

# The Singapore Family Physician



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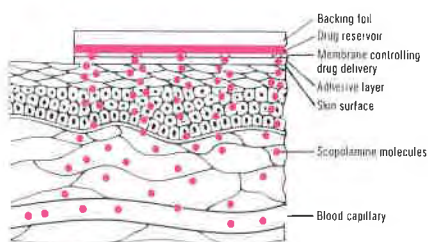
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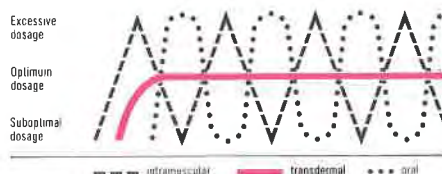
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## THE SINGAPORE FAMILY PHYSICIAN

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## EDITORIAL

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# VOCATIONAL TRAINING FOR FUTURE FAMILY PHYSICIANS

With gradually escalating costs of hospital care which caters for a small proportion of the population, greater emphasis is placed on the more cost-effective out-of-hospital ambulatory medical care and preventive medicine at the primary level aimed at the larger section of the population. Together with the stress by government on increasing labour productivity, the role of effective care by family doctors and government polyclinic doctors in diminishing the fraction of all sick people needing expensive technology of the hospitals becomes even more important. Now that the National University of Singapore has formally established Family Medicine as a distinct teachable medical discipline (the Family Medicine unit of the Department of Community, Occupational and Family Medicine is still in its infancy), it is appropriate at this point in time, more than ever before, to consider a formal, structured, comprehensive postgraduate training programme for the family doctors and primary care doctors of the future. In developed countries, such programmes have been in the educational limelight over the past decade.

In Singapore today the only requirement for setting up general practice is a registrable medical qualification; this results in a varied quality and range of medical practice. The graduate of the medical school is only a basic "undifferentiated" doctor grounded in the science that contributes to medicine and in clinical method, with a wide fund of knowledge of the breadth of medicine but not necessarily in its application to the management of the patient, at a loss without laboratory and backup facilities. Many graduates have drifted into general practice after falling off the academic ladder of training for other sections of medicine, or have been eased into the decision to set up private practice by the frustrations of work in hospital departments. The absence of any formal training for general practice causes them an unfair sense

of guilt and further frustration with their expected role in extending personal, continuing and comprehensive care ("whole-person" medicine) to their patients in the context of his family and the community.

The oft-repeated claim that the teachers in the hospitals are tailoring their programmes to prepare the undergraduates for general practice simply does not hold water. The training for general practice **cannot** be dominated or controlled by people who neither practise nor believe in the job itself. Many young doctors who have been told not to "waste" themselves in general practice will bear testimony to this attitude within the ivory towers.

Vocational training for future family physicians and primary care doctors, to be relevant and effective, must comprise **two** important sections, viz. traditional hospital posts **and** special training in general practice/family medicine. The postings in hospital departments, provided that all the appropriate disciplines are covered, will provide the variety of clinical experience required for the trainees' future work. However, their "training" in these departments must be organised and supervised, so that learning occurs more by intention than by osmosis; more time must be spent with the patient or his family in the community rather than time spent with disease in the hospital setting, to learn continuing care rather than episodic care. The emphasis must be on prevention, early diagnosis, cost-effective care and on total patient management.

Besides this teaching in hospitals, trainees will require an extended period of time to acquire the vast and varied body of knowledge, skills and attitudes for competence in family practice, where independent clinical judgement has to be used. Postings to emergency departments and

community health services (e.g. School Health) must be coupled with attachment to a special Training Practice or accredited general family practice. In fact, working in a few such practices in different urban, suburban and rural settings would be most desirable for the trainee to obtain the full spectrum of experience and a balanced perspective.

These practices must have optimal physical facilities for training, with consulting rooms having space for an observer (perhaps using a one-way mirror), and space for case reviews, tutorials or discussion groups. The practice should have its own library and basic educational aids like slide projector, cassette player and video recorder (perhaps with a camera for recording consultations); it must have the utilitarian Problem Oriented Medical Record (POMR) System.

The trainee will work in this practice in a supervised position, with observation of the trainee by his trainer and vice versa. He will be taught procedures and therapeutic techniques, and will have opportunity for on-the-spot consultation with his supervisor and for discussion of clinical work with his supervisor alone or in a group. Carefully structured training in these practices will include a comprehensive educational programme of tutorials, workshops, seminars and discussion groups, with emphasis on learner-oriented teaching rather than didactic teaching styles. It will also include courses in sciences basic to general practice — interviewing, counselling, medical record keeping and reviewing, prescribing, practice management (including dispensing) and ethical and medicolegal aspects — and in clinical or operational research and evaluation in the general practice/family medicine setting.

All in all, this Vocational Training will make the future family physician more competent and cost-effective, able to work with specialists in many fields on the one hand (the general practitioner taking responsibility for first contact and continuing patient care, the specialist concentrating on the disease

process) and with allied health personnel at the community level on the other. He will be able to stand at the forefront of the health care delivery team, to extend medical care to more people than his counterparts in any other field of medicine. Furthermore, it will prepare him for a lifetime of continuing self-education and self-study so that his competence as a practitioner will not be found wanting.

Naturally, this training programme will have to be instituted under the sponsorship and control of the government health authorities and supported by the University, with the College of General Practitioners being involved through the organising and running of relevant lectures and courses. The College could also help with the problems in finding, assessing and accrediting the general practices and competent and properly-motivated supervisors-trainers necessary to take these trainees; further it could help sponsor/organise suitable training courses for these teachers, for general practice training requires more than the traditional methods of teaching.

With implementation of such a training scheme, the government could create a grade of primary physicians in the Ministry of Health with a career structure comparable to other specialties. The College diploma examination could serve as part of or the whole means for terminal assessment, and success in the examination become a pre-requisite for a doctor to set up practice as a principal. Perhaps the School of Post Graduate Medical Studies should reconsider its earlier refusal to participate in or take over the responsibility for this examination.

Family Medicine has long withstood educational deprivation. Provision of a suitable and satisfying Vocational Training Programme will make general practice/family medicine a challenging and exciting career prospect for the young doctor, ensuring that he enters this vocational discipline by design and not by default.

MV



## **“FAMILY PRACTICE: UNITING ACROSS FRONTIERS”**

**Dr Rajakumar M K  
President of WONCA**

Guest of Honour, Hon. J. W. Chambers, Secretary for Health and Welfare, Dr Eddie Chan, Chairman of the Host Organising Committee, Dr Peter Lee, President of the Hong Kong College of General Practitioners, Presidents of Colleges of Malaysia, Singapore and Australia, Honoured Guests, Ladies and Gentlemen.

It is a great pleasure to come to Hong Kong to enjoy the legendary hospitality of our friends and colleagues here and it is a great honour to deliver the Opening Address to this distinguished assembly.

We are meeting in a most exciting part of the world. The Asia-Pacific Region is the home of ancient cultures which interacted for many hundreds of years and then lost contact. We are now rediscovering each other, paradoxically under the auspices of Western civilisation. This is my-own region and you must pardon me if I take pride in showing it off to our guests.

In this region, we are living through a period of great optimism and tremendous self confidence. They say that the Asia Pacific Region will show the highest growth rates for the rest of the century and the 21st century will see the full bloom of a Pacific Basin community. We are the heirs of ancient civilisations that lapsed into a stupor for a little over a century. We have woken up under the impact of Western technology. This meeting itself is one manifestation of the energy and vitality of this region.

This is the first international meeting of family physicians to be held in Hong Kong

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*Keynote Address  
Regional Conference of WONCA  
5-9 September 1987  
Hong Kong*

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and is the largest and most representative meeting of family physicians of this region. It has also attracted family physicians from all over the world. I hope you will find it worthwhile to experience the diversity of our cultures and cuisines. The theme of this Conference, of crossing frontiers, reflects the universalistic outlook that comes naturally to the cosmopolitan city state of Hong Kong.

As family physicians, we are highly conscious of cultural influences in the lives of the people we are caring for. The cultural values still cherished by our people may appear old fashioned. For example, personal relationships are very important and friendship is highly valued: ‘friendship before business’ is almost an aphorism in our societies.

Age still attracts deference and our young people are taught to be respectful even when differing with an older person. Grandparents are honoured persons in a family and it is considered a privilege and a duty to look after them. Lucky children can turn to 3 sets of parents for love and guidance. Families bear the burden of the care of the chronically ill and the disabled as our social services are poorly funded. It is a moving experience to see how lovingly they are cared for at home on very meagre resources. Work is part of our culture and not working is considered shameful. So much so that often our problem as physicians is how to persuade sick people to stay off work to get some rest.

These are values that family physicians everywhere, across all frontiers, will recognise as values they themselves cherish. If they are being eroded in the West, amongst us too they are being undermined by the impact of urbanisation and industrialisation. You will be dismayed to hear that Westernisation is as yet more strongly represented, not by Shakespeare, Beethoven and the Sermon of the

Mount, but the Beatles, Miss Madonna and the Consumer Society. We need more than that. We need not only the benefits of modern technology but we must jointly work across frontiers to sustain and preserve the humane values upon which civilisation rests. The great problems we face today, of poverty, social inequity, crime and the breakdown of families, transcend cultures and frontiers. We must find common purpose as human beings.

In a world of rapid change and social instability, the family physician represents enduring values and a commitment to compassion and caring. We are all here today because of this commitment.

Modern medicine has travelled beyond its Western frontiers to become part of our heritage. As with technology, we are assimilating modern medicine into our own way of life. The discovery of the new Family Practice has led us to share in the renaissance in General Practice, a renaissance that knows no frontiers. We owe to the British and Europe our pattern of health delivery with the general practitioner providing continuing care and guiding the patient through the thicket of subspecialties. In recent decades, we have benefitted from the powerful thrust in North America towards Family Practice. The new impulse has transformed our vision of general practice. Family Practice has emerged as a discipline calling for extensive postgraduate training and excellence in practice. We need highly trained and skillful family physicians to make full use of the potentials of modern medical knowledge and technology. We have a long way to go in this region to take full advantage of the potentialities of modern primary care. The colonial pattern of hospital building has persisted. There is a greater readiness to build hospitals than provide safe water and efficient sewage disposal, to start coronary care units than to prevent ischemic heart disease from a family practice. Our policy makers still prefer to invest in high-cost episodic care in hospitals than in cost-efficient continuing care in general practices.

The new concepts we espouse place great stress on the preventive approach, on identifying for special attention persons at risk, on comprehensive care and not merely episodic care, on caring for the whole person and not merely providing medication, on the ambula-

tory care of the individual functioning in society in preference to institutional care; and at all times remaining the advocate of the patient's best interests. We need all the help we can get to educate policy makers and to inform the community of the need for good Family Practice as the foundation of any health care system.

Our academic organisations also have the task of projecting these concerns to the community. Joined together in a world organisation, WONCA, we project to the world community and to international organisations, these caring values that are at the heart of Family Practice. The vigour of the new general practice is manifested in the strength and growth of WONCA.

In the past year, WONCA has established formal relations with two international organisations, the WHO and the UNICEF. The WHO is the organisation linking Ministers of Health of our governments. With them, we are collaborating on development of medical classification systems, on organising quality assurance and audit programmes, and on a plan to assist medical schools in developing countries to start departments of Primary Care and Family Practice. The noble objective of the Alma Ata Declaration, that transcends national frontiers, to bring 'Health For All by the Year 2000', is difficult to achieve but as physicians we must see in this global endeavour an opportunity to demonstrate the necessity of primary care of excellence as the key to Health For All. The representatives of the WHO are with us today and we offer them a joining of hands with the Family Physicians of the world to achieve Health For All.

