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TRAINING OF NON-PSYCHIATRIST PRIMARY CARE DOCTORS IN PSYCHIATRY

There is a wide gap between the mental health needs of the community and the available psychiatric services in India¹. The psychiatric morbidity among the patients of general practitioners (GPs) is about 36 per cent² and about 27 per cent³ among outpatients of general hospitals. The GPs who ideally can and should shoulder greater responsibility in psychiatric services in the community are ironically the least adequately trained, especially in developing countries like India⁴. Even countries like Britain with advanced and extensive health services acknowledge the role of non-psychiatrist doctors in extending the psychiatric services to the community^{5,6}.

In an effort to overcome this problem the National Mental Health Programme⁷ had declared the training of non-psychiatrist primary health care doctors in psychiatry as a necessary component of extending essential psychiatric services to the community. The Department of Psychiatry at the National Institute of Mental Health and Neurosciences (NIMHANS), Bangalore has been experimenting with short training programmes for primary care doctors, including GPs, and with methods of evaluation since 1977 (Shamasundar, 1986 unpublished data).

Short duration training programmes acquire significance as the available specialist manpower in our country is too small as compared to the large number of

primary care doctors who have had functionally inadequate undergraduate training in psychiatry. It is practically impossible in such short programmes to train a primary care doctor to acquire an expertise in managing psychiatric patients. A modest effort exposing the doctors to clinical psychiatry in an introductory manner in order to stimulate their self-learning interest would definitely be practicable. Such programmes must be clinically oriented with case discussions and demonstrations. The NIMHANS, Bangalore had been attempting to achieve this objective through programmes ranging from 6 to 20 sessions.

The evaluation of such short training programmes must necessarily be: (i) simple and capable of administration in a short time; (ii) clinically biased and able to assess different levels of knowledge; and (iii) easy to score with inter-rater reliability and replicability.

To fulfil these criteria the theoretically biased essay type questions and the multiple choice questions that suggest their own answers are unsuitable; 'live' clinical examination, on the other hand, are very time consuming and not easy to assess. Over the years, NIMHANS has found that use of clinical vignettes along with a set of simple questions can serve the purpose quite well.

On the basis of the work done at NIMHANS in this field, the ICMR initiated a multi-centre study on

"Training Non-Psychiatrist Primary Care Doctors in Psychiatry", with NIMHANS as the coordinator. The project was carried out in 1982-83 at three centres viz NIMHANS, Bangalore; Government Hospital for Mental Care, Hyderabad; and Christian Medical College, Vellore.

The main objectives of this study were to test the:

- (i) efficacy of the short training programme by assessing the extent to which the doctor became able to identify (diagnose) common psychiatric problems, indicate simple lines of management for the above, suggest suitable advice to patient and family members; and know when to refer;
- (ii) replicability of the programme at the three collaborating centres; and
- (iii) efficacy of the vignettes as a tool of assessment by ascertaining inter-rater reliability in scoring, the ability of the vignettes to reflect different levels of knowledge, and consistency in their performance with different populations.

Preparatory Exercises

Preparatory exercises were carried out for the purposes of familiarising all the collaborating investigators in (i) conducting the training programme in a fairly uniform manner, (ii) administration and scoring of the vignettes, and (iii) to establish the inter-rater reliability and other characteristics of the vignettes.

1. A week long workshop was held where a small batch of 9 GPs were trained over a period of 6 days in 12 sessions. Investigators from all the 3 centres jointly participated in the programme, discussing the proceedings at the end of each day. This programme was structured similar to the planned programme.
2. The vignettes were 12 in number, divided into two sets 'A' and 'B' with 6 vignettes each. The vignettes were so constructed that each vignette of one set had a similar one in the other set representing the same diagnosis. The six diagnoses were: Hysteria, Depression, Psychogenic somatic condition, Epilepsy, Schizophrenia, and No psychiatric diagnosis (NPD or 'Dymmy'). The purpose of the two sets of vignettes was to ensure that the same GP would not get the same vignettes at pre- and post-training assessments. Each vignette consisted of brief descriptions of 5 to 7 features characteristic of a major diagnosis. Each vignette was accompanied by a set of standard questions about: (i) the diagnosis (multiple choice); (ii) drugs if any to be used, dosage,

their side effects, and management of side effects; (iii) advise to be given about illness, drugs and work; (iv) when to refer; and (v) a set of 6 questions on attitude towards the illness.

