

# **The Singapore Family Physician**



**The  
College of General  
Practitioners Singapore**

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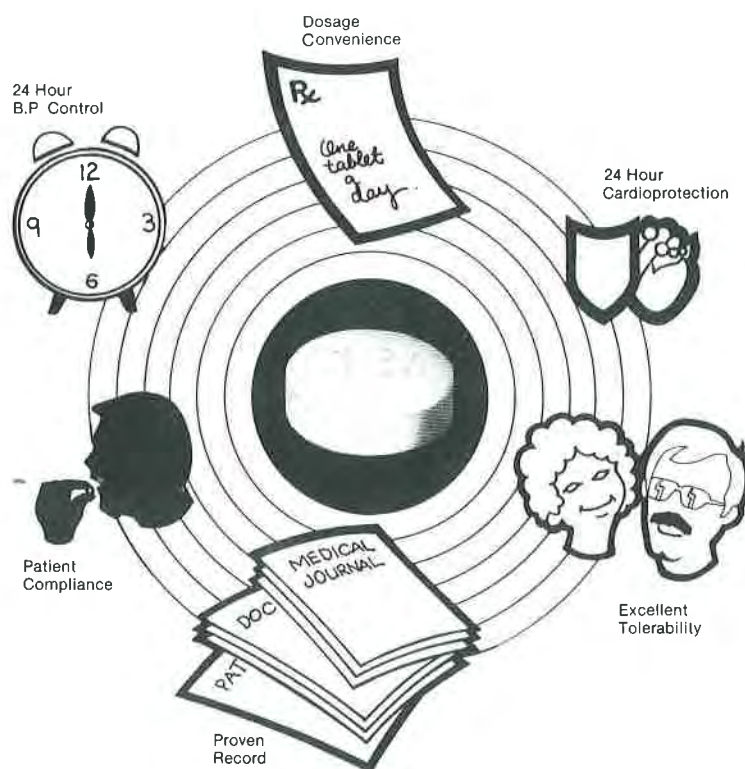
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## CONTENTS

	Page
Editorial — Quo Vadis? .....	37
Cause, Coincidence and Correlation .....	39
Dr Leong Vie Chung	
Common Examinations in Diagnostic Radiology — Principles .....	41
Dr Chin Wah Seng	
Abdominal Pain with Acute Abdomen in Adults and Children .....	49
Mr Yahya Cohen	
Surgical Conditions of the Urinary Tract in General Practice .....	58
Mr J. J. Murugasu	
Handling the emergency .....	66
Dr Joseph Levenstein	
Feeling at home (The James Mackenzie Lecture) .....	69
Dr D. J. Pereira-Gray	
News from the Council .....	82
Medical News .....	84
Book Review .....	86
Letter to the Editor .....	87

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## Editorial

### QUO VADIS?

An annual general meeting is as good a time and place as any to take stock of the situation and raise again the *raison d'être* for the formation of a College of General Practitioners. Osler in a message to medical students once said that to keep in mental trim one should undergo a "quinquennial braindusting" so as to discard outdated knowledge. Likewise it is important for institutions of learning like our College to engage in "braindusting" from time to time to dust the cobwebs off outmoded forms of policy and thinking.

The reason for the existence of a College of General Practitioners must surely be one and one alone, and that is, to train our students and doctors for general practice in a fashion that **cannot** be undertaken by the other branches of medical learning. The concept of a postgraduate degree in general practice is not exactly new. Over a hundred years ago an attempt was made in the United Kingdom to form a college for general practitioners. This did not succeed because the physicians and surgeons thought then that if any postgraduate teaching was to be done they were the best to do it. This argument was not without substance since at that time the general practitioners had not established the argument that there was need for special training distinctive to general practice.

Even to-day many people in our College believe that the function of a college for general practitioners is to provide regular refresher courses and examinations to improve a general practitioner's core knowledge. If this were so it would not be necessary to set up a College of our own because the Academy of Medicine and the School of Post graduate Studies are fully capable of running such courses.

Dr. Warren Ogborne of the Family Medicine Programme of the Royal Australian College of General Practitioners says that there are many who fail "to understand the nature of general practice and its changing pattern. This stems from the erroneous belief that general practice is the gestalt of the component specialties." (gestalt = formed from separate units).

Dr. J.P. Horder speaking to the Royal College of Physicians says, "Specialists and general prac-

tioners must have clearly defined and distinct functions. Each group must earn the respect of the other for the quality of the work that is done by it."

If we are to justify our need for a separate existence as a College we must as Dr. Horder pointed out, have our functions and field clearly delineated. What is the forte in general practice? In what areas should the GP seek to concentrate his skills? The general practitioner deals with common diseases and he should know these well. The GP deals also with the bulk of mental ill-health and here too he should be knowledgeable. The GP deals with normal people and we should be experts at what constitutes normality. The GP is in charge of continuing care and he should know all there is to know about patient management.

Sir James Mackenzie said that of the cases a general practitioner sees in his clinic, he can usually make a positive diagnosis in only one out of ten he sees. The proper management of a patient is to the GP far more important than the giving of a diagnostic tag to a case. Management requires empathy with the patient, and empathy requires proper communication.

It is shocking to realise how little is taught on how to communicate with patients in most medical schools. Dr. B.H. Tanner, who together with Prof. Patrick Byrne wrote the book "Language and Communication in General Practice," has this to say, "As a general practitioner I spend most of my time listening and talking . . . despite this, my medical education was never concerned with developing these all important skills of communication . . . Courses have been organised . . . to develop skill in teaching and in general practice. As one of the course organisers I felt increasingly that lectures on the incidence of bronchitis, and even seminars on the psychodynamics of ulcerative colitis were but an extension of the medical school curriculum and failed to get at one of the most important sciences basic to our specialty."

Render to Caesar the things that are Caesar's. If only we would heed this dictum. Prof. Keith Hodgkin, the Jephcott Professor of General Practice points out that in general practice the empha-

sis in medicine is quite different from that laid in hospital practice. "Twenty five years ago . . . I considered myself an expert on heart murmurs. Now my opinion is of little value because I listen to so few abnormal hearts and can no longer identify an early diastolic murmur."

The difference in outlook on the same topic between general practitioners and hospital doctors is often overlooked. To give but one example. If a bus-driver who is obviously overweight walks into a general-practitioner's clinic complaining of a headache and is found to have a blood-pressure of 160/100 mm Hg., is he (a) hypertensive, and (b) if so, what is the proper management? Most medical students would have no difficulty with the answers. The patient is hypertensive and the safest drug to use is chlorothiazide.

In general practice however the answers are not as simple. What is correct may not be what is best in the terms of the patient's interest. For a start a GP would not label a patient hypertensive unless the blood pressure remains constantly elevated on at least three consecutive visits. Our patient being a bus driver could conceivably have had a brush with another vehicle or the law on the morning of his visit and this would explain his elevated blood pressure. Time and rest would therefore do him more good than most drugs can.

On the problem of treatment, whereas chlorothiazide is a safe and good drug for the hospital patient, this drug will cause much inconvenience and annoyance to a bus-driver forced to make many unscheduled stops along his route.

There are many other ways where we can illustrate that what is taught in our medical schools is often not always applicable outside. The sins of omission in medical education unfortunately are more disturbing. Often a GP finds gaps in his knowledge and his inability to manage patients because of the things he has not been taught in the medical school.

How to communicate with patients is one, how to manage patients is another. Dr. C.A.H. Watts, a general practitioner and author of the book 'Depressive Disorders in the Community' makes this comment. "Medicine in those hospital days was almost completely an affair of organic diseases and any psychiatric casualty was viewed as the usurper of a useful hospital bed . . . When I entered general practice the volume of psychiatric problems became abundantly and painfully obvious."

"We were brought up to believe that the behaviour of patients was usually a consequence of their pathology; to-day we are learning that their pathology is often a consequence of their behaviour," said Dr. D.J. Pereira Gray in the Sir James Mackenzie Lecture to the Royal College of General Practitioners. We reproduce in this issue his talk because we believe that so much of what Dr. Pereira said is applicable to the local scene.

For our College to justify its existence, we have to establish general practice as a branch of medical knowledge in its own right, and we must develop our potentials in regions where the rest can only touch upon. We have to advance knowledge on early symptomatology of disease, on human development and behaviour, on communication and empathy with the sick, on non-institutional management of illness, on prevention and epidemiological patterns of disease, on genetic tracing in families, on non-curative medicine, and other fields where hospital doctors cannot be fully knowledgeable.

