

Community practice

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Notwithstanding the burden of being the first non-general practitioner to give the Pickles Lecture, it is an especial pleasure for me to be here since there is no one who did more for the founding Scottish Postgraduate Council than our Dr E. V. Kuenssberg. Secondly, Dr A. L. T. Beddoe, Provost of the South-West England Faculty, was the senior partner of the practice in which I undertook my traineeship, and I owe him much for the firm foundations of practice that I learnt from him: his innate skills, perpetual kindness to his patients, and masterly managerial ability I shall not forget. Thirdly, I attended the medical school in this faculty's bailiwick, and as President of the Medical Students' Society had the unforgettable experience of introducing Will Pickles to the Society, and the view I have of general practice derives from that occasion. Finally, my association with the College started in the South-West Faculty, and indeed I was once invited to become a member of the faculty board.

I do not know if there is any significance in the timing of these addresses for the eleventh hour of a Sunday morning! However, on re-reading previous addresses I find it has been customary for the speaker to open by quoting a text from the epistle to Will Pickles from the testament of John Pemberton (1970). This is not in any way surprising since his *Life of a Country Doctor* is a sensitive tribute to a man he clearly loved and admired, and it is a rich source of information. I have, therefore, no hesitation in conforming, taking my text from pages 20 to 21, where Professor Pemberton says it was "not uncommon . . . for general practitioners to be appointed part-time medical officers of health for remote rural districts. Will held such an appointment for Aysgarth rural district for many years, and this may have been one of the reasons why he turned his attention to the epidemiology of infectious diseases. On several occasions the words 'Medical Officer of Health, Aysgarth Rural District' appeared after his name as author of an article, and one feels he was proud to hold this modest position in the Public Health Service."

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Definition of community medicine

Alas, the medical officer of health is no more, a casualty of the reorganization of the NHS, and the health of the public has now been entrusted to the specialist in community medicine. This term was given prominence by the Royal Commission on Medical Education (1968), which used it to describe "the specialty practised by epidemiologists and by administrators of medical services . . . it is concerned not with the treatment of individual patients but with the broad questions of health and disease in, for example, particular geographical and occupational sections of the community and in the community at large." The Royal Commission stressed that community medicine uses "a variety of techniques and procedures which are not necessarily exclusive to it", and it is its application to general practice which I propose to consider in this lecture.

Responding to the Royal Commission's plea for a professional body to bring together all the interests, both academic and service, the Royal Colleges of Physicians of the UK formed a Faculty of Community Medicine in 1972 in order to develop training, to set standards for practice, and to advance knowledge in the field of community medicine. Community medicine is described by the Faculty as "the study of the distribution of mortality and morbidity in the community, the determination of the needs for preventive and medical care services, and the allocation of health service resources to meet those needs." The core knowledge required for membership of the Faculty includes epidemiology, statistics, the social sciences in relation to community medicine, and the principles of administration and management. These subjects provide appropriate headings under which to discuss community medicine.

Epidemiology in practice

Epidemiology is the study of factors which determine the frequency and distribution of diseases in human populations. At one time the term was used to describe that branch of medical science which treats epidemics of communicable disease, but it is now widely accepted as a science that deals with the incidence, distribution, and

control of any disease in a population; in other words epidemiology includes all diseases, whether acute or chronic, physical or mental, communicable or non-communicable. The aims of epidemiology are to determine the distribution of disease in a particular population, to provide information for the planning, organization and evaluation of services for the prevention, control, and treatment of disease, and to seek causes of disease in that population. Hence its practice requires the measurement of the healthy and pathological characteristics of populations, using a wide variety of observations; and because it is concerned with the reliability of information and measurements it is dependent on a variety of statistical methods.

Careful observation by alert and inquisitive doctors, and the association of such observations with those of other doctors, lies at the root of epidemiology. Extending the observations of one doctor to many increases the chance of association; so the recording of information and its dissemination greatly enlarges our fund of knowledge. Much of our understanding of the distribution and causes of illness in communities is derived from the registration of certain events and their classification into groups with constant characteristics; as far back as the seventeenth century, the tradesman John Graunt was able to draw inferences about mortality and fertility from the records of mortality kept by some parish clerks (Glass, 1963). Regrettably, progress towards the national registration of births and deaths was slow, the General Register Office not being established until 1837 (Greenwood, 1948), but this made possible John Snow's important work on cholera (1849) and William Farr's epidemiological inferences on the lethal nature of some urban living conditions and of some occupations (Farr, 1885).

