

everybody. However, only those trained, executed specialised jobs. Thus, a sociology questionnaire would be administered only by a social worker and others would help by locating the patient or assisting in questioning if a language barrier came in. Tuberculin testing was done by a trained tester and others assisted him in holding the patient, if necessary.

In addition, the NTI had innumerable difficulties in procuring the equipment needed for various investigations. Even if the equipment was obtained, there were difficulties in its maintenance and getting spare parts. This problem became worse if the equipment was not made locally.

As narrated by Mr Stig Andersen: *Three mobile units arrived, two IGE Scouts and one Philips, bringing the total to six mobile units in NTI. Three of these units are not operational, one IGE Scout has broken down and a replacement part (coupling) has to be manufactured locally, the old IGE (white elephant) lacks spare parts for the generator, and the Philips unit is standing idle for two weeks pending*

arrival of the Philips service engineers. The WHO X-ray Engineer undertook a considerable responsibility in the maintenance of NTI transport, in addition to his normal work. The government has now sanctioned a post of Transport Officer but pending his arrival, we felt we had to do our utmost to keep our 24 vehicles going, and to work out a system of maintenance for the Transport Officer to take over³⁴.

2.3. Work done during the period

2.3.1. The Kirangur experiments

Research activities and work methodologies had to be field tested first in pilot projects. For this purpose Kirangur, a village about 125 kms away from the Institute, was selected. It is a small roadside village; hence, it was possible to take the fragile IGE X-ray unit mounted on a bus to its doorstep. Moreover, there was a conveniently located school building which could be used to set up the examination centre where doctors and technicians could work.

A study of Annexure II would reveal that nearly all the forty protocols approved by the TCC during this period had high priority in training of personnel. Both the field and the headquarters staff were being trained in carrying out different aspects of operations research.

One of the first research protocols (RP) was a *pilot protocol* for the training of newly recruited NTI staff, 21 BCG technicians and three senior health inspectors deputed from the Mysore state (now called the Karnataka state). They were to be trained selectively in activities like: identifying village boundaries; establishing rapport with villagers and relevant VIPs; assigning tasks to different workers and supervision of different activities; maintenance of standard of work and time schedule. At the headquarters, the supportive staff were trained in: processing of incoming data; reading of MMR films; processing sputum for microscopy, culture and other tests; data entry; analysis; preparation of summary reports and when decided upon, consolidating the information into a paper for

publication.

To gain work experience in conducting major research studies several pilot studies were launched in Kirangur, Srirangapatna taluk (population:1800 in 1959-60)^{29,35}. These were epidemiological and sociological in nature (i) A core group got experience in rapport building, contacted VIPs, selected a suitable place as examination centre etc; (ii) some prepared a location map of houses, registered residents on individual cards; (iii) others briefed and motivated the registered population and escorted them to the examination centre with identity slips; (iv) trained persons did tuberculin testing in accordance with a precoded design on a selective basis; (v) the trained vaccinator gave BCG vaccination (in different doses given selectively by design); (vi) the XT took 70 mm chest X-rays of those five years and above; (vii) symptom elicitation and clinical examination was done by a MO. A follow up team which consisted of tuberculin and vaccination scar readers, LTs and HVs, carried out: three-month and one year follow-ups.



*Dr. VB Naidu
Medical Officer I/C training*



1. Village field activity



2. Village field activity

The entire staff of NTI was shifted to the Kirangur camp. The daily work schedule at the field was between 7.00 to 11.00 a.m. and 4.00 to 7.00 p.m. Incidentally, Srirangapatna was a small town and did not have a hotel facility to provide food for this large team. Cooks were recruited and posted so that the staff could run a mess. As the town did not have a petrol bunk, a vehicle with jerry cans was sent to fetch petrol from Mysore where the nearest petrol bunk was situated. Another vehicle called the communication vehicle plied between the camp and headquarters. This carried completed forms, sputum specimens, exposed X-ray films and other materials to the NTI and brought back new forms, X-ray results, sputum results and material needed for work.

During the time field work was in progress, Kirangur village was a beehive of activity. It was a sight to see the MOs and other investigators walking up and down the dusty lanes of the village either motivating the local people to go to the examination centre or in deep

N.I.I. 29-4-60.

File no 1-84/60-61 Est

SUBJECT- PEONS- Appointment of
Shri M. Jayaram - GTC

urgent RECEIVED ON
DATE 28-4-60
BY

M E M O

To
The Director, NTI.

