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# THE MEADOWLANDS METHOD: AN EXPERIMENT IN AN INTEGRATED CURATIVE SERVICE

S. B. SACHS, M.A., M.D., *Senior Medical Officer, Meadowlands Clinic, Baragwanath Hospital, Johannesburg*

The Transvaal Provincial Administration, faced with increasing hospital costs and continual demands for additional hospital beds involving considerable capital expenditure, decided to establish a combined clinic and district-nursing service. The initial experiment was carried out at Meadowlands, Johannesburg, where a clinic was opened in September 1957 under the control of Baragwanath Hospital.

*Meadowlands—Demography and Environment*

The residents of Meadowlands were moved from slum areas to this modern location, where all the amenities of a well-designed township have been provided. Hygiene and sanitation are of the highest order. Roads have been built, schools established, and provision made for a social centre. The population, which consists entirely of Natives, is at present (March 1959) 50,000. Building expansion is rapid and the population increase is about 1,000 per month. Eventually about 80,000 Natives will be accommodated in this area. Defined zones have been established for the main ethnic groups—Sotho, Nguni, Shangaan and Venda. Each zone is under the control of a superintendent with an administrative staff.

*The Clinic Buildings—Design and Planning*

After considerable research into the population needs and the type of service required, the National Building Research Institute provided the plans for the clinic buildings. A full description is given by Zwart.[1] The most notable innovation in design is the adoption of the principle of 'patient flow', which has prevented congestion in the clinic. The large central waiting hall of the older type of clinic has been abolished and several smaller waiting areas adjacent to each consulting room have been provided. The building occupies 12,000 square feet and has been erected at a cost of 18s. per square foot.

*The Clinic as an Integral Part of a Comprehensive Medical Service*

Unification of all health services under a single authority would be difficult to attain because of legislation which has divided the responsibility for different aspects of disease control among the central, provincial and local authorities, in addition to many voluntary organizations. The problem is a complex one, but a great step forward has been taken in the unification of curative services, as exemplified in the Meadowlands experiment, where the clinic and Baragwanath Hospital operate under the same Provincial control.

To illustrate the present organization: Patients attend the clinic for every type of ailment, yet we have no authority to treat cases of tuberculosis and infectious diseases, e.g. diphtheria. Immunizations are performed by the local authority (Peri-urban Areas Health Board) and vaccinations by the Union Health Department. Welfare administration is carried out by the Native Affairs Department and voluntary organizations are concerned with child feeding and related aspects of child care.

This division is administrative and financial, but at patient level there is no reason why complete amalgamation of all these services should not be effected. This has in fact been done at Meadowlands with most satisfactory results. For instance, there is complete liaison in regard to tuberculosis control; the local authority's staff attend the clinic every week for discussions on the cases referred by the clinic. The Union Health Department carried out a vaccination campaign with their staff operating from the clinic premises. A voluntary organization supplies food to the needy from the clinic every day. Welfare measures are instituted on the advice of the clinic personnel. In fact for all practical aspects a complete coordinated medical service operates at Meadowlands Clinic.

*The Clinic in Relation to the Hospital*

As already mentioned, the first step in coordination has been a unification of curative service by the linking of Meadowlands Clinic with Baragwanath Hospital. To extend hospital therapy to the home a district nursing service has been organized. It is thus possible to discharge patients from hospital at a much earlier date with the assurance that they will be under clinic surveillance. By this shortening of the stay in hospital bed, congestion is relieved. In addition a midwifery service has been organized. At present Baragwanath Hospital accepts all confinements, which results both in a shortage of beds and a curtailment of the period of hospitalization of maternity patients. Gradually the clinic will take over the normal cases and the hospital will be free to concentrate on abnormal cases really requiring hospitalization. To facilitate night deliveries 6-7 beds will be provided at the clinic for this purpose.

Many obvious advantages have resulted from the coordination of the curative services. X-ray and laboratory facilities have been made readily available to the clinic. The long-term follow-up methods of the clinic enable studies of disease to be made in the patient's natural environment, and the data obtained are readily available to the hospital personnel. The specialists at the hospital advise on difficult cases and when necessary visit the clinic for consultations. For instance, at Meadowlands we are perturbed by the high incidence of otitis media and hypertension, and in order to study these conditions the hospital staff visit the clinic. This has the added advantage of bringing the clinic personnel into touch with advances in medical progress.

