ulcerans* emerge.

In many countries where Buruli ulcer is endemic, 70–100% of patients present with ulcerative lesions and 0–30% present with non-ulcerative lesions. Since 2007, excellent progress has been made in using the fine-needle aspiration technique to collect samples from clinically diagnosed cases with non-ulcerative lesions. Until then, punch biopsy was the preferred technique to the more invasive surgical biopsy for obtaining samples from non-ulcerative lesions. Punch biopsy is used in a few countries mainly for research purposes. Today, fine-needle aspiration is used in a number of countries to obtain specimens for laboratory confirmation of infection. Punch biopsy is a less preferred choice, although its use may be limited to the special circumstances indicated below. Although surgical treatment may be performed less often today, cases that are surgically treated at any point in time should be an opportunity to provide samples for laboratory analysis.

Methods used for diagnosis

Four methods are commonly used for laboratory confirmatory of *M. ulcerans* infection: direct smear examination, polymerase chain reaction, culture and histopathology. The pros and cons of these techniques are summarized below.

Method	Pros	Cons
Direct smear examination	 Easy to perform at local level Does not require expensive materials and equipment Rapid results Uses swabs, fine-needle aspiration and biopsy samples 	 Low sensitivity (<60%) Needs trained personnel Needs external quality assurance
Polymerase chain reaction	 Results fairly rapid Uses swabs, fine-needle aspiration and biopsy samples High sensitivity (>95%) 	 Requires a sophisticated laboratory Expensive to perform Needs trained personnel Requires strict quality control
Culture of <i>M. ulcerans</i>	Uses swabs, fine-needle aspiration and biopsy samples	 Requires a sophisticated laboratory Needs trained personnel Results take >8 weeks Low sensitivity (20–60%) Not useful for immediate patient management
Histopathology	 Sensitivity is about 90% Results fairly rapid (if services are available) Useful in establishing differential diagnosis and monitoring unexpected response to treatment 	 Requires a sophisticated laboratory Expensive to perform Needs trained personnel Requires invasive procedure (i.e. biopsy)

Sampling techniques

Three techniques are used to collect specimens: swabs, fine-needle aspiration and biopsy (punch or surgical). Specimens may be used for routine diagnosis and clinical management of patients, and research.

1. Routine clinical management and case-finding

Swabs and fine needle aspiration are simple procedures that an be undertaken at any level (community, health centers, hospitals) during routine management or case-finding in communities.

1.1 Swabs

Specimens obtained by swabs should be taken from the undermined edges of a clinically diagnosed Buruli ulcer. Physicians or experienced health workers can perform this technique. In general, most patients present with ulcers so this technique is widely applicable in every setting. However, every effort should be made to minimize pain and bleeding, and proper training provided to health workers to perform this technique.

1.2 Fine needle aspiration

Fine-needle aspiration (FNA) is mainly used to obtain samples from clinically-diagnosed nonulcerative lesions (nodule, plaque and oedema). This technique is necessary in up to 30% of patients (depending on the setting) and is simple enough to be applied more widely in the field. FNA may also be used in some ulcerative lesions where it is difficult to take swabs because of healing edges. Only physicians or experienced health workers should perform this technique; ongoing training and regular supervision should be provided to health workers to improve their skills.

Extreme care should be exercised when performing fine-needle aspiration around the head and neck area (especially around the eyes) and the genitalia. Where necessary, an expert clinician should perform this technique in order to minimize any unintended damage to important organs or structures.

WHO recommends that a maximum of two swabs or two fine-needle aspirations be taken for each lesion depending on the experience of the person performing the technique.

预览已结束, 完整报告链接和二维码如下:



https://www.yunbaogao.cn/report/index/report?reportId=5 28103