

The Singapore Family Physician



ISSN 0377-5305

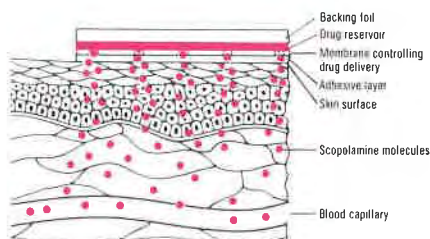
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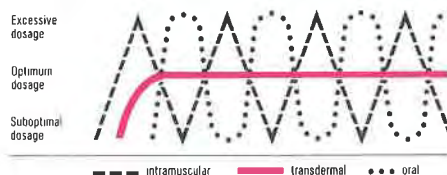
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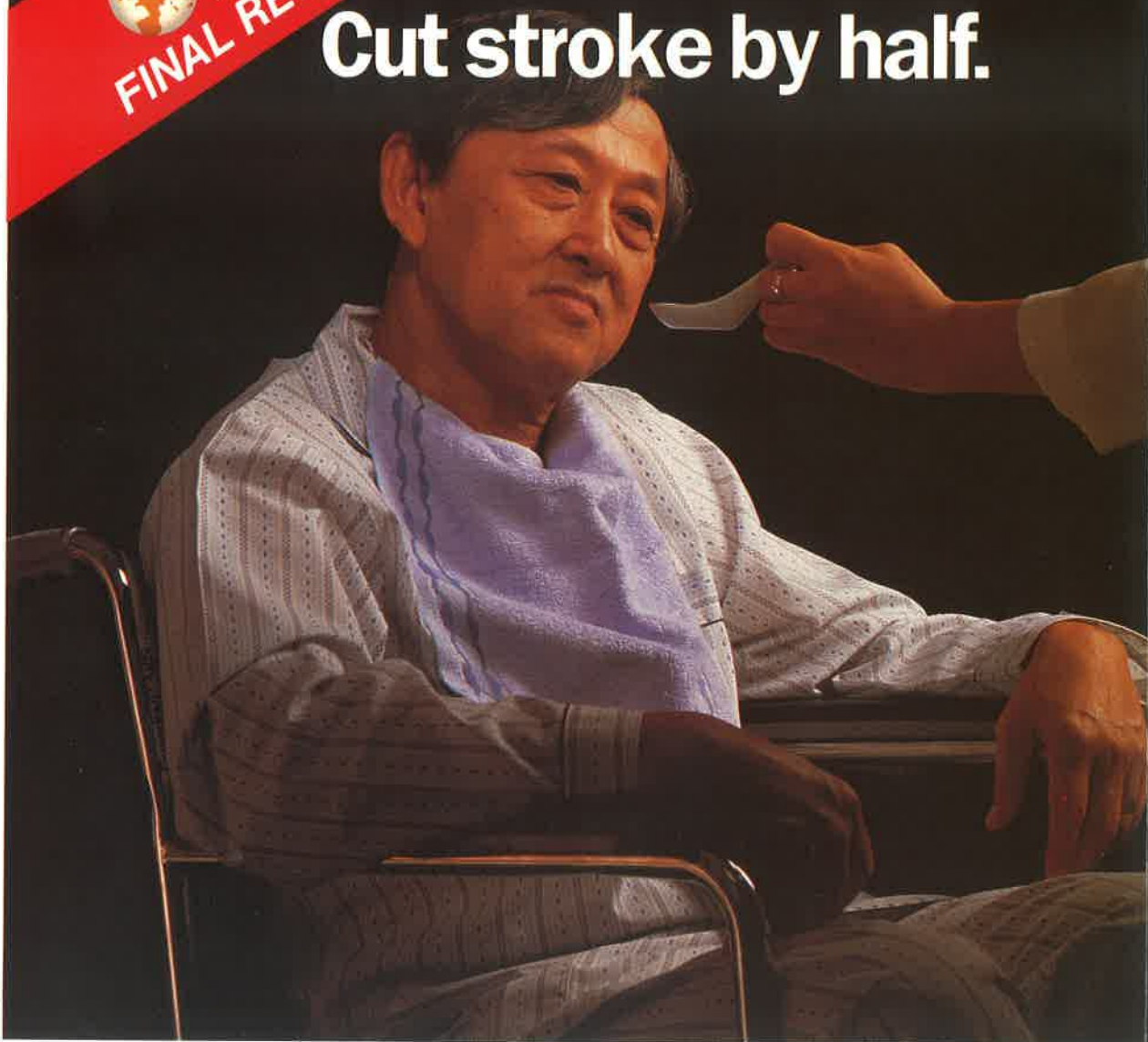
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¹ Amery A, Brinko P, Clement D et al. Mortality and morbidity results from the European Working Party on High Blood Pressure in the Elderly Trial. *Lancet* 1985; i: 1349 - 54.

² Antihypertensive therapy in elderly patients: Ninth interim report of the European Working Party on High Blood Pressure in the Elderly (EWPHE) *Neth. Journ. of Med.* 1984; 27: 165 - 70.

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The College of General Practitioners Singapore
4-A College Road, Singapore 0316

Vol. XII, No. 1

January/March 1986

Price to Non-Members \$5.00

MC(P) 86/3/86

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EDITORIAL

TOWARDS EXCELLENCE IN GENERAL PRACTICE

In a few months time, the College will be moving to a new home in the former building of the Faculty of Medicine. This move marks a new era in the history of our College. It means more than better and bigger premises for the College. It is a concrete demonstration by the Ministry of Health on the importance it places on continuing medical education for doctors. We are indeed most grateful for the recognition and importance accorded by the Ministry of Health to the College. It is also a reflection of the hard work put in by the members of the Council of the College in the past years.

It now falls upon all general practitioners in Singapore to make full use of this opportunity to strive towards higher heights of excellence in general practice. It is incumbent upon us to ensure that general practitioners do not become extinct in Singapore especially with the current emphasis given to specialisation. In the United States, a personal style of primary health care is practically non-existent in most of the country and this has resulted in fragmented care, a lack of attention to preventive medicine and a lack of adequate services for the poor and racial minorities. In contrast, the British National Health Service has protected a system of medical care based on the general practitioner and made available to the British an accessible, responsive, humane, technically competent health care and medical care¹.

We need to learn from the mistakes of the Americans and the experience of the British and to develop a primary health care system that is best suited to our society and second to none. In our search for excellence we need to recognise the deficiencies of our present system, to define our role in the health care system, and to explore other options and solutions.

PRESENT WORKING CONDITIONS:

The present working conditions of the majority of our general practitioners are

inimical to excellence. Working alone and spending long hours in the clinic leave many general practitioners precious little time for continuing medical education or research. Communication with the specialists and hospitals is poor or non-existent so that it is practically impossible to practise continuity of medical care. Furthermore, patients hop from one doctor to another making comprehensive care extremely difficult. The present set-up of primary health care in Singapore is thus episodic, fragmented and focussed on acute minor illnesses. It is therefore closer to the situation in the United States.

CONTINUING MEDICAL EDUCATION:

Dr Eric Gambrill, Associate Adviser in General Practice in SW Thames Region, suggested that continuing education should provide doctors with the means of maintaining and improving their professional skills on an individual basis and this requires a continuing and critical review of clinical and organisational aspects of their daily work. He observed that doctors seem to be attracted to learn more about subjects in which they are already well versed rather than to attempt to remedy deficiencies. He further noted that the primary aim and often the only aim of almost all post-graduate programmes is the transmission of knowledge and that the development of motor or manipulative skills and cognitive or thinking skills and the fostering of appropriate and relevant attitudes are almost totally ignored.

Dr Gambrill proposed that small group learning methods be given higher priority and less reliance be placed on formal lectures. In his view, general practitioners must assume responsibility for their own continuing education, because no other group can fully understand their needs and how to meet them — they must develop the confidence to learn from each other and make appropriate use of educational resources.²

FEE-FOR-SERVICE REIMBURSEMENT:

The present fee-for-service encourages the prescription of unnecessary drugs and therapeutic medicine rather than preventive medicine. Professor Steven A. Schroeder found that the fee-for-service reimbursement system encourages technology-intensive medical practice and favours hard services such as diagnostic tests and hospital care and discourages soft services such as counselling. The financial incentives accorded to the technologically intensive specialties results in a devaluation of the value of primary health care and this creates the impression that primary care is less important.³ This is most unfortunate as the most cost effective method of improving the health of our nation is primary health care. Specialist care is aimed solely at the treatment of diseases rather than in the cultivation of health.

Professor Rosalind S. Miller postulated that the income derived from a capitation mode of reimbursement may provide a realistic incentive for doctors to respond positively to primary health care.⁴

This is in fact the situation in Great Britain where the general practitioner is paid by the National Health Service through an annual capitation fee for each patient on his list. Such a system enables the British general practitioner to get to know his patients fairly well and to truly practise preventive medicine.

RESEARCH AND TEACHING:

It is most unfortunate that the University has failed to recognise the importance of primary health care. Without a Department of General Practice, research is seriously hampered. Worse still, students are given a lopsided training and are poorly equipped to deal with psychosocial disorders which are so common in general practice. Professor Schroeder pointed out that much clinical teaching is done on a relatively uncommon set of patients with rare, severe, or terminal illnesses as teaching hospitals have a high concentration of patients with high cost illnesses, many of whom have fatal outcomes. It is thus not surprising that newly qualified doctors entering general practice find themselves frustrated as they are not seeing the sort of patients they are trained to care for.³

Nevertheless, the College has taken very seriously the uphill task of exposing medical students to general practice during a week's posting in the clinics of its members. Unfortunately, the efforts by our general practitioners to impart some of their experience have not been deeply appreciated by the medical students who are more concerned and impressed with technological medicine than with humane medicine.

DEFINITION OF PRIMARY HEALTH CARE:

Primary Health Care has been described as "a constellation of health activities" that contains the following components:

1. Responsive care for episodic illness;
2. Continuing care of chronic illness;
3. Health screening and monitoring;
4. Preventive services;
5. Appropriate health education; and
6. Integration with care in acute and long term institutions.⁵

A good primary health care system is therefore characterised by accessibility, comprehensiveness, coordination, continuity and accountability. The problem is not so much a question of what is primary health care but how do we achieve the above objectives of primary health care.

THE FUTURE GENERAL PRACTITIONER:

One of the articles in this issue examines the impact of medical technology on general practice. With the advent of the computer the capabilities of the general practitioner will be extended in ways we are only just beginning to imagine. As Dr. Warren L. Osborne pointed out, information technology will enable general practitioners to spend more time with patients in disease prevention, counselling, and supportive care. Another effective use of computer technology is patient education.⁶

Opportunistic screening and epidemiological research will become readily available at the touch of a key of the computer keyboard.^{7,8} With the information collated from the patients seen in general practice, our concept of the treatment of chronic illnesses such as hypertension and diabetes mellitus may well change.

The professional isolation of general practitioners in solo practice can be solved by finding new ways of forming group practices. This has been documented by Dr. Kho Keng How who has shared his experience of how existing solo general practitioners can group together in a limited company to share certain aspects of their practices.⁹

CONCLUSION:

It is the vision of Professor Schroeder that primary care will be felt to be as intellectually demanding as the intensive care unit, when physicians will find psychosocial problems as exciting and challenging as biochemical ones.³ It is the challenge to general practitioners to prove that they hold the key to better health for they are in the best position to do the most good for their patients. Professor Miller espoused the view that it is a society with myopic vision that fosters episodic medical care rather than health care that includes primary prevention, particularly for those at greatest risk, and where the social welfare and health problems are indivisible.⁴

The future is thus an exciting one for general practitioners. We need to shed off the chip on our shoulder and to assume our responsibilities as the guardians of the health of our nation. We need to convince our political leaders that the road to health lies in excellence in primary health care rather than specialist

care. For if we fail our fellow citizens will pay dearly in terms of their increased morbidity and mortality. And the reward for excellence in primary health care is a healthy, vibrant and caring nation.

PK

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SERUM CHOLESTEROL, HDL-CHOLESTEROL, TOTAL SERUM CHOLESTEROL: HDL CHOLESTEROL RATIO AND THE RISING INCIDENCE OF CORONARY HEART DISEASE IN SINGAPORE

Dr W L S Chew
MB, BS, FRACP

Death from coronary heart disease (CHD) in Singapore has shown a 9% increase from 1974 to 1984. While mortality from infectious diseases has shown no rise and has remained at a low rate over the past 10 years from better environmental and health measures, we are now faced with increasing morbidity and mortality from cardiovascular disease of which ischaemic coronary heart disease is the main contributor. Over the past 10 years also (1974-1984), mortality due to strokes has shown a 1% rise.