*Meadowlands—The Effect on Hospital Admissions and Attendances*

The usual monthly in-patient admission rate to hospital is assessed at 5 per 1000 of the population. The monthly number of patients admitted to Baragwanath Hospital from the Meadowlands Clinic has never exceeded 1 per 1000 of the Meadowlands population and has even dropped to 1 per 2000. The inclusion of the patients who short-circuit the clinic and proceed direct to the hospital does not increase the monthly admission rate beyond 1·2 per 1000.

There has also been a marked decrease in the Meadowlands out-patient attendances at Baragwanath. The following is an analysis of 5,000 consecutive attendances at the paediatric out-patient department at Baragwanath Hospital.

| *Area* | *Attendances per 1,000 population* |
|---|---|
| Meadowlands | 1·8 |
| Area A | 7·0 |
| Area B | 6·0 |
| Area C | 13·0 |
| Area D | 14·0 |
| Area E | 15·0 |
| Area F | 15·2 |
| Area G | 23·4 |
| Area H | 50·1 |

In these areas, except A, E and C, a child-welfare clinic service is in operation and within easy reach of the residents. The living conditions in all the areas is similar, except in area H, where very poor conditions prevail.

*Costs*

The cost (in shillings) per patient treated at Meadowlands Clinic over a 3-month period is as follows:

| | | | |
|---|---|---|---|
| Direct costs | 5·68 | 5·13 | 5·03 |
| Indirect costs | 2·21 | 1·88 | 2·04 |
| Total | 7·89 | 7·01 | 7·07 |

The approximate attendances over a year for a population of 50,000 would be 100,000, at an annual cost of £35,000.

These unit costs, which include the provision of district-midwifery and home-nursing services, are less than the unit costs of a hospital casualty department.

*Clinic Practice*

The limiting factor for efficiency in clinic practice where large numbers of patients attend for treatment is the time available for the adequate investigation of the individual patient's complaint.

Under pressure, clinic practice sometimes deteriorates to little more than treatment of symptoms and reference of all doubtful cases to hospital. A medical officer employed in such an institution soon loses his skill for the careful assessment of clinical findings, and the patient, who often has to wait a long time for attention, is dissatisfied by the cursory nature of the examination and the general lack of attention given to his complaints. Such practice cannot produce any permanent benefit to health, and it fills the hospitals with relegated cases and thus increases the costs of health administration. The approach is in the best interests neither of the doctor nor of the patient. Unfortunately, because of pressure of work and inadequate staffing, the term 'clinic' has become associated with this form of medical practice. The time has surely arrived for a more positive attitude to the problems of ill-health in the individual and the community. The organization of the Health Centres was a progressive step in this direction, but in these institutions the emphasis was placed on promotive and preventive medicine, whereas the high incidence of disease in Native areas made it imperative that the first function should be disease control at the curative level and that promotive-preventive measures, while not neglected, should remain subsidiary to curative medicine.

In Meadowlands the positive nature of the curative work has been realized and, in order to emphasize this, the Meadowlands method aims at *health recovery* and it has been suggested that the term 'clinic' should be changed to 'health recovery centre'.

*Basic Concepts of Health Recovery*

Under prevailing conditions in a clinic, disease for the most part is regarded as episodic—a host reaction, often limited to part of the body and due to certain causality in a specific time interval. The approach to 'health recovery' is fundamentally different. It must imply 2 main concepts:

1. An assessment of the whole individual extended, under certain circumstances, to the family and the community.

2. The dynamic nature of pathology—the continual progression and retrogression of such processes due to direct and indirect causality, environment, psychosomatic host reaction, and the changes induced by therapy. The pathology is either self-limiting or extended. In the former case the time interval is limited; in the latter it is prolonged until a degree of recovery has been reached or until the methods have failed and the patient has succumbed to the disease.

