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Pointers

Measles Vaccination: Second Report to the M.R.C. shows immunization with either killed vaccine followed by live vaccine or live vaccine only gave high degree of protection against measles, but that this was greater with live vaccine. It concludes that there is a strong case for using live vaccine alone (p. 449). Leader at p. 444.

Oral Contraceptives: Dr. A. Nilsson and Mr. P.-E. Almgren, from Lund University in Sweden, found more psychiatric symptoms postpartum in women taking oral contraceptives than in those using other contraceptive methods (p. 453).

Hypertrophic Obstructive Cardiomyopathy: Risk of infective endocarditis illustrated by reports of three patients with this complication (p. 455).

Oliguric Renal Failure: Hope should not be abandoned in patients with apparent irreversible glomerular disease (p. 459).

Cirrhosis: Study from Johns Hopkins Hospital in Baltimore suggests that this is commoner in people with brown hair and very light skin, and in Caucasian than in Negro people (p. 463). Leader at p. 445.

Crohn's Disease: Possible association with carcinoma of the colon (p. 466).

Lignocaine: Two reports show no haemodynamic effects in patients with myocardial infarction (pp. 468, 470).

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Gastrointestinal Helminthiasis: Diagnosis and treatment discussed by Dr. H. M. Gilles (p. 475).

Non-proprietary Names: Work of British Pharmacopoeia Commission described by Mrs. Valerie Webb (p. 484).

Drug Dependence: Containing the heroin problem and methyl amphetamine addiction discussed at conference of B.M.A.'s Psychological Medicine Group. Report at p. 486. Mortality of heroin addicts in New York City (p. 489).

Personal View: Dr. I. R. McWhinney (p. 488).

Review Body's Report: Resolutions passed by Central Committee for Hospital Medical Services, the Hospital Junior Staffs Group Council, and the G.M.S. Committee (*Supplement*, pp. 143–145).

Psychological Medicine: Report of Group Conference (*Supplement*, p. 147).

Revolution in the Laboratory

The care of patients has become increasingly dependent on laboratory investigations and as a result the work of pathology laboratories has expanded tremendously. Indeed, the average increase has been about 15% each year, and it has been calculated that the work-load will double every five years. An important aspect of this laboratory avalanche is the speed with which the outflowing information can be assembled and presented in simple but meaningful form and the ease with which the results of tests can be collated with other data on patients. The processing of all this information is becoming the bottleneck of the clinical laboratories, particularly in biochemistry and increasingly so in haematology, but it is likely that the problem will affect all branches of pathology.

The term "data processing" refers to the handling of information between the ordering of tests by clinicians and their consideration of the final report. The processes themselves are now being studied and developed to a remarkable degree. The continuing increase in work-load will affect laboratory design, staffing, and equipment, and the capacity of any data-processing system which is introduced must be sufficient to meet the expected demand and be capable of further expansion.

Recently the Association of Clinical Pathologists formed a working party to "study, evaluate, and report on systems of data processing appropriate to clinical pathology," and their report has now been published.[1] This valuable document sets out clearly and in some detail the nature of the problems and discusses ways of dealing with them. The report points out that the rate of growth in the work-load of laboratories is unlikely to diminish in the foreseeable future, and if additional screening procedures are adopted the rate of increase may become even greater. As no comparable rate of increase can be expected in laboratory staff or accommodation, efficiency in the laboratory will have to be improved by making better use of existing manpower, by simplifying procedures, and by exploiting automation to the full. Increased efficiency within the laboratory must be matched by corresponding improvements in communication between the laboratory and its users, because a large proportion of the time elapsing between the initiation of a request and receipt of the final report is liable to be spent along the lines of communication. An important requirement, therefore, is the rapid transmission of specimens, request forms, and results of tests. Greater speed and accuracy can be obtained by introducing electro-mechanical and computer techniques, and these should be used to provide comprehensive processing of almost all laboratory data. Such improvements in the existing manual systems should lessen the amount of clerical work carried out by technicians, should reduce the proportion of errors, and should lead to more rapid and informative reporting. The need to improve laboratory management and facilitate research is also stressed in the report.

In its present form much of the potential value of the results of laboratory investigations is not being realized. It is important to eliminate the

wastage due to poor presentation of data in reports and inadequate facilities for retrieving and analysing information which has been stored. The design of laboratory reports should allow a rapid and comprehensive assessment of results and their rapid retrieval from store. Though the capital cost of introducing a comprehensive automated system for processing data in laboratories will be formidable, the proper use of equipment such as computers should raise the quality of work, improve the service, and increase productivity.

