

COLLEGE OF FAMILY PHYSICIANS SINGAPORE



# The SINGAPORE FAMILY PHYSICIAN



## **AMBULATORY PAEDIATRICS**

- Chronic cough
- Exanthemas and Skin problems
- Childhood injuries
- Asthma
- Behavioural problems

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## — APOLOGY —

The Editorial Board would like to extend their apology to Dr Lim Lean Huat for inadvertently omitting his name in the Editorial Board and in the Publications Committee. Vol XXI No. 3 July/Sep 1995 issue.

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### CONTENTS

Page

#### THE FIFTEENTH COUNCIL 1995/1997

##### EDITORIAL

- The Role of The Family Physician in Paediatric Care  
*L G Goh* ..... 172

##### THEME EDITORIAL

- The Uniqueness of Paediatrics  
*M M Thein*..... 175

##### FAMILY MEDICINE PAEDIATRICS

- Exanthemas in Infants and Children  
*H B Wong* ..... 178  
Chronic Cough in Children  
*S C Quek, S T Quek, M M Thein, G Connett* ..... 185  
Management of Childhood Asthma  
*O M Chay* ..... 189  
Emotional and Behavioural Problems in Childhood  
*Y M Cai* ..... 193  
Skin Problems in Childhood  
*Y C Giam*..... 196  
Childhood Injuries and Their Prevention  
*M M Thein*..... 201

##### ORIGINAL ARTICLES

- Pubertal Changes Among Singapore Adolescents  
*U Rajan, K Lyen, V Dramusic* ..... 206  
"Alternative Medicine" -- A Valid Alternative?  
*T C Quah*..... 217  
Health and Disease Screening  
*H C Lau*..... 222

##### PATIENT EDUCATION

- Teaching Discipline to Your Child  
*C B Tan* ..... 229

##### HOME STUDY SECTION

- Case Reports -- Reading and Writing Them  
*L G Goh* ..... 231  
ECG Quiz  
*W L Ng* ..... 235

##### OBITUARY

- Dr Lim Boon Keng ..... 236

##### NEW BOOK ANNOUNCEMENTS..... 239

##### INSTRUCTIONS FOR AUTHORS ..... 241

## THE ROLE OF THE FAMILY PHYSICIAN IN PAEDIATRIC CARE

*The family physician must be sensitive to the interactions between the child, his family and his environment which affect the child's physical and emotional health.*

*Lourdes M Leuterio, 1980.*

A paper by Dr Lourdes Leuterio in *Mother and Child* in 1980<sup>1</sup> described comprehensively the role of the family physician in paediatric care in developing countries. What he wrote still largely holds true today. This editorial revisits the subject in the context of present-day Singapore.

The family physician has several characteristics. He provides primary and continuing care, care of the whole person of all ages, preventive, curative and rehabilitative care; he functions within the economic, cultural and social environment and resources available to his patient and family.

In the context of paediatric care, the family physician has an evolving responsibility that matches the developmental milestones of his growing patient. Five periods can be recognised. His care begins with the preconceptual period and goes through the stages of antenatal, infancy and preschool, school-age and adolescent periods.

### **Preconceptual care**

The tasks of the family physician during the preconceptual period are health maintenance in the mother, family planning advice, genetic counselling and premarital counselling. The objective of these tasks is to promote a better outcome of pregnancy to couples who are physically and emotionally prepared for child-bearing and subsequent child care.

### **Antenatal care**

In the antenatal period the tasks of the family physician are to identify the high risk pregnancy, to identify and treat nutritional problems in the mother, to prevent maternal infections that may be damaging to the foetus, and to prescribe carefully.

The family physician needs to identify factors that increase the possibility of abortion, foetal death, premature delivery, low birth weight, congenital defects and fatal or debilitating consequences to the infant.

In present-day Singapore, malnutrition is seldom encountered, thanks to the improved economic status of the country. Nevertheless, there is still a place for counselling the mother on an optimal diet: protein, calcium and folic acid requirements increase in pregnancy. Maternal conditions like diabetes mellitus and hypertension need to be controlled by diet and other means. Uncontrolled diabetes mellitus in pregnancy results in increased risk of congenital abnormalities and foetal death.

Almost any severe infection may result in foetal death or premature labour. There are, however, some diseases which may affect the foetus more severely than the mother. Maternal rubella in the first trimester is a case in point. With the immunisation of all children against mumps, measles and rubella, the danger from such infections should now be a thing of the past.

The importance of an awareness of the adverse effects of certain drugs on the foetus in different stages of growth cannot be overemphasised. Untoward effects of drugs on the foetus are continually being reported and the physician must

therefore always be updated in this regard. Drugs taken in the first trimester of pregnancy may cause abortion or congenital defects. Those taken in the last weeks of pregnancy may cause problems in the neonate.

#### **Care of the infant and preschool child**

The tasks of the family physician during the infancy and preschool period are the identification of high risk children, anticipatory guidance, developmental assessment and immunisation.

Medical or social problems in the child or his family may endanger the child's health or interfere with his normal growth and development. Children of teenage mothers or single mothers are at risk. These must be followed up closely.

Anticipatory guidance is an essential component of well-child care. The family physician should assess the parents' skills in child care, guide them in the care of the normal infant, identify potential problems and follow up on these in subsequent visits. With the increase in small and nuclear families, parents may not have the experience or resources of child-rearing readily at hand: so the family physician needs to be a ready resource when needed.

The family physician should follow up the developmental milestones and discuss these with the parents to reassure them of the child's normality or identify possible delay in development. He should also discuss the precautions to take and play activities to encourage based on the child's developmental achievements. For example, when the child is able to grasp objects and bring them to his mouth, the parents should be instructed to avoid toys that have small detachable parts. The Denver Developmental Screening Tests developed for Singapore provide a systematic way of assessing development.

Immunisations are essential to any programme of preventive paediatrics. The family physician needs to check with the parents to ensure the programme is being followed. Where there is a delay from illness or oversight, parents should be reminded of the outstanding injections. The details of what needs to be done for missed injections have been described in an earlier paper on this subject<sup>2</sup>.

#### **Care of the school-age child**

The tasks of the family physician in the care of the school-age child are health appraisal and supervision, and evaluation and management of school problems. Singapore has a centralised preventive school health service that screens, on a national basis, health problems and defects that require further attention. The family physician plays a continuing and comprehensive role in the care of the child. He may be asked by parents and teachers to deal with physical or behavioural problems of children at school. Poor performance in school may be due to medical problems or to problems in the family situation. The education of children, parents and teachers in injury prevention is important.

#### **Care of the adolescent**

The tasks of the family physician in adolescent care are adolescent counselling and parental counselling. Adolescence, by definition, is a period of change from childhood to adulthood. As expected, it is a period of turbulence. The child, growing up, has several psychological and social developmental tasks to go through, namely, being comfortable with changing physical structure and establishing a self image, establishing independence, establishing an adult sexual role in preparation for marriage and parenthood, and making career and vocational choices. Chronologically, adolescence can be divided into three phases: (a) early adolescence, from 10-14 years, (b) middle adolescence, from 15-17 years and (c) late adolescence, from 18-19 years. This concept of distinct phases of psychosocial growth and development is important because it emphasises the differences between early and late adolescence. The psychosocial and social needs, as well as the difficulties and concerns, of 12-year-olds are different from those of 18-year-olds.

Early adolescence is a period of pubertal changes. Initial efforts to be independent of the family may be seen. During early adolescence, the preoccupation of the child is in coping with problems of self-image and identity crisis. There is a need to be comfortable with one's body. The secondary sexual characteristics and skin changes are a source of anxiety for many of them.

During middle adolescence, the child forms

relationships outside the family with both peers and adults. Such exposure may encourage adolescents to "try on" different styles and philosophies of life until they find what is comfortable to them. It is during this phase that they will be rebellious. Parents need to be assured that this is normal behaviour. Some surveillance is necessary to make sure they do not get mixed up with bad company.

In late adolescence, the individual is less rebellious and is more able to engage in a dialogue with parents. The peer group becomes much less important than the development of a close, intimate relationship with a member of the opposite sex. Issues of career decisions become important. They seek economic and social stability and strive to develop a workable value system.

The family physician needs to provide the adolescent with a non-threatening atmosphere for the latter to feel comfortable to talk about his or her problems. The doctor needs to balance between being too authoritarian and too friendly, as the adolescent will feel uncomfortable with either of these behaviours.

It is also important to recognise that whilst the minority may run into trouble with teenage pregnancy, sexually transmitted diseases, risky behaviour and substance abuse, the majority do not<sup>3</sup>. They generally enjoy good physical health. They are more concerned about the commonplace issues of friendships, relationships with parents

and other adults, personal appearance and emotional stress. Timely advice and reassurance in these areas may be all that they need.

### **Training**

The three-month rotating hospital posting, supplemented by exposure in the primary care setting, in the family medicine training programme that is available today helps to provide the trainee family physician with the headstart of knowledge and skills. He or she needs to continue to build on these in the subsequent years of practice.

### **Conclusion**

The family physician plays an important role in providing preventive, curative and counselling care to his paediatric patients as they grow from childhood to adulthood. He needs clinical skills, patient education and counselling skills to perform this wide ranging role well.

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*A/Prof Goh Lee Gan*



## THE UNIQUENESS OF PAEDIATRICS

*"We are guilty of many errors and many faults,  
but our worse crime is abandoning the children,  
neglecting the fountain of life.  
Many of the things we need can wait.  
The Child cannot.  
Right now is the time.  
His bones are being formed,  
His blood is being made,  
And his senses are being developed.  
To him we cannot answer, "Tomorrow".  
His name is TODAY."*

*Gabriela Mistral  
Nobel Prize Winning Poet from Chile*

The quotation underscores the uniqueness of paediatric care. The paediatric patient cannot wait. His body is growing day by day. Any setback will have long-lasting consequences. It is our responsibility to clear any barriers that may prevent him from reaching his maximal potential -- in body, mind and spirit. In this context, we should pay particular attention to several aspects of care.

### BREAST FEEDING

Breast feeding should be promoted to every mother. The mother should breastfeed the child for at least 3-6 months. Breast milk is ideal. It transmits antibodies against respiratory and gastrointestinal diseases to the baby. It also promotes parent-child bonding. Premature babies should also be given breast milk. This helps in brain growth and development besides protecting against disease.

Ways to foster breastfeeding include informing all pregnant women how and why to breastfeed, helping mothers to initiate breastfeeding soon after birth, encouraging breastfeeding on demand, and giving the infant no food or drink other than breast milk unless it is medically indicated. These were the findings of the PROALMA programme

in Honduras and reported in the International Journal of Obstetrics and Gynaecology, 1990<sup>1</sup>. Such measures may not be enough. Working mothers need support to continue to breastfeed, from employers, support groups and the health services. Health practitioners everywhere have an important part to play in promoting and supporting breastfeeding.

It is pertinent to mention here that it is a misconception that supplementary fluids are necessary, particularly in hot climates. It should not be done: supplementing breast milk in the first six months is unnecessary and may be harmful. Given the low concentration of sodium, chloride, potassium and nitrogen in breast milk, only a relatively small amount of fluid intake is needed for excretion of waste products. Calculations indicate that healthy infants who consume enough breast milk to satisfy their energy needs receive, with a considerable margin of safety, enough fluid to satisfy their requirements, even in hot and dry environments<sup>2,3</sup>. These calculations have been validated by six clinical studies<sup>4</sup>.

An editorial in the British Medical Journal addressed the importance of human milk in the preterm baby. Available evidence suggests that low birthweight babies fed human milk tolerate it more quickly than formula, are less prone to necrotising enterocolitis, and have fewer bacterial infections<sup>5</sup>. If the mother's own milk is used, they will probably be shorter in height than babies fed with formula, but more intelligent at the age of seven<sup>6</sup>. These findings are persuasive enough for encouraging and supporting all mothers who choose to breast feed their preterm babies.

### GROWTH AND DEVELOPMENT

Growth and development is crucial in the first few years of life. All children should be monitored for their growth and development. Doctors looking

after young children should be conversant with growth charting as well as developmental assessments. Any delay should be followed up and referred to secondary centres where necessary.

### **PARENT-CHILD BONDING**

Parent-child bonding is important for mental health and development. The strongest bonding takes place in the first few weeks of life. Early childhood is a period where the child needs a lot of stimulation and a loving environment.

### **EMOTIONAL HEALTH**

Failure to thrive may also be due to emotional deprivation. The neglected child, the child from a broken home, and the child living in a turbulent family environment may not grow properly. The doctor needs to be able to pick up children who are not thriving for closer attention.

### **INJURY PREVENTION**

Injuries cause unnecessary pain, disabilities and sometimes death. There is a case to be made for paying attention to the prevention of such injuries. We must take action to educate parents and carers to keep the home and the playground safe for children. We must also keep them safe on the roads.

### **CHILDHOOD INFECTIONS**

The young child has poor defences to infections. In the initial months, maternal antibodies are protective but these soon wane, leaving the child vulnerable. Childhood infections such as poliomyelitis, diphtheria, pertussis, tetanus and tuberculosis used to claim many lives and maim large numbers too. Thanks to immunisation, many lives are saved and disability reduced. Parents need to be impressed on the importance of immunisation.

Presentation of infections may be nonspecific and therefore give a false sense of security. Thus, diagnosis of acute meningitis and acute appendicitis may be missed for some time with disastrous consequences unless there is a high

index of suspicion.

### **EARLY PREVENTIVE INTERVENTION**

Hypertension, ischaemic heart disease and obesity may have their roots as early as childhood. The need of preventing these diseases through behaviour modification is now clear. Blood pressure rises with age in children and adults. In one editorial<sup>7</sup>, it was stated that in children, the rise closely relates to growth and to skeletal and sexual maturation. Adolescents with higher blood pressure are heavier and have as children grown the fastest; as adults, they show the greatest increase of blood pressure with age and are more likely to develop hypertension and coronary heart disease. In adults, the rate of increase of blood pressure relates to earlier blood pressure.

Even osteoporosis has a case for early intervention. Osteoporosis has long been considered a disease of the elderly; however, there is now a general agreement that predisposition begins in childhood and adolescence; thus, rational approaches to prevention of the disease should be started during childhood and adolescence. Indeed, by determining peak bone mass, events occurring in the first two decades of life may determine in large part the subsequent risk of osteoporosis. Attention has thus been focused on the physiology of bone mass accumulation during growth, including the role of environmental factors such as dietary calcium and exercise. Because their patients are at this particular time of life, when peak bone mass is being achieved, doctors are in a critical position to affect changes in the long-term risk of osteoporosis in their female and male paediatric patients<sup>8</sup>.

Educating parents and caregivers of children on proper diet and adoption of healthy lifestyles including exercise from a young age is crucial in giving our children a good head start.

### **CONCLUSION**

The paediatric patient has needs that cannot wait. We must satisfy his needs now and do the right things. This is a challenge to all practitioners who look after children.

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*Dr Myint Myint Thein*



## EXANTHEMAS IN INFANTS AND CHILDREN

*HB Wong, MBBS, FRCP (Lond), FRCP (Edin),  
FRCP (Glas), FRACP, DCH (Lond), PPA, PJG, AM*

### INTRODUCTION

Exanthemas are skin lesions in the form of rashes which affect the superficial blood vessels of the skin and as such they are visible lesions of the blood vascular system very much like the fundus which is the visible structure of the nervous system. However, in the case of the fundus, only a doctor may look at it, but the vascular lesions of the skin can be seen also by the layman who knows instantly that something is wrong with his health. The blood vessels of the skin comprise a rich plexus<sup>1</sup> which not only supplies the skin structures, but also plays a large part in heat dissipation in temperature control. Hence, any 'vasculosis' or 'vasculitis' in the body often affects the skin vessels. In the 'vasculoses', the rash can be blanched by pressure while in the 'vasculitides', the rash cannot be obliterated by pressure. Therefore, it is important to realise that rashes are seldom the only lesion, as the aetiologic cause can affect blood vessels elsewhere other than in the skin, with lesions also outside skin blood vessels. Therefore,

the doctor must look beyond the rash in formulating a diagnosis. Furthermore, it is obvious also that whatever the aetiologic cause of the rash, be it an infective organism, a drug or immunologic trigger factor, the rash will vary with the response of the host. Even in a particular infection causing exanthemas, the characteristics of the rash, its onset, its distribution, its appearance, etc. may not be homogenous, as each host is different from any other host. In other words, although we describe the exanthemas of a particular disease as "characteristic" for that disease, genetic host variation often causes 'atypical' appearances of the rash, which must be taken into consideration in any one case. The 'vasculosis' or 'vasculitis' causing the rash is the result of many microspic and chemical responses of the host to the offending cause such as vascular dilatation, chemotaxis of neutrophils, lymphocytes, monocytes with their cytokines, exudation of plasma from the blood vessels due to damaged endothelium of the vessels and also causing damage to the other structures of the skin resulting in vesicle formation, petechiae, bruises, denudation of skin, etc.

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*Emeritus Professor, National University of Singapore*

*Professorial Fellow, National University of Singapore*

*Visiting Consultant, National University Hospital*

*Consultant Paediatrician and Medical Geneticist,  
Paediatric Clinic, Thomson Medical Centre*

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Viruses formed a large part of the causative organisms of exanthemata even before the actual viruses were characterised so that the diseases were described one by one chronologically and named first, second, third, etc. Because of this historic evolution, often the causes are still mentioned in numerical order<sup>2</sup>. In the light of the discovery of the actual viruses causing these 'numerical diseases', it is worthwhile mentioning the present status, very much as we do for the various blood clotting factors (Table 1).

**Table 1: "Numerical Diseases" and Their Causative Agents**

Numerical disease	Disease infection	Causative virus
First	Measles	Measles virus
Second	German measles	Rubella virus
Third	Chicken pox	Varicella-zoster virus
Fourth	Now excluded because, it was realised that it was not an accurate description	
Fifth	Erythema infectiosum	Parvovirus B29
Sixth	Roseola infantum	Herpes virus-6 Herpes virus-7

As the causes of exanthemas are so numerous, it is more important to distinguish the more relevant ones in terms of how common some of them are and how serious they are in terms of causing illness or even death, if not diagnosed early enough for management. Therefore, the discussion will take these two factors into consideration.

## VIRAL CAUSES

Infective organisms which produce acute exanthemas include viruses and bacteria. Stress will be placed mainly in terms of their importance.

### Measles

Measles is now uncommon in Singapore because of near-universal immunisation usually at 15 months of age, and because of its relative rarity now, young doctors may miss such cases. The prodrome (before appearance of the rash) lasts for 4-5 days with upper respiratory tract symptoms of coryza, smaller eyes, high fever and irritable cough. The rash when it appears is maculopapular, first in the face and neck, and then gradually spreading to the body and extremities. In the upper part of the body, the rash is often confluent while in the legs

it is discrete. When the rash appears, the fever is even higher, before it gradually subsides after a few days. The rash desquamates leaving a pigmented brown residuum. The pathognomonic sign is the Koplik spots in the oral mucosa which appear during the prodrome.

Variants of measles include the following:-

- (a) modified measles
- (b) atypical measles

Modified measles is a milder form of the typical measles and may occur later after immunisation, but Koplik spots are still visible. This creates a problem as to whether a second dose should be given to all children at 6 years of age.

Atypical measles is severe and used to occur when killed vaccine was used initially but this has now been discarded for the live attenuated measles vaccine. Pneumonia and pleural effusions may supervene and rash may be haemorrhagic. Koplik spots may be absent. Atypical measles may occur in patients who are immunocompromised because of a congenital immunodeficiency disease or it may be acquired as in HIV or iatrogenically during cancer treatment. It can also occur uncommonly in a few who have been immunised with live attenuated vaccine.

### Rubella

Rubella is quite different from measles. It is a mild disease and may be even so mild that occasionally it is not even noticed by the patient that he is ill. The rash appears very shortly or simultaneously with the fever and it is discrete, starting from above and extending to the body and extremities. Prominent suboccipital glands are present and petechial rash may be seen in the palate with occasional arthralgia/arthritis. Hence, its importance does not lie with management of the patient but its possibility of transmission to a mother in early pregnancy and who is non-immune. Congenital rubella in the foetus may occur with tragic results. Hence, such a mother should have acute and convalescent serum samples taken to ascertain whether she has contracted rubella from the patient. What is most disconcerting is that a few rare cases have been reported of pregnant mothers immunised earlier on with rubella vaccine with positive rubella IgG and yet contracting

rubella and passing it on to their foetuses<sup>3</sup>.

### Varicella (Chicken pox)

Varicella virus is one of the human herpes viruses and is an extremely infectious exanthema. It is also unique in that the layman can diagnose chicken pox with almost equal facility and accuracy as the doctor. The maculopapular rash appears almost simultaneously as the fever, starting in the scalp and descending to the body and the extremities, and within 24 hours forms the typical recognisable vesicles and in the next few days successive crops may repeat this cycle. It is usually a benign infection in a child who needs only supportive management. However, Singaporeans view it as an important nuisance as it disrupts the child's schooling and he is disallowed from attending school till the exanthema is no longer visible to the school teachers. Parents usually request for acyclovir treatment to reduce the course of the infection. However, in infants and children with severe illness or immunodeficiency due to use of steroids and immunosuppressives such as in cancer, nephrotic syndrome, etc., specific anti-varicella IgG may be needed to prevent or ameliorate the disease on exposure. There is no doubt that once the varicella vaccine is registered in Singapore, parents would request it to be part of the routine immunisation schedule for their children.

### Roseola infantum (Exanthema subitum)

Roseola infantum affects mainly infants from 6 months of age and children less than 3 years. The clinical profile mimics measles very closely, i.e. a prodrome of fever, blocked nose and cough for 4-5 days and then a maculopapular rash appears. However, there are features which clearly distinguish it from measles, i.e. in roseola:-

- (a) the signs and symptoms during the prodrome are less severe,
- (b) there are no Koplik spots,
- (c) when the rash appears, the fever begins to settle and the patient is much better,
- (d) the rash appears on the trunk first and then spreads to face and extremities.

Very rarely aseptic meningitis or encephalitis can occur. The Singaporean layman considers it as measles and it is important to inform the parents that it is not measles, otherwise they will refuse

measles immunisation as the child "already had measles". They should be told that it is 'false measles' and is due to a totally different virus. This virus belongs to the herpes group of viruses and is chiefly due to human herpes virus-6<sup>4</sup> (HHV-6) although recently, a newly discovered herpes group of viruses, HHV-7, can also cause roseola. Table 2 summarises the human herpes viruses and their propensity to cause exanthemas.

**Table 2: Human Herpes Viruses (HHV)**

Numerical	Virus	Rash
1	Herpes simplex 1	Usually only in congenital infection
2	Herpes simplex 2	
3	Varicella-Zoster	Typical rash
4	Cytomegalovirus (CMV)	Usually only in congenital infection
5	Epstein-Barr (E-B)	Usually when given ampicillin
6	Roseola	Typical rash
7	Roseola	Typical rash

### Erythema infectiosum

Erythema infectiosum is the fifth disease (Table 1) and is caused by parvovirus B29<sup>5</sup>. Erythema infectiosum is not common in Singapore but when it occurs, it is easily recognised. Systemic symptoms are mild in most cases and the rash is the first sign to be noticed, occurring on the cheeks with circumoral pallor - the "slapped cheek" sign. The rash is red and slightly raised. One to two days later, the rash is seen in the extremities and spreading to the trunk and this may last for a week when it begins to fade leaving a lace-work pattern. This is the second stage. The third stage comprises recurrences off and on due to irritants such as sunlight, trauma or changes in temperature. Most times, the disease is benign but in a few patients, especially those with chronic haemolytic anaemia such as thalassaemia, severe anaemia with



reticulocytopenia may occur. These periods of erythroblastopenia may need blood transfusions. Rarely, there may be depression of leucocytes as well as platelets, i.e. a pancytopenia. Erythema infectiosum can affect children at any age but is most often seen in children of school age.

### **Enteroviruses**

Enteroviruses belong to the family of picornaviruses and comprise echoviruses, coxsackie viruses and poliovirus. They cause intestinal infections as well as extra-intestinal lesions such as aseptic meningitis, pleurodynia, myocarditis, pericarditis, parotitis, laryngotracheobronchitis, hepatitis, pancreatitis, encephalitis and others. Many of them also cause exanthemas. However, these exanthemas do not produce any constant features and are highly variable. The enteroviruses are one of the commonest causes of exanthemas.

One type is fairly constant and is referred to as 'hand-foot-mouth' disease, caused by a coxsackie type of enterovirus. It starts off as a non-specific fever with sore throat, anorexia and tiredness followed by vesicles in the mouth which give rise to oral ulcers. At the same time a rash develops on the hands and feet and in the perineum. As there are many subtypes of Coxsackie virus, more than one attack may occur.

