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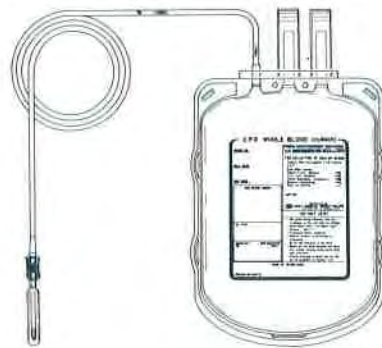
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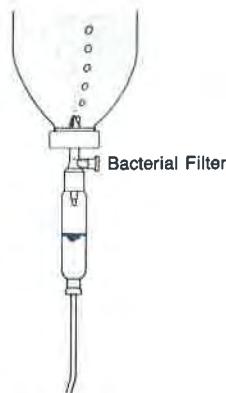
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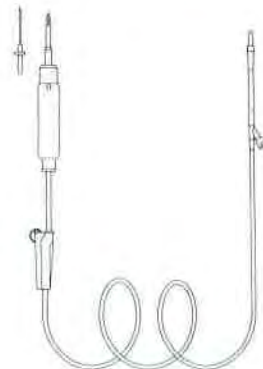
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CONTENTS

	Page
The Twelfth Council 1989/91	3
EDITORIAL	
Our Tasks in Medical Education	
Kee P	7
ORIGINAL ARTICLES	
Orthopaedic Sports Injuries	
Satku K & Kumar V P	11
SECOND ANNUAL SCIENTIFIC CONFERENCE: 11 NOVEMBER 1989	
Opening Address	
Seet A M	17
Sreenivasan Oration 1989	
Tan D	19
Teamwork in Health Care — The Role of the Diabetic Society of Singapore	
Tey B H	23
Teamwork in Health Care — Home Nursing Foundation	
Nair A & Ray R	26
HOME STUDY SECTION	
Theophylline in Bronchial Asthma	
Omar B S T	31
ECG Quiz	
Singh B	36
NEW BOOK ANNOUNCEMENT	38
NEWS FROM COUNCIL	
Annual General Meeting	40
Drug Registration (1): Implications on the General Practitioner	41
Drug Registration (2): Implications on the General Practitioner — A Reply	44
GUIDELINES FOR AUTHORS	
The Singapore Family Physician	48

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OUR TASKS IN MEDICAL EDUCATION

Kee P

General Practice is the "Cinderella" of medicine. Many specialists see general practitioners as "cough and colds" doctors with nothing to contribute to the progress in medical care or in the education of medical students. At best, some of our medical teachers see the "GP posting" as an "exposure" of medical students to general practice — and many medical students come for their general practice posting with this diffident attitude — not expecting to learn anything except to get some idea of the kind of cases we see as general practitioners.

Such attitudes infect even some of us as general practitioners. Consequently, we feel uneasy and inadequate when our hospital colleagues ask us: "What are you going to teach that I can't?"

Many GPs are not aware of the wealth of knowledge and experience in general practice which they can impart to medical students. There is a vital gap in medical education which I believe can best be filled by general practitioners.

The Crisis in Medical Education

Current medical education has been described as being in a crisis by Professor Prawase Wasi.¹ In his view, our present methods of medical education are outdated and reform is needed if future physicians are to have the knowledge and dynamism necessary to address the issues that are beginning to confront the medical profession and society today.

Professor Wasi identified out teaching of the use of technology without adequate emphasis on the ethical issues spawned by such technology as a major defect of today's medical education. The subsequent indiscriminate use of technology has made

the practice of medicine more mechanical and less holistic. Another deficiency is that our medical education is content-oriented and content-congested.

What modern society urgently needs are wise doctors. In order to produce new physicians who are wise men and not merely medical mechanics, Professor Wasi recommends a restructuring of the medical education that will change the emphasis from mastery of content to mastery of process. Medical teachers must be trained not only to teach content but also to teach the process of learning and of thinking critically as well.

At a medical conference organised by the World Federation for Medical Education in August 1988, the problem of younger doctors being more insensitive with poor bedside manners was discussed. It was suggested that a cause of this problem was that medical schools took a "too academic" approach when selecting students. The conference reiterated that Medicine needs doctors who are warm, caring and humane and that a good bedside manner helps to speed a patient's recovery.²

The Art of Listening

However, the fundamental deficiency in medical education is not so much the poor selection of students as the failure to teach our medical students the art of listening. It is the disease-oriented approach to medical care that has produced insensitive doctors with poor bedside manners.

One medical student shared how he felt frustrated when a patient who was being readmitted again and again for obstructive airways disease kept telling him about his family problems — of how he was rejected by the wife and children. He failed to see

that the family rejection is the main reason for the constant readmissions!

Unless this gap is filled, it will not be possible to achieve the objective of the medical faculty to produce balanced, scientific and humanitarian doctors. It has been said that when we listen with the heart, we tell someone they are important and we show them we care.

The art of listening is not only a skill that can be taught and learnt but one that needs constant practice. Teaching the art of listening is therefore an important area of medical training in which general practitioners can play a very important role.

It is a challenge to general practitioners whom I believe are well suited for such a task as they are well versed in the art of listening since they have to deal with undifferentiated problems. The ability to listen to what is not said as well as to observe nonverbal cues is essential for the first phase of problem definition which is discovering why the patient came.

The Hidden Agenda

Discovering why the patient came is not the same as making a physical diagnosis. We tend to assume that all patients see a doctor because they want to be healed. But many general practitioners will have encountered patients who do not want to be healed and who, in fact, are out to prove that they cannot be healed.

Many patients have a hidden agenda when they see a doctor and it is necessary to go beyond the presenting complaint and physical diagnosis to see this agenda. For example, patients may be anxious about the meaning of a symptom.

It is a common experience in general practice to have a patient requesting for a check-up because a friend just died suddenly. A girl may present with giddiness and epigastric discomfort when she is actually worried about pregnancy.

Other patients may have problems of living like the office worker who presented

with chest pain because she was divorced and having a problem with her youngest son.

There are also patients who need to legitimatise a sick role. An example is a teacher with SLE complaining of arthritic pain because she was unable to finish an assignment on time.

As general practitioners we can open the eyes of the medical students to these hidden agenda of patients. This is important because our medical training is only orientated towards making diagnoses and prescribing the right treatment and this has a blinding effect on the psychosocial problems of the patients.

The Diagnosis of Psychosocial Problems

Medical advances have given us a fantastic amount of knowledge about the physiology, pathophysiology and aetiology of diseases. This has led to the tendency to see man like a motor car and to think that all that is needed is to do a few tests, make the diagnosis, apply the appropriate treatment, and all will be well.

But man is more than the engine of a motor car for he is the driver as well who can be affected by many other factors such as the family, work, friends and other social factors. Unfortunately, the specialist knows more and more about the car but less and less about the driver. It is the general practitioner who can see the damage that the driver inflicts on the car and also how the car can give the driver a headache.

With a specialist and hospital-based medical education there is a tendency to focus only on those aspects of the patient's problem which are easiest for the doctor to handle. Consequently, many doctors fail to recognise underlying psychosocial problems as they are too busy chasing a physical diagnosis and asking the patient a barrage of questions. Many medical students have the habit of asking patients a list of questions instead of allowing them to describe their symptoms. Unless corrected, they graduate to be doctors who just chase physical problems.

The Holistic Approach

General practitioners are in the best position to observe the close and intricate relationship between physical illness and the inner disharmony of the mind and the emotions. With an awareness of such a relationship the management of minor illnesses will be seen from a different perspective. It is then not simply a matter of coughs and colds but as Dr Bernard Lau, a psychiatrist in Hong Kong pointed out:

"A family physician then becomes well placed to observe and influence family interactions by virtue of his ongoing contact with families. Handling a trivial complaint in a member of the family may ultimately turn into management of the psychopathology of the family in trouble, which is even more challenging, rewarding and satisfying than routine dispensing of trivial complaints."³

General practitioners therefore have the important task of teaching medical students to see the patient as a human being who has a body, mind and soul rather than a run down motor car in need of repair and spare parts.

The Bedside Manner

Another important teaching point in general practice is the so-called bedside manner. Dr David Mendel noted that an essential ingredient of proper doctoring is the much maligned bedside manner and made the following observation:

"The best doctors acquire one over the years, but many never do. I think this is due to the usual overswing of the pendulum. Around the turn of the century, medical remedies were not very effective; in the circumstances the bedside manner was all there was.

Now that we can cure many diseases, both doctors and public have replaced the wise avuncular physician of the past with the 'intensive care whizz kid image'. We don't need all that mumbo-jumbo when we have proper scientific methods, they say."⁴

Dr Bernie Siegel has written on the need for our modern doctors to apply the insights of psychology and religion to medicine as such an expanded outlook will help them to inspire hope and share major decisions with the patient. He said that such an approach rewards both the physician and the patient for the doctor who acts out of love will not burn out.⁵

It is sad that the bedside manner is dismissed as simply a personality trait or common sense or "mumbo-jumbo." The patient-centred model has been described by McCracken et al as a powerful teaching tool as they have seen students change their styles dramatically after even only a day's of concentrated exposure to the precepts of patient-oriented medicine.⁶

A good bedside manner is more than good manners — it is the therapeutic doctor-relationship. It is the adoption of a patient-centred attitude towards medical care and the formation of a healing partnership with the patient.

To quote Dr Francis Peabody, described as a pioneering medical researcher by Dr Siegel:

"The treatment of a disease may be entirely impersonal; the care of a patient must be completely personal... the secret of the care of the patient is in the caring for the patient."⁵

CONCLUSION

General practice is the last bastion against the dehumanising effects of modern technology. Professor Wasi has expressed his concern that physicians are seen increasingly as medical mechanics or even commercialised medical mechanics — a perception, which in his opinion, is too often true. In general practice, we hold the key to help our future doctors understand the true meaning of health and of the mechanisms by which health is maintained and preserved as well as the recovery from

ill health. As general practitioners, we have the challenge and the critical task of training tomorrow's doctors to be wise and caring physicians instead of mercenary medical mechanics.

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ORTHOPAEDIC SPORTS INJURIES

*Satku K, MBBS, FRCS

**Kumar V P, MBBS, FRCS

Orthopaedic sports medicine addresses both the therapeutic and the preventive aspects of musculoskeletal injuries. These injuries can be categorised into two groups. The first, traumatic injuries, includes injuries following a single episode of increased stress, often of considerable magnitude. They include ligament disruption, muscle or tendon ruptures, dislocations and fractures. The second, overuse syndromes, includes injuries resulting from repetitive stress in excess of the body's capacity to adapt, either inherent in a faulty training method or contributed by minor anatomic abnormalities. This category includes tendinitis and stress fractures.

Traumatic Injuries

Musculotendinous and ligamentous injuries resulting from a single episode of increased stress are categorised as 1st, 2nd or 3rd degree injuries. In 1st degree injuries the disruption is microscopic and with the exception of minor discomfort, there is no loss of function of the injured part. In 2nd degree injuries there is gross tissue damage with associated pain and swelling of the injured area, and significant loss of function. The disruption of the tissues cannot be demonstrated objectively. In 3rd degree injuries there is again gross disruption of the affected tissues with pain and swelling, but objective evidence of disruption, like instability of the affected joint or a gap in the musculotendinous unit is demonstrable. First and 2nd degree injuries respond well

to the conservative treatment of icing and rest for the injured area for an appropriate duration of time. Non-steroidal anti-inflammatory drugs (NSAIDs), compression after icing and elevation of the injured parts are adjuncts to the acute management of these injuries. After the initial 48 hours, heat and physical therapy are appropriate. Third degree injuries require prolonged immobilisation until the affected tissue heal. In the instance of ligaments and muscles this is for six weeks. In some circumstances surgical intervention must precede this immobilisation, the purpose being to establish continuity of the disrupted tissue. A rehabilitative programme after securing healing of the affected tissues is mandatory.

Overuse Syndromes

A simple prognostic classification categorises injuries which result in pain only after the athletic activity as mild, injuries which cause pain during the activity, sometimes interrupting the athletic performance as moderate, and injuries which prohibit participation in the activity as severe. In the latter instance there is imminent danger of total disruption of the affected tissues if the athlete does not heed his symptoms.