Dear Sir,

Since the first bus to Madanapalle will be leaving at 6.30 A.M. on Monday the 2nd May 1960, it is necessary to make arrangements immediately and instruct the peon who would be sent with the sputum specimens on Monday. This arrangement will have to be made only this time as I shall be returning from Srijangapatnam only on Sunday evening when the office will be closed on that day.

Sincerely yours,
K. Padmanabha Rao
(K. Padmanabha Rao).

D/28-4-60

A/O Please do the needful
Hebordi

RECEIVED ON
DATE 28-4-60
BY

NO. 111/3000

consultation among themselves, sorting out technical problems. Every aspect of work was observed in detail with an eye for improvisation, unambiguous data elicitation and getting maximum coverage with minimum inconvenience to the villagers. There were discussion sessions both at the camp and at the NTI so that the work progressed as planned.

The NTI laboratory was not yet functional. Sputum specimens were arranged to be processed at UMTS, Madanapalle. The assistance rendered by the UMTS went beyond processing of sputum specimens for culture and sensitivity for M.tb. It trained two LTs of NTI on all aspects of work. The specimens brought from Kirangur by the communication vehicle had to be transported



Examination Centre in a village

without delay. Hence, a rider on a motorcycle was retained at the NTI to immediately transfer the sputum specimen to another sputum box with sufficient ice, and transport it to UMTS. From there he would bring back sterilised empty containers and sputum results. These were processed and relevant feed-back was sent to the camp for further work. This seemingly simple task of transporting sputum specimens was not easy. If the motorcycle broke down, it was not possible to get it repaired on the same day and

a stand-by was not readily available. Speedy actions were taken to send the specimens by bus and to get the motorcycle repaired. Appended photocopy shows how the speedy actions were taken in one such instance.

All senior officers, including the Director, visited the field station to benefit from practical experience so that work became accurate and less tedious, data entry forms less cumbersome and more informative. As administrators, they had to resolve practical problems like

funds, fault repair, supplies and technical problems that cropped up in the field. They also worried about sudden distress calls, e.g., X-ray breakdown needing immediate attention. A different type of concern confronted the field work organisers. For e.g. Where to set up camp? Who are the village VIPs to be contacted to maximise rapport? What is the most convenient time to get maximum coverage? How to get the cooperation of the stubborn, the non-cooperative or the panicky? What strategies to adopt? These were very relevant and important factors in field work because every area, every individual, is different.

Kirangur was the first training ground for social workers to get experience in interviewing techniques. One of the Kirangur experiments was: *“to examine the frequency of complications after vaccination with BCG in relation to the pre-vaccination tuberculin sensitivity”*. The other minor objectives were learning census taking, tuberculin testing, reading, X-ray examination, sputum examination, by experience. Thus, these studies

served the purpose of gaining experience in all aspects of field work which would be useful for future epidemiological studies as well as sociological and BCG trials, to be conducted. For the proposed major BCG Trial, the four taluks of Bangalore district, viz., Nelamangala, Magadi, Channapattana and Devanahalli, were selected. Much work was being done at NTI on planning the trial. Therefore, several experiments on BCG had been included in the work²⁹. The proposal was ultimately shelved because of the overriding priority to conduct operations research on various aspects of the District Tuberculosis Programme (DTP). Fortunately, five years later, the BCG trial proposals were revived under the aegis of ICMR. However, the venue of the trial became Chingleput, Tamil Nadu and not Bangalore. The details of BCG trial appear in Chapter III. Thus, the Kirangur camp served the purpose for which it was established.

2.3.2. Other Experiments

Bangalore district was selected to

A Tragedy

The Kirangur camp where the field teams were stationed was situated in a secluded wooded part on the banks of the river Cauvery, about 3 kms from Srirangapatna. Everyone, from Piot, Banerji, Muthusubramanian, to the cook stayed in the camp. One day, as was the usual practice before breakfast, Verghese, XT went in for a swim in the river. Unfortunately, he got into the turbulence and before anyone could guess what was happening, drowned and never came up. Verghese was a very friendly person and had joined only recently. His body was retrieved by local fishermen by afternoon. After hectic parleying, necessary approval to transport the body to Kerala, his home town, was obtained avoiding postmortem. By late evening, the body was taken to the NTI. As ill luck would have it, the director was away and no one had the authority to use the government vehicle to transport the body to Kerala. The urgency was such that the senior most available officer, Banerji, took the decision. Nobody raised audit objection later! The teams were back to work 7.00 a.m. next morning.

conduct smaller studies simultaneously. These provided the necessary training to different categories of staff, for major studies which were constantly being planned. For e.g. a pilot “Awareness study” was carried out in randomly selected villages of Bangalore district. The objectives of the study besides training of social workers and formulating interviewing techniques were:

1) To obtain a preliminary picture of the level of awareness of TB and

2) To compare the results of interviewing on symptoms

before X-ray survey (in some villages) and after X-ray survey (in different villages).