The best teachers of general practice must be the general practitioners themselves. This does not mean we should ignore the help given by the specialists in our refresher courses, but we must not be totally dependent on them for our education. If our GPs have had little to contribute to our education or our examination for the M.C.G.P., then obviously we are not proceeding in the right direction. Dr. John Hunt (now Lord Hunt of Fawley) when he was in Singapore in 1968 said that if a newly graduated hospital doctor without any experience in general practice could fare better than experienced GPs in any examination meant for general-practitioners then there must be something radically wrong with the system. For that reason he believed that the best examiners for such an exam would have to be general practitioners themselves.

A ship cannot sail the high seas if it is still tethered to the pier. Our College cannot venture into new and challenging domains if we remain fettered to the conventional and shackled to tradition. Quo Vadis? Where are we headed? Perhaps we had better unfurl the sails, raise the anchor and set the compass for the journey first.

E.K.

(Views expressed in the Editorial are not necessarily the official views of the Colleges).

# Cause, Coincidence and Correlation

Dr. Leong Vie Chung

MBBS, FCGP (S)

In all walks of life and probably an everyday experience, bold assertions are often made claiming a cause and effect relationship between consecutive events or phenomena. It is commonplace to read and hear statements that: A war took place in Vietnam and top students in Singapore chose Medicine as their career. A medicinal product is given to a patient and he recovers because of it.

Perhaps, an indulgent smile can be given to such assertive persons if they are children or adult members of the pre-literate class. However, we must raise our eyebrows at others who strain their credibility with such barefaced pronouncements without at least a prior consideration of the concepts of coincidence and correlation.

Jean Piaget who charted, for almost half a century, the development of thinking in the child demonstrated that until the age of ten to eleven, children's concepts of space, time, matter and causality differ fundamentally from those of normal adults.

Robin Horton in a study of African traditional thought in relation to western science, noted that in traditional societies, the notion of coincidence is limited in development. There is always the tendency to assign a definite cause to a happening.

When an overhanging rotten bough falls off a tree and kills a man walking underneath, a definite explanation has to be sought for the calamity. Some of the "reasons" given to account for the accident run as follows:—

Perhaps a relative with whom the dead man has had a quarrel must have worked the fall of the bough through a sorcerer. Perhaps the dead man has misappropriated lineage property and the lineage ancestors have brought down the bough on his head.

The idea that the whole thing could have come about through the accidental convergence of two independent chains of events is inconceivable because it is psychologically intolerable. To entertain it would be to admit that the episode is inexplicable and unpredictable, a totally unacceptable confession of ignorance.

In terms of historical usage, the word "coincidence" in the sense of a concurrence of events or circumstances having no apparent casual relation is

not recorded before the end of the 17th Century.

The grave necessity to differentiate "coincidence" from "causation" is of the utmost importance in the courts of law. An accused person's life may well hinge on the weight of evidence provided to plead and prove the case for coincidence. Two eminent legal authors, H.A.L. Hart and A.M. Honore set out the following guides:—

"We speak of coincidence whenever (1) the conjunction of two or more events in certain spatial or temporal relations is very unlikely by ordinary standards and (2) is for some reason significant or important, provided (3) that they occur without human contrivance and (4) are independent of each other."

The notion of coincidence has not found universal acceptance. It has been challenged by more than one author. In the 1930's a German writer, Wilhem von Scholz who wrote on extraordinary coincidences offered the postulate that "a force of attraction" exists between an owner and his objects and he went to great lengths explaining why lost objects have a miraculous habit of "finding" their owners. Similarly "a force of attraction" governs sounds, names, words and numbers.

C.G. Jung who founded the Zurich school of psychoanalysis also sought for a hidden meaning in the conjunction of events which makes them more than mere coincidences. He thought that some special principle must be at work to bring about the conjunction of events. He named this principle "synchronicity" defining it as a coincidence in time of two or more casually unrelated events which have the same or similar meaning. Although he sought for the answer in the astrological conjunction of the influences and relative positions of the sun and moon in the horoscopes of about 500 marriages, he was unable to satisfactorily demonstrate "synchronicity" in operation.

Correlation is a statistical concept that is in some ways analogous to coincidence. The former is a measure of the extent in which two phenomena vary together in the same direction (positive correlation) or in the opposite direction (negative correlation). Does correlation reflect a



genuine casual relationship. This issue is not all that simple. There is such a thing as a nonsense correlation due either to chance or an underlying third factor.

The number of television licences purchased over the past ten years correlates highly with the number of people certified insane over the same period. They show a parallel growth. Who will be so bold as to say that one phenomenon is the cause of the other? It should serve as a clear warning against hasty assumption of a cause and effect relationship.

The association between two things may be due not to any direct casual relation between them but to their joint association with a third factor which is not so obvious. Hot weather in Singapore is associated with high sales of bottled drinks in Malaysia. It is not that the Malaysians buy bottled drinks because of the hot weather in Singapore. They do so because they are thirsty. The linking factor is that the two countries share a similar isothermal belt.

Three possible inferences are therefore possible when two variables (phenomena) show a high degree of correlation:—

- 1) one might be the cause of the other,
- 2) they might be related by one or more shared factors and

3) the correlation might have occurred by chance or coincidence.

Hasty paralogism is a manifestation of regression to the child-like mode of thinking, the elucidation of which has occupied the best part of Jean Piaget's researches. In the light of his important findings we can better appreciate the Biblical passage from I Corinthians 13:11.

When I was a child, I spake as a child,

I understood as a child, I thought as a child:

but when I became a man, I put away childish things.

The exhortation in all sincerity is that it is time to put away childish things such as imputing a cause and effect relation for any two consecutive phenomena. In examining the latter problem, a legal and statistical frame of mind is necessary. In this connection, the statistician's "Null Hypothesis" is fundamental. We can now recast at least one of the statements made at the beginning: A medicinal product is given to a patient and he recovers "in spite" of it. The assumption that there is no real significant difference between treatment and recovery is the very basis of good clinical research. It is the beginning of wisdom.

# Common Examinations in Diagnostic Radiology-Principles

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## Part Two

### THE INTRAVENOUS PYELOGRAM

The intravenous pyelogram (IVP) or intravenous urogram (IVU) is the prime procedure in the investigation of the urinary system. It provides information on the kidneys, ureters and bladder. Because of this facility, it is always required in the investigation of a retroperitoneal lesion.

The patient is always advised to have an empty stomach for the procedure because the contrast medium injected may cause temporary nausea and vomiting. Food in the stomach does not hinder the procedure otherwise. A laxative is given prior to the examination to eliminate fecal shadows. A standard routine IVP consists of 5 films each serving a particular function. The first film is a KUB (control film) before the injection of contrast and particular attention is paid to opacities which may be urinary calculi, as these will be obscured by contrast later. The contrast medium is injected intravenously in a bolus and the second film is taken immediately after the injection. It is sometimes called the one minute film or the nephrogram film. This localised view shows the kidney tissue at maximum opacification when the bolus of contrast floods the renal tubules. Therefore, this film is best for assessing kidney size and contour, and any lesion that has replaced functioning renal tissue will be seen as a translucent defect, i.e., cyst, tumour. After this film has been taken, external compression is applied to the lower abdomen in an effort to compress the ureters and hold back the contrast in the calyces for the third film. This film taken at 10 minutes after injection is primarily intended to demonstrate the calcles and renal pelvis. If this film fulfills this function, the external compression will be released and a KUB (release film) taken to show the state of the ureters and the bladder opacified by contrast. The fifth film (post-micturition film) is taken after a good attempt at emptying the bladder and adds further information about the bladder and the ureters.

It cannot be over-emphasised that the IVP can provide very valuable diagnostic information

and is often definitive in diagnosis. Therefore, the procedure is always closely supervised by the radiologist and tailored to the patient's problem to extract maximum information. Hence, depending on the problem, there may be extra supplementary films, delayed films, and tomography employed to obtain more information. In special situations where it is important to distend and visualise the full length of the ureters, an infusion IVP can be employed if the routine IVP was unsuccessful. Here, a large amount of contrast is mixed with 200 cc dextrose/water and delivered in a rapid infusion.

Mention must be made about the IVP in two special situations, namely the "emergency" IVP and the IVP in renal failure. The "emergency" IVP is used in two conditions; trauma and acute urinary colic. In trauma, a large bolus of contrast is given and films are taken without external compression. The information obtained will assist in the decision to adopt a conservative or aggressive management. In severe pelvic trauma with gross haematuria, the IVP can sort out bladder and urethral injuries. In a patient with acute abdominal colic, the IVP can confirm instantly that the colic is due to an ureteric calculus. If the diagnosis is not established during the acute attack, it can become a problem later on. There is no contra-indication to an IVP in renal failure as long as the patient is not dehydrated and does not suffer from multiple myeloma. A very large dose of contrast is given and tomography is used as opacification will be poor. The objectives of the IVP in renal failure are:

1. to exclude a correctable obstructive uropathy. This is the most important objective and can be achieved in the majority of cases.
2. to show the site and size of the kidneys for the purpose of renal biopsy.
3. to elicit clues as to the etiology of the renal failure.