Overuse injuries are managed by reduction of stress on the affected tissues. An insight into the mechanism of the injury is necessary in order to take the appropriate remedial measures. For tendinitis, improvement in the training programme by incorporation of suitable stretching exercises before and after the athletic activity is appropriate. In the instance of stress fractures, after an initial period of rest and healing of the fracture, measures should include programmes which increase the load on the skeletal

*Senior Lecturer

**Senior Lecturer

Department of Orthopaedic Surgery
National University of Singapore

system gradually, and the use of appropriate footwear to dissipate some of the load. Where minor anatomical anomalies are the cause of increased stress, the use of orthotics, for instance an arch support in flatfooted athletes, is recommended. In addition to measures to reduce overuse stress, icing the injured part immediately after activity minimises abnormal tissue reaction, facilitating an earlier recovery. As in acute injuries, NSAIDs are a useful adjunct.

Based on the principles outlined above we will now discuss by region some of the more common injuries.

THE KNEE

Ligament Injuries

The knee is the most frequently injured region and the anterior cruciate ligament (ACL) injury, often a 3rd degree disruption, is the most common injury. A twisting weight bearing injury often without collision is responsible for this lesion. The athlete hears a 'pop' and feels his knee run out of place and then relocate. There is excruciating pain. Most sportsmen would not be able to continue with their game. Within hours the knee swells up due to haemarthrosis. Seventy percent of acute haemarthrosis are due to ACL disruption underscoring the high incidence of the injury. Concomitant injury to the collateral ligaments and meniscus may be present. The clinical diagnosis is based on the history and the demonstration of a positive Lachman's test (Fig. 1).

The natural history of an anterior cruciate deficient knee in an athlete if left untreated is dismal because of the failure of the ligament to heal and the consequent instability. To avert this deterioration numerous surgical procedures have been devised to stabilise the knee. Despite this, results are not uniformly satisfactory. Therefore a reduction of activity level and a rehabilitation programme to strengthen the muscles to help stabilize the knee are advocated to reduce the stress on the knee. Should the athlete be keen to continue with his sport, surgical intervention becomes necessary. In acute disruption, primary repair of the ACL with or without augmen-

tation of the ligament with one of the tendons from around the knee is performed. In chronic injuries reconstruction of the ACL with a biological substitute or a synthetic material is undertaken.

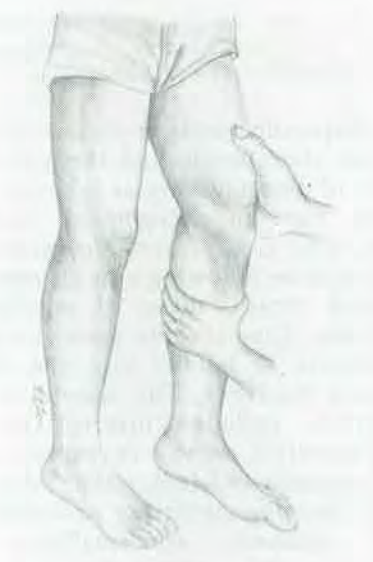


Figure 1: The Lachman Test

The test is done with the examiner on the same level as the knee to be examined. The knee is flexed to between 20° and 30°. By gripping the thigh and leg as shown anteroposterior movements between the femur and tibia are attempted. Abnormal movement is noted in the presence of cruciate injury. This test is more reliable than the drawer test.

Occasionally despite having given up sports and elected for conservative management the instability is still disabling. In this case an extra articular procedure referred to as a MacIntosh tenodesis is indicated. The results of this operation are more predictable than reconstruction of the anterior cruciate ligament. However if strenuous athletic activities are pursued the tenodesis will stretch and the instability will recur within a few years.

Posterior cruciate ligament injuries are less frequent. Like ACL injuries they do not heal spontaneously if treated conservatively and surgical treatment of ruptures is problematic. Fortunately the disability from a posterior cruciate injury is far less than that from an anterior cruciate

injury and many athletes are able to continue with sports without developing significant derangement of the joint in ensuing years. Ruptures are therefore best treated by rehabilitation. However ligament injuries associated with avulsion of a bony fragment are treated surgically as they heal well.

Collateral ligament injuries when they are isolated are still best treated conservatively despite the severity of the injury. They heal well.

Multiple ligament injuries are usually treated surgically as surgery gives marginally better results than conservative treatment.

Meniscal Injuries

The meniscus increases the contact area between the femoral and tibial condyles. Its loss will result in an approximately 100% increase in the load per unit area and hence increase the rate of wear of the articular cartilage. When meniscectomy is undertaken in the presence of ligament instability, the instability magnifies the effects of meniscectomy and hastens the onset of secondary traumatic arthritis. Two thirds of meniscal injuries are associated with ligament injuries.

The history of locking and clinical examination remain important diagnostic criteria of meniscal injuries but the final diagnosis is based on an arthroscopic evaluation of the joint. In recent years

magnetic resonance imaging (MRI) of the knee has been advocated for diagnosis but it is very unlikely that it will replace arthroscopy.

With regard to treatment, the salvage of the meniscus by repair has become an important consideration to minimise the risk of secondary osteoarthritis in athletes. Repair is possible in only about 10% of tears. In instances where the tears are not amenable to surgical repair the offending part of the meniscus is removed — partial meniscectomy. These procedures are now undertaken arthroscopically on a day surgery basis with minimal morbidity. The age of arthrotomy to explore the knee to verify the diagnosis or to undertake a meniscectomy is past.

Patello-femoral Joint Derangements

The most frequent complaint arising from the knee joint is anterior knee pain. Among the causes for this are overuse syndromes namely patella tendon tendinitis and quadriceps tendon tendinitis. The patient presents with anterior knee pain, aggravated by strenuous activities and activities involving ascending or descending stairs. Examination reveals tenderness in the inferior pole of the patella where the patella tendon originates or tenderness at the superior border of the patella where the quadriceps tendon inserts. This condition is best treated by physical therapy especially stretching exercises for the quadriceps and hamstring muscles (Fig. 2) and where there is an acute

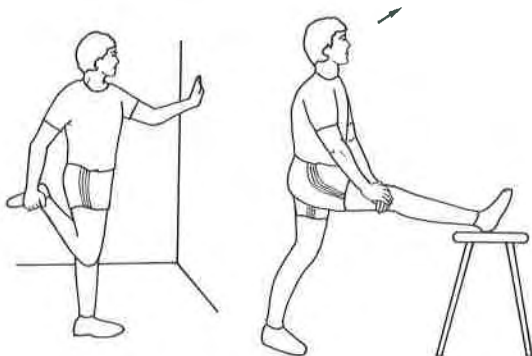


Figure 2: Quadriceps and hamstring stretching exercises

The athlete should feel tension in the muscles being stretched. For the hamstring stretch to be effective the spine should be maintained straight and the pelvis tilted. The latter is achieved when the athlete attempts to move his trunk in an upward and forward direction. The stretching is maintained for up to 10 seconds at a time and repeated for between five and ten times.

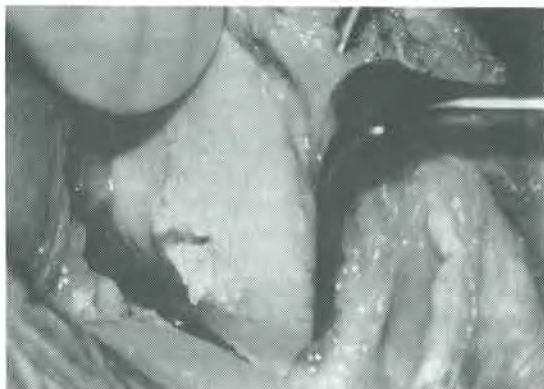


Figure 3: Chondromalacia patella

This figure shows articular cartilage disruption which is a characteristic feature of chondromalacia patella. Chondromalacia patella should not be diagnosed in the absence of features suggestive of articular cartilage lesion i.e. retropatellar tenderness and/or effusion in the knee.

episode of pain following exertion, by icing the affected region. This condition is underdiagnosed and often confused with a less common condition, chondromalacia patella (Fig. 3). In the latter condition the patient experiences similar symptoms as in patella tendon tendinitis but the tenderness on clinical palpation is located in the retropatellar area and not at the periphery of the patella. There is often an accompanying effusion in the knee joint, especially after strenuous activities. This condition is more refractory to treatment. Physical therapy emphasizing on strengthening the quadriceps and stretching exercise for the quadriceps and hamstring muscles still constitutes the main treatment measure. In a very small percentage of cases, surgical intervention may be necessary for disabling pain. Debridement of the affected area of the patella with division of the lateral retinacular fibres and when necessary, tibial tubercle elevation to minimise the patello-femoral compressive forces are undertaken.

SHOULDER

Shoulder Instability

Anterior dislocation is the commonest major injury sustained by the shoulder. After reduction of an acute dislocation, immobilisation of the joint for a period of 6 weeks in a body bandage is worthwhile to prevent recurrence of the dislocation in the young athlete. Once dislocation becomes

recurrent, surgical stabilisation is indicated to allow a return to sporting activities. While dislocation is easily diagnosed the less obvious subluxating shoulder may present as shoulder pain and pose a diagnostic problem. Reproduction of the pain by the anterior apprehension test indicates a subluxating shoulder. MRI of the shoulder, examination under anaesthesia and even an arthroscopic examination of the joint may be indicated in the more difficult cases.

Shoulder Pain

Besides instability, pain in the shoulder is the other common complaint in the upper limb athlete. Subtle subluxation as a cause of pain has been mentioned. The other common causes include rotator cuff tendinitis with or without tear and acromioclavicular degenerative joint disease.

Rotator cuff tendinitis can be acute or chronic. The acute tendinitis presents as excruciating shoulder pain after unusual excessive overhead activity such as vigorous week-end game of tennis. Rest, icing and NSAIDs are normally effective but an infiltration of steroid and lignocaine into the subacromial space gives rapid and dramatic relief of the pain (Fig. 4).

Chronic tendinitis is insidious in onset and is characterised by pain when the shoulder is abducted from 60 to 120° (painful arc). Before and beyond this range, the

joint is painless. Steroid and local anaesthetic infiltration into the subacromial space is effective and gives lasting pain relief. Recurrent pain can be treated with repeat steroid infiltration but resistant cases will need surgical decompression of the subacromial space.



Figure 4: Subacromial injection

This figure shows a diagrammatic representation of the subacromial space. After appropriate sterile preparation of the area the needle is inserted from either an anterior, lateral or posterior direction to lie in the subacromial space. The injection of hydrocortisone and lignocaine is then given.

In rotator cuff tears, (in the young athlete following major shoulder injury and in the elderly following mild trauma), weakness becomes a predominant feature in addition to the pain. If subacromial infiltration of steroid and lignocaine and a course of physiotherapy prove ineffective, surgical repair is indicated.

Acromioclavicular degenerative joint disease may begin in an upper climb athlete from early middle age. In this condition pain is experienced when the shoulder is abducted beyond 120° or when it is adducted across the chest. The pain is intensified at the extremes of these movements. Infiltration of steroid and a local anaesthetic into the joint and its surroundings abolishes the pain instantly and

is diagnostic. In recalcitrant cases surgical resection of the lateral end of the clavicle is indicated.

ANKLE AND FOOT

In this region the important injury in the athlete is lateral ligament sprain of the ankle. The majority of these injuries are 1st and 2nd degree sprains and should be treated by icing the injured area and application of a compression dressing. When the injury appears severe, it is pertinent to undertake a proper examination of the ankle under anaesthesia to determine the severity of the disruption. This can be demonstrated by both clinical examination and by stress x-rays. When there is obvious tilting of the talus or anterior talar translation in the ankle mortise immobilisation in a cast with a without surgical intervention is mandatory. During recovery the most useful rehabilitative programme is the wobble board exercise which is demonstrated in Fig. 5. With return to sports it would be prudent to tape the ankle or use a splint, like the air-cast, to protect from re-injury.

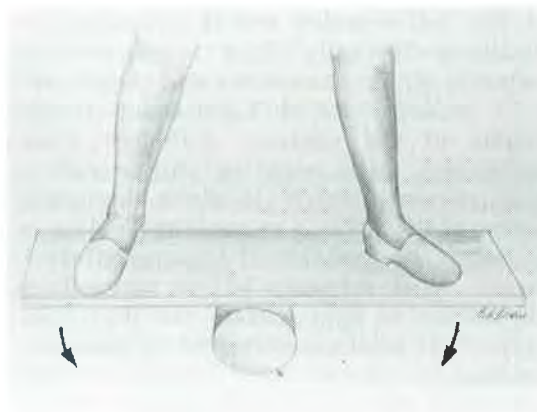


Figure 5: Wobble board exercise

The board is assembled as shown and the athlete learns to balance on it. This facilitates a quick reaction time and coordination of the muscles acting around the ankle.