What then is the contributor to this increasing morbidity and mortality of coronary heart disease in Singapore? Some cardiologists would have us believe that this is all due to stresses of modern living. Stress is unfortunately, a nebulous quantity — exceptions are the London bus driver-conductor study, where the occupation of the bus driver was found to be more stressful and sedentary than that of the conductor accounting for the greater incidence of CHD in the former. We looked at the occupational status of 40 survivors of coronary heart disease under the age of 50 years, and found that 21 (52.5%) were semi-skilled and unskilled employees, whose occupations were probably less stressful than the other (19 (47.5%)) who were professional and skilled employers and who were also facing business difficulties with the downturn in the economy (1984).

Physician
Alexandra Hospital, Singapore

What are the contributory risk factors to the increase in morbidity and mortality in our people? Over the past two decades, the Gross Domestic Product (GPD) has averaged a growth of almost 9% per year. The people have enjoyed the third highest per capita income in Asia (Brunei, with lots of oil and few people is number one, followed by Japan). Turning to admissions for coronary heart disease in our hospital, the Alexandra Hospital, there were 273 people admitted for management of this disease in 1984. A similar sized hospital in the province of Kwangchow had only 50 admissions for coronary heart disease. The Kwangchow Chinese are heavy cigarette smokers and suffer from a high incidence of lung cancer, but their diet of rice gruel, vegetable and fish must be preserving their coronary arteries as their serum cholesterol on such a diet can be presumed to be low. In our population what must follow our increase in wealth and our fondness for rich foods is the increase of serum cholesterol from dietary cholesterol. If we compare the levels of serum cholesterol in 1974 and in 1984, we see an average rise of 14.4%, with a rise of 22.5% in the less than 50 year olds. This is indeed alarming, as cholesterol is the major contributor to atherosclerosis and CHD. Lowering the level of serum cholesterol by 10% through dietary changes is achievable and is the first step to take if a halt and a reversal of the trend of rising morbidity and mortality in CHD is to be achieved.

That cholesterol is a major and important risk factor of atherosclerosis and CHD is not in doubt. The LRCPT trials showed that an 11% decrease in LDL cholesterol was related to

a 19% decrease in CHD. Hence lowering serum cholesterol is the first mandatory step in the lowering and reversal of the trend of CHD mortality and morbidity in Singapore. However the level of serum cholesterol must not be looked at in isolation. We have shown that the levels of serum cholesterol in many of our patients are in the normal reference range of the laboratory.

It is best to look at the total serum cholesterol: HDL cholesterol ratio if the risk of atherosclerosis and CHD is to be reckoned with. The Framingham study has shown that this ratio should not exceed 4.5, and has recommended that those with ratios greater than 4.5 should be advised and treated. Our Singapore patients have low serum cholesterol and low HDL cholesterol accounting for the high total serum cholesterol: HDL cholesterol ratios.

HDL cholesterol lipoprotein is associated with the reverse transportation of cholesterol from the peripheral tissues to the liver for metabolism to bile. Its beneficial effect then is the prevention of atherosclerosis. A low level of HDL cholesterol is associated with a greater degree of atherosclerotic change in the vessel wall. Although our studies show that the levels of HDL cholesterol in our population is low, we do not know as yet what the national average level of HDL cholesterol is. Neither do we know why these levels are low.

As health professionals, it may not be necessary for us to always indulge in controver-

sies. We should take the lead shown by our colleagues in the United States — where there is a continuing and indeed auspicious and important fall in the incidence of CHD — to educate our population to change to healthy life-style living. Here the College of General Practitioners can take the lead to look into the cause of the rise in the serum cholesterol and the reasons for the low HDL cholesterol in our population. Much is and will be expected of us doctors and health professionals to educate our people and to show the lead in living healthy life styles. Let us not allow this opportunity to halt and reverse this rising trend of morbidity and mortality of CHD to pass. The cost to the nation will be heavy if we do not do our duty.

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HELPING THE DYING PATIENT AND THE FAMILY IN SINGAPORE

Dr Anne Merriman

MBBCH, DCH, MRCP (I), MRCP (UK), FMCP (Nig), DTM&H, M Comm H, AM

INTRODUCTION

This paper is based on the final of 8 lectures given during the "Update in geriatric Medicine" course to the College in October-November 1985.

In preparation for the lecture, the author made enquiries at the local pharmacies, regarding drugs available for pain control in Singapore. Reference is made to this. (See addendum)

A questionnaire was distributed to those attending an earlier lecture in the series, regarding their approach to death, and care of the terminally ill in Singapore. The results of the questionnaire (n = 102) are referred to throughout the paper. The full results will be published in a later paper.⁵

This paper attempts to bring to light the need for an improved form of care for this group of patients, in the light of recent advances via the Hospice movement.

WHO IS THE TERMINALLY ILL PATIENT?

"The terminally ill patient is one in whom, following accurate diagnosis, the advent of death is certain and not too far distant, and for whom the treatment has changed from the curative to the palliative and the supportive."

— Dame Cecily Saunders¹

Reprints available from the author
Department of Social Medicine and Public Health
National University of Singapore
Outram Hill Singapore 0316

WHY DO WE NEED TO UPDATE TERMINAL CARE IN SINGAPORE?

- Epidemiology shows us that the number of deaths from cancer are increasing (Figure 1). Cancer as a cause of death, is only second to ischaemic heart disease in Singapore in 1984.² Some of those with cancer die quickly, but the majority have some time to go between diagnosis and death. 50% will have severe pain.³
- Carers have shown that they are not satisfied with the standard of terminal care here at present. (see results of survey with professional carers⁴ and GP's 1985⁵).
- There have been many recent advances in the management of terminally ill patients and their families, in the last 20 years, due to research and improved care via the hospice movement.

PSYCHOLOGICAL AFFECTS OF DEATH AND BEREAVEMENT

The doctor needs to understand the patient and the family. Death is a bereavement, for the dying person is losing everyone. The family faces bereavement losing the dying person. The stages of Kubler Ross⁶ help us understand some of the reactions that we might encounter in this sensitive situation from both the patient or the relative. These 5 stages are as follows:

DENIAL

ANGER

BARGAINING

DEPRESSION

ACCEPTANCE

However, not all go through all these stages, or in this order. Many old people have reached the stage of acceptance before they are terminal.

TO TELL OR NOT TO TELL?

Most doctors seem to tell the family here, but shy away from telling the patient. But even 88.2% of GP's want to be told, and 83.3% want to discuss their condition with their families!!⁵

1. Do I tell the patient?
Yes... if he wants to know. We owe our patients *Honesty*.
2. When do I tell the patient?
When he asks. *But the doctor must create the situation where it is possible to ask.*
3. How do I tell?
Knowing the patient, we tell as gently as possible. We may have to lead up to it in stages.
4. Should the family be involved?
Yes. Once both family and patient know they can discuss together. "In this way everyone knows what everyone else knows, and more importantly, everyone knows that everyone knows". This opens the way to communication within the family.
5. What if the family ask you not to tell?
Explain that you cannot lie to the patient. There may be affairs that need settling, a quarrel that needs healing, even thoughts or experiences that he/she needs to share. If you are avoiding telling, you will avoid the patient. Your guilt and discomfort will deprive the patient of that extra emotional care and attention needed at this time.

Remember each family is different, and each doctor is different. This sensitive area has to be handled individually.

Practice tip: **RECORD** what you have told the family and the relatives and their reaction, in case someone else has to carry on with the counselling.

WHERE SHOULD OUR PATIENT DIE?

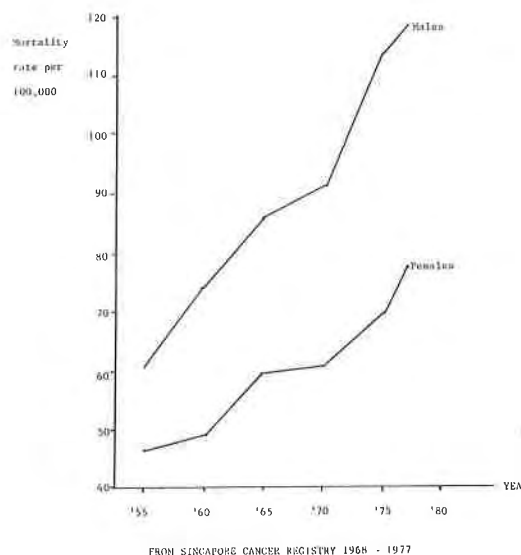
70.6% of GP's⁵ and, 71% of professional carers⁴ want to die at home. However the percentage of deaths occurring NOT at home in Singapore, rise each year. In 1982, 40% of Malays, 65% of Chinese, and 71% of Indians died *not* at home.⁷ (Figure 2)

WHY DO PEOPLE DIE IN HOSPITAL?

Because the family carers cannot cope. A survey in America was quoted by Professor

SINGAPORE: CRUDE CANCER MORTALITY RATE/100,000
BY SEX 1955 - 1977

FIGURE 1



FROM SINGAPORE CANCER REGISTRY 1968 - 1977

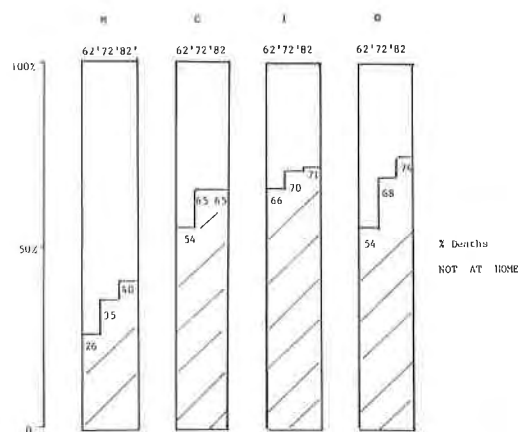


FIGURE 2

(ANNUAL REPORTS OF BIRTHS AND DEATHS)

Source Reference 7

Wilkes, in which 80% of the dying wanted to die at home, and 80% of their families wanted them to die in hospital!⁸

Family carers require:

- (a) adequate pain control so that they do not have to see the loved one in pain.

- (b) Nursing in the home, and support services eg. night sitters, a telephone hot line for advice.
- (c) A doctor willing to see the patient through to the end.

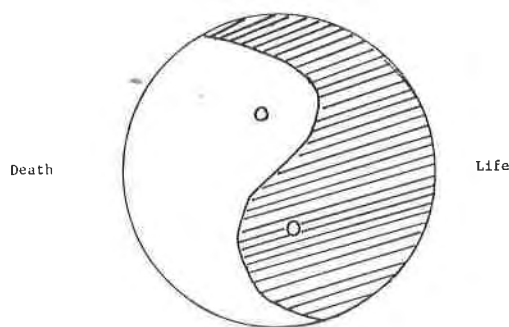
DOCTOR PSYCHOLOGY

89% of GP's feared most a prolonged dying process, 85.43% were afraid of troubling others, and 77.5% were afraid of a painful death.⁵ This may well reflect their experiences with dying patients in their practice.

Our whole training has been geared towards curing. To deal with the dying patient we have to step out of this role and become a carer, using palliative treatment and psychological support with the aim of improving the quality of life that is left.

Some of us find it very difficult to do this, especially in a busy practice. We need to take time to rethink our role. Are we prepared to do this? To care for the dying is to complete the circle of life (Figure 3). Everyone has to die. As a doctor do we sometimes forget this?

FIGURE 3



THE ORIENTAL SYMBOL OF WHOLENESS

Source Ref (15)

EXPECTATIONS OF THE PATIENT AND FAMILY OF THEIR DOCTOR

- a) Adequate pain control.
- b) Adequate symptom control.
- c) A sympathetic and honest advisor.

PAIN CONTROL

Acute pain is an event which will go away in time. Chronic pain is a situation which usually gets worse. This is the commonest form of terminal pain. Chronic pain expands and takes over until the patient cannot give attention to anything else but the pain. IT REQUIRES CONSTANT RELIEF.

It is exacerbated by other factors especially fear, depression and anxiety. ALL MUST BE CONSIDERED AND TREATED WHERE NECESSARY.

Principles of chronic pain control:

- (1) Know your patient.
- (2) Find the cause of the pain if possible.
- (3) Know your drugs.
- (4) **NO FEAR OF ADDICTION.** It has now been proved in trials that patients taking pain relieving drugs for that purpose, can stop the drug without withdrawal symptoms, (when pain has been relieved by other means eg. spinal block).
- (5) Exclude other causes of pain e.g. anxiety, depression.
- (6) Do not give drugs now known not to help in chronic pain. e.g. pentazocine, pethidine, Hoyle's cocktail.⁹
- (7) Injection should be the *last resort*.

Principles of administration

- (1) Give at regular intervals, do not wait for the pain to recur.
- (b) Increase dosage and frequency as necessary.
- (c) Change to stronger analgesic when necessary.⁹

Specific cause of pain requiring specific measures

- (1) Bone pain, worse at night, due to the production of prostaglandins. Use NSAIDS.
- (2) Secondary infection. Use antibiotics; metronidazole if anaerobic.
- (3) Colic. Use Lomotil with a stool softener.
- (4) Headache due to raised intra-cranial pressure, — dexamethasone 16mgs for 1 week then reduce.
- (5) Nerve compression — analgesics with dexamethasone 8 mgs.
- (6) Lymphoedema — dexamethasone 8 mgs daily.

