The Sreenivasan Oration, 1987

Towards A Rational Health Care System

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INTRODUCTION

President, Chairman, Ladies and Gentlemen, may I first say how deeply honoured I am by being invited to give this Oration in memory of the work and teaching of Dr Sreenivasan. I never had the privilege of meeting him, but reading about him I get the picture of a remarkable man, who saw the contribution that general practice should make, and set about exploring the work done in other countries to learn, and evaluate what would be effective and applicable here at the beginning of its independent statehood. His stature is well attested by his distinguished qualifications, not only of this medical school, but of Australian and British Colleges too. Perhaps he could well be summed up by a quotation from his beloved Shakespeare: "Here was a man, there are not many such "!

In the last few days I have had the opportunity to learn a lot more about this island state, its medical problems, its doctors, and its dynamic approach to innovation and progress. With the opening of the new College of Medicine Building and the rapid development of your College of General Practitioners, this would seem to be a good time to look forward and discuss the role, responsibility, and potential contribution of our discipline to the health of Singapore and the education of its doctors.

I shall divide my lecture into three parts, of unequal length; a brief description of the way in which General Practice is carried out in the UK; derived from this a conceptual model of a rational Health Service; and then discuss the objectives, clinical science, and interpersonal skills essential to general practice if it is to retain and increase the respect which it needs if it is to fulfil its potential in a rational health care system.

GENERAL PRACTICE IN THE UK

My teaching practice in central Manchester looks after 13000 Inner City people. **Figure 1** shows some aspects of the process of care that we provide. There are two important points to be made: firstly that these people can be well looked after with relatively small numbers referred to outpatients, and even fewer admitted for inpatient care; and secondly that about half the consultations are follow-up appointments which we have agreed with our patients previously. It is also worth noting that the utilisation rate, that is the average number of doctor-patient contacts per patient per year is about 3.0, rather lower than the national average of 3.7, despite the fact that our patients' health is affected by environmental factors like poverty, unemployment, and poor housing. While this is in some part due to our practice population being, like the rest of the inner city, rather younger than average, it also reflects, we believe, that longer consultations and good care reduce demand for new appointments. The fact that we can describe the age and social characteristics of our practice, and calculate essential planning information such as utilisation rates, in turn reflects the fact that our patients are registered with us, and have no other route into care, and that this makes it well worthwhile to have an efficient practice information system. Here we have evidence that demand is not limitless, and that, because a large proportion of our work is "doctor initiated" (i.e. follow-ups), general practice is not entirely "demand led" and therefore unmanageable and unplannable.

These features of General Practice in the UK have in their turn some important clinical implications. I want to point out three in particular:

1. The capacity for preventive medicine;

2. Preplanned patterns of care for patients with chronic diseases;

3. The management of uncertainty.

1 **Preventive Medicine**

The registered population not only gives each person the right to come to his or her own doctor whenever there is felt need, but also gives the doctor the chance to OFFER preventive care (for example by inviting patients to attend for cervical cytology, or blood pressure screening). It is equally easy, with such a system to review, using an age and sex index, the records of selected groups of patients to assess their preventive medicine status: for example "How many of our teenage girls are rubella immune?"

2 **Chronic disease care**

The doctor is effectively in control of when a patient with a chronic disease should return for check-ups, balancing clinical need and the patient's convenience. Moreover, he knows what will need to be done at the next attendance, and can programme the necessary time and arrange to have any materials, equipment, or help available at that time. In some cases this goes as far as arranging specific clinics for diabetics or hypertensives; in others some of the routine tests and examinations are done by appropriately trained nurses. Again adding a simple disease register to the record system allows the doctor to audit the process of care of all the patients with a given disease.