The other organisation with which we have established a link is UNICEF, a much loved movement bringing together voluntary societies to care for children. We plan to be associated with them in their work of love throughout the globe. We all perforce must share this little globe and everywhere there are hungry and neglected children who need love, care and food. Both individually and collectively we have a responsibility here — we may not avert our eyes and look away. All members of WONCA will have an opportunity in the coming years to give expression to their idealism and charity. There is no frontier to compassion for the hunger and suffering of children. The question that Andre Gide posed

— what price to put to a child's suffering — is still with us today.

WONCA is uniquely fitted for such a world-wide endeavour. Over 100,000 physicians are represented in WONCA and they live and practice in virtually every community of the 35 members of WONCA, and we are growing every year. We are meeting at the doorsteps of the largest nation in the world, the People's Republic of China. I am confident that they too will join our family in the not too distant future. Last year, I visited China and enjoyed their hospitality and I found that they too were beginning to discover the importance of Primary Care and the values of Family Practice.

Who, you will ask, has been introducing them to Family Practice? It was a delegation of the Hong Kong College led by its President that formally presented Family Practice to them. That seed has taken root and I believe it will flourish. I believe that the Family Practice way of Primary Care can make a tremendous contribution to the health of the people of that vast country.

We are meeting on this little rock off the coast of China. Can you imagine a place which faces greater adversity or where the odds of success are smaller? Yet a flourishing metropolis exists here, managed by anonymous civil servants and amateur politicians, with a talented population. Hong Kong has absorbed a tremendous growth of population by immigration and has continued to flourish.

Hong Kong is the gateway to China, not just geographically but for technology, trade and new ideas as well. It becomes part of the People's Republic in a decade. I see a powerful symbolism in that families of doctors in Hong Kong whose ancestors came to Hong Kong from China when the British first arrived, will continue to be here when Hong Kong reverts to China. I am certain Hong Kong will continue to flourish and play Athens to their great Sparta. You may be surprised that I can see Athens in the harsh entrepreneurial environment of this island state. Remember, this island has one of the great universities of the world and its Faculty of Medicine celebrates its centenary next week. They have as their Vice Chancellor one of the most distinguished academics my country has produced. Consider, in how many nations of

the world is the Vice Chancellor of the University, near the top of the order of precedence after the head of state. Now that is what I call showing Confucianist respect to learning!

These miracle makers are our hosts today. The tiny member Colleges in WONCA seem to concentrate talents and nowhere have I seen a more dedicated College Council than in the Hong Kong College. This has been a year of accomplishments. In addition to organising this splendid meeting, they have graduated their first batch of Fellows by examination. I had a small part in helping to develop this examination and the outstanding performance of candidates this year is a cause of pleasure to me. I must congratulate Dr Stephen Foo and his Board of Examiners for their very hard work for over 3 years to bring this examination into existence. The College has also published a pioneering survey of morbidity in Hong Kong, the third in a series, and I must congratulate Dr Paul Lam and his team for their very difficult achievement that only a few Colleges can match.

Speaking for all of you, I must congratulate Dr Eddie Chan, Chairman of the Organising Committee of the Hong Kong College for the excellent planning of what promises to be a most successful meeting. I am particularly looking forward to the excellent scientific programmes that Dr John Chung and his Committee have devised for us. I have kept in touch with the organisers and I can tell you that they have spared nothing to make this meeting a success.

May I on your behalf tell the President of the Hong Kong College, Dr Peter Lee and the Chairman of the Organising Committee, Dr Eddie Chan and his committee, how much we look forward to enjoying this week with them and how grateful we are to them for having accepted the responsibility of being hosts to this Regional Meeting.

We belong to the oldest discipline of medicine, general practice, now renewed as Family Practice. Our meetings are occasions not only for learning; the fellowship of these occasions is a precious asset. So I bid you to learn and to teach, make merry and make friends. To our Guest of Honour and our honoured guests, I say thank you for gracing this Opening. To all I say welcome, my friends, to the Regional Conference of WONCA.



## TOWARDS A RATIONAL HEALTH CARE SYSTEM

Professor David Metcalfe  
MA, MSc, MBB Chir, FRCGP, MFCM

### 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"!

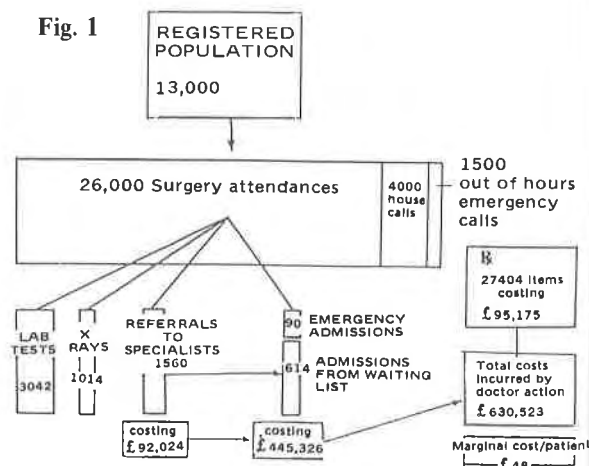
In the last few days I have had the opportunity to learn a lot more about this island state, its medical problems, its doctors, and its dynamic approach to innovation and progress. With the opening of the new College of Medicine Building and the rapid development of your College of General Practitioners, 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

Fig. 1



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

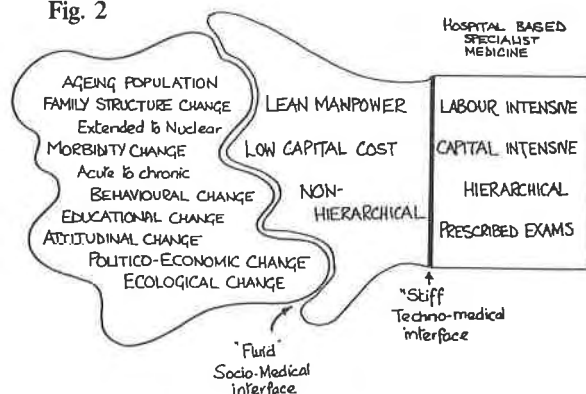
Because the patient has only one route of entry into health care, and because that care can be clearly and carefully documented in the medical record, the doctor can use time as a tool when the diagnosis remains unclear. The importance of this when patients enter care over a low threshold, and therefore with comparatively 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

Fig. 2



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 ageing 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 availability 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 explicitly 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 you 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 chiefs 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 pro-

blems (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 ability 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 decide if we have enough to justify making the diagnosis in the absence of those features. If, and it is comparatively 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 if 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 B12 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.



# URINARY INCONTINENCE IN THE ELDERLY

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## INTRODUCTION

*Urinary incontinence is a common disabling condition affecting the elderly. Management of the problem distresses both the patient and physician, resulting in institutionalisation of many elderly people. In addition to causing skin breakdown, urinary tract infections and social embarrassment, management of the condition and its complications poses a heavy economic burden on the family. Many incontinent elderly patients are not fully evaluated and are managed with chronic indwelling catheters or diapers. This has led to the 'diaper boom' which commercialises on this unfortunate and poorly evaluated medical problem. Urinary incontinence is often not recorded as a specific problem probably due to the ignorance and ageist attitudes of health personnel. Primary care physicians should place greater emphasis on the early detection of the problem, the identification of the possible reversible factors and full medical evaluation of this medical condition before resorting finally to pads and catheters.*

## Definition

Urinary incontinence implies any uncontrolled leakage of urine regardless of amount or frequency.<sup>1</sup> The British mail study defined the problem as involuntary leakage of urine in inappropriate places and inappropriate times but the definition was not suitable as it excluded those who wore external catheters or diapers.<sup>2</sup>

## Prevalence

5-20% of elderly persons in the community and approximately 50% of elderly nursing home patients are incontinent of urine.<sup>3</sup> Because of the social embarrassment associated with the condition, urinary incontinence remains a hidden handicap in the elderly.

## Neuroanatomy and physiology of bladder

Continence of urine depends on the presence of the following anatomical components: (a) proximal sphincter (b) distal sphincter (c) pelvic diaphragm (d) base plate and (e) urethral mucosal folds.<sup>4</sup> (Fig. 1) The detrusor or smooth muscle of the bladder accommodates to increasing volume of urine because of its compliance. Part of this smooth musculature forms the firm base of the bladder called the trigone. The base plate muscle of the bladder maintains the internal urethral meatus closed as long as the base plate remains flat but during micturition the right angle of the bladder outlet is lost and the base plate instead contributes towards the contraction of the bladder.<sup>4</sup> (Fig. 2). The proximal urethral sphincter prevents urine leaking out of the bladder cavity while the external sphincter supports the internal sphincter in maintaining continence whenever extra pressure is applied to the bladder. In the male, the prostate lies between the two sphincters; enlargement of the prostate leads to lengthening of the urethra and weakening of the internal sphincter. Adequate compression of the urethral folds provide a water tight mechanism for maintaining continence. The lining of the adult female urethra is composed of stratified squamous epithelium and is oestrogen sensitive. In elderly females this stratified epithelium may extend into the trigone. Oestrogen deficiency in postmenopausal state may lead to atrophied changes in

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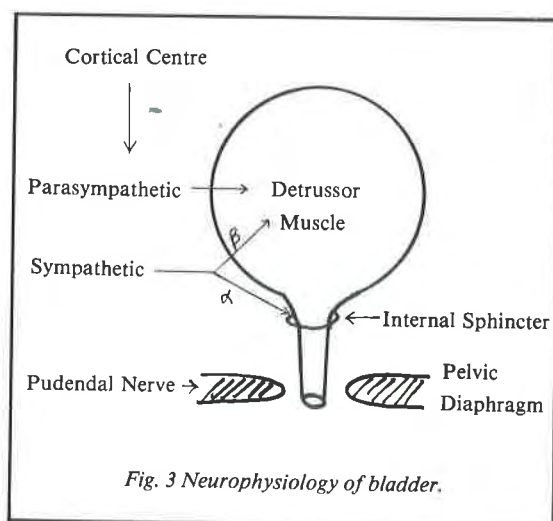
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the epithelium leading to frequency of micturition and sometimes incontinence.<sup>4</sup> The pelvic floor musculature lies outside the external sphincter area and its voluntary contraction enables one to stop micturition during coughing or straining; a weak diaphragm after repeated childbirth can thus lead to stress incontinence.

#### Neurophysiology of bladder

The bladder continence mechanism is maintained by a delicate balance between autonomic nerves (parasympathetic/sympathetic) somatic nerve (pudendal) and central cortical innervation. (Fig. 3)<sup>1</sup>

During the process of voiding, parasympathetic stimulation causes detrusor contraction and relaxation of the internal sphincter while in the phase of urine storage, sympathetic impulses lead to the reverse i.e. detrusor relaxation and internal sphincter contraction. The pudendal nerve innervates the pelvic floor musculature and is under voluntary control. Both the autonomic and somatic nerves are under the direct inhibiting or facilitating influence of the higher cortical centre.