### **Dengue haemorrhagic fever**

Dengue haemorrhagic fever (DHF) often gives rise to various types of rash but one variety is quite typical, i.e. a generalised erythema all over the body. Pressure in these areas will cause blanching so that on removal of the examining hand, the blanched areas bring out the imprint of the fingers of the examiner<sup>6</sup>.

In many of the above exanthemas caused by viruses, the clinical picture supplemented by the history may be sufficient for correct diagnosis. However, on occasions, laboratory investigations may have to be carried out. These will usually be a leucopenia with occasional slight fall in the platelet count. In others, viral culture or serology may be necessary for obtaining the diagnosis. In many of the above viral infections, serum IgM-specific levels are present.

## **BACTERIAL CAUSES**

### **Meningococcaemia**

Meningococcaemia is not common but when it occurs, it is an emergency. The skin rash occurs in about two-thirds of cases and appears as early as 24 hours after onset of the illness. Hence, the rash is an important sign pointing towards the diagnosis. The rash can be of any type but usually petechial rashes are important and are more common in the lower extremities. There may be concomitant signs of neck rigidity, tense fontanelle and positive Kernig's. Once meningococcaemia is suspected, an injection of penicillin should be given stat before sending the baby to hospital as this early treatment will result in a better prognosis.

### **Scarlet fever**

Scarlet fever due to erythrogenic toxins produced by Group A beta-hemolytic streptococcus is not common in Singapore. Shortly after onset of fever, there is a generalised erythema over the body and face but sparing the circumoral area. The rash is slightly raised and passing the hand over the rash gives a sensation of sand paper. The oral mucosa is red with a strawberry tongue. As the rash fades over 4-5 days, the skin desquamates. Penicillin is the drug of choice.

### **Staphylococcal Scalded Skin Syndrome**

The staphylococcal scalded skin syndrome (SSSS) is a staphylococcal septicaemia occurring in infants and young children from foci in the nasopharynx, umbilicus, urinary tract or conjunctivae. The organism is one which produces epidermolytic toxins which cause blisters and disruption of the epidermis at the granular layer. Clinically, there is fever and irritability and pain on touching the skin which demonstrates a generalised erythema, developing blisters within 24 hours and these blisters come together causing the epidermis to flake off leaving a red tender skin below. Rubbing the skin causes flaking of the epidermis and this is referred to as Nikolsky's Sign. Treatment comprises the use of appropriate antibiotics.

### **Staphylococcal Toxic Shock Syndrome**

Staphylococcal Shock Syndrome (SSS) was originally described in tampon use in adult females. Since then SSS has been described in girls before

menarche due to severe staphylococcal infection where the staphylococcus produces certain proteins which can cause hypotension and shock. The focus of infection is usually in the upper respiratory tract, i.e. bacterial tracheitis, tracheobronchitis, sinusitis and infection after burns. Fever is abrupt in onset with myalgia, vomiting, diarrhoea, headache and hypotension. Treatment includes appropriate antibiotics and supportive measures.

For all the above bacterial exanthemas, blood counts will reveal a leucocytosis with raised polymorphs and ESR, and appropriate cultures will reveal the causative organism.

### IMMUNOLOGIC CAUSES

There are many immunologic causes of skin exanthemas because the blood vascular system is a common battle-ground for immunologic reactions. In fact most of the viral and bacterial causes of skin exanthemas discussed above produce the rash via immunologic means. All the conditions usually ascribed to vasculitides may produce skin rashes. However, only the more common ones will be discussed here.

#### Kawasaki disease

Kawasaki disease was first described by Kawasaki in Japan in 1967. Its cause is unknown but it is most likely to be an immunologic reaction to a large number of suspected triggers as disparate as propionibacterium acnes, spirochetes, rickettsia, retroviruses, house dust mites and even rug shampoo<sup>8</sup>. As its exact cause is unknown, there is no golden standard for its diagnosis and needs certain criteria, viz.

- (a) high fever for 5 days or more,
- (b) bilateral conjunctivitis,
- (c) redness of oral cavity including a strawberry tongue,
- (d) erythematous exanthema of skin, and
- (e) cervical lymphadenopathy,

often with swelling of the palms and soles, with redness and peeling of the skin of the finger and toe pulps some time during the illness.

It affects children at all ages and has also been described in adults but is chiefly seen in children

up to 3 years, with the most severe cases occurring below the age of one year. It is a form of immunologic vasculitis and the most serious pathology is that involving the coronary arteries, i.e. a coronary arteritis, which is seen in about 20% of patients and can be detected by 2-D echocardiography.

Treatment with aspirin and I/V IgG aids in the resolution of the lesions.

#### Other vasculitides

There are many other immunologic vasculitides which produce exanthema of the skin, and in children, Henoch-Schonlein purpura is one of the commonest. The purpuric rash starts off as urticaria in the region of the buttocks and spreads to the lower extremities. The appearance and distribution of the rash is often typical and the diagnosis usually confirmed by associated abdominal pain due to vasculitis of the abdominal vessels especially those supplying the ileum, so that this often mimics acute appendicitis. Arthritis or arthralgia may also be seen.

#### Drug allergy

Allergy to drugs may produce many symptomatology from anaphylaxis to multiple organ failure such as renal failure, pancytopenia, etc., but one of the commoner modes of presentation is that of skin exanthema. This is due to the combination of the drug with a body protein to produce an antigenic hapten, and in individuals prone to allergy, this antigen excites the production of antibodies. The antigen-antibody immunologic complexes circulate in the blood vessels including those of the skin and their deposition in these cutaneous vessels produce the skin exanthemata. All types of exanthema can be observed from macular to papular varieties to vesicles, petechiae and purpura.

One of the most serious of these drug exanthemata is Steven-Johnsons Syndrome where the rash often assumes an iris type of appearance with a central raised pin-head dot surrounded by large maculopapular rash. The vasculitis may occur in vessels to the mucous membranes with oral lesions leading to multiple oral ulcers. Internal visceral organs may also be affected. Not only drugs may produce this symptomatology but infection with

mycoplasma can also be responsible for the Steven Johnson Syndrome.

## DISCUSSION

As mentioned earlier, no exanthema produced by a single cause is always typical but some are more 'typical' than others. These 'typical' ones very often suggest the diagnosis after a quick history and clinical examination and usually do not require any laboratory tests for confirmation of the diagnosis and they are mentioned in Table 3:-

**Table 3: 'Typical' Exanthemata**

1.	Measles
2.	Chicken pox
3.	Roseola infantum
4.	Dengue hemorrhagic fever
5.	Kawasaki disease
6.	Henoch-Schonlein purpura
7.	Steven-Johnson Syndrome
8.	Hand-foot-mouth disease

For **measles**, the high fever and URT signs and symptoms and appearance of rash at 4-5th day of fever and the presence of Koplik spots are pathognomonic. The continuation of high fever after appearance of rash is important for diagnosis. The only drawback is unfamiliarity for young doctors because of the rarity now with immunisation.

**Roseola infantum** is a "mini-measles" without Koplik spots, the patient is much less ill and it affects infants or very young children 1-2 years of age. When the rash appears at day 4-5, the fever comes down, another distinguishing characteristic from measles.

**Chicken pox**, as mentioned above, is no problem in diagnosis. The history of contact and appearance of maculo-papular rash on day 1 and the appearance

of vesicles within 12-24 hours thereafter is pathognomonic.

**Dengue hemorrhagic fever (DHF)**, if encountered with the generalised erythema and "hand-finger blanching sign" is pathognomonic. It must be diagnosed BEFORE shock appears. Pre-shock signs include thrombocytopenia, hyponatremia, pleural effusion in the chest x-ray, with blood pressure still adequate, and when seen in a patient is a reminder that he should be hospitalised for treatment.

**Kawasaki disease** is equally easily diagnosed WHEN the diagnostic signs are present. The problem is that they may not be present initially. However, if the diagnosis is thought of beforehand, then looking for the signs in the patient with the only complaint of fever, one will often find that indeed the rash, the conjunctivitis, the red oral cavity, slight oedema of hands and feet are already present. Full blood count will reveal:

- (a) high ESR,
- (b) leucocytosis, and
- (c) high platelet count.

**Henoch-Schonlein purpura** can also be diagnosed from the complaints of abdominal pain, joint pain and abnormal urine FEME together with the typical appearance and distribution of the rash.

**Steven-Johnson Syndrome** likewise may be 'typical' by the history of drug ingestion, appearance and distribution of the rash, often with oral ulcers.

**Hand-foot-mouth disease** due to Cocksackie virus is pathognomonic in that lesions in the mouth and on the dorsum of the hands and feet and in the nappy area are typical of the disease.

The second group of conditions are those where there may be various degrees of difficulty in diagnosis because the presentation may be variable. The only way to arrive at the diagnosis is to consider its possibility beforehand and to include it or exclude it. Even then there may be problems initially when the full-blown picture has not developed but as the clinical profile unfolds, at



some stage in the analysis, the diagnosis may be apparent. These include the following (Table 4).

**Table 4: Less Typical Exanthemata**

1. Meningococcaemia
2. Scarlet fever
3. Erythema infectiosum
4. Staphylococcal Scalded Skin Syndrome
5. Staphylococcal Toxic Shock Syndrome
6. Drug allergy
7. Other vasculitides
8. Enterovirus rashes

**Meningococcaemia** may not be easy to diagnose unless the doctor considers it as a possibility. It is an emergency type of case and no time should be lost in diagnosis and treatment. The rash may be macular or urticarial but petechial ones are more typical. They are raised with a grayish vesiculopustular centre. The most important sign is that patients are all very ill and toxic, and signs of meningitis may be elicited if they are looked for, even in the early cases.

**Scarlet fever** is fortunately rare now in Singapore but in other developed countries, a resurgence is seen. The rash appears early after onset of fever and oral lesions are striking. Facial flushing with circumoral pallor is seen and the rash is seen more in flexural areas of skin. The diagnosis should be made before the desquamation of the skin.

**Erythema infectiosum** may be diagnosed because of the facial rash coming on almost simultaneously with the fever giving a slapped-cheek appearance. Much later, about 4 days later, then the generalised rash will appear with its lace-like reticular pattern. Its importance is to see if an aplastic crisis develops

or not.

The systemic **staphylococcal** rashes should always be considered when pyogenic lesions of the skin are seen together with systemic toxic signs.

**Drug rashes** must always be considered in the differential diagnosis of exanthemata and a drug history must always be asked for. The problem may be obtaining a history of self-medication or the use of traditional drugs. Many of the latter contain 'Western drugs' added to the so-called traditional drugs.

**Vasculitis** arising from collagen diseases must also be considered.

Finally, there are a large number of **enteroviruses** which can cause exanthemata in the skin. These rashes are highly variable in occurrence and distribution except for hand-foot-mouth disease. Similarly other viruses not mentioned above, like adenoviruses can cause non-descript rashes.

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# CHRONIC COUGH IN CHILDREN

\* S C Quek, MBBS, MMed (Paeds), DCH (London)

# S T Quek, MBBS

+ MM Thein MBBS, MSc(MCH) (London), DTCH, DCH (Glasgow)

\*\* G Connett, MBBS, MRCP (UK), DCH (London)

## SUMMARY

Chronic cough in children is a common complaint to general practitioners and paediatricians. The challenge arises in an accurate diagnosis of the cause of the cough, and therein lies the proper treatment. Even so, treatment may not always be easy and this in part relates to the medication available for, and routes of delivery available in, children. This article examines the physiologic basis of the cough mechanism and the causes of chronic cough, delivers an approach to the child with chronic cough, and finally deals with management of this difficult but common problem.

**Key words:** Chronic, cough, children.

## INTRODUCTION

Cough is a distressing symptom, especially so in children and to their parents, particularly in our local context. The anxiety is frequently compounded when the cough becomes chronic and parents resort to doctor-hopping and the use of traditional medicine in their desperation to find a cure. Often, symptomatic reliefs such as cough mixtures do not solve the problem. In fact, many times cough suppressants<sup>1</sup> are not indicated and complications have arisen from their frequent use. Successful management of this problem is

dependent on how significant the cough is, whether treatment or just reassurance is necessary, and if the former, which medications and what appropriate modes of delivery.

## PHYSIOLOGIC BASIS OF THE COUGH MECHANISM<sup>2</sup>

Simply defined, cough is forced expiration against an initially closed glottis which opens suddenly. In so doing, a high pressure is generated which enables the functions of the cough mechanism to be fulfilled. These functions include removing excess secretions from the airways so that they may be expectorated (or swallowed), and expulsion of foreign matter or food particles which may be accidentally inhaled, thereby protecting from aspiration.

The initiation of the cough reflex begins from stimulation of afferents, which may be anything ranging from mechanical irritation to noxious fumes. These are receptors present in the respiratory tract up to the bronchioles, but these are more plentiful in the upper airways. These signals are transmitted by the vagus nerve to the "cough centre" in the medulla. Efferent pathways

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\* Lecturer

\*\* Teaching Fellow  
Department of Paediatrics  
National University of Singapore

# Medical Officer  
Department of Diagnostic Imaging  
National University Hospital

+ Lecturer  
Department of Community,  
Occupational and Family Medicine  
National University of Singapore

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are carried in the vagus, phrenic and spinal muscular nerves to effect the production of cough through co-ordinated action of the larynx, pharyngeal and respiratory muscles including the diaphragm. It should thus be realised that cough may be subject to at least some degree of voluntary control as the cough centre is situated in the brain.

The mechanics of a cough are such that a high velocity expiratory gas flow is generated to propel foreign matter into the large airways. Positive pleural pressure and high intra-thoracic pressure that result also compress the smaller airways, squeezing secretions into the larger bronchi so that they may be cleared.

### DEFINITION

Any precise definition of "chronic" cough is difficult and somewhat arbitrary if a time frame is to be dogmatically attached. Most people would start considering a cough as chronic if present continuously beyond two to three weeks. Perhaps, a more pragmatic definition of chronic cough would be a cough persisting longer than would be expected for any reason (for example, following an acute infection).

### AETIOLOGY

The causes of chronic cough in children are many and varied, ranging from the very common asthma to the exceptional such as mediastinal or pulmonary tumour. A classification is given in Table 1. The first group, or inflammatory conditions<sup>3</sup>, probably constitutes the most common aetiology. In the milder cases, patients may just complain of frequent cough, occurring commonly at night. The presence of a positive family history or personal history of atopy may be supportive as would previous episodes of wheeze. Bronchitis arising from a multitude of causes also significantly contributes to patients with chronic cough.

Suppurative lung disease and specific infections (for example whooping cough, *Mycoplasma pneumoniae* or tuberculosis) are usually more readily diagnosed either from the history or having characteristic features to suggest such a diagnosis. Bronchiectasis is uncommon today as a result of improved socioeconomic conditions and better

health care. Cystic fibrosis has a definite racial prevalence, and it is uncommon in Asians. The possibility of chronic, recurrent infections of the sinuses in older children resulting in nasal discharge and a chronic cough should also be remembered.

**Table 1: Causes of Chronic Cough**

#### Inflammation

Asthma

Bronchial hyperactivity: viral, chemical, allergy, aspiration, smoke, post-infection.

Post-nasal drip

#### Infection

Bronchiectasis

Cystic fibrosis

Immunodeficiency conditions

Specific infections (e.g. *Mycoplasma*, whooping cough, tuberculosis)

Secondary bacterial infections (following viral infections)

Sinusitis

#### Psychogenic cough

#### Others

Foreign body, mediastinal / pulmonary tumour, cyst, vascular ring.

Psychogenic or nervous cough is a diagnosis of exclusion but may be suspected from undue parental anxiety and the lack of evidence of respiratory disease in the child. Parents tend to report, and try to interpret, their child's symptoms. Resulting from this the child can occasionally become manipulative. Alternatively, it may be a form of release from built-up stress either in school or tension at home. Such children usually cough in the day but are not disturbed and sleep well at night.

Other causes are rare but should nonetheless be borne in mind. Foreign body aspiration is not a common occurrence but is a definite possibility. Common items include peanuts and other small food items. It is thus important that parents should not offer these to any child under four years of age. Tumours arising in the lungs or mediastinum and cardiac conditions causing stapling may be uncommon causes of chronic cough in children,



but these are usually associated with other symptoms as well.

## **APPROACH TO THE CHILD WITH CHRONIC COUGH**

In the evaluation of chronic cough, it is imperative that a detailed history is elicited, followed by a thorough physical examination. From these, investigative procedures can then be formulated. It should be emphasized that the number and type of investigations must be decided on an individual basis to avoid unnecessary costs and undue anxiety. Only with these can a line of management then be planned.

### **History**

This should determine the age of onset of the cough and its duration, including knowledge of whether the cough is intermittent or persistent. The nature of the sputum (purulent, mucoid), if any, and cough (dry, moist, barking, feeble) may be helpful if parents are descriptive enough. Other associated features should also be noted, for example, stridor (upper airway obstruction), wheeze, relation to feeds/posture (gastro-oesophageal reflux), physical activity (asthma) and anxiety (psychogenic). The time of cough, for example if nocturnal<sup>4</sup>, may be suggestive of asthma.

The presence of symptoms of preceding respiratory tract infections is significant as is a history of constitutional symptoms and other medical history of neuromuscular disease, immunodeficiency or atopy. Information on immunisations (pertussis, tuberculosis) should be sought.

Finally, it is important to establish what the parents have done about the cough and their concerns. At the end of the consultation, the doctor must decide whether the consultation reflects an inappropriate expectation of health by the parents, and if the symptoms are causing a significant and real amount of morbidity worthy of medical attention.

### **Physical examination**

This may be divided into the child's general well-being and specific respiratory signs. Growth is of particular importance. In this respect, a well-nourished, good-sized child with a chronic cough is probably much less worrying than one with

failure to thrive. Physical signs in the respiratory system (upper or lower respiratory tract) and other associated findings like clubbing as an indication of chronic infection and precordial deformities such as increased thoracic diameter and Harrison sulci signifying chronic respiratory impairment must be looked for.

### **Investigations**

Depending on what is suspected or what needs to be excluded, selected investigations can be carried out in the patient. Particularly useful would be investigations that provide the most information, and which are likely to alter the management of the child.

Chest X-ray is a simple and relatively safe investigation. An inspiratory film is frequently useful, despite the fact that a good quality film is in practice difficult to come by as it is difficult to get a child's co-operation during the imaging process. The posteroanterior view is the most conventional. When abnormal, the appropriate lateral film may help to more precisely localise the lobe or segment affected. Inspiratory and expiratory films are useful if foreign body aspiration is suspected.

Sputum examination for cells is sometimes useful (eosinophils in atopic disease, polymorphs in infective conditions). Sputum culture is frequently asked for, but it is emphasized that correlation to bacteriologic diagnosis of a lower respiratory tract infection is poor.

Pulmonary function tests are simple tests and can be a guide to diagnosis as well as a monitor of response to treatment. These can, however, be carried out only in an intelligent child of six years and above. The demonstration of reversibility after inhalation of a beta-2 agonist is a good indication of hyperactive airways disease. Rarely, bronchoprovocation studies such as the histamine/methacholine<sup>5</sup> or exercise challenge tests may be used for the same purpose.

Bronchoscopy<sup>6</sup> in expert hands is a valuable procedure. When carried out with proper indications, it serves diagnostic as well as therapeutic purposes. Some common indications are the investigation of persistent lobar/segmental

pulmonary collapse and in cases of suspected foreign body aspiration.

Other more sophisticated investigations for the diagnosis of the causes of chronic cough include skin tests of allergy, barium swallow (compression or obstruction of the airways), immunologic screen (immunodeficiency syndromes) and 24 hour pH probe monitoring for the presence of gastro-oesophageal reflux.

### Treatment

Specific treatment of chronic cough is obviously dependent on aetiology. Chest physiotherapy, proper coughing techniques and postural drainage are important adjunctive physical methods employed in cases of suppurative lung disease such as bronchiectasis and cystic fibrosis.

Where symptomatic relief of the cough is concerned, the role of cough suppressants is dubious. While some patients or their parents may lay claim to the efficacy, there is no clinical evidence to suggest the usefulness of these medication in children below six years<sup>7,8</sup>, and their use should generally be avoided. Side effects such as depression of the central nervous system and addiction may occur especially if they act by suppressing the central control as in the case of narcotics like codeine. Other complications relate to the pooling of secretions as a result of impeding the expectorant function and is especially dangerous in infants. Non-narcotic preparations are less efficacious. Antihistamines have been tried and are generally safer, but the dosage required for effectiveness induces appreciable drowsiness. The justification for use is in dry, irritative, distressing cough and generally to allow for a good night's rest.

Cough expectorants<sup>9</sup> are not without side-effects either, and have not been found to be objectively effective. The role of mucolytics and mist inhalation is not firmly established although the benefits, if any, stem from loosening of secretions and an expectorant effect.

### CONCLUSION

A good history, including family, social and environmental history, clinical examination and selective investigations when necessary are the cornerstone for diagnosis and management<sup>10</sup> of a child with chronic cough.

Adequate explanation to the parents regarding the child's condition, the aetiology of the chronic cough and any necessary reassurance may be the most important aspects in the management in most cases. It must be appreciated that in certain conditions (such as asthma), cough would almost invariably be a prominent feature. Hence, it is important that realistic expectations be set in order to achieve best results.

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# MANAGEMENT OF CHILDHOOD ASTHMA

OM Chay MBBS, M Med (Paeds), FAMS

## INTRODUCTION

Bronchial asthma is a common disorder affecting 20% of children in Singapore<sup>1</sup>. Hence, this is the commonest childhood chronic lung disease encountered by the family physician. Recognition and proper management by the family physician is very important in improving the quality of life of these children. It has been shown that early intervention with anti-inflammatory therapy improves pulmonary function and may prevent irreversible airway obstruction<sup>2</sup>.

## DIAGNOSIS

Often it is not difficult to reach a diagnosis of bronchial asthma after careful history-taking and physical examination. Typical history of recurrent cough and wheezing following triggers such as viral respiratory infection, aeroallergens, exercise and air pollutants is often forthcoming.

However, a small number may have atypical features such as chronic cough and nocturnal cough and may be misdiagnosed as recurrent pneumonia and appropriate treatment delayed. Therefore awareness of such atypical features is important to avoid unnecessary delay in the diagnosis. Personal or family history of allergies associated with asthma, e.g. allergic rhinitis, allergic conjunctivitis and eczema should be carefully searched for in such patients.

Physical examination is necessary to exclude other medical conditions. Stridor may be mistaken for wheezing by parents. This is a sign of upper airway obstruction rather than asthma. A young infant presenting with hyperinflated chest, crepitations and rhonchi in chest may have viral bronchiolitis instead. A child with congenital heart disease and cardiac failure can also mimic asthma symptoms with recurrent breathlessness and cough.

Most of the time, no investigation is required except in patients where history and physical examination is indeterminate. A chest X-ray may be useful in excluding pulmonary tuberculosis, mediastinal mass and tracheal stenosis.

The most useful investigation in the clinic is the measurement of peak expiratory flow rate (PEFR). This is a useful objective means of confirming diagnosis and assessment of severity of asthma. Demonstration of improvement in PEFR >30% after bronchodilator treatment indicates reversible airway obstruction, an important hallmark of bronchial asthma. In children where history and physical examination are indeterminate, demonstration of PEFR variability is important evidence of bronchial hyperactivity. This can be carried out easily at home. Parents are asked to measure the child's PEFR in the mornings and in evenings over a period of time. PEFR variability index is calculated as follow:  $(\text{Highest PEFR} - \text{lowest PEFR} / \text{mean PEFR}) \times 100$ . A PEFR variability index exceeding 20% is significant.

## PHARMACOTHERAPY OF CHRONIC ASTHMA.

Guidelines on pharmacotherapy have been laid down in the Singapore consensus on management of childhood asthma<sup>3</sup>. The emphasis is on early

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Consultant  
Department of Paediatrics  
Tan Tock Seng Hospital

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anti-inflammatory therapy in all, except the mild asthmatics. Mild or episodic asthma only requires intermittent bronchodilator.

In children with moderate or frequent episodic asthma (exacerbation more often than once a month), anti-inflammatory therapy with sodium cromoglycate is recommended. If symptom control does not improve significantly by 6 weeks, then low dose inhaled steroids (less than 400 mcg/day) will be substituted.

Children with severe or persistent asthma, on the other hand, should be started on inhaled steroids at higher dose and as soon as diagnosis is established. As soon as symptoms improve, the inhaled steroid dose should be titrated to lowest possible maintenance dose.

It is important to note that inhaler therapy is the best mode of drug delivery. The dose needed is small and it is delivered to the target organ and hence onset of action is rapid. With the aid of spacer-device with face mask, even infants and very young children are able to use metered dose inhaler. Even during an acute asthmatic episode, the large volume spacer device with tidal breathing technique has been shown to be as efficacious as standard wet nebulisers<sup>4,5</sup>.

