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EPIDEMIOLOGICAL RESEARCH LABORATORY

The Epidemiological Research Laboratory organises and co-ordinates field studies; these are made in co-operation with PHLS laboratories, Area Health Authorities, industrial or university medical officers, and family doctors. It has close links with the National Institute for Biological Standards and Control and the Committee on Safety of Medicines and is represented on all the DHSS and MRC committees concerned with immunisation.

The laboratory has two main fields of activity each of which requires the same type of experience and the same approach. One is the testing and monitoring of vaccines.

Testing and monitoring of vaccines

Millions of doses of vaccines are given each year in the UK and the problems they raise are of considerable practical importance. They include: the efficacy of vaccines, immediate and long-term hazards, dosage, optimum schedules, the value of each vaccine as the disease declines in prevalence, and sometimes (as in the case of influenza vaccine) the economic value to industry.

The Epidemiological Research Laboratory has been involved in most of the major trials made in the UK and is the main centre for the organisation of the field studies required. Examples are:

1. Immunoglobulin in the prevention of rubella during pregnancy.  
(British Medical Journal, 1970, 2, 497)
2. Control of hepatitis A outbreaks in the UK by immunoglobulin and its value for overseas travellers.  
(British Medical Journal, 1968, 3, 451; Lancet, 1969, i, 281)
3. Decline in efficacy of whooping cough vaccines and the consequent increase in the British potency standard.  
(British Medical Journal, 1969, 4, 329)
4. The subsequent assessment of pertussis vaccination which demonstrated both the high degree of protection for the individual and the limitations of the vaccines in eliminating whooping cough.  
(British Medical Journal, 1982, 285, 357)
5. Efficacy of measles vaccine and the subsequent demonstration of its protection long-term.  
(British Medical Journal, 1966, 1, 441; Lancet, 1977, ii, 571)
6. Efficacy and limitations of influenza vaccine.  
(Lancet, 1976, i, 105; Lancet, 1979, i, 33)
7. Seven-year study of vaccine reactions in the North West Thames Region (to be published shortly)

The second activity of the laboratory concerns the long-term consequences of infection.

### Immediate and long-term consequences of infection

The long-term possible hazards of some infections are increasingly recognised. Many of the infections concerned are uncommon and the planning, organisation and co-operation needed to collect adequate numbers and make useful studies are the same as those required for the trials already mentioned. Examples of many such studies made by the Epidemiological Research Laboratory are:-

1. The immediate consequences of EB virus infection in students and the tracing of subsequent cases of malignant disease via the Cancer Registry.  
(British Medical Journal, 1971, 4, 643)
2. The control of hepatitis B transmission in renal units.  
(British Medical Journal, 1976, 1, 1579)
3. Subsequent development of children after viral infection of the nervous system in early infancy.
4. Infections with Listeria monocytogenes; the origin of acute and chronic symptoms. (to be published soon)
5. Hazards of rubella infection at different stages of pregnancy.  
This study, in which women infected at various stages of pregnancy were followed up, illustrates three main advantages accruing from the PHLS system. First, a large number of pregnant women infected with rubella virus could be identified with complete certainty (in fact more than 1,000 were included). Second, the methods of follow-up and the specific observations required for each child could be standardised and the help of hospitals and the Area Health Authorities readily obtained. Third, the laboratory expertise needed to identify the occurrence of intra-uterine infection was available from a PHLS (Manchester) laboratory. The results (Lancet, 1982, 2, 781) have greatly increased understanding of rubella infection in pregnancy.

These studies both of vaccines and the long-term consequences of infections have the same dependence on laboratories and on the co-operation of a large number of persons, often for long periods. The Epidemiological Research Laboratory has been able to make these studies because the laboratory facilities and co-operation required are available in the PHLS, because the central position of the ERL and the reputation it has established have ensured widespread co-operation, and because the necessary expertise has been acquired by the medical, scientific and clerical staff.

The need for investigations into the efficacy and dangers of vaccines and long-term infection hazards will not decrease and there are signs that public demand for research into vital problems will become more insistent. This type of research cannot be adequately pursued without the resources of the PHLS. The Epidemiological Research Laboratory has a highly successful record, achieved with the minimum of medical staff. To ensure that the PHLS maintains its position in this important field it is essential that the laboratory, adequately staffed, should continue as a distinct entity.

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