#### Aetiology of urinary incontinence

In the initial evaluation of incontinence, it is important for the physician to identify the functional dynamics producing the incontinence and also to detect any reversible diseases associated with the condition. The

identification of the mechanism producing the incontinence enables the physician to successfully manage the problem even if the underlying disease is not identified.

#### (A) Classification of urinary incontinence based on functional abnormalities<sup>5</sup>

Incontinence occurs when there is disruption between bladder pressure and sphincter competence. Based on urodynamic function, there are three common conditions which produce incontinence:

##### (i) Detrusor incontinence/or Urge incontinence

This condition implies excessive bladder contractions of sufficient magnitude as to overcome the normal urethral resistance. Commonly this is due to unstable motor detrusor contractions but sometimes it can also be caused by hypersensitivity of the bladder receptors as in infections or irritation by stones.

##### (ii) Overflow incontinence

Obstruction of the bladder neck leads to retention of urine and urinary leakage occurs when the maximum bladder capacity is exceeded.

##### (iii) Sphincter Incontinence/Stress Incontinence

The underlying defect here lies either in a weak sphincter e.g. secondary to prostaticomegaly or a weak pelvic diaphragm after multiple childbirth.

In addition to the above three common mechanisms, there are two further common causes:-

##### (iv) Functional incontinence

This refers to patients who are potentially continent but because of their mobility problems they are unable to reach the toilet in time.

##### (v) Iatrogenic incontinence

Excessive use of diuretics or sedatives may lead to incontinence.

## **(B) Reversible Factors In Urinary Incontinence**

The five major types of incontinence mentioned earlier can be further elaborated to identify the reversible and nonreversible factors.

### **(1) Detrusor Incontinence**

#### **(a) Neurogenic causes**

- CVA        \*Confusional states
- Aging       \*Depression
- Dementia   \*Sedatives or hypnotics

#### **(b) Non-neurogenic causes**

- Unstable bladder
- Hypertonic bladder
  - Noninfective (interstitial cystitis)
  - \*Infection, †stones, †carcinoma

### **(2) Overflow Incontinence**

#### **(a) Neurogenic causes**

- Posterior nerve root lesions e.g. tables, diabetes mellitus.

#### **(b) Non-neurogenic causes**

- † Prostatomegaly
- † Urethral stricture
- \* Atrophic vaginitis
- \* Drugs
- \* Faecal impaction

### **(3) Stress Incontinence**

- \* Oestrogen deficiency
- † Cystocele/urethrocoele

### **(4) Functional Incontinence**

- \* Transient, due to acute illnesses
- Chronic, due to longstanding immobility e.g. Parkinsonism

### **(5) Iatrogenic Incontinence**

- \*Drugs inhibiting bladder control centre e.g. sedatives
- \*Drugs increasing urine volume e.g. diuretics
- \*Drugs inhibiting bladder contractions e.g. anticholinergic

**NB:-** \*Medically reversible factors  
† Surgically correctable factors

## **Clinical evaluation of urinary incontinence**

A complete clinical evaluation of urinary incontinence involves the following:

- (a) Comprehensive medical history and examination.
- (b) Basic blood and urine analysis, Xrays and urodynamic studies in selected cases.
- (c) Establishing an incontinence chart.
- (d) Conduction of clinical drug trials and behavioural treatment.
- (e) Exclusion of medically reversible factors and surgically correctable conditions.
- (f) Assessing the morbidity and mortality associated with incontinence.

## **Medical history and examination**

From the medical history it may be evident whether the incontinence is due to:

- (1) Stress incontinence: urine leakage occurs during coughing, sneezing or physical exertion.
- (2) Detrusor incontinence: presence of strong urge to void followed immediately by incontinence.
- (3) Overflow incontinence: history of difficulty in voiding or poor stream followed by leakage of small amounts of urine.
- (4) Functional incontinence: presence of mobility problems in the elderly.
- (5) Iatrogenic incontinence: evident from the drug history.

Further medical evaluation will assist in excluding reversible factors associated with the incontinent state.

## **Investigations**

Useful diagnostic tests include: renal function tests, vaginal smear for cellular maturation and cytology, blood sugar, calcium level, and IVP if necessary to exclude bladder or prostatic lesions. Measurement of residual urine after micturition is a simple procedure to detect the presence of bladder outlet obstruction.<sup>5</sup>

**Urodynamic studies** provide a good objective assessment of the detrusor and sphincter function. The detrusor activity



may be classified as normal, hyperactive or hypoactive and the sphincter resistance may be normal, decreased or increased.<sup>6</sup> These studies involve urine flow studies, filling and voiding cystometrography, urethral pressure profile and periurethral striated muscle electromyography.<sup>6</sup> In the simple cystometrography, the reaction of the bladder to increasing distension is studied. The bladder is gradually filled through a two-way catheter and a transducer converts the changes in the fluid pressure to a recording on paper. During the filling phase, the detrusor pressure normally remains below 15cm water till voiding is performed. At a volume of 150-200 ml, the first desire to micturate is normally experienced and the sensation of fullness is noted at about 350-500ml<sup>4</sup> (Fig. 4)

In the uninhibited bladder, the desire to void occurs earlier; there is a sudden build-up of bladder pressure at a lower volume leading to leakage or urine (Fig. 5.) For the obstructed

bladder, maximum urine flow rates are reduced associated with raised detrusor pressure on voiding and residual volume of more than 500cc is present.<sup>7</sup>

The role of routine urodynamics studies in the evaluation of urinary incontinence in the elderly is controversial.<sup>5</sup> Many continent elderly may exhibit abnormalities in urodynamic studies and conversely some incontinent old people have normal results.<sup>8</sup> Coexisting physical or mental conditions may limit the elderly person's ability to tolerate the procedure. Apart from cost, such studies may add on the risk of urinary tract infections. Thus it is important to define elderly patient subgroups which will benefit from the investigation before subjecting them to such tests. Alternatively, patients could be candidates for empirical treatment based on medical and clinical evaluation and urodynamic studies may be reserved only for the treatment failures.<sup>5</sup>

Fig. 4 Normal Cystometrogram

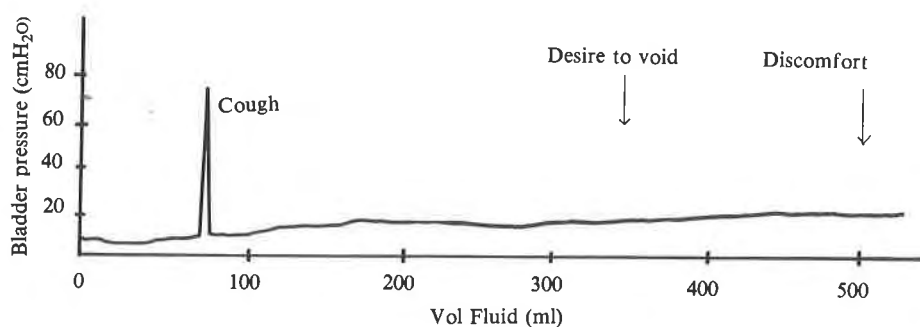
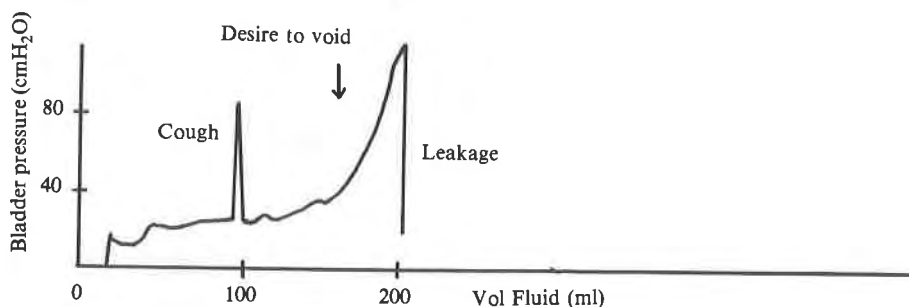


Fig. 5 Uninhibited Bladder.



### The Incontinence Chart

This incontinence monitoring record remains an important basic tool for the medical and nursing assessment of incontinence in the elderly. It is useful for:-

- (a) documenting the presence of urinary and associated faecal incontinence.
- (b) identification of the factors and patterns associated with incontinence.
- (c) assessment of the severity of the condition.
- (d) Monitoring the outcome of bladder training program.
- (e) assessing the outcome of drug therapy.

The basic chart must contain the following features:-

- (1) It must be able to differentiate the three different states of continence i.e. dry check without toileting; successful toileting and voiding, and incontinence of urine. These different states can be indicated by different colours so that nursing aids can easily perform the initial assessment and the success of the treatment can be easily assessed.
- (2) The severity of the incontinence can be assessed by the frequency and amount of incontinence. Small and frequent amounts of leakage implies overflow incontinence while large amounts associated with urgency indicates urge or detrusor incontinence.
- (3) The circumstances around the incontinence should be carefully studied as they may provide leading clues to the aetiology and planning for future management. Urinary incontinence occurring in the early morning hours may be due to excessive use of sedatives or hypnotics. It may also be due to nocturnal diuresis associated with untreated congestive cardiac failure. If incontinence occurs at an approximate set time in the early hours, it can be prevented by waking the old person with an alarm clock, avoiding excessive fluids at night and giving specific anti-incontinent drugs just before he retires.
- (4) The use of the incontinence chart for the monitoring of behavioural and drug therapy will be discussed subsequently.

### Management of Urinary Incontinence

This medical condition must not be considered unremediable till comprehensive evaluation is performed to assess the functional dynamics associated with incontinence and the potentially reversible factors. Palliative therapy with pads or catheters should be reserved as a last resort when other therapeutic options have failed.

The various **therapeutic modalities** available include:-

- (1) Medical treatment with drugs.
- (2) Behavioural and bladder training exercises.
- (3) Surgical therapy when medical therapy has failed or when there are clearcut surgical indications.
- (4) Palliative therapy as a last resort after the above methods have failed.

**Reversible factors** associated with incontinence must be identified at the start of the clinical evaluation. These include:-

- medically reversible factors: e.g. treatment of UTI, relief of faecal impaction, hormonal therapy for atrophic vaginitis and correction of confusional states in the elderly.
- Surgically reversible factors:- e.g. renal/bladder stones or carcinoma, prostatomegaly (benign or cancerous), urethral strictures and pelvic floor weakness.

Therapy can also be guided by the knowledge of the functional basis for the incontinence.

<b>Types of Incontinence</b>	<b>Therapeutic options</b>
------------------------------	----------------------------

- |                       |   |
|-----------------------|---|
| Detrusor Incontinence | — Drugs to inhibit detrusor contractions<br>— Bladder retraining exercises. |
| Overflow Incontinence | — Drugs to relieve bladder neck obstruction.<br>— Surgical correction       |
| Stress Incontinence   | — Drugs to increase outlet resistance.<br>— Oestrogen replacement.          |

- Surgical treatment.
- Pelvic floor exercises.

Iatrogenic Incontinence—Removal of precipitating drugs.

Functional Incontinence—Modification of the environment.

### **Management of Detrusor or Urge Incontinence**

The mainstay of the treatment here is the combination of drug therapy and behavioural or bladder training.

#### **(A) Drug Therapy**

- (i) Drugs with anticholinergic-antispasmodic properties are useful for controlling frequent bladder contractions.
- (ii) Antibiotics should be started if infection is present as this may contribute to detrusor incontinence. However the infection may be due to an uninhibited bladder and symptoms may persist even after treatment of the infection.
- (iii) Sphincteric incontinence can sometimes be associated with detrusor instability. This can be detected by cystometrography and agents that stimulate urethral closure should be combined with anticholinergic-antispasmodic drugs.

