

COLLEGE OF FAMILY PHYSICIANS SINGAPORE



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FAMILY MEDICINE CARDIOLOGY

- Prevention
- Atypical Presentation in AMI
- Post AMI / Bypass Care
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QUO VADIS PRIMARY HEALTH CARE STRATEGY?

ALMA ATA

The International Conference on Primary Health Care at Alma Ata in 1977 has had a profound effect on the health policies of governments throughout the world. By projecting "Health For All By the Year 2000" as the common goal and by adopting primary health care as the basic strategy to achieve health for all, the Alma Ata declaration provided all nations with a coherent framework for planning, implementing, and evaluating their health services. Such a framework is not only applicable to developing nations. Increasingly, developed nations too are finding that there is a need to adopt a coherent primary health care strategy. Over the past decade ministries of health have reviewed and revised their health policies to comply with the spirit of the Alma Ata declaration¹.

PRIMARY HEALTH CARE STRATEGY

As defined in the Alma Ata declaration, primary health care is "essential health care based on practical, scientifically sound, and socially acceptable methods and technology made universally acceptable to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination"².

These services are to be "sustained by integrated functional and mutually-supportive referral systems, leading to the progressive involvement of comprehensive health care for all and giving priority to those most in need"². In translating the concepts of primary health care into practical programmes, the world has learned that there are seven recurrent major issues that commonly demand attention and resolution¹. These are:

- (a) equity and coverage
- (b) inter-sectoral action
- (c) organisation and management of services
- (d) selection and use of technologies
- (e) financing of health care
- (f) health information
- (g) research.

Equity and coverage

The goal of primary health care is to ensure for all persons, a level of health that will permit them to achieve their full potential, both social and economic. Vulnerable and disadvantaged groups such as rural communities, urban poor, women and children, the elderly, and the disabled require more attention. Thus, national development policies need to be targetted to enable such groups to overcome the social and economic barriers that stand in the way of health and well-being. It is important that the most vociferous groups within the population and the most politically powerful are imbued with a sense of social justice and do not arrogate to themselves an unfair share of health resources.

Inter-sectoral action

The goal of Health for All can be achieved only through health development that includes the participation of all relevant sectors. In the central government, this requires the involvement of several key ministries — agriculture, education, finance, housing and communication. At the local community level, there is a need to ensure appropriate input from each sector. Such inter-sectoral action can also be used to promote equity in health by tackling poverty, malnutrition, poor housing, and other factors which put segments of the population at disadvantage. The promotion of health then becomes the goal of the government and not merely the preoccupation of the ministry of health.

Organisation and management of health services

The process of converting traditional health services in developing countries to fit with the concept of primary health care requires attention to the content of services, workable organisational framework, redefined role of care givers and community involvement.

Content of services

The challenge of primary health care is to ensure that all citizens have access to the eight basic elements of service at the point of first contact: health education; promotion of food supply and proper nutrition; adequate supply of safe water and basic nutrition; maternal and child health care, including family planning; immunisation against major infectious disease; prevention and control of endemic diseases; treatment of common diseases and injuries; and provision of essential drugs. Within this package of services, the priority given to each element will obviously vary from place to place and will also shift with time.

Organisation of services

Organisation of services to implement primary health care requires a redefinition of the roles of the existing organisations and the personnel within them. The peripheral and community services should form the broad base of the health care pyramid with appropriate back-up by referral units. A typical pyramidal structure consists of three main levels. The first level is primary health care units, each serving populations in the range of 2,000 - 30,000. At the next level is the secondary referral level which is usually a hospital providing the main specialist services for a population of 200,000 - 500,000. The top of the pyramid is occupied by tertiary referral level units, each providing highly specialised services for a population in the region of 1 million or more. The three-tier system should be integrated such that all the health service units in a geographical area form a functional unit linking promotive, preventive, and curative services as well as rehabilitation.

Managing the district health system

The district has been identified as the focus for effective management of primary health care. As defined by the World Health Organisation, the district health system:

- comprises a segment of the population living within a clearly delineated administrative and geographical area;
- includes all institutions, both public and private, providing health care in the area;
- consists of a variety of interrelated elements that contribute to health in homes, schools, offices, factories, and on the farm, through health and related sectors;
- extends from the most peripheral units to the hospital at the first referral level and to the appropriate diagnostic and logistic support services including laboratories; and
- requires co-ordination by an officer who can draw together the elements into a fully comprehensive range of promotive, preventive, curative, and rehabilitative health activities.

Community involvement

For the 'health for all' initiative to work, people should not regard themselves and be treated as passive recipients of health care. They must be involved in the process of identifying priorities, designing programmes, mobilising resources, delivering care, identifying problems and seeking feasible solutions, monitoring progress, and evaluating outcome. The effectiveness of community involvement is dependent on the quality and dedication of its leadership. Potential leaders who are committed to social justice should be identified and supported. They can be found in various sections of the community — professional persons, labour leaders, religious leaders and traditional healers. They need information which would guide their actions and the opportunity for meaningful participation to give them credibility within the community.

Training of personnel

This is of vital importance. The system can only be as effective as its leaders. There is a priority need to modify the training to fit health care providers to the tasks of today. Medical educators are concerned with the inadequacy of the traditional medical curriculum. The Edinburgh declaration provides the guidelines for the needed paradigm shift in medical training³.

Selection and use of technologies

Primary health care implies the use of technologies that are "scientifically sound and socially acceptable...". This definition has given rise to the concept of appropriate technology for health. Ideally, technologies for use in primary health care should be effective, safe, simple to apply and maintain, culturally and socially acceptable as well as affordable.

Financing health care

Progress with primary health care is often constrained by economic problems facing many countries. Within a country too, there may be not enough funding of primary health care because the hospital sector has a lion's share of the resources.

Health information systems

Efficient management of primary health care demands systematic and analytical information which can be used for setting priorities, designing strategies and for monitoring progress. The availability of affordable but powerful microcomputers facilitates the handling of data at least at the district level and some demonstration projects are exploring their use.

Research

The value of research in strengthening primary health care cannot be overemphasised. There is a need to recognise that in keeping with the basic concepts of primary health care, the research programme will be not conducted exclusively by biomedical scientists. It should involve other disciplines, in particular social scientists whose skills will contribute to the study of non-medical issues that have a bearing on health. Such studies should extend beyond the standard surveys of knowledge, attitudes and practice of selected samples of the population to probe on various aspects of life, disease and death within the community.

PRIMARY HEALTH CARE SEEN FROM GENERAL PRACTICE

The 'health for all' initiative puts primary health care as the basic strategy. This also puts the general practitioners and family physicians of the

world into the central spot. John Horder, writing on "Primary health care seen from a general practice" in the book "Primary Health Care 2000" raised important questions applicable to a doctor working in Western Europe. Such questions are also applicable to doctors working all over the world. They are:

- Can general practitioners and family physicians fully accept the responsibility of carrying out "the central function and being the main focus" of a country's health system?
- What does that imply for their relation with specialists and secondary care — is the specialist to be leader or helper, father or brother, someone better at doing the same job or an equal colleague doing a job which is different?
- Are general practitioners and family physicians really willing to provide care where people live and work? At times when they need it? With personal continuity, when this matters? Good care in deprived areas, rural areas or the unattractive centre of industrial cities?
- Will they take the steps needed to organise preventive work — immunisations, active detection of unsuspected disorders, persistent attention to harmful life-styles?
- Will they help others to learn, so that self-care can more often replace their own active interventions?
- Can they accept that some tasks are better done by nurses, social workers or counsellors than by doctors? That teamwork offers chances of growth, but needs to be cultivated?
- Can they accept that more patients may wish to be active partners, not only in their own care but in organising it for others? That their ideas, comments and co-operation are much more often a help than a hindrance?
- How far can they fulfil a role which demands such a variety of interpersonal skills and such flexibility in their application?

As John Horder concluded, "Primary health care", as defined by the Alma Ata declaration, is a wider concept than general practice and family medicine, requiring that doctors in this field look again at their traditional role and consider changes in response to the spirit of Alma Ata. It does not challenge the need for doctors, nurses and others whose remit is broad, who are readily accessible and provide continuity in personal care. Indeed, it stresses their value⁴.

CONCLUSIONS

In the Alma Ata declaration, the World Health Organisation has made an impressive start. It continues to challenge all those concerned in the health of people under their care, to think critically. The challenge needs to be met with equal enthusiasm by National colleges and academies of general practice and family medicine to press their own members, governments and the public for the necessary changes to remove barriers that stand in

the way to health for all. Individual practices throughout the world need to continually ask themselves how far they are on target towards health for all and setting an example of progress.

Dr Goh Lee Gan

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THE PATIENT WITH CHEST PAIN

Chest pain is one of the most common symptoms presented to the family physician. It is also one symptom the cause of which can usually be elucidated by a careful, precise and comprehensive history. The pain can originate in any of the tissues in the chest. Often the patient's symptoms do not resemble textbook descriptions, and the major findings on physical examination may be those due to pain itself e.g. sweating, vomiting, tachycardia and hypotension. Notwithstanding all this, the attending doctor must consider the full differential diagnosis in each patient, remembering that the patient may have more than one disease (e.g. reflux oesophagitis occurs in 30-40% of the population and may therefore co-exist with other causes of chest pain). Physical findings are often normal but do not necessarily exclude a diagnosis, and rapid assessment is necessary if myocardial infarction is a possibility.

Obviously, the first decision that must be made is whether the pain is of cardiac origin or not, and next whether it is serious, since approximately 50% of patients with acute myocardial infarction die within two hours of onset of symptoms. The clinical features of myocardial infarction are usually characteristic, but not so with angina pectoris. The likelihood of angina as the cause of chest pain is increased in the presence of other cardiovascular risk factors like diabetes, in males, in patients over forty years of age, and in Indians. Chest pain in psychoneurosis is seen more in younger patients of both sexes, and is usually accompanied by clinical signs of anxiety.

Patients with angina most often describe it as a 'discomfort' or an 'ache' rather than a pain, occasionally referring to it as 'squeezing', 'burning', 'choking' or 'pressing', while those with non-cardiac causes (also referred to as 'non-specific' pain) usually say it is sharp and stabbing. The pain of angina is retrosternal or to the left of the lower sternum and may radiate to the praecordium, the arms (the left more than the right), the neck and lower jaw, while chest pain in

oesophagitis is often referred to both arms or shoulders and in pulmonary hypertension from mitral stenosis more often radiates to the right arm than the left. Localised pain usually has its origins in the chest wall or in a pneumothorax.

Angina pain has a constant relationship with exercise or effort and makes the patient stop the effort or exercise; it may also be induced by sexual intercourse, a meal or emotion. This important feature helps distinguish it from other causes of pain. In psychoneurosis, the relationship with exercise is inconstant, it never comes on with intercourse, it often comes on after the effort is over or at the end of the day, and it is frequently related to fatigue. The pain of oesophagitis usually comes on in the recumbent position, is related to eating or may come on in the middle of the night, and is aggravated by bending over forwards; in musculoskeletal causes or costochondritis it is related to movement or deep inspiration rather than exercise, and can be replicated by pressure on or movement of the affected area. Pleuritic pain is related to a specific phase of respiration, and pericardial pain is worse on lying down flat, the patient preferring to sit up and lean forward. Chest pain from cervical or thoracic spinal arthritis or disc disease is not related to exercise and may come on day or night while the patient is sitting or moving.

Angina pectoris is rapidly relieved by rest, generally within ten minutes, or by sublingual nitroglycerine or nitrites, occasionally within seconds, generally within two minutes. In non-cardiac causes, the pain is not relieved by rest and may last for several hours; in gaseous distension of the stomach or in the splenic flexure syndrome, it is relieved by belching or passing flatus or by alkali medication. It is useful to remember that nitrites can help relieve chest pain from causes other than angina, although they generally help after twenty to thirty minutes. These conditions include cholecystitis and cholelithiasis, oesophagitis and oesophageal spasm,

diaphragmatic or hiatal hernia, gas entrapment syndrome, pulmonary hypertension especially when associated with mitral stenosis (nitrites act in all these disorders by relaxing smooth muscles) and psychoneurosis (the patient is relieved by medication through suggestion).

The diagnosis of angina pectoris can be confidently made from the history alone, physical examination findings usually being non-contributory. But physical examination is necessary to exclude the localised tenderness and reproducible pain of musculoskeletal origin, any diagnostic pleural or pericardial rub, the increased percussion resonance and decreased breath sounds of pneumothorax, and any signs which may point to possible myocardial infarction e.g. rhythm abnormalities, blood pressure changes, increased jugular venous pressure or presence of third or fourth heart sounds.

Still, the doctor must not jump to conclusions. How often have we labelled a patient as psychoneurotic when we cannot find any physical cause for his complaint of chest pain, or confidently announced a diagnosis of Bornholm's disease when he had signs of a viral infection, only to have the patient return the next day with the typical vesicular eruption of herpes zoster? Bear in mind too that diabetics with ischaemic cardiac disease may not complain of chest pain at all.

Finally, when ischaemic heart disease has been diligently excluded, including any necessary investigations, the patient must be completely reassured of this. Failure to do this carries with it the hazard of creating a cardiac neurotic.

Dr Moti H Vaswani

ATYPICAL PRESENTATION IN ACUTE MYOCARDIAL INFARCTION

L H Lim, MBBS, MCGPS, FCGPS

INTRODUCTION

Studies have long shown that many myocardial infarctions present with atypical symptoms. It is also clear from angiographic and post-mortem studies that severe coronary artery disease can occur without producing recognized (typical) symptoms. Hence, atypical presentation in acute myocardial infarctions is a diagnostic problem that is ever challenging, not only to cardiologists but also to primary care family physicians in their consulting rooms.

An acute myocardial infarction (AMI) is a clinical syndrome resulting from sudden curtailment of the myocardial blood supply. This clinical syndrome can be confirmed by

(a) Electrocardiographic changes

A recent or acute myocardial infarction is diagnosed if serial electrocardiograms satisfy the following four conditions:

- (i) Abnormal Q waves or QS complexes of 0.04 secs or more in width
- (ii) ST segment changes: ST elevation or depression of over 2 mm with or without reciprocal ST changes

(iii) T wave changes: symmetrical T wave inversion

(iv) A significant alteration, usually in the ST segment or T wave, in at least two serial tracings.