Make out a provisional list of drugs that you know that you can use in terminal care. Get to know their side effects, and when to and when not to use them. Stick to this regime unless the patient is intolerant of them, and then have a backup of second line drugs. (See addendum: Drugs available and used for terminal care, in Singapore Dec. 1985).

Morphine

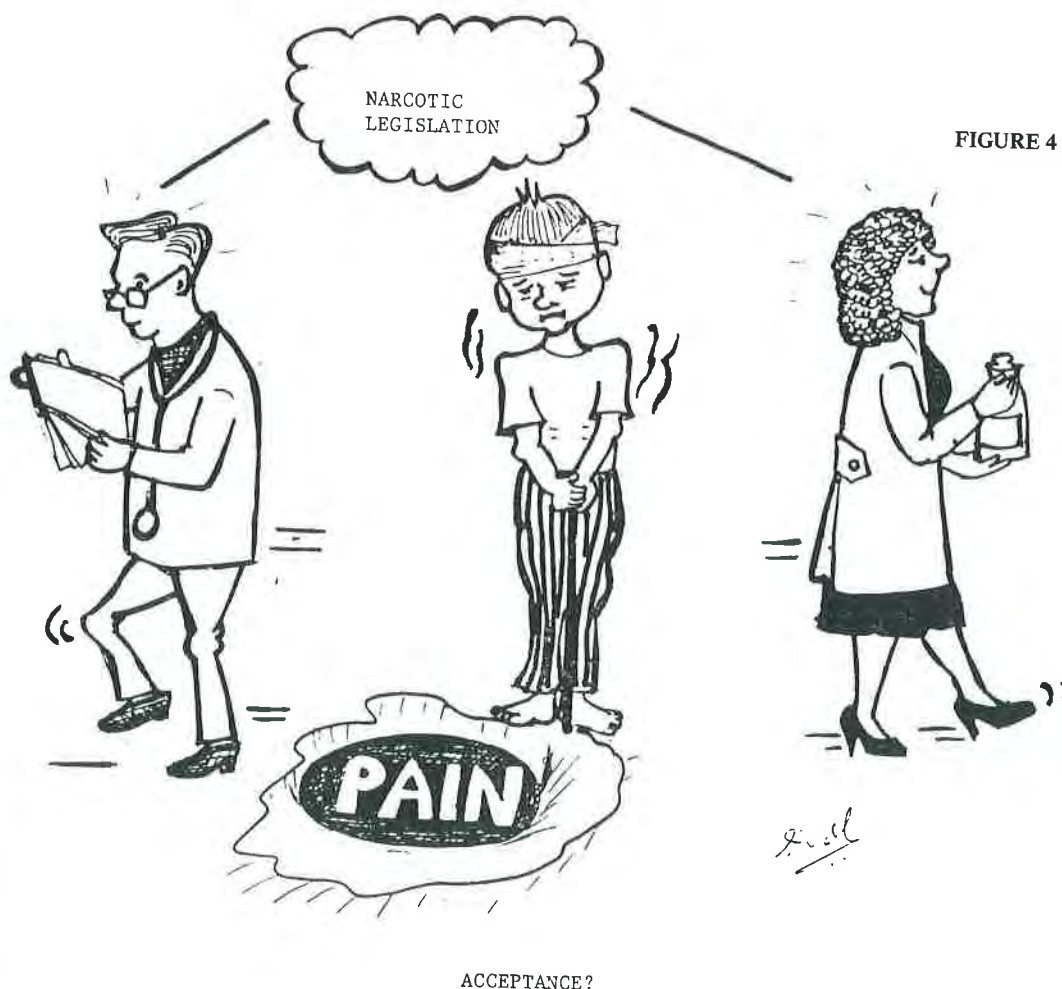
THIS IS THE MOST USEFUL IN MODERATE TO SEVERE PAIN. However it needs adequate and regular dosage. Standard solution available in Singapore is 5mgs in 5 mls of chloroform water. For increasing pain it is possible to increase the strength without increasing the volume. NUH Pharmacy, will do this if requested. But, up to December 1985, this had not been requested!

Morphine is also available in UK as MST 1 (morphine sulphate continuous), in a 10 mg tablet that acts up to 12 hrs. Also suppositories are useful if vomiting is a problem, and helps avoid injection. These are available in Singapore, but the doctors have not been requesting them.

Are our patients forced into "acceptance" not of death but of pain? Would it not be in the best interest of the patients if narcotics were handled completely by pharmacists, allowing the doctors to prescribe freely without the responsibility of form — filling which is demanded by legislation (Figure 4)?

Alternatives to morphine

Of the 9 alternatives to morphine solution prescribed at St. Christopher's Hospice,⁹ only



one is available here, ie Methadone, (physeptone).

But the same drug does not suit every patient. Even what is available here is not always accessible to the patient because of lack of coordination of the terminal care service.

CONTROL OF OTHER SYMPTOMS

All symptoms require specific therapy, and with recent research it is possible to control them in the majority of cases.

- 1) Anorexia, nausea, vomiting
- 2) Dry mouth
- 3) Hiccough
- 4) Constipation and diarrhoea
- 5) Dyspnoea
- 6) Cough
- 7) Urinary frequency and incontinence
- 8) Fungating growths
- 9) Itch
- 10) Insomnia
- 11) Anxiety and depression
- 12) Confusion
- 13) Terminal restlessness
- 14) Convulsions
- 15) Emergencies eg. haemorrhage, pulmonary embolus, fractures.

Management of these conditions is discussed in Reference 9, which is available at the College of General Practitioners, Singapore.

Euthanasia (Figure 5)

Would you like legislation of euthanasia? 23.5% of GP's answered yes.⁵ This question was not asked of the professional carers, but under "suggestions", discussions on euthanasia were requested by individual carers.

Linda Green, in tracing historical and social development giving rise to the concept of euthanasia concluded that doctors start to look for euthanasia when community and state values become based on cost benefit analysis.¹⁰ Could it also be that when doctors see patients suffering and lingering in circumstances that they are impotent to relieve their compassion for their patients is channelled towards relieving their suffering with euthanasia?

"Those who, in their despair, have thought that the only choice left to them was between a



FIGURE 5

KILL
or
CARE?
DOCTOR
or
EXECUTIONER?

SOURCE (10)

prolonged and painful death and euthanasia, have time and time again found an alternative in the hospice".¹¹

Do not we, as doctors, have a responsibility to do the best for our patients, whatever country we are in? And, if the system is not in the patient's favour, as a profession represent the patient's needs?

HOSPICE CARE AND ITS APPLICATION TO SINGAPORE

What is the hospice movement?

The modern hospice movement started in London in 1967 with the opening of St. Christopher's, as a response to a need identified and acted upon by Dr Cicely Saunders. The aim of the Hospice movement is to bring the possibility of a "good death" to everyone. This is hard to achieve but things are improving, especially in areas where hospice care has been established for some time.

The means are:

- (1) by providing care for the dying, and support systems for relatives, in human and homelike surroundings.
- (2) By teaching medical personnel and teams, the psychological and medical approach to terminal care.
- (3) By research into the causes of pain and symptoms in terminal conditions, and thus to continue to improve care.
- (4) By extending the training programmes and therefore care, into the home through home

nursing teams, and into hospital wards through symptom control teams, with coordination between home, hospital and hospice.

Today the hospice movement has developed 4 aspects of service.^{12,13}

- (1) The independent hospice, including day care, admission for the control of symptoms, and intermittent admission to relieve relatives. Patient/staff ratio is high, because of the nature of work. Concerns include the care of the patient and the relatives, the care of the staff and volunteers, research into cultural and psychological factors, and into the therapeutic management of pain control and teaching at all levels.
- (2) Home care teams: teams of nurses trained in hospice care. They may be attached to a hospice, or freestanding. They usually have a doctor trained in terminal care and pain relief to advise them.
- (3) Support teams: These teams are advisory and do not take over the care of the patient. They work in the hospital and outside. They consist of 2 doctors, a GP and a specialist (internist or surgeon or oncologist), who advise on the management of the cases. This has the advantage of a continuation of the relationship between the patient and their own doctor, and education of other teams. In USA, the term "Palliative care team" is applied to such teams, based in hospital. Could hospitals in Singapore accommodate such teams? In Maryknoll Hospital, (Hong Kong), a similar culture has found this helpful.¹⁴
- (4) Continuing care homes: These are comparable to nursing homes, with less medical input than hospices.

Do we need a hospice in Singapore?

We need at least a Hospice Movement,

- (1) For coordination and upgrading of the existing services so that the patient suffers as little as possible physically and otherwise.
- (2) For research into the cultural aspects in Singapore. Are traditional beliefs contributing to pain and suffering? What are the needs of the 3 ethnic groups and are we fulfilling them?
- (3) For teaching terminal care throughout the whole medical system, so that we may have a

holistic approach toward our patients in their hour of need. This can be represented by the Yin and the Yang concept where death completes the circle of life (Figure 3).

- (4) What about finance? In the west, hospice care has been started by voluntary organisations, and later been given a government subvention. The cost is very high, but should not be started without sufficient funds for the high staffing required, otherwise it may become a Chinese death house!

Unfortunately the hospice movement has been misunderstood in Singapore previously. The hospice in no way resembles a Chinese death house.

However each practitioner in his/her own family practice, by giving maximum support to the dying patient and the family, will be practicing the hospice concepts, and allowing each patient "to live until they die."¹²

Acknowledgements

My gratitude goes to the General Practitioners and Professional Carers who answered the questionnaires and to the Pharmacists who explained their dispensing practices for the dying patient, especially Mr Liat Teng Lit and the staff of NUH pharmacy for their encouragement. Special gratitude to my colleague, Dr Camay Lau Ting, for reading the paper and offering invaluable suggestions. Gratitude also to 4th year Medical students who presented the case of the dying patient, describing the hospice concept in true Singapore style, giving further ideas for the preparation of this paper. Last but not least gratitude to Mrs Nah Gek Choo, who translated my idea into Figure 4.

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ADDENDUM

Drugs available and used in Singapore for pain relief in terminal care

- Mild* — aspirin
 — paracetamol
 — mefenamic acid
- NSAID* — aspirin
 — indomethacin
 — Glifanan (glaphenine)
- Others* — Talwin (Pentazocine)
 (Not recommended)⁹
 Pethidine (not recommended)⁹

Weak Narcotics

Codeine
 Omnopon (pāpaveratum)
 (not suitable in liver damage, or elderly)⁹
 Temgesic (causes depression)

Narcotics

Only available in Singapore are:

- 1) morphine mixture in chloroform water
 (no tablets or suppositories)
 Hoyles cocktail
 (no longer recommended)
- 2) methadone tabs 5 mgs
 (physeptone)

How does the patient get such medication?

- a) from GP
 But not many GPs stock narcotics because of government controls.
- b) from 3 hospitals pharmacies:-
 1. SGH — but only for prescription from the hospital doctor.
 2. *Mount Elizabeth Hospital only stocks methadone tabs 5 mg.
 — open 8.30 am — 7.30 pm week days
 — 8.30 am — 4.30 pm Saturdays
 closed Sundays
 3. *NUH stocks morphine in chloroform water 5mgs/5ml and methadone tabs 5 mgs.
 — open 8.30 am — 5.30 pm week days
 — 8.30 am — 1.00 pm Saturdays
 closed Sundays

**Will honour prescription written by outside doctor. Prescription must be written in figures and words, (strength, frequency, amount) and contain full name and address of both patient and doctor.*

The above information was obtained from interviews with pharmacies at SGH, NUH and Mount Elizabeth in December 1985.

THE IMPACT OF MEDICAL TECHNOLOGY ON GENERAL PRACTICE

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General Practice must find ways of adapting to our changing society without losing the basic clinical competencies upon which its public mandate rests. The past 30 years have seen general practice adapt to these changes by changing its task. By contrast the task of specialist medicine has not changed and remains to identify and treat established disease in a referred population.¹

Specialist medicine has thrived in a technological age whereas general practice has become increasingly isolated from medical technology and has sought to define and consolidate its role where it operates, in the community, at the interface between society and the medical services.

In a world preoccupied with the glamour and romance of technological marvels it is not surprising that the general practitioner has been over shadowed by the specialist whose technological mastery is the thing that sets him apart:-

- The gastroenterologist with fiberoptic endoscope.
- The radiologist with CAT scanner.
- The ophthalmologist with laser... and so on...

By comparison the general practitioner with stethoscope, auriscope and sphygmomanometer, seems to be operating in the past with outdated skills and outdated technology.

But the technology of fibreoptics, the laser and the silicon chip have had their impact on the specialist in a way that has tremendous implications for the general practitioner.