#### **Drugs to inhibit bladder contractility**

Propantheline has been used for inhibiting detrusor contraction but is generally not suitable because of its generalised muscarinic side-effects.

Emepromium bromide has a more selective anticholinergic action on the bladder. This drug has been shown to reduce nocturnal frequency in elderly patients when used at a low dose of 200mg tds or two tablets just before bedtime. But some studies have shown it to be ineffective when given orally because of its poor absorption.<sup>9</sup> Nevertheless the drug should be given at least four weeks trial before treatment is considered unsuccessful.<sup>4</sup>

Oxybutin, another locally acting anticholinergic, is also indicated for the management of urge incontinence. In addition to its anticholinergic property, it has also a direct spas-

molytic and anaesthetic effect on the smooth muscle of the bladder.<sup>1</sup> Flavoxalate hydrochloride is another useful compound which has a direct antispasmodic and analgesic effect on the detrusor muscle without producing much of systemic side-effects because of its low anticholinergic activity.<sup>10</sup> Calcium channel blockers such as flunarizine and nifedipine have been tried in small clinical trials with some success in controlling detrusor instability.<sup>11,12</sup> Other newer drugs such as prostaglandin inhibitors are still in the experimental stage; one study showed a decrease in symptoms up to 85 of patients treated with this agent.<sup>5</sup>

#### **Drugs to increase outlet resistance**

Sphincteric incontinence may be associated with detrusor instability. Pseudoephedrine hydrochloride, an active stereoisomer of ephedrine can be used to stimulate the alpha-adrenergic receptors of the smooth musculature of the bladder neck. Imipramine a tricyclic antidepressant has been shown to be useful for detrusor incontinence as it has an anticholinergic action that inhibits detrusor contraction and also alpha-sympathetic agonist activity that increases the urethral resistance.<sup>13</sup>

#### **(B) Behavioural therapy for Detrusor incontinence**

Frewen et al in 1978 showed that behavioural therapy was a useful adjunct for the management of detrusor instability.<sup>14</sup> A knowledge of the incontinence pattern is important initially and this can be obtained from the Incontinence Monitoring Record. Once the pattern of incontinence is obtained, a flexible toileting interval is initiated so that the old person voids his urine before urge incontinence occurs. Gradually this voiding interval is increased by having the patient to delay the micturition consciously. The aim of the therapy is to achieve a toilet-free interval of at least four hours and to pass a volume of 400cc of urine each time.<sup>15</sup> Such bladder training exercises must be continued for a period of three months before considered to be a failure. The entire program must be carefully explained to the patient and rewards should be introduced at each step of achievement. Biofeedback techniques have also been utilised for behavioural therapy for incon-



tinence.<sup>16</sup> This aims at re-education with a closed feedback loop where information about the normal bladder physiological process is made available via visual or auditory stimuli.

### Management of Stress Incontinence

Drugs to increase the urethral resistance such as pseudoephedrine hydrochloride or imipramine have been shown to improve urethral sphincteric function. Numerous studies have also documented the usefulness of estrogen replacement in postmenopausal females with sphincteric weakness.<sup>17</sup> Both estrogens and alpha-sympathetic agonists produce favourable synergistic effects for stress incontinence. Patients may also benefit from pelvic floor exercises and electrical stimulation to improve muscle tone.<sup>18</sup> If these therapeutic methods fail after six months, urodynamic studies and subsequent surgical intervention should be considered.

### Management of Overflow Incontinence

Before active management of overflow incontinence is started, reversible factors such as faecal impaction or drug induced urinary retention must be excluded. Anatomical obstruction due to prostatic enlargement or urethral strictures usually require surgical intervention. However for poor risk patients, medical therapy may be worth a trial. Medical treatment aims at facilitating bladder emptying either by stimulating bladder detrusor muscle or relaxing the sphincter. Agents to stimulate bladder contraction such as ubretid or bethanecol should be avoided in the presence of mechanical obstruction of the bladder neck especially when infection is present as reflux infection can occur. Medical therapy to decrease outlet resistance includes alpha-adrenergic blocking agents such as dibenylamine and muscle relaxants e.g. diazepam or baclofen.

### Last resort management — Diapers or Catheters?

Diapers and catheters do not cure incontinence. They obscure the problem and pose many medical problems. Thus they should be used as a last resort only after all methods have failed.

### Urinary catheters

The average incidence of urinary incontinence in nursing homes ranges from 40-50%; about 10% of these incontinent patients require catheterisation.<sup>19</sup> However, the indication for catheterisation is often not documented in medical practice. Thus urinary catheters have often been inappropriately used without clearcut indications.

Acceptable indications for urinary catheterisation include:<sup>19</sup>

- (1) Outflow obstruction not amenable to drug or surgical therapy;
- (2) Intractable incontinence associated with skin breakdown;
- (3) Terminally ill patients for whom frequent bed changes are painful;
- (4) Persistent residual urine associated with recurrent infection or renal impairment.

Long-term catheterisation is a significant source of bacteriuria and nosocomial urinary tract infection. Other complications include bladder or renal stones, perinephric, vesical and urethral abscess, reflux nephropathy and renal failure.<sup>19</sup> Chronic catheter is also associated with decreased bladder capacity and a small bladder capacity decreases the chance for subsequent bladder toilet training and behavioural therapy.<sup>20</sup>

### Diapers and pads

In a recent study of elderly people in the Jewish Home in New York, urinary incontinence occurred in about 60% of the 500 residents studied. 78% of cases were treated with diapers and bladder conditioning; only 4% used indwelling catheters and drugs were indicated in only 2.8% of patients.<sup>20</sup> The disposable diaper has the advantage of simplifying nursing care because it is easy to handle compared to the catheter. However, diapering the elderly does not cure incontinence and may encourage the problem instead. Premature use of diapers only obscures the problem and treats incontinence as a symptom than a disease, allowing an underlying disease process to remain undetected.

### Conclusion

Urinary incontinence is an incomplete diagnosis by itself. It is only a symptom of an

underlying diseased state. Proper initial evaluation of incontinence is mandatory for all cases and clinical assessment should be done on a practical basis. Incontinence may be classified according to the dynamics and functional patterns involved and reversible factors need to be actively excluded. The incontinent elderly should be given the benefit of medical, surgical and behavioural therapy before resorting finally to diapers or catheters.

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# PREMENSTRUAL SYNDROME

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## INTRODUCTION

*The premenstrual syndrome is an ill-defined entity which is exhibited by a spectrum of recurrent physical and psychological symptoms experienced by many women for a variable period of time usually before menstruation. Premenstrual syndrome (PMS) can affect up to 90% of women. However, less than 40% will complain of any obvious interruption of normal functioning. About 5% may be incapacitated due to severe symptoms.<sup>1</sup>*

*PMS is gaining prominence in modern societies because of increasing awareness of this condition. However, it is still widely misunderstood by both health care professionals and the public. A general practitioner is therefore likely to see women who present with symptoms of PMS although only a small number of women will actually say they are suffering from PMS. As PMS can mimic many organic conditions, the diagnosis is made by exclusion of other physical and psychiatric illnesses. As PMS is generally a benign condition, much can be gained when practitioners become increasingly aware of it and make a confident diagnosis. Empirical treatment of the symptoms should be avoided if possible, as the treatment may be more harmful than the actual illness itself.*

## Clinical Presentation

This varies from one woman to another. The clinical picture is usually consistent with the same woman from cycle to cycle.

Symptoms occur regularly in the same phase of each menstrual cycle and are followed by a symptom free phase of at least one week after menses.<sup>2</sup>

The symptoms are:

### 1. Behaviour

There is alteration of personality with increasing nervousness, irritability and unreasonable temper. Sleep disturbances, fatigue, depression and lethargy can occur. A small number of patients can commit violent crimes and experience suicidal tendencies.

### 2. Neurologic

Headaches, vertigo, syncope and paraesthesia

### 3. Respiratory

Increasing symptoms of rhinitis and asthma

### 4. Gastrointestinal

A feeling of bloating of the abdomen is believed to be typical of the syndrome. Other symptoms are nausea and vomiting. There may be a change in the appetite.

Other symptoms are weight gain, palpitations, easy bruising, acne, breast swelling and pain.<sup>3</sup> It has been found that psychological symptoms of depression, irritability, anxiety and mood swings predominate in PMS.<sup>4</sup>

## Pathophysiology

The aetiology is unknown. PMS can occur in both ovulatory and anovulatory cycles although this is disputed.<sup>1</sup> Popular theories include psychogenic causes, water retention, hypoglycaemia, hormonal imbalance with oestrogen excess and progesterone deficiency, alterations in CNS neurotransmitters. Since

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none of the above causes can singularly explain the myriad of symptoms encountered in PMS, multiple causes have been proposed.

For most women, PMS occurs in the absence of psychiatric illness. However, if sub-clinical psychiatric disturbances are present, they are probably exacerbated in the premenstrual phase.

Water retention occurs in up to 40% of women with PMS with a gain of between 0.5-1.3 kg premenstrually. There is also an increase in total body sodium. However, studies have failed to demonstrate a higher aldosterone level in PMS.<sup>5</sup>

The most publicised theory is one of progesterone deficiency with an increase in the oestro/progesterone ratio. A 83% success rate has been claimed with treatment by natural progesterone in PMS.<sup>6</sup>

The latest theory proposes an alteration in levels of peptides like endorphins in the brain.<sup>1</sup> Very little evidence supports this theory at present. Deficiency of dopamine or serotonin has long been hypothesized as a cause of depression. This may well play an aetiologic role in some PMS symptoms.

### Diagnosis

At present, diagnosis of PMS depends on the patients' subjective reports. The American National Institute of Mental Health recommends the following diagnostic criteria: a marked change in intensity of symptoms measured in cycle days 5 to 10 compared with premenstrual days 22 to 28, and documentation of these changes for at least 2 consecutive cycles.<sup>7</sup> Together with the use of a menstrual diary, PMS is diagnosed by exclusion of other disorders.

The incidence of PMS rises with increasing age and parity, a history of pre-eclampsia, exposure to stress and lack of exercise. Women who live with men tend to have a higher incidence than women who live alone.<sup>8</sup>

In PMS symptoms occur regularly in the same phase of each menstrual cycle in the same patient and are followed by a symptom free period of at least one week after menses. It is generally believed that symptoms start at or after onset of ovulation and peak in severity

just before the menses. Although timing of symptoms is usually constant, the type of symptoms may change over time and a new set of symptoms can replace previous ones.

### Treatment

Like all diseases of theories, the treatment of PMS is yet to be perfected. No single treatment to date has successfully treated PMS. It has been found that even if patients were treated with a placebo, a success rate of up to 60% can be expected. Therefore whatever treatment proposed should produce a significantly higher 'success rate' compared with a placebo. A practitioner must also bear in mind that the majority of patients do not need specific treatment. Only those women whose symptoms disrupt their life need intervention.<sup>2</sup>

As PMS is generally a benign condition, it is desirable to treat patients as safely as possible. Supportive non-medicinal therapy should be started. The following is a suggested step-wise treatment regimen for PMS.