A less common but equally disabling problem is an overuse syndrome of the achilles tendon. Stretching exercises and icing following exertion is appropriate (Fig. 6).



Figure 6: Achilles tendon stretching exercise
The athlete positions himself as shown in the diagram and by dorsiflexing at the ankle stretches the tendoachilles.

Rupture of the achilles tendon is common in the middle-aged athlete. The patient remains asymptomatic until the moment of rupture. He feels a sudden blow in the calf muscles and is subsequently disabled. Clinically there is an obvious palpable gap in the tendon and in patients who present late, a haematoma in the region of the rupture. Although some surgeons still practice conservative management which involves immobilisation of the ankle in an equinus position in a cast for a duration of approximately 6 weeks, most surgeons advise surgical intervention to approximate the disrupted ends of the achilles tendon before immobilisation.

CONCLUSION

While we have outlined the principles of management and discussed some of the

more common sports injuries it has not been possible to present an exhaustive list of injuries nor detail exhaustively their presentation and management. What seems appropriate to underscore is that once third degree injuries have been excluded most other injuries can be treated conservatively with measures which are within the means of any family practitioner. Icing and resting the injured part for an appropriate duration of time and the administration of NSAIDs is rewarding in that once experienced, the practitioner will find it difficult to resist personally administering the management of the injured athlete.

Third degree injuries often require institutional management by an orthopaedic surgeon. The results of treatment in these cases, although satisfactory in most instances, leave much to be desired, and the injured athlete is occasionally unable to return to his previous level of athletic performance. Preventive measures cannot be overemphasized, especially as advances in medical science have not as yet enabled us to treat third degree injuries with optimal success.

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OPENING ADDRESS

Seet A M

I am pleased to be able to open this 2nd Scientific Conference of the College of General Practitioners Singapore.

The theme of this year's Conference is on teamwork in health care and I am sure as providers of primary health and family care our general practitioners (GRs) have an important role to play in this respect.

The increasing sophistication and specialisation of health care in our country has created a plethora of medical services which seek to meet the needs of the sick in our community.

While this in-itself is laudable in that the diverse and manifold needs of our sick can be met, it also creates a problem of causing confusion amongst the patients who seek medical treatment and assistance.

Furthermore, there is the danger of viewing the patient as a collection of diseased organs instead of treating him as a person with a medical problem.

The general practitioner by nature of his training tends to view the patient's pro-

blems as a whole and he is also able to treat and co-ordinate the health care for his patient.

He can advise his patient when further specialist treatment is necessary. He can make the necessary arrangements for this to be done, or where he is of the opinion that there is no need for this, he can reassure the patient or give treatment himself.

The co-ordination of a person's health care is a great responsibility and one which the general practitioner or the family physician does not undertake lightly.

It also calls for faith on the part of the patient in his GP, and this trust and faith in a personal doctor can only be achieved by years of knowing and trusting one's own doctor.

More and more these days, the family doctor or the GP tends to take the patient into his confidence and lets him know the nature of his illness and also what will be required of him in the treatment and management of his illness.

There was a time in the past when the patient did not take part in the management of his own illness. He simply did what he was told to do by the doctor. The doctor himself was a lone practitioner. He worked by himself, often isolated from his colleagues and other medical personnel.

*Minister of State, Ministry of Education and
Ministry of Community Development*

*The Opening Address was given
on 11 November 1989*

The present concept of the family doctor or GP is that he is part of the medical team and that a patient's illness should not be seen in isolation but should be viewed from a broader concept which involves other members of the medical profession, the patient himself and the community in which he lives in.

Not infrequently a patient's illness can only be cured if there is a change in his lifestyle. Medication alone will not bring about this change. Here the patient will have to see the need for the change, and has to have both the motivation to succeed and the support to do so. Only help from paramedical personnel and the community will make this possible. A patient who suffers from chronic lung disorders will for example not be helped by living in a community which pays scant heed to the dangers of a smoke-filled environment.

Old concepts die hard. Hence, there is the need to hold medical conferences such as this, to stress the importance of team-

work in health care not only to members of the public but to the medical profession also.

Members of the public who seek medical care should realise that it is to their own interests to have someone co-ordinate their health care for them. The treatment of an illness may involve more than one segment of the medical profession and expertise is required to know to whom to go to and when. The family doctor and the general practitioner is a patient's best guide to proper co-ordination in medical teamwork.

For the GPs themselves, this is a timely reminder that teamwork is an essential part of management of a patient's medical and social problems.

It is towards this end that I feel that all who are attending this Conference will not only have a profitable time but a most interesting one as well. I wish you all the very best.

TEAM CARE FOR FAMILIES

Tan D, AM, MBBS, M Med (Int Med), FRACP

Madam Minister of State, Mr President and Members of the College of General Practitioners, Ladies and Gentlemen.

I am not sure whether I should thank the College for inviting me to speak today because this oration has given me many sleepless nights.

Not having any experience of general or family practice, I was not at all convinced that I have anything to say which would have relevance to your practice. Worse yet, I may presume to tell you about things which you in your wisdom and experience already know will not work.

However, you may know that I have in the past gone "where angels fear to tread" in the areas of special education and politics, so allow me to try my hand in the area of family care. It could be that, looking in from the outside, I may see trends and patterns which you, in the busy life of attending to patients, may not have had time to think about.

The Ideal Family Physician is able to diagnose every ailment under the sun. He (includes she) is able to treat medically, surgically and to do obstetrics and gynaecology too. With his trusty stethoscope in his pocket, he is ready to answer house calls anywhere at any time. He needs no rest nor vocation. He is wise, patient and sympathetic at all times. I put up this description with tongue in cheek, but it comes fairly close to some real-life doctors.

*Member of Parliament
for Ulu Pandan
Consultant Cardiologist*

*Paper delivered at the Second Scientific Conference
of the College of General Practitioners, Singapore
on 11 November 1989*

With such doctors around, why do we need team care? I think that in today's complex world, no one professional is able to provide the multifaceted care which families need. Not to respond and change with the times would in the long term hurt the role of the family physician.

Doctors should be aware of the availability and the roles of other professionals in the overall care of patients. I note that many other organisations have been included in this conference, and that is a good start.

Why do I talk about families rather than individuals? Because most individuals live in family units. The individual's health affects the wellbeing of other family members. Most importantly, families share common denominators which affect their health status, such as income and housing; diet, smoking and other habits; mutual support and the network of extended family and friend.

Having explained the reasons for favouring team care, let us look at the professionals who will give this care. They are well known to us, but allow me to put them up for consideration as team members.

The Physician does diagnosis and treatment, and in the present era, also does health screening.

The Pharmacist ensures standards of drug usage and dispensing.

The Nurse Practitioner, not to be confused with the doctor's assistant, can carry out various nursing procedures and is also able to undertake health education such as breast-feeding, infant care and feeding, special care such as care of the skin, bladder and stoma.

The Social Worker investigates socio-economic problems, arranges for families to obtain help from agencies, and is able to undertake interventions such as family therapy.

The Psychologist investigates and assesses psychological and developmental problems. Where necessary, he is able to intervene in behavioural problems such as eating disorders, drug and alcohol addiction.

The Therapists are all involved with rehabilitation — physical, occupational, speech. We are very short of such workers and the need for them will grow as our population grows older.

Dietitians and Nutritionists have come into their own since the realization that certain diet patterns are harmful whilst other eating habits offer protection against various diseases. They have a big part to play in health education and they can offer advice for abnormal nutritional states.

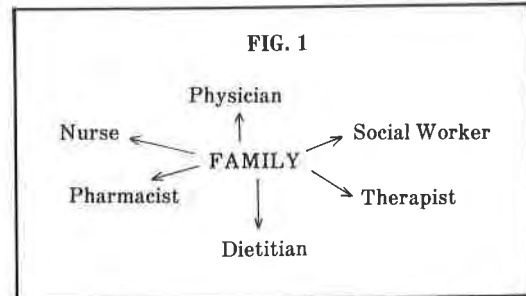
Dentists nowadays are able to conserve even the most carious tooth but we can be most proud of the excellent dental care which all our school children receive.

Volunteers are wonderful people. They provide a whole range of help in the many voluntary organisations. All voluntary agencies lean heavily on them to run their programs and to raise funds. Many hospitals in other countries also have such groups. Since some volunteers have earned the nickname "professional beggar", I feel justified in including them as professionals.

The concept is that all these professional services should be available to families according to their needs; and that these services should be co-operative and co-ordinated. Of course, not every person or family will need care from every professional, but every one of the professionals should be aware of the services given by the others and be willing to collaborate with any of them as necessary.

This diagram (Figure 1) illustrates a family surrounded by the various professionals who are ready and able to serve their

needs. The professionals link up their services as required for each case.



Let us now look at the structures within which the professionals can deliver their services in the context of team care.

Structures which are already with us include the polyclinic, the medical centre, hospitals, family service centres, scattered medical practices and home nursing teams. They are all tried and tested institutions which we can use effectively for team care.

In the Medical Centre, professionals generally work independently. Co-ordination regarding patient care is usually by telephone or at the bedside. The patient shuttles about and pays multiple fees, and this is a disadvantage.

The Polyclinic offers one-stop care and a single bill which is a great convenience. It tends to have a pyramid hierarchy which is usually headed by a doctor. The pyramid structure may not make optimum use of all professionals, and it is difficult to include a large range of services in the usual smallish organisation.

The Government Polyclinics¹ have kept up with the changing pattern of disease in Singapore by introducing health promotion programs and screening for coronary heart disease in addition to their traditional activities of antenatal and well-baby care, and outpatient treatment of illnesses.

The present hospitals are mainly specialist hospitals. I have high hopes for the community hospital² which is in the pipeline. I believe that specialist and community hospitals will complement each

other to provide comprehensive hospital care for the people.

I see the Community Hospitals playing a useful role in the following areas:

continuation of patient management by family physicians of acute-on-chronic conditions in diseases such as diabetes mellitus and hypertension;

care of patients where prolonged in-hospital convalescence is needed, for example following severe strokes and severe trauma; and

rehabilitation, a specialty in its own right, which would be very suitably located in a community hospital to provide expert rehabilitation care for patients with strokes, myocardial infarction, severe trauma and other diseases such as rheumatoid arthritis. These are all common causes of morbidity for which rehabilitation services have yet to be made easily available.

Patients should be admitted to community hospitals when it is the best choice for their particular condition, but the opportunity of taking care of in-hospital patients will also hone the diagnostic and therapeutic skills of family physicians.

There are several Family Service Centres which are now in operation. They are doing good work and we need many more. Corney³ of the Institute of Psychiatry in London has noted that there is a large degree of overlap in the populations served by the social services and that of primary health care. It is obvious that many of the clients of family service centres have stress related or other illness, and many medical patients have family problems as a cause or effect of illness.

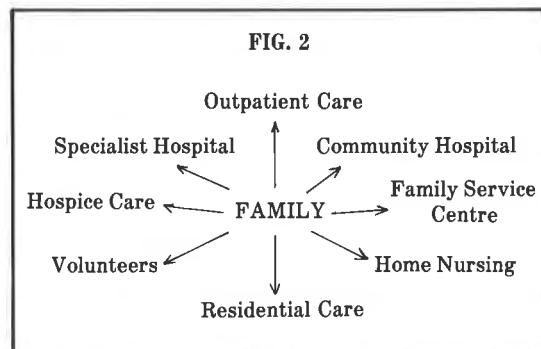
Scattered Clinics are the basic units and the backbone of primary health care for families. They bring the doctor to the patients where they live. However, there is a danger of professional isolation which must be overcome by maintaining links with hospitals and current practice. I know that your College is aware of this and is

actively providing continuing education. As I have just mentioned, the Community Hospitals could provide the hospital link.

Similarly, Home Nursing brings the nurse into the home. Like the family physician, these nurses also face the danger of professional isolation. I would like to suggest that they, too, should have continuing education programs and hospital links.