Epidemiologists are not just concerned with the spread of disease in populations or the effects of various environmental conditions; they are constantly searching for better definition of human problems and their diagnosis. Typhoid fever would not have been differentiated from typhus without careful observation and the grouping of characteristics. Such discoveries have made contributions of enormous importance to improvements in health by hygienic measures introduced by sanitary reform. In today's industrial society our problems have moved away from the acute illness due to a single, specific cause to the complexities of chronic diseases and disability. Here, definition and classification are no less important, not only in the search for causes, such as the association between malignant disease and exposure to certain industrial conditions, or pneumoconiosis among coal workers, but in understanding the nature and associations of such conditions as rheumatoid arthritis, migraine, or complex states broadly described as 'psychoses' (Acheson, 1971).

Contributions from general practice

The contributions of general practitioners to original observation are profoundly important. William Budd's

studies of typhoid and his inference that it was a communicable disease (Budd, 1873) preceded by about 40 years the discovery of the typhoid bacillus. The doctor we honour today was renowned for his meticulous observations and careful note-taking which revealed such new knowledge as the incubation period of infectious hepatitis and the characteristics of the previously undiagnosed epidemic myalgia (Pickles, 1939). However, as Karl Popper (1963) has pointed out, observation alone is not enough; it must be within the framework of some theory. "The belief that science proceeds from observation to theory is still so widely and so firmly held that my denial of it is often met with incredulity . . . but in fact the belief that we can start with pure observations alone, without anything in the nature of a theory is absurd . . . observation is always selective. It needs a chosen object, a definite task, an interest, a point of view, a problem. And its description presupposes a descriptive language, with property words; it presupposes similarity in classification, which in its turn presupposes interests, points of view, and problems." This means "that observations, and even more so observation statements and statements of experimental results, are always interpretations of the facts observed; that they are interpretations in the light of theories" (Popper, 1959). ". . . these observations, in their turn, presuppose the adoption of a frame of reference: a frame of expectations: a frame of theories. If they were significant, if they created a need for explanation and thus gave rise to the invention of a hypothesis, it was because they could not be explained within the old theoretical framework, the old horizon of expectations. There is no danger here of an infinite regress. Going back to more and more primitive theories and myths we shall in the end find unconscious, inborn expectations" (Popper, 1963).

This frame of reference is acquired in the formal processes of education and in an individual's own lifetime experience. The general practitioner is uniquely placed to study the ebb and flow of ill health as it is presented to him in his practice population, but his understanding of the human problems that he encounters is enormously enhanced if he shares that experience with the profession at large.

Such experience must be expressed in clear terms; the basic language of medicine taught in medical schools is refined and extended in whatever field of practice a doctor specializes. Increasing specialization incurs the risk of a diminishing common language. The extent to which one general practitioner may encounter a particular disease process, which may be familiar to a hospital specialist, varies, of course, with the prevalence of that disease (Fry, 1966).

The acute hospital has become in recent times the power house for the investigation and treatment of serious and life-threatening disease processes, and from its concentrated experience much is being discovered and remains to be revealed about human pathology. Important though it is, such experience overlaps only a

fraction of a general practitioner's field of medical work; further, the range and extent of human morbidity relating to known and often remediable conditions is much greater than is revealed to general practitioners (Logan, 1963). Estimating its extent is complicated by problems of definition and classification; the information derived from household surveys and health diaries is expressed in layman's language from which it is not easy to derive estimates of its medical significance. Patients' views of the relative importance of their symptoms vary significantly from those of doctors with their medical insights and knowledge.

Nor can an event in a patient's life which interferes with his normal social activities readily be classified as a 'medical' problem. "Medicine is now being called upon to deal with problems which were once considered moral rather than medical issues—for example, alcoholism, drug addiction, crime, marital disharmony, behaviour disorders, and fertility control" (Jefferys, 1970). This reveals the limitation of present methods of 'disease' classification, and to attempt to slot a patient into a numbered place on a list of known diagnoses is not only descriptively inadequate but can be positively inhibitory to a proper understanding of a patient's underlying problems. This nevertheless presents a new challenge to the epidemiologist, who will demand and seek precise definitions and employ tools of measurement which may as yet be unfamiliar in clinical practice.