#### 1. Reassurance

Many patients benefit from a frank discussion into their symptoms and reassurance that there is no other organic disease. They are particularly happy to learn that PMS affects a large number of women and that they are not suffering from it alone. It may be particularly helpful to educate the husband at the same time on PMS so that he can provide support to his wife during the more stressful phases of the cycle. A referral to a gynaecologist who has an interest in PMS for a second opinion can be helpful in reinforcing the supportive therapy.

#### 2. Dietary Changes

Dietary readjustment is a safe and easily tolerated form of therapy. However, it may take up to 6 months before maximum improvement in symptoms is noted.<sup>8</sup> The diet is similar to a hypoglycaemia diet in which six small frequent meals are taken instead of the traditional three. This diet should be rich in complex carbohydrates and protein and low in simple sugars. Salt and alcohol intake is limited.

#### 3. Exercises

Regular aerobic exercise at least 3 times a week is effective against depression pro-

bably because there is improvement in the patient's sense of well-being.

#### 4. Vitamins

The use of vitamins has always been attractive in all forms of illnesses.

Of the various vitamins advocated, vitamin B6 or pyridoxine has been most widely used. It is believed that pyridoxal phosphate is a necessary cofactor in the production of dopamine and serotonin in the brain. Vitamin B6 is taken in fairly large quantities (200-800 mg per day) throughout the cycle. Some studies have shown significant improvement in PMS symptoms when high doses are taken.<sup>9</sup> The side effects of vitamin B6 include headaches, nausea and dizziness. The patient should start with a low dose initially and increase every month until relief is obtained. There have been recent disturbing reports on peripheral neuropathy occurring when more than 500 mg of B6 is ingested per day. This side effect is partially reversible with discontinuation.

Vitamin E, 600 IU/day, together with reduced caffeine intake has been shown to relieve breast symptoms. Trials done on patients with fibrocystic breast disease have shown 65% improvement when caffeine intake is totally stopped.<sup>10</sup>

#### 5. Zinc Sulphate

This has been used in the treatment of acne and therefore may be useful also in PMS patients with this symptom.

#### 6. Diuretics

The use of diuretics may be beneficial in the initial 3-6 months when dietary readjustment is being tried. Preliminary studies with spironolactone have shown that there is improvement with mood and weight reduction. In another study, significant improvement in all symptoms were obtained in doses up to 5 mg/day given for 7 days before and during menses.<sup>5</sup>

#### 7. Hormones

Progesterone has been used extensively in the treatment of PMS. It has been proposed that natural progesterone is effective when given by the intramuscular or rectal route commencing from day 14 of

the cycle beginning at a dose of 200 mg/day. However, double blind controlled studies have not shown that progesterone is superior to placebo in the treatment of PMS.<sup>11</sup> Treatment is given on an individual basis and side effects are few. The progestin-dominant contraceptive pill has also been reported to be effective in the treatment of PMS.<sup>11</sup>

#### 8. Bromocriptine, Danazol and Clonidine

Danazol and bromocriptine are useful in relieving breast symptoms in PMS. However, the side effects of these drugs are often unacceptably high, prompting discontinuation of therapy. They should be prescribed by practitioners who are experienced with these drugs. There have been conflicting reports on the efficacy of these drugs in PMS and treatment has to be tailored on an individual basis. Their use is mainly restricted to a few individuals whose symptoms are resistant to all the abovementioned therapy.

Clonidine has antimanic properties and has been used in dysmenorrhoea and menopausal flushing. In a small study conducted, it has also been found to be effective in relieving depression, anxiety and hostility in PMS.<sup>12</sup>

#### 9. Psychoactive Drugs

These drugs are prescribed only when underlying psychiatric illnesses are present. The depressive symptoms associated with PMS are transient and respond well to supportive psychotherapy and do not normally require antidepressants. Anxiety and insomnia are treated with mild anxiolytics and sedatives. Should there be any doubt concerning the presence of psychotic illness, it is wiser to refer these patients for psychiatric assessment.

The large variety of alternative therapy include herbal therapy, naturo- and homeo-therapy, and acupuncture; a long list of other less scientific forms of treatment is also available. They serve to remind us that we are still inadequate in our management of PMS. Yet at the same time, it attests to the fact that patients are often desperate for relief.

## Conclusion

Premenstrual Syndrome is becoming better understood than before. In the past, symptoms associated with PMS have been thought to be some form of 'moon madness'. It is also likely that many women in the past have been sent to mental institutions for good because of their 'recurrent and untreatable mental sickness'. The number of psychiatric admissions, accidents and suicide attempts is increased during the premenstrual phase.<sup>1</sup>

It must be appreciated that PMS is neither easily characterised nor diagnosed. Yet the demand for treatment of PMS has increased over the years because of media attention, increasing numbers of educated women and the women's movement, which has inevitably brought attention to health care issues. PMS has recently been used as a mitigating factor in criminal trials. Some women have received lighter sentences for crimes such as child or spouse abuse if they receive and continue treatment for PMS.<sup>13</sup>

In medicine, if one does not know a condition, one will not diagnose that condition. Family practitioners have to be increasingly aware of PMS to be able to diagnose it. If there is any doubt, it may be more beneficial to the patient in the long run to refer her to a gynaecologist who has a special interest in managing PMS. Good doctoring also requires a responsibility to make sure that the treatment is never more dangerous than the disease.

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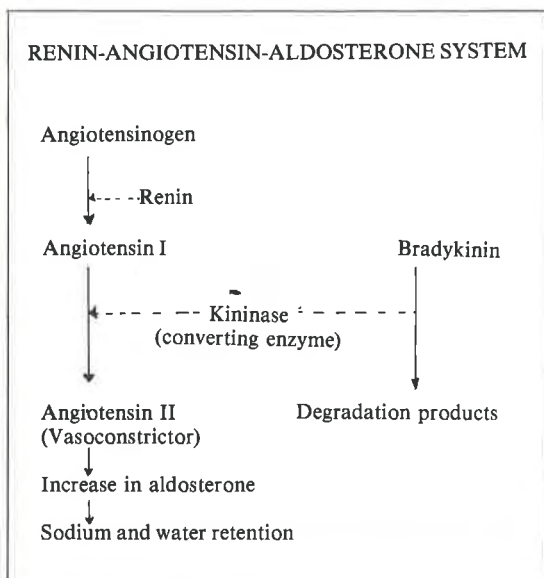


# ANGIOTENSIN - CONVERTING ENZYME INHIBITORS

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## Ace Inhibitors and the Renin-Angiotensin-Aldosterone System

The renin-angiotensin-aldosterone system (figure below) plays an important role in the regulation of blood pressure and fluid and electrolyte balance.



Angiotensin-converting enzyme (ACE) inhibitors prevent the formation of Angiotensin II, a powerful vasoconstrictor, and inhibit the breakdown of bradykinin, a powerful vasodilator. Both of these effects are important in the therapeutic role of ACE inhibitors in hypertension and cardiac failure. The decrease in Angiotensin II results in the reduction of aldosterone secretion leading to a decrease in sodium and fluid retention.

ACE inhibitors were first isolated from the venom of the South American pit viper *Bothrops jaracaca* and subsequently a series of orally active ACE inhibitors were synthesised.

Captopril (Capoten) was the first orally active and relatively specific ACE inhibitor available for clinical use. Enalapril (Renitec) is a second generation ACE inhibitor and unlike Captopril, does not possess a sulphhydryl group which is thought to be responsible for some of the adverse effects of Captopril. Enalapril itself is a pro-drug and has to be de-esterified in the liver to enalaprilic acid, which is the active compound.

Captopril, given orally to normal or hypertensive individuals, induces a fall in blood pressure which begins at about 20 to 30 minutes; the fall in blood pressure is greatest in 60 to 90 minutes and the hypotensive effect persists for 4 to 6 hours. Enalapril has a slightly slower onset of action but is much longer acting; maximum hypotensive effect persists up to 24 hours. Because of its longer half-life enalapril can be given once a day.

## Indications for Use of ACE Inhibitors

Captopril and enalapril are effective in

- \* severe accelerated hypertension
- \* renovascular hypertension
- \* drug resistant essential hypertension
- \* cardiac failure, especially hypertensive heart failure

Activation of renin-angiotensin-aldosterone system in cardiac failure leads to further vasoconstriction and salt and water retention.

Interruption of the activation sequence produces vasodilation, reducing ventricular pressure and improving cardiac output, exercise capacity and well-being in the majority of patients. Tolerance occurs less frequently than with other vasodilators and hence ACE inhibitors are being used increasingly in heart failure.

#### **Precautions in the Use of ACE Inhibitors**

Caution is necessary when starting treatment with captopril or enalapril as both drugs can cause a dramatic decrease in blood pressure, especially in patients who:

- \* are having congestive cardiac failure
- \* are salt and volume deplete
- \* have been taking diuretics
- \* have renin-dependent hypertension
- \* are taking adrenergic blocking drugs

These patients are particularly sensitive to the hypotensive effects of ACE inhibitors.

To avoid potentially dangerous hypotension, it is preferable to discontinue diuretics 2 to 3 days before starting either captopril or enalapril. All other vasodilator drugs should also be stopped for at least 24 to 48 hours before starting an ACE inhibitor.

Captopril or enalapril should be given in a small initial dose preferably while the patient remains supine to minimise the effects of first dose hypotension. The recommended starting dose for captopril is 6.25mg and that for enalapril is 2.5mg or 5mg. Patients should be closely monitored and should initiation of treatment be uncomplicated then the regular oral dose may be cautiously increased.

The maintenance dose must be reduced in the elderly and in those with renal impairment. Both captopril and enalapril can cause a deterioration in renal function. ACE inhibitors are contraindicated in the presence of bilateral renal artery stenosis since they lead to rapid deterioration in renal function. They also reduce potassium excretion and should not, therefore, be combined with potassium-sparing diuretics since dangerous hyperkalaemia may occur, especially in patients with renal impairment.

However, a thiazide diuretic can be used effectively with an ACE inhibitor. The

hypokalaemic effect of the thiazide is attenuated by the ACE inhibitor. In addition, some studies have shown that the increases in serum uric acid and glucose values generally seen when using a thiazide alone were attenuated by concomitant administration of an ACE inhibitor. Most current reports suggest that there is also some additive effect when ACE inhibitor is used concurrently with a betablocker plus a thiazide diuretic.

#### **Side Effects**

The side effect profile of captopril and enalapril is similar. Side effects are dose related and are usually reversible. The frequency of adverse effects has been reduced by the use of lower doses and by greater caution in patients with renal impairment.

The more serious adverse effects include neutropenia and proteinuria. These usually reverse with withdrawal of the ACE inhibitor. Close monitoring of patients should, therefore, include regular white cell counts (total and differential), urinalysis for protein and renal function tests.

Other adverse effects may be transient and include a maculopapular rash, with or without pruritus, loss of taste and an unproductive cough. They usually resolve with reduction of dose.

Dizziness, headache, asthenia, fatigue and gastrointestinal symptoms may also occur. In addition, enalapril has been known to cause angioneurotic oedema in a few patients.

#### **Advantages of ACE Inhibitors**

ACE inhibitors definitely offer some distinct advantages over conventional anti-hypertensive therapy:

- \* they have no central nervous system effects
- \* they do not interfere with the sympathetic nervous system; the patient retains normal cardiovascular reflexes including responses to posture, tilting, exercise and sexual activity.
- \* in inducing peripheral vasodilation they do not compromise cerebral or renal blood flow.
- \* unlike betablockers, they can be used safely in patients with peripheral vascular disease,

Raynaud's phenomenon, chronic obstructive airway disease and insulin-dependent diabetes mellitus.