(b) **Myocardial enzyme changes**, e.g. creatine kinase (CK), glutamic-oxaloacetic transaminase (SGOT) and lactic dehydrogenase (LDH). In the absence of diagnostic ECG changes, then a two-fold or greater increase in serum CK, SGOT and LDH with characteristic rise and fall is also diagnostic.

Creatine kinase is released by infarcted myocardium and peaks within 24 hours. It is usually back to normal before 48 hours. SGOT level is similarly increased and reaches a peak at about 24 hours to 48 hours, but returns to normal within 2 to 7 days. A high degree of diagnostic accuracy has been attributed to this test. LDH levels have been widely used as an index of myocardial necrosis, having greater specificity than SGOT. LDH peaks at 3-4 days and remains elevated for 10-14 days.

(c) **Post-mortem findings** of myocardial necrosis.

SYMPTOMS AND PRESENTATIONS

The typical or classical symptom of AMI is chest pain described variously as crushing, compression, heaviness, tightness, or like a great weight sitting on the chest.

It is well established that a substantial portion of myocardial infarcts occur without typical chest pain or other cardiac symptoms, and thus remain

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clinically unrecognised until routine ECG reveals unequivocal evidence of old infarction with abnormal Q waves or complete loss of R waves. These are called silent infarcts also referred to as silent, asymptomatic, unrecognised myocardial infarcts.

Atypical AMI is symptomatic myocardial infarction without chest pain.

Typical or classical symptomatic AMI patients would be attended to in one of the following ways:

- Present themselves at the Accident & Emergency department of a hospital,
- Seen and be diagnosed by a primary care family physician and then referred to a cardiologist or referred for admission to a hospital, or
- Go directly to a cardiologist.

However, atypical symptomatic AMIs without chest pain account for a large percentage of all presentations of symptomatic myocardial infarctions. Also, a significant number of such patients would be seen at a primary care clinic, making it important for family physicians to be alert and not miss out on the diagnosis of a myocardial infarct.

ATYPICAL PRESENTATIONS

In the Framingham Study "Clinical Features of Unrecognised Myocardial Infarction – Silent and Symptomatic – Eighteen year follow-up", there were 259 ECG-documented myocardial infarctions. Out of these, 23% were discovered by routine ECG at the time of biennial examination, 53% of these ECG-diagnosed cases were silent, giving 47% who gave symptoms judged to be compatible with acute cardiac infarction, i.e. the atypical symptomatic cases.

The conclusions and recommendations of this Framingham Study were:-

1. Unrecognized myocardial infarction was distinctly rare in patients with prior angina pectoris.

2. Patients with prior diabetes or hypertension appeared more likely to have unrecognised infarction. We must therefore be more vigilant and highly suspicious with our diabetics and hypertensives.

3. Unrecognised myocardial infarction is significantly present among those who infrequently visit their doctors, either for symptoms of any nature or even for routine annual physicals. We must therefore pay more attention to those patients who come for consultations only for major events and self medicate for minor symptoms which may be atypical symptoms of AMI.

4. Despite the more widespread use of ECG and an apparent physician awareness of the problem of unrecognised myocardial infarctions, the incidence of unrecognised cardiac infarction has not decreased with time.

The authors have recommended that this number could be substantially reduced by taking frequent ECGs for vague or suspicious symptoms. Also frequent ECG surveillance is desirable in persons with atherogenic precursors such as hypertensives and diabetics.

In Kamal et al's 1984 paper "Incidence and Prognosis of Unrecognised Myocardial Infarction" – an update on the Framingham Study, the authors noted that the proportion of unrecognised infarct was higher in women and in older men. The fact that the overall percentage of unrecognised infarcts is greater among women than men, and the corresponding prognosis is less severe raises the possibility that the electrocardiographic changes that lead to the diagnosis or suspicion of an infarct are more non-specific in women as confirmed by exercise tests. The likelihood of a recurrent infarction was significantly greater in women who had had a recognized infarction than in those who had had an unrecognized infarction ($p < 0.05$); this difference was not present in men.

This study has also confirmed that increased awareness and enhanced diagnostic capability have not greatly affected the problem, and the authors have also advocated frequent ECG surveillance in persons with an atherogenic cardiovascular risk profile.

Uretsky and others in their paper "Symptomatic Myocardial Infarction without Chest Pain: Prevalence and Clinical Course" found:

- 25% of patients admitted to the hospital with proven infarcts had symptoms other than chest pain and atypical symptoms of AMI.
- Patients with atypically symptomatic myocardial infarction were 10 years older than patients in the typical group (mean age 69.1 years for atypical and 58.7 years for typical).
- Atypical myocardial infarcts occurred more frequently in patients with chronic heart failure.
- There was a 3-fold greater mortality in the atypical group where there was also a greater prevalence of cardiogenic shock.
- Serum enzyme values were similar in both the typical and atypical groups, suggesting that the patients with an atypical presentation did not have a larger infarct.
- There was a greater incidence of pneumonia in the atypical group.
- Although fatal arrhythmias did not occur more frequently in their atypical group, such patients appear to be at greater risk for this complication because of longer delayed times in instituting continuous coronary or intensive care unit monitoring from delay in correct diagnosis.
- This study did not confirm that there is an increased frequency of atypical presentations in diabetic patients found in other studies including the Framingham Study; as for hypertension, it was neither more or less frequent in the atypical group.

They concluded that a correct diagnosis is more difficult in atypically symptomatic patients and because of delays in diagnosis and monitoring, these patients are at potential greater risk of death from arrhythmias and possibly cardiogenic shock.

Primary care family physicians look after a significant number of geriatric patients, among whom there is a high incidence of myocardial

infarction. More important is the fact that the clinical feature of myocardial infarction in the elderly may be extremely variable and sometimes so unobtrusive that the diagnosis is overlooked. Further, the update on the Framingham Study had shown that a high proportion of myocardial infarcts was found in older men.

Pathy studied the clinical presentations of 387 geriatric patients aged 65 and over who had myocardial infarction. The clinical features, i.e. symptoms other than chest pains, will be discussed.

Breathlessness

Breathlessness was the presenting symptom in 77 cardiac infarcts. Sudden onset or exacerbation of dyspnoea was the commonest presenting symptom in this study. In those in whom heart failure was already present, a sudden worsening of the symptoms of failure may be the only evidence of infarction. For those patients with infarcts who were not in heart failure, the onset of breathlessness was sudden and usually severe and progressed on to acute pulmonary oedema.

Patients with hypertension also tended to present with dyspnoea during a myocardial infarct.

Acute confusion

An acute confusional state is a presentation common to many diseases in the elderly, and cardiac infarction is no exception. In this study, the onset of cardiac infarction produced an abrupt and marked increase of mental disturbance.

Syncopal attacks

Frequent faints lasting for about a minute or less are not uncommon in the elderly who have hypotension following cardiac infarction. Transient heart block, reflex bradycardia, sudden rapid ventricular rate are also possible factors resulting in loss of consciousness. Myocardial infarction may also complicate syncope due to the carotid-sinus syndrome.

Strokes

Hemiplegia can be the presenting clinical problem. Studies have confirmed that symptoms and signs of stroke may overshadow the attending myocardial infarction.

Sensations of giddiness, vertigo or faintness are common in cardiac infarction without chest pain.

Palpitations due to cardiac arrhythmia, e.g. atrial fibrillation, atrial tachycardia, ventricular tachycardia, are also common with myocardial infarction.

Vomiting

Some authors had observed that sudden vomiting might be the cardinal symptom in myocardial infarction; also vomiting has long been recognised as a frequent accompaniment of cardiac infarction. When early spontaneous vomiting is associated with acute ischaemic cardiac pain, over 90% of such patients have sustained a transmural myocardial infarction. This clear-cut relation with transmural necrosis suggests that the vomiting reflex, if such exists, might arise as a consequence of damage to the subpericardial tissue (Ingram et al).

The *other atypical symptoms* to note in the elderly are peripheral gangrene or increased claudication, progressive renal failure, pulmonary embolus, restlessness and sweating.

Finally, **William Bean** in his paper "Masquerades of Myocardial Infarction" again reiterated that:

- Congestive heart failure, either beginning de novo or as a worsening of established failure, is the commonest masquerade of myocardial infarction. Severe attacks of dyspnoea on exertion or at rest, or nocturnal orthopnoea often with peripheral oedema in a person who has no complaint of chest pain may be the only indication that a myocardial infarction has occurred.
- The second hiding place for myocardial infarction is in patients who have classical angina pectoris without any particularly severe or prolonged attack. A large myocardial infarction may occur in a patient who is conscious of no variation from the ordinary recurring clinical theme of his old friend, angina pectoris.
- Some patients with acute myocardial infarction may have no other signs or symptoms except for irregularity of the heart.
- Central nervous system manifestations include an important though not large group of masquerades. Here, patients who have suffered a stroke, classical in all its features with hemiparesis, hemiplegia, convulsions or varying degrees of confusion, mania or delirium often have no embolus, thrombus or cerebral haemorrhage. Instead severely sclerotic vessels supply parts of the brain. When myocardial infarction occurs, cardiac output is reduced. The patient may approach shock, and areas of the brain with narrow vessels are sclerotically damaged. Also, many strokes associated with or following soon after myocardial infarction come from local thrombosis or haemorrhage rather than from cerebral embolism.
- Apprehension and nervousness:
An occasional patient who describes no pain whatever with acute myocardial infarction may present clinically with nothing but an overwhelming sense of apprehension, nervousness and a weird all-pervading anxiety.
- Sudden mania or psychosis, either de novo or as a recurrence, may herald an acute myocardial infarction.
- Syncope:
Syncope is not so rare in angina. Some patients who faint with myocardial infarction recover from the faint and have felt no pain at all.
- Overwhelming weakness without anxiety, fright or fear, sometimes attended by considerable sweating may occur.
- Acute indigestion:
In the past myocardial infarction has often been called acute indigestion. One must also be aware of the difficulty in distinguishing between a symptomatic hiatus hernia and angina. However, flatulence, pressure, belching, a sense of fullness, constriction, compressing or crushing pain in dyspnoea may characterise the clinical pattern.
- A peripheral embolism may be the signal of myocardial infarction. Another clue, particularly in post-operative patients, is the sudden appearance of coldness in the foot, a

clammy pulseless extremity. Note that post-operative myocardial infarction is common in persons who have had an earlier infarct, and it is increasingly frequent with advancing age.

Neurosis:

Cardiac neurosis is in itself no protection against the development of myocardial infarction.

Finally we must take note that masquerades of myocardial infarction occur when there is disproportionate prominence of a regular sign or symptom, and when usual clinical clues are absent. Awareness of these various masquerades should diminish the frequency of missed diagnosis – leading to better care of and for the patients.

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ROLE OF FAMILY PHYSICIANS IN CARE OF POST MYOCARDIAL INFARCTION AND POST BYPASS PATIENTS

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INTRODUCTION

Acute myocardial infarction and a cardiac bypass operation together with coronary angiogram and coronary angioplasty all have the level of a heart crisis event in a patient's life.

The role of the family physician during such a heart crisis can be considered for the in-hospital and post-discharge periods (early - first month, intermediate - rest of first year, and late - after first year). Such a division is artificial, but is helpful when considering the contribution of the family physician to patient care.

TREATMENT AIMS

Treatment aims are much the same for all three periods of follow-up, namely:

- 1) adequate control of angina
- 2) treatment of heart failure
- 3) treatment of hypertension, diabetes, etc.
- 4) monitoring for progression of heart disease
- 5) treatment of anxiety and depression
- 6) prevention of atherosclerosis.

However, the emphasis in each period is different. For example, it is mobilisation in the early, increasing exercise in the intermediate, and maintaining exercise in the late post-hospital periods. Likewise it is adequate nutrition in the

early, dieting to lose weight and lower blood cholesterol levels in the intermediate, and healthy eating to maintain optimum status in the late periods.

To achieve these aims, it is necessary for the patient to continue with medical treatment as well as take other measures to prevent deterioration and further heart attacks. Although it is time-consuming to do so, it is important for the family physician to play his part in convincing the patient that practising secondary prevention measures and delaying atherosclerosis is vital.

IN-HOSPITAL ROLE

The in-hospital role is markedly reduced if the family physician refers the patient for admission and hands over responsibility of the patient's care to the doctors at the admitting hospital. This is so in the majority of cases.

EARLY POST-DISCHARGE PERIOD

The newly discharged patient still lives under the shadow of the hospital, and looks towards the hospital doctor to provide cardiological care. Roughly this period lasts for about a month after discharge.

In this period, however, the patient may begin coming back to see the family physician again. The first post-discharge clinic visit is a landmark visit. It is important to set aside enough time for a long consultation to attend to all the listed issues. Also, the patient is likely to be brought by his family members; they may have incompletely

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understood what they were told at the hospital, and are full of questions. Explanations can help to reduce unwarranted anxiety and a balanced viewpoint to ensure realistic expectations.

The first post-discharge visit

Post-heart crisis history.
Details of hospital treatment.
Complete physical examination.
Obtain a standard 12-lead ECG.
Going over patient's medications.
Check response to medications.
Sort out sick leaves.
Advise current activity.
Advise secondary prevention measures.
Arrange follow-up visits.
Encourage attendance at hospital specialist clinics.

At the initial follow-ups a few special problems require attention. It is common to get chest pain after a heart crisis. Coronary bypass graft operation (CABG) and angioplasty may not fully relieve angina; often chest discomfort and pain at this time is due to anxiety and if thought to be so it is necessary to assure the patient that such chest pain is not angina. The patient should be reminded that it is safe to take GTN (glyceryl trinitrate) freely without fear of overdosage, and that speedier relief may be obtained by chewing or crushing the tablet first before sucking the fragments under the tongue.

Oedema in the leg from which the donor venous grafts were taken is almost invariable; assurance is given that in the course of time and with activity, the mild swelling will subside as new channels of fluid return are established by the body.

Oedema in the other leg (non-donor) appearing after the operation needs attention; it may be cardiac oedema or a deep vein thrombosis in the calf; appropriate action is needed, including a consideration of re-admission to the hospital.

Bruising in the groin on the side of the femoral artery puncture from coronary angiography with or without angioplasty is common. Reassurance is usually all that is needed, but more care is required if the patient is on an anticoagulant such as warfarin.