Statistics in practice

Valuable though mortality statistics have been and continue to be as crude indicators of disease in the community and of the variations they reveal between different occupational and social groups, they have limited use in the search for causal and preventive factors. Morbidity statistics are far less easy to collect and analyze; an incident of illness may occur in the same person on several occasions in his lifetime, its duration and severity also varying, and a particular diagnosis may have different significance for different individuals and/or age groups. Morbidity may concern the number of individuals who suffer from some types of illness, the number of incidents that occur and the duration of these illnesses. Other statistics in the health field relate to the use of services, notably in hospitals, such as the duration of stay in hospital beds, the number of inpatients and outpatients, and the number of drugs prescribed, but these structural statistics give little indication of any improvements in health brought about by these services, or of the severity of different illnesses. Both Professor Cochrane (1971) and Professor McKeown (1970) in their Rock Carling Lectures were critical of the effectiveness of personal medical care, and advanced sound arguments for the better use of resources. However, except in the treatment of some communicable diseases, neither was able to suggest how the outcome of services given by doctors and nurses could be expressed in terms other than the

prolongation of life. The present vogue for assessing the quality of medical care by the analysis of the processes of diagnostic investigations and therapeutic interventions—which now have the power of law in the US (Decker and Bonner, 1973)—has diverted attention from the search for improved measures of outcome.

Ferguson and McPhail (1954) in follow-up studies of 705 male patients discharged from acute medical wards showed that after two years a significant proportion were still far from well or had gone downhill since leaving hospital. Many had not worked regularly since that time. That was over 20 years ago. Blaxter (1976), in a recent pilot study in Aberdeen, has confirmed that in spite of the expansion of various social services the problems of patients discharged from hospital remain numerous and complex. She says that "categorizations of eligibility for services multiply, and the medical profession is—sometimes unwillingly—increasingly involved in defining social as well as medical 'need'. The close enquiry into the details of the lives of 194 people suggested that, in these circumstances, the people who may be the most vulnerable are those with multiple, complex, or ill-defined conditions, who cannot be clearly fitted into categorizations available."

It would be highly desirable if an indicator, or set of indicators, could be devised which measured and gave weight to varying states of health and social competency. Barr's (1964) work in categorizing patients into care groups by their dependency upon nursing skills is an important contribution in this field, and the problem orientated medical record (Weed, 1969) is potentially a mechanism for formalizing the assessment of patients and ordering priorities for their care. This is, of course, what good doctors do instinctively; a perceptive clinician knows a great deal about a patient from his general observation of him—his demeanour, the reactions of his family and his home background—but he does not always realize that he 'knows' it. Although he makes use of his observations in coming to decisions on how to manage a patient's illness, it does not necessarily become clear in a record, and efforts to formalize this knowledge, quite apart from the labour involved, can readily distort the picture.

How too can the "sixth sense" of a doctor, so eloquently described by Browne and Freeling (1976), be conveyed from the consultation to pen and paper? How can the doctor's judgements on degrees of severity of an illness and a patient's individual reaction to it be given some measurable quality? Reliance upon the use of numbers has been the hallmark of many advances in science, yet a numerate approach to clinical decision-taking is often dismissed as too simplistic, and it is thought such judgements can be expressed only in words and quantified by adjectives.

The statistician Lindley (1975) says, "it is usual for the doctor to have before him 40 or more separate pieces of information on which to base his diagnosis. It is beyond the power of anyone to absorb all that information and act on it in a sensible way without

some technical assistance. Typically, part of the information is selected—often a very small part—and only that is used. But how is this selection to be made?" It is here that statistical techniques can help, because that is exactly what they are for—to process data so that specific conclusions (or diagnoses) can be made in a reliable way. At the moment diagnosis relies heavily upon the experience and skill of the individual doctor who stores and processes his own data. Statistical methods can not only assist him in this selective process; they provide the means of comparing his decision-making with that of many other doctors in the light of the outcome of their previous decisions. This is no slippery slope down the path to medical automatism; it provides a framework within which the individual doctor interprets the needs of the individual patient; it improves and enhances the quality of the information on which the doctor makes his decisions.

Sociology in practice

Greater precision in clinical decisions is partly due to advances in the diagnostic and therapeutic techniques in this century. However, the shift today from specific therapy for a single cause of illness to problems of complex aetiology in some respects seems a return to the medicine of the nineteenth century, when the practice of medicine encompassed many concepts which today would be regarded as within the social sciences. Effective remedies for specific diseases were then few, and the relationship between doctor and patient such that his commonsense advice was largely acceptable.