The efficacy of inhaled corticosteroids in treating asthma is well established and its safety profile is much higher than that of oral steroids. Prolonged inhaled corticosteroid therapy reduces inflammatory infiltrates, proinflammatory cytokine expression, subepithelial collagen deposition and improves pulmonary function<sup>6,7</sup>. Although there are reports of mild suppression of adrenal function and growth in children with inhaled corticosteroid therapy<sup>8,9</sup>, more studies have shown no such problems<sup>2,10,11</sup>. However, when high dose inhaled steroid is prescribed, care must be taken to minimise systemic bioavailability of drug with the use of a spacer device. Inhaler device such as dry powder inhaler (turbuhaler) where lung deposition of drug is enhanced is also preferred.

Newer drugs are available in the market for treatment of asthma. Salmeterol xinaforte which has longer-lasting bronchodilator properties may

be helpful in managing childhood asthma<sup>12</sup>. It can be used as an adjuvant to high-dose inhaled steroid therapy in chronic asthmatics, to improve symptom control. Children who are active in physical activities and sports throughout the day may find, salmeterol xinaforte useful in control of exercise induced symptoms<sup>13</sup>. However, it should only be used concurrently with an anti-inflammatory agent at the present moment. Until such time as its "anti-inflammatory" properties can be established, it should not be used in place of an anti-inflammatory agent.

New anti-inflammatory agents such as nedocromil sodium which is more effective than sodium cromoglycate may be an alternative in older children<sup>14</sup>. Fluticasone propionate, which has high efficacy, is another attractive alternative to high dose inhaled beclomethasone dipropionate. Gustafsson et al showed that 200 mcg daily of fluticasone propionate compared favourably with 400 mcg daily of beclomethasone dipropionate<sup>15</sup>. Effective hepatic first pass metabolism where 99% drug is converted to non-active metabolite enhances the safety profile of fluticasone propionate<sup>16</sup>.

Another important issue in the treatment of childhood asthma is the duration of anti-inflammatory therapy. Improvement in bronchial hyperreactivity continues after 12 months of anti-inflammatory therapy and seems to indicate that prolonged therapy is necessary<sup>11</sup>. However in practice, it is almost impossible to prolong therapy once symptom control is good. Therefore, for practical purposes, duration of therapy of anti-inflammatory therapy could be between 6 - 12 months after achieving good symptom control and normal airway function. After cessation of therapy, it is necessary to continue close observation, as symptoms may relapse and further anti-inflammatory therapy may be necessary.

## MANAGEMENT OF ACUTE ASTHMA

Beta-2 agonist remains the most important treatment of acute asthma. It is most effective when given as inhalation. Metered dose inhaler with spacer device has been found to be as effective as nebulizer if equivalent doses are given<sup>5</sup>. Breath-activated inhaler such as autohaler, and turbuhaler

which can be triggered with low inspiratory flow rate, may also be used during an acute asthmatic attack.

We must not forget that in acute asthma, hypoxia is an important risk factor and has to be avoided with use of oxygen therapy. Although oral steroids are effective in treatment of acute asthma, not more than 4 short courses, of less than one week duration, should be prescribed in a year. Otherwise significant endocrine problems may occur<sup>18</sup>. When a child requires frequent oral steroid, maintenance therapy must be considered.

### MANAGEMENT PLAN

In managing childhood asthma, it is essential to establish a partnership relationship with the parents and care-givers. Whether management is successful is directly related to the degree of co-operation of the parents or care-givers. However, this is not possible unless they have a clear understanding of the problem, treatment strategies and future directions. They have to be actively involved in modifying the home environment to control dust and cigarette smoke. They play a vital supervisory role in carrying out the doctor's instructions and also have to report the symptoms of the child accurately to the doctor. Sometimes, use of diary record, particularly in early stage of treatment, reduces the error of recall. PEF monitoring may be necessary in the early stage of treatment to assess the therapeutic response.

It will be best for parents to be aware of the treatment strategy and duration of therapy, so that they can help the attending doctor to work towards an achievable goal of optimum asthma control. Treatment regime should be kept as simple as possible. It is advisable that medication should be administered twice a day at most. This will enhance compliance. Simple action plans such as when and how to increase usual medication dosage should be clearly explained to parents. When necessary, written instructions may be given to care-givers. This may reduce the sense of helplessness and anxiety when the child develops acute exacerbations. Regular visits to the clinic to reassess condition and review therapy are important to improve compliance. In order to achieve normal active life style, children are strongly encouraged

to participate in as much physical activities as possible. This will improve both physical and psychological well-being. Exercises which are less "asthmagenic" like swimming and leisure cycling should be encouraged. Children are also encouraged to do warm-up exercise before sports. When necessary, prophylactic bronchodilator before exercise may be advised. Sometimes it may be necessary to seek co-operation of school teachers in this matter.

### CONCLUSION

Bronchial asthma is a common chronic lung disorder. Early treatment with anti-inflammatory therapy is important to achieve good symptom control and may prevent irreversible airway obstruction. Co-operation of the care-giver is the key to successful asthma management in childhood.

### Acknowledgment

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# EMOTIONAL AND BEHAVIOURAL PROBLEMS IN CHILDHOOD

Y M Cai, MBBS, DPM, FAMS

## INTRODUCTION

Emotional and behavioural problems are relatively common in children. Between 10 and 20% of children may require help at some time. This is defined as a disturbance of function in the areas of relationships, mood, behaviour or development of sufficient severity as to require professional intervention.

Many developmental, emotional and behavioural problems are short-lived. For instance, fears in small children, temper tantrums in toddlers and periods of defiance of authority in adolescents are common. They may cause worry for a period without ever needing any professional intervention.

It is not necessary to get into an argument with yourself as to whether a child has or has not got an emotional or behavioural disorder, is psychiatrically disordered or psychologically disturbed. All such terms overlap and none of them is absolute.

However, if a child is doing something that is outside the range you would expect for his or her age and circumstances and is either causing or experiencing distress, then there is a problem which merits attention. If what he or she is doing is getting in the way of living a reasonable life, there is similarly a problem. It is better to think in terms of problems, impaired functioning and suffering rather than enter a sterile debate as to whether or not a disorder is present.

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*Consultant Psychiatrist/Head  
Department of Child & Adolescent Psychiatry  
Institute of Mental Health/Woodbridge Hospital*

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## RANGE OF PROBLEMS

A wide range of problems in childhood that may come into the attention of family practitioners include:

**Emotional problems** e.g. persistent fear and anxiety, school refusal, depression, suicidal ideas and attempts, day-dreaming and self-preoccupation, anger, hostility, irritability and mood swings.

**Behavioural problems** e.g. unusually shy, inhibited, solitary, withdrawn behaviour, antisocial behaviour, disobedient, violent, quarrelsome, destructive, lying, stealing, shoplifting, truanting, running away from home, hyperactivity, sexual misdemeanours and deviations, disruptive behaviour, inattention and poor concentration, distractibility, frequent temper tantrums, obsessive compulsive acts and bizarre irrational behaviour.

**Developmental problems** e.g. language and speech delay or disorder, bedwetting, reading and learning difficulties.

**Other problems** include asthma associated with emotional or family problems, habit disorders e.g. tics, blinking of eyelids, migraine, bodily aches and pains, parent-child relationship problems, marital problems which affect their children emotionally, child abuse and eating problems.

The Child Psychiatric Clinic, which is located at the Institute of Health, Outram Road, accepts referral of children up to the age of 19 years old. A total of 1318 new consultation cases were seen in 1993. A breakdown of the emotional and

behavioural problems is shown in Table 1.

**Table 1: Emotional and behavioural problems in 1318 new consultations, 1993.**

Type of Disorder	%
Emotional Disorder	23.7%
Developmental Disorder	22.6%
Adjustment Disorder	19.9%
Conduct Disorder	11.9%
Normal Variation	11.6%
Psychotic Disorder	3.6%
Others e.g. Hyperactive disorder, eating disorder, tics disorder, etc.	6.7%
Total	100.0%

It is worthwhile pointing out that 11.6% of the behavioural complaints by adults fell into the category of normal variation and only 3.6% of the cases belonged to psychotic disorders. Psychotic disorder, like schizophrenic illness, is rare in children and very uncommon in young teenagers.

### IMPORTANCE OF TREATMENT

The treatment of emotional and behavioural problems of children is important because

- Untreated emotional and behavioural problems create distress not only in the children themselves but in all those who care for them;
- Unresolved problems in childhood and adolescence may continue or increase in adult life;
- Problems unresolved in children can lead to disrupted education and school failure;
- Emotional and behavioural problems can retard their physical, psychological, social and intellectual development;
- Unrecognised emotional and behavioural

problems presenting in primary health care are likely to absorb increasing amounts of professional time until the underlying difficulties are tackled;

- Emotional and behavioural problems in children increase demands on the social, educational and juvenile justice systems.

### MANAGEMENT

The first step in managing a child's emotional and behavioural problem is to obtain a description of the symptoms and their effect on the child and others e.g. the parents and teachers. A decision can then be made as to whether the complaint is about behaviour which is normal or abnormal for the child's age.

If it is normal, there are several reasons for the parents to complain about it:

- They may be ignorant (first child), misinformed, or apprehensive because of similar symptoms in another child (or the child of someone they know) who became a problem.
- The behaviour may remind them of part of their own experience or personality which they are uncomfortable or upset about e.g. strict and bad-tempered parents may not tolerate children expressing anger with negative feelings, probably because they were not allowed to do so as they were growing up.
- They may be concerned about something else and are using the problem presented as an excuse for a consultation e.g. they may complain about the child's disruptive behaviour as an admission ticket to see a doctor for their marital disharmony or disagreement over parenting styles.
- They could be over-stressed or mentally unstable.

This means that it is necessary to go beyond a simple reassuring statement that the emotional or behavioural state is normal, to ask what concerns the parent most about the problem: does it remind them of anything, is there anything else that they

are worried about, and how are they coping themselves?

If an abnormality of behavioural and emotional reaction seems to be present, the next step is to estimate the prognosis. Here, it is useful to obtain the child's point of view (in a child over the age of about 4) and this may require a brief private interview. This can reveal private or secret sources of distress unknown to the accompanying parent as well as revealing the degree of inner emotional suffering. If the prognosis is thought to be good and the child is not suffering, then it may well be enough to reassure and offer a follow-up appointment.

Good prognostic pointers include:

- Good peer relationship
- Stable and supportive family
- Good previous temperament
- An onset related to identified and reversible stress
- Brief duration of problem.

Should you consider reassurance and an expectant approach to be insufficient, or if matters have not improved within a few weeks, then a more active intervention is required. Approaches within the capacity of most family practitioners include:

- counselling parents,
- counselling child,
- simple behavioural programmes and
- medication.

If this is inappropriate or insufficient then consider referral to another agency or a child psychiatric clinic for further management.

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# PRACTICAL APPROACH TO MANAGEMENT OF SOME COMMON SKIN PROBLEMS IN CHILDHOOD

*YC Giam, MBBS, MMed (Paed), FAMS, FAAD.*

Do you wonder why some common skin problems in children, that you manage, do not improve?

I will discuss some management problems in:

- a) Atopic dermatitis.
- b) Simple infections like scabies, molluscum contagiosum and viral warts.
- c) Eruptive erythemas like urticaria; and drug rashes vs viral exanthemas.

## ATOPIC DERMATITIS

This is the most common disorder and one needs to be familiar with it.

From my experience, a short guideline is suggested for management of these patients.

1. Look at the endogenous factors of atopy:
  - Does the child have the complex of asthma, allergic rhinitis and eczema?
  - Do both parents have atopy?  
The eczema is worse if child has uncontrolled asthma.

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*Senior Consultant  
National Skin Centre  
1 Mandalay Road  
Singapore 308205*

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2. Look for criteria, establishing this disease simply:

- Pruritis
- Recurrent nature
- Atopy
- Distribution and morphology.

3. The distribution and morphology are diagnostic and show 9 characteristic patterns of evolution. If the patterns are out of step, it will reflect poorer prognosis and one would be more aggressive with treatment.

- e.g. a) Infantile, as erythroderma,  
b) early childhood (1 to 3 years)--  
extensor and flexors affected; often  
exudative, infected,  
c) older child (4 years)-- mainly flexors  
affected.

Thus, an older child with erythroderma will need a course of prednisolone.

4. Atopic eczema is a disease of itch. When the itch is severe, excoriations lead to secondary infection and prurigo papules. If this is severe, the child requires stronger topical steroids, antihistamine for day and night, with necessary antibiotics.
5. Check if xerosis contributes to itch. If skin is very dry, use soap substitutes and emollients e.g.:

very dry : Use emulsifying ointment as soap

dry : Use emollient gel, and Keri lotion as emollient

less dry : Use Cetaphil lotion, Lacticare or Neutraderm lotion.

Do not give excessive antihistamines for itch from dry skin.

6. Try wet dressing for 8 or 24 hours for 1 to 5 days before deciding to add on oral prednisolone for severe cases. This could take the form of soaked cotton bandages with overlying stockinette. A cheaper method is to wear a pair of wet pyjamas, with another dry pair over it.

7. Give topical antibiotics e.g. tetracycline ung, or Bactroban ung (more expensive), and oral antibiotics (cloxacillin or erythromycin), for exudative lesions, as these are often subclinical staphylococcal infections. Antiseptic lotion e.g. Chlorhexidine wash is useful.

8. Try moderately potent steroid creams like fluocinolone for a week and reduce to lower potency ones like Eumovate cream, or Betnovate cream.

9. Oral prednisolone may need to be given for recalcitrant cases. Often a 2 week course is sufficient, starting at 0.5 mg/kg/day. Few difficult cases may need about 5 mg/day for 4 to 6 weeks.

#### 10. Special Cases

To exclude food allergy: do RAST test e.g. to eggs, nuts, fish. I do not chase for allergies unless eczema is persistent.

Special patterns of eczema include:

a) Pityriasis alba: use a sunblock and hydrocortisone cream; it mimics tinea versicolor on the face.

b) Prurigo papules: try occluding with duoderm plaster for 2 to 3 weeks.

c) Eczema herpeticum (primary herpes simplex): Start acyclovir immediately.

d) Hand and feet eczema: Intense itch, with exudation, fissures, due to irritants. Nail may be affected; it can be infected.

11. Misdiagnosis: dermatomyositis can be overlooked.

May need to do muscle enzymes, creatinine phosphokinase.

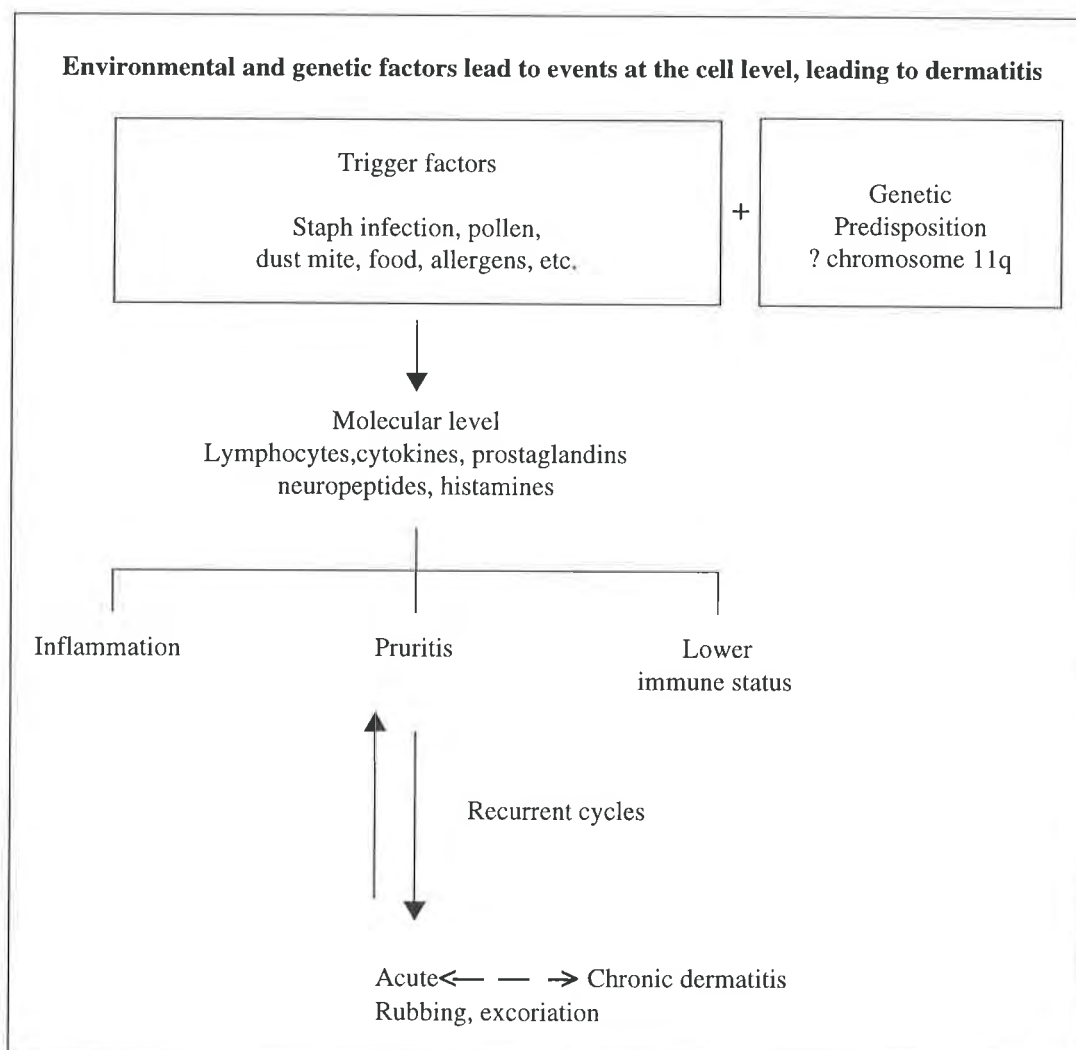
12. Psychotherapy: Counselling of mother regarding the condition; counselling of the older child for any misperceptions.

Inform mother of:

- Inherited cause, thus recurrence of eczema, and not due to failure of doctor's therapy.
- Condition clearing by puberty.
- To have a target--keep eczema under control, or in remission.
- How to use the creams--amount and frequency.
- How to use bath, occlusion wet dressings.
- Look for infections, which can cause a flare.
- Regular follow-up.
- Good rapport with child and encourage child in compliance to treatment, and not to scratch.

13. With atopic eczema, take time to sit with the mother and explain the steps in the use of the various creams, and do some counselling. If the eczema remains recalcitrant, hospitalise the child, and prescribe oral prednisolone.

**Fig 1. Schematic Presentation of Atopic Eczema**



## SCABIES

Scabies is a highly infectious dermatosis and is extremely distressing to children.

### 1. Some scabicides to be considered are:

Age:

Below 2 months:

- Permethrin 5% cream.

Apply once only to all parts of the child's skin.

- Derbac lotion (5% malathion).

They are very effective, and are used for 3 nights with a repeat once, a week later.

Below 6 months:

- Eurax lotion (Crotamiton), daily for 1 week. Continue with Eurax cream for 1 to 2 weeks. This is a mild, not very efficient, scabicide.

Above 4 years:

- Try emulsion Benzyl Benzoate 10% for 3 nights. Cheap, but very stinging and burns the child's skin.

- Older children, use 25% Benzoyl Benzoate. 1% Lindane (gamma and eczema hexachloride) is mildly toxic.

### 2. Treat secondary infection with oral antibiotics.



3. Hypersensitivity reactions recur as vesicles and papules, and mildly potent steroid creams, and antihistamines are required for a few weeks.
4. All parents, family members, grandparents, baby sitters are to be treated. Children may be infected when visiting grandparents in Homes.

#### **MOLLUSCUM CONTAGIOSUM:**

To me, this is a problem, as it is very infectious. Even if there is one lesion, treat it before 50 to 100 appear.

1. Few lesions: prick the lesion, and squeeze out the white cheesy viral material with a pair of blunt forceps (or eyebrow tweezers).
2. More than 5 lesions: Apply chemocautery with Retin A lotion 5%, Duofilm (17% Salicylic acid) sparingly over the lesions daily. You may need to protect the surrounding skin with vaseline, and even give EMLA cream (anaesthetic cover) 1 hour ahead, if the child is uncooperative, as these lotions sting.
3. 35% trichloroacetic lotion burns; if you use it, wash off after 3 to 4 minutes.  
The infection will take 6 to 8 weeks to clear.  
You may prick and squeeze fluctuant lesions.

#### **VIRALS WARTS**

1. Paring a hyperkeratotic wart, with a #15 Parker's blade, will allow the medication to work better.  
Always point the blade surface away from the patient.
2. Anti-viral paints:  
  
Duofilm - 17% Salicylic acid  
Verrumal - Efudix lotion  
  
Use daily.  
Apply a band-aid and keep lesions dry.
3. At the National Skin Centre, liquid nitrogen treatment is meted out fortnightly.  
For children, it's best to use EMLA cream one

hour earlier as anaesthesia.

4. Carbon dioxide laser -- for multiple plantar or periungual warts.
5. A great deal of patience is required when handling children and performing any procedures on them. Use EMLA cream generously with stinging applications.

#### **BULLOUS IMPETIGO**

Early lesions of macules can be misdiagnosed as eczema, chickenpox, or scabies.

Give adequate dosage of antibiotics (Cloxacillin) for at least one week in extensive cases. Use Chlorhexidine wash, and Bactroban ung.

#### **URTICARIA**

The common causes for acute urticaria are infections, drug or food allergies, other allergens, idiopathic, and bite reaction.

1. Confirm urticaria. The morphology ranges from wheals to annular, polycyclic or arcuate lesions. It is itchy.
2. Check for periorbital oedema, angioedema, laryngeal oedema (difficulty in breathing) and abdominal pain.
3. Give antihistamines (hydroxyzine) regularly, tds for 1 to 2 weeks, or longer if necessary.  
For non-sedative antihistamines, use terfenadine (Teldane) 30 mg bd, or loratidine (Clarityne) 10 mg o.n.
4. Avoid cough mixtures with codeine, avoid aspirin, avoid preservatives in foods.
5. If angioedema present, or breathing difficulty, give epinephrine.  
If severe, give oral corticosteroids.
6. If severe drug allergy, like a serum sickness reaction, with fever, arthralgia, arthritis or erythema multiforme, hospitalise the child.

## VIRAL EXANTHEM OR DRUG RASH

When a child is given drugs, e.g. antibiotics for a viral fever, a rash, often extensive morbilliform, but which could be maculopapular, vesiculobullous, petechial or urticarial, erupts. How do you exclude a drug allergy?

1. See if you can recognise this as a form of viral rash e.g. measles, rubella, erythema infectiosum, exanthem subitum, infectious mononucleosis, Gianotti-Crosti syndrome, herpes simplex or even hand-foot-mouth disease.
2. Check for signs accompanying viral disease: coryza, cough, fever, conjunctivitis, pharyngitis, lymph nodes, pneumonia, meningitis.
3. Viral rashes fade in a few days. Drug rashes may persist or progress. If any other allergic signs progress further (e.g. erythema multiforme, urticaria, angioedema, vasculitis) stop the drug, hospitalise the child.
4. In investigation of a drug allergy, the chronological evaluation of the appearance of the rash after ingestion, or past history of any similar experiences especially with similar drugs (e.g. Penicillin family), is important.

Table 1. Some Erythematous Rashes

Annular	Urticaria
Morbilliform	Viral exanthem, measles, rubella.
Maculopapular	Drug allergy, Kawasaki, roseola.
Vesicular	Hand-foot-mouth, varicella, herpes simplex.
Urticaria	Urticaria, drug allergy, Gianotti-Crosti Syndrome.
Petechial	Vasculitis - hepatitis, post-streptococcal
Nodular	Erythema nodosum, rheumatic nodules, panniculitis

5. Useful tests include radio-allergy-sorbent-tests (RAST) to many antibiotics, Penicilloyl V, G, ampicillin, erythromycin etc. Unless the drug is needed, oral provocation is not attempted, especially with Steven Johnson Syndrome or toxic epidermal necrolysis.

Make a Medic Awas card, as many patients do forget the drug(s) incriminated.

# CHILDHOOD INJURIES AND THEIR PREVENTION

*MM Thein, MBBS (Rgn), MSc (MCH) (Lond), FAMS*

## INTRODUCTION

Childhood injuries are the leading cause of death and disability for children after the first year of life in developed countries<sup>1</sup>. In developing countries, with the control of many childhood infectious diseases and malnutrition, childhood injuries are now gaining attention as a preventable health problem. Industrialisation, urbanisation and the consequent changes to the family structure, namely, the decreasing number of extended families living together mean the reduced availability of adults to help mind the child. This adds to the risk of childhood injuries.