Hospice Care is a specialty in its own right. The Singapore group offers a range of services including home visiting, day care and residential care. They, too, feel that hospice care should be linked with hospital practice for the maintenance of high medical standards.

This picture (Figure 2) shows how the family has a choice of care from various organisations and institutions according to their needs.



To digress a little, I am sure that you would have observed certain recent trends in medical practice in Singapore.

Patients are more knowledgeable about diseases than they were, say, a decade ago. This is good because it makes it easier to explain diseases to patients and to get their co-operation in the management of their illnesses. It also means that doctors should spend more time in discussion with their patients, making the patient a partner in health care for themselves and their families.

Given the opportunity and support, patients can and should undertake a bigger

role in decisions for investigations, treatments and changes in lifestyle for better health. This gives them a sense of control over their own lives, and makes for better overall results of treatment.

There has been a flow of patients away from family physicians to specialists, I think more than necessary for specialist consultation and treatment. I believe that this trend can be corrected by focussing on a high standard of professional service on the part of family doctors. Other things being equal, patients always prefer to see their family physicians.

Government departments are assuming a bigger role in preventive medicine, for example, in health screening and health education. It is good that Government initiates these services, but I see no reason why family physicians cannot provide this service just as well, by setting up preventive medicine centres, perhaps as joint ventures between a number of doctors.

In conclusion, let me return to the question "Why team care for families?"

Team care enables the skills of professionals in various disciplines to be harnessed for the optimal benefit of families.

Team care helps general practitioners to achieve a more satisfactory outcome for their patients and their patients families because of attention to their allround needs.

Finally, I firmly believe that team care will help to enhance the role of the general practitioner in the provision of primary health care to the people and in the prevention of disease.

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TEAMWORK IN HEALTH CARE: THE ROLE OF THE DIABETIC SOCIETY OF SINGAPORE

Tey B H, *MBBS (S'pore), M Med (Int Med) S'pore, AM*

INTRODUCTION

Teamwork has always been highly regarded as an attribute of Singaporean life. Its value has also emerged in certain areas of medical practice, particularly in the way we treat patients with diabetes mellitus.

TEAMWORK IN DIABETES CARE

A great deal of progress has been made in our understanding of diabetes mellitus and in the application of these advances to its management. Diabetic control programmes have been improved with the development of effective anti-diabetic drugs, revised dietary strategies and intensive treatment regimens which may enhance the prospects for delaying or preventing long-term organ complications. In spite of these, many physicians realise that they cannot handle diabetes mellitus by themselves. This is because diabetes mellitus is a complicated disease. It occurs and goes on for a lifetime and requires a lot of behavioural changes on the part of the patients themselves. It is an important part of people's life to make those changes in order to establish good control. Physicians usually do not have the time to deal

alone with all these problems and it is necessary to incorporate other people to help them.

The design and use of the diabetic health care team varies from place to place. In the ideal situation, it includes the patient and his family, the physician, diabetic nurse educator, nutritionist/dietician, social worker, exercise therapist, podiatrist, psychologist, ophthalmologist and nephrologist.

The patient and his family are the primary members of the team. The physician confirms the patient's diagnosis, assesses his diabetic state and investigates for complications. He prescribes appropriate treatment and establishes goals of management. The nurse educator explains the nature of diabetes, its course and the aims of diabetic control to the patient. She teaches the technique of home blood glucose monitoring with chemstrips and meters, reinforces meal plan devised for individual patient by the nutritionist, reinforces and explains meal plan in relationship to insulin action and action of oral hypoglycaemics. She teaches the technique of insulin self-injections and advises patients on dosage adjustments. She teaches patients and family members to recognize and treat "insulin reactions". She instructs patients on management of food, insulin, oral hypoglycaemics, blood and urine testing on days of acute illnesses. She instructs or reinforces the instructions on important items of hygiene (ie care of teeth, skin and feet). In between clinic visits, she acts as informational source for the physician regarding patient's diabetic control.

*Secretary, Professional and
Scientific Subcommittee
and Consultant Physician
Alexandra Hospital,
Singapore*

*Paper presented at the
Second Scientific Conference of
College of General Practitioners, Singapore
on 11 November 1989*

The dietician/nutritionist obtains a history of patient's usual habits of eating, designs a high complex carbohydrate, low fat, high fibre diet which is culturally acceptable to the individuals and fulfils his needs and still satisfies requirements like weight reduction and proper nutritional provisions especially in growing children and pregnant diabetics.

The social worker deals with patient's social problems such as family conflicts, financial difficulties, problems at work and finds homes for lonely diabetics.

The exercise therapist evaluates patients and customises exercise programs consistent with the fitness level of the patient.

The podiatrist checks and cares for patient's extremities including the nails, prescribes proper shoes and ensures that things are not happening that patients themselves are not aware of.

The psychologist bridges fears, concerns and uncertainties of patients regarding their illness and helps young diabetics with their adjustment problems. The psychologist also helps family members with their own prejudices and fears about their responsibilities and what they might be contributing towards the presence of diabetes as a result of what they do for their loved ones.

The ophthalmologist detects early retinal changes and other diabetic eye complications, follows them up and treats them.

The nephrologist advises on management of early diabetic renal disease and the need for dialysis and renal transplantation.

Patients with similar problems such as diabetics with limb prostheses and renal transplants can lend tremendous help and give very effective advice to diabetics who are about to undergo similar procedures.

The expertise of the neurologists, vascular surgeons and orthopaedic surgeons is often required to help the diabetic patient. They are however not regular members of the diabetic team.

It is not necessary to have the full diabetic health care team if one cannot become available in one's community. The nurse educator and/or the dietitian can train and become proficient in performing most of the duties and responsibilities of the full complement of the team. In the primary health care setting, physicians can group together and share the services of a nurse educator and/or a dietician.

WHAT CAN THE PUBLIC DO?

In a nationwide survey conducted in 1975, the prevalence rate of diabetes mellitus was found to be 1.99%.¹ Ten years later in 1985, a similar survey carried out jointly by the National University of Singapore and the Department of Medicine, Alexandra Hospital found the prevalence rate of diabetes mellitus for the adult population aged 18 years and above to be 4.7%.² Thus the prevalence rate has more than doubled over this ten-year period.

The public in general should therefore be more aware of the existence of diabetes mellitus in the community. They are encouraged to acquaint themselves with the signs and symptoms of diabetes mellitus and seek treatment as early as possible. They are encouraged to attend the various activities conducted by the Diabetic Society. These activities will be elaborated in the next section.

The public is encouraged to be more aware of the risk factors of diabetes mellitus (ie obesity, old age, pregnancy, presence of a family history of diabetes). Those who are obese or who have a family history of diabetes mellitus should be more aware of the symptoms and signs of diabetes mellitus. They should help their diabetic relatives to cope with the disease and undergo regular health screening themselves.

In the nationwide health survey conducted in 1975, the highest prevalence rate of diabetes mellitus was found in the age group 55 years and above (ie 7%). A similar survey conducted ten years later found similar high prevalences of diabetes mellitus in the age group 50 years and above. In the light of these findings, senior

citizens are encouraged to attend health screening at the Senior Citizens Health Centres to ensure early detection and early treatment of diabetes mellitus.

The public is encouraged to adopt healthy lifestyles. These include the eating of a healthy well-balanced diet (ie a high fibre, low fat diet with moderation in refined carbohydrates), proper exercise and no smoking. Those who are suffering from hypertension, heart and kidney ailments should take a diet low in salt content.

WHAT IS THE DIABETIC SOCIETY'S ROLE IN ENCOURAGING TEAMWORK IN HEALTH CARE?

The main role of the Diabetic Society is in DIABETES EDUCATION. Therapy of diabetics is adequately provided for by our governmentt and private hospitals and clinics. The objectives of DIABETES EDUCATION include the education of the diabetics on administration of diabetic medications, self blood glucose testing and monitoring, proper food selection and preparation, prevention and management of complications. The Diabetic Society makes use of teamwork to carry out its various educational programmes. A team of volunteer physicians, nurse educators, dieticians and counsellors is responsible for running the various educational programme of the società. These educational programmes include the following:

- Talks on diabetes mellitus at Community Centres and to donors of Community Chest.
- Talks on diabetes mellitus telecast over Singapore Broadcasting Corporation.
- Talks by prominent international diabetologists at the Society's Annual Scientific meetings.
- Diabetes self-care courses in English and Mandarin.
- Blood glucose screening sessions at Community Centres.
- Regular educational meetings and counselling sessions for members of the Diabetic Society, non-members are also welcome to attend.

- Diabetes Update Workshops for health professionals.
- Diabetes Youth Camps with help from Lions' Club and Lioness' Club of Singapore.
- Exhibitions on diabetes mellitus at the Society's anniversary meetings held at local hotels.
- Active involvement in Health Fairs organised by Ministry of Health at Community Centres.
- Active involvement in National Health Fairs organised by Ministry of Health.

At these health fairs, the society holds exhibitions on diabetes mellitus. Members of the society perform blood glucose testing and distribute educational materials on diabetes mellitus to the public. The society also sponsors research projects on various aspects of diabetes mellitus. Examples of these are the home blood glucose monitoring projects, drug trials on a new second generation sulphonylurea, HOE 490, produced by HOECHST, GERMANY.

In the near future, the Diabetic Society hopes to offer serum cholesterol and triglyceride estimations for the public in the Society's Office, Singapore Council of Social Service Building, #03-03, Penang Lane, Singapore 0923. Details of this new project will be announced in the press when the time comes.

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TEAM WORK IN HEALTH CARE — ROLE OF HOME NURSING FOUNDATION (HNF)

Ray R, MBBS (Singapore), DPH (Singapore)
Nair A, MBBS (India), LRCP, MRCS (London), D (Obst)
RCOG (London), MSc (Public Health) (Singapore)

SUMMARY

Home Nursing Foundation (HNF) believes strongly and practises team approach in the management of its patients both in the patients' home and at the Senior Citizens' Health Care Centres (SCHCCs). Home nursing service is a doctor directed, nurse coordinated home care programme for the bedridden elderly. The family is encouraged to participate and other health professionals are also called in when required. At the SCHCC, salaried medical staff and non salaried volunteers work together as partners and in a coordinated manner to provide medical, rehabilitative and social services for the elderly with the common aim of regaining and maintaining independence in the elderly.

INTRODUCTION

The team work approach involving the collaboration of various health care professionals yiz the physician, nurse, therapists, social worker, patient and his

family and friends, is the key to successful health care delivery, more so in the case of a community based health care programme. The physician will find that there are many talented professionals and lay people ready to work together with the physician and the patient as partners. Such team work involves pooling of skills and knowledge to provide an effective health care.

HOW CAN TEAM WORK BENEFIT THE ELDERLY SICK?

Chronic health illness is a major problem of older persons, and many live with resultant effects of physical and mental decline. Chronic diseases like cerebrovascular accidents, hypertension, Diabetes Mellitus, arthritis, visual impairment and mental and heart conditions are the primary cause of disabilities in most elderly. These states of health require long term support to maintain the persons optimal levels of functioning, and to enable them to remain at home. As chronic conditions worsen and physical reserves to combat illness or disease lessens with time, many become bedbound and bedfast. Based on the needs of individuals, the services of an array of professionals may be required to assist with the health maintenance of the older person.

The various professionals need to work as a team in an effective and cost saving manner, to meet the needs of the patient and their families.

The Benefits of Team Approach to the Elderly Sick

1. Getting more than one person with varying professional expertise to care

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of the College of General Practitioners, Singapore
on 11 November 1989*

*Prepared by:
Nair A
Deputy Medical Director
Health Service for the Elderly*

*Presented by:
Ray R
Medical Director
Health Service for the Elderly/
Executive Director
Home Nursing Foundation*

for a person ensures holistic care of the person.

2. When different professionals with different expertise join hands to provide health care, there is more effective delivery of service. The physician could then devote as much time as possible to clinical management of patient whilst other services are provided by those best qualified and trained to do so.
3. The different team members act as advisors to patient care planning and development.
4. The time of service delivery can be matched with the patients' needs and treatment preferences.
5. With good community team support, the elderly sick could continue to stay in the loving environment of their own home, rather than be institutionalised which is cost intensive and a choice preferably avoided by both the elderly and their families.

Some examples of the different types of services and benefits that an elderly sick person could get from the various team members of a supportive health service are as follows:

Physician — prescribes the medical plan of treatment including specific medication orders, therapy or exercise orders, safety precautions, activity restrictions, diet specifics, frequency of delivery of service, equipment, supply orders and nursing care interventions.