A scoring key was used for scoring. The maximum score per vignette was 18 (12 for clinical questions and 6 for attitude questions) and the numerical value of the score indicated the level of desirable knowledge.

The Efficacy of Vignettes

The three collaborating centres administered the vignettes to batches of doctors as shown in Table I.

Table I. Administration of vignettes to different groups of doctors at 3 centres

	Set 'A' vignettes	Set 'B' vignettes	Total number of protocols
Untrained GPs (Hyderabad)	7	10	17
Untrained GPs (Vellore)	11	16	27
Previously trained GPs (Bangalore)	20	20	40
2nd and 3rd year psychiatry residents (Bangalore)	22*	22*	44
Total	60	68	128

* Twenty residents were administered both set 'A' and set 'B'.

Twenty six (20%) of the 128 protocols were independently scored by the three principal investigators of the centres for calculating the inter-rater reliability by correlation co-efficient (r-value). The r-values ranged from 0.94 to 0.98 confirming a high degree of inter-rater reliability.

The remaining 102 protocols were randomly divided into three lots, each being scored at one centre. The mean scores for different groups of doctors were compared by one way analysis of variance (Table II). The scores confirmed the ability of the vignettes to reflect different levels of knowledge.

The two sets of vignettes 'A' and 'B' were equivalent (as shown in Table II). This equivalence was also

**Table II. Comparison of mean score by different groups of doctors by one way analysis of variance ('F' value).
Maximum score = 108**

	Set 'A' vignettes			Set 'B' vignettes		
	Mean score	N	% of max. score	Mean score	N	% of max. score
Untrained GPs (Hyderabad)	50.5	7	46.8	51.1	10	47.3
Untrained GPs (Vellore)	67.3	11	62.3	58.6	16	54.5
Previously trained GPs (Bangalore)	72.5	20	67.1	70.8	20	65.6
2nd and 3rd year psychiatry residents (Bangalore)	79.9	22	74.0	78.7	22	72.8
'F' value	3.7107			4.9661		
Significance	P < 0.01			P < 0.05		
df	3.56			3.65		

confirmed when the mean scores and SDs for the two sets of vignettes by the same 20 psychiatry residents were compared by paired 't' test for each diagnosis, and the 't' values ranged from 0.2944 to 0.8499.

The Main Training Programme

By the use of local Indian Medical Association (IMA) mailing lists and a questionnaire, 100 eligible GP's with MBBS qualification, aged 30 to 50 years were identified at each centre. By a random sequence, these GPs were offered a short training course in psychiatry till about 35 GPs volunteered and registered for the training. The characteristics of the GP populations (eligible, registered for training and unregistered) were compared within each centre and across the 3 centres, on 4 parameters (age, sex, number of psychiatric patients and epileptic patients referred in last 3 months). Except for differences in the variables of age and sex across the centres, the populations were comparable in other respects.

All the three centres carried out a similar training programme using the same manual and content-curriculum. At the beginning of the training programme, a cyclostyled manual of 100 typed pages was given to each GP trainee. The manual consisted of 13 sections covering Introduction and classification, Major symptoms and signs, History taking and interviewing, Six clinical sections, Psychiatric emergencies, Psychopharmacology

and counselling. The contents of the manual were clinically oriented with the case examples.

The programme comprised 13 afternoon sessions of two hours each, one or two sessions a week, depending on the convenience of the investigating centre. Each session consisted of initial brief lecture based on the contents of the respective section of the manual followed by open discussion. In those sessions where clinical syndromes were covered, there were case demonstrations, followed by open discussion on clinical material. Major topics like depression were allotted two sessions, and minor topics were condensed into single session. A standard set of slides were duplicated and used by all the 3 centres. Pre- and post- training assessments were administered in the first and the last sessions. The post training assessment also included a set of questions enquiring about the GP trainee's own opinion about the programme.