Specialization involves 'mastery' and prior to the era of information technology (I.T) with its combination of computers and communication technology, mastery of a special discipline was possible. With the advent of I.T., the concept of mastery, as we once conceived it, has been obliterated.

INFORMATION TECHNOLOGY AND GENERAL PRACTICE

It is characteristic of mankind to strive for mastery and this quest has resulted in a higher degree of specialization as scientific discovery has outstripped the capacity of the human brain to 'know it all'. Information overload has freed the human brain from the bondage of rote learning to pursue what it does best, to think new thoughts and generate new ideas or, as George Bernard Shaw put it — 'dream of things that never were and ask, "why not?"'.²

This freedom is a blessing to specialists and generalists alike and will ensure mankind of greater access of the effective and creative skills of both as never before.

The technology that has hitherto favoured the one at the expense of the other is about to become the property of both and will enable the specialist increasingly to explore the great mysteries at the frontiers of science while giving the generalist unfettered access to specialist medical knowledge and new and effective tools with which to apply it. In other words the specialist will increasingly specialize while the general practitioner will become the pivot of community health care.

My scenario for medicine towards the year

Lecture given at New Zealand's Waikato Postgraduate Medical Society Conference held in September 1984

2000 is therefore one of change in the role of both generalist and specialist and this will have important implications for government. Planning for these changes should already be in hand and the financial implications of these changes should be clearly understood by treasury.

The impact of medical technology on general practice is but a facet of the impact of technology on society as a whole and must not be viewed otherwise. To do so is to ignore the fact that the society in which the general practitioner of the future will work will be computer literate and have at its disposal the whole range of what is now called Information Technology or I.T.

In the 1960s and 70s Cyrus Levinthal and others were developing the highly sophisticated computer graphics that are now the tools used by pharmacologists to design new drugs.³ Within a mere decade computer graphics have become standard fare for high school children at work in their computer carrels. High technology is no longer the private tool of the great high priests of scientific medicine. Almost overnight it has passed into the hands of the man in the street... and his children.

Such spectacular movements in the transfer of the power of knowledge and the availability of information from the scientist to the man in the street will generate new community expectations of the general practitioner. This is but one aspect of the changing society to which general practice must adapt itself and if it is to meet these expectations general practice must literally 'come on line'.⁴

There are of course pervasive ecological changes afoot and these will be accompanied by tumultuous social, political and economic changes, all of which will profoundly influence the changing role of the general practitioner.¹ These do not however concern us in this discussion.

A brief discussion such as this can only touch on one or two aspects of general practice that will be effected by the new technology but these, I hope, will serve to lift the veil and give free rein to our imagination.

INFORMATION TECHNOLOGY (I.T.)

Many doctors are already using computers

in the routine operation of their practices to help with accounting and billing⁵ and there are sporadic reports of practices using computers for record keeping, correspondence and even research.⁶ This is only the beginning; the combination of computers and communications technology gives I.T. its power to extend our capabilities in ways we are only just beginning to imagine.⁴

I.T. can be expected to radically change society's present educational system in schools, colleges and universities alike. Medical education, both undergraduate and postgraduate, will be dramatically effected by these changes... topics to be discussed at subsequent sessions at this conference.

At this point it is sufficient to say that a doctor's *continuing medical education* in general practice will be revolutionized by teaching and learning technology and that this technology will be integrated with the computerized information, communication and management system of the practice.

I.T. will enable the general practitioner to spend *more time with patients* in disease prevention, counselling and supportive care by reducing the time spent in seeking clinical and laboratory investigations, in referral procedures, researching therapeutic regimes, excluding drug interaction problems and waiting for medical reports. All of these tedious procedures and many more will be accomplished by pressing a few keys on a computer keyboard and letting the circuits do the work while doctor and patient are engaged in matters that require personal dialogue and a sharing relationship. At present we are far too occupied with tasks that are better done by machines. The computer, as part of an information technology, will free the general practitioner from such inappropriate tasks and give him the time to do what he alone and not the computer can do.

Patient education is yet another effective use of computer technology.⁷ With access to data from anywhere in the world the general practitioner can, by pressing a few keys on the console, instruct the P.C. to compile a profile of any patient's personal health risk related to established criteria. The P.C. can be instructed to 'print' the profile which can be given to the patient in a matter of moments and discussion and management can be planned accordingly.

In the case of a non-English speaking migrant the profile can be translated into the appropriate language.

Thus I.T. will transform the modus operandi of the general practitioner and is one of the contingencies facing government in its fiscal planning for future health care.

As the 'broker' of community health services the general practitioner will have at his disposal an inexpensive and extremely flexible data retrieval and communication system that will enable him to provide a range of services hitherto undreamed of.

Although miniaturization and the rapidly decreasing cost of computer hard and soft ware will enable the general practitioner to 'gear up' cost effectively, one would expect substantial support from government through taxation concessions once the enormous advantages of incorporating I.T. into general practice are understood.

MEDICAL APPLICATIONS

The medical applications of newly emerging technology are seemingly limitless and should assist the general practitioner. Two examples will suffice:-

1. ECG Interpretation

When the first ECG machine was built patients had to travel from all over the USA to John Hopkin's University in order to be wired up to an apparatus that occupied a very large room. When I was a medical student ECG machines were wheeled to the patient in the hospital ward on a trolley. After graduation I was using a small transistorised machine far more sensitive and accurate than anything I had previously seen.

The problem with all these machines was that it required a cardiologist or an expert in ECG interpretation to report on the patient's tracing. I have no doubt that there is already, somewhere in the world, an ECG machine that not only traces the graph but also analyses the tracing and makes a report, lists the possible causes of any abnormalities detected, suggests possible aetiological factors as well as listing the therapeutic options available.

2. Diabetic Management

Diabetes has long been an affliction that has made patients wholly dependent on a galaxy of medical experts. The advent of the personal blood glucose monitor has changed all that. I am told that there is now a glucose monitor available to patients that records random blood sugars over a 3 month period and correlates these in memory with the patient's insulin dosage and dietary programme. The patient takes this pocket sized machine to the family doctor who plugs it into the practice P.C. which, if instructed, will print out a visual display of the 3 parameters, correlated, for examination by doctor and patient. A glance at the display is all that is needed to understand the patient's control status... and what therapeutic modifications, if any, are required.

MOLECULAR BIOLOGY AND GENERAL PRACTICE

Turning from computers and the technology of communications to the field of molecular biology we may truly find ourselves peering into the future and the destiny of mankind. Nils Bohr has said; 'prediction is an uncertain art, particularly about the future'. Nevertheless like Daniel Tosteson, the Dean of Harvard Medical School, I believe that 'we are in the midst of a rapid and profound transformation in medicine, a transformation comparable in extent to the conversion of a caterpillar to butterfly or tadpole to frog'.⁸

Prof Sir Gustav Nossal of The Walter and Eliza Hall Institute of Medical Research has predicted that when historians look back on the 20th century they will conclude that its first half was shaped by the physical sciences but its second by biology and 'in the eye of the storm we find D.N.A.'.⁹ What possible relevance can recombinant D.N.A. and monoclonal antibodies, for example, have to general practice? It is not our task to examine these tools of genetic engineering but we should be aware of their power to effect 'the profound transformation in medicine' that Tosteson predicts.

For the general practitioner the impact of genetic engineering will be three fold:-

1. Prophylaxis

Vaccination is one of the most important

services offered by the general practitioner. Vaccines have been described as 'the world's most cost-effective public health tools.'³ But vaccination is still an imperfect procedure for we cannot absolutely guarantee the safety of the cultured attenuated viruses that are used as immunogens.⁹

The possibility of producing synthetic or biosynthetic vaccines using recombinant viruses and monoclonal antibodies has great attraction. These techniques are even now being applied to Hepatitis B, malaria, rabies, and other infectious diseases. By these techniques vaccines of incredible purity and specificity will be produced at very low cost and without the public health risks now involved.⁹

2. Diagnosis

The relative ease with which monoclonal antibodies can be produced and their remarkable specificity, high specific activity and avidity are properties which make them ideal diagnostic agents in infectious disease where they are replacing more traditional methods such as microscopy, culture, and immunological techniques.

Using monoclonal antibodies tests now taking days to perform can be completed in minutes with great accuracy at a fraction of the cost,⁹ a very attractive laboratory service for the general practitioner.

Thousands of monoclonal antibodies have been produced that recognise antigens from a vast range of viruses, bacteria, fungi and parasites and as this technology expands so will rational therapy of infectious disease replace the hit and miss prescribing of antibiotics with which we are all too familiar in general practice.

The use of monoclonal antibodies and recombinant D.N.A. is not confined to the diagnosis of infectious disease. These tools are now being applied to cancer detection, antenatal diagnosis, heart muscle and liver disease, thalassaemia, sickle cell disease, phenylketonuria, Huntington's chorea and muscular dystrophy.⁹

In the 1960's pregnancy testing kits became available to the general practitioner. It is now 1984 and already the first cancer detec-

tion and assay kits utilizing monoclonal antibodies are commercially available.

3. Therapy

For human body cells to co-ordinate their individual and highly specialized tasks they must talk to each other and this they do in chemical language.³ Sir James Black showed us that receptors are the lynchpin of pharmacology and are required for all sorts of body reactions... for thought, for movement, for pain, for growth, for digestion, for immune defences against disease, for hormone and enzyme action etc.³ Each receptor is made by the cell according to instructions specified by genes which contain coded D.N.A. information for its structure. The genetic engineer is now able to identify the gene for the receptor and force harmless bacteria to manufacture it. The end point of this endeavour is clearly the development of drugs which are receptor-specific and can therefore be applied with greater precision to achieve the therapeutic outcomes desired.

Thus the technology of genetic engineering will provide the general practitioner with custom built drugs of absolute purity and specificity of action at a fraction of the cost of drugs currently available.

But it does not end there. Recombinant D.N.A. has made possible the production of pure human insulin thereby removing the problem of allergic reactions experienced by 5% of diabetics using pork and beef insulins.

Bacterially engineered Human Growth Hormone can now be produced in virtually unlimited amounts at minimal cost. Prior to this development 6000 human cadavers were required to extract enough HGH to treat only the 100 new cases of severe HGH deficiency detected each year in the United Kingdom.⁹

Calcitonin, interferons, blood clotting factors deficient in haemophilia and many other vital tissue proteins are now under investigation.

Finally it is worth pointing out that the monoclonal antibodies could well play a major role in bone marrow transplantation and the control of kidney allograft rejection.⁹ Their use in the development of

highly specific and potent cellular immunotoxins could, in the words of Paul Ehrlich, provide us with 'magic bullets to seek out the enemy'.⁹ The coupling of a cell toxin with a monoclonal antibody that reacts preferentially with tumour cells in vivo, though some way removed from clinical application, is now the goal of several research groups currently working in the United Kingdom.

Although the control of allograft rejection and antibody targeting of toxins in cancer cell destruction are hardly the province of the general practitioner, the therapeutic possibilities they provide will increasingly involve him in the early detection and long term surveillance of patients afflicted with this spectrum of disease.

CONCLUSION

The subject of this discussion is so vast that it has only been possible to touch briefly on one or two areas in which advancing technology can be expected to force major changes on general practice.

Man's brain has found something more valuable to engage its energies than memory overload. From its imaginative and creative resources the human brain has conceived a memory machine of virtually unlimited capacity and flexibility and with it has ventured into the exploration of D.N.A., 'the fundamental biological invariant'.¹⁰ In doing so man has changed forever the course of his destiny; he has freed himself from the bondage of human memory and the limitations of his physical dexterities. Henceforth ideas will dominate his endeavours because from his ideas he has finally produced the tools with which he can make his ideas work.

— *'Nothing is so powerful as an idea whose time has come'*
Voltaire

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SKIN INFECTION: COMMON BACTERIAL INFECTIONS

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Skin infections are common clinical problems. Recognition of skin infection is important because there are many antimicrobial agents available which can eradicate the infection. If unrecognized and untreated, such infection can lead to complications which may threaten life.

The normal skin of healthy subjects is very resistant to invasion by most microorganisms. Disease is not inevitable just because pathogenic bacteria are present. The host itself must be susceptible. Infection develops when the right combination of causative factors exists; a particular microorganism usually represents only one of the etiologic agents. There are almost always a number of interacting causes for infection of any body tissue, some direct, some indirect, which create circumstances leading to infection and aid in its persistence.

In this article common skin infections will be discussed; mycobacterial infections and STD infections are excluded. Clinical features, investigative procedures and approach to management will be discussed.

Common Bacterial Skin Infections

Many diagnostic sins are concealed under the term "skin infection". It is too often not appreciated that the presence of a pathogenic bacterium in a lesion does not necessarily indicate a bacterial disease. The first problem is to separate clearly primary from secondary infections.