The family doctor can play a key role in helping families prevent childhood injuries. He is in an ideal position to educate parents and care-givers on reducing the risks of childhood injuries when they bring their children for consultation, be it for minor illnesses, for immunisation or for well-baby check-ups. The key preventive task here is to disseminate to parents, care-givers, child-care teachers and school teachers the message that childhood injuries are preventable and steps should be taken to prevent them. It is important for primary care doctors to be knowledgeable and skilful in providing advice in childhood injury prevention.

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*Lecturer,  
Department of Community,  
Occupational and Family Medicine,  
National University of Singapore*

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## ACCIDENTAL INJURIES IN THE GROWING CHILD

The types of hazards and injuries encountered vary with children of different ages and stages of development. As children develop they acquire different skills at different developmental stages.

Falls are common in the infant. As early as four to six months of age, when the infant starts rolling over, there is a risk of falling off the bed if there is no one attending to the child. When the child begins to walk, this is another period when falls are common.

At about nine months of age, the infant starts to crawl. This is also a stage of exploring everything around him and putting everything he finds into his mouth. This is the time parents have to be very careful not to have small objects lying about, as these are liable to cause choking.

The age when the child starts to run and climb is also the time when he is prone to falls and injuries from bumping into objects. Minor falls are inevitable when the child is developing these motor skills, but the more serious falls can be avoided by having a vigilant adult around when the child is at play, and also by making the home safe.

The young school-going child is at yet another developmental stage. His curiosity and adventurous nature may put him at risk on the playground and on the road. He may take part in dangerous sporting activities.



In this paper, cases are used to illustrate the principles of childhood injury prevention through the different developmental stages.

#### **CASE 1. The Inquisitive Infant who Choked**

A young infant of 11 months was at home one Sunday morning together with his mother, father, an elder sibling of 7 years and an uncle. The mother was preparing lunch. The infant was playing by himself and crawling on the floor. Suddenly he was quiet. The uncle saw him choking and turning blue. The uncle called the others and he turned the child upside down, struck him sharply on the back between the two shoulder blades, and out came a coin.

##### **Comment**

This case was featured on one of our television programmes to highlight the importance of presence of mind and timely intervention. Young children from 9 months to 18 months are very curious. They explore their immediate environment on their own. They taste, bite and put everything in their mouths. Most poisoning and choking occur at this age and stage of development of children. Parents and care-givers must be aware that at this stage of development, young children will put everything into their mouths. Small objects like coins, buttons and pins should all be kept away from the child. They should not be lying around or on the floor.

Also, many types of food are prone to cause choking. Children less than 5 years of age should not be given nuts of any kind, fish ball or sweets.

##### **First aid to teach parents about a choking child**

Coughing is the natural body response to a foreign body in the respiratory passage. If the choking child is coughing, observe if the object or food is coming out in the process. If that is not happening or if the child is unable to cough, look into his mouth. If you see the object, put your little finger into the mouth and try to hook it out.

If you cannot see the object, then give the respective treatment as follows:

##### **Infants**

Turn the child upside down and strike him sharply

on the back between the shoulder blades.

##### **Children aged two and four years**

Put the child across your lap and strike sharply between the shoulder blades.

##### **Children aged five years and above.**

Stand behind the child and hug him below the waist. Put your fist below the sternum and apply 4-5 upward thrusts. This will cause the child to vomit and dislodgement of the choking object will take place.

#### **CASE 2. The 2-year-old Toddler with Burns**

This child is from a big family of 9 members - fathers, mothers and 7 children. The father is a production worker in a nearby factory and the mother is a full-time housewife. The ages of the children range from 17 years to 2 years.

Early one morning, one of the children, a 12 year-old schoolgirl, was ironing her school uniform and was in a hurry to rush off to school. She left the iron on the ironing board without switching it off. The 2-year-old toddler, the youngest child, woke up and touched the hot iron with the flexor surface of his right wrist and hand. He had to be rushed to Singapore General Hospital Accident and Emergency Department, and was hospitalised.

##### **Comment**

This case study illustrates the problem of a big family with only the mother to look after the children and the home. She thought the youngest child was sleeping and was occupied doing her household chores. Most people consider their homes to be safe but with modern day electrical appliances around, the home can be hazardous.

The 12 year-old sister forgot to switch off the iron after ironing her school uniform and thus indirectly caused burns to her youngest brother. Young children are curious and they will touch and pull things, so it is important that we advise parents and caregivers to switch off the iron, take off the plug, and keep the iron away once they have used it. It is better not to leave the iron on the ironing board because the young child can pull the electrical cord and the iron can fall on the child's head and cause head injury.

We can teach parents and caregivers that first aid management for burns is to cool the affected area under the cold tap water for 10 minutes and then assess the severity of the burns. If the burnt area is more than the area of the child's palm or if it is more than reddening, the parents must seek medical help immediately.

### **CASE 3. The Girl with Haematuria from a Fall**

A 4-year-old girl went to a neighbourhood playground to play. While she was climbing the stairs of the slide, she fell and hit the left side of her body against the iron railing of the steps. The mother was very near her and was able to catch her when she was falling, so the child did not hit the ground. They came home immediately as the child complained of pain on the left side of her abdomen. After about two to three hours, the girl vomited her food and also passed blood in the urine. Immediately the parents brought her to the Accident and Emergency Department at Singapore General Hospital. She was admitted and required an operation to repair a ruptured ureter.

#### **Comment**

Playgrounds and playground equipment present unsuspected hazards to children. Preschool age children and children in their early teens are usually the ones that spend a lot of time at the playgrounds. In Singapore, every housing estate has a playground. Head and neck injuries due to falls are the commonest injuries. Internal organ injuries like in our 4 year-old girl can also happen.

Playgrounds must be safe for children to play. There must be safety standards for playground equipment and surrounding surfaces. Safety standards for design and installation are not enough. Maintenance and regular checking must also be done.

In this particular case study regarding playing on slides, children should be told to hold on with both hands when they go up the steps of the slide and take one step at a time. They must be taught not to push each other on the steps or on the slide and keep at least one arm's length between children.

Although safety standards have been developed, it remains crucial to educate the public, particularly

parents and caregivers, on child safety. It is also important to teach children safe play habits.

### **CASE 4. The 5-year-old Girl who Fell to her Death**

This 5-year-old girl was left alone at home for about 10 minutes in a high-rise Housing Board flat. She plunged eight storeys to her death. Her aunt, who baby-sat every day when her parents were at work, had left her for about 10 minutes to run an errand nearby while the little girl was taking an afternoon nap.

When she returned, the child was missing and was found lying at the foot of the block. The child had multiple injuries and was pronounced dead when ambulance officers arrived at the scene. The sliding kitchen window of their flat was open.

#### **Comment**

This incident was featured in one of our television programmes "Talking Point" recently. We should never leave a preschool age child alone at home, not even just for a few seconds. Even if he or she is sleeping one cannot assume that the child will continue sleeping. In this case study, the child woke up and was frightened when she could not find her aunt. She started looking around. As the kitchen window was open, she climbed up and accidentally fell to her death. Children are unaware of the hazards or danger and at this age they cannot reason or understand what is right and what is wrong.

Those who are living in high-rise flats and have young children should install iron grilles and window locks. Just being careful is not enough, parents must make their homes safe. They must also remember not to leave any furniture such as a table or a stool near the window or balcony for the child to climb on to. Those with grown children living in high-rise flats without window grilles should be vigilant that no young relatives go near the windows unattended.

### **CASE 5. The Boys who Set Their House on Fire**

Two brothers, 3 years old and 7 years old, were left alone in their flat. They started making paper planes and flying them across the room. One fell

on to the family altar which had lighted candles. The paper plane soon caught fire. The boys panicked and took the burning plane and threw it into the adjacent room which was the storeroom containing old newspapers and paper cartons. Soon the newspapers and paper cartons were also on fire. The blaze spread to the kitchen. The two brothers cried, screamed, and ran to the front door but it was locked. Luckily, the neighbours heard their cries and came to their rescue.

#### **Comment**

This case was featured on the television programme "Code Red" which is an educational programme for the public. It was also reported in the local newspapers. It was fortunate the neighbours were in time to break down the lock and free the children before they were engulfed in flames.

Three lessons can be learnt. First, it is dangerous to leave young children at home locked in because they cannot escape if there is a fire in the house. Second, as lighted candles and joss sticks can be a fire hazard, they should not be left lighted when adults are not around. Finally, the older children should be taught how to put out fires. The fire would not have spread if the boys had left the burning paper plane on the marble floor.

#### **CASE 6. The School Child who Dashed Across the Road**

A 7 year-old child dashed out into the street in front of his school. He was knocked down by a car passing by and was immediately rushed to the nearest hospital. He was initially treated in the intensive care unit and later in the ward. He had multiple pelvic bone fractures.

#### **Comments**

Young children tend to run across roads without stopping or looking to see if there are cars coming towards them. Furthermore, even if they do look, children may have difficulty in assessing the speed of the on-coming car. They also tend to cross in front of a stationary car or bus where the driver may move off anytime. Because they are short, the driver may not see them and is likely to drive off into them.

We must teach our children road safety rules. In

Singapore, the Traffic Police together with the Ministry of Education conduct road safety education for all primary school children. The Road Safety Park is a permanent 8 hectare site at East Coast with simulated roads, cars, cycles and pedestrians for educating school children on road safety. The Traffic Police also teach the children to cross at pedestrian crossing; even at these crossings should raise their arms so that the drivers can see them more clearly.

We must also teach our children never to dart across the street without first looking to see if it is safe to do so. They should certainly not cross in front of a stationary car or bus.

Children must stop and look right, left and right again and only when there are no cars, motorcycles or cycles, then cross the road. They must also be taught to give ample distance between the on-coming car or bus and themselves.

#### **CASE 7. The 9-year-old Boy who Tried to Fly**

A 9 year old boy with an umbrella was found lying at the foot of the block that he was living in. He fell from his fifth storey flat. He was rushed to hospital but died. His story appeared in the Straits Times newspaper. The father of the boy said he was a very well behaved, obedient boy, liked school and was never late for school. That fateful morning, the father said, the child woke up late and was perhaps worried about being late for school. He jumped with an umbrella thinking that the umbrella would act like a parachute and was safe. His father thought his action might have come about because he might have thought that to "parachute" down the block with his umbrella would be quicker than going down the stairs.

#### **Comment**

In this story it is very sad to hear that this 9 year old boy, though a good boy in all aspects, could not differentiate between what is possible and what is not possible. An umbrella cannot serve as a parachute. He probably discovered it too late.

Children also may not be able to differentiate fantasy from real events. Children like to imitate TV characters such as Superman, Superboy and Mary Poppins where all these characters in



television programmes fly all over the place. Children think that they can also fly. We must teach our children that these characters in the movies or films actually cannot fly. It is just a movie and they are using camera tricks to do that. We will have to teach our children that "Children and Adults CANNOT FLY". Personally, I do not like the idea of parents buying Superman suits for children and letting them wear these. These children may act like Superman, with disastrous results.

#### **CASE 8. The Roller-blading Adolescent**

A 13 year-boy had just finished his school examinations. That evening he went down to the void deck of this block and started roller-blading. The void deck had some uneven surfaces and he fell and hurt himself. He was rushed to hospital. He had fractured the tibia and fibula of his right leg.

#### **Comment**

This type of injury is common amongst those between 10 to 14 years of age. Roller-skating, skateboarding and of late, roller-blading are popular amongst teenagers. A study on skateboarding in Hawaii<sup>2</sup> reported that one-third of the injuries were fractures, one-third were contusions and abrasions and one-third sprains and muscle injuries. There were some deaths which resulted from head injuries sustained from falls or when the child while skateboarding was hit by a passing vehicle. An analysis of these revealed that improper state of repair, excessive wobbliness, poor skateboarding surfaces, inexperience of the person and skateboarding on the roads in traffic were risk factors to severe injury.

The child and the parents should be educated on safe roller-skating, skateboarding or rollerblading. The following are precautions to take:

1. Use of protective equipment like helmet, gloves and elbow and knee pads.
2. Prohibit skateboarding or roller-blading on roads and streets.
3. Roller-skate only on surfaces that are smooth.
4. Limit such skating only to designated areas and skateboard parks.
5. Follow safety rules like one person on one skateboard, not to do trick stunts, no fast downhill racing, avoidance of wet surfaces and good maintenance of boards.

#### **CONCLUSION**

The injuries in these cases could all have been prevented. Two ended tragically. The two children (Case 4 and Case 7) were perfectly well, normal and healthy at one moment and in the next moment were dead. Several had to be hospitalised (Case 2, Case 3, Case 6 and Case 8). In the remaining cases (Case 1 and Case 5), the children were lucky to be alive and none the worse for the experience, thanks to the presence of mind and first aid knowledge of the uncle of the choking infant and the public spiritedness of the neighbours who rescued the two brothers from their burning flat.

Health professionals, parents, carers of children, teachers and all those who are involved in looking after children have a duty and responsibility to ensure that the home, the playground and the road are safe. Children must be drilled on home safety, safety habits at play and safety habits on the roads.

Parents and carers need to be educated on the types of injuries that are likely to be encountered in the age groups under their care. Family doctors must take every opportunity to teach parents and carers in the prevention and first-aid treatment of such injuries.

#### **References**

1. Alpert JJ, Guyer B. Injuries and injury prevention. *Paediatric Clinics of North America* 1985;32(1).
2. Greensher J, Mofenson HC. Injuries at play. *Paediatric Clinics of North America* 1985;32(1): 127-35.

## PUBERTAL CHANGES AMONG SINGAPORE ADOLESCENTS

\* *U Rajan, MBBS, MSc (PH), FAMS*

\*\* *K Lyen, MA, BM BCh, FRCP, DCH, FAMS*

\*\*\* *V Drammusic, MD, DSc (PHD), Cert (O & G)*

### INTRODUCTION

It is extremely important to have national data and information on normal ranges of pubertal development, to allay fears of adolescents who deviate within normal/abnormal patterns of development. Such data is also vital for the reference of primary health care doctors, paediatricians, endocrinologists, gynaecologists etc. dealing with children and adolescents. Such data also has social and legal implications in relation to labour, crime, and delinquency.

Cross-sectional studies have been conducted in Singapore, over the past four decades, on various aspects of pubertal development among Singapore children and adolescents<sup>1, 2, 3, 4, 5</sup>. However no cohort study has been done on the pubertal changes in Singapore adolescents. It was to determine this that the School Health Service (SHS) undertook the monitoring of the pubertal development pattern of the entire cohort of Primary 4 students (9/10 years) with effect from 1987 using the Tanner Staging protocol<sup>6,7</sup>.

The study was built into the annual health screening programme for students and included observations on axillary hair, pubic hair, facial hair, breast development and age of menarche or break of voice. However, detailed examination of the male and female genitalia was not included for the following reasons:

- the study was conducted by nurse practitioners in the school environment;
- Singapore schools in general do not have suitable private consultation rooms;
- the sensitive nature of the subject under study, especially in an Asian culture;
- the time and manpower constraint, as the cohort was large.

The data collected was collated and analysed to present the pubertal development patterns among Singapore adolescents by age, sex and ethnic group.

### OBJECTIVES

The basic objectives of the cohort study were to

- (i) obtain data and information on the pubertal development patterns of Singapore adolescents, and

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\* *Medical Director, School Health Service*

\*\* *Consultant Paediatrician,  
Mount Elizabeth Medical Centre*

\*\*\* *Consultant, Department of Obstetrics and  
Gynaecology,  
National University Hospital*

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- (ii) generate Pubertal Development Charts on Singapore students to parallel the Growth Charts on Singapore students.

included axillary hair, pubic hair, facial hair, breast development and age of menarche or break of voice.

## METHODOLOGY

The cohort study was integrated into the annual school-based health screening programmes for the period January 1987 to November 1994. It involved the 1978 cohort of births from 9 years of age in Primary 4/1987 to 16 years in Secondary 4/1994.

The total study population was 30,550 students, representative of the national population in terms of sex and ethnic group distribution.

A team of 30 well trained and experienced nurse practitioners examined the entire cohort of students annually as they progressed from age 9 to 16 years. Data was captured annually on standard formats on the various stages of development of the chosen parameters of secondary sex characters for the study, based on Tanner Staging. They

## Study population

No sampling was done as all 38,384 students in Primary 4 in 1987 were included in the study. Students from the 1978 cohort of births comprised 30,550 students and the balance of 7,834 students were from the 1977 birth cohort. The data on the 1978 birth cohort students was separately collated and analysed for better standardisation and avoidance of variation between cohorts affecting the study.

Students with severe diseases and malformations were excluded from the study.

## Demographic Characteristics of Study Population

The distribution in terms of sex and ethnic group are as in Tables 1 and 2. These paralleled those of the national distribution.

**Table 1: Distribution by Sex**

Sex	Number	Percentage
MALES	15,703	51.4%
FEMALES	14,847	48.6%
TOTAL	30,550	100.0%

**Table 2: Distribution by Sex and Ethnic Group**

Sex		Chinese	Malays	Indians	Others	Total
Males	No. (%)	13,028 (82.9)	1,943 (12.4)	498 (3.2)	234 (1.5)	15,703 (100.0)
Females	No. (%)	12,420 (83.7)	1,745 (11.7)	447 (3.0)	237 (1.6)	14,849 (100.0)
Total	No. (%)	25,448 (83.3)	3,688 (12.1)	945 (3.1)	471 (1.5)	30,552 (100.0)



### **Measurements**

The various parameters studied were axillary hair, pubic hair, facial hair, breast development and age at menarche and break of voice. Tanner's Classification was used.

#### ***Female Breast: Stages 1 to 5***

- Stage 1 : Infantile stage.
- Stage 2 : Bud stage, with breast and papilla elevated as a small mound and there is an increase in the diameter of the areola.
- Stage 3 : Breast and areola further enlarged with a continuous rounded contour, i.e. breast and areola form one continuous mound.
- Stage 4 : Further enlargement of areola and papilla to form a secondary mound above the level of the remainder of the breast.
- Stage 5 : Adult stage, with recession of the areola so that again a continuous mound is formed.

The above guidelines were supplemented with pictorial illustrations to aid the staff when staging.

If the breasts were at different stages of development the higher of the two gradings were recorded.

#### ***Pubic Hair: Stages 1 to 5***

- Stage 1 : No pubic hair.
- Stage 2 : Sparse, long, straight and lightly pigmented hair first seen at base of penis in boys or labia in girls. At most the hair is slightly curled.
- Stage 3 : Hair slightly more than stage 2 but still coarse. It is darker, coarser and more curled.
- Stage 4 : Midway between Stage 3 and 5 i.e. nearly adult in distribution but not quite. Does not spread above base of triangle.
- Stage 5 : Adult and inverse triangle distribution very evident. Spreads up linea alba.

The above guidelines were supplemented with pictorial illustrations to aid the staff when staging.

#### ***Axillary Hair: Stages 1 to 3***

- Stage 1 : No hair.

Stage 2 : Sparse hair.

Stage 3 : Adult hair.

#### ***Facial Hair: Stages 1 to 3***

Stage 1 : No hair.

Stage 2 : Sparse hair.

Stage 3 : Adult hair.

#### ***Menarche - Females***

The age at onset of first menstrual period.

#### ***Break Of Voice - Males***

The age at onset of voice change.

### **RESULTS**

#### ***Axillary Hair Development***

##### ***Females (Fig 1)***

Axillary hair development commenced at around 9 years of age in all ethnic groups. By 12 years of age complete development was observed in about 10% of Indians and Others and around 5% of Chinese and Malays.

Development preceded at a faster rate among the Indians and Others -- about 10 percentage points ahead of the Chinese and Malays. The gap between the Indians and Others commenced to widen slightly with the Indians leading, after age 13 years.

About 75% of Indians and Others and 60% of Chinese and Malays had reached full axillary hair development by 16 years of age.

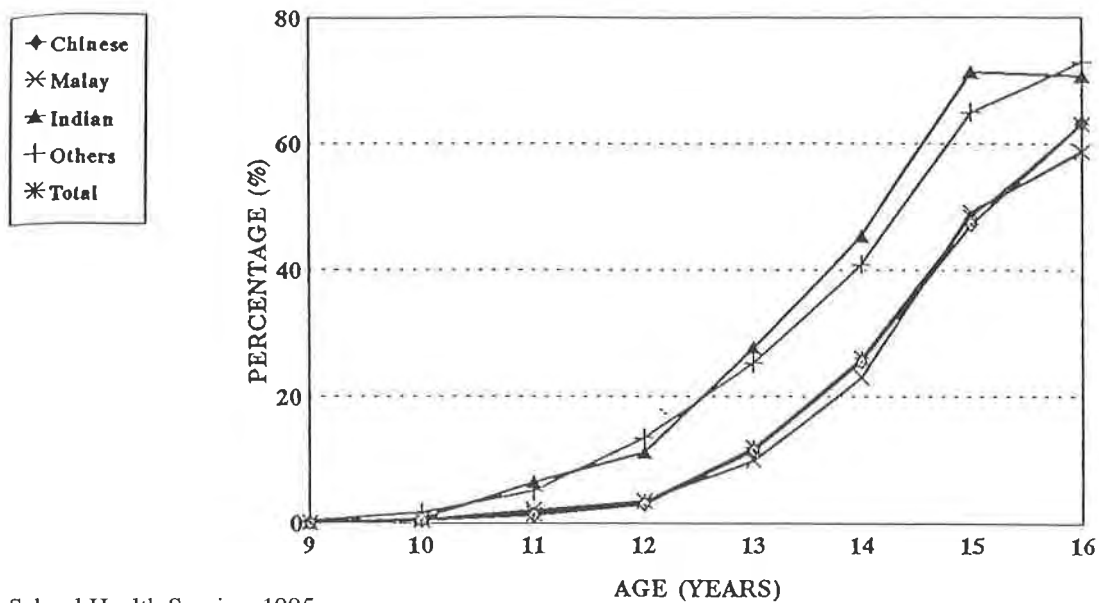
##### ***Males (Fig 2)***

Axillary hair development commenced at age 11 years in all ethnic groups. By 13 years of age complete development was observed in about 8% of Indians and Others and 5% of Chinese and Malays.

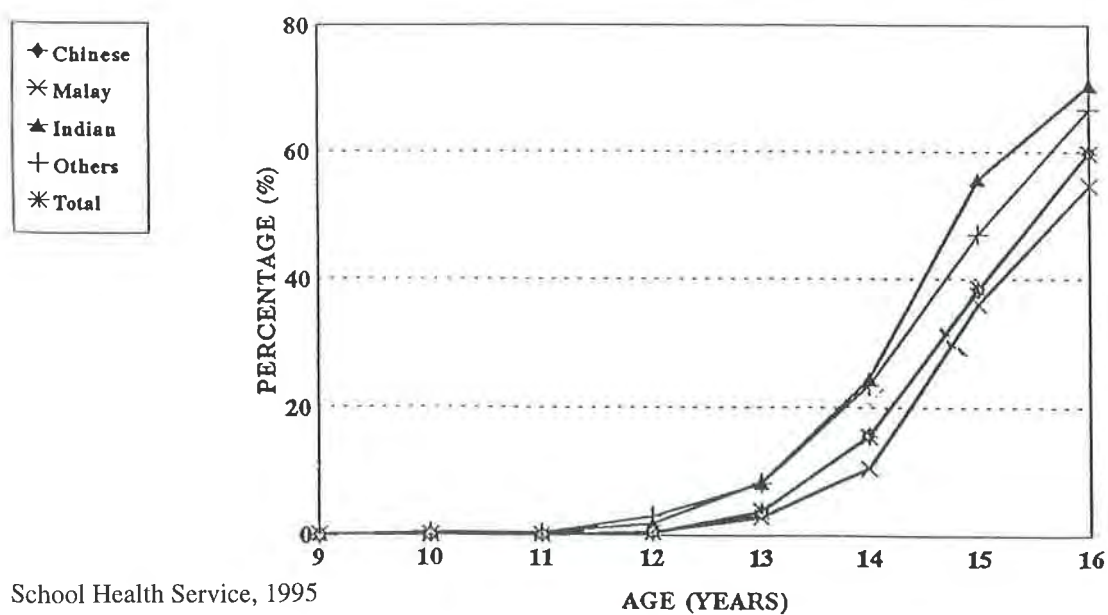
60% of Chinese, 55% of Malays and 70% of Indians had reached Stage 3 (full development) by 16 years of age.

Development preceded at a faster rate among the Indians and Others, about 10 percentage points

**Fig 1. Pubertal Development Stage 3 - Axillary Hair  
Females by Age and Ethnic Group**



**Fig 2. Pubertal Development Stage 3 - Axillary Hair  
Males by Age and Ethnic Group**



ahead of the Chinese and Malays at all ages. The gap between the Indians and Others commenced to widen after age 14 years with the Indians leading.

