

COMPARISON OF TECHNICIANS' WORK

TO THE EDITOR:

In the clinical evaluation studies of the Leonard Wood Memorial, considerable effort is made to standardize the techniques of making smears from the skin and mucous membranes, staining with Ziehl-Neelsen, making the examinations, and recording the results. Because of the large number of patients in these studies, the investigators must depend for the bacteriologic assessment upon technicians of long experience. Systematic checking has been done from time to time by blind exchange of slides between technicians, and in general the results have shown good agreement.

One of these exchanges illustrates the fact that it is sometimes possible not only to detect a deficiency on the part of a technician but also to show that the defect lies in a particular phase of the technique; that is, more or less to pinpoint the error.

It is our usual practice to have smears from the same patients examined by each technician. In this particular instance, however, it happened that smears from three groups of patients with lepromatous leprosy were made and stained by each of three technicians. Each technician then examined his own preparations and those of the others. Smears were made from 25 patients at Institution A by Technician No. 1; 25 patients at Institution B by Technician No. 2, and a second batch of 25 patients at Institution B by Technician No. 3. The patients assigned to Technician No. 2 were from the upper half of an alphabetical list; those to Technician No. 3 from the lower half. Each technician made 8 smears from each patients, 6 from skin sites and 1 from each side of the nasal septum. The stained slides, unidentified except by number and with findings withheld, were then sent to each of the others.

The results, in terms of average scores, were as follows:

Slides made by	Average score obtained by		
	Technician 1	Technician 2	Technician 3
Technician 1			
Institution A			
Sites: 6 skin	20.4	21.1	20.3
2 nasal septum	8.3	7.7	7.4
Technician 2			
Institution B (upper list)			
Sites: 6 skin	17.7	17.6	18.4
2 nasal septum	7.2	6.7	7.0
Technician 3			
Institution B (lower list)			
Sites: 6 skin	13.3	15.9	14.6
2 nasal septum	2.4	2.9	3.1

These findings demonstrate in a rather conclusive way that:

1. The average scores recorded by all technicians were more or less the same, from both skin and nasal septum sites for each of the three lots of slides. Obviously, therefore, the technicians agreed very well in observing and recording their results.

2. The average scores for the patients of Institution A were higher than those for each group of patients of Institution B, both for skin and nasal septum sites. The simplest explanation is that the patients at A were actually more heavily positive than those of B.

3. Although the two groups examined at Institution B were comparable to one another in other respects, the average scores for the slides prepared by Technician 3 were lower than those for the slides prepared by Technician 2. This is especially true for the nasal septum. The ratios of the skin scores to the nasal septum scores for the slides prepared by Technician 2 range from 2.5:1 to 2.6:1, and conform closely to those for Technician 1, but the comparable ratios for the slides of Technician 3 range from 4.7:1 to 5.5:1.

It is clear, therefore, that the work of Technician No. 3 was defective at some point. It was not in examining and recording, because he proved himself equal to the others in these respects. It was not notably defective in staining, because the average readings of the three technicians on the skin smears of Technician No. 3 were only about 20 per cent lower than those on the skin smears of Technician No. 2. The readings on the septum smears, however, reveal a very different situation. The average readings of Technician No. 3 were 60 per cent below the averages for Technician No. 2. It is a fair conclusion, therefore, that Technician No. 3 either failed to scrape adequately the nasal septum with a suitable metal instrument as directed, or failed to transfer the material to slides properly, or failed in both scraping and transferring.

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