Primary bacterial infections are those which originate in skin that grossly appears to be healthy, usually incited by a single organism, and have characteristic morphologic features. The etiologic role of the organism as the inciting pathogenic agent is usually very clear in primary infections. Adequate antibacterial therapy usually produces prompt and complete cure. Common place examples of such infections are impetigo, ecthyma, and furuncles. In secondary infections, on the other hand, the organisms do not play a prominent role in initiating the disease but may be important in protracting or intensifying it. Secondary infections develop in a variety of pre-existing skin disturbances such as cut, burns, abrasions, contact dermatitis, fungal and viral infections, insect bites, drug eruptions and so forth. Any change in the integrity of the skin paves the way for establishment of potentially pathogenic organisms and the possibility of a secondary infection. A variety of different organisms may be implicated and the morphologic features of the lesion are variable, depending on the primary disease. Unlike the more or less characteristic course of primary infections, the course and outcome of secondary infections are unpredictable.

PRIMARY SKIN INFECTIONS

Impetigo

This is the commonest bacterial skin infection in children. The disease is caused by coagulase-positive micrococci and by beta-hemolytic streptococci; both organisms may be present. The lesions can be divided into two types according to their bacterial aetiology.

Streptococcal Impetigo

The golden crusted impetiginous lesions are primarily caused by group A beta-hemolytic streptococci (GABHS). The earlier lesion is a tiny vesicle or pustule that soon rup-

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tures and is replaced by expanding crusts. Typically it has little surrounding erythema, but local adenopathy is common. The lesions are generally asymptomatic although pruritus may occasionally be present. They spread rapidly wherever the child has broken the natural defence barrier of the skin. Earlier outbreaks of impetigo-induced acute glomerulonephritis (AGN) resulted in renewed interest in GABHS. The outbreaks had important therapeutic implications for the treatment of pyoderma. Whereas physicians prior to this time were likely to treat impetigo with improved hygiene, soaking to remove crusts, and the application of topical antibiotics the morbidity of pyoderma-associated AGN led to treatment with antibiotics administered orally or parenterally. There is no evidence for the occurrence of acute rheumatic fever secondary to pyoderma.



Fig. 1 Streptococcal impetigo. Note brownish crusting and expanding and extensive lesions and minimal surrounding erythema.

Staphylococcal Impetigo

The typical lesions of bullous or

staphylococcal impetigo are easily separated clinically from those of crusted or traditional streptococcal infection. The bullae are larger than the transient, tiny vesicles or pustules of GABHS impetigo. The thin roof of the bulla is lost fairly quickly, and the telltale aftermath should be easily recognizable. Once the bullae have shed their covers, they initially have erythematous, moist bases that dry quickly, leaving a varnished or lacquered appearance. Contiguous older lesions may be recognizable by their thin collarettes of scales. The lesions have little or no surrounding erythema and lymphadenopathy is usually not present. Staphylococcal impetigo tends to spread locally unless associated as a secondary lesion in varicella or multiple insect bites. Bullous impetigo in neonates should generate special concern since serious secondary infections, particularly osteomyelitis, septic arthritis and pneumonia may follow seemingly innocuous superficial infection.



Fig. 2 Staphylococcal impetigo. Note different evolutionary stages with bullae of early lesions and thin collarette scales of older lesions. Notice lack of crusting commonly seen in streptococcal impetigo. Severe staphylococcal impetigo can develop into life threatening condition of scalded skin syndrome (Toxic epidermal necrolysis).

ECTHYMA

This condition has certain similarities to impetigo; it begins in the same way but the process erodes through the epidermis and produces a shallow ulcer. Beta-streptococci characteristically initiate the disease. Crusting occurs early and is dry, hard and firmly adherent. Healing with variable scar formation occurs in a few weeks. The lesions differs from impetigo in which the crust is not as massive and under which there is no ulcer. Attention should be

paid to possible underlying predisposing causes eg. insect bites, trauma, varicella infection etc.



Fig. 3 Ecthyma. Commonly caused by streptococcal infection. Note crusting and deep erosions. Often heals with scarring.

Treatment of Impetigo and Ecthyma

Many physicians prefer semisynthetic penicillinase resistant penicillins or erythromycin as systemic therapy. Although these drugs are effective, there are practical as well as theoretical reasons for advocating a more selective approach.

Penicillin has been shown to be eminently effective in eliminating the lesions of clear-cut traditional crusted impetigo. More than 90% of impetigo is due to streptococcal infection and should respond to Penicillin V. Dicloxacillin is 8 times more expensive than penicillin V and 3 times as expensive as erythromycin. If 90% of impetigo is primarily streptococcal, the use of dicloxacillin or erythromycin need not be as widespread as it currently seems to be.

Bullous impetigo requires treatment with either erythromycin or dicloxacillin. There has been concern about the increasing frequency of erythromycin-resistant staphylococcal infections.

Ecthyma responds nicely to penicillin but usually with some scarring.

Cellulitis and Erysipelas

This is a spreading inflammation of loose connective tissue, and is a more serious infection because of local and systemic spread. The overlying skin is erythematous and tender. Regional adenopathy, lymphangitis, and systemic signs and symptoms such as fever and chills may be more pronounced. In one study 84% of the infection occurred on the limbs and 16% on the face. Infection of the extremities is a result of staphylococcus and/or streptococcus in the majority of cases. Blood cultures and aspirates of cellulitis are of little additional value unless fever is present.



Fig. 4 Cellulitis. Usually from streptococcal or staphylococcal infection of subcutaneous tissue. Has ill defined border and is red and tender. Accompanying lymphangitis and regional lymphadenitis is common.

Erysipelas is a distinctive cellulitis caused by Group A beta-haemolytic streptococcus. It is rapidly spreading with distinct, raised borders associated with prominent systemic signs, and symptoms, Fever, chills, and prostration may be abrupt in onset, and bacteremia is common.

Facial cellulitis is an enigmatic potentially serious infection generally affecting young children. It requires early recognition and aggressive treatment because of the associated high risk for other serious systemic infections, particularly meningitis, brain abscess, optic neuritis, and cavernous sinus thrombosis.



Fig. 5 Erysipelas. Usually caused by streptococcus. Note well defined margin of lesion. Systemic symptoms and signs of fever and prostration is usually common.

Treatment of Cellulitis and Erysipelas

Attacks of cellulitis and erysipelas may be quickly suppressed by appropriate antibiotic therapy. Penicillin is the agent of choice. Cloxacillin or erythromycin should be given

when staphylococcal infection is suspected. Patients should be given complete bed rest. Local medicament is of no value. The affected part should be immobilized and elevated. In recurrent infection one should seek the nidus, such as tinea pedis. In some instances systemic antibiotics given on a long term prophylactic basis will prevent recurrences.

NECROTIZING FASCIITIS (HEMOLYTIC STREPTOCOCCUS GANGRENE)

This rare disease is a fulminating infection of the superficial and deep fascia resulting in thrombosis of the subcutaneous vessels and gangrene of the underlying tissue. Usually it follows a cutaneous injury but sometimes no portal of entry is found. The affected area becomes hot, oedematous and red and as it gradually enlarges, a pathognomonic sign develops between the second and the fourth days; the affected skin assumes a blue, dusky tinge. Blisters may be present. The process



Fig. 6 Necrotizing Fasciitis. A fulminating infection of the superficial and deep fascia tissue. Thrombosis of subcutaneous vessels and gangrene produce telltale signs. Streptococcus is common initial causative organism. Other organisms may be involved. A surgical emergency.

advances to areas of frank, cutaneous gangrene, with eventual sloughing. Cutaneous metastatic infections may appear. Streptococcus may be demonstrated from the spreading border of the lesions or from the blister fluid.

The most important part of the treatment is early incision and drainage. The involved part is opened widely at the fascial plane and the gangrenous areas excised. Massive doses of antibiotics are needed and all such patients require inpatient treatment. Mortality rate is high and underlying diseases such as diabetes mellitus and severe arteriosclerosis are not uncommon.

FOLLICULITIS, FURUNCULOSIS, CARBUNCLE

Infection of the hair follicle is most commonly caused by staphylococcus. Folliculitis is a superficial infection consisting of small, yellowish superficial pustules with a thin rim of surrounding erythema. A central hair shaft is commonly present in the lesion. A furuncle is a deeper infection in the follicle and is associated with more swelling and erythema. The center of these lesions often liquefies, producing a cavity filled with a creamy yellow pus.

The scalp, extremities, and buttocks are the most likely sites of these infections. Sycosis barbae is similar to bacterial folliculitis over the beard areas. The lesions are deep seated. Impetiginization also occurs.

Gram negative folliculitis mainly occurs as a superinfection in acne vulgaris patients receiving long term systemic antibiotic therapy. These pustules are often concentrated around the nose. The organism is found in the nostril and in the pustule in such patients.

Carbuncle may be regarded as an aggregation of furuncles. It is a larger, more deeply-seated, infiltrated lesion which drains through a number of points to the surface.

Recurrent furunculosis can be troublesome for the patient and the physician. Obese individuals who sweat excessively are particularly prone. In few instances systemic host factors are responsible. Most of the carbuncles are seen in diabetics and it appears reasonable to investigate patients with carbuncles for diabetes.



Fig. 7 Folliculitis and Furuncle. Note superficial follicular involvement with early pustules.



Fig. 8 Carbuncle. An aggregation of furuncles. Usually caused by staphylococcus but secondary mixed bacterial infection is not uncommon. Note large infiltrated lesions with multiple discharging points.

Treatment of Folliculitis, Furunculosis, Carbuncle

For folliculitis, proper cleansing and local application of topical antibiotics are effective measures. Systemic antibiotics are often indicated, especially when the scalp is involved. In treatment of recurrences the duration of antibiotic therapy should be increased.

Oral semisynthetic penicillin or penicillin is the drug of choice and should be given parenterally in every case of carbuncles as well as in severe cases of furunculosis. Local measures alone are indicated if there is only one boil or a few. Squeezing or too early incision of furuncles is harmful; the lesion should be allowed to point, then gently nicked and drainage established. Cleanliness is of paramount importance. The suppurative discharge should be removed as it forms and not allowed to drain over the surrounding skin. Antibiotic ointments e.g. fusidates and aminoglycosides may be applied after compressing, though their value is open to doubt except possibly in preventing the formation of new adjacent lesions.

Lesions about the nose and upper lip are always to be respected because of the danger of intracranial extension with development of a venous sinus thrombosis. Vigorous antibiotics therapy should be instituted early. Penicillins and dicloxacillins or the newer cephalosporins are useful.

Treatment of recurrent furunculosis is difficult and disappointing. Predisposing factors which may be uncovered should be corrected if possible: e.g. diabetes, poor hygiene, occupational trauma, pyogenic infections in the patient's family, hyperhidrosis and obesity.

OTHER COMMON SKIN INFECTIONS

Pitted Keratolysis

This is a superficial skin infection causing asymptomatic pits of the stratum corneum, usually involving the soles of the feet. It is caused by a gram positive filamentous and coccoidal organism, belonging to a *Corynebacterium* species.

Humidity is a frequent aggravating factor and is often associated with hyperhidrosis. Discrete crateriform defects, 1 to 7 mm in size

are present on the plantar surface, producing a punched out appearance. The areas most often affected are the pressure areas of the heels, the ball, the volar pads, and the toes. They are not infrequently seen in national servicemen, Gram stain of the ground-up stratum corneum will demonstrate the organism.

The condition may disappear spontaneously after the patient is removed from the moist environment. Topical broad spectrum antibacterial agents such as Whitfield's ointment, formalin and Castellani's paint are effective. In severe cases a course of oral erythromycin may be helpful.



Fig. 9 Pitted keratolysis. Caused by a Corynebacterium species producing characteristic pits of the stratum corneum, usually involving the pressure areas of soles.

Erythrasma

This is a chronic superficial bacterial skin infection involving the body folds and toe webs, and sometimes it may be generalised. The causative organism is a species of *Corynebacterium*.

Three forms of disease are recognized viz. (1) the genitocrural and axillary form presenting with well circumscribed patches with pinkish discolouration later turning brown; it is asymptomatic or mildly pruritic. (2) Toe web infection, the most common manifestation of the disease presenting with scaling, fissuring and maceration. (3) the generalised form presenting with well defined scaly lamellated plaques on the trunk and proximal parts of the limbs.

Diagnosis can be confirmed by a coral red

fluorescence of the lesions under Wood's light. Confirmation is with Gram stain and culture.

Topical antibacterial preparations and keratolytic agents e.g. Whitfield ointment or topical erythromycin will beneficially affect the lesions of erythrasma. In severe cases a course of erythromycin in the dose of 1 gm daily for one to two weeks is curative in most cases.

SECONDARY INFECTION OF THE SKIN

The distinction between primary and secondary infections cannot always be rigid. The cardinal feature of a secondary infection is that there must be some pre-existing condition, either local or systemic, which diminishes the host's defenses. Secondary infections usually represent complications of an antecedent cutaneous lesion e.g. cut, burn, ulcer, contact dermatitis etc. The infection arises in the pre-existing cutaneous lesion, which serves as a portal of entry.