- \* unlike thiazides, they do not lead to hypokalaemia, hyperuricaemia, hyperglycaemia and hypercholesterolaemia.
- \* there is evidence to suggest that hypertensive left ventricular hypertrophy resolves more quickly on treatment with ACE inhibitors than with other drugs; left ventricular hypertrophy is an unfavourable prognostic sign in patients with hypertension.

### CONCLUSION

ACE inhibitors are, therefore, an important addition to the therapeutic armamentarium for hypertension and cardiac failure. With very careful patient selection and the use of low dose regimens, they can be safely used in general practice. And when better and safer

ACE inhibitors become available they may well become first-line therapy for even mild-to-moderate hypertension and heart failure.

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### MULTIPLE CHOICE QUESTIONS

1. Angiotensin-converting enzyme inhibitors:
  - A block angiotensin receptors.
  - B can cause potentially dangerous hypotension when commenced in full dosage.
  - C are effective in hypertensive heart failure.
  - D are best avoided in patients with peripheral vascular disease.
  - E can cause deteriorating renal function.
2. The following statements are true:
  - A A thiazide diuretic should not be administered in a patient already taking an angiotensin-converting enzyme inhibitor.
  - B Enalapril can be given once a day.
  - C Patients who are salt and volume deplete are particularly sensitive to the hypotensive effects of angiotensin-converting enzyme inhibitors.
  - D Angioneurotic oedema may occur with enalapril therapy.
  - E Angiotensin-converting enzyme inhibitors reduce renal blood flow.
- 3 Side effects associated with angiotensin-

converting enzyme inhibitor therapy include:

- A hypokalaemia
  - B skin rash
  - C neutropenia
  - D proteinuria
  - E disturbance in taste
- 4 With regard to treatment with angiotensin-converting enzyme inhibitors:
    - A they are contraindicated in patients with bronchial asthma.
    - B potassium supplements are necessary
    - C side effects are dose related and are usually reversible.
    - D diuretics should be curtailed or omitted before administering an angiotensin-converting enzyme inhibitor.
    - E the hypotension induced by a single oral dose of captopril usually lasts for more than 24 hours.
  5. First dose profound hypotension with an angiotensin-converting enzyme inhibitor is more likely to occur in patients who
    - A are taking adrenergic blocking drugs
    - B have congestive cardiac failure
    - C are on large doses of diuretics
    - D have renin-dependent hypertension
    - E are salt and volume deplete

### ANSWERS

4. C D E 5. A B C D E  
1. B C E 2. B C D 3. B C D E



# INFRARED COAGULATION — A MODALITY OF TREATMENT OF HAEMORRHOIDS

Dr Maung Maung Aye, MBBS, M Sc, FRCS, FACS  
Dr P H C Lim, MBBS, M Med (Surg)

Haemorrhoid is a common ailment. The incidence of piles apparently increases with age, and it seems likely that at least 50 percent of people over the age of 50 have some degree of haemorrhoid formation (Goligher).

Internal piles have been traditionally regarded as varicosities of the haemorrhoidal venous plexuses in the submucosa of the anal canal although Thomson (1975) had proposed an alternative theory, haemorrhoids being prolapse of the normal mucosal cushions containing so called 'corpus cavernosum recti of Stelzner'.

Primary piles are typically situated at 3, 7 and 11 'o' clock position. Secondary piles may occur between these main haemorrhoids. The stages of the haemorrhoids are classified as first degree, second degree which is again divided into early and late, and third degree.

Haemorrhoids cause itching, smarting, bleeding and aching sensation; later, piles protrude and may become complicated with prolapse, thrombosis, strangulation and even gangrene.

Various methods of treatment such as sclerotherapy, anal dilatation, banding, cryotherapy and haemorrhoidectomy are in existence; each method has perhaps its own indi-

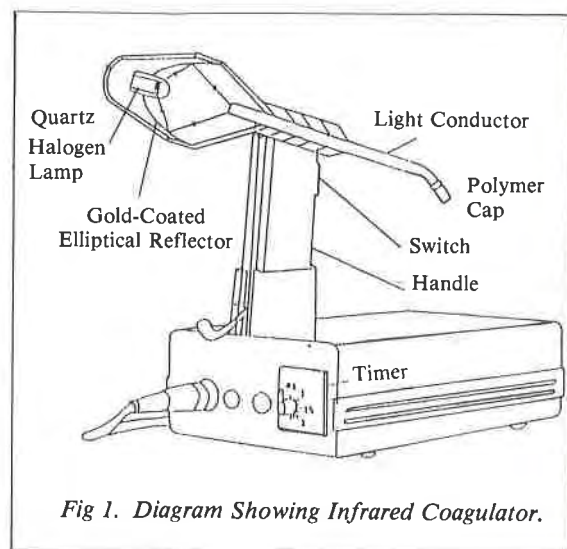


Fig 1. Diagram Showing Infrared Coagulator.

cation and place in the spectrum of treatment of piles. Infrared coagulation of haemorrhoid is relatively a new method. This technique was introduced by Nath and Neiger. This paper is to present a limited experience of prospective study of infrared coagulation of haemorrhoids.

The infrared contact coagulator consists of an infrared radiator, a rigid quartz-glass light guide curved at the end, at which the light emerges and a tissue contact surface or tip made from a special polymer that is transparent to infrared and does not adhere to the tissue. That infrared radiation is focussed into the light guide. A low-voltage tungsten-halogen lamp (15V) produces the beam in a gold coated reflector housing. The optimal amount of energy to be transferred into the

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Singapore

tissue to produce precise depth of necrosis can be preset exactly by means of a timer and thus can be reproduced at all times. This is not possible with other methods of coagulation — electrical, thermic or injection sclerotherapy. (Figs 2 and 3).

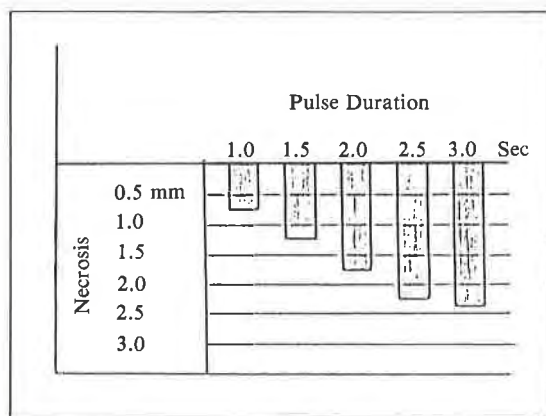
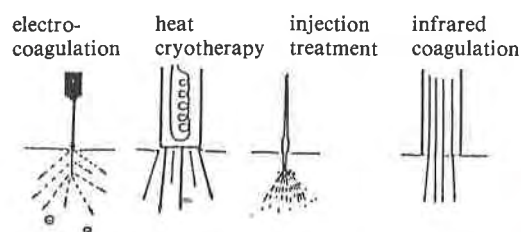


Fig. 2 The correlation between the depth of necrosis and pulse duration.



Depth of the action depends on current, intensity, pressure and diffusion.

Fig. 3 Comparison of the various methods of coagulation: Electrical — Thermic — injection — Infrared.

Unlike the laser, the infrared coagulator does not effect non-contact coagulation; the end of the light conductor must be pressed against the tissue. This concomitant tissue pressure using a flat probe is in fact even more advantageous as the mechanical pressure reduces or interrupts the blood flow and produces instant coagulation. Being non-electromagnetic, it does not affect a cardiac pace maker; being non-sparking, therefore, there is no danger of explosion in the colon; and being no injection of foreign substance into the body so the technique is safe during pregnancy. Infrared coagulation is particularly suitable for first and second degree piles.

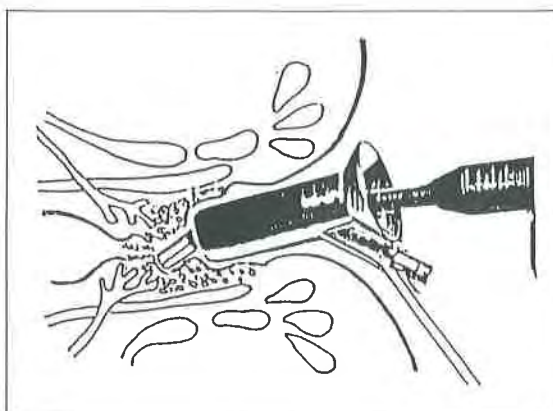


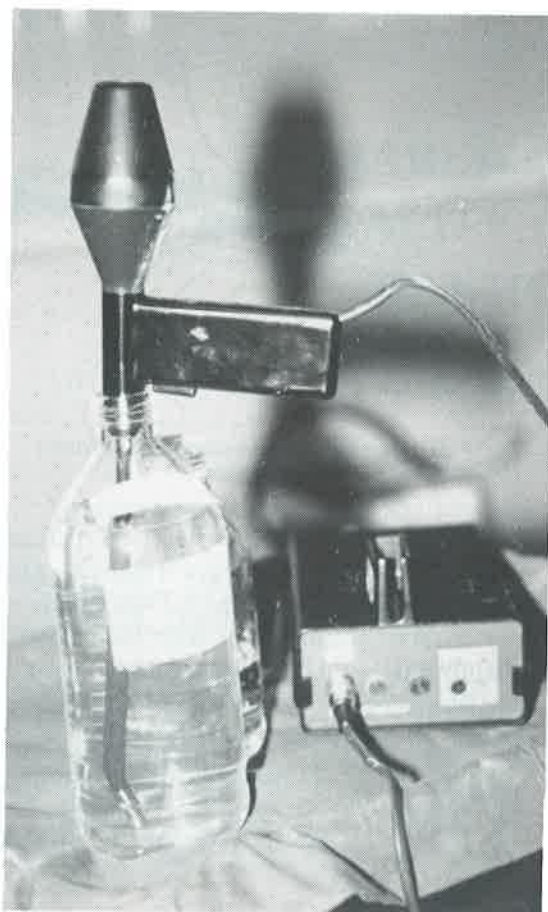
Fig. 4 Diagrammatic Representation of Infrared Coagulation On Haemorrhoid.

The haemorrhoids are first located through a proctoscope and the light guide of the infrared coagulator is then inserted and slightly angled tip is positioned on the mucosa just above the haemorrhoid with a slight pressure. The infrared lamp is then switched on by means of a trigger on the pistol grip and the radiation goes off automatically according to the duration set on the timer. This may be repeated on each pile resulting in multiple coagulation sites.



Fig. 5 Infrared Coagulation of Haemorrhoids in Action.

For disinfection of the coagulator only the front section of the light guide up to the screw area can be cleansed and wetted; therefore the light guide is chemically disinfected upright in the cidex solution in the bottle. The basic coagulator unit cannot be wetted and washed.