SECONDARY PREVENTION

Secondary prevention is risk factor intervention in a patient who already has ischaemic heart disease. The aim is to delay and prevent further atherosclerosis and the deterioration of the patient.

Three of the generally accepted risk factors are unalterable, namely male gender, a family history of heart disease, and age; indeed, with increasing age, the chance of developing serious heart disease increases.

Because of the heart crisis, the patient and his family are likely to be more receptive to advice and make the lifestyle and lifelong changes to decrease the risk of further heart attacks. All involved in medical care should take advantage while they are in a listening mood to educate them about secondary prevention measures and press them to adopt these. The best time to start secondary preventive measures is when the patient is in hospital; it is important to continue to press such measures on the patient after discharge without let up.

Secondary prevention measures

1. "Don't smoke."
2. Weight control with a healthy diet.
3. Physical activity.
4. Hypertension control.
5. Diabetes control.
6. Hormone replacement therapy (HRT) in women.
7. Use of medications.

Of the secondary prevention measures, the first three in the list are largely lifestyle changes which the patient must make himself and cannot be achieved without his cooperation.

Stopping smoking is vital, as it is well proven that smoking increases the risk towards heart attacks. The best stand to take is to be absolute and advocate immediate total stoppage and not be satisfied with just a reduction. Because of the shock they receive on learning that they have heart disease, most smoking patients do give up smoking. If the patient finds it very difficult to stop smoking, it probably means that he is addicted to it; it may be helpful to give a nicotine substitute temporarily, a convenient

way being nicotine skin patches, to help wean him off the addiction. However, if the patient persists in smoking while wearing nicotine patches he may harm himself as his heart may receive even more nicotine than before.

Patients who are overweight (arbitrarily a body mass index (BMI) greater than 25) provide a good opportunity for therapeutic intervention. It may not have been proven that weight reduction in overweight patients with heart disease lengthens their lives, but patients easily understand and accept the concept that a lighter body imposes less work on his heart. They should aim for a target weight equal to a BMI of 25, lose two kg weight per month, and not faster or they will feel sick. They should be weighed in the family physician's clinic and the weight compared to previous recorded readings. Encouragement or disapproval and discussion should follow; both positive and negative comments can further the objective.

Dieting is the key to losing weight. The patient needs to avoid the high-caloric components of meals like carbohydrates and fats particularly, but otherwise most people will lose weight if they continuously eat half the amount that they have been eating previously, despite the discomfort of having to get up from the meal table still feeling hungry. This advice requires modification if the patient is a diabetic, especially one on insulin, as sudden alterations in daily calorie intake without compensatory adjustments in insulin dosage can lead to dangerous hypoglycaemia.

If the patient fails to lose weight by dieting, a referral to a dietician may be effective. If that fails and the patient is very much overweight, medication can be prescribed to promote weight loss, provided that undesirable side effects can be avoided.

After the desired weight loss has been achieved, the patient must stay on the diet or he will inevitably put on his weight again. Checking his weight during clinic visits helps in weight maintenance.

Reduction of salt intake by not adding table salt and not eating salty foods is especially important in those patients with hypertension or cardiac failure.

As atheromatous processes are believed to be accelerated by lipids and by prolonged elevations of blood cholesterol levels it is important to advocate adherence to a healthy, low fat, low cholesterol diet. By definition, a healthy diet is one that keeps the blood cholesterol levels low.

Development of further stenoses after acute myocardial infarction and re-stenoses after CABG may be postponed, and possibly prevented, if low levels of total and LDL-cholesterol are maintained. The patient needs to realise that while CABG provides alternative channels of blood flow, unless they maintain low cholesterol levels, these new channels will block up in course of time. Blockage will likewise occur after angioplasty. Checking cholesterol levels (total as well as HDL and LDL levels) every few months will show when the patient's own dieting efforts are not enough and that cholesterol-lowering medication is necessary.

Total cholesterol level for the population at large has been targeted at below 200 mg/dl (5.2 mmol/L) for the past several years. In 1993 in the U.S.A. recommendations were made to use LDL-cholesterol level lower than 100 mg/dl (2.6 mmol/L) as the target for secondary prevention, and to use medication as well if dieting did not succeed in lowering LDL-cholesterol to the target level¹. These levels are not easy to attain, but since lower levels of cholesterol are associated with even less cardiac mortality^{2,3}, it is logical to encourage patients to try to get the blood levels of total and LDL-cholesterol as low, and HDL-cholesterol as high as possible.

ADVICE ON PHYSICAL ACTIVITY

A low level of physical activity is believed to be a risk factor for heart disease, and mobility is encouraged as much as possible. In the early post-discharge period, however, a common sense approach is to encourage walking up to brisk walking, but to postpone more strenuous exercise till later.

Patients often bring up the role of exercise in losing weight. While exercise is important in keeping body muscle tone during the period of dieting and weight loss, not eating contributes more to weight loss. This is not to downgrade the

value of exercise in losing weight, but unless prolonged strenuous exercise is regularly undertaken (and this may not be advisable in the cardiac patient), it is safer to emphasise the value of refraining from overeating.

OTHER MEDICAL PROBLEMS AND MEDICATIONS

In the early post-hospital stage, it is necessary to keep a closer check on medical problems of hypertension and diabetes, especially if the medications or dosages were altered or started (such as for newly uncovered diabetes) during the in-patient period.

There have been many reports of the favourable effects of hormone replacement therapy (HRT) in reducing heart events in women. This may be because such therapy results in a rise in HDL and a fall in LDL cholesterol levels⁴. Some reports claim that postmenopausal oestrogen therapy reduces the risk of coronary heart disease by as much as 50%. Perhaps HRT should be routinely given to postmenopausal female patients after heart attacks as a secondary prevention measure.

Perhaps in addition to considering HRT for our female patients, we should consider medications as a prophylactic measure for all post heart crisis patients⁵. Candidate medications include aspirin (antithrombotic), beta-blocker (antiarrhythmic), ACEI (angiotensin converting enzyme inhibitor, as in a patient with heart failure⁶), nitrates, and cholesterol-lowering agents. What medications should be used in a particular patient is a matter of fine clinical judgement by the family physician.

INTERMEDIATE TERM CARE

Intermediate term care covers the period from one month to one year after discharge from hospital during which the patient continues to improve and hopefully recovers fully. Because of lifestyle changes he may actually feel better than before his heart crisis.

As he improves, he regains the capacity and confidence to go out on his own and in most cases to return to work. In addition to his current medical condition, the return to work depends on the

interplay of many factors including age, nature of the job, family pressures, income and financial situation, the patient's temperament and attitude, and so on. In some cases it is necessary to initiate changes at work, and the family physician may have to write on the patient's behalf to the patient's employer to request, for example, that he be excused from heavy lifting in his job as a storehand. Sometimes it is clear that a change of job is necessary, and the older person may opt to retire. Mental depression is common, but in the Singapore cardiac patient is rarely of the severity to require referral to a psychiatrist.

During this period he is encouraged to increase his capacity for exercise. Some patients and some doctors prefer a formal exercise rehabilitation group programme; indeed some patients need the group behaviour pattern prevalent in such a programme to exercise regularly as they lack the discipline to continue exercising on their own.

Daily brisk walks at increasing speeds and of longer duration provide a simple and effective measurable exercise. Treadmill testing at intervals provides an objective endpoint to angina-limited and tiredness-limited exercise. "Whether regular exercise training can prevent or delay future coronary events or death in patients with coronary disease is uncertain. Controlled trials of cardiovascular rehabilitation with exercise training after myocardial infarctions do show a 20% decrease in mortality over 3 years, but when trials of exercise alone without other risk factor modifications were analysed separately the results were directionally similar but not statistically significant"⁶.

The question of exercise-induced myocardial infarction looms as a fearful threat. In addressing this point it is useful to remember that "one can lessen the hazards of physical exertion by starting on an exercise regimen gradually, strictly avoiding overexertion and seeking medical attention promptly if exertional symptoms occur"⁷. Those patients who are active before their heart crisis may be the ones more likely to encounter the more severe risks, as they try to recapture their former fitness level. It is worthwhile to err on the cautious side and advise against, for example, playing squash, going scuba diving or on holidays or job-

related trips to remote or mountainous areas, as prompt medical care in case of a sudden heart attack is unavailable.

Continued evaluations of chest pain form a large part of the medical consultations in this period, and the first post-heart-crisis ECG becomes very useful for comparison. Not all chest pains and discomforts are coronary in origin. Deciding if they are is often difficult. When in doubt we usually try to ensure that adequate dosages of GTN and / or other nitrates are taken, before recommending further investigations.

LONG TERM CARE (AFTER ONE YEAR)

The name of the game is maintenance, and the enemies of maintenance are patient complacency and non-compliance.

Because the patient remains well and life goes on normally, he may slacken in his secondary prevention measures. Increase in body weight and blood pressure, and rises in cholesterol levels can be detected at clinic visits. A more complete cardiological check up on the anniversaries of their heart crisis provides an annual opportunity for a more in-depth medical review than is possible during the routine monthly or bimonthly visits.

Patients need to be warned if they become slack in their secondary prevention measures. Nonetheless, even if they diligently do what they are asked to do, most of them have progressive heart disease. Painful as well as silent myocardial ischaemia and tiredness continue to intrude on the patient's life. A further heart attack can occur and result in sudden cardiac death; those who have multiple heart attacks eventually develop congestive heart failure, before finally suffering a fatal cardiac arrest.

Each year about 10% of the patients with congestive heart failure and poor myocardial contractility (whose ejection fractions are less than 0.35) will die⁸. The survival figures after acute myocardial infarction, CABG, and angioplasty differ in detail, but many die within the first few years of their heart crisis and few survive beyond fifteen years.

While family physicians present an encouraging prognosis for the patient, they should be ready also to remind patients and their families of the hard expectations following heart crisis events. At best family physicians can only postpone the fatal event by exercising clinical skills on behalf of the patient and by getting the patient's cooperation in adopting secondary prevention measures.

CONCLUSION

The sense of crisis following a heart attack provides a golden opportunity for the family physician to get the patient to start secondary prevention measures and gain his cooperation in adopting healthy lifestyles. This contribution in preventing further heart attacks should be accorded as much importance as medical treatment by the family physician.

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PREVENTION OF STROKE AND CORONARY HEART DISEASE: THE ROLE OF FAMILY MEDICINE IN SINGAPORE

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SUMMARY

Stroke mortality rates in Singapore have been declining since the 1970s in both sexes while the coronary heart disease (CHD) mortality rates have only recently shown any decline. The absolute CHD mortality rates in Singapore rank high in the world because the decline in other industrialised countries has been much greater and began earlier. There are important ethnic differences in CHD mortality rates and stroke rates in Singapore. Indians have the highest CHD mortality rate but this cannot be explained by differences in the major CHD risk factors of cigarette smoking, blood pressure and blood lipids. Malays have higher systolic blood pressure than the other ethnic groups.

During the 1980s the merits of different strategies for preventing CHD were debated, particularly population, individual and high risk strategies. There is now a general consensus that these strategies are complementary. Family Medical Practitioners need to be involved in primary prevention as well as in secondary prevention. Approaches to cardiovascular disease (CVD) prevention by Family Medicine Practitioners need to take account of the multiplicative interaction between the major risk factors. The CVD mortality rates in Singapore are high by international comparison although they are now beginning to fall. Family Medicine Practitioners have an important part to play, along with Public Health Physicians, in accelerating this trend.

INTRODUCTION

The epidemiology of both major manifestations of cardiovascular diseases (CVD), stroke and coronary heart disease (CHD), in Singapore has followed the pattern seen in other developed countries where the stroke mortality rates peaked and are now steadily falling, and the CHD mortality rates peaked somewhat later but are now beginning to fall. The timing and the height of the peaks, as well as the rate of the subsequent decline largely determine the CHD mortality rate rank in the world at present. CVDs are a major cause of morbidity and mortality in Singapore in the 1990s.

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They have an impact on individuals and their families, and on the economy.

CHD and stroke are multifactorial diseases and the major risk factors have been well described by many longitudinal studies. Studies have been conducted in Singapore to assess the levels of the risk factors in different age groups, men and women, and in the different ethnic groups. The levels of these risk factors are comparable with those found in Europe and North America as well as in Australasia. A major local interest lies in the ethnic differences in disease and risk factors.

Many approaches to prevention of stroke and CHD have been advocated. However the problem of CVD is so great, and potentially difficult to tackle, that it is perhaps important that it is tackled in different, yet complementary, ways. Primary and secondary methods of prevention have there place as do population, individual and high risk

strategies. It is important that the different approaches are integrated, and that the messages conveyed to patients, families and communities are consistent. It perhaps has been the inconsistency in messages and conflicts of interests which have undermined the commitment to CHD and stroke prevention in many countries. Prevention, which should be everyone's business, has ended up as nobody's business. Family Medicine Practitioners in Singapore, along with Public Health Physicians have a vital role to play in the implementation of CVD prevention in order to accelerate the decline in mortality.

LEVELS AND TRENDS IN CVD IN SINGAPORE

The trends in stroke¹ and CHD² mortality rates in Singapore up to 1983 have been described in detail. The stroke rates are approximately 20% higher in men and in women. A modest decline in male stroke mortality began in the early 1970s and a similar decline was seen in women from the mid 1970s. These declines have continued, and are slightly greater in men than in women. The declines began at the same time in all age groups. The timing of these declines has been considered to be consistent with improvements in the treatment of

hypertension. However other factors have been considered as explanations for the fall in stroke mortality observed elsewhere such as dietary changes, particularly falls in salt consumption³.

The rates of CHD mortality in Singapore have been increasing up to a peak in the 1980s after which a decline has been seen, starting in the younger age groups. This has been seen in both men and women, and the older age groups are only in the late 1980s beginning to decline. The pattern is consistent with a birth cohort effect and could be due to changes in lifestyle, such as nutrition and exercise patterns, being taken up by young adults and showing benefits in reduced CVD mortality rates as these groups grow older.

The rates of mortality from stroke and CHD in Singapore have peaked later than in other developed countries and the decline so far has been modest. In countries such as the United States of America and Australia the rates have peaked much earlier and the declines have been very substantial, but not all show a cohort effect⁴. This has put Singapore quite far up the CHD mortality league as shown in Fig 1, based on 1988 data. The rates in women appear particularly high by international comparison.

