SOCIETY FOR SOCIAL MEDICINE

XVI ANNUAL MEETING, SEPTEMBER 21-22, 1972

Held in the Radcliffe Infirmary, Oxford

FIRST SESSION (*Chairman: DR. ALICE STEWART*)

Some Features of Screening Programmes. M. J. GARDNER (*Medical Research Council Social Medicine Unit, London School of Hygiene and Tropical Medicine*)

It is by now well understood that the evaluation of screening programmes in terms of comparing survival time with a control group needs to take into account the 'lead time' obtained. A model was presented showing how this is important. It was shown also that cases with a long duration in the preclinical spell will be detected at screening more often than those with a short period. The effect of non-attendance and insensitivity of the screening test on the lead time and probability of detection was considered.

The desirable interval for repeated screening was discussed in relation to the proportion of cases that may be missed by entering the preclinical state and presenting clinically in the interval between two successive screens. It was demonstrated that if the detected cases are those with more slowly progressive disease a simple correction for lead time is not sufficient; some knowledge of the joint distribution of preclinical and clinical periods is clearly needed.

Study of Screening Tests for Breast Cancer. JOCELYN CHAMBERLAIN and PAULINE SEDGWICK (*Department of Public Health, London School of Hygiene and Tropical Medicine*)

A large randomized controlled trial of screening for breast cancer has recently published results¹ which indicate that, in the short term, a reduction in mortality can be achieved by screening, using both clinical examination of the breasts and x-ray mammography. If this beneficial effect is confirmed by later follow-up then a decision will have to be taken on whether to introduce this form of screening in the National Health Service.

One of the areas requiring further investigation is the validity of the screening tests, and a study of this is now being planned by the Department of Public Health in the London School of Hygiene and Tropical Medicine in association with the London Borough of Ealing Health Department and Hammersmith Hospital. Ealing Health Department already runs well-woman clinics which offer

clinical breast examination as well as cervical cytology; mammography equipment is being installed in one of these clinics situated in Greenford. During the study women over the age of 40 attending the clinic will be x-rayed as well as having two independent clinical examinations, one by a doctor and one by a nurse. The x-ray films will subsequently be read independently by two radiologists, and finally, at a weekly review meeting, all the findings will be brought together and a decision made on action to be taken. All women in whom no malignancy has been found will be asked to return for rescreening after six months and then again at one year and two years.

The study aims to describe four attributes of screening tests defined as follows:

1. False negative rate = number of cancers missed by test as a proportion of all cancers found in six months
2. False positive rate = number of women without cancer referred to breast clinic as a proportion of all women without cancer
3. Predictive value = number of cancers detected by screening as a proportion of all women referred to the breast clinic
4. Cost

Information will be obtained on these attributes for both clinical examination and mammography combined and for each separately; and a comparison will be made in these terms, of one radiologists' interpretation of mammograms with another's, and of nurses' clinical findings with those of doctors.

This study is part of a co-ordinated research programme approved by the Standing Medical Advisory Committee's Working Group on Breast Cancer Screening, whose aim is to promote investigation of the many problems which would arise in providing a national service.

¹ Venet, L., Strax, P., Venet, W., and Shapiro, S. (1971). *Cancer*, **28**, 1546.

ESR in the Community. J. M. HARGREAVES, W. E. WATERS, and P. H. N. WOOD (*Medical Research Council*)

Epidemiological Research Unit, Cardiff, and Arthritis and Rheumatism Council Field Unit for Epidemiological Investigations, Manchester)

A 'normal' erythrocyte sedimentation rate (ESR) has been suggested as a criterion for the identification of osteoarthritis (OA). This idea was examined in the 1968 Rhondda Fach follow-up survey by measuring the Westergren ESR at one hour in 520 persons (98% of individuals who were seen). A logarithmic transformation of the data satisfactorily corrected skewness of the distribution and instability of the variance, permitting comparison of means in subgroups with various characteristics. The ESR increased with age and was higher in miners than non-miners, and higher still in women. It was also higher in those who had migrated to England but was not directly correlated with social class.