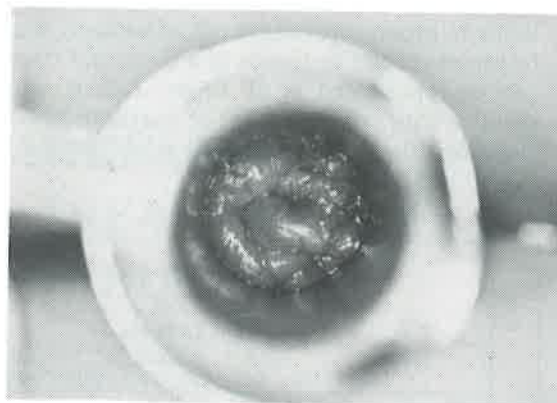


*Fig. 6 The Method of Sterilization of the Coagulator.*

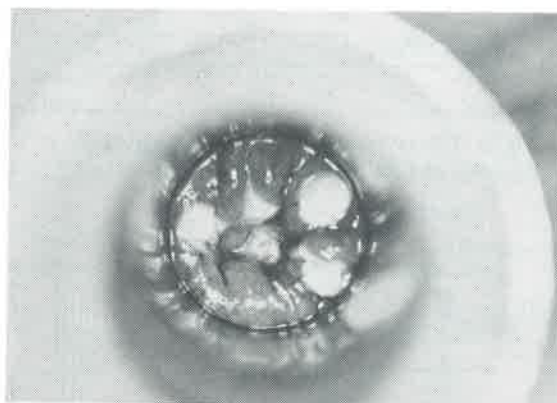
Tissue coagulation with infrared radiation is based on the protein denaturation which occurs at 60°C to 80°C. When exposed to radiation for one second, tissue fluid reaches a temperature of 100°C and a hissing noise is heard, then tissue coagulation, dessication and subsequently carbonisation occur. Since the tip of the probe is coated with a special polymer it does not adhere to the mucus membrane after the irradiation.

The purpose of infrared coagulation in the treatment of haemorrhoids is to promote intravascular thrombosis and tissue sclerosis to throttle the blood vessels.

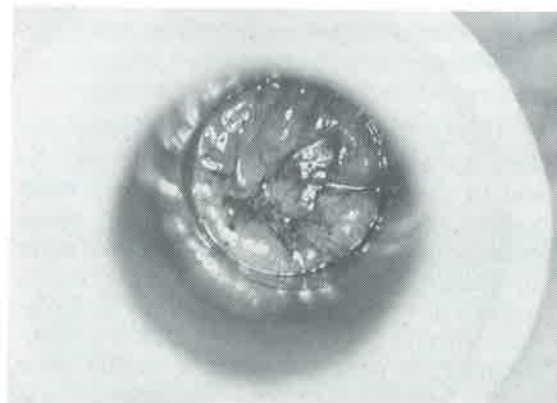
The irradiated site appears as a greyish white rounded area which become a shallow ulcer and heals within a week or fortnight



*Fig. 7 Haemorrhoids seen through the Proctoscope.*

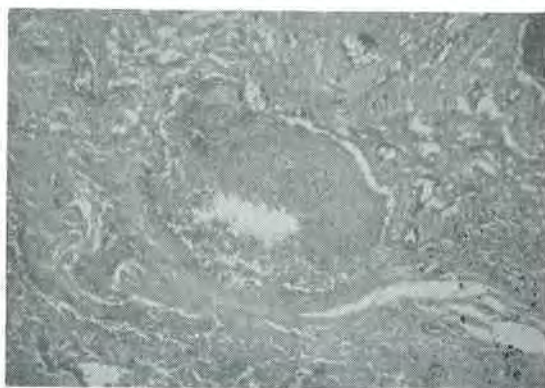


*Fig. 8 Appearance of Haemorrhoids Immediately After Coagulation.*

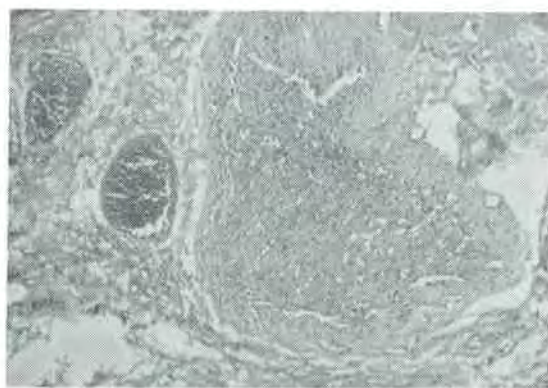


*Fig. 9 Appearance of Haemorrhoids 2 weeks after coagulation showing Healing Superficial Ulcers.*





*Fig. 10 Histology showing Recent Thrombus in Haemorrhoids after infrared coagulation.*



*Fig. 11 Histology of Organising Thrombus in Haemorrhoids after infrared coagulation.*

without superficial scarring. Bleeding stops immediately if infrared radiation is applied on the bleeding pile. The treatment may be repeated weekly or fortnightly if necessary for a number of times.

## Patients and Results

**TABLE I.**

Total Number of Patients:	25
Male:	22
Female:	3
Chinese	21
Malay	2
Indian	2

A total of 25 patients, 22 male and 3 female, were treated by this method; they were mostly Chinese. The commonest presentation was bleeding on defaecation, which was followed by prolapse while passing motion; other manifestation included pain, discomfort, discharge and irritation at the anus.

**TABLE II.**

PRESENTATION	
Bleeding	23
Prolapse	11
Others	16
DEGREE	
First	3
Second	19
Third	3

Regarding the degree of piles, three patients belonged to first degree, 19 to second degree and 3 patients to third degree; two initially refused operation and the third one was bleeding profusely at each motion.

**TABLE III.**

PREVIOUS TREATMENT	
Conservative Treatment	5
Sclerotherapy	5
Banding	3
Haemorrhoidectomy	4
Multiple Treatment	3
Nil	11

Most of the patients had some form of treatment before; surprisingly four patients had haemorrhoidectomy previously and only 11 patients had no prior treatment.

**TABLE IV.**

NUMBER OF INFRARED COAGULATION APPLICATIONS	
Times	Patients
1	7
2	8
3	7
4	2
5	1

Infrared coagulation was applied from one to five times at weekly intervals as an out-patient; the sites of application were often multiple on each primary piles depending on the size of the haemorrhoidal node but the pulse duration was always set at 1 second. If a patient needs more than three sessions of treatment, then the haemorrhoid is unlikely to respond to further applications.

## Results

TABLE V.

### RESULTS

Cured	17 (68%)
Improved	3 (12%)
Failed	5 (20%)
Unsuitable	4
Suitable	1

Sixty eight percent of the patients were cured, i.e. no more visible piles and patients were asymptomatic and pleased; 12 percent were still having some piles but no more symptoms and were satisfied. Five patients failed to respond to infrared coagulation, out of which four had advanced degree of haemorrhoids and actually were unsuitable for this type of treatment. It was tried on them as one was bleeding profusely and continued to bleed despite the treatment, and the other three were initially reluctant to undergo operation and wished to try this new method.

One young lady had early second degree bleeding piles which she said were not improving even after three sessions. All the five failed cases were operated upon, among which the young lady and the other patient

had minimal piles at operation. These two patients perhaps could be spared haemorrhoidectomy. All the specimens were sent for histological examination. Some cases showed superficial ulceration, intravascular thrombosis and perivascular fibrosis.

Complications were negligible. Some patients felt mild sharp pain when coagulated especially if the application was low but the majority were painless. Minimal discomfort or aching and heavy sensation in the rectum were sometimes felt. Occasionally bleeding at defaecation i.e. blood stain on the toilet paper was reported but none of the patients had severe bleeding.

## Discussion

The paper is presented not to claim superiority of the new technique over the other established methods of treatment that have been in use. Nevertheless, comparison of the results is not out of place here too. J. Goligher has summarised the results of the various modalities of non-operative treatments of early degree of haemorrhoids.

Leicester et al from St. Mark's hospital, London, had done prospective randomised control trial of infrared coagulation versus sclerotherapy and banding on 200 patients with haemorrhoids, non-prolapsing and prolapsing. The results presented were favourable towards infrared coagulation especially in the non-prolapsing haemorrhoids. Their conclusion may be summarised as infrared coagulation being superior to injection sclerotherapy in first degree piles and the rubber band ligation being more suitable for prolapsing larger haemorrhoids. The complications

TABLE VI. HAEMORRHOIDS: COMPARATIVE RESULTS OF VARIOUS TREATMENTS

Author	Technique	Total Patients	Improved/Satisfied	Not or Minimally Improved	Operated	Follow-up Period
Greca	1981 Sclerotherapy	30	23 (76%)	7 (23%)	6 (20%)	1 year
Murie	1980 R.B. Ligation	43	34 (79%)	9 (21%)	?	1 year
Anscombe	1974 Anal Dilatation	50	38 (76%)	12 (24%)	?	6 months
Goligher	1976 Cryosurgery	68	38 (56%)	25 (37%)	5 (7%)	3 months
Leicester	1981 I.R. Coagulation	42	34 (81%)	17 (17%)	1 (2%)	3 months
Aye & Lim	1986 I.R. Coagulation	25	20 (80%)	5 (20%)	5 (20%)	6 months

of the treatment are not serious — slight pain, minimal bleeding and occasional discharge.

We agree with them that infra-red coagulation is particularly suitable as an outpatient treatment for early degree haemorrhoids with high chance of success. We also found that there is no harm even if applied on the later degree of haemorrhoids if the patient refuses operation; he will probably be happier and obtain symptomatic relief. The advantages of this technique are simplicity, safety, speed and security. In addition, the technique can also be used in surgery for haemostasis of bleeding points, for the treatment of cervical erosion in gynaecology and destruction of superficial skin lesions in dermatology.

In conclusion, infrared coagulation has a pride of place in the modalities of treatment of haemorrhoids, especially for first and early second degree haemorrhoids.

### Summary

In summary, infrared contact coagulation is based on infrared radiation emitted by an infrared lamp. The exact depth of necrosis can be predetermined by means of pulse duration on the timer. Infrared coagulation on the haemorrhoid produces intravascular

thrombosis and perivascular sclerosis of the tissues. It is effective in controlling the haemorrhage in bleeding piles and the technique is particularly suitable for early degree or non-prolapsing piles. It is simple, safe, secure and speedy. Among the armamentarium for treatment of haemorrhoids, newly introduced infrared coagulation technique indeed has a pride of place.

### Acknowledgement

This study was made at the Toa Payoh Hospital and the equipment was procured by my co-author. The photographs were taken by Dr Kenneth Thean, F.R.C.S. and the histology slides were prepared and read by Dr Carol Kwan of Pathology Dept, SGH.

I wish to express my gratitude to all who have helped me in treating these patients and also to Shariffa of Changi Hospital for help in preparing this paper.

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## X-RAY QUIZ

*Contributed by Dr K Param, MBBS (S'pore), DMRD (Liv), FRCR (UK)*



**FIG. 1**

Fig. 1 is a radiograph of a young male adult's IVU examination, 20 minutes after injection of contrast medium.

- 1) What are the unusual features you can make out from Fig. 1.?
- 2) What is your most likely diagnosis?