In fact, at that time, very little information was available in the field of ‘medical sociology’. With Dr Banerji and Mr Andersen in the lead, the main theme, of understanding the sociological aspects related to health of the people; to feel their pulse and identify ways of enlisting their cooperation, gained centre-stage. They discussed extensively and constantly revised opinions based on new information coming as a

feedback from the field teams. They were joined by Dr Piot who had considerable field experience; Drs Raj Narain, Bordia, Geser, Mahler and Mr Jambunathan. Their collective wisdom would not yield to unqualified acceptance of highly attractive sociological techniques in vogue in western countries. Instead they looked at the problems and formulated plausible questions. For e.g., Are people aware of symptoms of pulmonary TB? How many of the active cases found were aware of their symptoms attributable to TB? Can we find potential TB cases by questioning people? Can we design statistically applicable interview techniques to yield quality data?

Would this data form a basis for case finding tools? Would these tools be applicable in different epidemiological situations³⁶?

They also battled with another different, but equally important area of investigation: 'action taking' pattern. How much sickness, suffering, any other distress signal or what criteria prompt or impel people to take action? What will they do? Where will they go? What other influences play their parts in taking any decision? Yet another was the "acceptability" pattern. When diagnosed and informed "you have TB", how many would accept the diagnosis and take action? An important variable is the



Sociology Interrogation

individual's impulsive behaviour which is indeed difficult to determine. Understandably, the behaviour would be influenced by financial, emotional, educational and religious factors³⁴ Those battling with the above questions at the NTI, knew that despite these obvious quandaries, there would emerge a broad pattern amenable to scientific computation. The difficulty was to quantify them on a scientific basis. The purpose of doing this research was to feed the information to develop a socially applicable TB programme which could offer the best possible returns from the available resources.

The tasks set before the epidemiology section (EPS) were slightly different but yet vital. It had to obtain information on the size, extent and nature of the TB problem in the community. The information obtained should yield precise estimates of the disease burden. Thus, the work was not just the study of distribution and determinants of TB but where, which and how much the various factors attributable to TB are

distributed, and interrelated. It had also to develop through systematic studies, a comprehensive picture or model into which the various determinants of TB problems are fitted and available for immediate use.

Field work was extremely labour intensive and physically exhausting. Both accuracy and high coverage for all examinations were the basis of standard scientific epidemiological investigations. The staff had to be trained to carry out different types of skilled tasks e.g., tuberculin testing, reading, X-ray examination. The tasks changed from study to study in accordance with the needs. Each item of data, therefore, was considered specific. So, both the trainers and the trainees met frequently and had long improvisation sessions. During these endeavours, both had first-hand experience of mass contact, and of ways of getting adequate cooperation of the community. Desk planning methodologies were perfected. In the process, they developed research manuals (RM), for census



Old X-ray unit

taking (RM/1), tuberculin testing and reading (RM/2), XT (RM/3) and LT (RM/4). These manuals were extensively used while training. In addition, variations between different workers doing the same task and different workers doing different tasks e.g., tuberculin testing, reading, enumeration, symptom questioning, etc., were kept to the minimum by constant statistical monitoring. At the end of training, the performance of staff trained in these aspects was compared and best were selected for the field work.

As data began pouring, the



New X-ray unit

Statistics Section (STAT) got busier by the day. In fact, the pressure was so much it could only concentrate on receiving and checking the large quantities of data pouring in from different field activities, arranging them to be punched, after random scrutiny. There was hardly any time even for preparing tables and preliminary analysis work. There was pressure on the NTI to concentrate on planning different studies which would yield the necessary and relevant data for the proposed nationally applicable TB control programme. These studies would be carried out in Tumkur district³⁴.

2.4. The Tumkur district baseline studies

After having gained expertise in carrying out research field work at Kirangur and Bangalore, one of the most challenging assignments of the NTI was planning and execution of operational studies which had direct bearing on the proposed nationally applicable controlled programme. What preventive measures can be taken to break the chain of transmission? What were the likely steps involved? Which method is cost effective and efficient? Which agencies could be involved? Will



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