3 **Uncertainty**

Because the patient has only one route of entry into health care, and because that care can be clearly and carefully documented in the medical record, the doctor can use time as a tool when the diagnosis remains unclear. The importance of this when patients enter care over a low threshold, and therefore with comparitively minor deviations from their perceived normal health, is that expensive, invasive, inconvenient, and sometimes actually dangerous

investigations, which might be justified if the problem had to be solved there and then, can be avoided, or at any rate minimised to exclude potentially lethal conditions. Using time as a tool, balancing probability against risk, is a really scientific process.

Please do not think that General Practice in the UK is as near to perfection as this makes it sound! What I have described is the potential of the system: in practice there are sad shortfalls. The easy bits of prevention, immunisations etc, have been on the whole fairly well accomplished: the difficult part, that is the modification of behaviour to reduce risk, is largely unachieved. Chronic disease care is patchy, with few practices developing, applying, and auditing protocols for chronic disease care, let alone installing disease registers. We are not very good at coping with uncertainty, and should often quote the general confession in the Book of Common Prayer: "We have done those things which we ought not have done, and left undone those things which we ought to have done"! Comfortingly there is now some evidence that mandatory postgraduate vocational training is having a perceptible effect on these problems: interestingly nearly all those trainers and course organisers involved consider that much of their teaching is remedial.

A CONCEPTUAL MODEL OF A RATIONAL HEALTH SERVICE

I would like now to move into the next part of this address and discuss the theoretical place of general practice in a rational health care system. I am of course aware that the British system will not transplant readily: cultural, economic, political, and professional factors often preclude such developments. Nevertheless it offers the opportunity to develop a conceptual model of a rational system which could be used to assess the potential contribution of proposed organisational change anywhere in the world.

Figure 2 is a conceptual model of a population and its health services. On the left is the population: it is a society characterised by change (as are all but the most severely handicapped nations in the world today). The pace of change, and its most salient features will vary from country to country, depending on economics, politics and culture, but all the ones I have put in are associated with health status changes, and therefore in changes in the pattern of health care needed and provided.

1. the aging population: as infant mortality is brought down, the birth rate falls, and premature death from infection and trauma yield to better acute care services, the population becomes older and more people live long enough to get the chronic degenerative diseases (and to become dependent at the other end of their lives);

2. As a result, the dominant diseases suffered in the population have changed from the acute, infectious and curable, to the chronic preventable but incurable;

3. Family structure tends to change from extended (three or four generations living in one household, and many close relatives nearby) to nuclear (which has been described as "Mum, Dad, and 2.7 children in a brick pressure cooker!") with consequent loss of mutual support and advice, and loss of role for the older generation.

4. Behavioural changes which come with prosperity, education, and emancipation include such things as eating habits, leisure activities and travel, as well as sexual and interpersonal behaviour.

5. Education brings with it huge increases in people's knowledge of health, disease, and medical care: the interest they show is reflected in the large amount of space the media devote to what they see to be popular and therefore saleable.

6. This is reflected in changes in ordinary people's attitudes and behaviour towards health professionals unthinking respect, immediate and unquestioning acceptance of advice are things of the past, at any rate in the UK, let alone the USA.

7. Political and economic changes for better or worse have a direct effect on people and how they feel about themselves and their lives whether they are gaining or losing prosperity, security, or freedom.

8. Lastly there are subtle, often unrecognised but important ecological changes in such areas as availabililty of energy on one hand and the chemicals in food on the other.

To indicate the extensiveness, variability, and pervasiveness of these changes I have drawn society as an amoeba!

Opposite the amoeba I have drawn a box to represent hospital based specialist medicine, which is characterised by four important features, wherever it is in the world.

It is capital intensive: hospitals and their equipment are very expensive and represent huge investment of money that cannot be easily retrieved and redeployed.

It is labour intensive: large numbers of nurses, other professionals, technical, administrative and domestic staff underpin the specialist doctors and those in training grades.

It is very hierarchical: all the professionals, technicians, and administrators are explicity graded by training, experience, and responsibility, and are very conscious of their status within their own hierarchy.