Changes in the nature of society and of human relationships have made it more hazardous today for the doctor to depend on commonsense experience for an understanding of the human context of disease. Such changes make a convergence of the medical and social sciences all the more important. These include the sociology of illness and illness behaviour, recognizing the wide variety of reaction which individuals have to identical pathology and their different response to therapies and preventive measures. Hence the need for doctors to understand the nature of the sick role as well as the relationship between illness behaviour and a patient's cultural background. It is part of community medicine to recognize that there is a socially conditioned selective process which can affect what is presented for medical treatment. In practice, there is a need to look for utilitarian aspects of the social sciences and not simply to regard them as vague generalizations or repositories of data.

Many of the characteristics of communities are revealed by the census. This includes the age structure of the population; its distribution in terms of occupations and broad socio-economic classes; population stability; patterns of housing and family size, and indirect estimates of levels of deprivation. From such information hypotheses can be formed about prevailing patterns of behaviour and attitudes in different areas, but such conclusions can be drawn only in broad terms;

the quantitative census data have to be supplemented by more qualitative judgements.

Indices of social class were first shown in British census data in 1911, when five social classes were identified; this was originally intended to be socio-economic ranking of occupations. Social class gradients have been of great epidemiological and sociological importance, since a different incidence of disease is found to be associated with various socio-economic groups, and different health practices (use of services and methods of infant feeding) also correlate with social class (Hart, 1971). However, subjective class consciousness can cause many ambiguities as classifications are not clear-cut—and the increase in professional and technical occupations in industrial societies has complicated the occupational structure. Nevertheless, people of similar occupation and income tend to have common experiences and modes of life (Susser & Watson, 1971).

Preventive medicine brought about major improvements in the control of communicable diseases and maternal and perinatal mortality. Today, epidemiological evidence suggests that the scope in industrial societies for reducing mortality by preventive measures through traditional medical methods is small in comparison with the need to effect change in human behaviour: for example, eating, drinking and smoking habits, physical activity, and personal hygiene. It is a common fallacy among some health educationists that the public will respond to rational explanations of the need to change personal habits in the interests of better health. Complex factors are involved which social science has an important role in investigating by trying to unravel the subjective meanings of underlying behaviour, its relationship to cultural rituals, and exploring alternative strategies of behaviour and attitude modification. Varied response to presymptomatic screening by different social groupings is another important field of sociological investigation (Martin, 1970).

As the pattern of sickness in industrial societies shifts towards degenerative disease and its consequent disabilities, new insight is needed into the implications for patients of employment, income, family life, and attitudes of friends and relatives, particularly where mental illness or handicap is involved. Sociology can provide insight into some of these problems as they affect the role of the doctor and his association with others in the health field. This is part of community medicine because of its implications for the planning and organization of services—not only those for the chronically ill and disabled, but the whole pattern of services needed in the face of changing morbidity.

Management in practice

The organization of health services with which community medicine is intimately concerned must be seen from the point of view of those who work in the service as well as from that of the patient. Behavioural sciences

provide some insight into the ways in which individuals respond within an organization, the nature of various interrelationships, modes of communication, and methods of team work in consensus management. The effect of various organizations on patient behaviour and response has been investigated by Revans (1964) but requires further research in depth.

The growth of scientific and technical knowledge and the increasing size of organizations has led to the realization that 'management' is a necessary skill and a discipline for which there is a body of knowledge which can be taught. The earliest developments in management theory were concerned with management as a 'process', or a way of getting things done by people operating in organized groups. This was based on the idea of a properly designated organization with clear definition of tasks at each level of authority within a pyramid of superior/subordinate relationships, and with obedience to authority as the integrating force.

Reactions against this school came both from developments in social sciences and from management theorists looking at the effects of industrial conditions on people's social and emotional lives. Assertions that social, democratic, and participative management was not only more human and socially healthy but also more productive led to the 'participative' school of management, and a variety of other theories have been propounded which lay different emphasis on the motivation of individuals working within organizations and on other socio-emotional factors. In an organization as dependent upon people as the Health Service, especially one in which single profit-motivated objectives (as in industry and private business) are absent, the management of personnel is of the utmost importance. The individuals involved have a wide variety of social and economic positions, personal needs, and opportunities for development. Such matters have to be taken into account, so far as they are understood, in deciding manpower policies including strategic planning, which is essential to balance supply and demand in a national service which has a monopoly of a wide variety of technical skills. Within the organization, different levels of responsibility have to be fully recognized. Responsibility implies freedom to form judgements in relation to various alternatives and to act in accordance with these judgements. An individual must not only be capable of forming judgements, he must have the opportunity and incentive to act upon them.

