Evaluation and selection

After all candidates have been seen I prefer that the suitability of the candidates should be discussed before looking at their references. The chairman should ask committee members if there are any candidates who should not be considered further and, if there is agreement, he should then invite a senior and experienced member of the panel to sum up the qualities of the remaining eligible candidates: after that, the other members are invited to contribute their opinions.

The chairman should then ask for the references to be read and read between the lines by the panel. (References are confidential and should not be circulated.) Some referees may be very spiteful and some give little information. (I was told that all the references given by Einstein were the same and said only "AB is in the running for a Nobel Prize.") Panel members can also give the references a numerical weighting. After the references have been read the chairman should invite one of the senior members of the panel to put the candidates in order of merit. This is then discussed in turn by each member of the panel and, if agreed, the job is finished. If there is no clear agreement, there will have to be further discussion. It is best to try to achieve unanimous agreement and it is better to make no appointment than choose a second-rater without unanimous support.

If no appointment is made the chairman may then, in some circumstances, ask for suggestions for individuals who might be approached to apply for the post; otherwise, instructions are given to readvertise it.

If one of the applicants is recommended for appointment, he is usually invited back to the committee room, congratulated by the chairman, and starting dates and so on may be briefly

discussed, but details should be left to the officers of the committee to arrange outside the committee room.

Minutes and manners

A minute of the meeting should be kept with the names of the candidates interviewed, the membership of the committee, and the result.

You should not drink tea or coffee in the middle of an interview; if need be there should be a recess and you should make sure that the candidates are also offered refreshments.

All matters of an appointments committee should be confidential, and it is often best to leave *all* papers with the committee secretary for destruction.

Epilogue

Sometimes one of the candidates with the highest "score" fails to get the job because he or she is too good or too specialised: sometimes an otherwise excellent candidate is not appointed because of lack of experience in some special requirement. In these and other special cases the regional postgraduate dean (if he is a member of the committee) or one of the consultants should informally let the unsuccessful candidate know that, although he was the committee's first choice, he failed to get the post because of some particular reason, and if this defect could be remedied he should consider applying for a similar post, then, wish him success in the future.

Eventually this series will be collected into a book and hence no reprints will be available from the authors.

Epidemiology for the Uninitiated

Outbreaks of disease

GEOFFREY ROSE, D J P BARKER

British Medical Journal, 1979, 1, 43-44

Although communicable diseases have declined in industrialised societies, outbreaks of diseases such as influenza, gastroenteritis, and hepatitis are still important causes of ill health. During the 1957-8 influenza epidemic, for example, the death rate in England and Wales was 1 per 1000 population above the seasonal average; an estimated 12 million people developed the disease; and the work load of general practitioners increased fivefold.

New kinds of epidemics have replaced communicable diseases as major causes of death. Ischaemic heart disease, lung cancer,

and traffic accidents are among conditions producing present-day "slow" epidemics. Untoward effects of new medication are a new source of epidemics; explosive outbreaks of disease have resulted from chemical contamination of food; and, from time to time, hitherto unrecognised diseases such as Lassa fever and legionnaires' disease appear in epidemic form.

Communicable disease outbreaks

In outbreaks of common communicable diseases such as gastroenteritis and hepatitis it is the clinician who must initiate the appropriate investigations. The routine for these investigations is also the model for studying non-infectious disease epidemics.

At the outset it is necessary to *verify the diagnosis*. Three patients with halothane-induced hepatitis were recently referred to one university hospital. Investigation of an outbreak of infectious hepatitis was begun, presumably because the clustering of cases gave an impression of infectivity and unduly influenced the physician's diagnosis. With some diseases—Lassa fever, for

Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine, London WC1E 7HT

GEOFFREY ROSE, DM, FRCP, professor of epidemiology

Faculty of Medicine, University of Southampton, Southampton General Hospital, Southampton SO9 4XY

D J P BARKER, PHD, MRCP, reader in clinical epidemiology

example—urgency demands that immediate action is taken on the basis of a clinical diagnosis alone. But for most diseases there is less urgency and the clinician should remember that clusters of cases of uncommon non-infectious diseases sometimes occur, by chance or for some other reason, in one place within a short time.

From time to time errors in collecting, handling, or processing laboratory specimens may cause "pseudo-epidemics." The Centre for Disease Control in Atlanta has reported several such pseudo-epidemics. In one, an apparent outbreak of typhoid occurred when specimen contamination produced blood cultures positive for *Salmonella typhi* in six patients.

If a disease is endemic (habitually present in a community) it is necessary to estimate its previous frequency and thereby confirm an increase in incidence above the normal endemic level. Pseudo-epidemics may arise from sudden increases in doctors' or patients' awareness of a disease, or from changes in the organisation of a doctor's practice. When the endemic level has been defined from incidences over previous weeks, months, or years the rate of increase of incidence above this level may indicate whether the epidemic is contagious or has arisen from a point source. In the former there is a slow rise, whereas point-source epidemics, such as occur when many people are exposed more or less simultaneously to a source of pathogenic organisms, arise abruptly.

To build up a description of an epidemic it will be necessary to take case histories to identify the characteristics of the patients. Patients who are notified or otherwise recorded are often only a proportion of those with the disease, and additional cases must be sought. Thereafter it is necessary to define the population at risk, and relate the cases to this. This will require mapping of the geographical extent of the epidemic.