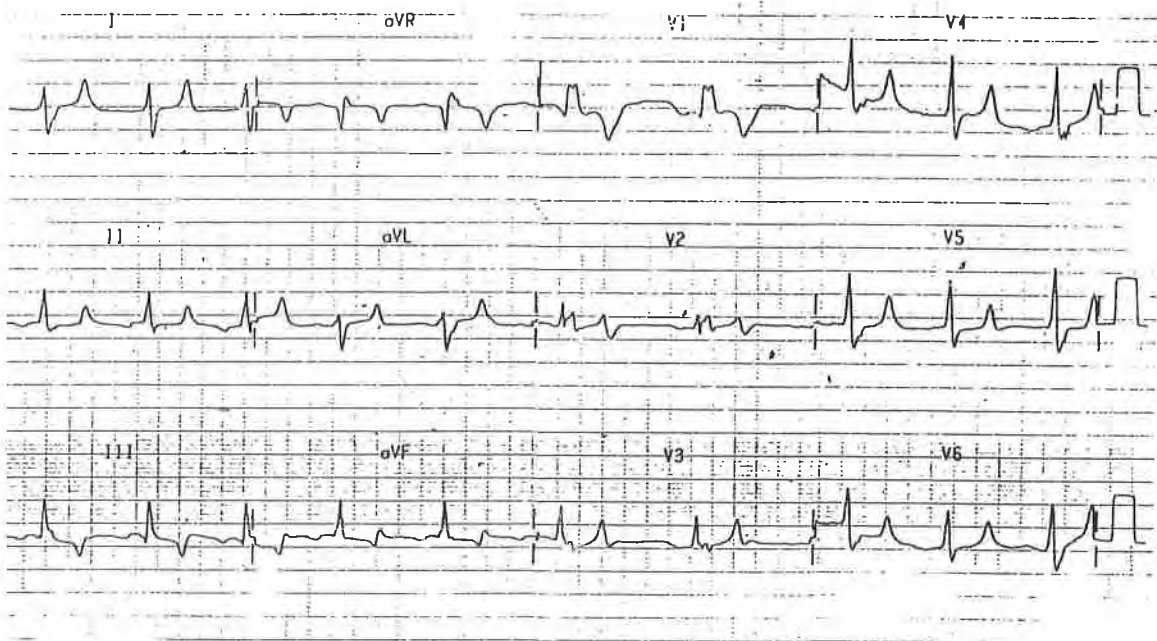
## HOME STUDY SECTION

### ECG QUIZ

*Contributed by Dr Baldev Singh, MBBS (S'pore), M Med (Int Med), MRCP (UK)*

This ECG belongs to a 65-year-old lady who was brought to the emergency room in a listless and extremely drowsy state. She had a history of diabetes mellitus for which she was taking oral medication. There was no chest pain.

1. What abnormalities are present in the ECG?
2. What is the most likely underlying causes?



## ANSWERS TO X-RAY QUIZ



FIG. 2

Fig. 2 is a second view of both the kidneys. Both kidneys are markedly enlarged, each measuring about 18 cm in length in its longest axis (Normal 10-15cm). The length of a normal kidney can also be assessed by the height of the L2 vertebra and disc. It is approximately 3 times the height of L2 + disc.

In addition, the pelvi-calyceal systems are stretched and deformed by multiple cysts. There is elongation of the major and minor calyces resulting in 'spider leg' appearance.

### DIAGNOSIS: ADULT POLYCYSTIC KIDNEYS

Bilateral enlargement of kidneys may also result from

1) Infiltration by lymphoma or amyloid; 2) Bilateral acute pyelonephritis; 3) Acute tubular or cortical nephrosis; 4) Bilateral obstruction.

## ANSWER TO ECG QUIZ

1. The patient has a regular heart rate of approximately 60/min. Low flat P waves are visible in lead III and the P wave is followed by a QRS complex indicating that the patient is in sinus rhythm. Inverted P waves are also visible in II but generally the P waves are hardly visible. The QRS complexes are widened to 3 small squares or 0.12 sec; each small square being equivalent to 0.04 sec. The pattern of the QRS complex in V1 is that of a Right bundle branch block. The QTC interval is prolonged to 0.48 sec after correction for rate. The T waves are tall and peaked.
2. The most likely cause of these ECG abnormalities is hyperkalemia.

### DISCUSSION

Chronic Renal Failure had crept up on the patient as a result of Diabetic Nephropathy and she had hyperkalemia, the potassium level being 7.2 mEq/L. Hyperkalemia produces changes in all parts of the ECG — P waves, QRS complex, ST segments, T waves and also in the cardiac rhythm. The changes become

increasingly severe as the level of potassium rises, but this correlation is neither precise nor totally consistent.

The initial abnormality is usually the development of tall T waves. These in themselves do not necessarily indicate hyperkalemia as they are sometimes seen in normal people and in those with posterior ischaemia. Next comes a reduction in the P waves amplitude, reduction in R waves height, widening of the QRS complex, ST segment elevation or depression and development of hemiblocks.

Finally P waves disappear altogether. QRS complexes become very wide and bizarre. A-V block may occur, premature ventricle contractions, ventricular tachycardia, ventricular fibrillation or ventricular asystole may result.

It must be emphasized that the only way to confirm hyperkalemia is by serum potassium level estimation. There are no diagnostic ECG changes. All the changes described above are non-specific may be seen in myocardial injury from any cause.



## NEWS FROM THE COUNCIL

### 1. THE POST-GRADUATE MEDICAL REFERENCE LIBRARY

The library was officially declared open by Mr Howe Yoon Chong, former Minister for Health, on 19 October 1987. This Medical Library is run by the College of General Practitioners Singapore and the Academy of Medicine. It contains a wide range of medical journals and textbooks and latest medical information is readily available by electronic information storage, retrieval and access to international medical databases.

### 2. INTERNAL MEDICINE COURSE

The Continuing Medical Education Committee of the College conducted an Internal Medicine Course. The programme was as follows:

Date	Topic	Speaker	Moderator
30.10.87	House-Calls — Emergency and Non-emergency	Dr Goh Lee Gan	Dr Koh Eng Kheng
06.11.87	Management of Migraine and other Vascular Headache	Dr Benjamin Ong	Dr Soh Cheow Beng
13.11.87	A Practical Approach to Anaemias	Dr Ng Hoo Wah	Dr Chin Koy Nam
20.11.87	Management of Thyroid Disorders	Dr Lee Kok Onn	Dr Richard Ng
27.11.87	Uses and Abuses of Corticosteroids	Dr Vernon Oh	Dr Ho Gien Chiew
04.12.87	Evaluation & Management of Bleeding Disorders	Dr Patrick Tan	Dr Cheong Pak Yean
18.12.87	Rehabilitation of Post-Stroke Patients	Dr Oon Chong Hau	Dr Henry Yeo

### 3. OBSTETRICS AND GYNAECOLOGY COURSE

The College of General Practitioners Singapore in conjunction with the Department of Obstetrics and Gynaecology, Singapore General Hospital, organised a "Practical O & G Course for Family Physicians". This course emphasized on the problem-oriented approach to common O & G problems. Hands-on experience in examination techniques, diagnosis and O & G problems were highlighted. The programme covered the following:

Date	Topic	Speaker
04.11.87	Approach to the Subfertile couple — Case Demonstration	Dr Charles Ng
11.11.87	Post Menopausal Bleeding and Oncological Management Problems — Case Demonstration	Dr Yeo Ker Chiang
18.11.87	Screening for Cervical Cancer — How to take a cervical smear — Slides Presentation	Dr T H Ho
21.11.87	Tour of "D" Clinic — FAC, Colposcopy, Ultrasound Gynaecology Ward Bedside Teaching	Dr K H Chan Specialists of Dept

- |          |  |                                  |
|----------|--|----------------------------------|
| 02.12.87 | Common Complications of pregnancy — Ectopic Pregnancy, APH, Pre-eclampsia, Intrauterine Growth Retardation, Intrauterine Death<br>— Case Demonstration | Dr S H Yeo                       |
| 07.12.87 | Common Medical Diseases in Pregnancy —<br>— Anaemia, Heart Disease, Diabetes, Hyperthyroidism<br>— Case Demonstration                                  | Dr Phyllis Liauw                 |
| 12.12.87 | Tour of Labour Ward<br>Obstetrics Ward Bedside Teaching  | Dr S L Yu<br>Specialists of Dept |
| 16.12.87 | Evaluation of Menorrhagia<br>— Case Demonstration  | Dr L K Yap                       |

#### 4. COLLEGE DIPLOMATE EXAMINATION

The College Diplomate Examination will be held in October/November 1988. In preparation for this examination, candidates must have attended six (6) different modules of the Continuing Medical Education programme. The College in addition is organising a 20-session teaching seminar on Family Medicine/General Practice commencing 9 January 1988, for those intending to take the examination. Arrangements will also be made for candidates to attend Clinical sessions in the hospitals and this will include five sessions each in Adult Medicine and Paediatrics.

#### 5. NEW MEMBERS

The following have been accepted by Council into the membership of the College during the months of October/December 1987:

Dr Yap Kok Keng	— Ordinary Membership
Dr Lay Hong Choon	— Ordinary Membership
Dr Koh Joon Soo	— Associate Membership
Dr Lee Geok Choo	— Ordinary Membership
Dr Yeo May Lene, Esther	— Associate Membership
Dr Nithiananthan Jeevarajah	— Associate Membership
Dr Eu Yee Tat, David	— Ordinary Membership
Dr Susan Jill Pickard	— Ordinary Membership
Dr Tan Foh Thai	— Ordinary Membership
Dr Tan Seung Po	— Ordinary Membership
Dr Choe Inn Chuan Raymond	— Associate Membership
Dr Kwok Yuet Har Cynthia	— Associate Membership

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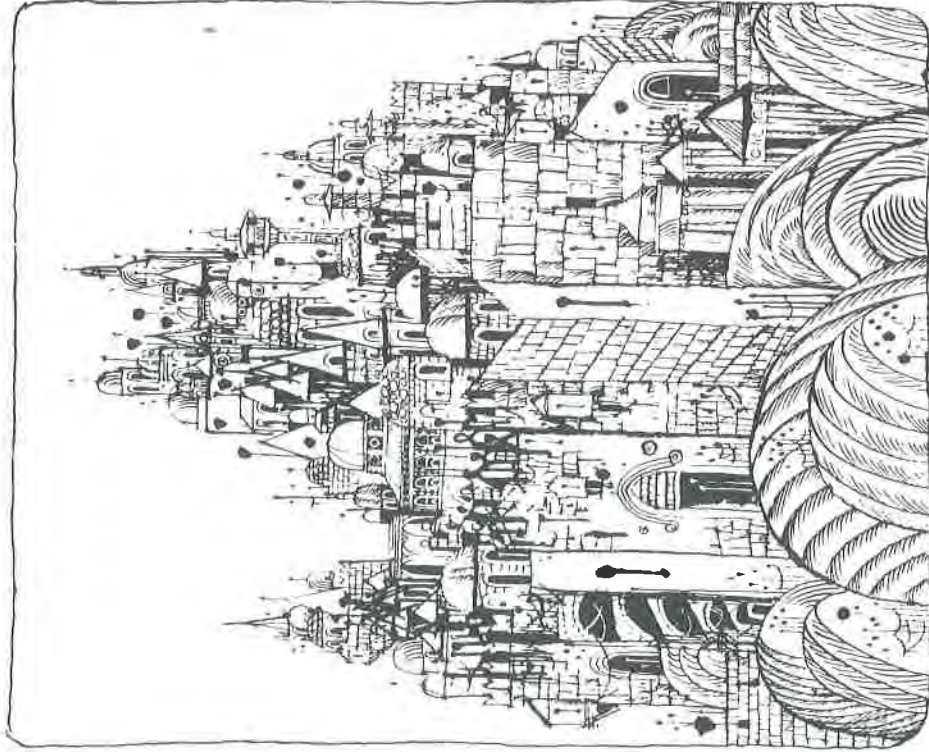
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