Registered nurse — initiates physician's ordered plan of care and coordinates all services provided, provides preventive and rehabilitative nursing services, administers medication and monitors effect of treatment performs and teaches stoma care, wound care, bowel and bladder care and provides counselling and emotional support.

Physiotherapist — evaluates patient's level of function and endurance, instructs patient and care person and other team members in carrying out exercise programmes and teaches balance and joint mobility exercises, evaluates home

environment and recommends adaptation for home safety and convenience, may use aids such as ultrasound, hot packs, SWD or TENS, teaches safe use of equipment, splints and braces.

Occupational therapist — evaluates patients ability to perform activities of daily living (ADL) such as dressing, bathing, going to toilet, feeding and cooking, provides retraining for problematical ADL activities, teaches patient and the family members how to use assistive devices to conserve energy, promote safety, fits patients with splints and braces as needed, applies various treatment modalities to fingers, hands and shoulders to relieve problems, teach or perform active or passive range of motion exercises.

Speech therapist — assists in the diagnosis, evaluation and treatment of speech, communication and swallowing disorders, teaches techniques to facilitate improved chewing, sucking and swallowing.

Medical Social Worker — assists patient, care givers and other team members in understanding the significant social and emotional factors related to health problems and new diagnosis; counsels and instructs in ways to meet patients social needs, teaches patient and family members how to utilize community resources, assist in planning for long term care or respite service in the home.

The benefits to the elderly sick patient of a team approach in management, where a team of professionals with different expertise work together are many. Together they ensure a holistic care of the person.

HOW CAN THE PUBLIC HELP?

The health care personnel working as a team meet the health needs of the person, but there are many other areas where an elderly sick person needs assistance in order to remain independent in the community such as with personal maintenance. Members of the public could assist here. Personal maintenance services are the functions necessary to maintain independence for example, providing a

healthy home environment with house-keeping, assisting with shopping, preparation of food, delivery of hot meals for the homebound, minor home repair, run errands, interact socially, provide transport to seek medical treatment, stay with patient to permit care givers to take time away from home. The *healthy older adults* could contribute significantly towards the services, which is both beneficial to the giver and the receiver of the service.

The *younger individuals* that is, children from schools, junior colleges and universities could also assist in filling existing gaps in community resources with services to support the elderly's independence eg. by carrying out tasks, visiting, running errands, spending time talking to the elderly. In institutions, the young can assist by providing recreational functions, assist with writing letters, entertaining on holidays and special occasions, providing manicure and pedicure, hair dressing.

Community organisations such as temples, churches, Lions and Rotary Clubs whose membership may include community leaders, could contribute services and funds to help the less fortunate. These organisations could provide supplementary services and aids that the health and social agencies cannot offer.

Individual professionals are another valuable source. This group comprises of persons who are aware of the plight of the aged and underprivileged, and have interest in contributing their professional expertise on a voluntary basis, example of such professionals are doctors, nurses, therapists, dentists, nutritionists, etc. Their assistance could be provided through their respective associations or by individual contact.

HNF's ROLE IN ENCOURAGING TEAM WORK IN HEALTH CARE

HNF is a charitable organisation which is registered in accordance with the Charities Act and Societies Act and was

established by the Ministry of Health in 1976. It is run by a board of management comprising of representatives from both the public and private sectors.

Ministry of health provides policy directions, planning, administrative and manpower support to the Foundation. The community assists with funds to meet the operating costs and also in the form of volunteers. All donations to HNF are tax exempt.

Services Provided by HNF

1. Home Nursing Service.
2. Senior Citizens' Health Care Centres which have the following services:
 - Day care
 - Rehabilitation
 - Health education
 - Health screening
 - Specialist eye and ear screening
 - Family training in care of the elderly
3. Transport

HNF believes strongly and practices team approach in the management of health problems for all patients being served by her. The various team members involved in this community health care team are as follows:

1. *Home Nursing Service* — is a doctor directed, nurse coordinated home care programme for the bedridden elderly. The nurses attached to various Home Nursing Centres visit the patients home on request to provide different nursing procedures such as dressing, injection, change of nasogastric tube and urinary catheter, bowel care, rehabilitation for post stroke and counselling. The nurse does an initial social and medical assessment of the patient and assumes the role of the case manager. She calls in, if necessary, other professionals such as medical social worker, therapists and the doctor. The family members also form part of the team as they are

taught by the nurses how to care for their bedridden elderly and how to perform simple nursing procedures so that they can look after their dependent during the nurses absence.

Volunteer staff nurses from the hospitals and community too assist the nurse in providing this service. The nurse is in regular communication with the doctor through referral letters and through the phone. Usually the family members would visit the doctor with the referral letter given by the nurse to collect the necessary medication and for further advice on management. If the doctor expresses the need to see the patient, the nurse arranges for transport for the patient to visit the doctor's surgery.

Hence, a team comprising of doctor, nurse, family members, patient, community volunteers, medical social worker, therapists and driver work together to provide an island wide domiciliary nursing service.

2. **Senior Citizens' Health Care Centres (SCHCCs)** — at the centres, all patients are managed by a team of salaried staff and volunteers from the community. The salaried members of the team are: doctor, nursing officer, staff nurses, physiotherapist, therapy aides, clerical officer, health attendants and driver. The volunteer team members are lay volunteers from the community (about 4-6 per day), medical social workers from the Community Health Service, occupational therapists from general hospitals and general practitioners who have practices near the centre.

The full-time paid staff and community volunteers work together as a team in a coordinated manner to provide medical, rehabilitative and social services to the elderly with the common aim of regaining and maintaining independence in the elderly.

All patients admitted to the centre are assessed thoroughly by the doctor, nurse and therapists and a systematic rehabilitation programme is worked

out. Realistic goals are set for the patient in consultation with the patient and the family members. The main care giver is also involved in the programme at the centre so that he or she could continue with the programme at home. Case conferences are held every month when all the team members meet to discuss and monitor patients progress. All admissions and discharges are discussed too with open and full participation from all team members working as equal partners.

3. **Transport** — for patients receiving day care or rehabilitation services at the centre, transport is provided to ferry them from their homes to the centres and back for day care and rehabilitation. Transport is also provided on request for bedridden or chair-bound patients, to visit hospitals or clinics for their medical review. A full-time driver employed by HNF provides this service and when the driver is on leave, the volunteers help out. All the staff and volunteers working at the centres viz, the nurses, therapists, therapy aide, clerical officer, health attendant and the patients' families help the patients board the van and also in alighting from the van and in transference to the centre. Transport is an essential service and with the help of team effort, it is possible for more elderly to avail themselves of the services offered by the centres.

Fund Raising and Liaison

The NHF staff also work with members of the community as a team to raise funds. HNF also works with other organisations and ministries such as Ministry of Community Development, Council of Social Service and geriatric units of general hospitals to help develop a good network of community based services for the elderly.

In summary, HNF is a strong advocate of team work approach in health care delivery. It has added meaningful years to the lives of the elderly and they continue to live in the community with the help of their families and the community health care team.

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THEOPHYLLINE IN BRONCHIAL ASTHMA

Omar B S T, MBBS (S'pore), MCGP (S'pore), FRACGP

INTRODUCTION

Theophylline preparations have been used in the management of bronchial asthma for more than fifty years, but with the introduction of beta₂-agonists the popularity of theophyllines decreased. There has recently been a resurgence of interest in these drugs with the wide availability of plasma theophylline assays to optimize therapy, and with the introduction of reliably absorbed slow-release formulations, which provide prolonged and stable therapeutic concentrations of theophylline.

MODE OF ACTION

Theophylline preparations reverse and prevent bronchoconstriction in asthma. They may also increase contractility of the respiratory muscles, particularly when fatigued, and stimulate the respiratory centre.

The exact mechanism of action is not clear. In the past, the mode of action of theophylline was attributed primarily to inhibition of phosphodiesterase, thus delaying degradation of cyclic AMP and thereby encouraging smooth muscle relaxation. More recently, it has been suggested that the mechanism of action may also involve antagonism of endogenously produced adenosine. In addition to relaxation of bronchial smooth muscle, this has also been proposed as the mechanism for the drugs mild transient diuretic action, stimulation of the central nervous system, and its

effect on myocardial muscle performance. Theophylline may also have a direct or indirect effect on sympathetic activity and may encourage smooth muscle relaxation by limiting calcium influx into the cells.

PHARMACOKINETICS

Absorption of theophylline from the gastrointestinal tract is usually rapid and complete. It is widely distributed in the body. About 60% is bound to plasma proteins; protein binding is markedly reduced in neonates and in patients with cirrhosis. Theophylline passes freely into breast milk and across the placenta.

The drug is eliminated mainly by biotransformation in the liver (by demethylation and oxidation), with about 10% of a dose being excreted unchanged in the urine. The bronchodilator effect of theophylline is related to their plasma concentration and the therapeutic range is now accepted as 10-20 mg/l (55-110 micromol/l). Below 10 mg/l therapeutic effects are small and above 25 mg/l adverse effects become unacceptable. The dose of theophylline required to give these therapeutic concentrations varies between individuals, largely because of differences in clearance.

Several factors may influence clearance (summarised in Table 1). The rate of hepatic biotransformation varies markedly among individuals and with age. In young adults, the elimination half-life varies from 3 to 113 hours, but averages about 8 hours in the majority of otherwise healthy non-smoking adults; however in about 25% of adult non-smokers elimination is more rapid with half-life of less than 6 hours. Elimination is delayed in the elderly and in neonates, but is more rapid in young children (1 to 16 years of age) in whom the

Klinik Omar
56 New Upper Changi Road #01-1324
Singapore 1646

TABLE 1
FACTORS AFFECTING THEOPHYLLINE CLEARANCE

<p>Increased theophylline metabolism</p> <ul style="list-style-type: none"> • Tobacco • Enzyme inducing drugs ethanol, rifampicin, phenobarbitone, phenytoin, carbamazepine, isoniazid, sulphinpyrazone • Marihuana • High protein, low carbohydrate • Barbecued meat • Youth 	<p>Decrease theophylline metabolism</p> <ul style="list-style-type: none"> • Factors decreasing hepatic blood flow and metabolism cirrhosis congestive cardiac failure corpulmonale • Enzyme inhibiting drugs cimetidine, erythromycin, oral contraceptives, allopurinol (in high doses) beta-blockers, verapamil • Obesity • Increasing age • Caffeine • High carbohydrate diet • Virus infections and vaccinations • Fever
---	--

elimination half-life averages about 3.7 hours.

Elimination is also affected by other physiological and disease-related variables. Cigarette smoking (10 per day) increases the rate of elimination (due to induction of the hepatic metabolising enzymes) and the half-life in most adults who smoke is less than 6 hours. On the other hand, elimination is delayed in patients with conditions such as congestive cardiac failure, liver disease and obesity.

Elimination of theophylline is also influenced by other drugs taken at the same time. Enzyme induction by anticonvulsants such as phenobarbitone, phenytoin and carbamazepine increases theophylline elimination so that the dose of theophylline may have to be increased by 30 to 50%. Rifampicin, isoniazid or sulphinpyrazone also increase theophylline elimination, and special care is needed if any of these drugs are stopped in a patient who continues theophylline treatment. On the other hand, hepatic enzyme inhibition by drugs like erythromycin, oral contraceptives, cimetidine, beta-blockers and allopurinol (the last in high doses) decreases theophylline elimination so that the dose of theophylline may have to be reduced by 20 to 30% or more.

ROUTES OF ADMINISTRATION

Intravenous

Intravenous aminophylline (the ethylene diamine salt of theophylline is used to increase solubility) has been used for many years in the treatment of severe acute asthma. The recommended dose is 5-6 mg/kg given intravenously over 20 to 30 minutes followed by a maintenance dose of 0.5 mg/kg/hour. Plasma theophylline should be measured at 24 hours. If the patient is already taking theophylline preparations or there are any factors which decrease clearance these doses should be halved and the plasma level checked more frequently (every three hours until stable). It may be preferable to use beta-agonists in these circumstances.