So long as the patient is not dehydrated, there are really no absolute contra-indications to the IVP. But there are situations where the risk is

high and may outweigh the diagnostic benefits. They are myelomatosis, combined renal and liver failure, pregnancy, previous reactions to contrast media, and a history of allergy. The referring doctor must inform and discuss these situations with the radiologist. It should also be noted that contrast media, being iodine-containing compounds may block the uptake of iodine radio-isotopes in the thyroid, whether for the diagnosis or treatment of thyroid disease.

The IVP is the commonest radiological examination where an intravenous contrast medium is given. Modern contrast media are very safe but there are infrequent occasions when the IVP may produce reactions in otherwise healthy people. The nature of most reactions remains uncertain up to today. The following information will give a general idea of the reactions:

- (i) minor reactions which usually subside without treatment. They include flushing, sneezing, nausea, vomiting, arm pain, and an itchy rash. Incidence of about 8%.
- (ii) intermediate reactions which require some form of treatment but there is no undue alarm for the patient's safety. They include severe vomiting, facial or glottic edema, bronchospasm, rigors, chest or abdominal pain and headache. Incidence of about 1 in 2,000 examinations.
- (iii) severe reactions where there is fear for the patient's life and intensive treatment is usually required. They include severe collapse, loss of consciousness, pulmonary edema, myocardial infarction, and cardiac arrhythmias. Incidence of about 1 in 14,000 examinations.
- (iv) death can occur unexpectedly in about 1 in 40,000 examinations.

The IVP is therefore not an innocuous procedure. It is an extremely valuable diagnostic examination but due consideration must be exercised.

### THE ORAL CHOLECYSTOGRAM

The oral cholecystogram is primarily an examination to see the gall bladder. On many occasions, the cystic duct and the common bile duct will also be seen providing more diagnostic information.

After a laxative to clear fecal shadows, the examination begins with a plain film (control) of the right upper quadrant to detect any opaque gallstones which can be obscured by the contrast medium subsequently. The appearance of opaque gallstones is very often characteristic, distinguishing them from right renal calculi. The diagnosis can be further substantiated by confirming their

anterior extra-renal location in an oblique view. With these radiological features supported by a typical history, there is really no need to order an oral cholecystogram. About 60 – 80% of gallstones however are non-opaque and this is where the oral cholecystogram is of immense value. After the control film, the patient is given the cholecystographic tablets to swallow after supper and to return the following morning without breakfast for the actual examination. If Biloptin is the contrast used, there is a supplementary dose to be taken early in the morning, 2 – 3 hours before filming, to enhance opacification of the common bile duct.

At least two films of the opacified gall bladder in different projections are taken. More films may be taken to confirm an abnormality or to avoid interference by fecal shadows. At times, fluoroscopy with spot films is required to separate fecal shadows from the gall bladder. The gall bladder is then induced to contract by giving the patient an artificial fatty meal to be followed by more films half an hour later. The after or post-fatty meal films are best for demonstrating the cystic duct, common bile duct, Rokitsky Aschoff sinuses, and confirming abnormalities seen in the pre-fatty meal films. If the gall bladder is not seen or very poorly opacified, it is common practice to give a repeat dose of contrast the same night with re-filming the next morning.

The modern oral cholecystographic media are safe. They could produce minor reactions of nausea, vomiting, dysuria, headache, and skin rashes. The media have an uricosuric action and hence patients must be adequately hydrated to avoid uric acid crystalluria. There is of course no indication for their use in the presence of jaundice and should be avoided in marked renal failure. It should be remembered that these media will cause a pseudoalbuminuria temporarily.

The cholecystographic media are absorbed by the bowel and excreted by the liver into the bile, which is then concentrated by the gall bladder to be rendered radio-opaque. Therefore, a successful examination depends on.

- (i) bowel absorption of the media
- (ii) adequate liver function
- (iii) patent cystic duct
- (iv) interval of time for the gall bladder to concentrate the bile (12 hours before filming)

The examination is reliable, and providing adequate absorption (no pyloric stenosis, severe diarrhoea or vomiting), non-opacification of the gall bladder indicates a pathological biliary tract in well over 95% of cases. A normal gall bladder concentrates bile and contracts well following a fatty



meal. It should be remembered that a gall bladder containing gall stones can also function satisfactorily in concentration and contraction. The degree of radio-opacity of the gall bladder depends on many factors and therefore a poorly opacified gall bladder need not be pathological. It is best that diagnosis be based on morphology. If Bilopatin is used, a patent gall bladder with a damaged mucosa may be visualised because of high concentration of this contrast in the bile. An unopacified gall bladder in the presence of opacification of the common bile duct unquestionably means an obstruction in the cystic duct, i.e., stone.

Referring doctors should note that for the convenience of the patient and to expedite investigation, an oral cholecystogram and a barium meal can be performed on the same morning. Films of the gall bladder will be taken first before beginning the barium examination.

### THE INTRAVENOUS CHOLANGIOGRAM

The intravenous cholangiogram is an examination of the hepatic and common bile ducts. It can also be used to examine the gall bladder if the cystic duct is patent. The examination is not frequently ordered because it is rarely employed as the first procedure in investigating biliary tract disease.

The preparation of the patient is similar to that of the oral cholecystogram. As the degree of opacification produced is much less compared to the oral cholecystogram, elimination of interfering bowel shadows with laxatives is very important. The patient arrives in the morning without breakfast and hopefully, a clean colon. After a control film, the contrast medium is given as an intravenous infusion over one hour. It has been found that this method gives less side-effects and a better opacification than a bolus injection. The contrast starts to appear in the bile ducts in 15 – 20 minutes progressing to maximum opacification in about an hour. Because opacification is not dense, it is routine practice to employ tomography to demonstrate the bile ducts clearly. Tomography will also eliminate overlying gas and fecal shadows. A film must be taken after 2 hours if the gall bladder is present but not seen by one hour, as most gall bladders will fill in 2 hours.

The indications for an intravenous cholangiogram are:

- (i) non-visualisation of the gall bladder following an oral cholecystogram. If the common bile duct is seen on the intravenous cholangiogram, then the cystic duct can be assumed to be obstructed. This is a very common situation.
- (ii) post-cholecystectomy patients with re-

current biliary symptoms. This more often than not is due to common bile duct stones which will be shown by the intravenous cholangiogram.

- (iii) as an urgent examination in an acute abdomen where acute cholecystitis is suspected. If the gall bladder opacifies, acute cholecystitis can confidently be excluded as the cystic duct is very likely to be obstructed in this condition.
- (iv) when calculi are suspected in the gall bladder and common bile duct. The intravenous cholangiogram can be used to examine the whole biliary tract in one sitting. Alternatively, the intravenous cholangiogram can be combined with an oral cholecystogram but it has been found that there is a higher incidence of toxic reaction to the intravenous cholangiogram in such a combined examination.

The contrast media is excreted 90% by the liver and 10% by the kidney. The examination is therefore of little use or possibly harmful in severe liver damage. Both the oral cholecystogram and the intravenous cholangiogram are practically useless in a jaundiced patient. When the bilirubin exceeds 2 mgm %, visualisation of the biliary tract becomes poor and progressively so with deepening jaundice. It is therefore not worthwhile to order an intravenous cholangiogram when the serum bilirubin is more than 2 – 3 mgm %. Both the oral cholecystogram and the intravenous cholangiogram are useless when there is aerobilia. The air will interfere with contrast opacification of the ducts.

Biligradin and Biligram are the two contrast media in use; the latter appears to produce less side-effects. But both are the two most toxic intravascular contrast media, producing more reactions, compared to the urographic media. To have an idea of the incidence of toxic reactions, the result of an UK study is given here:

Reactions	Inter-mediate	Severe	Death
Intravenous pyelogram	1:2,000	1:14,000	1:40,000
Intravenous cholangiogram	1:700	1:1,600	1:5,000

Hence, caution must be exercised and the oral cholecystogram should always be the initial examination in investigating biliary tract disease.