In secondary infections, as in primary ones, pathogenic staphylococci and streptococci are the organisms of principal importance, and routine therapy is directed against these.

Organisms not ordinarily considered pathogenic may be the cause of secondary infections. The principal ones in this group are gram-negative bacilli, chiefly *E. coli*, *Pseudomonas*, and *Proteus*. Gram negative organisms thrive under occlusive dressings. They are chiefly responsible for the malodor of ulcerative or eczematous lesions which have been occluded by fixed dressings, especially if these are covered by adhesive tape, plaster or other relatively impermeable material.

DOG AND CAT BITES

Animal bites continue to be a source of great concern to physicians caring for children

because of the physical and emotional trauma and increasing frequency of occurrence. Almost half of all domestic animal bites occur in children between the ages of 5 and 14 years. It is estimated that approximately 1% of all emergency room visits are a result of animal bites, of which about 90% are caused by dogs and slightly under 10% by cat. About 5% of dog bites and 20% to 50% of cat bites become significantly infected. Dogs are likely to cause lacerations and crush injuries, while cats produce puncture wounds. Arm and hand wounds more frequently become infected than those on the legs, scalp and face. The typical signs of infection — erythema, swelling, and pain — occur within 24 to 72 hours of the bite. Often, animal bites are contaminated by two or more organisms. The most common infecting bacteria are streptococci, coagulase-negative staphylococci, some enteric bacteria, *Staph aureus* and *Pasteurella* species. Anaerobic bacteria can usually be recovered as well. Wounds to the face, deep wounds of the hands, and heavily contaminated wounds should be covered by prophylactic antibiotics. A combination of penicillin V, to cover most anaerobes, streptococci and *Pasteurella* organisms, and a penicillinase-resistant penicillin e.g. dicloxacilin or cephalosporin, to eliminate staph aureus, is suitable prophylactic therapy.

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HOME STUDY SECTION

QUIZ

Answers on page 32

Picture A

1. Name the physical signs.
2. What is your diagnosis?
3. What other physical signs may be present in this patient?
4. What investigations will confirm the diagnosis?
5. What is the recommended treatment?



Picture B

1. What is the differential diagnosis of this picture?
2. Name one investigative procedure that may confirm a diagnosis.
3. What is the cause of this condition?
4. How can this condition be treated?

Picture C

1. What is the clinical diagnosis?
2. What are the aetiological agents involved?
3. Name 2 important investigations.
4. What is the treatment?



ANSWERS

Picture A

1. There is an erythematous plaque with an ill-defined margin and a thickened subcutaneous nerve — the greater auricular nerve. This is not a blood vessel because it is firm on palpation and non-compressible.
2. Borderline Tuberculoid Leprosy.
3. Loss of nervous functions including sensation like touch, temperature and pain. Autonomic function loss is shown by loss of sweating and hair loss. Other peripheral nerves may be involved and become thickened, eg. ulnar, medial, popliteal nerves.
4. A skin biopsy and the specimen stained with Hametoyline⁵ Eosin Technique will show granulomas with or without giant cells and lymphocytic and histiocytic infiltration around the skin appendages and nerve to confirm the diagnosis. The slit skin smear for Acid Fast Bacillus is usually negative in Borderline Tuberculoid Leprosy.
5. The WHO recommends treatment with Rifampicin 600 mg once a month and Dapsone 100 mg daily for 6 months for Paucibacillary Leprosy (i.e. Tuberculoid and Borderline Tuberculoid Leprosy). For Multibacillary Leprosy (i.e. Borderline, Borderline Lepromatous, Lepromatous Leprosy), treatment is with Rifampicin 600 mg daily for 1st week, then once a month for 2 years, together with Ethionamide 250-375 mg daily and Dapsone 100 mg on daily. Total duration of treatment is at least 2 years or till the smear becomes negative.

Picture B

1. a) Keratosis Pilaris
b) Follicular type of Tinea versicolor
c) Folliculitis

Tinea versicolor lesion is usually scaly and may be pale, brown or pink in colour. Less commonly, a follicular type is seen.

2. Scraping of the lesion on a 10% Potassium Hydroxide mount to look for yeast and hyphae, i.e. "Malassie Furfur". A drop of Parker's blue ink facilitates identification of the organism as it takes up the ink. Culture of Malassie Furfur can be done on special media but is done for research purposes only.

3. The yeast, *Pityrosporum orbiculare*. It exists in 2 forms, viz. Yeast and Mycelial, and "Malassie Furfur" is now recognized as the mycelial form. *Pityrosporum orbiculare* is a commensal in many individuals and it is not clear why it causes diseases in some individuals. It is also incriminated in the causation of Seborrhoeic dermatitis, *Pityrosporum* folliculitis and possibly Psoriasis and Acne vulgaris.
4. Topically, 12.5% Sodium Thiosulphates, Selenium Sulphite and Imidazole creams (eg Econazole, Miconazole, Clotrimazole) are effective. Oral ketoconazole may be used in patients with extensive involvement. However, all these treatment modalities are effective in clearing the existing infection but none is superior to the other in preventing relapses. Interval administration (eg. once monthly) of oral ketoconazole has been reported to be useful in reducing relapses.

Picture C

1. Clinically, this is intertrigo of the toeweb.
2. Dermatophyte fungus, eg *Trichophyton rubrum*, *Epidermophyton floccum* and in this instance, the term Athlete's foot or Tinea pedis is sometimes applied. Tinea pedis may also present as thickened scaly skin on the soles and as vesiculo-bullous lesions. Candida species cause a rather more white macerated skin. Bacterial infection with staphylococci or streptococci, or gram negative organisms, particularly *Brevibacteria* produce inflammation and often odour. In Erythrasma, due to *Corynebacterium minutissimus*, the lesion is largely confined to the cleft and asymptomatic. Intertrigous dermatitis results from close apposition of skin surfaces, often due to anatomical deformities of the toes.
3. A scrape to look for fungus, i.e. hyphae and yeast to evaluate dermatophyte infection (i.e. Tinea pedis) and monilia respectively. A swab for pyogenic organism may be performed. *Brevibacterium* is not routinely looked for.
4. Tinea pedis and monilia is best treated with topical antifungal like Imidazole cream, and Gentamycin cream may be necessary in severe cases. Keeping the web space dry by using dusting powder may be a useful adjunct.

RADIONUCLIDES IN THE INVESTIGATION OF ABDOMINAL PAIN

Dr F X Sundram

MAMB, BCh (Dublin), MSC (Nuclear Med), DMRT (London)

Abdominal pain is a common presenting symptom seen in general practice. Diagnosis can often be made with careful history and physical examination, but occasionally investigation is required to elucidate the cause of the pain. This is usually done after referral to a specialist or to a hospital. Numerous diagnostic modalities are currently available i.e. X-rays, ultrasound, computerised tomography, radionuclides, and in the near future nuclear magnetic resonance. Though radionuclides (or radioisotopes) have been in medical use for more than 40 years, it is only within the last 15 years that their use has increased; this is due to improved equipment to detect the gammarays of the radionuclides (gamme-cameras) and to rapid computerised acquisition and processing of the images of distribution of radioactivity in a patient — hence the growth of nuclear medicine departments.

For the purpose of this paper, abdominal pain can be conveniently listed as organ-based causes (see Table I). The radionuclides used are listed in Table II and these are usually com-

TABLE II

Radionuclides	Use
1 Technetium-99 m (as pertechnetate)	Meckel's diverticulum
2 Technetium-99 m labelled with	
a) red blood cells (RBC can be labelled with Chromium-51)	G.I.T. bleeding
b) tin or sulphur colloid	G.I.T. bleeding; liver/spleen scan
c) DTPA (diethylene triamine penta-acetic acid)	Renal function studies
d) DMSA (dimercaptosuccinic acid)	Renal cortex pathology
e) DISIDA (diisopropyl iminodiacetic acid)	Hepatobiliary system — obstructive jaundice, biliary atresia, cholecystitis
3 Indium-III labelled with white blood cells (WBC) or platelets	Diverticulitis, Abscess
4 Gallium-67	Abscesses and tumours

TABLE I ABDOMINAL PAIN

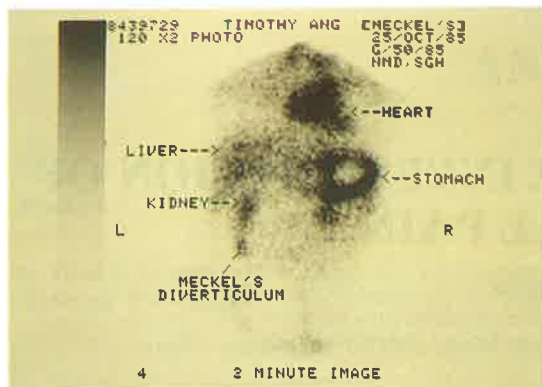
Organ/System Involved	Disease
Bowel	Gastritis, Reflux Oesophagitis Peptic Ulcer, Meckel's diverticulum, Diverticulitis, Appendicitis
Renal	Pyelonephritis, Renal Stones
Liver and gall bladder	Cholecystitis (acute and chronic) Hepatitis, Cirrhosis, Abscess, Tumours

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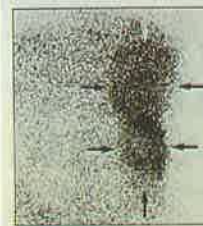
bined with chemicals (labelled radio-pharmaceuticals) or tagged with cells in the blood.

Bowel

Reflux oesophagitis produces a typical history and is not a diagnostic problem; the difficulty is in detecting reflux if history is atypical and excluding it from peptic ulcer, achalasia, or pyloric stenosis. Reflux is measured using a gamma-camera and computer after the patient swallows Tc-99m colloid in saline and abdominal pressure is increased. Solid and liquid gastric emptying studies are done with tracer amounts of radioactive liquids or solids

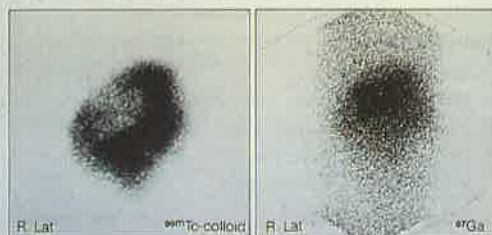


Renal Abscess



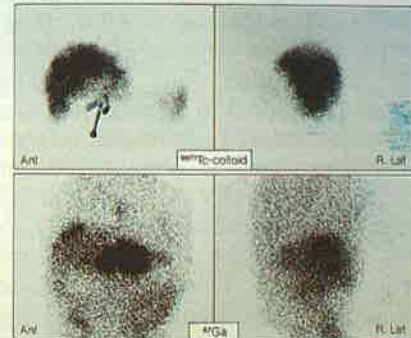
A patient with fever and pain in the right lateral abdomen. ^{67}Ga scan demonstrates abnormal concentration extending upward from the right kidney. Renal abscess involving the perinephrium was confirmed by the nephrectomy.

Liver Abscess



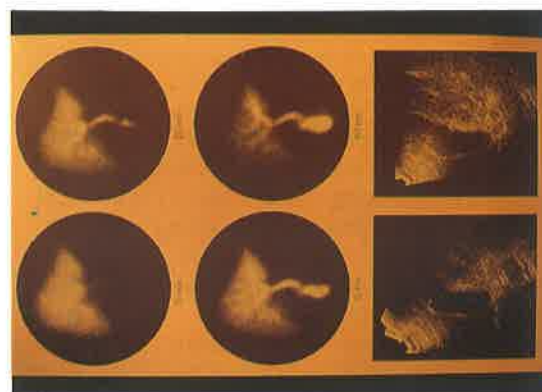
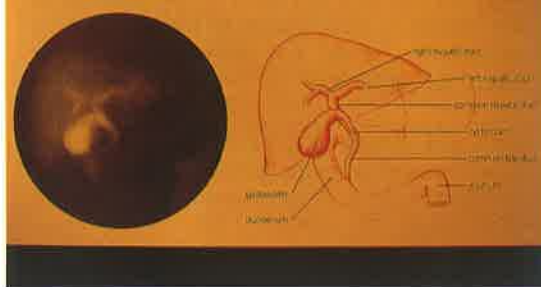
A patient admitted for complaints of fever and upper abdominal pain. Liver scan shows defects involving the right lobe. ^{67}Ga scan demonstrates a corresponding area of increased uptake.

Hepatoma

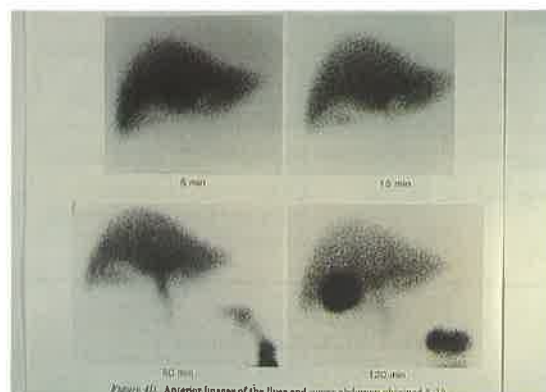


Liver Metastases

Normal Hepatobiliary Imaging Anatomy



Acute Cholecystitis



Chronic Cholecystitis

in syndromes due to abnormal gastric emptying. Ectopic gastric mucosa as Meckel's diverticulum, and retained gastric antrum syndrome, (after Billroth II gastrectomy) can be visualised following the injection of Tc-99 m pertechnetate. Bleeding from the bowel can be localised using Tc-99 m labelled RBC, though endoscopic examination should be performed initially.