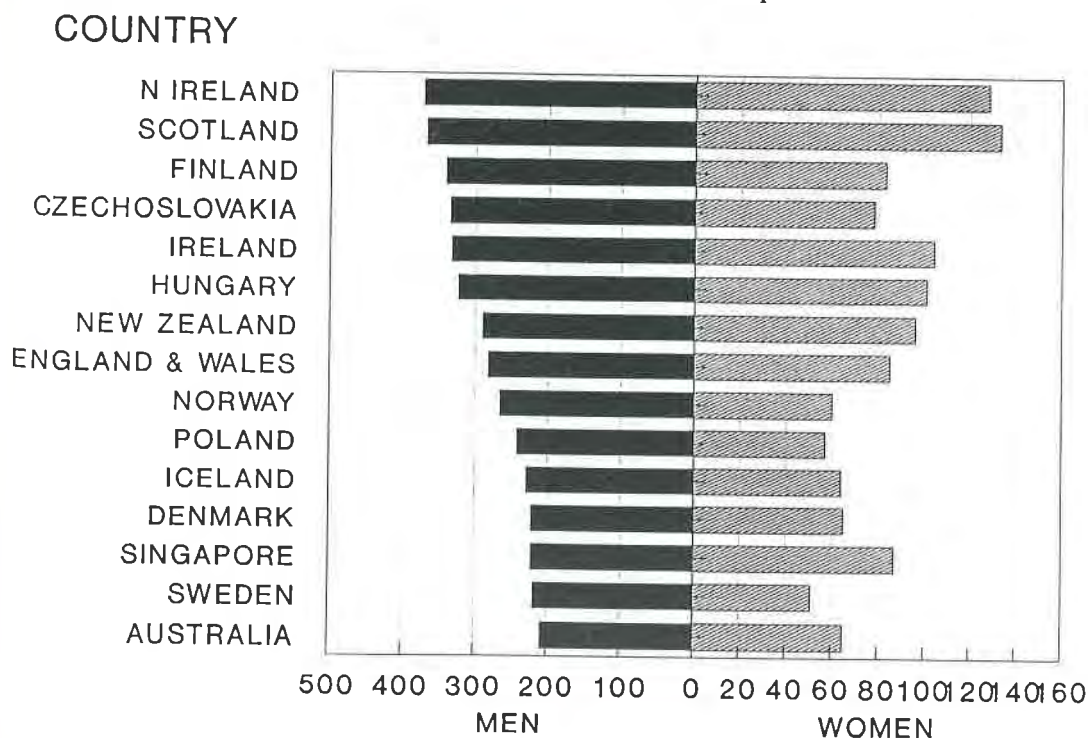


Fig 1: Standardised CHD Mortality Rates in Men and Women aged 30 - 69 years.

Important ethnic differences exist in stroke and CHD mortality rates in Singapore⁵. Indians have considerably higher CHD mortality rates than the other ethnic groups, both in men and women. The CHD mortality rates in Malays are about twice that for Chinese. However there is little difference in stroke mortality rates between the ethnic groups except for slightly lower rates in Chinese women.

MAJOR RISK FACTORS FOR STROKE AND CHD

The three major risk factors for CHD, apart from age and sex, are blood pressure, blood cholesterol and cigarette smoking. Blood pressure is the single most important risk factor for stroke incidence. There are many other factors which have been shown to be associated with CHD incidence; however the relationship is not so strong or consistent as that seen for these three factors. Amongst these other factors are Body Mass Index (BMI), HDL-cholesterol, triglycerides, and plasma glucose.

A major study of the prevalence of these factors in Singapore⁶ has shown there to be high levels of

risk factors and some important differences between ethnic groups. All male ethnic groups aged 18 - 69 years have high proportions smoking cigarettes, the highest being in the Malay population (Malays 53%, Indians 46%, and Chinese 37%). Malays also have higher mean blood pressure levels in both men and women; the Chinese and Indian levels are similar. No differences were noted between the ethnic groups in blood cholesterol and triglycerides, but the HDL-cholesterol levels in Indians were lower than that of the other groups. Prevalence of diabetes mellitus was highest in the Indian male population. Malays had a higher mean BMI than the other groups. These risk factor differences do not account for the higher rates of CHD in Indians, except for the lower HDL-cholesterol levels and the higher prevalence of diabetes mellitus. Higher rates of CHD in Indians than expected by classical risk factor levels has been noted in other countries⁷; diabetes mellitus may be part of the answer⁸. The coronary risk factor levels in Singapore have been compared to those in Scotland (Table 1), one of the countries at the top of CHD world league table⁹.

Table 1: Major Coronary Risk Factor Levels in Singapore Compared to Those in Scotland^{5,7}.

Cigarette Smoking			Scotland		
	Singapore			Scotland	
	Men	Women		Men	Women
30 - 49 yrs	41%	3%	40 - 49 yrs	41%	40%
50 - 69 yrs	48%	3%	50 - 59 yrs	37%	35%
Diastolic Pressure (mmHg)			Scotland		
	Singapore			Scotland	
	Men	Women		Men	Women
30 - 49 yrs	77	74	40 - 49 yrs	83	79
50 - 69 yrs	82	81	50 - 59 yrs	85	83
Blood Cholesterol (mmol/L)			Scotland		
	Singapore			Scotland	
	Men	Women		Men	Women
30 - 49 yrs	6.0	6.0	40 - 49 yrs	6.3	6.1
50 - 69 yrs	6.2	6.7	50 - 59 yrs	6.4	7.1
HDL-Cholesterol (mmol/L)			Scotland		
	Singapore			Scotland	
	Men	Women		Men	Women
30 - 49 yrs	0.84	1.00	40 - 49 yrs	1.36	1.64
50 - 69 yrs	0.89	1.07	50 - 59 yrs	1.36	1.70
Cigarette Smoking			Scotland		
	Singapore			Scotland	
	Men	Women		Men	Women
30 - 49 yrs	23.1	23.9	40 - 49 yrs	26.0	25.2
50 - 69 yrs	23.2	24.9	50 - 59 yrs	26.1	26.1

The interaction between risk factors is important in considering the approach to prevention; the second risk factor multiplies the risk of CHD. Thus individuals who have more than one risk factor can be identified as at considerably greater risk of CHD than expected by the simple addition of the risk. This is illustrated in Fig 2 using data taken from the MRFIT analysis based on 325,348 middle aged men¹⁰. The six-year risk of CHD increases with increasing baseline diastolic pressure; however the addition of smoking increases the CHD risk considerably more. This interaction between risk factors has important implications for CHD and also for stroke prevention.

STRATEGIES FOR CVD PREVENTION

The major strategies for CVD prevention can be grouped into primary and secondary approaches; however these are not competing but rather complementary strategies. Primary prevention is aimed at preventing the development of CVD in apparently healthy individuals whereas the secondary approach is to prevent a recurrent event in patients who already have a manifestation of CVD. In primary prevention the individual is healthy and often low in motivation, whereas in

the secondary approach the individual is already a patient and is usually highly motivated.

In primary prevention of CVD a number of approaches can be identified. The major two are the high risk approach and the population strategy. The high risk approach identifies those individuals who are at high risk based on knowledge of their risk factor levels. This approach implies an initial screening procedure to measure the risk factor levels. Those with high risk then receive counselling as well as medical therapy to modify these risk factors, and while the individuals themselves may benefit, the overall population benefit is usually quite small. There are also disadvantages with screening as it can cause alarm, is expensive and may give a false sense of security to many individuals. By contrast the population approach attempts to alter the population levels of risk factors thus benefiting all members of the community. This can be done by health education and by national policies such as nutrition policies including taxation and subsidies of certain food items. These behaviour changes can be difficult to achieve and no individual benefits greatly, however the potential population benefit can be substantial.

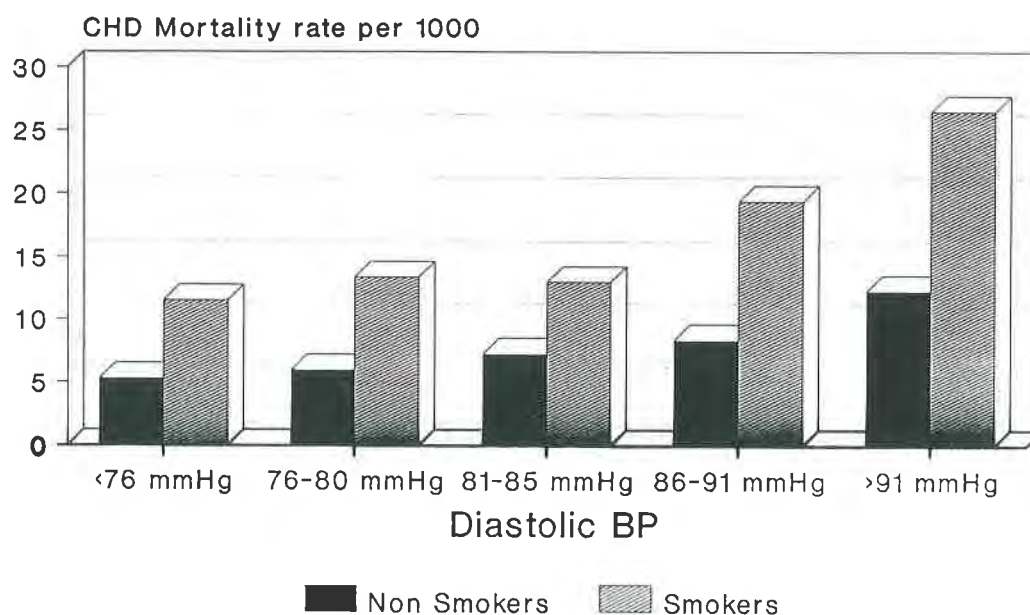


Fig 2: The Interaction Baseline between Diastolic Pressure and Cigarette Smoking on Risk of CHD at Six Years, MRFIT.

A parallel approach which is perhaps most suited to Family Medicine is an individual based approach, and has been recommended for primary care¹¹. In this approach all patients have a family and personal medical history taken, blood pressure measured and smoking status assessed. Patients with at least one risk factor then can have their blood cholesterol measured to assess their overall risk and plan any intervention. Thus in patients with hypertension it is important to assess their levels of other risk factors particular smoking and cholesterol in order to prevent CVD. The success of the longterm management of hypertension also needs to be reviewed as it may not always be as good as it appears¹². A number of risk assessment methods based on the large longitudinal studies can be used^{13,14}. Patients with a history of CVD or diabetes should also have their levels of risk factors ascertained. The advice given to patients particularly on nutrition should be consistent with the population messages on nutrition, as well as that given to patients who already have evidence of CVD. There-enforcement of advice is important in the Family Medicine context as the same practitioner may be seeing relatives and friends of patients who have recently experienced a major cardiovascular event and who may at that point in time be well motivated to behaviour change such as smoking cessation or reduction in dietary saturated fats.

Secondary prevention should start in hospital immediately after a CVD event but it needs to be taken up by the Family Medical Practitioner as the management, whether by counselling or drugs, requires to be on a long term basis. The opportunity to extend this to family members is very important. Emergency coronary care and particularly the use of thrombolytic agents may be regarded by some as prevention but they are not considered here. The place of the longterm use of drugs to reduce blood pressure and blood cholesterol can only be considered after repeated measurements, assessment of the overall CVD risk, and after trial on non-pharmacological measures.

THE ROLE OF FAMILY MEDICINE IN CVD PREVENTION

Family Medicine, along with Public Health, is crucial to successful prevention of CVD. It is the assessment of risk of CVD in individuals, patients, and their families and the consistent advice along with medical interventions when indicated which is central to successful CVD prevention. These efforts need to be supported by cardiologists, and are complementary to the efforts of Public Health Physicians in providing a population approach. In individuals it is the interaction of risk factors which is the basis for any action. The active involvement of Family Medicine Practitioners in CVD prevention has great potential for reducing the considerable risk of CVD which currently exists in the Singapore population. This involvement will also contribute to the status of Family Medicine in the community as a rising discipline. However careful planning and well organised practice, including call and re-call methods and opportunistic interventions, are essential for success.

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NEW TECHNOLOGICAL ADVANCES IN CARDIOLOGY

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ADVANCES IN INTERVENTIONAL CARDIOLOGY

Despite the explosive growth in the use of coronary angioplasty (PTCA) in the treatment of coronary artery disease over the last 15 years, a number of problems still exist. These include:

1. **Re-stenosis** which clinically occurs in 30% of patients but in up to 50% or more when angiographic criteria are used.
2. **Acute closure syndrome** which can occur in up to 5% of cases.
3. **Unfavourable anatomy and total occlusion** which reduces the success of conventional angioplasty techniques.

To overcome some of these problems, a variety of new devices and technologies have been developed. These include atherectomy devices which are designed to mechanically debulk and remove atheromatous material, rotator and laser-based catheter systems. While these devices may have a "niche" in the interventionalist's armamentarium, it would not be unfair to say that to date, the results from various trials using these devices have been relatively disappointing.

The use of coronary stents however is somewhat more encouraging and the recent publication of

two important controlled clinical trials of coronary stenting versus conventional coronary angioplasty adds to this optimism^{1,2}. Until recently, re-stenosis following coronary angioplasty was viewed somewhat simplistically as a fibroproliferative response to intimal injury resulting in matrix formation and a resultant late loss of lumen diameter. More recent studies using coronary ultrasound have demonstrated that mechanical factors such as acute recoil and geometric remodelling of the coronary vessel following angioplasty are perhaps of greater import than fibrointimal proliferation. Thus re-stenosis is currently viewed as the net effect of the acute initial gain in vessel diameter following an intervention and the subsequent late loss brought on by fibrointimal hyperplasia and chronic remodelling. By acting as a "scaffold", stent implantation has now been shown to prevent this elastic recoil of the coronary vessel soon after angioplasty hereby maximizing the initial gain. While the late loss appear to be greater with stent implantation, probably because of greater fibrointimal proliferation induced by the stent material, these two important trials have demonstrated that the net gain at the end of six months as determined by quantitative coronary angiography is approximately 20 - 25% better in the stented patients. These data therefore support the adage that "bigger is better" as far as the immediate angiographic results are concerned.

Does a slightly larger luminal caliber translate into significant clinical benefits? Surprisingly, these two trials demonstrated that there is a disproportionate beneficial reduction of coronary events following stent implantation, the mechanisms of which are uncertain at this time.