## THE PRINCIPLES AND ORGANIZATION OF THE MEADOWLANDS METHOD

### Principles

Based on the above concepts there are 4 main principles of practice:

1. *Prevention of Disease at the Level of Early Diagnosis*

Separate institutions established for the early detection of such diseases as tuberculosis and cancer cause division of health services which is not in the best interest of the patient. The miniature X-ray is an example. It is employed solely for the purpose of finding early cases of tuberculosis, and other chest conditions are excluded because the authority is concerned only with tuberculosis. In Meadowlands, where the whole population is being X-rayed, we are obtaining reports on all abnormalities seen on the plates; several cases of cardiomegaly which would have remained undetected are now being investigated.

The antenatal examination, so universally accepted, is perhaps the best example of the importance of this principle, which should be extended to all fields of medical practice. Simple routine tests in conjunction with the clinical examination bring to light early diabetes, tuberculosis, syphilis, hypertension etc. Malnutrition in infants should be diagnosed not at the 'skeleton stage', but when weaning is commenced or when the mother begins work, an act associated with neglect of feeding and consequent malnutrition.

2. *Selection*

Amongst all other cases seen there is a group designated 'special cases', which are priority cases that fall into 2 categories:

(*a*) Where the diagnosis is uncertain and cannot imme-

diately be ascertained, and where, therefore, it is doubtful whether the pathology is self-limiting. Into this category would fall various symptom complexes such as cough, fever and loss of weight (possibly indicating tuberculosis), tumours —benign or malignant—obscure fevers, blood dyscrasias etc. Patients suffering from such complaints are 'listed' until the diagnosis is established.

(*b*) Certain categories of chronic cases, such as the following: Cardiovascular disease requiring prolonged therapy to prevent relapse. Children suffering from malnutrition and who require prolonged surveillance to maintain their nutrition. Any specially prevalent diseases are included in this group; otitis media is so rife in Meadowlands that about 200 cases have been 'listed' as special cases for prolonged surveillance and study.

This selection is not only of benefit to the patient, who is kept under continual control, but it is of great value in the study of disease to establish not only the present incidence, but also the changes from year to year and the influence of various therapies over a period of time.

3. *Observation over a Period of Time*

This principle bears a relation to the dynamic nature of pathology. It is part of the process of selection which will give an added impetus to research in Native medicine. At present, observations on patients are largely confined to a brief period of illness in a hospital. The ultimate prognosis of many cases is left in doubt and the true function of the patient cannot be adequately assessed unless he is observed in his own environment. What is the fate of the Native suffering from hypertension? What percentage of children suffering from otitis media will become deaf? Furthermore, the answer to a very pertinent question in this day and age can only be provided by this method of observation; viz. Will the increase of strontium-90 in the atmosphere cause a greater number of congenital deformities in future years?

4. *Health Recovery*

This implies the remedy of both direct and indirect aetiology, and the use of recognized therapeutic measures, ancillary services and welfare measures to correct as far as possible socio-economic factors. There are 3 types:

(*a*) Symptomatic—limited only to the relief of symptoms; e.g. advanced carcinoma.

(*b*) Partial—enabling the patient to enjoy a large measure of normal function; e.g. patients suffering from cardiac failure.

(*c*) Complete—the restoration of normal function.

**Organization**

*The Unit System*

The Meadowlands area is divided into geographical units of 16,000 inhabitants. Each unit is controlled by 2 medical officers who are responsible for the organization of the clinic work, the 'special cases', the antenatal and midwifery services, and the district-nursing service, in the specific area. In Meadowlands the unit areas follow the pattern of the ethnic groups, a system which enables interesting comparisons to be made between races still living at different stages of civilization. These figures apply only to Meadowlands. The size of the unit would vary in accordance with the general-practitioner services and the incidence of disease in the community.

*The Special Case*

Each medical officer keeps 2 charts for the special cases—one for doubtful and acute cases, the other for chronic cases. The first chart is divided into columns for each day of a month, the second into weekly intervals over a whole year. A series of symbols on the date indicate whether the patients have attended the clinic or not, if a home visit has to be made, and if the nurses have reported the progress of the patient. The nursing staff keep a master-record of all the medical officers' charts on a large peg-board. After a time cases can be grouped into cohorts of various diseases such as malnutrition, cardiovascular disease, otitis media, toxaemias of pregnancy, etc.