The vignettes-protocols from all the 3 centres were pooled, coded and randomly divided into 3 batches. Each batch was scored by a Principal Investigator. The scores were analysed to assess the efficacy of the programme.

Replicability of the Training Programme

When the mean pre- and post-training scores were compared, the performance of the 3 centres were similar for the clinical questions (Table III).

Table III. Comparison of pre- and post-training mean score for three centres

	Bangalore (N=30)	Hyderabad (N=33)	Vellore (N=34)	'p' value by one way analysis of variance
On Clinical questions max. score=72				
Pre-training	26.4 ± 10.7	28.6 ± 7.1	24.6 ± 9.9	NS
Post-training	35.6 ± 11.6	36.2 ± 12.7	40.1 ± 12.9	NS
'p' value by paired 't' test	<0.001	<0.01	<0.001	
On Attitude questions max. score = 36				
Pre-training	29.8 ± 3.1	31.4 ± 3.1	28.0 ± 5.2	<0.01
Post-training	32.1 ± 2.7	32.4 ± 2.9	31.6 ± 3.3	NS
'p' value by paired 't' test	<0.01	NS	<0.001	

Values are Mean ± SD

These findings indicate that (i) the pre-training level of knowledge of GPs at the 3 centres were comparable; (ii) their gain in knowledge by training was also comparable. That is, the effect of the training programme at different centres have been consistently similar; and (iii) the slight differences in gain at different centres are probably attributable to minor differences in the manner and style of the investigator-trainers.

The pre-training performance on attitude questions was quite high, of the order of about 80 per cent of the maximum, indicating that at least the urban GPs have appropriate attitudes indicating redundancy of attitude questions in assessment of training. Nevertheless, the gains ranging from 2.8 per cent to 10 per cent is interesting because the topic of attitudes was not included in the training programme. The implication of this is that the GPs were capable of extracting the corollaries of what is taught which can be termed "indirect learning", and hence, it is not necessary in short courses for comprehensive details about the subject taught.

The Efficacy of the Training Programme

The question-wise performance of all the GPs for all the diagnosis combined is seen in Table IV. It confirms that all the criteria of efficacy of the training are satisfied, though to varying degrees:

Table IV. Question-wise mean scores on clinical questions shown as percentage of maximum for each question. All diagnoses and all centres combined

Question on	Pre-training	Post-training	Gain by training
1. Diagnosis	73.8	86.2	12.4
2. (a) Drugs	55.6	72.1	16.5
(b) Dosage	39.1	63.1	24.0
(c) Side-effects	28.6	47.0	18.4
(d) Management of side-effects	27.4	47.7	20.3
3. Advise about:			
(a) Illness	29.8	42.3	12.5
(b) Drugs	22.0	36.4	14.4
(c) Work	44.5	53.6	9.1
4. Disposal (when to refer)	16.6	26.8	10.2

1. The high pre-training ability (73.8%) of GPs to diagnose is probably partly spurious due to the multiple choice nature of the question on diagnosis. Open ended question like other questions would have been desirable.

2. Even though GPs are moderately knowledgeable about the drugs to be used (or not used) even before training, their knowledge on dosage, side-effects and their management was inadequate.
3. With respect to the advice to the patients and their family members, despite gains of the order of 0.1 per cent to 14.4 per cent, the post-training performance of the GPs remained comparatively poorer. This is probably related either to their insufficient receptivity to these issues or to insufficient emphasis during training, or perhaps to both.
4. The very poor performance of the GPs before and after training on the question of disposal was traceable to effect of the degree of confidence acquired by them. When a number of protocols were randomly examined it was found that: (i) before the training, majority of GPs wrote: "....will refer to a psychiatrist", (ii) after training, majority of GPs wrote: "....I will treat the patient myself," or "no need to refer".

The GPs Performance on Different Diagnosis

Table V shows the diagnosis-wise performance of the GPs at all the 3 centres. The relatively poor performance and gain in respect of 'No-psychiatric-diagnosis' is probably related to: (i) the difficulty of constructing a vignette seemingly representing a pathology but not amounting to the syndrome, (ii) the natural tendency of the assessee to make a diagnosis of illness. Inclusion of vignette of 'No-psychiatric-diagnosis' may not be necessary for assessment.