Logarithmic transformation yielded a mean ESR of 8 mm/hour with a range (± 2 SD) from 2-41. The generally accepted 'normal' range (Dacie and Lewis, 1963) is 3-5 mm/hour in males and 4-7 in females, yet in 60% of men and 81% of women in the Rhondda the ESR exceeded these values. Thus the empirical 'normal' range is unsatisfactory, probably because the gradient with age was ignored. In clinical practice a value of 20 mm/hour is often used as the dividing line, and 58% of the Rhondda sample had results less than 10 and a further 27% showed values between 10 and 19. *Ante hoc* postulations that ESR would correlate with chest expansion (inversely), chronic bronchitis, other chest diseases, antibodies to pigeon droppings, and haemoglobin and haematocrit (both inversely) were confirmed, but, contrary to expectation, the ESR did not correlate with rheumatoid factor.

The records of all individuals with a value in excess of 20 mm/hour were reviewed, and the prevalence of various diseases was compared with that found in the lower ESR group. Five per cent of those with an ESR ≤ 20 mm/hour suffered from disease, whereas 29% of those in whom the ESR exceeded 20 were diseased. Notably, the ESR exceeded 20 mm/hour in almost one-third of people with OA, a reflection that OA is common, particularly in older people, and that these individuals may also suffer from other diseases. Thus to demand a 'normal' ESR as a diagnostic criterion is unrealistic.

Dacie, J. V., and Lewis, S. M. (1963). *Practical Haematology*. Churchill.

A Computer-assisted Developmental Paediatric Programme. K. CARTWRIGHT, A. H. SNAITH, and A. J. TRICKEY (County Health Department, Matlock, Derbyshire)

A computer-assisted developmental paediatric programme was implemented in the County of Derbyshire in May 1972. The objectives of the scheme are to identify all handicapped children as early as possible, to improve counselling services for mothers, to provide for close collaboration with the County Education Department in the investigation of medico-educational problems, to improve the monitoring of the child population, and to provide an information system for clinical and research

purposes. The computer has been used (1) in the management and organization of the system and (2) to improve the data processing and improve child health records.

The main characteristics of the programme are:

(1) *Timed appointments* These are sent to all children four times in the first five years of life for medical examination at the ages of 6 weeks, 10 months, 2 years, and at school entry.

(2) *The clinical examination* This has been devised with emphasis on the physical, intellectual, emotional, and social development of the child and consists of 32 individual items, all of which are recorded by the clinician.

(3) *Training* An extensive and on-going in-service training programme in the required clinical techniques has been devised in collaboration with the consultant paediatricians at Derby Children's Hospital. These clinicians have been party to all the arrangements and are responsible for the clinical training.

(4) *Additional screening tests* Certain additional tests are carried out by health visitors as part of the programme. These include tests of vision and auditory function.

(5) *Recording of data* There is both a computer record and a clerical record. The computer record consists of identification data and positive medical findings only and is held at headquarters and there is such a record for all children. The clerical record is retained for the clinician at the clinic and provides a complete record for all positive cases.

(6) *Recall system* Provision is made for additional examinations of all suspect children. Positive cases are handled outside the screening system and undergo comprehensive assessment.

It was not possible to design a screening programme which would meet the ideal requirements as recommended in the Sheldon Report 1967. Resource constraints compelled restriction of the programme to four examinations in the first five years of life. Each examination lasts 20 minutes, so that on average eight children can be seen in each session. To provide for 50,000 children in the pre-school age group, 11.3 (from an establishment of 27) doctors are required to complete the comprehensive screening programme. Some 50 general practitioners have volunteered to contribute to the system on a sessional basis (employed by the Health Department) and all will undertake the full training course. Departmental staff will therefore carry out about half the work and general practitioners the other half.

Preliminary results on the first 1,000 children invited show an attendance at clinic of 81%. Of these, 10.3% had some degree of abnormality of whom 73% have been asked to attend for further examination.

SECOND SESSION (Chairman: PROFESSOR SIR RICHARD DOLL)

Measurement of Blood Urea to assess the Prognosis of Hypertensive Pregnancies. C. W. G. REDMAN, L. J. BEILIN, J. BONNAR, and SIR RICHARD DOLL (Department of the Regius Professor of Medicine, Oxford)

During a trial of antihypertensive therapy in pregnancy, plasma urea has been measured in all participants.