### RADIATION IN DIAGNOSTIC RADIOLOGY

All examinations in diagnostic radiology (except Ultrasonography) involve radiation to the

patient. In this regard, the diagnostic radiologist has a two fold duty to patients:

- i) he must see to it that an adequate examination is performed so that an accurate diagnosis can be made
- ii) he must ensure that the examination is conducted with the least possible radiation to the patient.

Modern radiological equipment is very advanced from the point of minimising radiation to the patient and the worker. There are a Code of Practice and official regulations to ensure that the equipment functions as demanded and measures of radiation protection strictly adhered to. Regular monitoring of equipment and personnel is provided for. Radiation workers (i.e. radiographers) are well-versed in radiation protection and only employ the best techniques to obtain maximum diagnostic quality with minimal radiation to the patient.

The referring doctor has just as important a responsibility in protecting their patients from unnecessary radiation. He must satisfy himself that the radiological examination he is requesting is necessary. If in doubt, he should discuss with the radiologist. He must provide the radiologist with all the relevant clinical information and all previous examinations, results and films. The possibility of pregnancy in a female patient must receive extra consideration and pertinent information to be entered in the request form, ie, menopause, last menstrual period, contraception, menstrual irregularity and artificial sterility.

In all patients, there are general risk of radiation. The fact that radiation is an etiologic factor in carcinogenesis cannot be disputed. The bulk of clinical evidence comes from the atomic bomb survivors, radiation treatment of ankylosing spondylitis and skin carcinoma in early radiation workers. These people were exposed to very large doses of radiation but the risk was still relatively small. And considering the very low doses of radiation employed in modern diagnostic radiography, this carcinogenic risk becomes literally a theoretical one. But in the female, the extra risk of foetal radiation demands special attention. There is epidemiological evidence of an increase (eight fold) of leukemia in children who had utero-radiation compared to those who did not. The first six weeks of foetal life is the period with the highest poten-

tial of serious radiation damage. Thus, most X-ray departments now practise the so called **10 Day Rule** which states —

**"non-urgent diagnostic radiology of the abdomen and pelvis in a female of child-bearing capacity should be confined to the pre-ovulatory phase of the menstrual cycle, i.e., 10 days following the first day of the last menstrual period."**

This does not mean postponement of all non-urgent examinations as a large proportion of females can provide proof that they are not pregnant, i.e., contraception, etc. In urgent cases, the abdominal X-ray is taken after deliberation on the risk and benefit.

The potential risk of radiation damage from diagnostic radiology appears to be highly exaggerated in the minds of the public. The best assurance for the unwilling or apprehensive patient is to quote some comparison with the environmental radiation which everyone inevitably receives. The environmental (cosmic and earth) radiation to a person's body is estimated on the average to be 100 mrem per year. A routine chest X-ray is estimated at about 100 mrem, an IVP about 125 mrem and a barium meal about 200 mrem. These estimates are of course gross, depending on many factors, but they nevertheless give a very good idea of how small the radiation risk is in diagnostic radiography. To safeguard the population, most countries adopt WHO recommendations that radiation workers should not receive a whole body dose (maximum permissible dose) exceeding 5 rems per year and non-occupational personnel 0.5 rems. In practice, the doses received are far below these values. This MPD is far below the value expected to produce a malignancy. For example, according to one source, an acute dose of 750 mrem to the bone marrow may significantly increase the chance of causing leukemia. Radiologists and radiation workers do not have an increased morbidity or mortality and do not suffer a higher incidence of cancer, leukemia or sterility compared to the population at large.

This is just a short over-view of the potential risk of radiation injury in diagnostic radiology. It can be seen that except in pregnant women, the risk is negligible. Patients and persons interested in radiation work should be duly assured of their safety.

#### ACKNOWLEDGEMENT

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**Abdomen Figure 1**

**Figure 1**

A man with a huge asymptomatic mass in the right abdomen. The clinical examination was unhelpful except to confirm a hard mass. But the KUB provided valuable clues and even suggested the diagnosis. The liver, right kidney, colon, small bowel and right psoas muscle are seen on the KUB. The mass therefore is not related to these organs or the retroperitoneal space. It must be intra-peritoneal and being located in the direction of the mesentery, a mesenteric cyst is the best diagnostic possibility. Further investigations are not necessary. But an IVP was inadvertently ordered which does not contribute further to the KUB findings. In view of its large size, the ureters not unexpectedly are displaced. A thick-walled mesenteric cyst was confirmed at laparotomy.

**Figure 2A**

The value of an abdominal film in excluding certain lesions and determining the next best investigation is demonstrated in this man presenting with a lump in the left upper quadrant. The abdominal film excludes the lump to arise from the left lobe of the liver, spleen, left kidney, stomach or colon as these structures can be visualised. Hence a barium follow through should be the next investigation and this proved a malignant tumour in the upper jejunum (see arrow Figure 2B)



**Abdomen Figure 2B**



## CHEST

**Figure 1**

The PA film shows a huge awesome mass or aneurysm in the left lung. But a correctly exposed left lateral film clearly shows that this is just a very tortuous artherosclerotic aorta which should be left alone.



**Figure 2A**

**Figure 2A**

The "right diaphragm" is abnormally high, it has to be explained and may lead to a suspicion of liver pathology. But in view of the large heart and slightly congested lungs, a recent congestive cardiac failure was suspected and consequently the high "right diaphragm" may not be the diaphragm but a subpulmonary effusion (fluid between the diaphragm and the base of the lung). This was confirmed by a right lateral decubitus film (figure 2b) which showed the subpulmonary fluid to flow out along the inner right chest wall. This radiographic technique is very useful in confirming suspected pleural effusions.



**Figure 2B**

## BARIUM MEAL

**Figure 1**

In double contrast, barium meal examination Fig. 1 shows radiating gastric folds pin-pointing a healed gastric ulcer.



**Barium Meal Figure 1**

**Figure 2**

The double contrast barium meal showing circular gastric erosions (white spot) surrounded by a band of edema (black).



**Barium Meal Figure 2**

## BARIUM ENEMA

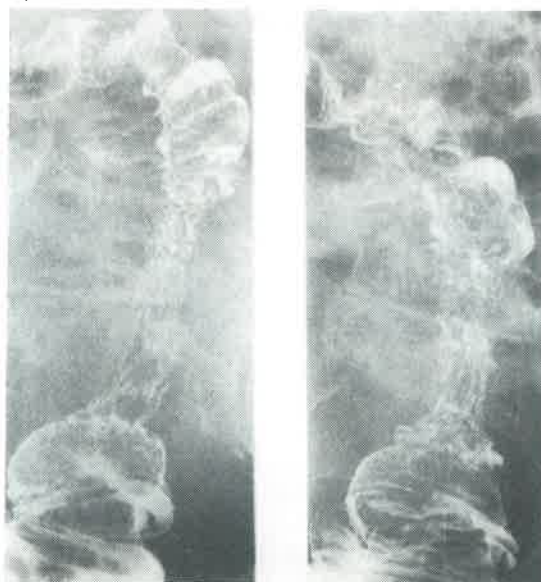
**Figure 1**

A young lady with ulcerative colitis. The barium enema shows typical extensive ulcerations. The ulcers are better appreciated in the upper double contrast section of the descending colon.



**Figure 2**

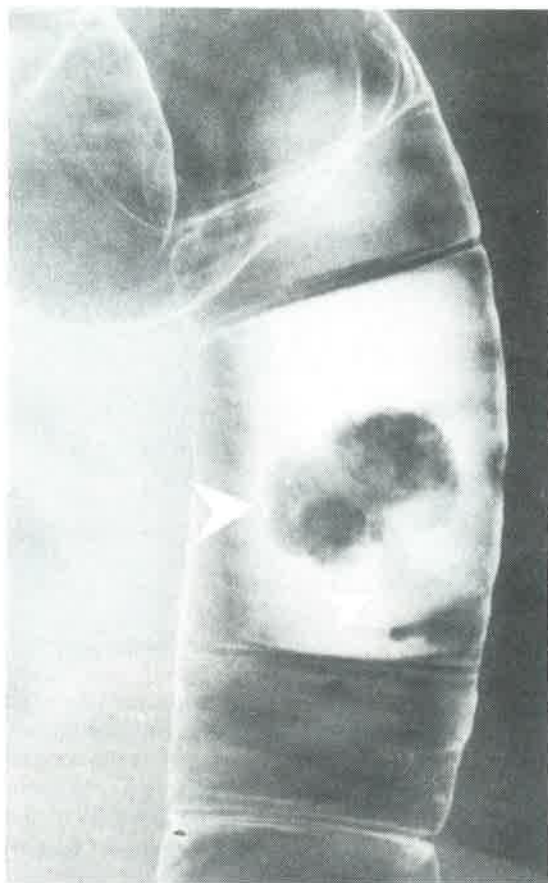
A lady with a left pelvic mass suspected clinically to be a recto-sigmoid carcinoma. But the double contrast barium enema shows the recto-sigmoid colon to be in spasm and stretched with intact mucosa. The mass must therefore be extrinsic to the colon and most likely ovarian in origin. An ovarian cyst was removed.