Table V. Comparison of pre- and post-training mean scores for diagnosis on clinical questions. Three centres combined. Max. score = 72, N = 97

	Pre-training Mean	Post-training Mean	Mean gain
No psychiatric diagnosis	31.3	37.1	5.8
Hysteria	17.2	26.9	9.7
Depression	18.7	35.3	16.6
Psychogenic somatic condition	28.4	36.9	8.5
Epilepsy	40.0	46.1	6.1
Schizophrenia	22.6	42.3	19.7
All diagnosis combined	26.4	37.4	11.0

The maximum gains for depression and schizophrenia, and least gains for hysteria and psychogenic somatic condition are perhaps related to the concreteness and precision of respective clinical information taught.

The high pre-training score and low gain for epilepsy indicate that (i) it may not be necessary to include epilepsy, (ii) probably, the investigator-trainers did not lay much emphasis on this condition.

It is necessary in subsequent training programmes to lay more emphasis on those topics and diagnosis in which the post-training performances and gains were comparatively poorer.

The GPs Opinion about the Training

The opinion of the 102 doctor-trainees suggests the following areas for further improvement in the training programme:- (i) There is a need to study thoroughly the kind of psychiatric patients who commonly attend GPs clinics in terms of their presentations and diagnosis; (ii) Case history examples in the manual as well as the contents of the lectures are to be formulated on the basis of the above; and (iii) Demonstrations must form a major part of such training programmes.

In conclusion, it can be stated with confidence, that the short course of Psychiatry training of 13 sessions, not

only contributed to fair increase in the knowledge of the GPs, but is replicable on different GP populations.

References:

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This write-up, by Dr. C. Shamasundar, Department of Psychiatry NIMHANS, Bangalore, is based on the Report of the ICMR multi-centric study on "Training Non-Psychiatrist Primary Care Doctors in Psychiatry" (1982-83).

ABSTRACTS

Some Projects Completed Recently

Urinary inhibitors of calcium oxalate crystallisation in normal population and in stoneformers.

An assay system involving the measurement of rate of calcium oxalate monohydrate (COM) seed crystal growth in a metastable solution of calcium chloride and sodium oxalate containing traces of ^{14}C -oxalic acid was standardised. Low molecular weight inhibitors viz pyrophosphate and citrate caused a 50 per cent decrease in crystal growth rate at $1.5 \times 10^{-3}\text{M}$ and $2.85 \times 10^{-4}\text{M}$ concentration respectively.

Fifty stoneformers and 25 healthy controls were analysed for lithogenic substances and inhibitory activity towards COM crystal growth in urine. The stoneformers revealed a significant hypercalciuria and hyperuricosuria as compared to controls with no significant difference in the excretion of urinary oxalate and inorganic phosphorus in two groups. A significant negative correlation observed between urinary inhibitory activity

and uric acid levels in stoneformers indicated that hyperuricosuria indirectly predisposes to calcium oxalate lithiasis by decreasing the urinary inhibitory activity.

The circadian biology of lithogenic substances in urine of stoneformers showed statistically significant circadian rhythm for organic phosphorus only ($T=24\text{h}$, $A^{\circ}=0038$) and an ultradian rhythm for calcium excretion ($T=8\text{h}$, $A^{\circ}=0205$). Urinary calcium and oxalate concentrations showed an almost coinciding acrophase at 15^{20}h and 15^{36}h respectively, thereby showing high risk for calcium oxalate precipitation at this time. The cohorts of stoneformers showed significant mesors with respect to urinary volume, creatinine, oxalate and uric acid excretion. However, the cohorts of stoneformers did not differ significantly from the stoneformers with respect to calcium and inorganic phosphorus excretion.

Cosinor rhythmometry of urinary citrate excretion revealed a significant circadian rhythmicity in healthy

subjects which was absent in stoneformers. Circannual variation in 24h urinary excretion of lithogenic substances showed increased excretion of calcium in winter (October-March) and a significantly decreased excretion of inorganic phosphorus in summer (June-September). Increased tendency towards calcium and uric acid excretion and decreased tendency towards oxalate excretion was observed after the surgical procedure amongst stoneformers and non-stoneformers.

