



ILEP



TECHNICAL BULLETIN

Advice from the Medico-Social Commission

Issue No. 3, December 1990

IMPROVING SKIN SMEARS & THE READING OF THE BACTERIOLOGICAL INDEX IN MDT LEPROSY CONTROL PROGRAMMES

1 INTRODUCTION

Reliable skin smear tests are essential for the confirmation of the diagnosis of leprosy, the correct classification into Paucibacillary (PB) leprosy and Multibacillary (MB) leprosy of newly-diagnosed patients, the duration of treatment in MB leprosy in the majority of control schemes which treat 'until smear negativity', and the diagnosis of MB leprosy relapse. They may also be of help in the correct classification according to the Ridley-Jopling 5-point spectrum, in the assessment of progress, and in the anticipation of the further course of chronic severe Erythema Nodosum Leprosum (ENL). Yet the 5th Expert Committee on leprosy of WHO (1977) commented on '...the extremely low standard of the bacteriological examination techniques used in many leprosy control projects'. The WHO 6th Expert Committee (1988) was forced, not on theoretical grounds but by reason of operational feasibility, to amend the classification of MB leprosy and PB leprosy recommended by the WHO Study Group on the Chemotherapy of Leprosy (1982), so that all smear-positive patients were included in MB leprosy.

In a scathing attack on the present low standards encountered nearly everywhere save in main 'referral laboratories', Georgiev and McDougall (1988) have questioned 'the safety and good sense of current policies with regard to slit-skin smears in leprosy control programmes in most parts of the world, and have concluded that, the situation is unacceptable by any standards and unlikely to change'. The ILEP Medical Commission is in full agreement with their censures, though not necessarily with their suggested solution of having all smear work (the taking, processing and reporting of smears) being undertaken at the referral-centre laboratories.

2 MANAGERS AND THE SMEAR PROBLEM

It is basic to management that managers should lead from the front, appreciating the skills and responsibilities of their staff, and that they should care for and value their staff, and understand their problems. Yet most leprosy programme directors, whether Medical Officers or Senior Programme Managers (non-medical) or supervisors have little or no experience of smear taking, fixing, staining or scoring. Therefore they are unable to encourage, aid or advise adequately their laboratory technicians, who tend thus to be isolated, unchecked and under-appreciated - the very situation likely to lead to poor performance.

3 NEEDS

Areas needing management input include:

3.1 Supplies

These should include scalpel blades and handles, microscope slides, slide boxes, spirit lamps to fix the slides (unless formalin fumes are used) and to sterilise the blades between smear sites, 70% spirit to clean the smear sites, suitable dressings to stop bleeding from the smear sites, rubber gloves for the technician or smear taker to wear (especially in areas where AIDS is prevalent), and appropriate equipment for marking smear slides, for recording the specimens and for returning the results to the patients' notes.

3.2 Clear directives to the staff on:

- Who takes the smear and who selects the smear sites.
- Whom to smear, and when: This will include all patients before commencing MDT, and all MB leprosy patients at 2 years, post-treatment patients if suspected of relapse, and on other occasions according to the individual programme scheme. But smear examinations

should be kept to a minimum consistent with good practice; there is nothing so demoralising as having to examine large numbers of negative smears.

- The sites to be smeared: The minimum is one ear lobe plus two active skin lesions in untreated patients, the same sites to be used for follow-up smears. In patients suspected of relapse, new relapse lesions should also be smeared. Standard sites recommended in many books and control schemes as a helpful guide are often misinterpreted. Some schemes use standard sites on all patients, not just for lepromatous patients. Therefore many BT and BB (and even a few BL) patients may not have any lesions smeared, only normal skin, and they may as a result be labelled PB whether or not their lesions contain significant numbers of bacilli.
- The technique of smearing and of fixation: See standard text-books, Leiker and McDougall's short guide (DAHW, 1987), the The ILEP Standard Protocol (1982) and the ALERT basic manual 'Skin Smears For Leprosy' (1989). All too often, smears are full of blood and deficient in bacilli because of poor technique.
- The technique of staining smears (see references in above paragraph).
- The labelling and documentation of smears.
- The transport of smears to the laboratory (if taken elsewhere), and the sending of results back to field centres. All too often, this takes weeks rather than days, needlessly depriving field workers of essential information -perhaps the delay reflects the lack of faith in the eventual results.