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The disadvantages of stent implantation are the increased risk of significant bleeding, need for vascular surgical repair of the access site, a 3 - 4% risk of stent thrombosis resulting in a myocardial infarction, longer hospital stay and significantly higher costs. Are stents the panacea for the problems of conventional angioplasty? The answer is "No". However, in my view, they have a definite place in certain patients, particularly in large native coronary vessels (>3mm), vessels with an unfavourable morphology prone to coronary dissection and in coronary bypass grafts where the results of conventional angioplasty are disappointing. Future developments will include biodegradable stents and stents impregnated with various ant clotting and possibly genetic and other material to reduce the intimal response to injury. As to the fundamental achilles heel problem of re-stenosis, there are currently many exciting molecular approaches to this seemingly insoluble problem³.

INTRAVASCULAR CORONARY ULTRASOUND IMAGING (ICUS)

While coronary angiography remains the current "gold standard" for the determination of the extent and severity of coronary artery disease, its limitations have recently been appreciated. Coronary angiography is no more than a "shadowgram or luminogram" and it does not provide any information on the vessel wall or the extent of the atherosclerosis. We now know that atherosclerosis causes an enlargement and remodelling of the vessel wall and this is not appreciated on the coronary angiogram. Coronary angiography also tends to underestimate the severity of coronary artery disease largely because coronary atherosclerosis tends to develop somewhat eccentrically. Recent studies have also demonstrated that up to 50% of coronary thrombosis can occur on coronary lesions that appear to be angiographically "trivial" on a previous angiogram. This makes it difficult to predict prospectively which lesions are likely to occlude on a routine coronary angiogram. ICUS allows the vessel wall to be imaged and there are now many studies including our own at the National University Hospital to show that atherosclerosis is present despite a seemingly normal coronary angiogram.

Perhaps the most exciting and clinically important aspect of ICUS is the potential ability of the technique to determine whether an atheromatous plaque is predominantly filled with lipid or fibrocalcific material because the former is potentially more prone to rupture and thrombosis. An additional advantage of ICUS is that it allows the luminal area of the vessel to be measured accurately. Thus it is currently the technology of choice in the study of the vessel wall and the pathogenesis of re-stenosis following various interventions. The potential of ICUS is enormous and it would not be surprising that this technology may replace coronary angiography as the "gold standard" in the assessment of coronary as well as peripheral vascular disease in the near future. 3-dimensional reconstruction of the entire coronary artery can also be performed using computerized technology. It would not be difficult to visualize that future therapies would be based on the information obtained by ICUS. Thus coronary lesions that are lipid-rich should probably be treated with aggressive antilipid and antithrombotic measures with the avoidance of a more mechanistic approach such as angioplasty which may be more suitable for more fibrous and less lipid-laden plaques. Coronary regression trials are currently being planned with the use of ICUS rather than coronary angiographic techniques.

NON-INVASIVE TECHNIQUES TO DIAGNOSE CORONARY ARTERY DISEASE

(Magnetic Resonance Coronary Angiography and Computerized Tomographic Imaging)

These expensive technologies are currently being evaluated in the noninvasive diagnosis of coronary artery disease. Electron beam computed tomography has recently been used to diagnose focal coronary artery disease by detecting the presence of discrete coronary calcification. While the severity of angiographic coronary artery disease cannot be predicted accurately by the degree of coronary calcification, the absence of discrete coronary artery calcification has been shown by a number of investigators to be a sensitive marker of the absence of angiographic coronary artery disease. A number of studies are currently underway to assess the diagnostic utility of this technology in the screening of individuals with

risk factors and its value in long term prognostication.

Magnetic Resonance angiography has been used in the noninvasive evaluation of static vascular structures such as carotid, renal and peripheral vessels. More recently using a breath holding technique, various investigators⁴ have demonstrated that the coronary arteries can be imaged with relatively high sensitivity and specificity compared to conventional coronary angiography, raising again the practical possibility of using this technology to screen for coronary disease. However, further studies on a broader range of patients as well as cost effective studies comparing currently available methods with this relatively expensive technology are required before one can apply it in clinical use.

IMPLANTABLE CARDIOVERTER-DEFIBRILLATOR (ICD)

The implantable cardioverter-defibrillator (ICD) is increasingly being used particularly in the United States as the treatment of choice in life-threatening ventricular arrhythmias and in patients surviving a cardiac arrest. While there is no doubt that this expensive device can effectively terminate dangerous cardiac arrhythmias, there is considerable controversy about its long-term efficacy, in particular as to whether long-term total cardiac mortality is reduced⁵. Thus, critics contend that the ICD merely converts "sudden

death" into "not so sudden" death! Furthermore, while the early studies using this device have shown a reduction of arrhythmic deaths compared to historic controls, total mortality is ranged from 5 - 8%. Several important trials are currently underway comparing total mortality in patients randomized to ICD versus medical therapy such as long-term amiodarone therapy. In the meantime, my own view is that it should be reserved for relatively young patients who are prone to life-threatening ventricular arrhythmias in whom conventional antiarrhythmic therapy is either contraindicated or ineffective.

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REPETITIVE STRAIN INJURY

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INTRODUCTION

Repetitive Strain Injury (RSI) is a term used to describe those diffuse neck and arm pain syndromes that appear to be directly related to occupational factors. Other terms used to describe such broad descriptive categories of perceived work-related pain are "occupational overuse syndrome" (OOS), "occupational cervicobrachial disorder" (OCD) (Japan and Finland), "cumulative trauma syndrome" (USA), and "industrial rheumatology" (Scandinavia), but these terms are not synonymous.

There is no generally accepted definition of RSI, but in Australia, where it reached epidemic proportions in the eighties, the RSI Committee of the National Occupational Health and Safety Commission defines RSI as follows:

"A soft tissue disorder caused by overloading of particular muscle groups from repetitive use or maintenance of constrained postures."

This definition implies a physical cause for a physical condition, which is strongly disputed by others, as the aetiology, pathogenesis and pathology of RSI is little known. This definition also fails to make a specific diagnosis on anatomical grounds.

HISTORICAL CONSIDERATIONS¹

1713: A condition known as "diseases of clerks and scribes" was described with symptoms similar to RSI, implicating "continuous sitting, repeated use of the hand and strain of the mind" as its cause.

1830: "Writer's cramp" was described which differs from RSI only in the high incidence of hand spasm.

1888: Gowers termed writer's cramp an "occupational neurosis", upholding the "primarily and essentially central nervous system origin, the result of a deranged action in the centres concerned in the act of writing" rather than a peripheral affliction. He also mentioned other similar occupational neuroses of that time afflicting pianists, violinists, "sempstress" and telegraphists.

1911: British and Irish Post Office Department Committee of Inquiry concluded that telegraphist's cramp was "a nervous breakdown" due to "nervous instability and repeated fatigue".

1971: Ferguson described cramp of Australian keyboard telegraphists, with a clinical presentation similar to today's RSI, the incidence varying from 4% in Melbourne to 25% in Sydney among workers using the same equipment under similar working conditions, causing some to suggest auto-suggestion and mass hysteria as a possible cause.

OFFICE AUTOMATION AND RSI

RSI only came into prominence after the advent of large scale office automation. The aim of office automation has always been to increase efficiency, increase accuracy in data management and reduction of labour cost by reducing staff. Improvement of working conditions is mostly incidental, and has never been a major consideration. The introduction of such new and expensive technology at great cost is often linked with a greater control of workers and more intense work. In the case of British Telecoms, for example, "employees were ordered to type 13,000 characters an hour, or 3.6 letters a second. If they did not

reach the target, the machines automatically docked their pay and informed the management"². This naturally caused much unhappiness among VDU users who began to complain of neck, shoulder and arm as well as eye symptoms.

CLINICAL CONSIDERATIONS — THE AUSTRALIAN EXPERIENCE:

Symptoms:

RSI as it affects the Australian workforce can be described as a collection of symptoms affecting the upper limb, pain being the most prominent. In the arm and hand, it is described as aching, burning, tingling, numbing, and as a heaviness. It tends to be diffuse, involving the whole arm vaguely, though it may be localised variously, in isolation or in combination, to the hand, thumb, fingers, wrist, elbow, and so on. Pain in the shoulder girdle and neck may radiate to the head, anterior chest wall and axilla. The pattern of pain does not conform to any known neurological pathway, anatomical structure or physiological pattern. Pain intensity may vary from day to day, exacerbated by the use of the arm in daily activities, and even at rest.

Signs:

Examination shows no primary objective physical findings in the upper limbs. There may be wrist or forearm muscle tenderness without other associated signs of inflammation. Local tenderness of the epicondyles is not associated with positive tests for epicondylitis. There may be shoulder abduction limitation. Brachial plexus tension test may be positive and sustained neck flexion or extension of up to 3 minutes may provoke severe exacerbation of symptoms in some patients. This led some workers to postulate that the pain of RSI is neuropathic (pertaining to the cervical spinal cord, nerve roots and brachial plexus and their coverings) in origin, and that sustained neck postures adopted during work, rather than repetitive work is the cause of one of the conditions known as RSI^{3,4}.

Investigations:

Clinical investigations (including biochemistry, radiography, electromyography and nerve conduction studies, radio-isotope bone scanning, thermography and haematology) are negative.

OVERUSE CONDITIONS

Ireland, in his excellent review on "Psychological and physical aspects of occupational arm pain"¹, emphasises the importance of distinguishing RSI from the commonly accepted overuse conditions: rotator cuff tendinitis, bicipital tendinitis, tennis elbow, golfer's elbow, ulnar neuritis, olecranon bursitis, radial nerve entrapment, abductor pollicis longus bursitis, De Quervain's tenosynovitis, wrist flexor tenosynovitis causing median nerve compression, digital flexor tenosynovitis, and so on. All these conditions differ from RSI in having clearly defined and distinguishable subjective symptoms, reproducible objective clinical findings, recognisable and rational gross and microscopic pathological changes and effective forms of physical treatment.

Differential Diagnosis

Sikorski et al⁵ studied 204 subjects with pain in the upper limb or neck who worked in a highly stylized and repetitive occupation none of whom had a single specific diagnosis made. Most had been labelled as suffering from RSI. With proper clinical evaluation, including appropriate investigations (e.g. radiology, 99 m-technetium bone scans, electrophysiological studies of nerves, screening for systemic diseases), they were able to identify five categories of patients:

1. *Arthropathic*. Mechanical joint pain, often with joint swelling, involving one or more joints. These were mostly degenerative arthropathies.
2. *Neurologic*. Pain was in the distribution of nerve or nerve root, accompanied by sensory disturbance, and sometimes muscle wasting, appropriate for the involvement of specific nerve or nerve root. These include abnormalities attributable to the ulnar nerve (ulnar neuritis), median nerve, cervical spine or thoracic outlet, posterior interosseous nerve palsy and pronator syndrome. Nerve entrapments were the most common neuropathies.
3. *Systemic*. Five subjects were found to suffer from generalized disease, including seronegative rheumatoid arthritis (2), HLA

B27 positive arthropathy (1), viral myopathy (1) and hypothyroidism (1).

4. *Tendinous*. Symptoms and signs localised to one or more tendons. Tenosynovitis, De Quervain's tenovaginitis, supraspinatus tendinitis, subacromial painful arc syndrome, biceps tendonitis and tennis elbow were included in the findings.

5. *Non-specific*. 86 subjects (42%) were included in this category. Vague symptoms with often poorly localised pain, diffuse tenderness, easy fatiguability of upper limb muscles, and widespread upper limb weakness compatible with prolonged disuse were the main findings. These subjects often lived very protected and highly supported lives.

Compensation

It is interesting to look at differences of compensation and sick leave payments among these groups. 25% of all subjects with a diagnosis received such payments as opposed to 45% of those without a diagnosis (category 5).

DISCUSSION

The pain of RSI

Many theories abound to explain the pain of RSI in physical terms, including muscle damage, muscle fatigue, joint capsule deformation, cervical nerve root tension and so on. However, the lack of histological, biochemical or demonstrable electrophysiological evidence to support these theories render them speculative.

That there is musculo-skeletal fatigue in repetitive work is undeniable, the operators having to maintain neck/head and arm posture for prolonged periods of keyboard work without support³. But whether this leads to the specific RSI syndrome is still arguable.

The citation of 15,000 keystrokes per hour appears to be horrifyingly excessive until it translates to about 50 words per minute of typing, an accepted typing rate for office secretaries. Yet, the VDU Hazards Handbook⁶ states: "It is generally

recognised that a rate of more than 10,000 keyboard depressions per hour is hazardous, and increases the risk of developing strain injuries". This is the reason for the famous Australian trade union slogan 'Go safe: Go 10,000'.

The concept of muscle fatigue and muscle cramp is difficult to accept since physiologically, frequent use of the muscle increases efficiency.

RSI a misnomer

RSI is an unfortunate term, as it implies injury. There is no evidence of injury to the vast majority of people with arm pain engaged in repetitive work. The word "injury" implies an unjust or wrongful action, or a violation of rights; this leads to the issue of culpability and the involvement of a legal system, which, at best, cannot aid the healing process or encourage rehabilitation.⁷ In Australia, RSI is often diagnosed without a proper examination to determine the specific condition from which the person may be suffering. The controversy led the Royal Australasian College of Physicians to suggest that the term "regional pain syndrome" be used in situations where the patient has some symptoms but no signs. Such a patient should be approached as a pain problem rather than as a specific local injury.

Arm Pain and RSI

Arm pain is very common in the workplace but it also occurs as a part of life. Although it cannot be denied that occupation does make a contribution to upper limb soft tissue disorders, many RSI patients have genuine problems they mistakenly believe to be caused by their work. It is estimated that at any given time, nearly a tenth of the adult population has pain in the neck or arm, or both, and a third have had it for some time. Unsatisfactory social, family, marital and economic circumstances are also often expressed as job dissatisfaction. Certified sickness absenteeism only reinforces the incorrect and misleading notion that the physical aspect of work has caused the symptoms. The powers of suggestion reinforcing this notion by sections of the press, trade unions, legal and medical professions and others, have been overwhelming¹. It seems that we must now live in a pain-free society, and rewards await those who can convince

the authorities and courts that they have a pain that is work related.

One must also recognise the fact that symptoms arising in the course of work are less well tolerated than those arising out of play, and there are attractive reasons in Australia to lower the threshold for complaints of aching due to simple physiological stress and strain.