## BARIUM ENEMA

**Figure 3**

To demonstrate colon polyps, the double contrast barium enema is essential and the colon must be clear of faeces. Large arrow points to a large friable polyp and small arrow to a thick stalk of the polyp.



**Barium enema Figure 3**

## IVP



**IVP Figure 1A**

## IVP

Figure 1(a) is a pyelogram film showing large kidneys and a cyst in the lower half of the right kidney. A diagnosis of polycystic kidneys could be missed on this IVP examination, but for the pathognomonic nephrogram film of figure 1(b) which shows multiple bilateral cysts of varying sizes.



**IVP Figure 1B**

## Oral cholecystogram

**Figure 1**

The oral cholecystogram is still the best method of examining the gall bladder in a non-jaundiced patient. This film shows gross multiple diverticulæ which are epithelial sinuses (Rokitansky-Aschoff sinuses) from the gall bladder wall which is a feature of adenomyomatosis. These sinuses are better demonstrated in the post-fatty meal films when the gall bladder has undergone contractions. In this film, there is in addition, small multiple non-opaque gallstones.



**Oral cholecystogram Figure 1**



# Abdominal Pain with Acute Abdomen in Adults and Children

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*"If it is a question of doubt in diagnosis, you may often observe that one man solves the doubt when the others could not, and the way in which one man happened to solve it is this: he applied to the diagnosis of the case some method of examination which the others have not applied."*

C.B. Lockwood  
1858-1914

Surgeon St. Bartholomew's Hospital  
London

Diagnosis of the acute abdomen and abdominal pain can be one of the most difficult of surgical diagnostic problems.

It must be remembered that pain is a SYMPTOM and is part of the symptomatology of a disease. Its relief is no answer to the problem.

In reviewing abdominal pain we have to re-examine our thoughts on the subject and refresh our minds on the various characteristics of pain.

What do we want to know about pain when we review the subject? It is well worth recollecting the following factors, all of which may be invaluable in elucidating the possible cause of pain.

- (1) ONSET — whether pain has come on suddenly or slowly.
- (2) DURATION — we very often forget to ask how long the pain has been there except in the acute abdomen.
- (3) SITE — here the finger pointing test of Hamilton Bailey is extremely useful. The patient is asked to point to the area of pain with his index finger.
- (4) TYPE — colicky; dull; aching; burning; pinching; windy; stabbing and so on.
- (5) SEVERITY — is it intense, mild or a mere discomfort.
- (6) CONSTANCY — is it there all the time or does it come and go.
- (7) PERIODICITY — if the pain has been going on for sometime, are there periods of complete relief. Duodenal ulcer is very typical.
- (8) RADIATION — renal colic is the best example. Others are the appendix and the

gall bladder.

- (9) AGGRAVATING FACTORS — food; movement; position.
- (10) RELIEVING FACTORS — doubling up; food; medicines such as alkalies.

It is most important — and this is often forgotten — to ask if there have been past incidents of similar pain.

## Accompanying Symptoms

- (1) Vomiting; nausea; anorexia
- (2) Constipation or diarrhoea
- (3) Sweating
- (4) Abdominal distension

**Colicky pain** is particularly revealing. Its characteristics are as follows:—

(a) It is squeezing in character; (b) It is intermittent and comes in waves; (c) The patient rolls around with pain and (d) sweating if it is severe. The patient however is not in shock. His skin shows no pallor. His pulse rate may be only slightly raised. His blood pressure is well maintained or may even be elevated.

Colic is of four main types.

(1) Intestinal colic. This is centrally placed in the para-umbilical or umbilical region and is due to small or large gut activity. A typical example is the sort of pain that a person experiences when he is constipated. Intestinal obstructions of various kinds whether acute or chronic, mild or severe, cause central abdominal pain.

(2) Renal colic. Pain originating in the lumbar region radiates to the groin, scrotum or labium or vice versa.

(3) Biliary colic — where pain can be severe during the passage of a small stone. The pain is in the epigastrium and radiates to the right hypochondrium and to the back between the scapulae.

(4) Appendicular colic — where there is obstruction of the appendix. The pain is central and settles in the right iliac fossa.

It might be recalled that colic is caused by spasm in a tubular organ when it is attempting to expel its contents.

These characteristics apply to all forms of pain — whether acute and of sudden onset or whether

chronic and of long duration.

### THE PHYSICAL EXAMINATION

The greatest pitfall in the examination of the abdomen with most clinicians is that they try to fit the findings with the classical picture that is in their minds! Every abdomen must be approached with an open mind. The physical signs should be elicited and then fitted into a clinical entity. In doing so one has to have regard for the whole presentation which will include the symptoms. One should never hang the diagnosis on a single peg of the one cardinal symptom or the one cardinal physical sign.

More important one should never be misled by the absence or presence of a "favourite" physical sign such as Rovsing's sign in acute appendicitis or Boaz's sign in acute cholecystitis. These "favourite" physical signs acquired during student days can be misleading when given excessive importance.

One need not stress the great need to do a physical examination in a routine and orderly manner. The general practitioner is hard put to it by the limited time at his disposal. But training and experience makes for facility of observation. Training is not so much what one has been taught but what one has taught oneself over the years. With this expertise an examination can be done quickly. What may appear to be cursory is in fact complete and thorough.

A routine procedure should start by looking at the sclera for jaundice and the conjunctiva for a sign of anaemia. The tongue is then seen and smelled and pulse is felt.

The abdomen is examined with the following standard steps:—

Inspection, Palpation, Percussion and Auscultation. Auscultation is often neglected but may be invaluable in determining the character of the bowel sounds and whether they are exaggerated or absent; the splash of a stomach full of fluid; the bruit of a liver cancer or of a renal artery stenosis. There is no doubt at all that palpation is the most important form of these examinations. In palpation we are looking for two main factors — one is **tenderness** and the other is a **mass**. Routinely we look for a palpable liver, spleen or kidney. A rectal examination completes the study.

Every step in the examination is important including one that produces negative findings as these provide a base line for future observations.

#### Tenderness

Tenderness may be elicited in many areas of the abdomen. One should try to elicit the point

of maximal tenderness. This can be difficult in a case of generalised peritonitis. However, careful palpation even in a rigid abdomen may determine the point of maximal tenderness. This is usually over the site of the organ implicated. Keeping in mind that organs within the abdomen may vary in position, the points of tenderness for any organ need not be the same for every individual. The appendix is very much a case in point and its position varies considerably. This is not only because it is a mobile and inconsistent organ and can assume varying anatomical positions, but the caecum itself is occasionally mobile or indeed undescended. In its own vagaries it may modify the point of appendicular tenderness.

The gall bladder and duodenum are also mobile organs and points of tenderness may be variable. The gall bladder, placed as it is under the costal margin, may not lend itself to easy palpation and may only reveal its presence on deep abdominal (diaphragmatic) breathing (Murphy's sign). The duodenum lies medially and below the gall bladder and can be very tender when there is an active ulcer. However, the tenderness is not consistently present even in the presence of a duodenal ulcer.

**Points of tenderness** — Where are the points of maximal tenderness of various organs?

In the right iliac fossa there is the appendix and caecum and it can be difficult to differentiate lesions of one organ from the other.

With the gall bladder the tenderness is in the right hypochondrium.

With the liver the tenderness is along the right costal margin or high in the epigastrium when it is full and tense. Tenderness of the liver however is nearly always best felt with the liver punch test or by compressing a lower rib in the lateral chest wall.

The duodenum manifests its tenderness in the right epigastrium and the spleen in the left hypochondrium although it is very unusual to have a spleen that is really tender.

Bladder tenderness is best felt suprapubically in the midline although the bladder is very rarely tender except when it is full and tense. The female genitalia also show their tenderness suprapubically either in the midline or on either side of the midline.

The kidneys can be felt to be tender in the lumbar regions anteriorly. Tenderness is more easily elicited in the right rather than the left kidney. However, the cardinal test for tenderness in the kidney is palpation over the kidney points posteriorly at the angle of the 12th rib with the sacrospinalis muscle and with the kidney punch test.