Where the affective and cognitive elements are dissociated there is a corresponding restriction of freedom. Responsibility and freedom are correlated: as there are degrees of freedom, so there are degrees of responsibility (Cherrington, 1971). Awareness of such factors is of major importance in the organization of any enterprise and its management structure, not only by those with specific, identified managerial responsibilities, but by all who work within it. This is particularly true in an organization as complex as the NHS.

All doctors have a managerial role in the sense that the decisions they take affect the people with whom they work and the use of resources. With the growth of professional interdependence and increasing economic constraint such managerial roles need to be recognized, and the science of management, such as it is, comprehended. There is no doubt that its adoption in training programmes for many who work in the Health Service has given them a confidence and authority which is often resented by the medical profession. It is surely preferable to seek mutual understanding, if not agreement, about the respective roles of different individuals within the organization than to adopt an extreme and intransigent position.

The practice of community medicine

I have referred to community medicine as a discipline of medicine rather than a particular field of practice, for it pervades all that doctors do. This may be easier for clinicians to accept with regard to certain aspects of the Faculty of Community Medicine's definition. Indeed, it has been suggested by some academics that there should be a distinct dividing line between epidemiology and the organization of medical services. However, whereas there may be scope for the practice of pure epidemiology, the organization of medical care should not be allowed to revert to the empiricism of the old style medical administration with no other basis for action than the expediency of the moment. The importance of epidemiology for the daily work of clinicians is increasingly being recognized. Frustrated by the limitations of biological research in such disease processes as atheroma and cancer, clinicians are recognizing the contribution of epidemiology in determining the factors which influence the prevalence of such diseases. As Professor Morris (1964) has said, epidemiology helps "to complete the clinical picture and to clarify the natural history of disease. Furthermore, epidemiology supplements the clinical picture by asking questions that cannot be asked in clinical medicine; it provides a different view of the world of medicine. Clinical problems are set in community perspective, the physician's experience can be compared with the health of the population. Group regularities that are established will help to explain the individual instance, or draw attention to its peculiarity." Epidemiology sheds new light on clinical problems and provides the context for the care of individual patients. General practitioners in particular are conscious that medicine is a social science as well as human biology, and epidemiology is the main method of studying the social aspects of health and disease.

The epidemiologist's role is to provide skill in the analysis of information and in testing its reliability, but his services clearly depend heavily upon the supply of information from clinicians, particularly where morbidity studies are concerned. Techniques of recording and the provision of data naturally fall within the range of work of the epidemiologist *qua* community medicine

specialist, and it is essential for his field of work to include all medical information sources relating to a given community. It is really extraordinary that after nearly 30 years the NHS has yet to establish a unified medical information service and that the walls of institutions still impede the free movement of information relating to individual patients. It was in 1920 that the Dawson Committee recommended a unified system of records of illness based on card indices. With today's data-processing facilities there is no practical reason why the linkage of personal records should not be introduced. However, this cannot be done without the full co-operation of practising doctors, and this is often not forthcoming because they do not see its relevance to their clinical work. The Alment Committee (1976) believed that the regular aggregation of information from clinical records would lead to the following benefits:

- a) a crude but simple measure for comparing regimens of treatment for similar groups of patients;
- b) a broad outline of the disease categories needing care, highlighting unusual occurrences;
- c) indicators for further detailed investigation in the care provided in individual cases.

The Committee recognized that this would need improvement in methods of record-keeping, and of course much has been done in this field by the Royal College of General Practitioners, with its development of the 'E' book, and 'F' and 'S' cards (RCGP, 1973).

If such developments can become the vehicle for a more descriptive classification of patients' problems, such as those suggested by Clark (1974) in his proposal for disease-coding for problem orientated records, a major step will have been taken towards understanding the nature and distribution of ill health in the community and the effectiveness of medical measures to relieve it.

What will not be revealed will be the extent of sickness which is not presented to the doctor. Here the study of vital statistics and the mounting of a variety of surveys by community medicine specialists can demonstrate the extent to which the public fails to benefit from effective medical aid.