About 70% of Indians, 68% of Others, 60% of Chinese and 55% of Malays had reached full axillary hair development by 16 years of age.

#### **Pubic Hair Development**

##### ***Females (Fig 3)***

Pubic hair development was first observed at age 11 years in all ethnic groups, with less than 5% of all ethnic groups attaining full development at 12 years of age.

Development preceded at a faster rate among the Indians -- about 5 percentage points ahead of the Others and 10 percentage points ahead of the Chinese and Malays after 14 years of age.

About 42% of Indians, 40% of Others, 25% of Chinese and 22% of Malays had reached full pubic hair development by 16 years of age.

##### ***Males (Fig 4)***

Pubic hair development was first observed at age 12 years in all ethnic groups with less than 5% of all ethnic groups attaining full pubic hair development at 13 years of age.

Development preceded initially at a faster rate among the Others until after 14 years of age when the Indians moved ahead. The gap between the Indians and Others was very narrow at all ages. The Indians and Others were ahead of the Chinese and Malays at all ages by about 5 to 10 percentage points, with the gap widening with age.

About 40% of Indians, 38% of Others, 28% of Chinese and 25% of Malays had reached full pubic hair development by 16 years of age.

##### **Breast Development (Females) (Fig 5)**

Breast development commenced at age 11 years among all ethnic groups.

Only 40% of Chinese and Malays and 50% of Indians had reached Stage 5 (full development) by 16 years of age.

Development preceded at a faster rate among the Indians from 12 years of age, ahead of all the other 3 ethnic groups by about 15 percentage points from age 14 years onwards.

50% of Indians, 42% of Others and 38% of Chinese and Malays had reached full breast development by age 16 years.

##### **Facial Hair Development (Males) (Fig 6)**

Facial hair development commenced at age 9 years in all ethnic groups.

Only 25% of Chinese, 30% of Malays and 40% of Indians had reached Stage 3 (full development) by 16 years of age.

Development preceded at a faster rate among the Indians and Malays, ahead of the Chinese and Others at all ages by about 5 to 10 percentage points. The gap between the Indians and Malays remained very narrow by about 2 to 3 percentage points, but that between the others and Chinese was fairly wide, with Others leading.

40% of Indians and Others, 30% of Malays and about 27% of Chinese had reached full facial hair development by 16 years of age.

##### **Menarche (Females) (Fig 7)**

Onset of menarche was as early as 9 years or as late as 16 years of age in all ethnic groups, with a very similar pattern of distribution throughout. The modal age (most frequently occurring) for menarche was 12 years for all ethnic groups.

##### **Break of Voice (Males) (Fig 8)**

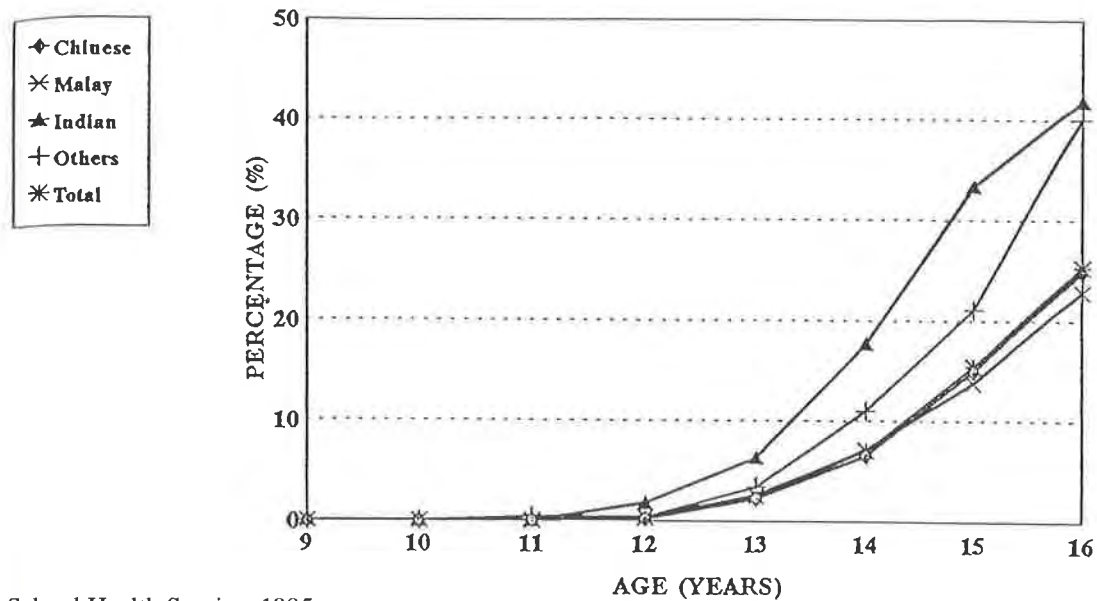
Break of voice occurred as early as 9 years or as late as 16 years of age in all ethnic groups with a very similar pattern of distribution throughout. The modal age for break of voice was 13 years for all ethnic groups.

Tables 3 and 4 summarise the age of onset of pubertal changes among males and females by ethnic group.

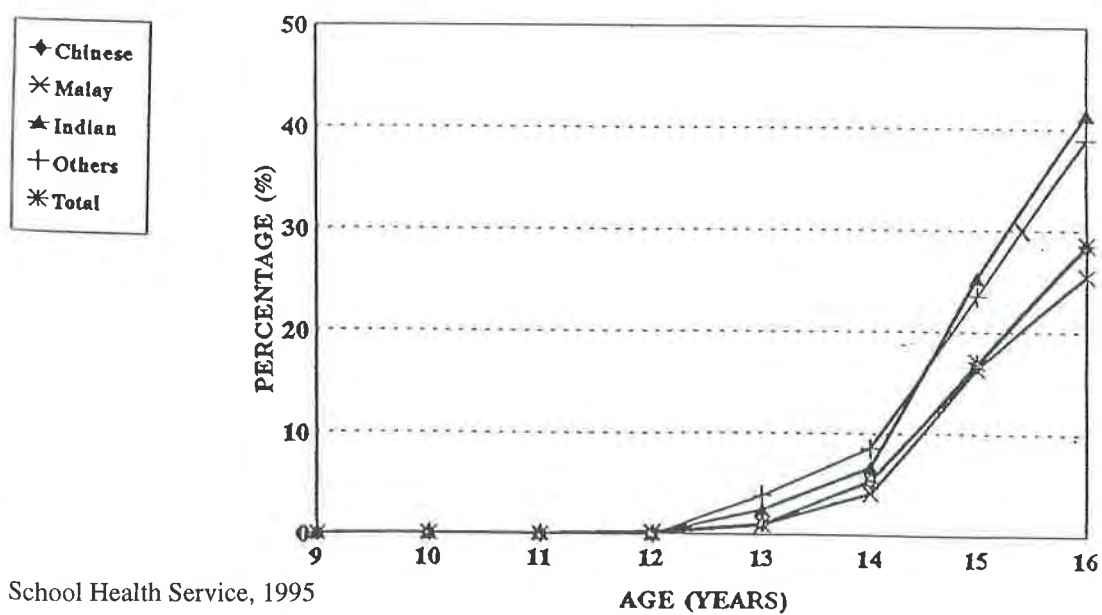
Tables 5 and 6 summarise the modal age at which the students attained full development of the various pubertal characteristics.



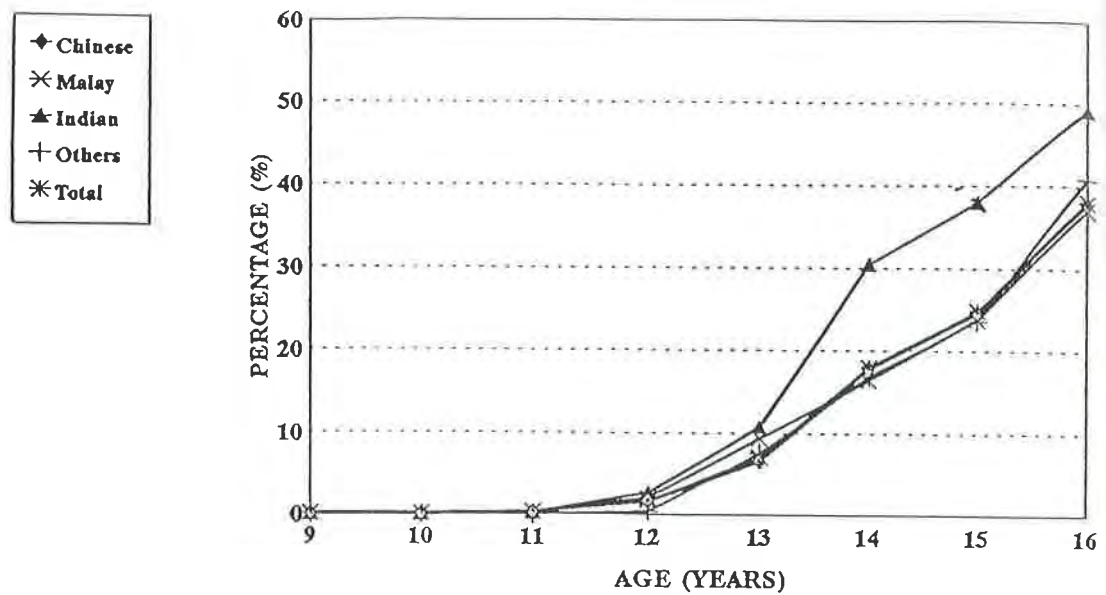
**Fig 3. Pubertal Development Stage 5 - Pubic Hair  
Females by Age and Ethnic Group**



**Fig 4. Pubertal Development Stage 5 - Pubic Hair  
Males by Age and Ethnic Group**

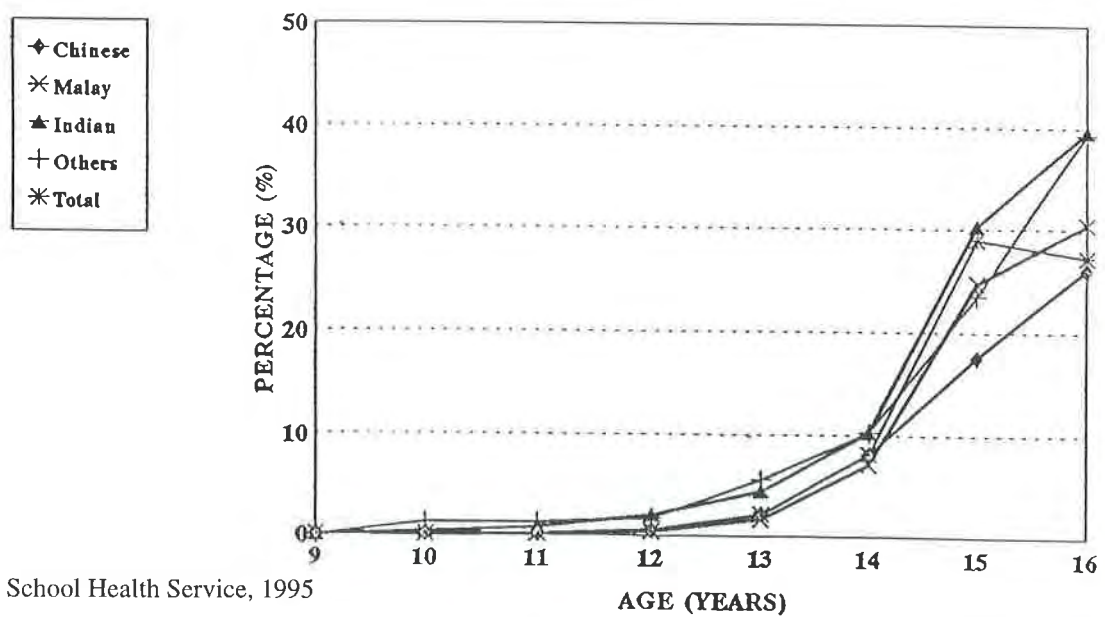


**Fig 5. Pubertal Development Stage 5 - Breast  
Females by Age and Ethnic Group**



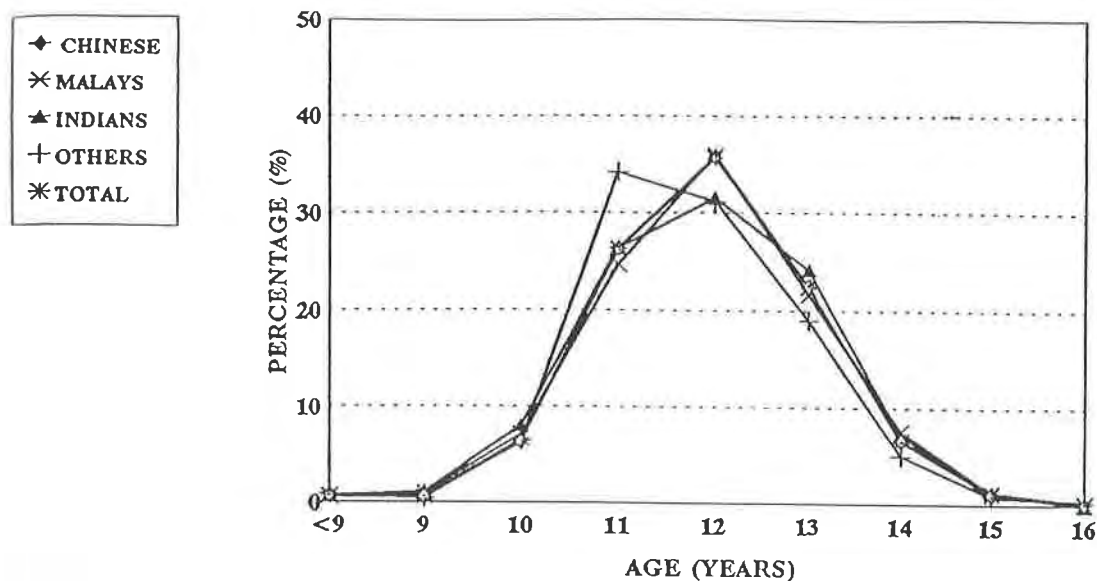
School Health Service, 1995

**Fig 6. Pubertal Development Stage 3 - Facial Hair  
Males by Age and Ethnic Group**



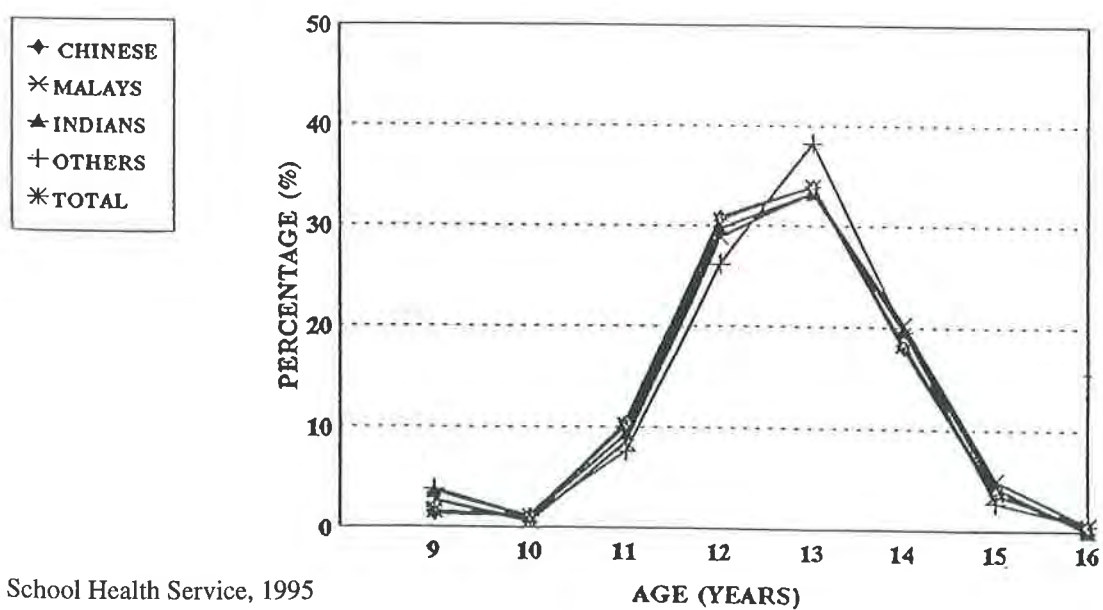
School Health Service, 1995

**Fig 7. Pubertal Development - Menarche  
Females by Age and Ethnic Group**



School Health Service, 1995

**Fig 8. Pubertal Development -Break of Voice  
Males by Age and Ethnic Group**



School Health Service, 1995

**Table 3 : Age of Onset of Pubertal Characteristics by Ethnic Group - Females**

Pubertal Characteristics	Females (Age in years)				
	Chinese	Malays	Indians	Others	Overall
Axillary hair	9	9	9	9	9
Pubic hair	11	11	11	11	11
Breast	11	11	11	11	11
Menarche	12	12	12	12	12

**Table 4 : Age of Onset of Pubertal Characteristics by Ethnic Group - Males**

Pubertal Characteristics	Males (Age in years)				
	Chinese	Malays	Indians	Others	Overall
Axillary hair	11	11	11	11	11
Pubic hair	12	12	12	12	12
Facial hair	9	9	9	9	9
Break of Voice	13	13	13	13	13

**Table 5 : The Modal Age at which the Students attained Full Development of Various Pubertal Characteristics by Ethnic Group - Females**

Pubertal Characteristics	Females (Age in years)				
	Chinese	Malays	Indians	Others	Overall
Axillary hair	15	15	15	15	15
Pubic hair	16	16	15	16	16
Breast	16	16	14	16	16
Menarche	16	12	12	11	12



**Table 6 : The Modal Age at which the Students attained Full Development of Various Pubertal Characteristics by Ethnic Group - Males**

Pubertal Characteristics	Males (Age in years)				
	Chinese	Malays	Indians	Others	Overall
Axillary hair	15	15	15	15	15
Pubic hair	16	15	15	16	16
Facial hair	15	15	15	16	15
Break of voice	13	13	13	13	13

## DISCUSSION

### Females

Among the females the pattern of commencement of development of the various secondary sex characteristics was axillary hair and menarche at 9 years, pubic hair and breast development at 11 years. The modal age of menarche was 12 years at which age

- about 10% of Indians and Others and about 3% of Chinese and Malays had reached full axillary hair stage 3 development,
- Less than 5% of all ethnic groups had reached full pubic hair stage 5 development, and
- less than 5% of all ethnic groups had reached full breast development Stage 5.

By age 16 years

- the percentage of students who had reached full axillary hair development increased to about 70% among the Indians and Others and about 60% in the Chinese and Malays.
- the percentage of students who had reached full pubic hair development increased to about 40% among Indians and Others and about 25% among the Chinese and Malays.
- the percentage of students who had reached full breast development increased to 50% among the Indians and about 40% among the Chinese, Malays and Others.

- the percentage of students who had attained menarche reached to about 99% among all ethnic groups.

### Males

Among the males the pattern of commencement of development of the various secondary sex characteristics was facial hair and break of voice at 9 years, axillary hair at 11 and pubic hair development at 11 years. The modal age of break of voice was 13 years at which age

- about 10% of Indians and Others and about 5% of Chinese and Malays had reached full axillary hair Stage 3 development,
- less than 5% of all ethnic groups had reached full pubic hair Stage 5 development,
- less than 5% of all ethnic groups had reached full facial hair development Stage 3.

By age 16 years

- the percentage of students who had reached full axillary hair development increased to about 70% among the Indians and Others and about 60% in the Chinese and Malays.
- the percentage of students who had reached full pubic hair development increased to about 40% among Indians and Others and about 25% among the Chinese and Malays.
- the percentage of students who had reached full facial hair development increased to 40%

among the Indians and Malays and about 30% among the Chinese and Others.

the percentage of students who had attained break of voice reached to about 99% among all ethnic groups.

In general the onset of pubertal changes among both females and males is at 9 years of age. Menarche and break of voice seem to precede full development of secondary sex characters by about 3 years. Breast (in females) and facial hair (in males) development precede both axillary and pubic hair development.

The ages at which pubertal development changes commence are similar in all ethnic groups. Differences are however observed in the rate of development of axillary, pubic, facial hair and breast development. This is attributable to genetic and environmental factors.

The findings of this study confirm clinical observations and are of great relevance in the detection and management of students with abnormalities of pubertal development.

Most of the changes occurring at puberty are the consequence of the action of the sex hormones - androgens and oestrogens - which are produced in large quantities at this time. These changes are controlled by genes. Puberty is initiated by a decreased sensitivity of the hypothalamus-pituitary complex, to the small amounts of androgens and oestrogens produced, prior to puberty. The decreased sensitivity in the feedback mechanism allows for the production of large amounts of

gonadotropins, which in turn stimulate the gonads to produce more sex hormones. The environment, e.g. general health and nutrition, can modify most genetic processes to some extent. The influence of other factors e.g. climate and education is still uncertain.

## RECOMMENDATIONS

There is an urgent need to substantiate the findings with a study on the nutritional and hormonal patterns of Singapore students, to explain the general observations and the differences among the ethnic groups.

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# "ALTERNATIVE MEDICINE" - A VALID ALTERNATIVE?

T C Quah, MBBS, M Med (Paeds)

## INTRODUCTION

As a paediatric oncologist, I observed that many of my patients took many other medicines (apart from those we prescribed) and herbal preparations on their own. One day, one of them brought a big green leaf to show me. Her mother has been boiling the leaf daily for her to drink. I was told that it was called "lung-wei-chao" (dragon-tail-herb). I left it on my table in the outpatient clinic. Many of my other patients who saw me that morning noticed and recognized the leaf and asked me, "Dr Quah, do you know that this leaf is very good for cancer?" I had to say, "No, I don't". Later, I consulted Prof Wee Yeow Chin of the Department of Botany, and he told me that this plant is called *Raphidophora korthalsii*, that it had been rumoured to have anti-cancer properties, and that our local scientists were investigating this claim, but there was no evidence yet that the claim was true.

This little incident illustrates a few points:

1. Patients have their own "grape-vine" and get to learn of many purported cures for their diseases from their relatives, friends, other patients, New Paper, Lianhewanbao, etc.
2. Patients often do not tell their doctors what they do apart from what their doctors expect to hear ("Yes, I've been taking my prednisolone, three times a day, and yes, I

have put on some weight.....").

3. Doctors often have no idea about what else their patients are taking.
4. Doctors often do not know anything about these purported cures.
5. These "cures" often have very little scientific evidence to back them up.

Not only patients, but people who are otherwise "not sick" take may "non-standard" drugs and herbs, to "pep themselves up", stay young, etc. I was intrigued by this phenomenon, did a little survey, and found that many people use these products with little knowledge of what they are good (or not good) for. Many depend on hearsay, advertisements, etc. Much of the evidence for the efficacy of these products remains in the realm of myths and legends and old wives' tales, but there is some scientific basis for the use of some, and I will try to present a fair assessment of these products.

## WHAT IS ALTERNATIVE MEDICINE?

Different people have different ideas as to what constitutes "alternative medicine". A reasonable and clear definition comes from the US National Library of Medicine: "Non-orthodox therapeutic systems which have no satisfactory scientific explanation for their effectiveness". It can also reasonably be defined as "medical interventions not taught at traditional medical schools or not available at conventional hospitals". Many of us, who have been trained in traditional Western medicine, know little about this subject as it is outside our normal reading, unless we make the extra effort of learning about it, which we should.

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*Senior Lecturer and Consultant  
Department of Paediatrics  
National University Hospital*

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### **Survey of local patients**

Recently we did a little survey of 20 children seen at the Hematology/Oncology Clinic and their families, and found that the use of alternative medicine is common. For example, 9 of them took bird's nest, 5 took ginseng, and 5 took traditional Chinese medicine (TCM) to "boost the immune system", decrease nausea, and increase appetite. How should we advise them?

Among the respondents (usually the mothers), all of them have heard of chi'kong and acupuncture; 11 had heard of bee-pollen, 9 of Aloe vera and reflexology, 8 of Royal Jelly, Chlorella, fish oil (Omega-3), Linzhir etc. Four took Royal Jelly themselves, 3 used bee-pollen, Linzhir or Aloe vera. Do these really work? Do they do any harm?

### **Aloe vera, good for skin but bad for gut**

Aloe vera has been used since thousands of years ago by the Egyptians, Arabs and Chinese for wound-healing<sup>1</sup>. A gel/mucilage can be obtained from the leaf-core. This is very soothing for the skin (mosquito bites, minor burns etc). In fact we can easily grow some of these plants at home, and use them on the spot when we have some minor skin injuries. Some people use Aloe vera as a tonic, but the surface of the leaves contain anthraquinone laxatives (and have been used as such), and thus ingestion carries the risk of producing diarrhoea.