Interested parties

The list of vested interest in Australia is long — physicians, surgeons, patients, unions, lawyers, ergonomic furniture manufacturers, physiotherapists, occupational therapists, and reporters. It could be suggested that to a large extent the disease is media promoted. Up to 30% of the staff of some government departments in Australia have been crippled by this condition.

The advent of this "new" industrial disease in epidemic proportions in Australia leads to an increased presence of industrial rehabilitation clinics ostensibly to care for RSI sufferers. Doctors, ergonomists and occupational therapists operating these clinics develop a commercial symbiosis with RSI sufferers who request and receive periodic certification of their work incapacity. The vested interest of the legal profession in RSI as representing an injury with permanent residual disability requiring compensation is obvious. The ergonomists brought their ergonomic re-design of the workplace, work furniture and equipment to prominence, based solely on the unproved assertion that RSI is a physical condition, though it cannot be denied that ergonomics does improve worker comfort.

Worker's Compensation

In Australia, RSI is compensable under Worker's Compensation which allows payments of a lump sum. It is therefore understandable that people would have their aches and pains diagnosed as RSI. In an open market health care system not too different from ours, doctors are unlikely to try to disprove the diagnosis — not that it is easy to disprove. As Awerbuch⁸ put it. "There is simply no way of diagnosing 'not RSI'". Data from New South Wales alone showed 600 cases of RSI in

1970, while in 1985 there were 6948 cases. By 1987, RSI cost Australia over A\$1 billion and it threatens to become one of Australia's major exports to developed countries.

Although one can postulate that patients with RSI complaints could be suffering from a discrete disorder that has so far resisted definition, one must wonder if this problem is not largely psychosomatic if not a profitable diagnosis to have for some non-specific aches and pains.

Barton⁹ identified three categories of patients diagnosed as RSI:

- a. Those who suffer from overuse syndrome with definite signs, particularly peritendinitis crepitans.
- b. Those who have definite problems they mistakenly believe to be caused by their work.
- c. Those who jump on the bandwagon to have their symptoms diagnosed as RSI for monetary gain.

Monotonous, low-prestige occupations

Ireland noted that "the condition affects predominantly young to middle-aged female employees engaged in low-paying, monotonous, low-prestige occupations." RSI is also seen in workers not engaged in repetitive movements, e.g. retail sales assistants, implying that repetitive use and movement of the upper limbs is not a common denominator.

Similarly, Linton and Kamwendo¹⁰ noted a three fold increase in risk for neck and shoulder pain among secretaries working in a large hospital who experience "poor" as compared to those who experience "good" psychological work environment, in particular with regards to work content and social aspects of work. Exposure to high work demands did not result in significantly higher frequency of shoulder or neck pain.

The secretaries in this study were nearly at the bottom of the work hierarchy, with placement and salary regulated by the central administration rather than by their immediate bosses (each served up to 20 different doctors). They felt that they could

not initiate positive changes in their work situation and felt helpless.

Treatment

Strain implies deformation of tissue, but there is no evidence of anatomical or histological abnormality in biopsied tissue. Presumption of physical cause led to various modalities of treatment, including drugs, physiotherapy, rest and even surgery. None has been rewarding. Implied physical cause of RSI requires those affected to refrain from such activity. However, avoidance of work has not only failed to remit symptoms, but has also often been accompanied by a puzzling steady deterioration of symptoms, often worsening years after discontinuation of the allegedly responsible work task. By the time a specialist opinion is sought, notions of physical injury and employer culpability are so heavily reinforced by vested interest groups that acceptance of the psychological basis of the condition is usually impossible. Psychological counselling can be successful, but benefits only those who are motivated and co-operative.

In contrast, Fry¹¹ found that the majority of the 175 musicians with overuse syndrome in his study responded well to conservative treatment. Musicians, as a whole, are highly motivated people who want to get back to their work quickly.

In all fairness, it must be said that the majority of RSI patients are often the innocent victims of circumstances rather than seekers of secondary gain. Most express a genuine wish to return to work, but with modifications or transfers.

Besides the financial cost of ineffective physical treatment resulting from the inclusion of RSI as an overuse syndrome, patients presenting with upper limb symptoms incorrectly diagnosed as RSI had been denied appropriate early treatment. One example quoted is that of a 21 year old male music student with right wrist pain for ten months incorrectly diagnosed as RSI. He was on the verge of giving up a career as a pianist when he was properly diagnosed as suffering from an un-united scaphoid fracture. He was successfully treated with a bone graft and continued to play his piano.

RSI a medical problem?

Ireland suggests that RSI be classified as a socio-political phenomenon rather than a medical condition. The responsibility for its prevention thus must rest not with the medical profession, but with public education and acceptance of RSI as a multi-factorial, occupational, socio-economic problem with a major psychological basis rather than a physical condition resulting from injury.

Doctors have been accused by some industrial health workers of routinely misdiagnosing a range of repetitive strain disorders due to inadequate training in industrial health. These same accusers have failed to understand that patients will not be helped by unsupported allegations, unscientific attitudes, or emotional reactions, however well-intentioned.

CONCLUSION

Many of the studies of RSI have been done through questionnaires, with little if any, examination of the subjects, and often by workers not medically trained. Many of the champions of RSI sufferers are again not medical doctors, and those who are mostly failed to declare their interest.

Objective clinical studies of patients find RSI to be a condition where abnormal physical signs are transient or absent, and for which no objective tests are available. Accurate diagnosis is often impossible; the lesion cannot be defined and even the anatomy cannot be ascertained.

There is no scientific evidence that repetitive work causes either strain or injury. The classification of RSI with the commonly acknowledged overuse conditions of the upper limb is not only confusing and misleading, but has in many cases denied such patients appropriate and early treatment. We should not continue to propagate the unsupported notion that RSI is a physical condition caused by injury. As Ireland suggested, it is more a sociopolitical phenomenon rather than a medical condition. Indeed, since then the incidence of RSI has declined in Australia,

after several verdicts against the claimant⁹, though diehard supporters of RSI would attribute this purely to improvement in ergonomics in the workplace.

Whatever your own conclusions on this controversy, one thing must be clear: we must learn not to repeat the costly Australian experience.

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A RANDOMIZED ASSESSMENT OF SOME VITAL PARAMETERS IN PAKISTANI YOUTHS

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INTRODUCTION

Diverse factors like personal income, expanded public assistance programs, and vitamin and mineral enrichment of food have reduced the prevalence of the classic nutritional deficiency diseases in the United States over the past few decades¹. However in a survey conducted in 28 developing countries, 25% of children with an age below 5 years had Kwashiorkor (body weight below 80% of standard) or marasmus (body weight below 60% of standard)². Similarly, the prevalence of nutritional disease is not over expected in the Indo-Pakistan subcontinent. This study was done for assessment of some nutritional diseases in Pakistani youths.

MATERIALS AND METHODS

Twenty nine (fourteen male and fifteen female) volunteers included in this study were students from different vicinities of Karachi, and were at the same level of a graduate degree. Criteria for inclusion, were:

- Physical and psychological well being, without any congenital anomaly or mental retardation.
- Absence of signs and symptoms of any nutritional deficiency.
- Without use of any pharmacotherapy for any disease since two weeks.
- Absence of any addiction of any type of abused substance.
- Living in Karachi since two years, without absence for more than two months during stay.

The volunteers had an initial evaluation. They were weighed, and information about their diet collected. About 5 ml blood was collected from a prominent cubital vein, by a disposable syringe from each of the volunteers, and the samples centrifuged immediately. Plasma was separated and frozen. The analysis was done within 72 hours, by Standard reagent kits provided by Merck and Boehringer Mannheim, on vitalab 'Eclipse' automatic analyzer (Merck).

RESULTS AND DISCUSSION

Table 1 shows the characteristics of volunteers and Table 2 shows the comparison of important parameters from standards used in European laboratories. Although total proteins, cholesterol, triglycerides, LDL cholesterol, HDL cholesterol and GPT were found to be in normal ranges, the alkaline phosphatase was found to be slightly raised.

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Table 3 represents the comparison of the parameters according to sex of the volunteers. No statistically significant difference ($p > 0.05$) was seen in most

of the parameters. However statistically significant difference ($p < 0.05$) was found in SGPT and LDL cholesterol of male and female volunteers.

Table 1: Characteristics of Volunteers

No. of volunteers	29
Male volunteers	14
Female volunteers	15
Age	20 - 23 years
Marital status	Unmarried
Weight (Average)	Male: 63.71 kg, Female: 49.73 kg
(Range)	Male: 54-76kg, Female: 37-65 kg
Social status	Middle class
Residential area	Urban

Table 2: Comparison of Important Parameters from Standards Used in European Laboratories (n = 29)

Profile	European standard*	Determined level	Variation
Alkaline phosphatase	21 - 91 IU/L	93.02 ± 5.06	More than limit
GPT	3 - 36 IU/L	9.84 ± 0.57	Within limit
Total protein	5.5 - 8.08 / 100 ml	7.49 ± 0.16	Within limit
Cholesterol (at 20 - 29 years age)	120 - 240 mg / 100 ml	160.48 ± 4.37	Within limit
Triglycerides (at 20 - 29 years age)	10 - 140 mg / 100 ml	98.03 ± 4.50	Within limit
LDL cholesterol (at 20 - 29 years age)	60 - 170 mg / 100 ml	67.81 ± 2.08	Within limit
HDL cholesterol (at 20 - 29 years age)			
Male	35 - 70 mg / 100 ml	40.92 ± 2.01	Within limit
Female	35 - 75 mg / 100 ml	43.86 ± 2.77	Within limit

* Extracted from Harrison's Principles of Internal Medicine, by Isselbacher K J, Adams R D, Braunwald E, Petersdorf R G and Wilson J D, McGraw-Hill Kogalceusha Ltd, 1980.

Table 3: Comparison of the Parameters depending on Sex

Sex	Alkaline phosphatase	SGPT	Total protein	Cholesterol	Triglycerides	LDL cholesterol	HDL cholesterol
Male (n = 14)	$95.33 \pm 5.19^+$	11.05 ± 0.95	7.60 ± 0.16	161.85 ± 6.72	80.35 ± 7.49	64.72 ± 2.62	40.92 ± 2.00
Female (n = 15)	90.89 ± 8.65	$8.73 \pm 0.55^*$	7.38 ± 0.26	159.20 ± 5.87	87.46 ± 5.25	$70.70 \pm 3.10^*$	43.86 ± 2.70

+ Mean \pm SEM.

* $p < 0.05$

Table 4a shows comparison of different parameters depending upon body weights in female volunteers. No statistically significant difference ($p>0.05$) was seen in alkaline phosphatase, GPT and triglycerides, but statistically significant difference ($p>0.05$) was found in total protein, cholesterol, LDL and HDL cholesterol between the two groups having body weight more than or equal to 50 kg or less than this weight. Table 4b shows the same comparison in male volunteers. No statistically significant difference ($p>0.05$) was found in all the important parameters except the total protein

was found to be statistically higher ($p<0.05$) in volunteers having weight less than 65 kg than in volunteers having weight equal to or more than 65 kg.

Table 5 represents comparison of different parameters on the basis of nature of diet. Although no statistically significant difference ($p>0.05$) is seen in most of the parameters, a statistically significant high value ($p<0.05$) is cholesterol in obvious in volunteers who used high fatty diet, compared to high protein and carbohydrate diets.

Table 4a: Comparison of the Parameters in Females depending upon Body Weight

Weight	Alkaline phosphatase	SGPT	Total protein	Cholesterol	Triglyceride	LDL cholesterol	HDL cholesterol
≥ 50 kg (n = 8)	$90.67 \pm 14.96^+$	9.27 ± 0.61	6.88 ± 0.38	153.62 ± 4.30	83.75 ± 5.67	67.61 ± 2.78	39.12 ± 2.98
< 50 kg (n = 7)	91.48 ± 8.81	8.10 ± 0.43	$7.95 \pm 0.26^*$	$165.57 \pm 11.63^*$	91.71 ± 9.49	$74.22 \pm 5.88^*$	$46.57 \pm 3.38^*$

+ Mean \pm SEM;

* $p < 0.05$

Table 4b: Comparison of the Parameters in Males depending upon Body Weight

	Alkaline phosphatase	GPT	Total protein	Cholesterol	Triglyceride	LDL cholesterol	HDL cholesterol
Weight < 65 kg (n=7)	$91.87 \pm 9.29^+$	10.15 ± 0.99	7.91 ± 0.24	153.14 ± 8.30	82.57 ± 14.81	65.70 ± 2.30	40.85 ± 1.82
Weight ≥ 65 kg (n=7)	98.80 ± 5.20	11.96 ± 1.63	$7.30 \pm 0.14^*$	170.57 ± 10.13	78.14 ± 4.79	63.74 ± 4.93	41.00 ± 3.77

+ Mean SEM; $p<0.05$

* $p, 0.05$

Table 5: Comparison of the Parameters in 24 Volunteers depending upon Diet

Type of diet **	Alkaline phosphatase	GPT	Total protein	Cholesterol	Triglyceride	LDL cholesterol
Type 1 diet (n=8)	$85.02 \pm 9.13^+$	9.63 ± 1.10	7.65 ± 0.27	150.00 ± 8.16	82.00 ± 8.51	66.40 ± 5.31
Type 2 diet (n=8)	97.03 ± 14.38	11.59 ± 1.43	7.27 ± 0.17	154.87 ± 5.78	79.12 ± 5.11	65.27 ± 3.82
Type 3 diet (n=8)	94.79 ± 7.6229	8.61 ± 0.65	7.88 ± 0.23	$181.25 \pm 7.93^*$	94.61 ± 12.47	70.68 ± 3.89

+ Mean \pm SEM; * $p < 0.05$

** Type 1 diet: Dry bread + vegetables and milk (rich in carbohydrates)

Type 2 diet: Dry bread + meat and chicken (rich in protein)

Type 3 diet: Dry bread + egg and butter (rich in fat)

Note: 5 volunteers were omitted as they had mixed diet.