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Publications:

1. Sidhu, H., Gupta, R., Thind, S.K. and Nath, R. Inhibition of calcium oxalate monohydrate (COM) crystal growth by pyrophosphate, citrate and rat urine. *Urol Res* 14: 299, 1986.
2. Nath, R., Thind, S.K., Vaidyanathan, S. and Sidhu, H. Circadian biology of urinary excretion of calcium, oxalate, phosphorus and uric acid in renal calculous patients. In: *Pathogenese und Klinik der Harnsteine, Fortschritte der Urologie und Nephrologie*. Eds. W. Vahlensieck and G. Gasser, Steinkopff Verlag, Darmstadt, p.163, 1987.
3. Sidhu, H., Vaidyanathan, S., Wangoo, D., Rattan, V., Thind, S.K., Nath, R., Malakondaiah, G.C. and Tandon, S.P. Urinary inhibitory activity of calcium oxalate monohydrate crystal growth in stoneformers and non-stoneformers. *Indian J Med Res* 86: 500, 1987.

Immunological studies in experimental hydatid disease in mice.

An animal model of human echinococcosis was developed in weanling Swiss albino mice of both sexes by inoculating 2000 protoscolices per animal intraperitoneally. These protoscolices were obtained aseptically from liver or lung hydatid cysts of infected patients. The cysts started developing after 2-3 months post infection (PI) and the whole abdomen was studded with cysts 6-7 months PI.

Infected animals were checked for the presence of specific haemagglutinating antibodies using hydatid fluid

antigen. Forty per cent of animals became seropositive by 2 months and 80 per cent by 3 months PI. Depression in the number of T lymphocytes was observed with increase in the period of infection, however, there was no change in the number of B lymphocytes. Besides, depression in blast transformation of lymphocytes was observed using non-specific mitogens like PHA and Con A and specific hydatid antigen. An increase in T cell cytotoxicity was observed in the later stages of infection (significant difference in cytotoxicity activity appeared at 4 months PI and remained unchanged till 6 months PI), indicating that it had some protective role. No significant difference in percentage phagocytic activity was observed during the early stages of infection which increased during later stages.

Infected animals were treated with mebendazole after 2, 4 and 6 months of infection. The drug was found effective in decreasing cyst mass in the early stages of infection, given in dosage of 200 mg/kg body weight for 21 days.

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Publications:

1. Ganguly, N.K., Mahajan, R.C., Wangoo, A., Bose, S.M. and Dilawari, J.B. Potential experimental model for unilocular hydatid disease. *Indian J Med Res* 84: 210, 1986.
2. Wangoo, A., Ganguly, N.K. and Mahajan, R.C. Lymphocyte subpopulations and blast transformation studies in experimental hydatidosis. *Indian J Med Res* 85: 149, 1987.
3. Wangoo, A., Ganguly, N.K. and Mahajan, R.C. *In vivo* efficacy of drug mebendazole in early stages of hydatid disease with *Echinococcus granulosus*. *Trans R Soc Trop Med Hyg* 81: 965, 1987.
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ICMR NEWS

Meetings of the following Task Force (TF)/Expert Groups (EGs)/Project Review Committees (PRCs)/Project Advisory Committee (PAC) of the Council were held at New Delhi during the month:

TF on Collaborative Study on Indian Childhood Cirrhosis. October 3-5, 1989

EG on Hyperthermia in Treatment of Cancer

October 9, 1989

EG on Mid-term Appraisal of Efficacy of Killed Poliomyelitis Vaccine in North Arcot District of Tamil Nadu.

October 11, 1989

PRC on Monitoring and Evaluation of MCH Programmes with particular reference to Immunization by Involving Government Medical Colleges.

October 11, 1989

PRC on Urology, Gastroenterology, Cardiovascular Diseases, and Ophthalmology.

October 24, 1989

PAC on Integrated Approach to Prevention of Avoidable Disabilities (IMPACT Programme).

October 25-26, 1989

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The 48th meeting of the Scientific Advisory Board of the ICMR was held at the ICMR Headquarters, New Delhi on October 19-20, 1989.