Renal

Infections of the kidney causing severe pyelonephritis may lead to non-visualisation of the kidney on radionuclide studies. Functional information is obtained using Tc-99 m DTPA and the GFR (glomerular filtration rate) can be estimated, as well the contribution of individual kidney to total renal function. Tc-99 m DMSA is taken up by the renal cortex. In pain due to renal stones, it is possible to visualise the residual functioning cortex, prior to decisions on surgical removal of kidney; renal abscesses can be localised with Gallium-67.

Liver and Gall Bladder

Pain in the right hypochondrium is not an uncommon complaint. Tc-99 m colloid which is taken up by the reticuloendothelial cells of the liver, enables visualisation of abnormal areas of liver such as tumours, abscesses, cysts, haemangiomas, which do not take up the radio-pharmaceutical. The uptake is reduced in hepatitis and cirrhosis; splenic and bone-marrow uptake is increased in cirrhosis and the images are diagnostic; splenic infarcts can also

be noted by radionuclide scanning, abscesses by gallium-67 scanning.

Cholecystitis (acute and chronic) is one area where radionuclide studies have proven very useful in management decisions. Tc-99 m iminodiacetic acid compounds are taken up by the hepatocytes and subsequently excreted in the bile. Functional anatomy of liver, common bile ducts, gall bladder and entry of bile into intestine can be noted. In the patient with acute cholecystitis, the gall bladder is usually not seen due to spasm of the cystic duct. With chronic cholecystitis there may be delayed visualisation of the gall bladder (1-4 hours after injection of radiopharmaceutical). If the common bile duct is completely blocked, no radioactivity is noted in the intestine.

Conclusion

The advantage of using radionuclides is that functional information is obtained and this applies to almost any organ in the body. The functional images thus obtained, may however, be of low resolution, unlike radiology films. Useful information is derived non-invasively and with very low radiation burden, and in some institutions radionuclide studies are requested with X-rays for patients who have been subjected to trauma and bleeding within an organ or intra-abdominal bleeding or biliary leakage needs to be detected. There is also a definitive place for radionuclide studies in the non-invasive follow-up of patients who have been treated for abdominal trauma or other diseases in the abdomen.

ETHICO-LEGAL CONSIDERATIONS IN FAMILY/GENERAL PRACTICE

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I. ETHICS

What is Ethics? It is a moral duty (Code), i.e. right and wrong conduct and duty to a patient by a doctor.

It has long been accepted by the practitioners of medicine that they should submit themselves to a strict code of professional and personal conduct. It has, as recently as in September 1979, in the New England Journal of Medicine been re-iterated by Dean Willard Sperry of the Harvard Divinity School, who reviewed it in a learned manner and stated that ethics is the *basis* of medical practice. Ethics, from a commanding prospective is said to be the heart of Medicine, and the relationship between physician and patient is the centre of ethics. What is therefore ethics? Ethics means moral principles or code, and moral means concerned with the right and wrong *conduct* and *duty*, and hence medical ethics is concerned with right and wrong conduct of medical men. This code is arrived at by common agreement and from traditional values from the earliest times. This code changes slowly like *Law*, with the changing needs of society, public interest, public policy and the self regulatory mechanisms of the medical profession.

1. Professional Secrecy

One important aspect of medical ethics is professional secrecy. What is it?

It means that to ensure optimum and competent attendance by the attending physician, it is of paramount importance that the secrecy of history, clinical and laboratory examination and treatment is maintained by the doctor so that patient can tell and confide all in *full* to facilitate correct diagnosis and proper management.

What is the crux of the principle of professional secrecy, apart from the above-stated

facilitative factor? The principle is that a secret acquired by the doctor in the course of his professional duties is the secret of the patient and not of the doctor. The patient has a *prima facie* right in (i) ethics and in (ii) Law to require that the secret shall not be divulged to any third party, and to seek redress if so divulged, unless the doctor can show that there is paramount reason acceptable to the presiding judicial tribunal which overrides the patient's *prima facie* right, or, if there are exceptions to this right of the patient by statute laws of the country.

2(a) Consent

A consideration of what transpires when a patient meets a doctor will help to elucidate some of the principles of ethics. When a patient meets a doctor a professional relationship is set up and there is implied consent for examination and treatment as distinct from formal written consent of examination and treatment. The age for consent is 21 years provided the person is of sound mind. If the patient is a minor, the parent or guardian will be required to give consent, unless in an emergency the attending doctor may undertake treatment with the concurrence of second medical opinion. He may be liable for assault unless he has good reasons for rendering emergency treatment for a minor in an emergency, and he can show that he made every attempt to contact the parents or legal guardian.

In invasive investigatory procedures and in surgery, an *informed* written consent is necessary.

2(b) Medical reports and certificates

Medical Reports — In medical reports it is important to get the written consent of the patient, and in particular the patient should be informed of the implications of giving such written consent to his attending doctor.

In medical reports the facts of the case should be given to the third party, and if an opinion is required the attending doctor may give his opinion as medical opinion under a separate heading.

Medical certificates — Medical certificates have medico-legal importance and therefore should be factual, there should be no inaccuracies or carelessness. There should be no presumption and no hear-say evidence inserted in medical certificates. In other words, if the information is not personally known to the doctor it should not be introduced into the certificate.

The question of diagnosis to be inserted in medical certificates will arise from time to time. The diagnosis can only be inserted with the consent of the patient, provided the implication of divulging the diagnosis in the medical certificate is made clear to the patient. The date of the medical certificate must coincide with the date of the examination and it is important to fill in all relevant facts correctly.

II EXCEPTIONS TO PROFESSIONAL SECRECY

There are seven main exceptions to professional secrecy. They are:

- (1) **Divulging information of the patient to health professionals and medical consultants** with a view to obtain the best possible line of management of the patient. This is obviously in the interest of the patient.
- (2) **Divulging professional secrets to third parties**, i.e. to an employer, insurance companies or where litigation is involved. This can only be done with the written consent of the patient as some of this information may be detrimental to the patient.
- (3) **Controversial disclosures** — From time to time the attending doctor may divulge the patient's secrets in public interest or security, or as a social responsibility — e.g. a doctor informing the railway authority that an engine driver is colour blind and/or an epileptic.
- (4) **Sueing for professional fees** — Obviously to recover fees through a Court of Law, it

is essential for the attending doctor to disclose the professional secrets of the patient so that the presiding judicial officer can evaluate the medical attendant's claim for professional fees.

- (5) **Courts** — In a judicial court the attending doctor is bound to disclose to the presiding judicial officer the professional secrets of the patient in the interest of truth if he is required to do so. He must however demure or object to give such evidence. However, he must give full and truthful evidence and reveal all professional secrets only relevant to the case in question.

- (6) **Criminal Procedure Code and Penal Code** — Under these codes the police have the right in investigating and apprehending an alleged criminal to require *all* information, including professional medical secrets, to be revealed unconditionally to the investigating police officer. Failure to do so may render the attending medical practitioner liable to arrest and punishment.

- (7) **Statute Laws of Singapore** — There are 17 Statute Laws in Singapore where compliance of the attending medical practitioner is required whether or not professional secrecy is involved.

- (i) **Medical Registration Act** — This Medical Registration Act enables people who have completed the approved requirements of study and housemanship to be registered under the Medical Registration Act by the Singapore Medical Council. This registration as medical practitioner under this act carries certain responsibilities including signing of Death Certificates. Here it is important to note that all deaths cannot be signed by medical practitioners. If there is any evidence of violent death or any sudden unnatural or unexplainable cause of death, then the medical practitioner cannot issue a death certificate, but must inform the Coroner.

Poisons and Controlled Drugs — A medical practitioner, if he desires to dispense medicines for

his patients, must keep a proper Poisons Book and a Controlled Drugs Book for poisons dispensed to his individual patients.

- (ii) **Births and Deaths Act** — Here the medical practitioner is required to comply with certain provisions of the Act, in particular still births and neonatal deaths, and proper certification.
- (iii) **Medicines Act 1975** — Amongst the many provisions of this Act are detailed requirements for the purchase and dispensing of poisons and controlled drugs to only patients seen by the attending doctor. Provisions for labelling of medicines with trade or chemical name of medicines, including strength of the medicine, have to be complied with.

Apart from this, the name of the patient, date of dispensing and dosage should be clearly written on the label.

Human products have come under control in this act. e.g. plasma, plasma concentrates to prevent spread of AIDS, etc. Growth hormones have been banned to prevent rare, but serious CNS diseases. A licence is required by retailers for the sale of Boric Acid and Sodium Borate, to prevent vomiting, diarrhoea and abdominal cramps and growth retardation.

- (iv) **Infectious Diseases Act 1976**
 - (i) Infectious disease requirements under the vaccination regulations 1977.
 - (ii) Leprosy Rules 1951.
 - (iii) Notification of infectious diseases, e.g. PTB, Typhoid, Malaria, AIDS, etc.
 - (iv) Immunisation procedures, i.e. for typhoid, Hepatitis B, and the need to notify the relevant authorities.
 - (v) Weekly notification of the number of sexually trans-

mitted diseases (not names) to the Director of the Middle Road Hospital.

- (vi) New regulations introduced in 1985:

Immunisation against measles and notification to the relevant authorities.

- (v) **Misuse of Drugs Act 1973** — Here it is required under this Act to notify the Director of the Central Narcotics Bureau and the Director of Medical Services of patients whom you know or have good reason to believe or you are suspicious of taking and abusing narcotic drugs.

- (vi) **The Factory and Industrial Diseases Act** — In this Act and the regulations (1985) of Designated Factory Doctors, medical practitioners are required to notify the Industrial Medical Unit of the Ministry of Labour of dangerous or potentially dangerous substances in transport, storage and exposure to patients which can lead to industrial diseases, e.g. cement (chromium), lead, chloroform, carbon tetrachloride, benzene, coal tar, ether, noxious fumes, formic acid and dangerous and inflammable substances, acids and alkalis.

Other occupations which can give rise to occupational disease are work in quarries, sand-blasting, wood factory, tank cleaning and painting, moulding and polishing in prosthetic labs, radio-active monitoring, in industries using nuclear materials or substances that emit rays that are damaging to human health.

Other industrial diseases that come under this Act are the monitoring and notification of hearing impairment in textile factories and foundries. Eye strain monitoring in occupations involving fine microscopic work as in microchip manufacture is also required.

Other aspects under the Factories

and Industrial Diseases Act involve the safety of machinery in factories, effluent removal and disposal and the monitoring of the pollution of air within and outside the factory.

- (vii) **Family Planning Act** — This Act was enacted to set up the Family Planning Board, to control and regulate the population of Singapore.
- (viii) **Voluntary Sterilization Act (1973 & 1974)** — This Act together with the Family Planning Act was enacted to control and regulate the demographic pattern of the population of Singapore.
- (ix) **Abortion Act (1974)** — This was enacted to liberalise the rules and regulations governing abortion and it enabled abortion to be obtained on request by the patient. However, only designated private clinics, apart from Government Clinics, could do abortions. The prerequisite training of a private practitioner are an FRCS or MRCOG or 18 months experience in an approved O & G Unit. All abortions have to be notified to the Ministry of Health. However, menstrual regulation in early phases of missed periods does not come within the ambit of these strict regulations and is therefore open to abuse by unscrupulous practitioners.
- (x) **Road Traffic Act 1985 (Regulation 1982)** — These provide, amongst other things, for an annual physical examination for drivers above the age of sixty years, and for taxi-drivers and public vehicle drivers for renewal of driving licences. Among the recent amendments are the measuring of blood alcohol levels — any person with an alcohol level above 80 mgm/100 ml of blood is considered drunk and incapable of handling motor vehicles. There is also provision for breath analyses for random check-up by police of drivers of motor vehicles.
- (xi) **Mental Disorder and Treatment Act (1973)** — This act provided for rules and regulations and safeguards for committal, duration of treatment and discharge of mental patients.
- (xii) **Private Clinics and Hospitals Act** — This Act has been passed but has not been implemented.
- (xiii) **Radiation Act** — This Act provides for the issue of licences to own and operate diagnostic medical Units, industrial units and radio-active isotopes. Rules for protective clothing and lead-lining for operators are spelled out, including Dossimeter monitoring and annual physical check-ups.
- (xiv) **Labour Laws** — These are designed to protect workmen from excessive long hours and with mandatory provision of rest days. There is also a schedule for workmen's compensation for damage or loss of human parts during the course of work. There are also rules governing pregnant women in restricting them from night shifts, and on granting maternity leave. Further, pregnant women and children are restricted from working in high pressure areas, like M.R.T., tunnelling, and diving, etc.
- (xv) **Immigration Department Laws** — These laws are designed to prevent unrestricted entry of non-citizens into densely populated Singapore. Amongst these laws of interest to the medical profession are:
 - (i) Certification of period of gestation of foreign visitors.
 - (ii) Periodic medical examinations for foreign workers, including V.D.R.L. and pregnancy testing to determine fitness to stay and work in Singapore.
 - (iii) Certification of diseases for treatment in Singapore for temporary extension of stay in Singapore.
 - (iv) Medical examination and skeletal survey to determine age of minors who are coming

into Singapore for permanent stay.