Defining the population at risk enables the extent and severity of the epidemic to be expressed in terms of attack rates—which may be given either as crude rates, relating the number of cases to the total population, or as age-sex specific rates. It may be possible to identify an experience that is common to those affected by the disease but not shared by those not affected; and, from this, an hypothesis as to the source and spread of the epidemic may be formulated.

Modern epidemics

There are several examples of large-scale epidemics due to chemical contaminants. Outbreaks of mercury poisoning, with resulting deaths and permanent neurological disability, have been reported from several non-industrial countries as a result of ingestion of flour and wheat seed treated with methyl and ethyl-mercury compounds. In Morocco an outbreak of peripheral neuritis resulted from ingestion of orthocresyl phosphate—a lubricating oil for aircraft engines which had been sold as olive oil. Such incidents arise from misuse and careless handling of the products of Western technology.

Widespread environmental contamination is a new agent of epidemic disease. At Minamata in Japan 46 people died as a result of eating fish containing high concentrations of methyl mercury. This was traced to pollution of the waters of Minamata Bay by release of methyl-mercury compounds from nearby plastics factories. In 1973 a fire-retardant chemical, polybrominated biphenyl, was inadvertently mixed with farm feed. The resulting contaminated meat and dairy products led to most of Michigan's nine million citizens having detectable concentrations of the chemical in their blood. The effects on their health are not yet known.

Increasing recognition of environmental hazards due to substances introduced by man into his environment, as a result of the application of new technology, has led to a demand for large-scale monitoring systems based on automated record linkage. Whether or not such systems come into operation, clinicians' awareness of changes in disease frequency or of the appearance of clusters of unusual cases will continue to be crucial to the

early detection of new epidemics. In the early detection of epidemics due to medication, clinicians have a special responsibility. The rise in mortality among asthmatics due to pressurised aerosols, and the occurrence of corneal damage, rashes, and various other adverse effects of practolol are two of many examples of epidemics resulting from prescription of new drugs.

New diseases

New diseases continue to appear. Outbreaks of Lassa fever and legionnaires' disease are examples which have recently attracted widespread publicity. The name legionnaires' disease was given to an outbreak of pneumonia at a convention of American Legionnaires in Philadelphia in 1976. There were 29 deaths. This stimulated an intensive epidemiological investigation whose successful outcome was identification of a Gram-negative bacillus as the causative agent. Investigations of this kind are an exciting and dramatic application of epidemiology.

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A 60-year-old man in good health was treated with Fowler's solution for over a year when in his early 20s. During the past year he has developed three small areas of hyperkeratosis on the palmar surfaces of his fingers, and needed treatment for a rodent ulcer. How greatly increased is the risk of him developing malignant disease, and where? Should he have any investigations done at intervals in an attempt to diagnose a tumour at an early stage; if so, what investigations and how often?

Fowler's solution has been incriminated in the development of cancer of the skin,¹ lung,² and haemangioendothelioma of liver.³ The incidence of the last two may be little more than coincidence but fits in with the data obtained with retrospective studies and correlation studies in people who work with arsenic. Fowler's solution is potassium arsenite and was in vogue some years ago for treating various skin conditions, such as psoriasis. There is no real doubt that there is a considerable increase in the frequency of subsequent hyperkeratosis and carcinoma of the skin in patients treated up to 40 years previously in this way. The relative risk factor is about three, but this figure has been derived from all the data on arsenic exposure and it includes occupational studies.⁴ This patient should have regular examination of the skin with particular detail to the areas of hyperkeratosis already noted and, in addition, probably an annual chest radiograph. A recent study of 140 patients exposed to arsenic showed a 44% incidence of premalignant keratosis, 12% incidence of malignant skin conditions with a latent period of 21-47 years, and concluded strongly that the drug should not be used.⁵

¹ International Agency for Research on Cancer, *Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man*, vol 2. IARC, Lyon, 1973.

² Lee, A. M., and Fraumeni, J. F., *Journal of the National Cancer Institute*, 1969, **42**, 1045.

³ Regelson, W., et al, *Cancer*, 1968, **21**, 514.

⁴ Higginson, J., in *Cancer Aetiology and Prevention in Persons at High Risk of Cancer*, ed J. F. Fraumeni. New York, Academic Press, 1975.

⁵ Evans, S., *British Journal of Dermatology*, 1977, **97**, 13.

Is it possible to differentiate between the hysterical and organic causes of spasmodic torticollis by electrophoresis of the serum proteins in the cerebrospinal fluid?

The differentiation of hysterical from organic torticollis is very much a matter of clinical opinion and judgment. The various cerebrospinal fluid proteins and immunoglobulins do not help to differentiate the two groups, nor unfortunately is there any other laboratory test which helps to resolve this difficult dilemma. Most cases are probably organic representing a fragment of torsion dystonia. Psychogenic factors are, however, commonly prominent in both groups. Formal assessments of psychotherapy have generally given disappointing results, but undoubtedly in the individual case sympathetic management and attempts to reduce the level of anxiety can help. In older age groups an organic cause is likely, and the need for other forms of physical treatment¹ depend on the severity of the condition and its rate of progression.

¹ *British Medical Journal*, 1978, **2**, 786.