Oral

Plain theophylline tablets or elixir which are rapidly absorbed and give wide fluctuations in plasma concentrations have no place in current therapy except when recourse to elixirs is necessary for patients intolerant of tablet/capsule preparations. Effective slow-release formulations of theophylline have now been introduced, and several such preparations are currently marketed locally. These are slowly absorbed and provide steady plasma concentrations of theophylline which fluctuate

less between doses over a 24 hour period. Although there are differences between preparations, these are minor and of no clinical significance. It is more important to use the optimum dose than to worry about the small differences in each preparation. Either slow-release theophylline or slow-release aminophylline tablets are available; they are equally effective, but the ethylene component of aminophylline has been known, though very rarely, to produce allergic reactions including urticaria and exfoliative dermatitis.

The dose of slow-release theophylline should be adjusted according to plasma levels measured, if possible, about a week after starting treatment when blood samples should be taken before and four hours after a dose to assess approximate trough and peak concentrations. For continuous treatment twice daily therapy is needed although two preparations that are marketed locally are promoted for use only once a day. Children and fast metabolizers can require three times a day dosage.

The dose of theophylline prescribed is often too low to give useful therapeutic effects. Surveys of plasma theophylline concentrations in patients attending chest clinics show that in a majority of patients the concentration is sub-optimal (10 mg/l). For twice daily therapy doses of approximately 8 mg/kg are necessary. For nocturnal asthma a single dose at night of theophylline of approximately 9 mg/kg (or aminophylline 11 mg/kg) may be effective.

Once optimal doses have been determined plasma concentrations remain fairly stable and it necessary only to check plasma levels if there are new factors which may change clearance. When determination of plasma concentration is not available, the recommended dose should be given but the dose reduced if any symptoms of toxicity develop. However, it may be safest to start at a lower dose and build up to the recommended dose over two weeks.

Other theophylline salts such as choline theophyllinate have no advantage over plain theophylline, and some derivatives such as diprophylline are less effective.

There are various compound tablets which contain theophyllines and adrenergic agonists and sedatives; these should never be prescribed.

Other routes

Aminophylline may be given as a suppository, but rectal absorption is unreliable and proctitis can occur. Inhalation of theophyllines irritates and is ineffective. Intramuscular injections of theophyllines are very painful and should never be given.

CLINICAL USE

Acute asthma

The preferred initial treatment for acute severe asthma should be a nebulized beta2-agonist. Intravenous aminophylline should be reserved for those patients who fail to respond to this treatment after the first hour. The reason why some patients respond to aminophylline but not to nebulized beta2-agonists may relate to an additional effect of theophylline on reversing respiratory muscle fatigue. In general practice if a nebulizer is not available, the choice lies between intravenous aminophylline and subcutaneous or intravenous beta2-agonist; the clinical effectiveness is similar, but beta2-agonists are probably safer.

Chronic asthma

Theophyllines reverse bronchodilation in asthma but are less effective as bronchodilators and for protecting against various bronchoconstrictor challenges, than are beta2-agonists. They may have effects which are additive after maximally effective doses of inhaled beta2-agonists have been given. They should therefore be added to maintenance therapy if adequate control of asthma is not achieved with inhaled beta2-agonist combined with inhaled corticosteroids.

The most frequent indication of theophyllines is in the control of nocturnal asthma and early morning wheeze. Some studies suggest slow-release theophyllines may be more effective than slow-release beta2-agonists and should be given as a

single dose at night which will give therapeutic plasma concentrations for the duration of sleep (approximately 9 mg/kg theophylline or 11 mg/kg aminophylline). In chronic bronchitic patients with airflow obstruction theophyllines are less effective than beta2-agonists but may improve exercise tolerance, possibly by an action on respiratory muscle strength.

ADVERSE EFFECTS

Adverse effects are probably the major problem with theophylline usage as their incidence increases with increasing clinical effects. Using plasma theophylline measurements to optimize dosing it is possible to minimize these effects and maintain plasma theophylline concentration steady over many years. The incidence of adverse effects may also be reduced by gradually increasing the dose until therapeutic concentrations are obtained. Unwanted effects of theophyllines are related to plasma concentration and tend to occur when plasma levels are greater than 20 mg/l (although in a minority, especially in the elderly, adverse effects can occur at lower concentrations).

Theophylline has the potential for a wide range of adverse effects. Caffeine-like side effects including minor degrees of central nervous system stimulation and slight nausea or queasiness of the stomach occur frequently following a loading dose, even by the intravenous route, and appear to have little direct relationship to serum concentration. Most patients rapidly acquire tolerance to these symptoms particularly during long-term therapy. Moreover, these minor side effects generally can be avoided by beginning with low doses, and attaining full therapeutic doses only after 7 to 10 days. In contrast, more severe and persistent adverse effects generally are associated with serum concentrations above 20 mg/l and include nausea, vomiting, headache, diarrhoea,

irritability and insomnia. At higher serum levels (e.g. 35 mg/l) cardiac arrhythmias, seizures, brain damage and death may occur.

Serious toxicity such as seizures from a toxic encephalopathy induced by theophylline is not invariably seen at very high serum concentrations, but neither is this life-threatening consequence reliably preceded by less serious symptoms such as nausea or vomiting. Thus, only measurement of serum theophylline concentration can provide assurance of safety for doses likely to be optimally effective. Theophylline is not associated with identifiable long-term risks separate from those associated with acute toxicity from excessive serum concentrations.

CONCLUSION

There have been tremendous contributions to understanding the rational use of theophylline in the past fifteen years. As knowledge and experience were gained, the popularity of the drug increased. The clinician can use theophylline effectively as long as the many factors which affect its use are appreciated. Detailed approaches to therapy which include specific guidelines for individual patients are now available. Theophylline will likely remain an important antiasthmatic preparation for many years to come, and it is likely that additional information regarding its use, as well as new, more convenient dosage forms, will appear in the near future.

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MULTIPLE CHOICE QUESTIONS

1. Theophylline
 - A. should never be prescribed with a beta2-agonist.
 - B. can be given intramuscularly for rapid action.
 - C. is mainly excreted unchanged in the urine.
 - D. has a transient mild diuretic effect.
 - E. is ineffective in the treatment of early morning wheeze.
2. Drugs that may increase theophylline clearance include
 - A. cimetidine
 - B. rifampicin
 - C. carbamazepine
 - D. erythromycin
 - E. phenytoin
3. Factors that may decrease theophylline clearance include
 - A. cigarette smoking
 - B. alcohol ingestion
 - C. obesity
 - D. liver cirrhosis
 - E. congestive cardiac failure
4. The following are known side effects of theophylline
 - A. headache
 - B. vomiting
 - C. somnolence
 - D. cardiac arrhythmias
 - E. convulsions

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

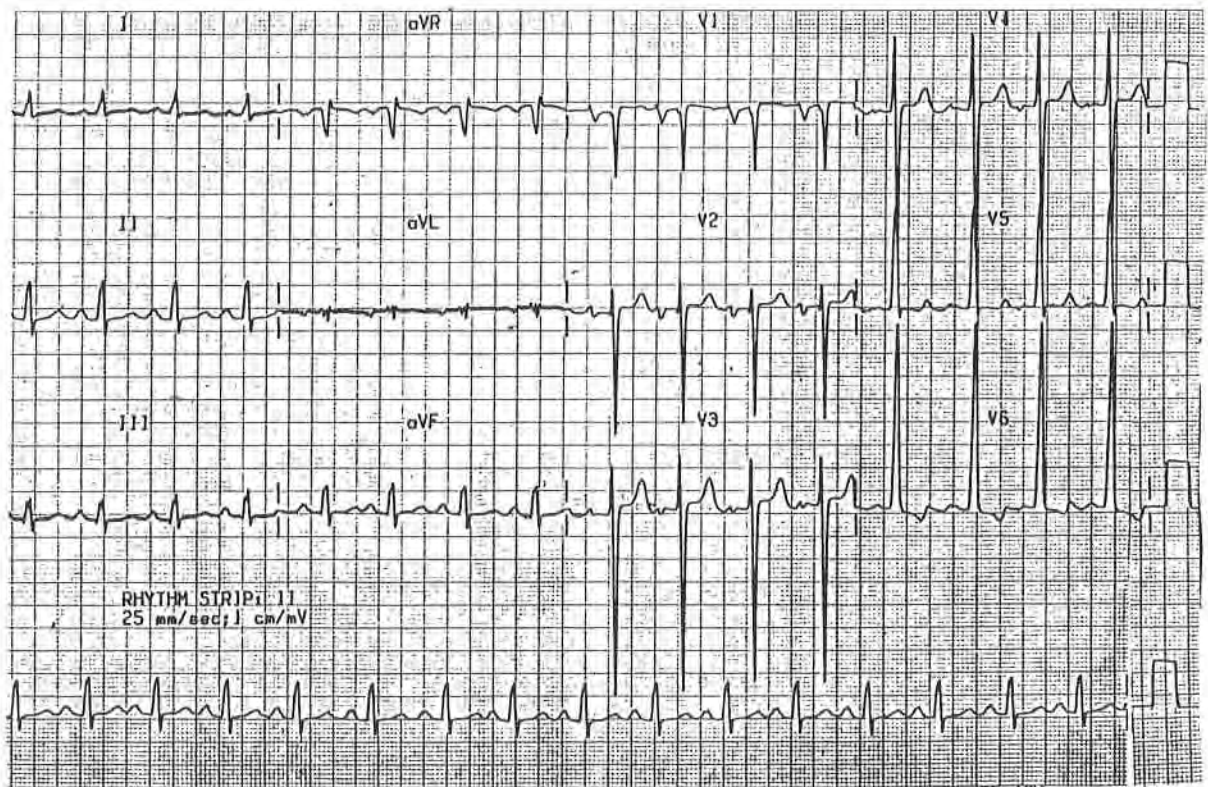
HOME STUDY SECTION

ECG QUIZ

Contributed by Singh B, MBBS (S'pore), MMed (Int Med), MRCP (UK)

Question: The ECG shown below belongs to a 28-year-old male who complained of shortness of breath on physical exertion. He has no chest pain.

What are the abnormal ECG features and what is the electrocardiographic diagnosis?



ANSWER TO THE ECG QUIZ

The ECG shows deep S waves in V1 to V3 and tall R waves in V6. Downsloping ST depression and T inversion is seen in V6. In addition P wave is broad in II, III, AVG and biphasic in V1 with a predominantly negative component.

This patient had rheumatic heart disease with severe aortic regurgitation. The ECG shows severe left ventricular hypertrophy and the P wave characteristics are compatible with left atrial hypertrophy.

The criteria for LVH are not internationally agreed. The criteria listed below would meet general but not universal acceptance.

1. The R wave in any one or more of the leads V4, V5 or V6 exceeds 27 mm.
2. The tallest R wave in any of the leads, V4, V5 or V6 plus the deepest S wave is in any of the leads V1, V2 or V3 exceeds 40 mm.
3. The S waves in one or more of the leads V1, V2 or V3 exceeds 30 mm.
4. Downsloping ST depression and T inversion in V4, V5, V6.



NEW BOOK ANNOUNCEMENT

Preventing and Controlling Iron Deficiency Anaemia through Primary Health Care

A Guide for Health Administrators and Programme Managers

by *E.M. DeMaeyer* with the collaboration of *P. Dallman, J.M. Gurney, L. Hallberg, S.K. Sood* and *S.G. Srikantia*
World Health Organization, 1989
58 pages (available in English; French in preparation)
ISBN 92 4 154249 7
Sw.fr. 11.-/US \$8.80
Order no. 1150325

This book provides a guide to the full range of technical and practical considerations required for the design of direct, inexpensive, and effective strategies to combat iron deficiency anaemia. Noting that this condition impairs the lives of over 700 million persons worldwide, the book makes a special effort to show how new knowledge about the technical means for prevention and control can be used to reach the largest numbers at the lowest possible costs. Throughout, emphasis is placed on problems and pitfalls, particularly in developing countries, that need to be considered when selecting the most appropriate measures for control.