### **Bee Pollen, good for the bees**

This is collected using mesh-like pollen traps which relieve the bees of the pollen carried on their back legs as they enter their hives<sup>2</sup>. This has been used to prevent premature aging, as a general tonic to promote better health along with "happiness and optimism". But biochemical tests have showed that it contains nothing that can be obtained more easily and cheaply (and I would say, more humanely) from other sources.

### **Royal Jelly, good for the Queen (bee)**

Another product stolen from the unfortunate bees is royal jelly<sup>2</sup>. This is the milky white, viscous secretion produced by the pharyngeal glands of worker bees. Bee larvae are fed exclusively on this for the first 3 days of life. It is called "royal" jelly because larvae which are destined to grow into future queens continue to feed on it, even after

the first 3 days. Compared to worker bees, these queen bees grow much larger, live ten times longer, and are highly fertile (compared to the sterile worker bees). However, it is certainly wishful thinking to reason that the same thing is going to happen to us if we take royal jelly too! To summarise: It was said that "one physiological effect of royal jelly is indisputable. It does have the ability to produce queens from ordinary bee larvae. Prudent people will limit its use to that purpose".

### **Evening Primrose Oil, good for the ladies**

This is very popular with the ladies, many of whom think that it is good for dysmenorrhoea, good complexion, general well being, menopausal symptoms, eczema and acne. Quite a few scientific trials have been done and showed that it is probably effective in premenstrual syndrome, mastalgia, eczema and prevention of cardiovascular diseases<sup>3</sup>. Some of the beneficial effects are thought to be due to its GLA (gamma-linolenic acid) content<sup>4</sup>.

### **Garlic, a panacea?**

Garlic, like aloe vera, has a venerable legacy in the traditional pharmacopoeia of many countries. More than 100 different uses for garlic have been recorded (one of which is for cooking), including high blood pressure, low blood pressure, warding off vampires, demons, witches, and use as an aphrodisiac.

During the First World War, British, French and Russian doctors treated infected war wounds and amoebic dysentery with garlic juice. It was still used for the same purpose by the Russians during the Second World War, as they (unlike their Western European allies) were too poor to afford penicillin, which had just been made available.

Garlic contains alliin (S-allyl-L-cysteine sulfoxide) which is odourless, but when the bulbs are ground, alliin comes into contact with allinase which converts it to allicin (diallyldisulfide-S-oxide), a potent antibacterial agent, which unfortunately is the compound that makes garlic smells like garlic! However, it is another chemical, ajoene (a self-condensation product of allicin) which inhibits platelet aggregation, and it thought to account for the protective effect of garlic against cardiovascular diseases.



Many garlic trials have been done, and these provided evidence that it can prevent atherosclerosis, reduce hypercholesterolaemia, alleviate hypertension, and prevent stomach cancer (as shown by 2 large trials in China and Italy)<sup>5,6,7</sup>. However, the dose required for these effects is rather high, equivalent to 5-20 fresh garlics daily. This may result in heartburn, flatulence and bleeding tendency, apart from the danger of losing some friends. Unfortunately, dried garlic (which is often used in commercial preparations) contains neither allicin or ajoene, and thus may not be beneficial.

### **Ginseng, the ultimate tonic**

Ginseng is of course one of the oldest of Chinese herbs, and Shen Nung, in his ancient pharmacopoeia, recommended it for "enlightening the mind and increasing wisdom". Continuous use is said to lead to "longevity". It is also said to be completely safe. Other claims for it include: mild aphrodisiac effect, enhancing of memory, learning, productivity, physical stamina, and immune function, decreasing the ravages of stress, aging, radiation, and alcohol. It illustrates a common concept used in many herbal traditions of basing the presumed indications on the physical resemblance of the herb to the organ or disease condition ("The Doctrine of Signatures"). The ginseng root resembles an old man, and thus it is said to be good for the whole person, especially an old person.

Traditional Chinese medicine distinguishes between different species of ginseng. *P. ginseng* from China, Korea, and Japan is said to be "heaty". The cheaper American ginseng, *P. quinquefolius* is said to be cooling, and thus used differently. Two other species used are *P. pseudoginseng* from Yunnan, and *Eleutherococcus senticosus* from Siberia, Korea and North China; these are not considered as true ginseng, but have similar chemicals to the true species.

Ginseng had been intensively analysed, and many of the chemicals (including 28 ginsenosides) it contains have been shown to have pharmacological effects<sup>8</sup>. It has a wide range of pharmacological and therapeutical actions. It acts on the central nervous system, cardiovascular system and endocrine system, promotes immune function and

metabolism, possesses biomodulatory action, anti-stress and anti-ageing activities, and so on. Some ginsenosides cause a rise in blood pressure, others a drop; some stimulate the CNS, others depress it. Chemical analysis showed that the content of ginsenosides is related to the source, part and growth years of ginseng. This illustrates the difficulty of assessing the efficacy of herbal products<sup>9</sup>.

### **Linzhir**

I have a little booklet on linzhir, which lists down the diseases for which it is good for. If what it says is true, we can throw away all our other medicines! I remember this little fungus as the precious thing growing on top of far-away snowy mountains in China, for which many kung-fu experts had to risk their lives and limbs to obtain. As the yield of wild *Ganoderma* (the scientific name) is very low, only the rich in olden China could afford it. However, modern science has made it much easier for us, as it can be cultured now, even in Singapore, and the most we have to do is to go to the nearest pharmacy, and we will be able to get hold of this precious fungus, conveniently packaged into capsules.

Linzhir is a fungus (basidiomycete) growing on rotten logs<sup>10</sup>. It is true that there have been quite a few scientific papers on this fungus in the literature, but most have been in vitro, mainly biochemical, studies, demonstrating antitumour, anti-inflammatory and other effects; but there is very little hard evidence of its efficacy in any human disease.

### **Chinese herbs**

I find it difficult to assess, from the scientific literature, how efficacious Chinese herbs are. This is because:

- \* Most studies (in English) have been published in obscure journals.
- \* TCM (traditional Chinese medicine) is based on very different concepts (e.g. ying and yang), and it is almost impossible for TCM and Western medicine to meet on common grounds.
- \* Very few good, properly designed trials have been done.

Thus, it is difficult for us objectively to advise our patient when they ask us whether they should take certain Chinese medicines. Another difficulty is that the practice of Chinese traditional medicine (TCM) has not been as strictly regulated as Western medicine, and thus the risk is higher. For example, the herbal medicines may be substandard or even adulterated. It is heartening that the Ministry of Health has made an effort to regulate the TCM practitioners and products. But as Prof Sun Yan (a well-known oncologist who was trained in the Western medical tradition, but is also an expert on the use of Chinese traditional medicine in patients with cancer), in an interview with TCS, said, it is going to be a tough job.

Even in China, where many hospitals practise integration of Western and Chinese medicine, many diseases (e.g. cancer) are primarily treated by Western medicine, with Chinese medicine being used as supplements (to strengthen the body, to improve the ability of the patients to undergo cancer therapy).

It is claimed that TCM practitioners (in common with many other practitioners of "alternative medicine") employ a more personalized approach than Western-trained doctors. This is in fact what we should, and what many of us do, practise too. What I find difficult to accept is that oftentimes **the same patient** seeing different TCM practitioners is given either different diagnosis or different treatment of both. It appears to me that the diagnostic and therapeutic process is too "operator-dependent".

#### **Problems with dosage**

Apart from the problem of efficacy, the other problem with using herbs is that unlike modern Western pharmaceuticals, the quality plant products vary tremendously depending on many factors like plant genetics, growing conditions, maturity at harvest, time in storage, possibility of adulteration, preparation method, and having the right plant! Thus, it may be more difficult, in some ways, to be a good herbalist, requiring such an encyclopedic and detailed knowledge of botany, than a conventional physician! At least when we order 500 mg of Penicillin, we know we are getting exactly (almost) that, and we don't have to worry so much whether the drug manufacture/

supplier is reliable, as long as we take care not to buy counterfeit drugs.

#### **Are herbal medicines safe?**

"Partisans in the herbal revival are more evangelistic than critical. Practically all herbals recommend large numbers of herbs based on hearsay, folklore, and tradition; in fact, the only criterion which seems to be rigorously avoided is scientific evidence. Particularly insidious is the myth that there is something almost magical about herbs which prevents them from inflicting harm." Thus wrote Varro Taylor, the author of *The Honest Herbal*<sup>2</sup>.

There is a prevalent misconception that just because herbs are "natural" products, they must be perfectly safe. Castleman is worth quoting here, "The fact is, healing herbs are neither "completely safe" nor "poison". They are like other medicines. Take too little, and nothing much happens. Take the right amount of the proper herb, and you enjoy healing benefits. "Take too much for too long, and you run into trouble. ...Any pharmacologically active substance capable of doing good when used properly, can also do harm when used improperly"<sup>11</sup>.

The potential toxicity of herbal medicines, apart from that due to adulteration (especially with heavy metals) is illustrated by a recent paper from Hong Kong that reported cases of severe and even fatal poisoning with herbs containing aconitine, podophyllin, and anticholinergic substances<sup>12</sup>; and recent reports on rapidly progressive fibrosing interstitial nephritis in 9 women who had all followed a slimming regimen in the same medical clinic in Brussels. The clinic had specialised in slimming treatments for the previous 15 years without any problems. In May 1990, therapy was changed, with the introduction of two Chinese herbs (*Stephania tetrandra* and *Magnolia officinalis*)<sup>13</sup>. This resulted in the outbreak of interstitial nephritis.

#### **Macrobiotics**

The use of macrobiotics (meaning "way of long life") seems to be getting more popular in Singapore. It is "a quasireligious philosophical system" founded by George Ohsawa (1893-1966),

based on the ancient Chinese concept of yin and yang. It is a complicated and abstruse system of healing and health, partly based on the belief that refined sugar and excess animal proteins are the two main causes of illness. The diet is mainly vegetarian in which foods of animal origin are used as condiments. Other beliefs include: not wearing synthetic or woollen clothing next to the skin, avoiding long hot baths or showers, having large green plants in the house and singing a happy song everyday. However, some adherents end up undernourished, with vitamin D, B12 and iron deficiency. It is also expensive and time-consuming.

## CONCLUSION

We, TWMPs ("Traditional Western Medicine Practitioners") are still to come to terms with the concepts and practice of "alternative medicine". Some are obviously "way out", and we should warn our patients to avoid these, especially if these might be potentially harmful, and often expensive. However, some appear promising, and we should not close our minds to them, but continue to learn and separate the wheat from the chaff.

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# HEALTH AND DISEASE SCREENING

*H C Lau, MBBS, MCFP(S), M Med (PH)*

## INTRODUCTION

To be appropriate for screening, a disease should be serious, treatment given before symptoms develop should be more beneficial than that given after they develop, and the prevalence of the preclinical disease should be high among the population screened. The criterion of seriousness relates primarily to issues of cost effectiveness and ethics. The expenditure of resources on screening must be justifiable in terms of correcting adverse health circumstances. Examples of seriousness are breast cancer and congenital hypothyroidism. Medical problems such as gallstones which are usually not life threatening and may in fact never become symptomatic, may not be suitable for screening. With respect to ethics, the consequences of failing to diagnose and treat early must be sufficiently grave to warrant

the risks and discomforts of the screening procedure (adapted from *Epidemiology in Medicine* by Hennekens and Buring<sup>1</sup>). In this article we will examine some of the principles fundamental to the practice of screening.

## PRETEST ESTIMATED RISK

The interpretation of tests often depends on the estimated risk. The pretest estimated risk helps to alert the practitioner to the possibility of a higher risk requiring serial or repeated testings. A careful history should therefore precede screening. High risk individuals should make us beware of possible false negatives, seroconversion window periods and advise regular testing to detect future disease. The following table on HIV screening gives the pretest probabilities of detecting HIV positives in different groups.

**Table 1. Order of Magnitude of Risk for HIV Infection in Different US Epidemiologic Groups**

Estimated Risk				
0.01 %	0.1 %	1 %	10 %	50 %
Blood Donors across USA	Military recruits across USA	IVDAs in methadone maintenance, New Orleans	Sexual Partners of haemophiliacs	Gay men, MACS cohort Los Angeles
Persons planning marriage, Illinois	Blood Donors, New York city	Military recruits Washington DC	IVDAs in methadone maintenance, San Francisco	IVDAs in methadone maintenance, New York city

*Registrar/Doctor-in-charge  
Woodlands Polyclinic  
Family Health Service  
Ministry of Health*

*(Punzer, Black, Griner. Diagnostic strategies for common medical problems<sup>2</sup>.)*

MACS = Multicentre AIDs Cohort Study  
IVDAs = Intravenous Drug Abusers



Advice to the patients after screening is often required because when the pretest probability is high, even a negative result is not reassuring. Repeated and serial tests are mandatory. When the pretest probability is low, a single screen may suffice.

### THE PROBLEM OF FALSE POSITIVES AND NEGATIVES

False positives and negatives are part and parcel of screening tests. For example in screening for syphilis using reagin tests like RPR and VDRL, the history is important and further tests are necessary to confirm diagnosis as false positive RPR/VDRL can occur in the presence of other infections e.g. IMS, varicella zoster, malaria, SLE, chronic disease and aging. Another common example is pregnancy tests where a retest later may be necessary if the test is negative and where false positives have also been known to occur.

### SENSITIVITY AND SPECIFICITY

Sensitivity and specificity and predictive value can be shown using Table 2.

**Table 2. Sensitivity and Specificity Calculations**

Screening Test	Disease present	No disease
Positive	a	b
Negative	c	d

Sensitivity =  $a/a+c$

Sensitivity =  $d/b+d$

Positive predictive value =  $a/a+b$

Negative predictive value =  $d/c+d$

As an example of calculating sensitivity and specificity we can take the Breast Cancer Screening Project of the Health Insurance Plan of Greater New York (HIP) study for testing the sensitivity and specificity of mammograms. In the HIP study, 62,000 women aged 40-60 years were screened. Two groups were compared, those on the screening programme and those on the usual care. The results of 64,810 screenings done over a period of 5 years observation showed 132 breast cancers

diagnosed among the 1,115 biopsies or aspirations done, 45 cases were missed by screening as they screened negative but were subsequently diagnosed to have breast cancer the following year. Hence the total number of breast cancers among those screened was  $132 + 45 = 177$  cancers.

**Sensitivity** is defined as the probability of a test being positive when applied to a person with the disease. Sensitivity of mammography  $132/177 = 74.6\%$ . Hence 75% of cancers would be detected by screening using the screening method in the HIP study.

**Table 3. Sensitivity and Specificity Calculations Using the HIP Study**

Mammography	Cancer present	Cancer absent	Total
Positive	132	983	1,225
Negative	45	63,650	63,695
Total	177	64,633	64,810

*Adapted from Hennekens and Buring. Epidemiology in Medicine.*

**Specificity** is defined as the probability that a test will be negative when applied to a person who does not have the disease. Hence specificity of mammography in the HIP study would be calculated as  $64,810 - 177 = 64,633$  had no cancer. From the screening, 63,650 tested negative. Specificity =  $63,650/64,633 = 98.5\%$ .

### SENSITIVITY AND SPECIFICITY TRADE-OFF

It is desirable to have a screening test that is both highly sensitive and highly specific e.g. the ELISA test for HIV screening which has a sensitivity of 99% and a specificity of 99.8%. In many tests this may not be possible and there is a trade-off between sensitivity and specificity. This is usually related to the stringency of the test. For a given test if you are more stringent, you get increased sensitivity at the expense of specificity. This is demonstrated by the urinalysis test to detect UTI.

**Table 4. Test Results of Urine Samples Obtained on Initial Visit from 1,047 Pregnant Women**

Test	No. of positive samples	No. of positive by culture	Sensitivity(%)	Specificity(%)
> 10 leukocytes	16	6	25%	99.0%
> 50 leukocytes	5	2	8.3%	99.7%

*Adapted from Bachman JW, Screening Studies for Asymptomatic UTI in Pregnancy<sup>3</sup>.*

One way of addressing the trade-off between sensitivity and specificity is to use the results of several screening tests together with these in parallel or in series. The liver function test panel (LFT) is an example of tests used in parallel to detect abnormality. The sensitivity of liver function tests has been found to be 59-90% depending on the histological abnormality. Some tests are not specific only to liver disease; alkaline phosphatase rises in bone disease and aspartate transaminase rises after myocardial infarction. The LFT has to be used in conjunction with clinical history, physical examination or after another screening test like hepatitis B screening. Where hepatitis B carriers are concerned, it is questionable whether follow-up screening is really useful with respect to cancer, since liver cancers have poor prognosis even with early detection, except for well encapsulated cancers. An example of serial testing is RPR or VDRL testing followed by TPHA or FTA-Abs to confirm diagnosis. Another example is HIV screening where a test of high sensitivity, the ELISA is used to screen, followed by the Western Blot test to confirm. A repeated high ELISA coupled with a positive Western Blot test done under dependable hands is highly accurate with the incidence of double false positive 1 in 100,000 or less.

#### FACTORS AFFECTING SENSITIVITY AND SPECIFICITY

Sensitivity and specificity like many things in medicine may be a moving value for a given

individual. What this means is that sensitivity and specificity may be affected by different categories of people tested. It has been suggested that ELISA sensitivity may be as low as 80% in high risk homosexual men and its specificity deteriorates in some groups viz, renal dialysis patients, alcoholics with liver disease, intravenous drug abusers, multiparous women and transfusion recipients. Another example is sensitivity and specificity of different categories in syphilis testing. This is shown in Table 5.

**Table 5. Characteristics of Serologic Tests in the Stages of Syphilis**

Stage	Sensitivity(%)		Specificity(%)	
	VDRL	FTA-Abs	VDRL	FTA-Abs
Primary	72%	91%	*	98-99%
Secondary	100%	100%	*	98-99%
Latent	73%	100%	*	98-99%
Tertiary	77%	100%	*	98-99%
Screening	86%	99%	97%	98-99%

*Punzer, Black, Griner. Diagnostic strategies for common medical problem<sup>2</sup>*

\* Specificity variable by stage and proportion of population tested with chronic and autoimmune disease.

#### MULTIPHASIC AND EXECUTIVE HEALTH SCREENING

Multiphasic Screening is blunderbuss medicine. There are inherent problems. As a population screening instrument it demonstrates poor utilization of resources. Tests vary in sensitivity and specificity. False positives, false negatives and borderline abnormal results can be vexing. Test results follow a Gaussian curve and in fact most tests follow this bell shaped curve. 2.5% of abnormal results can be normal because the range is taken from 95% of the normal population tested. The implications of screening asymptomatic

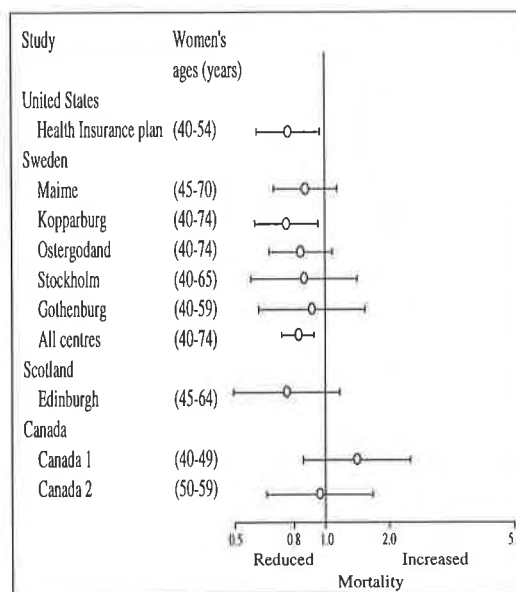
individuals are the battery of tests having a chance of hitting such "abnormals" in almost every single test. Hence it is not recommended for routine medical care. However it can generate work (and profits) for a medical practice. It has an attractiveness to the lay public who view it as an encompassing early detection instrument. Being a feature of medical affluence, consumerism and the executive lifestyle, doctors may find that they have to do it out of consumer demand factors. However it should not be promoted and certainly not advertised. In fact the public should be informed about the possible implications of such screenings. Screening must be accompanied by advice on abnormal and even normal findings.

### HIGH RISK STRATEGIES

Efficiency in screening is increased in those with high pretest probabilities. Health promotion and other strategies should be directed towards the target group for the highest possible yield. Doctors can practise this by selection of patients at higher risk. For example, a high risk strategy to disseminate health information for Pap smears for example would account for the risk factors for **cervical cancer** viz, intercourse at young age, multiple sexual partners or a husband/partner who has multiple sexual partners, increasing parity, poor personal hygiene and a history of venereal disease. Summary statistics of the breast cancer screening trials show us that mammography is useful especially in women over 50 years and they also show that it has lower sensitivity and specificity in younger women, increasing the risks of false positives and false negatives and their consequences. This is shown in the summary chart of various conducted trials (Fig 1). This chart also shows that the Canada 1 Trial did not show a clear benefit for screening women of age 40 - 49.

Similarly the Singapore National Health Survey showed that diabetes is of high prevalence after age 40 and is higher amongst Indians, followed by Malays and Chinese. Higher yield would be obtained if we screened asymptomatic individual above 40 years old as well as those with a family history of diabetes.

**Fig 1. Summary of 7-12 years Mortality Data from Randomised Trials of Breast Cancer Screening.**



Blamey RW, Wilson ARM, Patnick J, Dixon JM. Screening for Breast Cancer. *BMJ*<sup>4</sup>.

Points and lines represent absolute change in mortality and confidence interval.

In screening for **colorectal cancer**, a high risk strategy is also indicated in the use of the Faecal Occult Blood test (FOBT). The FOBT lacks sensitivity and studies have indicated that the test can miss anything from 25% to 75% of cancers. The true sensitivity and specificity of the test in asymptomatic persons is not known simply because most investigators have not found it feasible to do a total colon examination in asymptomatic persons with negative test results. In many texts an estimated range is given, as in Table 6.

**Table 6. Operating Characteristics of Tests for Colon Cancer**

Diagnostic Test	Sensitivity for cancer (%)	Sensitivity for adenoma (%)	Sensitivity for any neoplasia (%)
Three day faecal occult blood test	30-50%	4-20%	97%

Adapted from Punzer, Black, Griner. *Diagnostic strategies for common medical problems*<sup>2</sup>.



The FOBT tests for blood is a surrogate indicator for the target of screening, bowel tumours. Bleeding from cancers and adenomas varies and some tumours do not bleed at all. Occult blood testing is also insensitive to upper gastrointestinal bleeds and may be affected by diet and gastrointestinal irritants such as aspirin and nonsteroidal anti-inflammatory drugs. The FOBT must be done with proper instructions. Patients who undergo testing should be asked to take a meat-free diet with no peroxidase-rich vegetables and fruits, e.g. tomatoes and bananas, three days before the test. Although the test alone is inexpensive, the follow-up evaluations of a positive test are expensive.

Is the FOBT a useful test? If used correctly, it is useful and remains the most non-invasive test for colorectal cancer screening. Currently there is no better simple test to replace the FOBT. However to use it as a population screening instrument is controversial and not currently justifiable because follow-up evaluations are invasive, expensive and require adequate specialist expertise. Screening however can be selective to people at risk for colorectal cancer e.g. familial bowel cancer syndromes or elderly patients. For very high risk patients additional screening with colonoscopy is generally recommended. (The risk of developing colorectal cancer if one has three first degree relatives affected is 50%, decreasing to one in six with two first degree relatives and one in 17 with one first degree relative. With one first degree relative less than 45 years of age affected, the risk is one in 10). Ideally in screening for colorectal cancer, a careful history should be taken, proctoscopy and rectal examination done and three stool specimens examined with instructions given for the examination. They should be told of the implications of false positive and false negative results. If any of the 3 stool specimens is positive for occult blood, then referral for further investigation is indicated.

#### SCREENING IS OPERATOR DEPENDANT

Screening can be operator dependant as illustrated by the cervical **PAP smear Test**. The Pap Smear Test is currently the best screening test for cervical cancer. The cervix is easily accessible; it is easily done by any doctor; it is relatively cheap and early

treatment is effective, simple and complete with almost no morbidity. Studies have shown that a single smear will not detect 20% of CIN and 50% of invasive cancer. The diagnostic accuracy rate of cervical smears depends on the cellularity, proper smearing technique, fixation, staining and cytologic interpretation. Every step of the process is vital. Inadequate cellular sampling has been found to be responsible for missing 30 - 60% of high grade dysplasias that are picked up in second screening.

Different techniques of the smear can result in different sensitivity rates e.g. endocervical swabbing gives a sensitivity of 82 - 92% and scraping by wooden spatula 86 - 100%. The attention of the cytologist does make a difference as the reading of many smears in the day can result in fatigue and missing of abnormal cells. These however may be reduced by technological improvement using computer programmes with artificial intelligence like PAPnet to assist in the picking up of abnormal cells. A proper clinic screening protocol ensures procedural uniformity to reduce operator dependant errors.