Tenderness may be elicited **per rectum** and this physical sign may be cardinal as in the tenderness of the pelvic (or rather the para-rectal) appendix and the tenderness of the female genitalia especially with pressure on the cervix. The latter is particularly useful in eliciting affection of the Fallopian tubes. In infection (pyosalpinx) tenderness is severe. In the ectopic pregnancy it is exquisite. Even a tender pelvic colon may be better felt through the rectum. Above all the tenderness of an early pelvic peritonitis can only be elicited per rectum.

### **Masses**

Masses are easily elicited if large and obvious. However, smaller masses can be easily missed and they have to be sought. The patient must be relaxed and the abdominal wall soft. All parts of the abdomen must be palpated gently for the suspicion of a mass to be first raised. Only then is deep palpation applied and the characteristic of the mass elicited — its site and extent and its shape; its consistency and surface and the organ with which it may be associated.

Occasionally no mass but only a resistance may be felt in a difficult abdomen. If the history is at all suggestive it would be enough to raise one's suspicion and proceed to special investigations of that organ.

### **The General Practitioner's Problems**

There are many problems that beset the general practitioner in his busy practice.

(1) In the acute case close observation over a period of some hours may be necessary. The general practitioner has neither the time nor the facilities for this. The problems are reduced if the patient is admitted into hospital and ancillary aid such as hourly pulse, blood counts, straight X-rays of the abdomen and above all, repeated examinations are used. Not least the observation of a good experienced nurse can be invaluable.

On the other hand, the general practitioner is at a considerable advantage in the case of long standing recurrent abdominal pain. His vigilance of the patient over a period of weeks or months or even years gives him an advantage over the specialist who may have to assess the patient's condition for the first time.

(2) There is a lack of time for the taking of a complete history and a thorough examination. In a domiciliary visit his freedom of action is hampered by lack of the right conditions for examination and the presence of anxious relatives cramp his style.

(3) The problem of referral — whether the patient should go to a physician or a surgeon. Most cases of abdominal pain should go to a surgeon who is more alert to the conditions that require urgent surgical intervention. Later when a surgical condition is excluded conservative treatment may then be pursued by the physician or the practitioner himself.

In the acute abdomen the general practitioner may be beset by acute medical problems that mimic surgical conditions such as cardiac conditions like coronary thrombosis; peri-carditis and paroxysmal tachycardia and chest conditions such as diaphragmatic pleurisy. Root pains, abdominal wall abscesses, the early heralding of diabetic coma or even simple constipation may all mimic an acute abdomen.

### **Acute Abdominal Pain In The Acute Abdomen**

The abdominal pain that has a sudden onset may be an emergency of a very high order. Its importance is increased if it is accompanied by shock. With shock it is essential to determine whether or not the shock is due to haemorrhage.

Acute abdominal pain accompanied by shock is often due to a perforated viscus or a sudden obstruction or strangulation. In a perforated viscus the initial shock is due to pain and the action of an irritant fluid on the peritoneum. Though it is a surgical emergency, the knowing surgeon will temporise with operation and manage this initial shock with supportive and conservative treatment until the patient rallies. However certain one may be of the diagnosis, immediate operation before supportive treatment can result in a mortality rather than recovery.

There are really not very many conditions that produce this clinical picture. The perforated peptic ulcer is of course a classical example. When the shock in such a perforation is considered to be due to haemorrhage as well, operation not only becomes mandatory, but a resectional or other definitive procedure has to be done. It will not be sufficient to merely close the perforation. Haemorrhage may continue and re-operation may become necessary, thus adding to the hazards of management and ultimate recovery.

Even under what might be difficult conditions where a patient is too harassed to give a reliable history it is always worthwhile to determine if there has been a previous history of abdominal pain or discomfort. This certainly helps the surgeon to decide on his definitive cause of action of operation. For example a perforated peptic ulcer with no previous history of ulcer symptoms may be due to an acute rather than a chronic



ulcer. In such a case no definitive radical treatment such as gastrectomy need be attempted at operation. A simple closure is all that is required. The patient may recover completely and never have a symptom again.

A history of **injury** to the abdomen or the involvement in an accident may be cardinal in the occasional case. It should be remembered that trauma to the abdomen sometimes due to an apparently minor incident may result in a perforation of an organ many days later. A bad bruise to the wall of a viscus or a tear in the mesentery of the small gut may produce such a perforation.

Acute pancreatitis is not a common condition in Singapore. It closely simulates a perforated hollow viscus. It is a diagnostic challenge that may be clarified only by close clinical and laboratory observation in a hospital. The differentiation is important. Acute pancreatitis responds to conservative treatment. A perforated viscus requires operation.

In the female the ectopic pregnancy is the best example of a perforated organ accompanied by haemorrhage and may be initiated with the collapse of the patient.

It can be difficult to differentiate shock due to pain and that due to haemorrhage. A valuable physical sign is to avert the lower lip. In haemorrhage a clear line of demarcation may be seen between the vermilion margin of the exposed lip and the blanched mucous membrane proximal to it.

### **The "Acute Abdomen"**

The acute abdomen is doubtless one of the most challenging problems in the whole practice of medicine. One must be clear in one's mind as to what we mean by an acute abdomen. It is not merely a state of a painful abdomen for this in itself does not qualify this definition. Many painful conditions in the abdomen are not acute at all. What constitutes an acute abdomen is a condition where there are symptoms related to the abdomen such as pain, vomiting or nausea, constipation or distension of recent onset whose cause is undetermined and where an urgent decision has to be made as to its management. It is a condition where a wrong decision may lead to extended morbidity or even death. From the general practitioner's point of view the decision has to be made as to whether the case should be referred to a surgeon. It is not easy to decide whether a case of duodenal ulcer that has a sudden severe epigastric pain is undergoing an acute exacerbation or has perforated or is about to perforate. It may be difficult to decide whether

abdominal pain and vomiting of recent onset is due to an acute appendicitis or to an abdominal upset due to a dietary indiscretion. It is in such difficulties that valuable hours may be lost and salvage delayed.

The surgeon confronted with the problem has to decide whether or not an operation is necessary and if it is, what the condition requiring operation is likely to be so that he may plan the pre-operative management and the surgical approach to be adopted.

To both, the acute abdomen signifies a situation where an abdominal condition requires an urgent decision.

It would be redundant to recount the symptomatology of all acute conditions of the abdomen to general practitioners who have seen many such cases and have been exercised by some. More useful would be a recollection of the highlights of each particular group of conditions.

### **Perforations**

The type of pain is paramount in the symptomatology of these conditions. Perhaps the most dramatic of these is perforation of a peptic ulcer or a cyst or an intra-abdominal tumour. This pain is usually accompanied by shock. A past history of the causative condition is certainly helpful; these are the presence of a chronic duodenal ulcer or of a history of recurrent epigastric pains or the previous presence of a tumour. In the first few hours there is the classical board like rigidity caused by spasm of the abdominal muscles from severe peritoneal irritation. There is a generalised tenderness which is maximal over the site of the affected organ. It is important to remember however that this is a passing phase which lasts for a few hours. Later the onset of paralytic ileus overcomes the rigidity and the abdomen becomes somewhat distended and soft although the tenderness is maintained. A similar clinical picture presents with acute pancreatitis.

When sudden pain is accompanied not only by shock but with evidence of bleeding such as pallor, air hunger and a dramatic fall in pulse volume, then an internal haemorrhage should be suspected. A perforated peptic ulcer with accompanying haemorrhage is suspected especially if there is accompanying haematemesis and melaena. In the female an ectopic pregnancy would be a common cause. Not least the history of a recent injury — sometimes only slight — should lead one to suspect an internal haemorrhage due to a ruptured spleen, liver, kidneys, intestines or other organs.

### **Obstructive Lesions**

There are four leading symptoms that charac-

terise intestinal obstruction. These are pain, vomiting, abdominal distension and constipation. Although these facts are well recognised it is not so well known that these four signals will vary according to the level of the obstruction. Failure to appreciate this may mislead one and the diagnosis missed.

In high obstruction abdominal distension may be relatively slight or absent altogether. This is easily understood if one realises that the gut can empty itself beyond the obstruction and therefore remain void. Thus the higher the obstruction the less the abdominal distension. If the obstruction is very high up in the jejunum just beyond the duoden-jejunal flexure, there may be no distension at all. On the other hand, the lower the obstruction the greater and more progressive is the abdominal distension as the gut fills up with gas and liquid and the abdomen finally appears like a tense drum.