The professionals' career progress is controlled by examinations set by bodies outside their own hospital (The Royal Colleges in the UK). These bodies tend to value reliability in their exams (as so they should since peoples' careers depend on them) at the expense of validity.

These four features all militate against rapid or easy change: if your have put all your money into one sort of building, or spent your budget on scanners, you cannot suddenly build a different sort or equip it differently; a large labour force presents a massive training task if its job is to be changed significantly; change has to be negotiated all the way down a hierarchy, and all the way back up again; and if the task changes the old exams no longer qualify people to do it!

Coming between the amoeba and the box in my model is general practice/primary care. Low on investment, lean in manpower, theoretically non-hierarchical, it is inherently flexible (but we must be careful that in assessing trainees' learning by examination we should not sacrifice validity to reliability by allowing the exam to stay the same while the task changes). General practice should have a fluid, responsive, "socio-medical interface" with our changing society, and a stiffer and more traditional "techno-medical interface" with hospital based specialist medicine, to which, of course it is complementary.

Please understand me, to differentiate in this way between specialists and GPs is not to attack or denigrate either, but to show how they are interdependent if rational health care is to be provided to meet the changing needs of the society from which they come and which they serve.

Three points are important here: Firstly, that nearly all student learning takes place in the "hospital box". It is characterised by learning on inanimate materials and cadavers in the pre-clinical years, and on horizontal, undressed, and non-autonomous in-patients in a doctor-controlled environment in the clinical years! Moreover this learning takes place in high certainty areas, whether labs, post-mortem room, or teaching hospital wards. The "technomedical interface" is only seen from the hospital side, so the decision making is hidden, and the "sociomedical interface" is hardly seen at all. Is it surprising that there should be underperformance, and a need for remedial teaching? "Why" you may ask, "is there this imbalance in learning?"

The problem, I believe, is that the GP task is not understood, and therefore not valued as a learning opportunity by those who dominate medical education. But it is not only the chieftains of the faculty who do not understand, and therefore apply inappropriate criteria, whereby General Practice is found wanting. GPs themselves have failed to think through their task, and tend to be trapped in three assumptions: that they are practicing the same sort of medicine in a different place; that their work is demand led, and therefore not amenable to management; and that their adaptation of clinical medicine to cope in the community is somehow second class medicine.

The second point is that everywhere in the world, there are major cost problems in the hospital box. These not only affect availability (for example in the USA where rationing is by ability to pay, and the UK where it is by waiting list), but also the process of care, which is now characterised by short stays and intensive investigational and therapeutic activity. The third point is that nearly every country that has had to develop its health care system in a relatively short time has followed a "top down" model. Once clean water, safe sewage disposal, and fertility control had been achieved, (the cheap but enormously effective tasks) most money has been spent in or on the hospital box. The so-called "advanced" countries have exported the technology of secondary care without ensuring the presence of an effective primary care system to support it.

The actuality, in the NHS, as I have indicated, and elsewhere judging by the literature, is that there is undercare and overcare at both interfaces. At the techno-medical interface overcare results in the referral of people who do not need it, putting them at risk of unnecessary, even invasive, and expensive over-investigation and -treatment; undercare results in people who could benefit from specialist care not getting it, or not getting it soon enough. At the socio-medical interface undercare is mainly in the area of preventive medicine, but in badly organised practices there may be poor accessibility or continuity, while in the UK there is evidence that women do not present problems to an all-male practice that they would if there was a woman doctor in the team. Overcare results in the "medicalisation" of non-medical problems (as evidence by the over-use of psychotropic drugs). Excluding physical and mental illness at this interface is a vital competence.

Underperformance in professionals, in hospital medicine or outside it, is often ascribed to loss of motivation, or of "professional pride" (conforming to one's reference group). I believe that, in general practice, primary loss of professionalism is rare. Secondary loss of motivation, "burn out", is probably more common, and comes from not valuing the job you are doing, because you do not understand its significance. This in turn is likely to be brought about by lack of proper education about medicine, and training for general practice; but in some places it may be that the organisational features of practice make it very difficult to do the job in a way that provides proper professional satisfaction.