Participation of ICMR Scientists in Scientific Events:

Dr. K. Banerjee, Director, and Dr. M.A. Sreenivasan, Dy. Director, National Institute of Virology, Pune participated in the International Symposium on Arboviral Infections, at Moscow (October 1-7, 1989).

Dr. M.S. Malhotra and Dr. V.K. Dua, Senior Research Officers and Dr. R.S. Yadav, Research Officer, Malaria Research Centre, Delhi, participated in the 3rd Asian Course in Tropical Epidemiology, at Manila (October 7-27, 1989).

Dr. C.P. Puri, Asstt. Director, Institute for Research in Reproduction, Bombay, participated in the WHO Steering Committee Meeting of the Task Force on Post-

ovulatory Methods for Fertility Regulation, at Geneva (October 9-13, 1989).

Dr. J.R. Parikh, Asstt. Director, National Institute of Occupational Health, Ahmedabad, participated in the 7th International Symposium on Epidemiology in Occupational Health, at Tokyo (October 11-13, 1989).

Dr. S.P. Tripathi, Addl. Director-General, ICMR, participated in the Special Scientific Session on Tropical Disease Control by 2000 AD, at the Annual Conference of Tropical Disease Control Programme, at Wardha (October 12-13, 1989).

Dr. K.A.V.R. Krishnamachari, Officer-in-Charge, Regional Medical Research Centre, Jodhpur, participated in the WHO Advisory Group Meeting on Trace Elements in Human Nutrition, at Geneva (October 16-20, 1989).

Dr. A.S. Paintal, Director-General, Dr. S.P. Tripathi and other senior scientists of ICMR, participated in the Indo-US Vaccine Action Programme Workshop on New Development in Vaccinology, at New Delhi (October 24-26, 1989).

Sh. N.S. Murthy, Asstt. Director, Institute of Cytology and Preventive Oncology, New Delhi, proceeded to USSR for 2 weeks under Indo-USSR Agreement in the field of Medical Sciences and Public Health (Oncology) (October 24 - November 6, 1989).

Dr. M. Dutta, Asstt. Director, Tuberculosis Research Centre, Madras, participated in the International Symposium on Childhood Tuberculosis and Acute Respiratory Infections in Developing Countries, at London (October 26, 1989).

ICMR AIDED SYMPOSIA/SEMINARS/WORKSHOPS/COURSES/CONFERENCES

Symposium/Seminar/Workshop/ Course/Conference	Date & Place	Contact Address
Continuing Medical Education Programme in Preventive Cardiology and Cardiovascular Epidemiology.	October 1, 1989; New Delhi	Dr. H.S. Wasir, Professor, Department of Cardiology, Cardiothoracic Centre, All India Institute of Medical Sciences, New Delhi.
Seminar on New Trends in Methodology for Social and Population Research.	October 1-3, 1989; Tirupati	Prof. K. Mahadevan, department of Population Studies, S.V. University, Tirupati.
National Workshop on Burns Injuries and their Sequelae.	October 7-8, 1989; Chandigarh	Dr. C.P. Sawhney, Professor & Head, Department of Plastic Surgery, Postgraduate Institute of Medical Education and Research, Chandigarh.
XVI Annual Conference of Indian Immunology Society and Symposium on Tropical Immunology.	October 12-14, 1989; Sevagram	Dr. B.C. Harinath, Professor & Head, Department of Biochemistry, Mahatma Gandhi Institute of Medical Sciences, Sevagram, Wardha.