The opening chapters provide essential background information about the complex causes of iron deficiency anaemia, the many factors that influence its etiology, and the corresponding implications for assessment and treatment. Readers are first introduced to the prevalence of iron deficiency anaemia and its consequences in infants and children, in adults, and in pregnant women. A chapter

devoted to etiology and epidemiology includes a thorough explanation of iron requirements, intake, and bioavailability useful in understanding why some individuals are at greater risk than others. Details range from a table indicating recommended daily iron intakes to examples of dietary combinations, commonly found in developing countries, that either enhance or inhibit iron absorption

Against this background, the book turns to the practical problems of assessment, treatment, and prevention. A chapter concerned with anaemia screening and the detection of iron deficiency critically compares available laboratory tests, pointing out advantages and drawbacks, whether involving costs or the possibility that samples will leak during transport, likely to be encountered under field conditions in developing countries. Readers are then given detailed information on treatment options using iron tablets, liquid preparations, or tablets including folate or ascorbic acid, on the recommended dosage and duration of therapy, and on side-effects associated with specific preparations and known to cause poor compliance. Information on prevention concentrates on four basic approaches involving supplementation with medicinal iron, education and associated measures to increase dietary iron intake, the control of parasitic and other infections, and the fortification of a staple food with iron. The book concludes with a discussion of the costs and benefits of prevention and a guide to the components, goals, and logistics of an anaemia control programme.

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Please indicate languages of publication, price, ISBN, and address of local sales agents (see reverse).
A copy of the review or notice would be appreciated.

DSA/89.76



NEW BOOK ANNOUNCEMENT

Prevention in Childhood and Youth of Adult Cardiovascular Diseases: Time for Action

Report of a WHO Expert Committee

Technical Report Series, No. 792
1990, 105 pages (available in English; French and Spanish in preparation)
ISBN 92 4 120792 2
Sw.fr. 12.-/US \$9.60
Order no. 1100792

This report sets out the scientific rationale for an approach to the prevention of coronary heart disease that starts in childhood. Throughout the report, an effort is made to translate scientific knowledge about the causes of cardiovascular diseases into clear lines of preventive action, applicable in early life, that can be followed by parents, schools, physicians, public health authorities, and governments.

The book has two main parts. The first identifies risk factors for each of the main groups of cardiovascular diseases, including atherosclerotic cardiovascular diseases, hypertensive diseases, rheumatic fever and rheumatic heart disease, congenital heart disease, cardiomyopathies, and pulmonary heart disease. Evidence from a wide range of sources, including inter-country comparisons, is assessed in order to determine both the extent to which these risks are present in childhood and youth and the potential for their prevention. Details range from advice on the primary and secondary prophylaxis of rheumatic fever to facts about the role of passive smoking in the development of chronic obstructive pulmonary disease.

Drawing upon decades of experimental, clinical, and epidemiological research, the report presents convincing evidence that the processes

leading to cardiovascular disease start in childhood, that causative factors are directly linked to culturally-determined risks, and that correction or avoidance of these risks needs to be an integral component of childhood preventive care.

Since severe atherosclerosis underlies most cases of coronary heart disease, the most extensive section concentrates on the potential of interventions, introduced in childhood and youth, to protect populations from the current epidemic of atherosclerotic disease. Particular attention is given to the strength of evidence linking dietary patterns, cigarette smoking, and a sedentary lifestyle to the early onset of processes leading to cardiovascular disease. Readers are reminded that atherosclerotic and hypertensive diseases begin in childhood, that the habits favouring this development are established in early life, and that the "rich" dietary patterns common in this century are the primary and essential factors that contribute decisively to the epidemic of coronary heart disease.

Having established a rationale for early prevention, the second half of the book offers guidelines for the immediate introduction of vigorous preventive measures. Separate sections explain the need to treat "sick" populations as well as individuals at high risk, define the powerful role of schools in preventive programmes, establish criteria for successful health education and promotion, and extract a number of practical lessons from recent studies of childhood interventions. The report concludes with a discussion of areas where further research can contribute to the refinement of preventive strategies in childhood and youth.

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DSA/90.058

NEWS FROM THE COUNCIL

ANNUAL GENERAL MEETING

NOTICE IS HEREBY GIVEN that the NINETEENTH ANNUAL GENERAL MEETING of the College of General Practitioners Singapore will be held on Sunday 20 May 1990 at 2.00 pm.

AGENDA

1. Minutes of the Eighteenth Annual General Meeting held on 14 May 1989.
2. Matters arising from the Meeting.
3. Annual Report of the Twelfth Council for the year ended 31 March 1990.
4. Audited Accounts for the year ended 31 March 1990.
5. Constitutional Amendments

5.1 Increase in subscription fees

As per article 7 Section 2 Article(e), Council has recommended an increase of \$30 for Ordinary/Diplomate Members/Fellows and \$15 for Associate/Overseas Members. The new subscription rates will be as follows:

Ordinary or Diplomate Member	\$130
Fellow	\$130
Associate Member	\$ 65

5.2 To delete clause (f) of Article V Section 4: Admission to Diplomate Membership.

6. Any other business.

Dr Soh Cheow Beng
Honorary Secretary
for Twelfth Council
College of General Practitioners Singapore

DRUG REGISTRATION: (1) IMPLICATIONS ON THE GENERAL PRACTITIONER

The drug registration exercise has stimulated some reactions amongst general practitioners. These were expressed verbally through telephone calls, letters to the Council, letters to the medical press, e.g. Newsletter of the Association of Private Medical Practitioners, Singapore (APMPS)^{1,2,3}

The issue was serious enough to warrant an Extra-Ordinary Meeting of the APMPS and this was held on 6 August 1989.

POINTS RAISED BY PRACTISING GENERAL PRACTITIONERS

1. Unavailability of some generic drugs

Generic drugs provide a cheaper source of drugs in the treatment of patients. This is especially important where there is need for long term treatment, e.g. hypertension and diabetes. Poor patients cannot afford to pay for proprietary drugs and patient compliance to long term medication becomes then a serious problem.

The reason given by importers for non-registration of some generic drugs is the fee for such registration which makes it financially less attractive to import the drugs concerned.

*This is a paper submitted
by the Council of College of General Practitioners,
Singapore
to the Ministry of Health's
Health Advisory Council
on 27 Feb 1990*

2. The unavailability of parallel imports

Parallel imports hold in check unreasonable price hikes in drugs. They also prevent monopolisation of the market by the sole importing agency.

Several firms which have the sole agency to these drugs fix prices at levels well above those in our surrounding countries. The high price of these proprietary drugs has meant that many of the poor have been denied their use because of their inability to pay for the medicine. A case in point is the high mark-up price of the newer drugs used for the treatment of peptic ulcers and virus diseases.

The requirement that parallel importers must furnish a letter of authenticity from the manufacturers is a move which importers find difficulty in meeting as no drug manufacturer is likely to issue a document which would prejudice the sales of its own product in a market already assigned to an agent. Furthermore, insistence on a certificate of authenticity is not a fool-proof test of quality. Periodic checks by the Ministry of Health (MOH) on the efficacy of these drugs is an alternative.

3. GPs "kept in the dark"

This is a cause of annoyance to many General Practitioners, (GP) and frustration to their patients when they are told that a certain drug is no longer available on the market with no explanation given.

In this respect many of the drug firms are equally to blame for what appears to be a "couldn't care less" attitude toward the patients and GPs. Not infrequently, the blame is laid on the doorstep of the MOH by the remark, "Why don't you ask them?"

Better communication between the MOH and practising GPs will be a welcome move, and reasons should be extended why certain drugs have been taken off the market. It would be useful also to give the names of acceptable alternative drugs.

4. The prohibition of fixed-dose combination drugs

Although only 2% of the applications for drug registration have been disapproved (June 1988), unfortunately many of these were popular fixed combination drugs.

Some of these drugs have stood the test of time and their unavailability has caused some distress to many patients. These are drugs widely used for cough (Phensedl), asthma (Franol/Tedral), allergies (celestamine) and gastric upsets (Combizyme and Malami H).

There are several reasons in favour of combination medicines over single products. Perhaps the most important is convenience and simplicity of dosage: better patient compliance can be counted upon with less confusion on the part of the patient.

E. Snell⁴ says that combination drugs at present "account for about one-third of medicines used in general practice and one-fifth in hospital. The alleged disadvantages of such products are mostly theoretical or doctrinal, with the strongest being an objection to the fixed ratio of the ingredients. Nearly all medicines are a formulated ratio of several chemicals and a single active ingredient may be metabolised to a variety of substances with different therapeutic and toxic effects".

Other reasons⁵ for a fixed dose combination include:

- i) *Enhancement of therapeutic effect.*
Antibacterial activity is enhanced and extended by certain drug combinations, e.g. trimethoprim with a sulphonamide, ampicillin with flucloxacillin.
- ii) *Improved therapeutic action.*
Use of a beta blocker alone may cause fluid and sodium retention. The addition of a mild diuretic obviates this. Oral contraceptives with oestrogen-progesterone combinations are also safer to use.
- iii) *Prevention of induction of microbial drug resistance.*
In treating tuberculosis it is important to prevent bacterial resistance, and the concomitant use of isoniazid is necessary.
- iv) *Alleviation of side effects.*
Potassium loss during diuretic therapy can be alleviated by the concomitant use of a potassium salt.
- v) *Simultaneous treatment of co-existing disease.*
In some anemias, iron deficiency commonly co-exists with folic acid deficiency.

5. Representation of Medicines Advisory Committee

There is a need for representation on this Committee by practitioners that represent medical bodies, apart from practitioners appointed in their personal capacity. This will give the profession a sense of an official link, representation as well as continuity.

PROPOSALS FOR CONSIDERATION BY THE HEALTH ADVISORY COUNCIL

1. Appropriate drugs of good quality must reach the people. To ensure this, attention must be paid to quality as well as availability. The present drug registration exercise regulates quality that may introduce price and availability barriers.
 - i) *To ensure availability of generic drugs to poorer patients.*
The importation or manufacture of

such drugs must not be made financially unattractive to drug houses.

ii) *To allow parallel imports.*

This should not be stifled by bureaucracy. Parallel imports mean an alternate and cheap source of drugs for those in need.

2. GPs should be told the reasons why certain drugs are not registered and also the alternatives to be used.
3. The following procedure should be followed before a fixed-dose combination drug is dropped.
 - i) Drugs should be evaluated not only on pharmacological grounds but also on practical therapeutic benefits.
 - ii) A list of those drugs ear-marked for deletion should be circulated to all practising doctors giving

reasons for such deletion. A period should also be given for objections to be submitted in writing by GPs, stating reasons for retaining the drug.

4. Representation on the Medicine Advisory Committee should include practitioners representing medical bodies.

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“DRUG REGISTRATION: (2) IMPLICATIONS ON THE GENERAL PRACTITIONER” — A REPLY

1. Unavailability of some generic drugs

There is no shortage of generic drugs in the market. Out of a total of 3,611 drugs registered in Phases I & II DR, 2,319 are generics or products which belong to non-multinational companies. The percentage of generic drugs registered is 63.2%.

The number of drugs registered for management of diabetes and hypertension are:

	Patented or Proprietary	Generic
Antidiabetics	10	39
Antihypertensives	78	166

Examples of availability of popular drugs in these two categories are given below:

Drugs	No of MNC products registered	No. of generic products registered
Atenolol	2 (Tenormin)	16
Propranolol	3 (Inderal)	60
Nifedipine	3 (Adalat)	10
Glibenclamide	2 (Daonil, Euglucon)	13
Metformin	1 (Glucophage)	8

Paper prepared by:
Tan K K
Director (Pharmaceutical Department)/
Chief Pharmacist

Approved by:
Ong Y Y
Chairman
Medicines Advisory Committee/
Head, Medical Unit III, SGH

Drug registration (DR) has reduced some generic drugs but generally, these drugs do not meet with quality standards or the product owners are not keen to register them.

2. Drug Price

DR does not cause increase in drug prices. The registration fee for a product licence is \$100 for 3 years or \$120 for 5 years. This works out to be \$2 to \$3 per month for a product. Our registration fee is one of the lowest in the world.

3. Unavailability of parallel imports

Ministry of Health does not object to parallel import of drugs. It has the responsibility to ensure that the imported drug is the same as the one registered locally. The Drug Administration Division (DAD) has taken steps to facilitate parallel import of drugs by relaxing the requirements.

The present requirements are:

- a statement attesting that the exporting agent is an authorized agent for the product and that the product is registered in the country of export.
- a copy of the invoice from the exporting agent, and
- an undertaking from the importer that he will be responsible for the quality of the product.

These requirements have been worked out with major parallel importers.

The impression DAD gets from parallel importers is that they are not keen as the market size is small and the profit limited.