In describing my practice, and discussing some of the features of general practice within the NHS, I have tried to establish the extent to which it has achieved its potential in terms of a rational health service. Most of what has been achieved in the clinical and educational areas, access to laboratories and X-rays, and proper undergraduate education has been due to the vision and efforts of our Royal College of General Practitioners (of which, of course, Dr Sreenivasan was a Founder Member, and was later honoured by the award of its Fellowship). Other improvements in the terms and conditions of service have been negotiated by the BMA: group practice allowance, partial reimbursement of staff salaries, and the provision of purpose-built health centres. Here too however the College exerted a powerful influence by providing well researched evidence of the range and effectiveness of GP care. Together we have fought for, and achieved, mandatory vocational training for general practice: a post-graduate programme that is the envy of the other Royal Colleges.

I could perhaps best sum this up by saying that we have earned a lot of the respect that should be due to general practice, and respect is essential if other people are to help, cooperate, and even make concessions.

While cultural, political, and professional differences between countries will dictate the way in which respect is achieved, and the order in which things are done, I believe that, everywhere, GPs must set about earning respect; from ourselves, from our patients (and through them from our political masters), and our professional colleagues in other disciplines (who control our access to both clinical and educational resources).

OBJECTIVES, CLINICAL SCIENCE AND INTERPERSONAL SKILLS IN GENERAL PRACTICE

In the third and most important part of this oration, I want to examine the objectives of general practice, the way they are achieved, and the extent to which our activity is related to clinical science. From this I shall propose certain changes that are needed in medical education, and the way they can be achieved.

Formulating the Professional Objectives of

General Practice

The task of general practice is to protect the health of those people who give it a mandate so to do. Their health may be protected by preventive measures, by the cure of acute illness; by the control of chronic illness; and, importantly, by the exclusion of illness. There are of course many definitions of health: that of the WHO "not merely the absence of disease, but complete physical, social, and psychological well-being" is often derided as Utopian and impracticable, but it does make the point that health is to do with feelings and function as well as physiology. Dubos' definition (in "Man Adapting", 1968) is "the ability to adapt one's environment to one's needs". Abraham Maslow, the American educationalist coined the concept of a "hierarchy of

need", postulating that one's learning abililty was related to one's levels of need: put another way, pressing needs, for food, warmth, and shelter not only inhibit one from learning Pythagoras, but take up all one's energy, determination, and imagination: one has little or no "personal space". From these definitions we can least begin to put together a working definition of the health we work to protect or restore to our patients. Personal space is the key concept, because pain, disability, distress, and fear, the concomitants of disease, all limit, or even destroy people's personal space. To feel, and to function, to one's capacity, or near it, is to be healthy, to have space. Paradoxically you can have space, and getting that space is the most appropriate objective of care, even when you are dying. Some of the excesses of high technology medicine diminish this much needed space.

Immediately the task of the general practitioner can be seen to be concerned as much with the management of disease as its diagnosis, and that the management must not further diminish the patient's space, already reduced by the effects of his illness. It must therefore be negotiated with the patient. To do this the doctor must have the skills, and willingness, to understand the patient's life and his way of looking at it.

By adopting a "patient-centred" approach we are fulfilling our potentially complementary role with regard to specialist medicine. Note, however, that a patient-centred approach is not a retreat into some "soft", psychosocial, social work type of practice. The patient centred approach is necessary for good clinical care, whether of diabetics, patients with rheumatoid arthritis or hypertension, or of the family of an asthmatic child.

General Practice and Clinical Science

It is often said that General Practice is "management-orientated" rather than "diagnosis-orientated", and the implication is that general practice is therefore academically, intellectually, and professionally inferior to specialist medicine (which is "diagnosis orientated" presumably). There are some assumptions here that ought to be carefully examined if general practice is to take its proper place, administratively, educationally, and professionally in a rational health care system.