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Symposium/Seminar/Workshop/ Course/Conference	Date & Place	Contact Address
Symposium on Reproductive Biology and Fertility Control.	October 12-14, 1989; Imphal	Dr. B.K. Omar, Professor & Head, Department of Anatomy, and Secretary, Anatomical Society of India, Regional Medical College, Imphal.
Symposium on Nurse and MCH Services.	October 13-14, 1989; Srinagar	Dr. M. Regu, Department of Nursing Education, Sher-I-Kashmir Institute of Medical Sciences, Srinagar.
Seminar on Surgery for Base of Skull.	October 13-14, 1989; New Delhi	Dr. S. Bahadur, Additional Professor, Department of Otorhinolaryngology, All India Institute of Medical Sciences, New Delhi.
Symposium on Respiratory Allergy and Applied Immunology.	October 14-16, 1989; Hyderabad	Dr. M. Sundaramma, Professor & Chest Physician, Osmania College and A.P. Chest Hospital, Hyderabad.
XXII Annual Convention of the Indian Dietetic Association.	October 19-20, 1989; Hyderabad	Dr. Indira Ray, Reader, Home & Social Sciences Department, Calcutta University, Calcutta.
Seminar on Acute Respiratory Infections Among Children in the Context of Primary Health Care.	October 20-22, 1989; Guwahati	Dr. A. Patowary, Director, Medical Education of Assam, and Hony. Professor & Head, Department of Social and Preventive Medicine, Gauhati Medical College, Guwahati.
Brachytherapy Workshop for Cancer Cervix.	November, 1989; Betul (M.P.)	Dr. Anand Vijay Kumar, Secretary, Paramedical Section, Christian Medical Association of India, Smruti Theatre Compound, Nagpur.
National Workshop on Advances in Flexible Fiberoptic Bronchoscopy.	November 4-5, 1989; Chandigarh	Dr. S.K. Jindal, Department of Chest Diseases, Postgraduate Institute of Medical Education and Research, Chandigarh.
All India Symposium on Biophysics of Cell Structure and Function.	November 6-8, 1989; Chandigarh.	Dr. P.C. Mangal, Chairman, Department of Biophysics, Punjab University, Chandigarh.
International Symposium on Levels of Awareness and Conscious Experiences.	November 6-9, 1989; Visakhapatnam	Prof. P.V. Krishna Rao, Director, Institute for Yoga & Consciousness, Andhra University, Vijayanagram Palace, Visakhapatnam.
Seminar on Zoonoses.	November 9-10, 1989; Dibrugarh	Dr. L.P. Datta, Director, Regional Medical Research Centre (ICMR), P.B. No.105, Dibrugarh.
National Symposium on Social and Legal Aspects for AIDS Prevention and Control.	November 9-11, 1989; New Delhi	Dr. T.R.C. Sinha, General Secretary, National Environmental Sciences Academy, Bettiah.
XVI Biennial Conference of the Indian Association of Leprologists.	November 9-12, 1989; Trichur	Dr. P. Vijay Shanker, Damien Institute, Ayyappankavu, Trichur.
Seminar on Pathology of Cardiomyopathies.	November 11, 1989; Bhubaneswar	Professor L.N. Mohapatra, Convenor, Indian Association of Pathologists and Microbiologists (Orissa Chapter) and Director, Regional Medical Research Centre (ICMR), Bhubaneswar.
Seminar on Modern Biology: Genetic Recombination.	November 19-26, 1989; Mahabaleshwar	Dr. John Barnabas, Scientist (Director's Grade), National Chemical Laboratory, Pune.
Conference on Health Care for the Villagers and Urban Slums.	November 23-25, 1989; Calcutta	Dr. Ashok Sahani, Professor & Hony. Executive Director, Indian Society of Health Administrators, 104 (13/37), Cambridge Road Cross, Ulsoor, Bangalore.