In addition to the above, the clinical cards are filed in cohorts, firstly according to ethnic grouping and secondly according to age of birth. Thus one can observe the progress of a whole group born in one specific year over a whole lifetime, provided that the population remains relatively stable. The clinical cards are also marked with a series of symbolic tags indicating specific diseases. Thus, in a matter of minutes one could abstract all congenital deformities in each racial group for each year of the existence of the clinic.

*Simplification of Clinical Examination*

A card has been devised which is separated into 3 sections. The first section deals with basic information and routine tests e.g. name, age, sex etc., weight, blood tests, blood pressure and urine. The second section covers in broad outline the patients symptoms. These two sections are completed by the nursing staff; the medical officer checks the information and enquires further into the history of the patient. The third section, for the clinical examination, covers every system of the body. Abnormalities are not detailed but are marked in red against the system affected in order to establish a systemic diagnosis, e.g. cardiovascular disease. The detailed diagnosis is expanded on the clinical card proper—perhaps at a later date if time is not available at the first examination. Under the present staffing arrangements at Meadowlands it is not possible to carry out such an extensive examination on every patient. It is being tried in the over-40 age-group and in children, but later it will be extended to cover all age-groups.

This clinical examination forms the basis of 'prevention at the level of early diagnosis'. We have many interesting examples of the most trivial symptoms revealing gross pathology; e.g. gross hypertension revealed by quite unrelated symptoms.

The antenatal clinic is run on the usual lines and all abnormalities are listed as special cases. The Provincial authorities have wisely made this preventive function part of the curative (midwifery) service. However, there is a great hiatus in the service, in that prevention is not carried out 'at the level of early diagnosis' in Native children, from birth to the age of 15 months, where there is the highest morbidity and mortality. For this reason, every child born in the district is automatically made a special case for home visiting during this period. This most important and vital application of the first principle of the Meadowlands method is the best example of clinical prevention of disease. It is truly a function of the child-welfare department of the local authority, to which, when it is established, this aspect of our work will be handed over.

*The Home-Nursing Service in Relation to Social and Environmental Factors*

Unfortunately, Native clinic practice has deviated from the type of general practice in which the doctor not only understood the individual complaints, but had a complete understanding of the family. He was well described as the family doctor. With Native patients, apart from language differences, there are many difficulties in obtaining a clear insight into the family milieu, the complicated psychological reactions of the Native to disease, and the influence of age-old customs and beliefs. Medical practice cannot fulfil itself if it neglects these aspects and, for this reason, an important function of the Native nurse, understanding the problems of her own race, is to supply the necessary information to the medical officer. Regular discussions are held, and appropriate action can be taken either through education or economically, the latter by application to the welfare authorities for grants and relief from rents in circumstances of misfortune.

For the most part, general home nursing is carried out, that is to say where it is not necessary for the patient to occupy a hospital bed and where the home conditions are satisfactory for the care of the patient. This needs no further elaboration. Where, however, socio-economic, nutritional and environmental factors present problems, and where it is no longer a question of the individual, but of the whole family, the doctor-nurse liaison is maintained, both by the discussions mentioned above and by records on a special card on which all the necessary information is recorded.

## CONCLUSION

This article describes an integrated clinic-hospital service where all related aspects of a complete health service are taken into consideration, but with the emphasis on curative medicine. The Meadowlands area is only a small part of a vast Native district of half a million residents. New clinics are being planned to provide a more comprehensive service for this population. Greater expansion can be envisaged for the promotive and preventive functions which will be under the control of the Johannesburg City Council. Preliminary discussions have indicated a unanimity of views in regard to the closest cooperation in all aspects of health administration.

It is felt that the form of practice devised at Meadowlands offers a much widened scope for the medical officers working in this institution. Under these better conditions and with the hospital liaison it is hoped that many newly qualified medical practitioners will join this service.

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## REFERENCE

1. Zwart, W. (1959): *The Design of Polyclinics and their Effect on Medical Services in Bantu Urban Areas.* Pretoria: National Building Research Institute.