A pilot study for the solution of nutritional problems of Pakistan was conducted under the supervision of Dr Habibur Rehman Undere, in collaboration with Agriculture Research Council, UNICEF, WHO, FAO and other agencies, in 1971³. This study showed that most people residing in Karachi suffered lack of balanced diet, and the distribution of food is uneven both in quality and quantity. Moreover it also presented that the diseases related to multiple deficiencies of important nutrients are common here. Similarly, another study based on plasma Vitamin A and carotene levels in Karachi population showed that the diet of the population is generally low in vitamin A, animal protein and calories⁴.

However biochemical analysis of randomly selected volunteers in our study did not present an ugly picture. For example, in the previously mentioned pilot study, the estimation of total protein, albumin and globulin, in the same population did not show more than 3% of school children who were deficient or more than 17% of same age children who were in the low categories of these important biochemical parameters. Similarly, another study based on serum folic acid and vitamin B12 levels, presented a limited aetiological role of vitamin B12 and folic acid

deficiency in anaemias in males and non-pregnant females in Pakistan⁵.

Our study is also in support of these studies; it does not show deficiencies in total protein or an increase in cholesterol, triglycerides, LDL cholesterol or HDL cholesterol, findings which one would expect due to improper and imbalanced diet in our population. Our study was conducted on volunteers of undergraduate age group, so the parameters which were determined provide a direct reflection of their dietary habits rather than the alterations which are induced by different diseases in older age groups.

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GENERAL PRACTICE / FAMILY MEDICINE IN CHINA

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China has become better known to me with my visit to this huge country as a member of a World Organisation of National Colleges and Academies of General Practice/Family Medicine (WONCA) Task Force to China in late 1992 and early 1993. This paper describes the introduction of general practice into China in recent years.

A Growing Interest

China has a population of 1.13 billion as reported in the 1990 Census. Of these, 300 million live in the towns and cities. The Central Government introduced in 1949, for the first time in the history of China, a national health delivery system with a strong focus on preventive care and primary care. Whilst such a system served China well in the past, increasingly it is not keeping up with the rising expectations of its people. The primary care system is increasingly being bypassed in favour of larger township, provincial and city hospitals.

The Minister of Public Health, Professor Chen Minzhang observed in one of his speeches in 1992: "Our existing system of medical care is basically specialised; and although doctors at the primary level are not specialists, they are often

divorced from formal medical education and have no standing in society. This basic system of medical care should be changed since it cannot meet the peoples' needs for health care. In our country, 80% of the population are farmers, and a great number of the grass-root level populace needs well-trained general practitioners to serve them. This will also greatly reduce the burden on specialist health care and make rational use of health resources."

It is not surprising then that the health care delivery system in China has rapidly undergone reform in recent years. In particular, there is a national move to introduce an integrated general practice at the primary care level similar to that practised around the world which is the provision of personal, primary, comprehensive and continuing care. A national health insurance system is also being contemplated.

Historical Development of Health Care in China

There is a need to understand the historical development of health care in China before one is able to suggest ways on how China could introduce general practice / family medicine into its health delivery system. One of the first priorities of the Central Government of China when it came into power in 1949 was to develop a health administration to cater for the one billion population, more than 80% of whom lived in rural areas. There was a dearth of medical personnel. The imminent task then was to devise crash programmes for training doctors and nurses.

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There were of course medical schools in China, some of which were world-renowned, for example, the Peking Union Medical College (PUMC) in Beijing. The output however, could only be a tiny fraction of what was needed. The Government improvised by sending into the countryside millions of workers who were given only rudimentary training in public hygiene and immunisation (lasting in most cases from one to three months) to serve as medical personnel. Thus was born the title "bare-foot doctors".

Since Russia was her close ally in the 50s, China's medical system followed closely the Russian model which was hospital-based and specialist-centred. That was why, in the early years, "Specialist Schools" were set up all over the country producing instant "Specialists" in Internal Medicine, Surgery, ENT, Paediatrics and so on, by conducting crash programmes in the "Specialist subject" for 2 or 3 years for those who finished secondary schools. Later on, in addition to these "Specialist Schools", and to satisfy the medical needs of the people at different "levels" of administrative units, different grades of "medical graduates" were produced.

The few who underwent the full 5-year medical course after 12 years of primary and secondary schooling were sent to major hospitals in big cities and provincial administrative centres. One rung below were graduates of medical schools offering 3-year courses after 12 years of primary and secondary schooling. They were sent to "country" hospitals. The next rung below that were those who graduated from schools offering 3-year medical courses but who had only 9 years of primary and secondary schooling. They were sent to the "township" hospitals in the rural areas. Thus, there were four grades of doctors in China. Such a system was baffling to an overseas doctor visiting China for the first time.

In spite of obvious inadequacies, the system succeeded in achieving the primary aim of providing much needed medical services to the whole population. Irrespective of how primitive and elementary such services were, they must be

viewed as considerable developments in circumstances where none existed before and where no organised and centrally administered health care was available to the general population for centuries.

Hongkong College of General Practitioners' Initiative

The existing health delivery system in China being hospital-based and specialist centred is not cost effective. The Hongkong College of General Practitioners sent a delegation, led by Dr Peter C Y Lee, to Beijing in 1986 to introduce the concept of general practice / family medicine to the authorities in China and persuade them to replace the existing system with a community-based health delivery system emphasising holistic care. The response was immediate and overwhelming, and the assistance and expertise of WONCA was sought. The visit to China of Dr Rajakumar from Malaysia, Dr Don Ray from Canada, respectively the President and President-Elect of the world body paved the way for the formation of the Beijing Society of General Practice in January 1989 and the holding of the First International Scientific Meeting in General Practice in November of the same year.

Family Medicine Teachers in China

Through WONCA's initiative and with the help of the College of Family Physicians of Canada, the Canadian International Development Agency (CIDA) made a grant in 1991 to enable a Canadian specialist in Family Medicine, Dr Brian Cornelson, to teach in Beijing for six months. This same grant also financed a follow-up visit by a Family Physician from Taiwan, Dr Meng-Chin Lee, to teach in Beijing for a further period of three months. Dr Lee translated the Introduction to General Practice by McWhinney into Chinese. This was published in Tientsin. The textbook is deeply appreciated. The focal point of academic development in China is in the Capital Institute of Medicine, headed by an enlightened and dynamic Professor Xu Quanyuan. WONCA's input in the

process of teaching Family Medicine in China was continued by the fortuitous presence in Beijing of Dr Martine Granek-Catarivas who was appointed Visiting Professor to the Capital Institute of Medicine.

WONCA Task Force to China

These WONCA activities coincided with policy decisions by the Central Government of China in the 1990s to gradually upgrade the standard of medical practice in China. Probably because of this reason, the then Director of Medical Education of the Ministry of Health, Dr Huang Yongchang, and two other delegates from China, attended the WONCA World Conference in Vancouver in May 1992 and approached WONCA Executives with the request that WONCA send a team of Family Physicians to China to study, report and recommend the development of general practice / family medicine in China. This challenge was accepted by WONCA and subsequently a team of four consisting of Drs Giora Almagor from Israel as the Convenor and Leader, Martine Granek-Catarivas from Israel and residing in Beijing as the Co-ordinator and Rapporteur, Chou Tang-Tat from Taiwan and myself from Singapore visited China.

The terms of reference were to recommend various curricula corresponding to the needs of the doctors and health care workers in China. The general purpose of this project was to promote the worldwide model of general practice / family medicine in China. The team convened in Beijing from the 20th of December 1992 until the 9th of January 1993. The team was warmly received by Dr Gu Yuan from the Capital Institute of Medicine. The Institute was the home base during the stay. During that time the team visited general practice projects that have already been developed in Beijing, Zhejiang, Henan and He Long Jiang. The team completed its visits and discussions with local health officials by 30th December and spent the New Year completing its report and having further discussions with teachers in Capital Institute of Medicine.

A Workshop on General Practice hosted by the Capital Institute of Medicine was conducted on the 3rd and 4th January 1993 which was attended by nearly one hundred prominent clinicians, teachers in medicine, and health officials, some coming from remote parts of China. A small number of Western physicians residing in Beijing were also present, notably Dr Bill Kean (WHO Representative in China), and Dr John W Aldis (Medical Officer of the American Embassy). The participants were also remarkably active and numerous questions were raised by the audience. They were most interested in the content of the clerkship in family medicine, the practical aspects of training in postgraduate programmes, the criteria for entrance into the programmes, and the maintenance of quality and standards among the teaching staff.

Apart from the educational matters, they were also very interested in health care financing, organisation of team work in the clinic and in the community, as well as in community hospitals. Meetings were held with the Minister of Public Health, the Director of Medical Education and the Director of the National Centre for Medical Education Development.

Recommendations concerning the delivery of care, the education of health workers, the interface between various levels, the system of payment, and the image of general practice were made. In essence they supported the direction that China is developing. There was the need to disseminate the idea of general practice as a level of appropriate care. The Ministry of Public Health should provide support for the development of training programmes for teachers and the training of general practitioners / family physicians. Some important focal points, such as the Capital Institute of Medicine, should be provided with appropriate funds for expanding personnel, teaching materials and exchange programmes. As of 1992, the Institute has started a "GP class" of 50 undergraduates on a 5-year university medical programme to be trained as general practitioners. Half of the class are students from He Long Jiang province. In the

short run, there will be a need to co-opt specialists into the teaching and practice of general / family practice.

Specific recommendations were also submitted to the Chinese Medical Association, the Capital Institute of Medicine, the Bureau of Public Health of Beijing, WONCA, WHO, and the State Administration of Traditional Chinese Medicine. These addressed the specific contribution of each institution to the development of general practice / family medicine in China and were focused mainly on the subject of medical education of doctors and health care workers. The recommendations were well received. The WONCA Task Force has since submitted its report and the Minister of Public Health has requested WONCA to produce one million copies of the report for circulation in China.

The Formation of the Chinese Society of General Practice

I returned to Beijing in November 1993 to attend the Second International Meeting in General Practice and the formation of the Chinese Society of General Practice. The Guest of honour was the Minister of Public Health. We were warmly welcomed. The Conference had a total of 163 papers which, with the exception of 19, were delivered by local delegates. The meeting was attended by 220 local delegates and 160 overseas delegates. Judging from the active discussion of the concepts and practice of general practice as well as the reports from general practice projects over the country, it is clear that general practice

has taken root in China. We look forward to the next meeting in Shanghai in 1996. Meanwhile, leaders of foreign delegates have pledged their support to the newly developed national body for general practice.



Capital Institute of Medicine in Beijing, a focal point in the development of General Practice / Family Medicine in China

HYPERTENSION

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DEFINITION AND CLASSIFICATION

The 1993 Report of the Joint National Committee on the detection, evaluation and treatment of Hypertension has provided a new classification of adult blood pressure based on its impact on risk for cardiovascular disease (see Table 1). The traditional terms *mild* and *moderate hypertension* failed to convey the major impact of high blood pressure on the risk for cardiovascular disease. A high-normal pressure is included because persons with systolic blood pressure and / or diastolic blood pressure in these ranges are at increased risk of developing definite high blood pressure and experiencing nonfatal and fatal cardiovascular events, compared to otherwise similar persons with lower blood pressures.

Table 1: Classification of Blood Pressure for Adults Aged 18 Years and Older

Category	Systolic, mmHg	Diastolic, mmHg
Normal	< 130	< 85
High normal	130 - 139	85 - 89
Hypertension		
Stage 1 (mild)	140 - 159	90 - 99
Stage 2 (moderate)	160 - 179	100 - 109
Stage 3 (severe)	180 - 209	110 - 119
Stage 4 (very severe)	≥210	≥ 120

Source: Arch Intern Med, Jan 25 1993; 153:161.

The classification is for adults who are not on antihypertensives and not acutely ill. The diagnosis of hypertension is based on the average of two or more blood pressure readings taken at each of two or more visits after an initial screening.

When systolic and diastolic pressures fall into different categories of severity, the higher category should be selected to classify the individual's blood pressure status.

In addition to classifying stages of hypertension on the basis of average blood pressure levels, the presence or absence of target-organ disease and additional factors for cardiovascular risk should be stated.

All stages of hypertension warrant effective long-term therapy and follow-up (see Table 2).

Table 2: Recommendations for Follow-up based on Initial Set of Blood Pressure measurements for Adults

Initial screening blood pressure in mm Hg		Follow-up recommended
Systolic	Diastolic	
< 130	< 85	Recheck in 2 years
130 - 139	85 - 89	Recheck in 1 year, advise on lifestyle modification to decrease cardiovascular risks where relevant
140 - 159	90 - 99	Confirm within 2 months
160 - 179	100 - 109	Recheck within 1 month
180 - 209	110 - 119	Recheck within 1 week
≥ 210	> 120	Consider referral for inpatient management

Source: Arch Intern Med, Jan 25 1993; 153:162.

BLOOD PRESSURE MEASUREMENT TECHNIQUE

1. Patient should be seated, arm bared and supported and positioned at heart level.
2. Have 5 minutes of quiet rest before blood pressure is taken.
3. No smoking or caffeine within 30 minutes of measurement.
4. Use appropriate cuff size
 - rubber bladder at least two-thirds of arm circumference
 - width of cuff to be two-thirds of arm length
 - applied as high up arm as possible.
5. SBP should be estimated first by palpation of brachial artery to avoid a low reading due to the auscultatory gap.
6. Let the mercury drop steadily at rate of 2 mm / sec - as a faster drop can cause a falsely low reading of DBP.
7. Read DBP at disappearance of sound (Korotkoff phase V).
8. Take average of two readings. If the final readings differ by more than 5 mmHg, additional readings should be obtained. Avoid too many readings at one sitting, as this may lead to venous congestion and falsely high BP readings.
9. Patient variables can affect blood pressure
 - abnormal heart rhythm
 - physical and mental state
 - circadian rhythm
 - concurrent medications used.

PRINCIPLES OF THERAPY

The following factors influence the modality and choice of treatment:

Age

In the elderly, especially those > 65 years of age,

one should "start low and go slow" in the treatment of hypertension. Avoid drugs that may cause postural hypotension in this age group, because of the risk of falls.

Severity

In the mild, elderly hypertensive, one may be content with just instituting non-pharmacological modalities of treatment and regular monitoring of blood pressure. On the other hand, a patient with severe hypertension may require combination drug therapy from the outset.

Presence of end-organ damage

One may have to start treatment immediately in a newly diagnosed case of hypertension who has evidence of target organ damage. Evidence of significant end organ damage includes the presence of:

- hypertensive retinopathy
- left ventricular hypertrophy on CXR
- left ventricular strain pattern on ECG
- significant proteinuria (24 hr Urinary Total Protein > 6g/L or labstix > 3+).