There is a growing interest in screening as a preventive measure but, before any procedure is introduced, it is essential that strict criteria are fulfilled. McKeown (1968) has clearly set out a scheme for the evaluation of prescriptive screening procedures. They should not be undertaken lightly, not simply because of their high cost, but because of the implications inherent in a medically initiated approach to a patient, with its implicit promise to provide effective treatment.

The community medicine specialist may be acceptable within the ranks of clinicians for his skill in epidemiology, techniques of verification and skills of information processing, and because his understanding of social factors in disease and access to sources of information which are not readily available to clinicians may also be

welcome. However, involvement with a community medicine specialist is often avoided because of his identification as an 'organization' man, one of 'them', a creature of officialdom and bureaucracy. The diagnostic side of community medicine is concerned with the observation of a given community, the study of trends in the pattern of disease, detection of social variables, and hazards to health. He is not a passive observer though; as a practising doctor he is motivated to action, and his 'therapeutic' role is to provide services to meet needs.

All is well if, having seen a cause for action, he can find new resources to meet that need. He may be criticized for his ordering of priorities, and quite properly must defend his opinions with the authority he derives from his own skilled analysis of a particular need in the context of others. Within an expanding economy, criticism rarely exceeds the volume of a bleat, but in today's harsh economic climate, where the development of one service can be only at the expense of the decline of another, every action that he takes is accompanied by complaints. Yet he has no scope for action without seeking opportunities for change by the evaluation of existing services. Wing (1972) describes evaluation as an essentially scientific activity. It is concerned with the extent to which services fulfil their functions and with making recommendations for change, but not with taking decisions.

Planning, however, is an essentially political activity, concerned with anticipating problems which are likely to arise when trying to achieve a given aim, and working out in advance some means of solving them, for instance, the best allocation of resources to reduce morbidity. Partnership between clinicians and community medicine specialists is essential in both these activities, for both involve value judgements which reflect different approaches to medical care. There may well be conflict but this does not mean to say that there should be an irreconcilable polarization of viewpoint.

The relationship between a doctor and his patient is of such importance that any thing that appears to detract from its personal nature is sharply resented. The notion that services rendered to one patient may mean the denial of services to another may be alien to this personal bond, but today it is a reality from which no doctor can escape, whether he works within a national health service or in a country where access to care depends upon ability to pay.

The public is unlikely to accept that the ordering of priorities should be the exclusive preserve of the medical profession although it will have high regard for its recommendations, including its views on investment in social services other than medical ones. Within the profession, should clinicians be the sole arbiters of how best to use limited resources? How will the surgeon rank a new operating theatre table against a bus to take elderly patients to a day hospital? How will a pathologist place the employment of a laboratory technician against a health visitor? The neutrality of the

community medicine specialist may be welcomed by some and resented by others; but real conflict arises if a community medicine specialist's advice to management results in a realignment of resources which directly affects the way in which a clinician is able to care for his patients. The community medicine specialist is then seen to be in a position of privilege *vis-à-vis* management, and the participation of the clinician subservient to that of the community medicine specialist. The right relationship between clinical and community medicine within our Health Service has yet to be found, and it cannot be found without understanding and mutual respect for the two disciplines.

Will Pickles did not need the label of assistant medical officer of health to be his own community medicine specialist. He knew his practice better than any community medicine specialist could ever hope to know his community, with an intracranial data-bank more sophisticated than the most advanced mechanical system could emulate. This was no latent file, and he constantly updated and reprogrammed its core by alert observation and meticulous recording. He nevertheless perceived the need for advice from epidemiologists and statisticians and for sharing his experience with others. The complexity of today's medicine is such that no man can be the "compleat" physician. Just as the need for the pathologist and radiologist arose earlier this century, now the community medicine specialist should be recognized for the expertise that he can offer. This can only happen if the scope of his work is understood and his skills used by the practising doctor.

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Prenatal progesterone and educational attainments

Children whose mothers received prenatal progesterone have been shown to be advanced in development at one year and to have greater academic achievement at nine to ten years. This study compares the educational attainments at 17 to 20 years of 34 progesterone children with 37 normal and 12 toxæmic controls. More progesterone children continued schooling after 16 years compared with controls, a higher proportion left school with 'O' level and 'A' level passes; the average number of passes per child was greater at both levels and more obtained a university place. The best academic results were for those whose mothers had received over five grams of prenatal progesterone, and those for whom administration began before the sixteenth week and treatment lasted longer than eight weeks.

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