3.3 The possession of laboratory facilities

- The technician will require adequate supplies of stains and reagents, water and electricity. There is nothing more disturbing than having a failure in the electricity supply while using a microscope with electric light illumination, with no reserve supply.
- The supply and upkeep of a microscope of adequate quality is essential. In humid climates, fungus grows easily on microscope lenses. A clear policy of prevention (eg. microscopes should be kept overnight in an incubator), regular checking and servicing is mandatory.

3.4 Quality control

- The most important support for the laboratory technician is the skilled and appreciative

interest of the Medical Officer(s) and Senior Management. Nevertheless, a system of quality control should be introduced (de Rijk et al, 1988).

- Increasingly, problems are being encountered with the differentiation of saprophytic or atypical mycobacteria which may be present on skin. Difficult smear slides should be referred to main referral-centres such as the WHO reference laboratories for the microbiology of *Mycobacterium leprae*.
- Whereas in general smear technicians are undervalued and underpaid, they have skills which may enable them to carry out evening work in local hospitals (especially if the leprosy programme is centered in the grounds of the District Hospital). A technician who spends long hours on evening or night duties to supplement his income is unlikely to have much patience in examining weakly-positive smears.

4 SUMMARY & RECOMMENDATIONS

Doctors who work in good centres, with skilled technicians supplying reliable smear results have little insight into the difficulties of working with unreliable smears. The quality of patient care is seriously affected. Good smears are a matter of leadership, concern and quality control.

In the first instance, emphasis must be placed on better training.

- All doctors in charge of control schemes should be taught the fundamentals of smear technology even if this means adding some extra time to the doctors course at such centres as Karigiri and ALERT. The techniques developed at the Leonard Wood Memorial laboratory in Cebu, for the training of smear technicians could be of value.
- Senior (non-medical) Supervisors may also be considered for short courses in smear technology, this is appropriate for their responsibilities.
- Senior Managers, whether medical or non-medical, should have laboratory and personnel management included in their training. Laboratories should be visited regularly.
- Smear Technicians should have 'update courses', based on the Cebu 'smear technicians' course. The Training Expert Discipline of the ILEP Medical Commission should be asked to produce an outline of objectives and a syllabus.

Further reading

WHO Expert Committee on Leprosy, *5th Report*, Technical Report Series 607, 1977, WHO, Geneva.

WHO Expert Committee on Leprosy, *6th Report*, Technical Report Series 768, 1988, WHO, Geneva.

Basic Requirements for Implementation of Multi-drug Therapy, ILEP Technical Bulletin No. 1, revised September 1990.

Skin Smears and the Bacterial Index (B1) in Multiple Drug Therapy Leprosy Control Programmes: An Unsatisfactory and Potentially Hazardous State of Affairs, GD Georgiev & AC McDougall, International Journal of Leprosy, Vol. 56, No. 1, March 1988 (pp 101 -104).

Technical Guide for Smear Examination for Leprosy, DL Leiker & AC McDougall, 2nd revised Edition 1987, DAHW, Würzburg, under the auspices of TALMILEP.

Skin Smears for Leprosy-Basic Manual for Leprosy Control Supervisors and Laboratory Technicians, T Nilsson, G Sparell, P Nak (ALERT), 1st Edition

1989, DAHW, Würzburg, under the auspices of TALMILEP.

Quality Control of Skin Smear Services in Leprosy Programmes: preliminary experience with inter-observer comparison in routine services, AJ De Ruk, T Nilsson & M Chonde, Leprosy Review 56, 1985 (pp 177 - 191).

THELEP Standard Protocol, *Standard Protocol for Chemotherapy Trials in Non-lepromatous Leprosy*, UNDP/WORLD BANK/WHO special programme for research and training in tropical diseases, TDR/THELEP/PROTOCOL/82.1

This document was produced by the Therapy Expert Discipline and endorsed by the ILEP Medical Commission.

ILEP is a Federation of autonomous anti-leprosy Associations. The advice contained in this publication is not binding on ILEP Members.

The text of this Technical Bulletin can be freely quoted subject to acknowledgement of its source.