- (xvi) **Civil Aviation Authority Act** — The provisions of this act, amongst other things, provide for the setting up of the Civil Aviation Medical Board for periodic rigorous medical examinations for the issuance of Pilot's Licences.
- (xvii) **Ministry of Social Affairs and Community Development Laws** — Among the laws, rules and regulations are provisions for old age homes, rules for committal and care for the elderly, juvenile delinquents, mental deficiency, spas-tics, cerebral palsies, blind, deaf, dumb and educationally subnor-mal children.

III CONTRACT AND TORT (Civil wrong)

- (A) **Contract** — Briefly, contract is an agreement either implied or oral or written, freely entered into by two parties, the terms of which both parties agree to comply with. The chief forms of contract are:
 - (i) **person to person contract**, in the doctor/patient relation-ship, apart from the ethical and professional obligations therein.
 - (ii) **contract patients**. Here, the doctor enters into contract with a third party (the em-ployer), by virtue of the Labour Laws of Singapore, to medically treat the employees. The employer undertakes to pay the medical fees. What-ever the contractual relation-ship, the doctor must strive at all times to maintain a high *ethical, professional and legal responsibility* and *duty* to-wards these patients.
 - (iii) a point worth noting in the management of contract patients is that a doctor cannot unilaterally terminate contrac-tual obligations half-way in the management of his patients without first ade-

quately briefing the new prac-titioner taking on the respon-sibility of care. If he does not fulfil these obligations, he is liable for damages in ethics and contract.

- (B) **Tort (Civil wrong)** — One of the main aspects of tort is that a doc-tor in practice owes a duty to his patients to care and manage their illnesses to the best of his ability re-flected by his training and his ex-perience. He is expected to carry out his duty with (i) *care* at every stage, (2) *skill*, (3) *competence* and (4) *diligence*. Thus, apart from the ethical and medical responsibility, there is the legal responsibility as well. However, it is not unknown in the realm of professional endea-vour for doctors to make mistakes in the course of diagnosis, investi-gation and treatment resulting in damage to the patient and even death. How would the Courts view this mistake? Would they regard it as a misadventure, or would they regard it as negligence? Lord Denning sums it up well in *Rove v Ministry of Health* (1953): "We would be doing a disservice to the community at large if we were to impose liability on hospitals and doctors for every thing that happens to go wrong. Doctors would be led to think more of their own safety than of the good of patients. Initiative would be stifled and confidence shaken. A proper sense of proportion requires us to have regard to the conditions in which the hospitals and doctors have to work. We must *insist* in the *care* of the *patient* at *every point*, but we must not condemn as negligence that which is only a mis-adventure."

Negligence is thus the omission to do something which a reasonable man guided upon those conditions which ordinarily regulate the con-duct of human affairs, would do, or doing something which a pru-dent and reasonable man would *not* do. In a strict Legal analysis (Lord Wright) said, "Negligence

means more than heedless or careless conduct, whether in omission or commission; it properly connotes the complex concept of *duty, breach, and damage* thereby suffered by the patient to whom the duty is owing."

Whether or not the medical defendant meets the requisite standard of care is a question of *fact* for the trial judge to establish. To obtain this fact the trial judge obtains the opinions of his medical peers and then gives his judgement of negligence or of mis-adventure according to the facts determined by him.

If a judgement of negligence is rendered, then apart from the medical practitioner's personal negligence, there is also *vicarious liability* for actionable damages for acts of commission and omission for staff in a practice, e.g. nurses, lab. staff, radiographers, receptionists, etc. In addition, there is *superior respondent liability* on the Principal in applicable cases, for actionable damages for negligence of patients by locum tenens doctors.

Thus, it has been well established that a doctor must apply the four principles of *care, skill, competence and diligence* by examining his patient with thorough care, establishing his diagnosis on reasonable grounds on current updated knowledge and skills, considering the differential diagnoses by performing additional tests that are necessary, treating his patient along well established regimens, keeping adequate notes on the progress, knowing what he is doing, and resuscitating immediately and adequately when things go wrong. Under such conditions when things go wrong, the court may favour misadventure rather than negligence.

IV ENVIRONMENTAL LAWS

These were originally under the ambit of supervision of medical doctors. Of late, these laws have come under the control of Engineers of the Ministry on Environment.

- (1) **Atmospheric Pollution** — The amount of industrial atmospheric pollution and lead content of air due to combustion of petrol by motor vehicles is constantly monitored to check and reduce, if unacceptable levels are reached.
- (2) **Water** — The transport of raw water, filtration, treatment and chlorination to make it potable and fit for human consumption. Other aspects include the recycling of waste and industrial water.
- (3) **Sewerage** — The transport and treatment of sewerage to prevent pollution and seepage into catchment areas.
- (4) **Food and beverages** — control and regulation of dyes and preservatives is monitored.

V GENERAL LEGAL CONSIDERATIONS THAT AFFECT ALL CITIZENS INCLUDING DOCTORS:

These laws require compliance by all people including doctors:

- (1) Income Tax Laws.
- (2) Provisions of the Companies Act; particularly Statutory Declarations and the duties of Directors.
- (3) Laws of Sole Proprietorship and Partnerships.
- (4) Business Registration Act and exemptions for professional practices.
- (5) Medisave Rules and Regulations.
- (6) Prevention of Corruption Act. Note should be taken of its wide powers, and that of its investigating officers who have powers similar to that of Police Officers.
- (7) Mandatory statistical returns to the Department of Business and Statistics as and when required.
- (8) Compliance with C.P.F. provisions for staff in medical practices.

VI CONCLUDING THOUGHTS

In conclusion, a doctor in family practice

should perform his ethical and professional obligations to his patients and discharge his legal responsibility to his patients within the ambit of Statute Law and Common Law.

He owes a duty of ethical, medical and

legal care to treat his patients with *care, competence, skill and diligence*. Only then will he earn the respect of his peers and the public. Indeed, in the ultimate analysis, the respect and gratitude of his patients.

BOOKS RECEIVED

Primary Health care in Industrialised Countries — Report on a WHO Meeting

This report provides a clear account of the state of development of primary health care in Europe in 1985. The recommendations emanating from the Conference are broad, being aimed at governments, health professionals and lay people alike in an effort to further reduce inequalities in health by making better use of resources and by improving the co-ordination, planning, delivery and assessment of health care services.

These recommendations hope to provide the essential building blocks for the primary health care component of the strategy for health for all, and to spur implementation of the 1978 Alma-Ata International Conference on Primary Health Care, at which governments committed themselves to the principle of primary health care being the key to achieving "health for all by the year 2000".

Principles of Development of Model Health Care Programmes — Report on a WHO Meeting

This meeting addressed the broad issues related to the development of model health care programmes — motivation, types of model, content and criteria for selecting health problems to be dealt with.

This report will be of value to national health authorities in setting up a planning mechanism for the systematic development of

model health care programmes, to clinicians and health care administrators in the process of developing specific local programmes, to educators responsible for training health personnel to use such programmes, and to the research community interested in health services research.

Guidelines on AIDS in Europe

These guidelines are aimed at national public health authorities, providing them with a brief introduction to the problem and to the public health measures that can be taken to reduce the spread of infection.

The booklet covers the magnitude of the problems in Europe, the virus and its mode of transmission, the major clinical features of the disease, laboratory tests, possibilities of treatment and prophylaxis, the role of blood and blood products, the public health importance of the disease, and control measures.

Others

- * Planning principles for accelerated immunisation activities — a joint WHO/UNICEF statement.
- * The role of food safety in health and development. WHO Technical Report Series No. 705.
- * Education and training of nurse teachers and managers with special regard to primary health care. WHO Technical Series No. 708.
- * Energy and protein requirements. WHO Technical Report Series No. 724.

NEWS FROM THE COUNCIL

1. COLLEGE EXAMINATION FOR DIPLOMATE MEMBERSHIP

The 12th College Examination leading to the Diplomate Membership of the College is scheduled to be held in October/November 1986. Applications are now open. Those who are interested in taking the examination should apply now. The closing date for receiving applications is 15 May 1986. Application forms may be obtained from the College Secretariat.

In order to be admitted to the examination, the candidate must:

- a) be a registered medical practitioner or have an acceptable qualification.
- b) have a registrable qualification for not less than five years.
- c) have been engaged in Family/General Practice for at least three years.
- d) be a member of the College for at least two years.
- e) have attended at least six College's Continuing Medical Education modules over a period of two to three years.

2. PAEDIATRICS UPDATE COURSE

The Continuing Medical Education Committee of the College conducted a Paediatrics Update Course, commencing 14 February 1986. The programme was as follows:

Day & Date	Topic	Lecturer
14 Feb 86 Friday	COMMON NEONATAL PROBLEMS Moderator: Dr Goh Lee Gan	Prof K L Tan FRCP(E), FRACP, DCH Head, Neonatal Unit Kandang Kerbau Hospital
21 Feb 86 Friday	WELL BABY CLINIC Moderator: Dr Henry Yeo	Dr Loh Hung Soo MRCP (Ireland), MD (Dublin) Paediatrician Katong Baby & Child Clinic
28 Feb 86 Friday	SEIZURES IN CHILDHOOD Moderator: Dr Alfred Loh	Dr Lee Wei Ling MBBS (Hons) Senior Registrar Neurology Dept Tan Tock Seng Hospital
7 Mar 86 Friday	ORTHOPAEDIC PROBLEMS IN CHILDHOOD Moderator: Dr Hia Kwee Yang	Prof Kamal Bose MS, M Ch Orth, FRCS(E) Professor & Head Dept of Orthopaedics National University of Singapore

14 Mar 86 Friday	GROWTH PROBLEMS IN CHILDHOOD Moderator: Dr Goh Lee Gan	Dr Tan Siok Hoon MB, Ch B (Manc), M Med (Paed) Senior Lecturer Dept of Paediatrics National University of Singapore
21 Mar 86 Friday	PAEDIATRIC UROLOGICAL PROBLEMS Moderator: Dr Henry Yeo	Dr June Lou M Med (Paed), FRACP Senior Paediatrician Paediatrics Dept Tan Tock Seng Hospital
4 Apr 86 Friday	SURGICAL PAEDIATRIC UROLOGICAL PROBLEMS Moderator: Dr Soh Cheow Beng	Mr V T Joseph M Med (Surg), FRACS Consultant Surgeon & Head Dept of Paediatric Surgery Singapore General Hospital
11 Apr 86 Friday	RESPIRATORY PROBLEMS IN CHILDHOOD Moderator: Dr Soh Cheow Beng	Dr Tan Cheng Lim FRACP Head, Dept of Paediatrics East Singapore General Hospital

All Friday sessions were held at the Pathology Lecture Theatre, Singapore General Hospital, Singapore 0316, from 9.00 — 10.00 p.m.

Clinical Sessions (From 2.00 — 4.30 p.m.)

Day & Date Venue

2 Mar 86 Sunday	Dept of Paediatrics National University of Singapore Singapore General Hospital	Dr Tan Siok Hoon MB, ChB (Manc), M Med (Paed)
9 Mar 86 Sunday	Dept of Paediatrics Tan Tock Seng Hospital	Dr June Lou M Med (Paed), FRACP

3. ANNUAL GENERAL MEETING

The Fifteenth Annual General Meeting of the College of General Practitioners Singapore will be held at the Academy of Medicine Lecture Theatre, Alumni Medical Centre, 4-A College Road, Singapore 0316, on Sunday, 18 May 1986 at 2.30 p.m.

4. NEW MEMBERS

The following have been accepted by Council into membership of the College during January-March 1986:

Dr Chua, Catherine	Ordinary Membership
Dr Ong Poh Kheng	Ordinary Membership
Dr Heng Bee Hoon	Associate Membership
Dr Jackson Yap Queen Lan, Winifred	Associate Membership
Dr Leung Yuet Sing, Lewina	Associate Membership
Dr Lim Eang Ling, Eileen	Associate Membership
Dr Sie, Paul Timothy	Associate Membership
Dr Wong Fook Meng, Wilson	Associate Membership

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- BCG, DTP, Polio, Measles, Mumps, Rubella, Smallpox
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