#### LEAD TIME AND LENGTH BIAS

**Lead time** is defined as the interval between the diagnosis of a disease at screening and when it would have been detected due to development of symptoms. It therefore represents the amount of time by which the diagnosis has been advanced as a result of screening. **Length bias** refers to the over-representation amongst screen-detected cases of those with long preclinical phase of disease. An example of lead time and length bias can be surmised in screening for lung cancer. Large scale early detection programmes for lung cancer have not produced any benefit because of the rapidly fatal course of the disease. For example a controlled British study of semiannual chest x-ray in more than 29,000 men detected 101 cancers. Of these 101 men, 65 were detected by the chest x-ray and the others detected symptomatically during the screening intervals. The overall 5 year survival rates were 15 percent and six percent in the control population. Taking this example, those detected by the routine chest x-ray may represent those with slower growing tumours since not all individuals have tumours with exactly the same



behaviour. Those that present without screening in the controlled group may represent those with a faster growing tumours and thus a poorer prognosis. Reports of higher survival rates after resection of insitu lung cancer diagnosed by chest x-ray or sputum cytology/bronchoscopy may represent selection of slow growing tumours, an example of length bias. Other randomised lung cancer screening trials have not shown clear benefits for population screening of lung cancer. This include 3 American trials at the Mayo Clinic, Sloan Kettering Cancer Centre and John Hopkins Cancer Hospital, each enrolling more than 10,000 smokers and employing sputum cytology as well as annual chest x-rays. However screening with chest x-ray may not necessarily apply to the more limited general practice clinic setting. Discretion to screen those at high risk may be exercised e.g. a 55-year-old smoker with a family history of cancer, or resected lung cancer cases who are known to have high incidence of a second primary.

#### DEMONSTRATION OF THE PRINCIPLES OF SCREENING USING THE EXERCISE STRESS TEST

The **Exercise Stress Test** can be used as an example to demonstrate the principles discussed so far. It is a common test in executive screening packages. Myocardial ischaemia may be manifested during the exercise stress test by ECG changes, particularly alterations in the ST segments. We can ask the following questions. What is the underlying premise of the test? How useful is the exercise stress test? What affects the sensitivity, specificity and predictive value of the stress test? In what context is it most useful?

##### 1. What factors affect sensitivity and specificity in the exercise stress test?

The underlying severity of coronary artery disease and the ECG criteria used for diagnosis of the ischaemia affects sensitivity e.g. test sensitivity using ST segment depression in one study increased from 40% to 76% as the extent of the disease went from one-vessel to three-vessel stenosis. The magnitude of ST depression used affects the sensitivity and specificity as a sensitivity specificity trade-off. We can increase sensitivity by reducing the amount of ST depression required at the expense of lowering specificity resulting in more false

positives. For example if we take ST depression of 1-1.5 mm the sensitivity was 23.3% and specificity 89%. By raising the ST depression to 2 mm, sensitivity was lowered to 8.8% but specificity rose to 97.8%. Others aspects of the ST segment have also been used e.g. downsloping ST segment - specificity 99%, horizontal depression 85%, slow upsloping ST 68%,. Different protocols and number of leads also affect sensitivity and specificity. Submaximal tests are less sensitive. The number of leads used also affects and three leads are better than one.

##### 2. What factors account for false positive results in the exercise stress test?

Conditions that may cause false positive results include pre-excitation syndromes, hypertension, valvular heart disease, left ventricular hypertrophy, hypokalemia, recent glucose ingestion and drugs like sedatives and digoxin. Studies also show that false positive results may be commoner in women than in men by a factor as high as three. Asymptomatic subjects with few or no risk factors for coronary artery disease are less likely to have underlying coronary artery disease and more likely to have a false positive test. They should therefore be screened carefully for possible causes of a false positive response. *In the asymptomatic population, abnormal ST responses should be viewed as a risk factor rather than definite evidence of disease since in these individuals only 6% have coronary disease or 12% if they are in their sixties.*

##### 3. What is the underlying premise in the exercise stress test?

The underlying premise of the stress test is flow-limiting stenosis. The resultant myocardial ischaemia during stress testing gives rise to symptoms or shows ST depression on the ECG. However the majority of patients who die suddenly from coronary artery disease may not have flow-limiting stenosis. Instead they have severe atherosclerotic disease in which the atherosclerotic plaque suddenly ruptures and ensuing clot and thrombus occlude the coronary vessel. Studies have indicated that exercise stress testing is not a cost-effective way of screening otherwise healthy people for coronary heart disease. This may be because many who have myocardial infarction do not have flow-limiting stenosis preceding the event.

#### 4. When is the exercise stress test useful?

The positive predictive value of the presence of coronary artery disease has been found to be 50% in those with atypical chest pain and 89% when typical angina is present. The predictive value of a test can be increased by screening those with a greater likelihood of disease. In the case of the stress test, the positive predictive value in those with typical anginal symptoms is 90%. However in such patients there is an 89% chance of it being coronary disease. In other words the predictive value of typical symptoms is as good as the test itself. So when is the exercise stress test useful? It is useful in the context when the pretest likelihood is moderate e.g. a 50 year old man with atypical chest pain and one or two coronary risk factors. In this case a positive result would probably not be false and a negative result would probably exclude coronary disease.

#### THE IMPORTANCE OF CONTEXT AND THE CLINICAL EXAMINATION

Using a test in context is basic to the practice of medicine. Even a nonspecific test like ESR can yield useful information in the right context. The ESR has been quoted as the most sensitive serologic test in the detection of malignancy as a cause of back pain. An ESR more than 20mm has a sensitivity of 78% and a specificity of 67% for diagnosing underlying malignancy. If we increased it to more than 50mm, the specificity goes up to 97% with a corresponding decrease in sensitivity to 56%. Specific clinical examination may be more sensitive than some tests. An example is **prostatic cancer** where direct rectal examination has a sensitivity of 60-70%. PSA or prostate specific antigen has a specificity of only 33%, too low to warrant its use as a screening test. There is no evidence that screening for prostatic cancer reduces long term mortality as death from prostatic cancer is low and even the patient (who is usually an elderly man) with clinically evident disease is more likely to die from something else.

#### CONCLUSION

Screening should be used in the right context in a knowledgeable way. It should neither be used blindly nor written off as being totally useless. The practitioner should update on new

developments and tailor screening to those at risk. Screening is an **evolving science**. Techniques are continually refined and technological advances can improve sensitivity and specificity. Studies may lag behind new advances in tests because time is required to produce study findings and results. When comparing studies the techniques of the studies will also need scrutiny as they may not be comparable across trials and between new and old trials. The epidemiologist looks at the precision of the instrument and its cost-effectiveness for large scale use. However to general practitioners and family physicians operating in personalised clinic environments the patient is an individual, not a statistic. He has feelings, fears, misinformation, anxieties and desires. To him it may be all or none; does he have disease or not? The rapid expansion of new medical knowledge and modalities of screening and treatment has placed a greater burden of expertise and competence on the medical practitioner to advise his patients. He must be sensitive to each patient's needs. He must remember the fundamentals of his calling and practise with wisdom and sensitivity.

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## TEACHING DISCIPLINE TO YOUR CHILD

C B Tan, MBBS, M Med(Fam Med)

### INTRODUCTION

No parent is taught how to become a good parent. It is often assumed that when the baby is born, the couple automatically become good parents. Discipline is such an important element of a healthy society and yet little is taught to the couple. Below are some pointers concerning disciplining of children.

### WHAT IS DISCIPLINE AND WHY IS IT IMPORTANT?

Discipline is behaving in a way that conforms to the customs of the society. Each individual's behaviour should be acceptable to others. Children must understand that there are limits to freedom. They must learn to respect the right of others. They should also be taught what is safe and what is dangerous. Discipline is important because, without that, the child concerned will grow up to be a problematic adult.

### WHAT IS CORRECT DISCIPLINE?

Correct discipline has several features.

#### Love

Love is the most important element in discipline. The parent should discipline the child out of love

and not out of anger or frustration.

#### Humour

There is also a need to have a *sense of humour* when one teaches a child. The child is often innocent and ignorant. A little humour will make discipline more enjoyable. Getting angry and worked up only makes things worse.

#### Rules

Rules are important in discipline. Simple rules and regulations are needed to teach the child to differentiate between right and wrong, between danger and safety.

#### Consistency

Consistency, both in behaviour and punishment, is necessary so that the child is not confused. Both parents should agree on the type of behaviour that is not acceptable and the type of punishment that is appropriate. Do not let the child play one parent against another. There should be *no double standards*. All the children should be treated equally. Parents' behaviour should also confirm to the rule of the game.

#### Praise and encouragement

A child responds more to *praise and encouragement* than punishment. Motivate the child through appropriate praises. Reward the child for good behaviour.

#### Explanation

Allow the child to explain his behaviour. Sometime it is not his fault; punishing him will certainly confuse him. Explain to the child why he is being punished; tell him what is expected of him.

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Registrar, Bedok Polyclinic,  
Primary Health, Division,  
Ministry of Health

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### **Punishment**

Punishment is needed when the behaviour is not acceptable. Punishment should be consistent and immediate. Deal with the behaviour and not the child. Avoid comments that belittle the child e.g. 'you are stupid', as you will only confuse him further. There is the trap of *repeated threats or cry wolf situation*. The child is quick to learn to ignore threats which are not carried out.

### **WHEN TO START DISCIPLINE?**

#### **Under one**

A child below the age of one is unable to understand or learn discipline. It is useless to teach him discipline at this age.

#### **One to three**

A good period to begin discipline is between the ages of one and three. During this period, the child begins to understand language and begins to develop his world view. As the child is still too young to understand danger, discipline generally revolves around ensuring that the child's behaviour is safe.

#### **The older child**

When the child grows older, explanation accompanied with praise and encouragement and

some punishment is probably the best way to teach the child. A school child learns very fast; the child is also more independent. Explanation and consistency become important components of discipline now. Praises and rewards will generally motivate the child and punishment with proper explanation will certainly correct his mischief. Using yourself as a role model to teach the child is extremely effective.

### **Adolescents**

Adolescents are a difficult group. They are more independent and have a strong sense of ego. Treat them with respect.

Communication is probably the best approach. Discuss and negotiate with them concerning house rules and punishment. Talk to them, provide guidance but most of all, listen to them.

### **CONCLUSION**

Society is changing rapidly. There is the influence from the West. People are more materialistic and more affluent. Instead of personal attention, they may provide materialistic comfort as surrogates. It is important not to forget about our children. They are our future. Love them dearly. Discipline them well!



## CASE REPORTS -- READING AND WRITING THEM

*L G Goh, MBBS, M Med (Int Med), FCFP (S'pore), MRCP*

### INTRODUCTION

A case report is a brief objective report of clinical observations or outcome usually from a single clinical subject or event; occasionally two or more cases may be described. Case reports form a source of specific information and details about clinical problems encountered in clinical practice. Through them, we add the experiences of the writers to our repertoire of clinical experience.

Reading from case reports should therefore be part of our continuing medical education. Writing case reports is the next step in learning and teaching case, both for self-learning and sharing and teaching others.

### CASE REPORTS

Case reports can be grouped into types: the knowledge case and the teaching case.

#### The knowledge case

A case report is often the first evidence of an unexpected or unusual event<sup>1</sup>: discoveries on new uses of therapeutic agents and adverse drug reactions are examples. The knowledge case also includes lessons to learn from one's mistakes and near misses. Learning vicariously from a colleague through such cases helps us avoid similar mistakes

in the future. A selection of examples from current medical literature is used to illustrate the knowledge case.

#### *New uses of therapeutic agents*

An example of this type of case report is that in the Journal of Family Practice 1995 by Mold<sup>2</sup> who reported on an elderly patient.

This patient experienced frequent drop attacks. These were effectively prevented with nifedipine. Possible pathophysiologic mechanisms are discussed and the relevant literature is reviewed.

#### *Adverse drug reactions*

Adverse drug reactions are many. One such example is calcium channel blocker-induced gingival hyperplasia reported in the Journal of Family Practice by Lawrence et al<sup>3</sup>.

*Gingival hyperplasia is a common disorder associated with phenytoin and cyclosporine therapy. However, induction of this condition by calcium channel blocker is less well known. Inflammation of the gingival tissue from bacterial plaque and the subsequent development of gingival crevicular fluid may allow sequestration of the calcium channel blocker, thus predisposing the tissue to a localised toxic effect and the development of gingival hyperplasia. Calcium channel blockers have cellular effects similar to those of phenytoin and cyclosporine, including the production of a localised folic acid deficiency. All the available calcium channel blockers have been reported to cause gingival hyperplasia. Treatment options include meticulous plaque control.*

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*Associate Professor  
Department of Community,  
Occupational and Family Medicine,  
National University of Singapore.*

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### **Lesson to learn**

Journals often have cases that are lessons to learn featured in their pages. Two examples from recent literature illustrate this type of case report.

The first example is a case in *Update* by Hopcroft<sup>4</sup>, a general practitioner in Essex. This is an account of how an acute case of epiglottitis in a boy was nearly missed.

*Briefly, it was about a housecall where the consultation took place in a noisy and uncondusive setting. The boy presented with a simple cough. The dim lighting and the family member's demeanour of "each apparently intent on treating the consultation as a spectator sport" obscured the mild respiratory difficulty the boy was already experiencing. The doctor missed the life-threatening epiglottitis. However, he was lucky to have thought of it on the way back and also took the trouble and the indignity of going back to check ("It sounded feeble, standing at the door: 'Could I take another look at Alex because there was something else I wanted to check?'"). He redeemed the situation, in time.*

This case allows us to focus on the near tragedy that we may get into in the distracting real world. The general textbook chapter on acute epiglottitis may contain one or two paragraphs on the subject and will make a point on it being a threatening condition. A case report gives us that and more. We are introduced to thought processes, the decision-making points in problem resolution and the setting of the problem. The case provides the context that gets our minds active clinically and the details make the medical problem memorable so that if we ever meet a similar case, we are reminded of the potential pitfall.

The second example is a paper by Korner et al<sup>5</sup> on the dangers of oral fluoroquinolone treatment in community acquired upper respiratory tract infections that was published in the *British Medical Journal* under the column of "Lesson of the week".

*Two cases of patients of life-threatening systemic pneumococcal infection, originating in the upper respiratory tract in which a fluoroquinolone was prescribed unsuccessfully as first line empirical*

*antibiotic treatment, were described. The first case was a 29-year-old woman who developed acute severe headache and subsequent confusion and agitation; she had a history of flu-like infection and was given ciprofloxacin. S pneumoniae serotype 6, sensitive to penicillin, was subsequently isolated from the cerebrospinal fluid, blood cultures and the pus from her nose. The second case was a 67-year-old man who was admitted with a three-day history of right sided muscular weakness, sore throat and worsening dysphagia. He was found to be septicaemic and had septic polyarthrititis. S pneumoniae serotype 9, sensitive to penicillin and resistant to ofloxacin, was isolated from blood cultures and from the ankle aspirate. Fortunately, both patients recovered.*

The lesson is this: fluoroquinolones should not be used when pneumococcal infection is likely, as in community acquired respiratory tract infection. The oral fluoroquinolones, ofloxacin and ciprofloxacin, show excellent activity against Gram negative organisms, but their activity against Gram positive organisms, in particular streptococci and pneumococci, which are commonly encountered organisms in upper respiratory infections, is limited. Better empirical choices of antibiotics would have been amoxycillin and related antibiotics or erythromycin. The increasing trend of using ciprofloxacin to treat upper respiratory tract infection can be dangerous.

### **The teaching case**

Teaching may be a major or minor activity of clinicians. Clinicians who spend the major part of their time in clinical work are more likely to have case material they can draw on as teaching material compared to the academic colleague. At any rate, case from the medical literature provide a dossier of clinical material that are worked out and will have discussions that are often instructive and illuminating. Such case reports can be used in various ways for teaching purposes, including self-learning. The weekly clinicopathological exercises in the *New England Journal of Medicine* and case from Hospital Grand Rounds in the *British Medical Journal* and other journals are such examples. There may be a need however to simplify the case material to suit one's teaching needs.

Cases may also be used to illustrate concepts. The case vignettes used to illustrate childhood injuries in this issue is one example of such a use. The value is that the cases make the concepts more memorable and the paper more interesting and clinical.

## WRITING A CASE REPORT

Progressing from reading a case report, the reader may at some time have reason to want to write a case. Indeed, there are examples on one's practice of patients and problems that may serve as useful reminders of pitfalls or they may be new observations or they may be rarities of a medical condition. These may be usefully shared in the pages of a journal. These are the knowledge case.

Cases can be used innovatively to illustrate the specifics of a subject. We can also approach teaching from the other end, namely starting with specifics of a case or cases and have the educational closure with general principles of the subject. In teaching problem solving, cases are valuable. These are the teaching cases.

### Writing the knowledge case

To document knowledge, the case report can follow the format of Introduction, Description and Discussion. The Introduction should state the reason why a case report is being done. The Description should vividly describe the essential needed to understand the case; the Discussion should compare one's observations with what is known in the literature and state how the reported information will be useful clinically. Having decided on the intended readership and a journal to which to submit the manuscript, and searched the literature for similar cases, the investigator has enough perspective to begin preparing a case report

### Writing the teaching case

The teaching case has a more complex agenda. When selecting and writing cases for the teaching by the case method, important principles need to be applied. These have been defined by Thomas<sup>6</sup> in a paper in Medical Education in 1992.

They are (a) to include the prototypical features of a disease but keep the case simple; (b) to include

decision making nodal points; (c) to emphasise clinical reasoning; (d) in the context of reinforcing prior knowledge; and (e) to enable the case to permit the transfer of knowledge and skills to other areas of medicine. Each of these principles are elaborated using the points made from Thomas' paper itself.

### *Include the prototypical features of a disease but keep it simple*

Students learn faster when either lecture material or case studies have the maximum number of features typical of the disease. The repertoire of teaching cases should begin with a prototypical case. This can be followed by cases that are made more difficult diagnostic problems because key prototypical features are missing, or multiple disease or extraneous features ("distracters") are present.

*As an example, a case of a 22-year old female with multiple episodes of untreated urinary tract infection is selected. She also has a therapeutic abortion, venereal warts and vaginal discharge; these are distracters to the understanding of what are the prototypical features of an urinary tract infection.*

If this case is to be written up for the initial undergraduate curriculum, the part on therapeutic abortion and warts may be intentionally left out to give focus to the prototypical features of urinary tract infection. For postgraduate learning, the other problems surrounding this case can be included to make the case more difficult and more akin to the real world.

### *Include decision making nodal points*

For students to make crucial decisions at nodal points, the case needs to feature enough diagnostic problems and contain enough patient information and resource material.

*A case of attempted suicide was prepared for course teaching. It focused mostly on making the diagnosis from the history. The tutors teaching this course felt that whether to hospitalise was a key lesson to be learned, so they requested a simplification and focusing the case so that students needed to make a clear decision whether or not to hospitalise. Students working on the refocused*



*case commented that they felt the case gave them the needed skills to deal with similar issues.*

#### **Emphasise clinical reasoning**

Enough patient information and resource material should be provided to permit clinical reasoning. The example given by Thomas was a case on meningitis.

*The meningitis case, as was originally written, was of meningococcal meningitis but it contained enough clues for the differential diagnosis to include Rocky Mountain spotted fever.*

To emphasise clinical reasoning skills, the case was rewritten to focus on meningitis and the features that may suggest Rocky Mountain spotted fever were omitted.

#### **Reinforcing prior knowledge**

The repetition of key aspects of learned material while presenting new material in a case study encourages students to maintain a firm hold on basics. This is an important pedagogical principle.

#### **Permit the transfer of knowledge and skills**

The case should include concepts and resources that permit the transfer of knowledge and skills to other clinical problems.

*For example, a case on breast cancer may usefully also include in the lesson plan, a focus on the anxiety and fear of malignancy that the disease may impose on the patient. This anxiety and fear would be applicable to all malignancies and lumps of uncertain diagnosis and could be usefully pointed out to the learner. The lesson could be*

*made to move further afield from just breast cancer to get the learners to share the experience of anxiety and fear in those they know who had cancer of various organs if this has been thought of in the learning agenda.*

#### **CONCLUSION**

Reading from case reports should be part of our continuing medical education. Writing case reports is the next step in learning and teaching with cases, both self-learning and sharing and teaching others. The knowledge and skills of how to read them and write them well need to be honed through conscious application of the concepts of case reading and writing.

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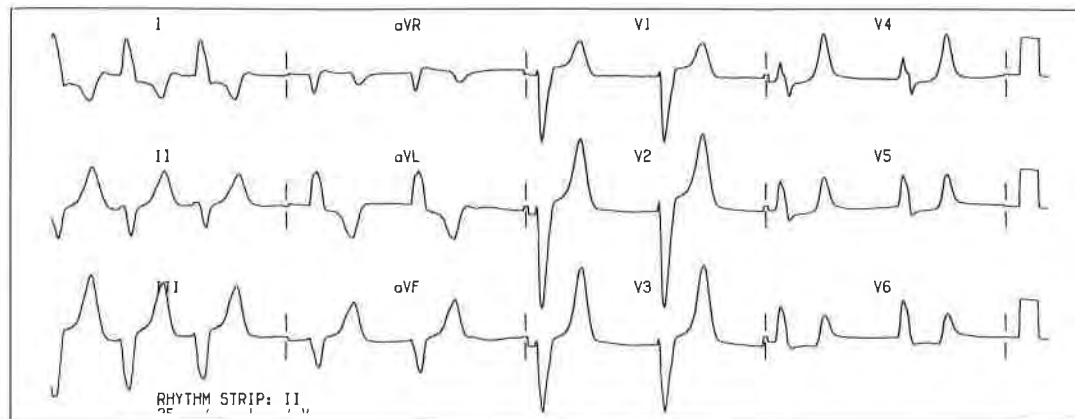
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# ECG QUIZ

W L Ng, MBBS (Adelaide), FRACP, FAMS

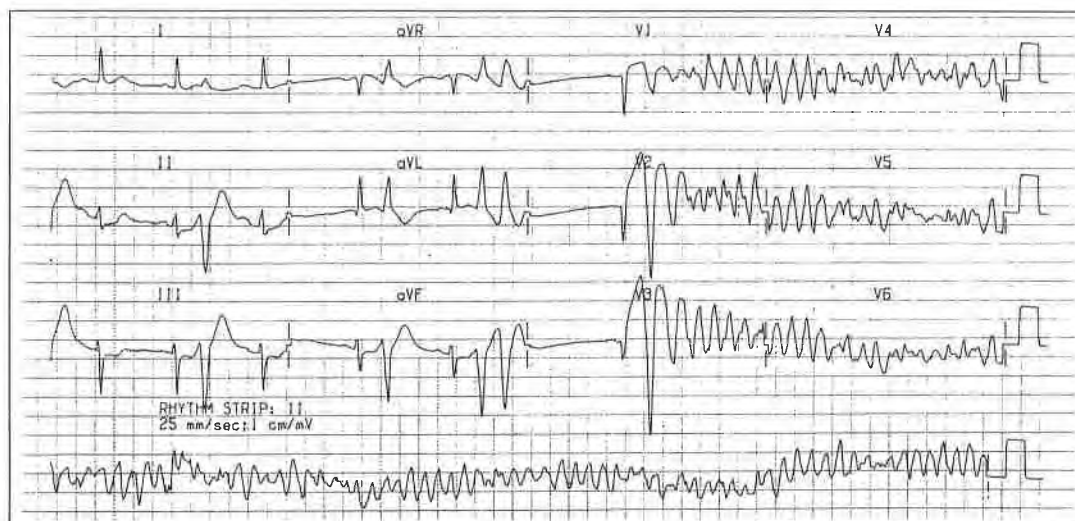
## ECG 1



### Question on ECG 1

- Describe the ECG abnormalities.
- List one test you would do.
- How would you manage the problems?

## ECG 2



### Question on ECG 2

- Describe the rhythm.
- What is the treatment of choice?
- What is the most likely cause of the rhythm disturbance?

Senior Registrar  
Cardiac Department  
National University Hospital

Answers on page 238

## OBITUARY

## OBITUARY



**Dr Lim Boon Keng, Ignatius Francis**

Born: 15 Aug 1934

Departed: 21 Oct 1995

Dr Lim Boon Keng was born in Singapore on 15 August 1934. He spent his childhood in Singapore, was educated in Victoria School and proceeded to do his medical training in Australia. He graduated from the University of Sydney with MBBS in 1960. It was in Sydney that Boon Keng met his wife, Theresa. They have three children Francis, Selina and Serene, and seven grandchildren.