The criteria by which general practice might, spuriously, be held to be inferior, mostly relate to the diagnostic process. Because we do it differently, we must be doing it worse! But are we doing it differently? We were taught, admittedly, that the proper way of reaching a diagnosis was always to take a "complete history", and do a "complete" physical examination, and we certainly do not do that. But, if the truth be told, neither do the specialists! Even more importantly, nor should they be because it is unscientific! All recent research into medical decision-making has shown that most diagnoses whether by specialists or GPs are made very fast by "pattern-recognition" from a few features. If some of the characteristic features are missing, we "change gear" to "pattern-matching", trying to decided if we have enough to justify making the diagnosis in the absence of those features. If, and it is comparitively rarely needed by experienced clinicians, that does not work, we change gear again to a "hypothesis-testing" mode ("If its A, there will be symptoms B, C, and probably D, and I must look for sign E"). At this level we begin to apply some conventions like "This must be seen as cancer until proved otherwise", and differentiating between the necessary and the sufficient: for this reason the cognitive psychologists call this level "rule-based" (whereas pattern recognition is "skills based"). Only in the very rare case are we forced to change gear again, and to collect as large a data base as we can in order inductively to reach an interpretation that we have not achieved by the more usual methods. By now I am sure the GPs in the audience will be saying "but that's what we do!" and of course they are right, and have no need to feel that they are practicing second class medicine.

The milieu influences the diagnostic method chosen and the intensity with which it is applied, which is another reason for differences between GPs and specialists. This is not evidence of underperformances, but of adaptation of the task to the circumstances in which it is carried out. When a specialist sees a referred patient he cannot only make pretty safe assumptions that the illness is distressing enough, persistent enough, or serious enough to warrant referral, but that it is within his field of expertise. GPs on the other hand have to work in an "open field" mode, starting far further back on the diagnostic road: any sort of patient may come in, and could present any disease at any stage of its natural history, or no disease at all.

The insistence that diagnosis is essentially precise, and scientific, hides an important fact. The statements that all doctors make as "diagnoses" are themselves very variable. Sir Karl Popper, the noted philosopher of science, says that a statement, to be scientific must be refutable. Many of our diagnostic statements are not, in fact refutable. They are what Popper calls parables, useful as a basis for understanding what is going on, but not refutable, (at least until autopsy!). Lawrence Weed helped us here by teaching us to "define problems" rather than "make diagnoses" and he is a Professor of Internal Medicine! We can, he says, define problems in diagnostic terms if we have the evidence' but a lot of the time we have not, but we can define the problem in symptomatic terms (for example, backache) well enough to allow us to make a plan for care, which may of course include getting more information to redefine the problem. The Leeuwenhorst definition of the GPs task states that the GP will be able to make at least an initial plan for anything that he encounters. Two criteria can be applied. Firstly, was the patient's problem defined sufficiently clearly to allow a safe and effective plan to be made? Secondly, could a more precise definition have allowed a more effective plan to be made?

One of the advantages of making this distinction is that it should protect us from investigational intoxication; doing tests to confirm the diagnosis, rather than to inform the plan for care.

There are two curious features of our feelings about diagnosis. The first is that we get a far bigger "kick" out of making an elegant diagnosis of a serious, complex, or rare disease than out of excluding it; yet in confidently and safely excluding it we are giving the patient health. The second related feature is that it actually takes far more skill to exclude a serious illness than to recognise one!

Interpersonal Skills of General Practice

If the diagnostic process, or problem definition, has been the first part of the doctor's tasks, selecting and explaining the treatment is the second and equally important part. There are three intimately related activities in this phase: balancing, negotiating, and informing.

(Remember that, theoretically at any rate professionals whether doctors, lawyers, accountants, social workers, clergy, or counsellor can only advise their clients: they are not executives to command or order.)