Vomiting behaves conversely. The higher the obstruction the more urgent and more copious the vomiting and a patient with such a high complete obstruction may be reduced to a state of severe dehydration and inanition in a matter of hours. On the other hand, vomiting comes on later in a low obstruction and after the proximal gut has become full of contents. The vomiting is not as projectile or as repetitive as in a higher obstruction and the loss of fluid is more into the gut than into the ether.

Constipation which finally becomes absolute (no faeces or flatus) is early in a low obstruction. This is understandable for the small segment of gut distal to the obstruction soon empties itself. No further contents pass into it and no further expulsion of contents is necessary or indeed possible. On the other hand, in a high intestinal obstruction secretory functions will continue and gas and liquid passed.

Pain is common to both forms of obstruction. Colicky pain characterises both forms. It would tend to be less urgent with the high obstruction and more severe with the lower. With the latter the colicky pains give way finally to the agonising discomfort of the abdominal fullness that supervenes and which is not present when the obstruction is very high.

Variations on this theme will obviously occur if the obstruction is only partial as when it is due to adhesions. Gut contents passing beyond the point or points of obstruction will cause a variation in the clinical picture.

As with all other clinical conditions a correct diagnosis is made when the clinical picture is taken as a whole.

Pain and vomiting may occur with various forms of colic — biliary, renal, intestinal or appendicular. In the first three the pain can be very severe and in the last less so. In all these the prostration is less and the patient never in a state of true shock. There is no abdominal distension. Constipation of faeces and flatus is never present. Above all there is a typical distribution of pain, characteristic of each — (a) epigastric radiating to the right hypochondrium and back as in biliary colic; (b) lumbar pain radiating to the groin or scrotum or labium in renal colic; (c) generalised and peri-umbilical pains in intestinal colic and (d) abdominal pain concentrating in the right iliac fossa in appendicular colic.

In all cases of suspected obstruction the hernial orifices should be carefully inspected. In obese subjects — and particularly women — a tender fullness in the umbilical area should be sought. A strangulated umbilical hernia is easily concealed in a mass of fat.

It is essential in all cases of obstruction to determine whether or not there is a concomitant strangulation. In addition to the hazards of the obstruction there is the danger of perforation. Strangulation of gut manifests itself in **tenderness** over the area affected. The presence of rebound tenderness reinforces this suspicion. Operation in such cases becomes more urgent than ever. In considering strangulation one should think more widely than in terms of gut. Any structure with a pedicle or mesentery can undergo strangulation. A twisted ovarian cyst is not an uncommon example. Many other organs in the body in the abdomen have been known to undergo strangulation. The spleen, the kidney, an undescended testis and even the stomach which can sometimes twist in a volvulus and in severe cases cause strangulation. Even the twisting of an appendix epiploica on its pedicle can cause severe symptoms. The signs in the strangulation of these other organs are in many ways similar to that of strangulation of gut. There is intense tenderness over the site affected with rebound tenderness and the patient may become quite prostrated. However, symptoms such as vomiting, abdominal distension and constipation are not characteristic in their clinical picture.

### Inflammatory Lesions

Consideration has already been given to the two most important inflammatory lesions that occur in the abdomen — acute appendicitis and acute cholecystitis. To these may be added salpingitis and diverticulitis. Diverticulitis is still relatively uncommon in this country. All these lesions are

characterised by abdominal pain, pyrexia, vomiting or nausea or anorexia of varying degrees and malaise. The main point of differentiation is in the distribution of pain peculiar to each and the site of tenderness, guarding and rigidity. Diverticulitis is described in the literature as a typical case of acute appendicitis with the symptoms and signs concentrated on the **left** iliac fossa. The tenderness in salpingitis is suprapubic but best elicited per vaginam or per rectum.

In appendicitis fever is relatively mild compared to the other two conditions and in all the white count is elevated. However, this elevation takes place only after about 24 hours or so when the defence mechanisms have been given time to rally their forces.

On exploration for appendicitis an occasional surprise finding is an inflammation of the caecum (typhlitis). In some case no cause can be found. In others there may be an inflammation or even a perforation of a diverticulum. Another lesion, Meckel's diverticulitis — which simulates appendicitis is sometimes found. A Meckel's diverticulum is routinely looked for at operation.

#### **Chronic or Recurrent Abdominal Pains**

We now come to the problems which beset the general practitioner as well as the surgeon when a case is referred to him. This is the condition where there is recurrent abdominal pain which may have gone on for weeks, months, or possibly years. It would be unnecessary to say that one of the most important aspects of making a correct diagnosis is the taking of a careful and detailed history as well as conducting a careful and full examination including a rectal examination.

In the upper abdomen the differentiation lies in the two most common conditions — a peptic ulcer or gall bladder disease. Many experienced practitioners know that the differentiation of symptoms is not as obvious as the textbooks would have us believe. The standard symptoms of pain — flatulence, anorexia and others can be common to both. The incidence of pains in relation to food do not occur as often as we would like to see although the classical picture still holds good for the majority of cases. The pains of gall bladder disease unrelated to food also are not necessarily born out by experience. However, certain factors do help considerably. Abdominal distension and flatulence certainly occur more commonly with biliary disease than with ulcers. Distribution of pain and tenderness is helpful and reaction to fatty foods is much more common with biliary disease than with ulcers.

One has an impression that the tendency

amongst many Singapore practitioners is to think in terms of peptic ulcers in recurrent upper abdominal pains. The gall bladder appears to be a poorly thought of as an organ causing upper abdominal discomfort. One has seen many a case of gall bladder disease missed and the patient treated for months and sometimes even years for "gastritis" in a case where barium meal studies were negative. Gall bladder disease appears to be increasing in Singapore and it is always worth doing a cholecystogram. It is a much simpler method of investigation. This should particularly be done should barium studies be negative and symptoms persist.

Carcinoma of the stomach should be considered seriously in any case of consistent epigastric discomfort unrelated to meals and accompanied by some degree of anorexia. A loss of appetite is particularly useful as it does not occur with a peptic ulcer. The gastric ulcer patient wants to eat but is afraid to and the patient with a duodenal ulcer eats to relieve his pains. The story of a recent loss of weight can be helpful.

Evidence of a recent onset of pyloric stenosis without previous peptic symptoms particularly in a patient aged 40 or over is diagnostic of carcinoma of the stomach until proved otherwise. A patient with such a presentation should be investigated thoroughly for carcinoma.

There are of course many other causes of abdominal discomfort in the upper abdomen. Liver disease in both its acute and chronic forms is not an uncommon cause of epigastric discomfort. A chronic pancreatitis would be considered very seriously in a Western country and could conceivably become increasingly common here. It is of course always worth remembering that purely medical conditions such as the early onset of cardiac disease manifests itself in epigastric discomfort.

Mention has already been made of how misleading a small almost imperceptible epigastric hernia can mislead one to suspect a serious disease in the internal organs of the upper abdomen.

In the lower abdomen persistent pain in the right iliac fossa exercises one considerably as to whether or not to diagnose a chronic (recurrent) appendicitis. There is no doubt that such a condition exists and that many patients are considerably relieved following appendicectomy. However, one must not lose sight of the fact that the most common cause of discomfort in the right iliac fossa is **constipation**. It is quite remarkable how often a soft, full, gurgly caecum is palpated on examination of many an abdomen. This is undoubtedly a common cause of dis-



comfort.

As in the case of acute appendicitis tenderness is a cardinal sign. However, this tenderness need not necessarily be due to a diseased appendix. It is always reassuring in these cases to do modified barium meal studies if only to determine whether the position of the appendix is at the point of tenderness. Occasionally constriction of the base of the appendix may be seen or the presence of faecoliths or other evidence of obstruction in the appendix may help in the diagnosis. Radiologists vary in their preferences between a barium enema or a small modified barium meal for studying the appendix.

Pains in the left iliac fossa are in many ways among the most tiresome of presentations as very often no real cause for them can be found. In Western countries this might often be attributed to diverticulosis and a barium enema would confirm this. However, this condition is relatively uncommon in Singapore. In women it is mandatory to carry out a careful gynaecological examination to exclude lesions of the female adnexae. Occasionally a mild ureteric colic may manifest itself by pains in the left iliac fossa. Carcinoma of the colon very rarely presents with pain in this area. In most cases no specific cause is found and all the patient requires is reassurance. Happily, this symptom is not common.

#### **Rarer Causes of Abdominal Pain**

Patients turn up sometimes with recurrent attacks of abdominal pain which appear to defy diagnosis. There are a number of conditions some of which are unusual which have to be sought on careful clinical and special examinations.