Symposium/Seminar/Workshop/ Course/Conference	Date & Place	Contact Address
National Seminar on Squint and Amblyopia.	November 25-27, 1989; New Delhi	Dr. Vimla Menon, Dr. Rajendra Prasad Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, New Delhi.
All India Symposium on Reproductive Biology and General Endocrinology.	November 26-28, 1989; Baroda	Prof. P.M. Ambedkar, Department of Zoology, M.S. University of Baroda, Baroda.
Workshop on Recent Advances in Intensive Care.	November 26-30, 1989; New Delhi	Dr. H.K. Kaul, Professor & Head, Department of Anaesthesiology, All India Institute of Medical Sciences, New Delhi.
International Conference on Structure and Functions of Biomembranes.	November 28-December 2, 1989; Calcutta	Dr. Parul Chakrabarti, Convenor, Bose Institute, 93/1, APC Road, Calcutta.
Seminar on Biochemistry and Modern Biology.	December 4-14, 1989; Lakshadweep	Prof. S.P. Modak, Convenor, Guha Research Conference, Department of Zoology, University of Poona, Pune.
Workshop on Paediatric Urological Reconstructive Surgery.	December 23-25, 1989; Chandigarh	Dr. S.K. Mitra, Professor & Head, Department of Paediatric Surgery, Postgraduate Institute of Medical Education and Research, Chandigarh.
Symposia on Cytogenetics; Plant Cell Biology; Mammalian Systems; and Microbial Systems, and Annual Meeting of the Indian Society of Cell Biology.	December 27-29, 1989; Hyderabad	Dr. M.R. Das, Deputy Director, Centre for Cellular and Molecular Biology, Hyderabad.
XXXIII All India Obstetric and Gynaecological Congress.	December 28-30, 1989; Patna	Dr. J. Mishra, Department of Obstetrics and Gynaecology, Hospital for Women, Patna Medical College, Patna.
Symposium on Current Advances in Molecular Biochemistry: Applications in Health, Environment, and Agriculture.	December 28-31, 1989; Lucknow	Dr. G.G. Sanwal, Professor and Head, Department of Biochemistry, Lucknow University, Lucknow.
III International Congress on Traditional Asian Medicine.	January 4-7, 1990; Bombay	Dr. K.M. Parikh, Chairman, Organising Committee, III International Congress on Traditional Asian Medicine, C/o Zandu Pharmaceutical Works Ltd, Dadar, Bombay.
Seminar on Indian Speech, Language and Hearing Tests—the proposed ISHA battery.	February 8-9, 1990; New Delhi	Dr. S.K. Kacker, Professor & Head, Department of Otorhinolaryngology, All India Institute of Medical Sciences, New Delhi.
National Symposium on Application of Recombinant DNA Technology in Disease Diagnosis.	March 23-25, 1989; Hyderabad	Prof. P.P. Reddy, Director, Institute of Genetics and Hospital for Genetic Diseases, Osmania University, Hyderabad.

COUNCIL'S TRAINING PROGRAMMES

Virology

At the National Institute of Virology, Pune:

- ... Short-term Course on Detection and Isolation of Arboviruses Using Mosquito Inoculation and Mosquito Cell Culture (October, 1989).

Nutrition

At the National Institute of Nutrition, Hyderabad:

- ... Annual Certificate Course in Nutrition (December 1, 1989 to February 28, 1990).

Occupational Health

At the National Institute of Occupational Health, Ahmedabad:

- ... Refresher Course for Industrial/ESIS Medical Officers (October 9-14, 1989).
- ... Training Course on Disaster Management of Hazardous Chemicals in Industry for Industrial

Physicians, Chemists, Safety Officers, Hygienists (November 6-10, 1989).

Laboratory Animal Technology

At the Laboratory Animal Information Service Centre, National Institute of Nutrition, Hyderabad:

- ... Training Course for Laboratory Animal Supervisors (September 1 to November 30, 1989).

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Depressive Disease (1986), by A. Venkoba Rao	58.00
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Unpriced Publications (for limited distribution)

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Proceedings of the Indo-UK Workshop on Leishmaniasis (1983)
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Plague Conquest and Eradication in India (1987) by S.C. Seal
Laboratory Manual for the Diagnosis of Haemophiloid Disorders (1989),
by Manorama Bhargava and Dinesh Jain

These publications are available on prepayment of cost by cheque or postal order (bank and postal charges will be extra) drawn in favour of the Director-General, Indian Council of Medical Research, New Delhi. Money orders are not acceptable. All correspondence in this regard should be addressed to the Chief, Division of Publication and Information, Indian Council of Medical Research, Post Box No.4508, Ansari Nagar, New Delhi-110029.

Some available publications of the Institute of Immunohaematology, Bombay

	Price Rs.
Techniques in Blood Banking, by H.M. Bhatia	12.00
Genetic Atlas of the Indian Tribes, by H.M. Bhatia and V.R. Rao	125.00

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ANNOUNCEMENT

The Institute of Immunohaematology, Bombay, offers training for establishment of laboratory facilities for HLA typing. Individuals interested in setting up HLA laboratory for the transplantation programme in their hospitals are requested to contact Dr. N.M. Contractor for further information before December 30, 1989:

Dr. N.M. Contractor
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