Since the systems for dealing with laboratory data must be compatible with those that will be used in the future for medical records, it is important that they are not planned in isolation. The working party hopes that the Ministry of Health will set up a central advisory organization to deal with all aspects of data processing in the National Health Service and also act as a central agency for purchase of equipment in bulk and for the integration of developmental work. To ensure that all the items of information on a patient are correctly linked the report emphasizes the overriding importance of a foolproof method of identifying patients and specimens, this being a fundamental prerequisite of any system for processing laboratory data. Not only is there a need for a concise and unique way of identifying individual patients throughout the country but there is also a need for a method of transferring this information to a document such as a laboratory request form in a way which precludes error. Ideally such data should be in both visible and machine-readable form. Existing methods of output from automatic data-processing systems seem unlikely to fill laboratory requirements, and equipment is needed to operate at speeds intermediate between those of teleprinters and line-printers.

Malfunction or failure of equipment used for data processing in clinical pathology laboratories would have serious consequences. Thus the system should have built-in facilities for detecting errors and should be reliably constructed. Moreover, arrangements would still have to include a manual system to take over temporarily in an emergency.

Because of the different functions served by specialized laboratories some senior members of the laboratory will have to acquire some knowledge of systems analysis and programming in order to communicate their needs to a professional programmer. The Clinical Pathologists' report includes informative sections on systems analysis, the use of punch cards and tape, and computer programming. This requirement, as well as that of training laboratory staff in the running of automatic data-processing systems, will call for suitable training courses.

[1] Working Party of the Association of Clinical Pathologists, *J. clin. Path.*, 1968, **21**, 231–301. (Price of whole issue, Vol. 21, No. 2, 18s. 6d. net.)

Vaccination Against Measles

Early in 1964 the Measles Vaccines Committee of the Medical Research Council embarked on a series of studies to assess the value of measles vaccines for general use in children. Two schedules of vaccination were studied—a single dose of inactivated killed vaccine followed one month later by live attenuated vaccine, and live attenuated vaccine alone. The approach to the problem was systematic and cautious, and commendable for work of this kind. A small study was first made of vaccination reactions and serological responses in 299 nonimmune children 10 to 18 months old.[1] This study indicated that both schedules were acceptable procedures, though it was clear that the frequency of febrile disturbances was greater in those children who had received live vaccine alone than in those who had had in addition a preceding dose of killed vaccine. It was also shown that measles antibody was induced by both schedules in more than 95% of children but that higher antibody levels were obtained in those who had received live vaccine alone.

As a result of these findings a second study on a much larger scale was begun in the autumn of 1964 in 32 areas throughout the country. This was planned to obtain further information on the degree and frequency of vaccination reactions and also to assess the ability of the vaccines to protect against measles. More than 36,000 children in the susceptible age group of 10 to 18 months took part; about 10,000 were given live vaccine alone, 10,000 killed vaccine followed by live vaccine, and 16,000 remained unvaccinated, serving as controls. A preliminary report of the trial published in 1966[2] gave a detailed account of the reactions following vaccination. It was found, as in the earlier small study, that live vaccine alone gave more reactions than killed-and-live vaccines but that on the whole the majority of children remained well. A few cases of febrile convulsions occurred in all three groups of children, and it appeared that live vaccine was responsible for some of them when given alone but not when given after killed vaccine. The report considered that such febrile reactions were not serious in children of this age group, that there was a greater risk of convulsions from a natural attack of measles, and that in general both schedules were acceptable.

The 1966 report also gave some information on the ability of the vaccines to protect against measles, but the results covered only a relatively short period of six months following vaccination. However, the report which is published in the *B.M.J.* this week at page 449 gives much more valuable information of the immunizing potentialities of the vaccines, since it covers a follow-up period of two years nine months which includes two epidemics. This report clearly shows that both vaccination schedules induced substantial protection, which was well maintained, without any evidence of waning, throughout the whole follow-up period. During the second epidemic, for example, the case rate per 1,000 children was 19 for those who had had killed-and-live vaccines, 8 for those who had had live vaccine alone, and 179 for those who remained unvaccinated. When a more critical assessment of the degree of protection was made, based on the incidence of measles in children exposed to the disease at home, the attack rates obtained during the second epidemic were 6% for the group given killed-and-live vaccines, 2% for the group on live vaccine alone, and 82% for the unvaccinated children. In addition, it was found that when measles attacked vaccinated children it was on the average of a milder

[1] Measles Vaccine Committee of the Medical Research Council, *Brit. med. J.*, 1965, **1**, 817.
[2] Measles Vaccine Committee of the Medical Research Council, *Brit. med. J.*, 1966, **1**, 441.
[3] *Brit. med. J.*, 1968, **1**, 395.
[4] Fulginiti, V. A., Eller, J. J., Downie, A. W., and Kempe, C. H., *J. Amer. med. Ass.*, 1967, **202**, 101.