Balance is the only one of the three which takes place mostly, or perhaps initially, in the doctor's head. He must review the possible courses of action and balance the expected benefits against the possible risks. Whilst we have, hopefully, got used to doing this for the prescriptions we write, we should also consider costs and risks for the other things we advise. There are for example disbenefits in going into hospitals. There are risks in advising people to change their job, or move to a more salubrious area. On the other hand maintaining a seriously ill, or disabled person in the family home may be achieved only at enormous cost, in terms of physical health, personal space, and general well-being of other members of the family. It is the GP's

responsibility to consider these when reviewing, in his head, the possible management plans to be offered to the patient in terms of advice.

This overlaps into the next component of the management **process, negotiation.** The management of an illness will only be effective it is carried out properly. It will only be carried out properly if it is acceptable, and practicable in the patient's own life environment. In the West, study after study has shown poor levels of "compliance": only about half the drugs prescribed are taken in the way they should be, even if they are taken at all. But there is more to negotiation than discussing with the patient the balance between expected benefits and possible disbenefits, and whether the proposed plan is acceptable and practicable. There has to be agreement on the nature of the illness (why should the patient cooperate in the treatment if he does not believe that the doctor knows what it is he is treating). To attain this a bridge has to be built between the patient's experience of the phenomena that brought him to the doctor, and the doctor's interpretation of these phenomena. In most cases this is easy: a patient with dyspepsia which has not responded to over-the-counter alkalis will have thought of peptic ulcer before he came in. Often, however, the link is less clear: a patient complaining of shortness of breath and funny feelings in her feet may find it difficult to understand her doctor talking about bone marrow and Vitamin Bl2 injections! Sometimes even more persuasion may be necessary, because there are some diseases that patients do not want to face up to: for example alcoholism. In some cultures (and certainly in the UK when I first entered practice) mental illness carries such stigma that patients are reluctant to accept that their illness is mental and not physical.

Here again there is an overlap, because negotiating about the nature of the illness is essentially done by giving the patient **information,** so that they can come to their own conclusion. It is often said that information is power, and indeed some doctors are reluctant to relinquish power to the patient because they feel that they need that power because they carry the responsibility for the patient. There are, I think, two misconceptions in that rather old fashioned idea. Firstly, if you accept that your role is to be an adviser, rather than an 'executive, your primary responsibility to the patient is to give good advice, not to enforce behaviour, so you do not need power. Secondly knowledge is not like energy or mass, obeying laws of conservation: in the jargon phrase it is not a "zero sum"; you can increase the patient's knowledge without diminishing your own. But by enhancing your patients' knowledge by giving them information, you increase their space. You give them the means to make better choices. The plan you advise therefore is more likely to be adhered to if you have shared the relevant information with the patient and treated him or her like a fellow adult (despite wide social, cultural, and educational differences: remember Kipling's "The colonel's lady and Judy O'Grady are sisters under the skin!")

The Changes Needed

The issues that have to be faced if we are to achieve and keep self respect as clinicians, respect within the profession, and the respect of our patients, have to do with organisation and resources on one hand, and education on the other. While it would be impertinent of me to make any recommendations in the first area, I have to say that, if the GP is to exercise clinical science in defining his patients' problems, and interpersonal skills in negotiating their management, adequate consultation time and the organisation to provide it becomes a central issue. In the area of medical education I will be more bold, because what I have to say is applicable anywhere in the world where GPs provide primary care.

We are, in the words of the proverb, our fathers' sons. Not only our knowledge and skills, but the way we apply them and the attitudes with which we carry out our clinical task, are derived from our medical education. Some of the things I have been saying about diagnosis, and about negotiation and power sharing with patients seem to many doctors to be sharply at odds with

what they were taught. Most of us have gradually become aware of the discrepancies, and have made our adjustments in order to achieve a modus vivendi. Unfortunately these have often seemed like retreats from an academic ideal, and we express ourselves in ways which suggest we are ashamed of the skills we have developed! We say we cut corners when what we should say is that our hypothesis testing is more scientific than the induction we were taught.