Presence of other cardiovascular risk factors

These include smoking, obesity, hypercholesterolaemia, diabetes mellitus and sedentary lifestyle. For instance, it may be appropriate to start treatment in a male smoker of 35 years with an average DBP of 95 mmHg and a family history of hypertension. It is also appropriate to ignore a BP of 160/100 mmHg in an otherwise well person of 76 years with severe postural instability.

Presence of concurrent disease

Concurrent disease may influence the choice of drug therapy. Table 3 offers a general guide.

Compliance

To ensure compliance

- keep drug regime simple
- use minimum number and type of drugs
- use minimum number of doses per day
- avoid odd dosages that require either many tablets of the same drug or half tablets.

Table 3: Anti-hypertensive drugs in Concurrent Diseases

Disease	Drug of choice	Avoid
Diabetes mellitus	ACE Inhibitors, Calcium channel blockers	Thiazides, β -blockers (in IDDM)
Ischaemic heart disease	β -blockers, Calcium channel blockers	Hydrallazine (the tachycardia induced may precipitate angina)
Asthma / COLD		β -blockers
Congestive heart failure	ACE Inhibitors, Prazosin, Hydrallazine	β -blockers
Migraine	Propranolol	Nifedipine
Gout		Thiazides

INVESTIGATIONS

In all cases, some baseline investigations are recommended. These should be done upon diagnosis and repeated at one to three yearly intervals according to the initial results:

- Serum electrolytes and creatinine
- Fasting blood sugar
- Fasting triglycerides and cholesterol levels
- Serum uric acid - if patient is to be on thiazide diuretics
- Urinalysis
- Electrocardiogram (ECG)
- Chest Xray
- KUB Xray.

MANAGEMENT

Newly diagnosed hypertensive

The management depends on the age and severity of hypertension. In the young patient a secondary cause needs to be excluded.

Young hypertensive

- Taken generally as those < 40-45 years.
- Use diastolic BP > 95 mmHg as a guide to initiate treatment.
- In a *mild* hypertensive:
 - observe 3-6 months with nonpharmacological treatment.
 - after observation period:
 - if DBP > 95 mmHg still, start drug treatment
 - if DBP 90-94 mmHg in presence of 2 or more risk factors, start drug treatment.
- In a *moderate* hypertensive – start with non-pharmacological and monotherapy.

- In a *severe* hypertensive – initiate drug treatment immediately; may need two drugs from the outset.

- Baseline investigations and 24 hours urine VMA in all these cases.
- Other investigations to exclude secondary causes of hypertension if suspected on clinical grounds.
- There is no need to include IVU as a routine investigation in the young hypertensive, because of its low positive yield.

Elderly hypertensive

- Taken generally as those > 65 years of age.
- Treatment usually indicated if BP > 160/95 after 3-6 months of observation.
- *Standing blood pressure.* The standing blood pressure is more important than the sitting blood pressure. One should not be overzealous in treatment and not cause too drastic a drop in the blood pressure, as there is the risk of giddiness, falls and even strokes when treating hypertensives of this age group. The blood pressure should generally be maintained around 140-160/90 mmHg.
- In this age group also, one should remember other associated medical conditions which can influence the choice of therapy.

Isolated systolic hypertension

- This is defined as Systolic BP \geq 160 mmHg with a Diastolic BP < 90 mmHg. It is more commonly seen in the elderly.

- Studies have shown the benefit of keeping Systolic BP < 160 mmHg and have recommended drug treatment at levels beyond this. However, in the very old, one would be more cautious and monitor regularly and treat only if systolic BP is persistently more than 180 mmHg.
- Diuretics usually control isolated systolic hypertension satisfactorily in most patients. Beta-blockers, calcium channel blockers and ACE-inhibitors are also effective as monotherapy in the elderly.

Severe hypertension

- This is defined as diastolic BP > 115 mmHg. The level of the systolic blood pressure is not used in the definition, but generally would be considered to be severe when more than 200 mmHg. Having first detected the severe hypertensive, one should rest the patient for at least 5-10 minutes and then repeat blood pressure readings.
- If readings are repeatedly high, one should check for signs and symptoms of complications like hypertensive encephalopathy, impending stroke, transient ischaemic attack, angina pectoris or congestive cardiac failure. Presence of any of these in the severe hypertensive is an indication for immediate therapy at the clinic. One could use sublingual nifedipine 5-10 mg and rest the patient for half an hour before reviewing the blood pressure again.
- Refer the severe hypertensive with signs and symptoms to hospital for management after initial stabilization.
- Most cases of severe hypertension seen at the outpatient clinic are usually asymptomatic. It is usually seen in those with poor compliance or in chronic defaulters. In such cases, compliance to drug treatment should be stressed and dosages of medications may need to be reviewed. Rarely should sublingual nifedipine be instituted in such cases.
- If patients are seen on several occasions with severe, uncontrolled hypertension despite drug compliance, one should examine and investigate carefully to exclude secondary causes of hypertension.

It is wise to remember that one should be judicious in the use of sublingual nifedipine in the outpatient setting because of the potential problem of a precipitous drop in blood pressure leading to syncope or even stroke in the patient.

Chronic hypertensive

The most frequently encountered patient is one who is known to have chronic hypertension.

At each visit, the doctor should check on the following:

- compliance
- side-effects
- symptoms suggestive of complications of hypertension
- any other complaints
- check if the baseline investigations are due to be done
- review the medications and dosages.

If the blood pressure is stable, the patient can be seen at two-monthly to four-monthly intervals. If blood pressure is uncontrolled, review dosage, medication and compliance. See earlier (1-4 weeks).

NON-PHARMACOLOGICAL THERAPY

This is a very important aspect of management, and should be stressed to all patients and reinforced at regular intervals. The following should be advocated:

Quit smoking

Facts Smoking has been shown to aggravate hypertension. Smokers have 8 times the risk of developing CVA and 2 times the risk of coronary artery disease and sudden death.

What to do Doctors should emphasise to their patients to quit smoking. Reinforce the message at regular intervals. Make use of, and distribute, the Training and Health Education (THE) Department's "Anti-smoking" pamphlets to your patients. May need to refer to "Smoking Cessation Clinics" conducted by Youngberg Hospital and the Institute of Mental Health.

Weight reduction

Facts Blood pressure can drop by 2 mmHg for every 5 kg shed. Remember the possibility of falsely elevated readings in obese individuals where inappropriately small cuff sizes are used.

What to do Check height, weight and BMI. Advise patients on their target weight. Make use of the relevant pamphlets prepared by THE.

Low salt diet

Facts A high salt intake has been shown to raise blood pressure. It also limits the effectiveness of certain drugs. One should restrict intake to 1.5 - 2.5g (i.e. < 1/2 teaspoon) salt / day.

What to do Advise avoidance of canned, frozen or processed food. Advise avoidance of added table salt or use of soya sauce. Be aware of sodium content of food items and learn how to look at food labels.

Reduction of alcohol intake

Facts There is an increased risk of developing hypertension if one consumes more than 2 drinks per day.

What to do Take history of alcohol consumption in all hypertensive patients. Advise patients to take less than 1 oz (30 ml) of ethanol per day or 2 oz (60 ml) of 100 proof whiskey or 8 oz (240 ml) of wine or 24 oz (720 ml) of beer (i.e. 2-3 cans of beer) per day.

Regular exercise

Facts Sedentary lifestyles can increase the risk of cardiovascular morbidity in hypertensive patients. Exercise helps to reduce high blood pressure through weight reduction. In the mildly hypertensive, this may postpone the necessity for drug therapy.

What to do Regular exercise means at least 15-60 minutes of aerobic exercise done

at least three times per week. Patients with uncontrolled hypertension should not exercise vigorously and should consult their physician before embarking on any exercise programme.

PHARMACOLOGICAL THERAPY

All patients with diastolic pressure 105 mmHg or higher should have drug therapy. Urgency depends on the level and on the presence or absence of target organ damage. Cerebral haemorrhage, encephalopathy or left ventricular failure are emergencies. A diastolic blood pressure of 130 mmHg must be treated immediately, while a reading of 110 mmHg does not require such urgency.

Table 4 shows the dosages and side effects of anti-hypertensive drugs commonly used. The anti-hypertensive drugs available can be classified into five groups, namely:

- Diuretics, e.g. Hydrochlorothiazide, Natrilix
- Sympatholytics
 - centrally acting, e.g. methyldopa
 - β -blockers, e.g. propranolol
 - Peripherally acting e.g., prazosin.
- Vasodilators, e.g. hydralazine
- Calcium channel blockers e.g. nifedipine
- ACE inhibitors, e.g. captopril, enalapril.

Initial therapy of uncomplicated essential hypertension should be either a β -blocker or a thiazide diuretic in low dosage unless there are contraindications.

References:

1. Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure. The Fifth Report of the Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure (JNC V). Arch Intern Med 1993; 153:154-183.
2. Stott D J & Williams B O. Hypertension in the elderly. Update, 1 Apr 1988; 72:2078.
3. Seyer P et al. Management guidelines in essential hypertension. Report of the Second Working Party of the British Hypertension Society. Br Med J, 10 Apr 1993; 306:983-986.

Table 4: Antihypertensive drugs

Drug (Tablet Strength in mg)	Initial Dose	Maximum Dose	Important	Remarks
DIURETICS				
Hydrochlorothiazide (25)	25 mg OM	75 mg BD	Raise blood sugar, uric acid, lipid levels	Avoid in diabetics
Natrilix (Indapamide) (2.5)	2.5mg OM	2.5 mg OM	Nausea, headache, fatigue, orthostatic hypotension	Do not combine with diuretics; check serum potassium, uric acid
SYMPATHOLYTICS				
β-Blockers				
Propranolol (10, 40, 80)	10 mg BD	160 - 320 mg daily	fatigue, bronchospasm, parasthesia, impotence	Do not give in bronchial asthma; avoid in diabetics on insulin, in COLD and CCF
Atenolol (Tenormin) (50,100)	25 mg OM	100 mg OM	Similar to propranolol but less risk of bronchospasm Fewer CNS effects	Useful drug in young; easy compliance
Metoprolol tartrate (Betaloc)	50 mg OM	100 - 400 mg per day OM (/BD)	Same as propranolol	Avoid in asthma, CCF, heart block; expensive
Centrally acting agent				
Methyldopa (Aldomet) (125, 250)	125 mg BD	3 g / day	Depression; drowsiness, impotence	Drug of choice in eclampsia
Peripherally acting agent				
Prazosin (Minipress) (1, 5)	0.5 mg OM	20 mg OM	Headache, giddiness, oedema, rash, impotence	Beware of first dose hypotensive effect; be careful in elderly; increase dose slowly; take at bedtime.
VASODILATOR				
Hydrallazine (10, 25, 50)	10 mg BD	100 mg BD	Headache, palpitations, oedema, SLE	Cheap
CALCIUM CHANNEL BLOCKER				
Nifedipine (Adalat) (5, 10)	5 mg BD	20 mg TDS	Headache, nausea,	Transient side effects; useful in patients with coronary artery disease.
ACE INHIBITORS				
Captopril (Capoten) (25)	6.25 mg BD	50 mg TDS	Chronic cough; rashes,	Useful in diabetics with CCF or micro-albuminuria
Enalapril (Renitec) (5, 10, 20)	10 mg OM	40 mg per day	dizziness, headache, diarrhoea, cough fatigue, hypotension, angioneurotic oedema	Use lower dose in or avoid altogether.



NEW BOOK ANNOUNCEMENTS

WOMEN'S HEALTH AND HUMAN RIGHTS

The Promotion and Protection of Women's Health through International Human Rights Law

R J Cook

1994, vii + 62 pages

ISBN 92 4 15616161

This book explores the ways in which international treaties on human rights can be used as a mechanism for improving the health of women. Throughout the book, a special effort is made to point out the many new lines of action that arise when the health risks associated with women's low status are viewed as a violation of international human rights agreements.

The book has six chapters. The first describes the evolution of international human rights relevant to women's health and shows how specific universal and regional international instruments can provide a framework for understanding the nature of State obligations to improve women's health. Evidence of the pervasive neglect of women's health is reviewed in the second chapter, which points to a number of health risks, present from birth through old age, that are uniquely experienced by women and closely linked to society's tendency to "devalue" their importance. Chapter three considers the key questions of how

compliance with a right is determined and how breach of the right can be established.

The fourth and most extensive chapter summarizes each of the main health-related rights of women embodied in the international treaties and explains how these rights can be invoked to provide relief, remedy, and preventive interventions. The discussion begins with the right to freedom from all forms of discrimination, and then addresses rights to survival, liberty, and security of the person, the right to family and private life, rights regarding information and education, the right to health and health care, and the right to the benefits of scientific progress. The remaining chapters discuss some of the judicial processes available to promote women's health and issue a call for greater initiative in the use of these mechanisms to identify cases when the low health status of women constitutes a violation of human rights and to enforce legal remedies for such injustice.

HEALTH PROMOTION AND COMMUNITY ACTION FOR HEALTH IN DEVELOPING COUNTRIES

H S Dhillon and L Philip

1994, vii + 122 pages

ISBN 92 4 156167 X

This book explains how the tools of health promotion can be used to encourage community action for health, foster healthy lifestyles, and create conditions conducive to good health, even when resources are severely limited.

The first chapter reviews the origins and evolution of health promotion as a strategy, in line with the principles of primary health care, for reaching disadvantaged and underserved populations and for giving people greater control over conditions affecting their health. Chapter two explains the purpose and aims of health promotion and outlines three principal strategies for action. These involve advocacy for public policies that support health, empowerment of people to make decisions for health,

and social support for health.

The third chapter, which constitutes the core of the book, presents and discusses over 50 case studies of health promotion activities in different parts of the world. These case studies illustrate successful approaches ranging from the training of "little doctors" to the use of land-sharing schemes to upgrade urban slums, from earn-while-you-learn programmes for improved literacy to the use of comic magazines to promote hygiene in schools. The final chapter, on challenges for future action, identifies six issues crucial to making health promotion a reality in developing countries.

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 where 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 unit in parentheses.

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

- * Results: Present results in logical sequence in the text, tables and illustrations.