4. GP "kept in the dark"

With its current manpower resources DAD has disseminated as much information as possible. Presently, it sends computer printouts of drugs registered in Phases I & II DR to professional organisations, including the Singapore Medical Association (SMA) and Association of Private Medical Practitioners, Singapore (APMPS) for their dissemination to members.

Product owners are given the reasons for rejection. They can appeal to the Minister if they have good reasons for requiring the drug. The form to use is at Appendix I.

There will be a computer dial-up system which provide the drug registration status. The system will be operational in April this year.

When the DR exercise is completed in 1991, DAD intends to publish a Drug Register.

5. Prohibition of fixed-dose combination drugs

MAC's criteria for registering combination drugs are that the combination must have clear advantage, e.g. synergism. Examples of combination products which have advantages as those mentioned in the paper approved for registration are:

Drug	Advantages
1. Trimethorim & sulphamethoxazole (Bactrim)	Enhancement of therapeutic effect
2. Atenolol and chlorthalidone (Tenoret)	Improve therapeutic action
3. P.A.S. with isoniazid	Prevention of induction of microbial drug resistance
4. Nystatin/triamcinolone/gramicidin (Kenacomb cream)	Simultaneous treatment of co-existing diseases

Only 2 of the 5 products mentioned in the paper are rejected. The reasons for rejection are:

Drug	Reasons
Franol	Barbiturates cause dependence, tolerance and respiratory depression. They should not be combined with other drugs for treatment of asthma.
Celestamine (oral)	Contains a steroid and an antihistamine. Such combination can lead to abuse. Steroids are powerful drugs with many side effects. They should be used by themselves so that the dose can be carefully regulated. The dose is normally reduced gradually before stopping the medication. Combination with another drug means that the dose of the steroid cannot be regulated as the amount taken often depends on the dose of the other ingredient.

For combizyme and mamil H, DAD did not receive any application for DR. Phensedyl is registered and 35 products of similar combination are also registered.

6. Representation of Medicine Advisory Committee (MAC)

Medical associations and general practitioners are represented in the MAC. We have 1 SMA representative and 2 senior GPs in the MAC, and 2 GPs in the expert sub-committee. The current members of MAC are as follows:

	Name	Dept	Position
1	Dr Ong Yong Yau	Head, MU III Singapore General Hospital P L	Chairman
2	Dr Chin Koy Nam	Senior GP in private practice	Member
3	Prof Gwee, Matthew	Head, Dept of Pharmacology National University of Singapore	Member
4	Ms Lim, Amy	Head (Drug Administration Division) Ministry of Health	Secretary
5	Dr Loh, Alfred	Senior GP in private practice	Member
6	Dr Rasanayagam, W R	SMA representative	Member
7	Mr Tan, K K	Chief Pharmacist Ministry of Health	Member
8	Prof Tan Yew Oo	Dept of Oncology National University Hospital	Member
9	Prof Ti Teow Yee	Clinical Pharmacologist National University of Singapore	Member
10	Prof Wan, Lucy	Head, Dept of Pharmacy National University of Singapore	Member
11	Mr Wu Teck Seng	Representing Pharmaceutical Society of Singapore	Member

The members of the expert sub-committee on GI and skin preparations are:

Name	Dept	Position
Dr Ng Han Seng	Senior Consultant Physician, Dept of Medicines III, Singapore General P L	Chairman
Dr John Choy	GP, Shenton Group	Member
Dr Tulip Tan	Medical Director National Skin Centre	Member
Dr Steven Ong Sin Eng	GP, Drs Gethnin Jones Liow & Partners	Member

7. Conclusion

MAC agrees with the College of General Practitioners' proposals that good and appropriate drugs must reach the people. This principle is adopted by MAC in recommending drugs for registration. However, MAC maintains that the present DR does not present availability barriers of drugs so long as they are safe, effi-

acious and of good quality.

To ensure that there will be no disruption of drug supply, MAC will recommend to the Ministry to include a transitional period of 1 year for products not approved for registration before they are withdrawn from the market. This grace period will apply to products which are not hazardous.

APPEAL FORM

Date: _____

Ref No.: _____

Head
Drug Administration Division
Tan Teck Guan Building
16-A College Road
Ministry of Health
Singapore 0316

I wish to appeal for the registration of this product in Singapore.

- 1) Name of Product: _____
- 2) Active Ingredient(s): _____
- 3) Main indications of Product: _____
- 4) Alternative drugs available: _____
- 5a)* Annual requirement estimates: _____
(For individual prescriber/user)
- b)* Annual sale of purchases estimate: _____
(For product owner or agent)
- 6) Reasons for Appeal (Please attach additional sheets if necessary)

Name of Applicant: _____ Name of Company: _____

Designation: _____ Address of Company: _____

DECISION BY MEDICINE ADVISORY COMMITTEE (MAC)

Approved

Signature: _____
Secretary MAC

Not approved

Date: _____

** Delete if not applicable.*

GUIDELINES FOR AUTHORS

THE SINGAPORE FAMILY PHYSICIAN

Authors are invited to submit material for publication in the Singapore Family Physician on the understanding that the work is original and that it has not been submitted or published elsewhere.

The following types of articles may be suitable for publication: case reports, original research work, audits of patient care, protocols for patient or practice management and review articles.

PRESENTATION OF THE MANUSCRIPT

The whole paper

- * Normally the text should not exceed 2000 words and the number of illustrations should not exceed eight.

Type throughout in upper and lower case, using double spacing, with three centimetre margins all round. Number every page on the upper right hand corner, beginning with the title page as 1. Make all necessary corrections before submitting the final typescript.

Headings and subheadings may be used in the text. Indicate the former by capitals, the latter in upper and lower case underlined.

Arrange the manuscript in this order: (1) title page, (2) summary, (3) text, (4) references (5) tables, and (6) illustrations.

- * Send three copies of all elements of the article: summary, text, references, tables and illustrations. The author should retain a personal copy.

The title page

- * The title should be short and clear.
- * Include on the title page first name, qualifications, present appointments, type and place of practice of each contributor.

- * Include name, address and telephone number of the author to whom correspondence should be sent.
- * Insert at the bottom: name and address of institution from which the work originated.

The summary

- * The summary should describe why the article was written and give the main argument or findings.
- * Limit words as follows: 100 words for major articles; 50 words for case reports.
- * Add at end of summary: an alphabet listing of up to 8 keywords which are useful for article indexing and retrieval.

The text

The text should have the following sequence:

- * Introduction: State clearly the purpose of the article.
- * Materials and methods: Describe the selection of the subjects clearly. Give references to established methods, including statistical methods; provide references and brief descriptions of methods that have been published but are not well known. Describe new or substantially modified methods, giving reasons for using them and evaluate their limitations. Include numbers of observations and the statistical significance of the findings were appropriate.

Drugs must be referred to generically; all the usual trade names may be included in parentheses. Dosages should be quoted in metric units.

Laboratory values should be in SI units with traditional units in parentheses.

Do not use patient's names, initials or hospital numbers.

- * **Results:** Present results in logical sequence in the text, tables and illustrations.
- * **Discussions:** Emphasise the new and important aspects of the research and the conclusions that follow from them. Indicate the implications of the findings and limitations. Relate the observations to other relevant studies.

Illustrations

- * Diagrams, line drawings, photographs or flow charts are valuable but their use will be subject to editorial policy. Transparencies or prints are acceptable for colour reproduction at the authors' expense.
- * Each illustration must carry its appropriate Figure number and the top should be clearly labelled.
- * Figure legends, typed (double-spaced) and each on a separate page should be no more than 45 words.

Tables

- * Any table must supplement the text without duplicating it.
- * Each should be numbered, typed on a separate sheet with an appropriate title.

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Acknowledgements

Place these at the end of the text, before references.

References

These should be limited to the work cited in the article.

References should be double spaced and arranged alphabetically by author. Personal communications are not acceptable as references. Unpublished material should be included only if an address can be given from which a copy of the material cited is available.

Authors are responsible for accuracy of references, which should conform to the Vancouver style (see Further reading). List all authors (include all initials) when there are six or fewer; when seven or more list the first three and add et al. Give the title of the paper cited in full, the title of the journal abbreviated according to Index Medicus (if not listed by Index Medicus spell in full); the year; the volume number and the first and last page number of the article.

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Further reading

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2. Bailar III JC and Mosteller F. Guidelines for Statistical Reporting in Articles for Medical Journals. *Ann Intern Med* 1988; 108: 266-273.

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'NIF-TEN' Prescribing Notes

USE: Management of hypertension.

DOSE (adults only):
One capsule daily; recommended where monotherapy is inadequate. If necessary, one capsule twice daily.

CONTRAINDICATIONS:
Heart block, cardiogenic shock, overt heart failure, pregnancy and lactation, co-administration of cardio-depressant drugs (eg. verapamil), marked renal impairment.

PRECAUTIONS:
Poor cardiac reserve, conduction defects, anaesthesia. Caution in patients with chronic obstructive airways disease or asthma. Withdrawal of beta-blocking drugs should be gradual in patients with ischaemic heart disease. Withdrawal of clonidine. Co-administration with Class I antiarrhythmic agents. Interaction with cimetidine or quinidine.

Diabetes: Rarely, a transient increase in blood glucose has been observed with nifedipine in acute studies. Modification of the tachycardia of hypoglycaemia may occur.

SIDE EFFECTS:
Dizziness and bradycardia may occur. Headache, flushing, fatigue and oedema have been reported. Skin rashes and dry eyes have been reported with beta-blockers – consider discontinuance if they occur.

Rare reports of jaundice and gingival hyperplasia with nifedipine.

PRESENTATION:
'Nif-Ten' capsules each containing atenolol 50 mg and slow-release formulation of nifedipine 20 mg.

*'Nif-Ten' is a trademark.
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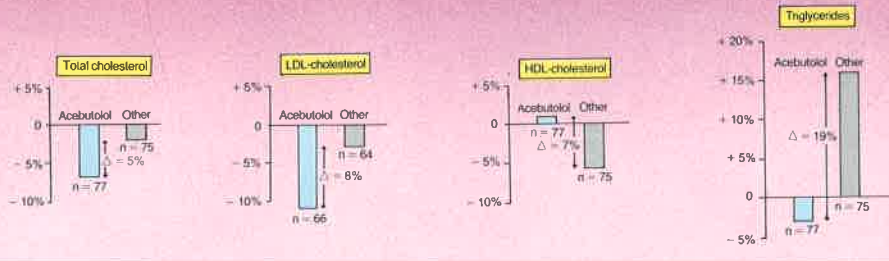
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A. Clucas and N. Miller, Drugs 36 (Suppl. 2): 41-50 (1988)

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Dosage: (Hypertension) 400mg orally once daily at breakfast. If response inadequate after two weeks increase up to 800mg once daily at breakfast; up to 1,200mg in divided doses may be required. (Angina) Most patients respond to an oral dose of 200mg twice daily. In severe forms up to 300mg t.i.d. may be required. (Cardiac arrhythmias) **Intravenous:** In severe arrhythmias, dosage depends on the degree of urgency and clinical state of the patient. Twenty-five mg may be administered fairly rapidly intravenously over 3-5 minutes. Initial dose may be followed by a further 25mg slow infusion over an hour or more, again depending on urgency. **Oral:** May take about three hours to exert its full effect. Thereafter dosage may be maintained at 100-200mg two or three times a day. **Contra-indications:** Cardiogenic shock, heart block, Sectral (acebutolol) should not be used with verapamil or within several days of verapamil therapy (or vice versa). **Precautions:** In asthmatics; in pregnancy and those with blood pressures of the order of 100/60 or below. In the presence of bradycardia; with catecholamine-depleting drugs such as reserpine; signs of heart failure; with insulin dependent diabetes and metabolic acidosis dosage adjustment may be required. If preferred, discontinue 24-48 hours before anaesthesia. If a beta-blocker and clonidine are given concurrently, the clonidine should not be discontinued until several days after the withdrawal of the beta-blocker. (see Prescribing information on clonidine). **Side effects:** Bradycardia, gastro-intestinal effects, depression have occurred infrequently. There have been reports of skin rashes/dry eyes associated with the use of all beta-adrenoceptor blocking drugs. Symptoms have cleared when treatment was withdrawn. Discontinuation should be considered if such reaction is inexplicable, cessation of therapy with beta-blockers should be gradual. **Presentation:** 100mg, 200mg capsules; 400mg tablets; Injection sol. 2ml ampoules.



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