Conventional medical education has not changed much in its basic design since the 1950s, although the content has increased exponentially. That model was designed to equip the student to deal with the major task of the day, which was then infectious disease. This resulted in two central features: a preclinical course designed to describe the normal, so that later the abnormal could be recognised; and the iron rule that you must never treat until you have diagnosed. These features continue to dominate medical education even though the task has now swung to the prevention and control of the chronic diseases. Indeed most medical schools are now having to look at their curricula: the balance between learning knowledge, skills and attitudes has been lost under pressure of the growth of bioscience fact; MCQs have trained students to ask for facts to regurgitate rather than think with; hospital case-mix is less and less representative of the pattern of disease in the community; high costs mean short stays characterised by intensive activity so that the student finds it difficult to get at the patients to take histories and examine them, let alone get to know them as people. Indeed the conventional model must be in its last decade.

If we are to lay our shortcomings at the feet of our medical education, how should it be improved?

Firstly, by tuning our teaching methods towards skills rather than the present overwhelming emphasis on knowledge for its own sake (an imbalance compounded by the use of examination methods such as the MEQ which sacrifice validity for reliability).

Secondly, to inculcate in the student a reverence for the elegance of the homeostatic mechanisms, and the basic sciences which describe them (without overwhelming him with detail that he cannot relate to people, whether sick or well), so that he is suitably humble in his interventions.

Thirdly, to inculcate an equivalent reverence for the personhood of patients so that the student will respect them as people who have much in common with himself in terms of feelings, however wide the social gap may be.

Fourthly, by paying more attention to the natural history of disease, not just as a diagnostic characteristic (useful though that is), but to demonstrate the relationship between the disease process and the rest of the patient's life. This is important in the early stages to enable us to understand the relationship between life events and the onset of illness; and in the late stages to help us to make effective plans for continuing care.

Fifthly, by making the real diagnostic process more explicit, and teaching it as a skill.

Lastly, by being honest about clinical reality: making explicit the way in which the task of the doctor varies with the circumstances (so that it is not always proper to take a history before examining the patient, or always proper to make a diagnosis before treating the patient, or always proper to treat the disease process rather than its results).

But, I would argue, these are not merely the requirements for turning out good GPs (which is probably not what the medical school wants to do anyway): these are the requirements for all doctors, if they are to be effective when working with patients, whether in the doctor-controlled environment of the ward of their own home environment if they are outpatients.

Thus, the educational changes needed to form the basis of good general practice are changes which will improve the performance of all the graduates of the school.

By the same token, General Practice as a discipline has an important contribution to make to medical education in general. Only GPs can really demonstrate, and lead the student through, diagnosis ab initio, in the open field. GPs can best demonstrate the interaction between host, disease, and environment. It seems that GP's are more likely than any other teachers to discuss patients' (and doctors') personal space, give an example in negotiation and information sharing. Management plans which are comprehensive, taking into account not only physical, but social and psychological factors as well, are easier to teach when the patient is not in a doctor-controlled environment, where so much can be taken for granted. General practice can provide access to patients with interesting histories and fixed physical signs, for teaching by specialists. These are the contributions that General Practice can make to medical education.

CONCLUSION

If the delivery of health care to a population is to be effective and economical, there has to be balanced investment in education and service; and in each area, between hospital-based specialist care and general practitioner care in the community. In educational terms, learning in each area complements and reinforces learning in the other. In service terms the relationship between specialist and GP should reflect, firstly the partition between health and disease in the population, and secondly the meeting of needs that vary at different points in the natural history of each disease.

This week the Academy of Medicine and the Singapore College of General Practitioners have pledged themselves to work together, facilitated by the vision and generosity of the Ministry of Health in providing splendid premises in its beautiful headquarters building. This must embody the vision of Dr Sreenivasan, physician, general practitioner, and educationalist, to whom we are all beholden for inspiration and example, and whom it has been my honour, privilege, and joy to honour today.