After his graduation, Boon Keng returned to Singapore and served as Medical Officer in the Singapore Medical Services from 1960-1963. He then joined the American International Assurance working his way up from position of Associate Medical Director to Regional Medical Director and Vice President from 1963 to 1974. From 1974-1985 he was Vice President and Medical Director, AIA Companywide with responsibilities covering the East Asia Region. He was also a holder of the Diploma of Board of life Insurance Medicine (USA).

Boon Keng even ventured into business and was Managing Director of Singapore Marine Enterprises from 1985-7. In 1988, he returned to general practice in partnership with his daughter, Selina and son-in-law, Cheow Ju.

The birth of the College of Family Physicians, Singapore was due to the foresight, wisdom, untiring and persistent efforts of a few illustrious members of the local medical profession. Boon Keng was one of these pioneer fathers of our College.

He was Associate Secretary in 1968 of the Society of General Practice, Singapore, and in 1969-1970 Honorary Secretary. The seeds of the College were sown in 1969 when the Singapore Medical Association set up a committee "to look into the feasibility of forming a higher academic body of general practitioners in Singapore..." Boon Keng served in this Committee as Secretary. On 22nd November 1970, the Society of General Practice initiated the formation of a protem Committee to form a College for general practitioners. Boon Keng again served in this Committee. Finally, on 30th June 1971, the College of General Practitioners, Singapore was formed and Boon Keng served as Founder Council Member.

Boon Keng continued to serve the College with active involvement from 1972 to 1977 in various capacities as Honorary General Secretary, Council Member, Censor, Member of Education,

Examinations and Publications Committees and Organising Committee of the Joint College Conference in 1973 (Singapore, Malaysia and Australia).

His dedication to and resolute belief in the future of general practice and of upgrading the status of general practice went beyond the shores of Singapore for he was also founder member of the College of General Practitioners, Malaysia in 1973. In 1984 he was made Diplomate Member of that College.

In recognition of his active involvement in the founding and various activities of the College of General Practitioners, Singapore as well as his contribution to community work, the Royal College of General Practitioners, United Kingdom awarded him the FRCGP in 1976.

He practised what he preached and was an active supporter and participant of various CME

(continuing medical education) programmes organised by the College and various medical bodies till his last days. He even had an original paper on "Cost-effectiveness of ECGs and Exercise ECGs" published in the Singapore Family Physician in 1984.

Boon Keng also volunteered his services to the Red Cross, the Catholic Church, the Rochore Constituency, Singapore Amateur Wrestling Association, his alma mater (Victoria School) and the Rotary Club of Raffles City. In his later years, he devoted and dedicated a greater part of his time to the Catholic Church serving as Eucharistic Minister since 1987. He left his greatest mark in his religious activities when he collapsed and died while he was the doctor -in-attendance at the Pan-Asian Conference of Catechesis.

The College of Family Physicians, Singapore, has lost a noble colleague who was a man of many parts and talents and who was not found wanting.

*Lim Lean Huat*

## **ANSWERS TO ECG QUIZ**

### **ECG 1**

- (a) Widened QRS complex Tall, symmetrical, peaked T waves Absence of P waves - Junctional rhythm.
- (b) Serum potassium level.
- (c) Possible treatment depending on potassium level includes
  - (i) Resonium
  - (ii) IV bicarbonate
  - (iii) IV dextrose/insulin
  - (iv) IV calcium chloride
  - (v) Dialysis.

### **ECG 2**

- (a) Ventricular Fibrillation.
- (b) Defibrillation.
- (c) Acute antero-septal myocardial infarction (ST elevation in V1-3)  
Ventricular Fibrillation precipitated by R on T.





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## NEW BOOK ANNOUNCEMENT

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### **The World Health Report 1995**

Bridging the gaps

1995, 120 pages

ISBN 92 4 156178 5

What are the most important diseases that afflict humanity today, and why do they occur? Are advances in knowledge and technology having a real impact on health? Which are the actions most urgently needed, and what will they cost? At a time when resources are shrinking nearly everywhere, what should be the priorities for improving world health?

These are some of many questions being addressed in the World Health Organization's new series of annual World Health Reports. Drawing upon a greatly expanded database, *The World Health Report 1995 - Bridging the gaps* documents the attributed causes of ill-health and death for each age group throughout the human life span, around the globe. Analytical as well as descriptive in its approach, the report also explores the effects of ill-health on people's lives and what can be done to improve conditions. Issues covered range from the causes of infant mortality to the health impact of global climate change, from the importance of poverty and lack of knowledge to the projected toll of the AIDS pandemic.

While progress is evident for some disease in some countries, others show trends that are deeply disturbing. As the report reveals, today's global

health situation is characterized by ominously widening gaps between rich and poor, between one population and another, and between age groups. Knowledge and technologies continue to advance, but fairness is lost when their benefits are distributed. Though many countries have already reached the health targets set by WHO for the year 2000, in some parts of the world, life expectancy is actually decreasing and populations lack access to even the most basic health care.

For virtually all the major diseases that kill children or cut short the lives of adults, the picture that emerges is one of immense suffering easily prevented or treated by technologies that already exist and cost surprisingly little to implement. As the report makes abundantly clear, the gaps that need to be bridged include the discrepancy between knowing exactly what should be done and finding the will and resources to do it. Facts and figures gathered in the report also underscore the fundamental importance of health to socioeconomic development: when the poor are made healthy, they can earn more and become less poor.

By ranking the major causes of death and ill-health, and showing how they can be prevented, *The World Health Report 1995 - Bridging the gaps* provides a foundation for priority setting and action and challenges the world conscience to face the difficult ethical issues raised by so much preventable suffering.

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### **Community-based Distribution of Contraceptives**

A Guide for Programme Managers

1995, xi + 135 pages

ISBN 92 4 154475 9

This book provides guidelines for the introduction and management of family planning programmes

that rely on trained non-professional members of the community to distribute contraceptives, usually the pill and barrier methods, to other community members. Such community-based distribution services are usually less costly than clinic-based services, easier for people to reach, available in a wider range of settings, and more likely to be accepted and used.

Addressed to programme managers, the book offers abundant practical advice intended to help readers plan and implement community-based services with a full awareness of the many factors that can influence a programme's success. Information ranges from a simple step-by-step method for estimating potential demand for services, through examples of job descriptions for different categories of staff, to advice on policy options for procuring contraceptives and charging clients for services. Throughout the book, successful experiences from around the world are used to illustrate the many ways that community-based services can help reach underserved groups and improve both the availability and acceptability of contraceptives. Drawing on these experiences, the book also alerts readers to common problems and the best ways to avoid or overcome them.

The book has six chapters organized to follow the main steps involved in planning, implementation, and evaluation. The opening chapters explain how to develop a programme that is appropriate to the

needs of the community, and how to ensure that the programme receives support from both the public and the medical community. Emphasis is placed on factors that have proved to be crucial to any success of any programme for the community-based distribution of contraceptives.

Since successful delivery of community-based services is closely linked to the education of potential users, the book also includes specific recommendations on the training of personnel and the organization and delivery of services. The concluding chapters cover the evaluation and monitoring of programmes, and issue advice on six of the most important issues raised by managers of community-based distribution programmes, service providers, policymakers and researchers.

Further practical information is provided in a series of annexes, which list sources of data, supplies, technical assistance, and information, and present sample materials that can be adapted to local needs.

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### **Investing in Women's Health: Central and Eastern Europe**

WHO Regional Office for Europe Copenhagen,  
1995, xvi + 44 pages (WHO Regional Publications,  
European Series, No 55)  
ISBN 92 890 1319 2

Profound and rapid changes are under way in the countries of central and eastern Europe (CCEE) and the newly independent states (NIS) of the former USSR. These changes have led to social and economic hardship and, in some cases, to war. The result is a widening gap in health between the eastern and the western halves of the WHO European Region: a serious inequality. A closer look at the CCEE and NIS reveals a particularly disadvantaged group in these countries: women. While women bear more of the burdens imposed by change, they also comprise an invaluable, largely untapped resource for the response to change.

Recognizing both the problem and the opportunity, the WHO Regional Office for Europe created the Investing in Women's Health Initiative. Its goal is to provide governments in the CCEE and NIS with

information and policy options, through a European Women's Health Forum. Governments can then use these tools to address women's needs throughout life, and make use of women's strengths in this difficult period of transition.

This book is one of the first fruits of the Initiative. Coordinators from 11 pilot countries and 1 pilot city in the eastern half of the Region gathered data for the first-ever "country profiles" on women's health and the factors that influence it. This book makes a comparative analysis of the profiles. It takes a broad view of women's health, extending beyond the traditional focus on reproductive issues to embrace the whole life cycle. It describes not only health status and health care services but also women's position in society and the influences of daily life and the environment on their health. It concludes by indicating the directions for future action, which should include improving the amount and quality of the data on women.

This book makes gripping and vital reading for anyone interested in women's health, health in the CCEE and NIS, equity, healthy public policy, or the opportunities for beneficial change in the eastern countries of the European Region

# 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:

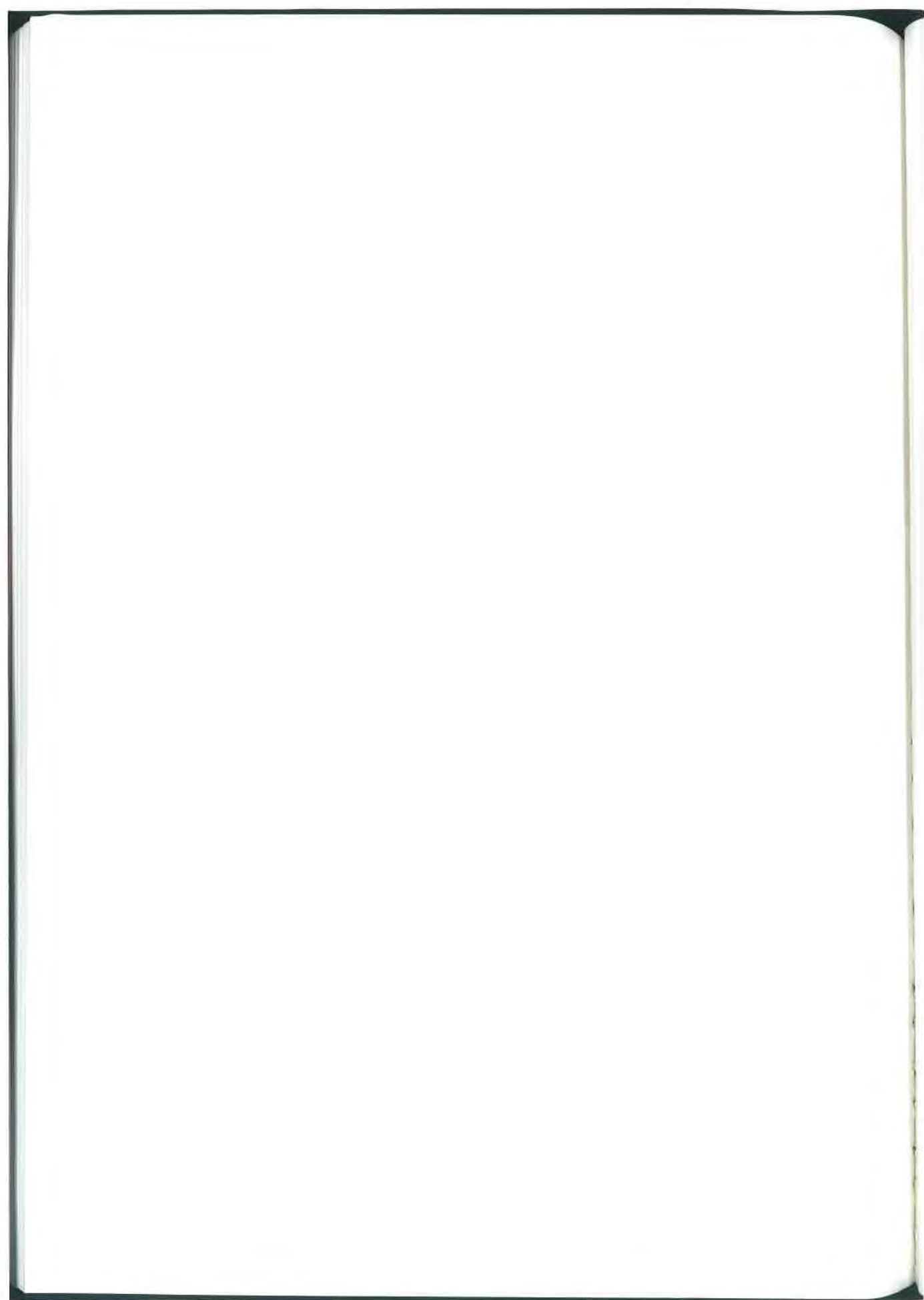
- \* Introduction: State clearly the purpose of the article.
- \* Materials and methods: Describe the selection of the subjects clearly. Give references to established methods, including statistical methods; provide references and brief descriptions of methods that have been published but are not well 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.

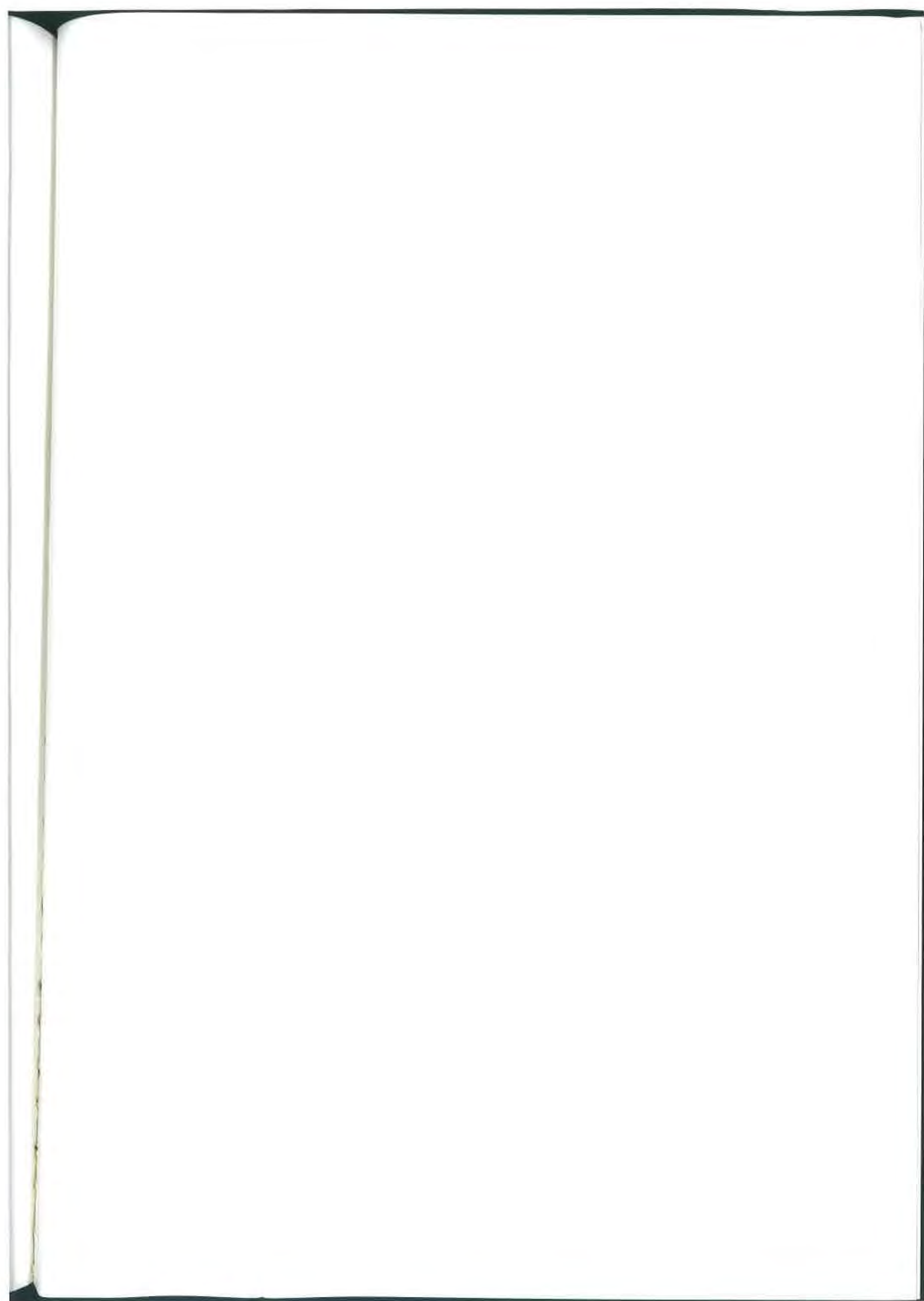
Laboratory values should be in SI units with traditional unit in parentheses.

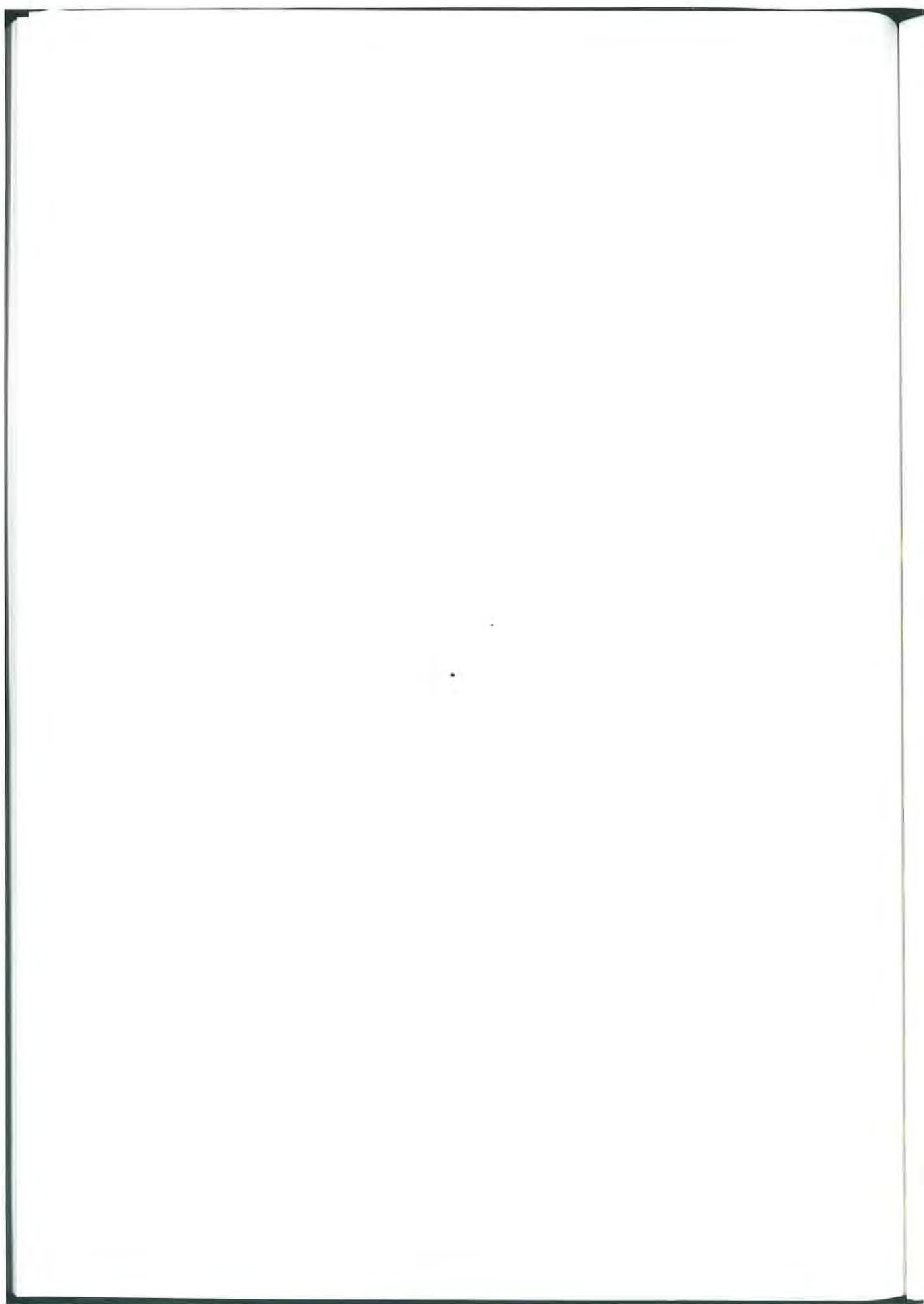
Do not use patient's names, initials or hospital numbers.

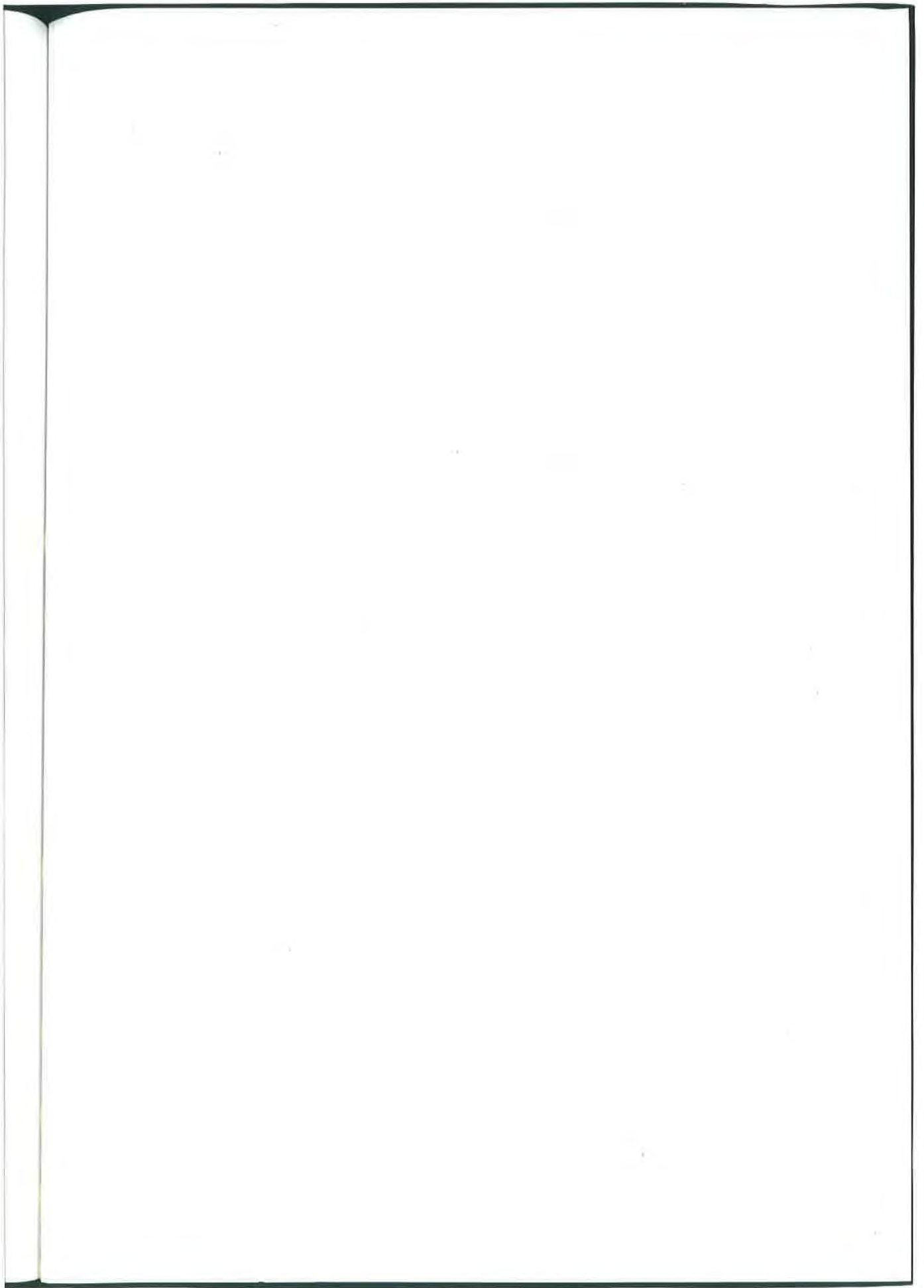
- \* Results: Present results in logical sequence in the text, tables and illustrations.











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Asiamed Pharmaceutical Products (S) Pte Ltd  
Franchise Servier International B.V.  
510 Thomson Road #09-02, SLF Building  
Singapore 1129  
Tel: 2500377 Telefax: 2500177

**MALAYSIA**  
Zuellig Pharma Sdn. Bhd.  
Wisma Zuellig, Lot 8, Seksyen 13  
No. 9, Jalan Bersatu 13/4  
46200 Petaling Jaya, Selangor  
West Malaysia  
Tel: 03-7551866 Fax: 03-7551049