Importance attached to selected topics by general practitioners compared with their coverage in letters from hospital

	No (%) of general practitioners grading topic as essential (n = 73)	No (%) of letters adequately covering topic (n = 68)
Technical topics:		
Diagnosis	71 (97)	68 (100)
Stage of disease	66 (90)	68 (100)
Details of drugs used in chemotherapy	60 (82)	68 (100)
Details of surgery	57 (78)	68 (100)
Details of investigations	56 (77)	68 (100)
Details of radiotherapy	50 (69)	68 (100)
Details of chemotherapy doses	49 (68)	61 (89)
Details of potential side effects	30 (41)	3 (5)
Social topics:		
What patient has been told about his disease	62 (85)	12 (18)
Prognosis given to patient	59 (81)	7 (10)
What relatives have been told about the disease	47 (64)	5 (7)
What patient has been told about his treatment	43 (59)	9 (13)
Advice given to patient on when to contact hospital	31 (43)	7 (10)
Family problems relevant to management	30 (42)	

non-specialist clinicians are likely to know of the major toxic effects, few are likely to have a detailed knowledge of these potentially important problems. Only three (5%) of the hospital letters, however, devoted space to this topic. The social topics rated as most important by general practitioners—namely,

whether the patient knew the diagnosis or prognosis—were covered by this hospital as badly as other social topics that had been less highly rated. It is a common experience, unfortunately, that hospital notes rarely mention whether the diagnosis or prognosis has been discussed with the patient. The data from this type of hospital unit are likely to be representative of similar highly specialised hospital departments.³ Routine hospital summaries and letters contain nearly all the technical information needed by general practitioners but should also include a section covering what patients have been told of their illness and its prognosis as well as any other relevant social factors. Such an innovation would not only help general practitioners; it might also focus attention on the patient's social and emotional needs while he is in hospital.

We thank the general practitioners in the Wessex region who took the time to complete the questionnaire used in this study.

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(Accepted 22 March 1984)

Appropriate Technology

Epidemiology and research at low cost

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At first sight it would seem that both research and epidemiology are high technology, high cost activities carried out by highly qualified specialists with nothing else to do except punch buttons on computers or organise well trained scientists working in well equipped laboratories. This is not so, for good epidemiological data should be the basis for all health planning from national to district level, and the more scanty the resources the more accurate the decisions must be. The data needed by the district medical officer for day to day decisions in planning the number of beds in a health centre or determining the size of a new hospital are also the bricks and mortar of the nation's statistics. The morbidity figures reported in the dispensaries make up the country's health statistics. Hence inaccurate, deficient, or out of date figures at district level may lead to poor planning and a distorted picture of the overall health problems of the country.

This article aims at encouraging those at the periphery of the health network to improve their methods of collecting data and embark on the vital basic research that only they can do. These tasks are not optional extras: they should be priorities in the schedule of every district medical officer.

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Establishing a baseline

One of the great difficulties in working in developing countries, especially as a newcomer to a remote district, is the lack of a baseline. What is normal? Values may vary among ethnic groups, among neighbouring districts, or even among villages as little as 30 or 40 miles apart. In one district in which I worked the serum protein concentrations showed a wide variation among four centres of population, and all these concentrations were higher than those in adjoining districts and tribes.¹ Disease prevalence may vary with altitude and climate and be profoundly influenced by the local customs and way of life. This was so noticeable in one district that it was virtually possible to predict the patient's home area from his symptoms.² Attendances may vary from month to month according to the season and are often dictated far more by social, geographic, and agricultural factors than purely medical ones. The district medical officer must find and record these idiosyncrasies and interpret the regional statistics against this background, for without this interpretation a misleading picture may be drawn. For example, in one tribe the incidence of tapeworm in men was about four times that in the women. Many years elapsed before we found that the people believed that possession of a tapeworm increased the chances of pregnancy. The picture was spurious for the actual incidence was the same, but the women did not come for treatment.

FIG 2—In remote areas estimates of population may be aided by taking aerial photographs and counting the number of houses.

Chiefs, elders, and administrative officers are likely to be good sources of local knowledge and will probably be able to list the main families in an area. Schoolchildren may also be able to give the numbers in their households and identify the blind and paralysed people confined to the houses.

Research

Collection of basic data inevitably uncovers problems and eventually leads to simple research. Much tremendously useful work may be done by the district medical officer, either in collaboration with a central laboratory or by using existing laboratory facilities and simple tests. Most of these tests would be carried out routinely for diagnostic purposes in any case, but as results accumulate and records are brought together valuable information is found and a general picture begins to emerge. For instance, the splenomegaly that has now been proved to exist and to be a major problem as a result of the tally survey may be investigated further. Perhaps three quarters of all children under 5 have large spleens and half of the adults as well. The routine tests have shown that malaria, kala azar, and brucellosis exist, although the prevalence of each is not known. The district medical officer may make an attempt to solve this problem by collating the clinical tests and making sure that a simple protocol is adhered to in every case.

For instance, a directive is issued to all staff interviewing and treating patients:

"Please refer all patients with grade 2 or 3 spleens to the district medical officer or take a coagulated and non-coagulated blood sample from each case and send to the laboratory."

The laboratory will carry out the following tests on every

sample: haemoglobin, white cell count, thin and thick blood slide, formol gel, brucella rapid slide test. Spleen punctures or marrow biopsy may be carried out in some cases as a second stage and if possible the results of treatment collated with the results.

The results are then sufficient for a firm report to be sent to the ministry of health and a collaborative survey to be undertaken with the vets or vector borne diseases units and above all for a rational scheme of treatment to be carried out by local staff.

The classic example of the way in which simple mapping of the occurrence of a condition may lead to the recognition of a new disease must surely be the investigation of African lymphoma by Dennis Burkitt. He observed the correlation between the number of cases and the altitude, and then the distribution of the *Anopheles* mosquito and malaria. Further research linked the tumour with the Epstein-Barr virus and unravelled the immunological relation with malaria, while he and other workers were able to carry out work on the histological appearance of the tumour and methods of treatment.^{5 6}

The key to low cost and low technology research is to pick subjects that depend on the observation or occurrence in a specific locality, backed up by very simple tests. It is particularly important to link this type of research to local knowledge. Two examples might be cited. Firstly, the apparently unique occurrence of procidentia in young women of low parity. This was tackled by sending a simple questionnaire to about 50 neighbouring hospitals, asking about female circumcision, the ethnic population served, and whether prolapse of the uterus occurred. It seemed, when all this information was returned, that the problem was unique to the district and was due to the custom of the local midwives to press hard on the fundus in early labour.⁷ The second problem was the occurrence of a severe arthritis, in one area, affecting hip, knee, and spine. This was solved by carrying out a survey using the rose bengal slide agglutination test for brucellosis, when about 38% of the tested cases were found to be positive each year. This investigation was repeated in other areas, when constant figures were again obtained.⁷

Merely keeping a register of certain conditions will lead to valuable information being recorded. Certainly every hospital should have a cancer register, and, while it might prove impossible for a district medical officer to carry out complete tests on thyroid function, all known cases of goitre may be recorded and mapped so that a future research worker may have months of time saved.

In summary collect, record, and report the facts and findings from your district—what may be familiar and commonplace to you may be rare and interesting to someone else. Carry out your own bits of research as far as you can go, for it is very likely that you may supply the very information that the high technology scientist lacks.

The Makerere team, in Uganda, in the 1960s enlisted the cooperation of all the peripheral hospitals in the investigation of the tropical splenomegaly syndrome; surely this is how research should be done with low cost intermediate technology paving the way, or working in conjunction with the university team.

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