**Worms** — This is not too unusual a cause of recurrent abdominal pains and often enough is not excluded. Occasionally worms are visualised in a follow through of a barium meal. Examinations of stools are surprisingly disappointing and not productive of ova. It would seem that an eosinophilia — however mild — is a much more reliable pointer. It is always worthwhile in such cases to exhibit a modern anthelmintic as a form of therapeutic diagnosis as modern anthelmintics are relatively innocuous.

**Visceroptosis and spastic colon** — These two conditions are often diagnosed and they may be the cause of recurrent generalised abdominal pains. However, they should not be diagnosed until one is certain that other conditions have been excluded. Many a case of carcinoma of the colon or even the rectum has been dismissed as a case of spastic colon.

**Floating kidney** — This is a rare but real cause of

recurrent abdominal pains. About 2% of the population appear to have a palpable right kidney. In some of these cases the kidney may drop as far down as the right iliac fossa. This can be palpated with the patient standing up. Such a finding does not necessarily constitute the cause of abdominal pains. It is only when the ureter is kinked or the pedicle twisted that the abdominal pain can be attributed to this cause. To prove this requires very careful radiological investigations before any definitive conclusions can be drawn.

**Internal herniae** — This condition although rare is met with from time to time. The diagnosis can be extremely difficult and often not made until the patient undergoes laparotomy.

**Adhesions** — following a previous abdominal exploration the formation of adhesions in some individuals can cause true recurrent abdominal pains. These adhesions need not be many in number. In the occasional case only one adhesion band may be present. This causes small or large gut to twist around it. Individuals vary in their propensity to adhesion formation. Many, and sometimes dense adhesions, may cause no symptoms whatsoever. On the other hand, one or a few adhesions may cause very severe attacks of recurrent colic. A diagnosis of adhesion colic should never be hastily made. However, re-exploration of an abdomen can be justified but only after other causes have been excluded. There may be no demonstrable presentation on X-ray studies in such cases and the cause may only be determined at operation.

**Malrotation & Dolicho-colon (redundant large gut)** — An abnormal rotation of the large gut can be a cause of severe recurrent abdominal pains. Many of these patients present over the years with symptoms that become more pressing. Of particular significance in these cases is the history of constipation over many years and since childhood. Many of these patients have a bowel function once in every 5 or 6 days. The association of these clinical findings with X-ray evidence would certainly justify exploration. In cases of redundant large gut, excision of the redundancy leads to almost dramatic relief of symptoms. In cases of malrotation re-arrangement and fixation of the large gut can lead to salutary results.

It is well worth keeping in mind rare and sometimes non-surgical causes of generalised abdominal pains. These include an impending diabetic coma with ketosis; ureamia; a referred pain from a lesion in the spinal column; and the odd case of abdominal aneurysm or embolisation.

Cases of abdominal pains should rarely be attributed to psychological causes. Such cases

doubtlessly exist. However, to entertain them early in an investigation can be foolhardy and dangerous to the patient.

#### **Exploratory Laparotomy**

With many modern methods of investigation and diagnosis it is not often that a surgeon is called upon to carry out an exploratory laparotomy. However, there is a definite place for this in a patient who has been carefully watched over a period of time. Surprising findings are occasionally encountered and the correction of abnormalities lead to a satisfactory result.

#### **ABDOMINAL PAIN IN CHILDHOOD**

A large number of lesions can be the cause of abdominal pain in childhood. In later years when the child can be his own witness the history can be very helpful. In infancy however only a vicarious history given by the parents is obtainable.

Many abdominal conditions that present as acute and recurrent cases of abdominal pain are caused by OBSTRUCTION. Many of these are due to congenital defects in one form or another. Some are not easy to diagnose pre-operatively and can only be discovered at laparotomy. They have to be considered when there are recurrent attacks of abdominal pain sometimes terminating an acute obstruction or even strangulation. A clinical picture is as with the adult. There is vomiting and constipation as well as abdominal distension depending on the level of the obstruction. In the neonate the most common cause is **meconium ileus** or **atresia** of the gut at various levels. **Imperforate anus** has of course to be excluded at birth. Symptoms of intestinal obstruction occurring soon after may be due to **Hirschsprungs' disease** and later in life to a true **megacolon**. Among lesions in the upper alimentary tract **pyloric stenosis** takes pride of place in the early months of childhood. Pyloric stenosis presents with the classical picture of upper abdominal distension with peristaltic waves going from the left to the right side of the abdomen. Careful palpation when the child is relaxed or even asleep reveals a palpable tumour in the right epigastrium and this is diagnostic of the condition. Vomiting, sometimes projectile, is of course a cardinal symptom.

At or about the state of weaning the onset of acute severe recurrent abdominal colic especially in the male would be strongly suggestive of an **intussusception**. The diagnosis in this condition is confirmed when a mass can be felt in the abdomen usually in the right iliac fossa in the early stages.

An intussusception that has been allowed to progress may actually present with the apex of the intussusception felt in the rectum or may appear through the anus. Palpating the abdominal lump in a child in severe pain is not always easy. A great deal of patience is required while the medical attendant sits beside the child waiting for a quiescent phase in between attacks of colic when the child is exhausted and relaxed. Only a short time is required to feel the telltale mass.

The presence of intra-abdominal **congenital bands** is sometimes the cause of recurrent attacks of abdominal colic which may lead to intestinal obstruction or even strangulation. Such bands may not cause any trouble until late in childhood or even adolescence. However, earlier in childhood an umbilical sinus may suggest the presence of vitello-intestinal duct which may be the cause of obstruction or strangulation. **Duplication of the gut or malrotation** is yet another cause that may occur any time in childhood. Malrotation itself — as has been mentioned earlier — may not manifest itself till early adult life.

**Internal herniae** caused by defects or pouches in various recesses of the peritoneal cavity may present with evidence of intestinal obstruction early in life. Here again no symptoms may appear until early or even middle adult life. No examination of the abdomen in a child with recurrent abdominal pains suggesting obstruction is complete without an examination of the **hernial orifices**.

Another group of conditions causing abdominal pain and the acute abdomen in infancy comes under a grouping of **INFLAMMATORY** conditions. Foremost of these is of course **appendicitis**. This is not an uncommon condition in childhood and simulates the symptomatology in the adult. As with the adult, tenderness is the leading physical sign which should be sought either through the abdominal wall or per rectum. A rectal examination is particularly useful in infancy and childhood as the finger can reach a large proportion of the abdominal cavity. Differentiation between acute appendicitis and **Meckel's diverticulitis** can be very difficult and, as in the adult, may only be discovered at operation. An important lesion in childhood which is often misdiagnosed as appendicitis is **mesenteric adenitis**. It is sometimes almost impossible to differentiate between the two. Acute appendicitis can be an exceedingly dangerous condition in childhood because of inadequate omental protection. Appendicectomy is often carried out in preference to missing a possible appendicitis. The only physical sign that may be of value in differ-

entiating between the two is that described by Aird. Here the tenderness in the right iliac fossa disappears when the child is turned over to the left side. In iliac adenitis the tenderness disappears as the mesentery is pulled away towards the left. In acute appendicitis it tends to persist in the right iliac fossa. However, this is not always a simple sign to elicit. In some cases of acute appendicitis in infancy the temperature may be raised more than in the adult. It must be remembered that children tend to overact to pathological or even psychological situations and this overreaction manifests itself in the form of an unduly high temperature.

It is not altogether rare to see the odd case of **acute cholecystitis** with or without gall stones in early childhood. Occasionally even a perforated gall bladder may be encountered although acute inflammatory conditions of the gall bladder are distinctly unusual. More commonly a lesion of the biliary complex is related to congenital conditions such as a **colidochus cyst**.

Another cause of abdominal pain in childhood may be due to a primary peritonitis.

Yet another group of cases causing abdominal symptoms but unrelated to the alimentary tract may be due to congenital **urinary conditions**. Foremost among these are cases of **pyelitis** due to various congenital causes such as uretero-pelvic obstruction or duplications of ureters. Among the congenital causes **torsion** — especially of the undescended testis in a male may have to be considered and haematocolpos in a young female adolescent who has had her first few menstrual periods.

In all cases of acute abdomen one should never hang one's coat on a single peg and make a diagnosis on a single symptom or a physical sign. In no other situation is the composite presentation of symptoms, physical signs, radiological and laboratory evidence more important. One cannot summarise this philosophy better than in Sherlock Holmes' repeated demand: "Give me the data; the data".



# Surgical Conditions of the Urinary Tract in General Practice

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## SYMPTOMATOLOGY

Three main symptoms usually accompany most urinary affections — pain, frequency and haematuria.

### 1) PAIN

**a) Renal** — This is a fixed dull ache in the loin usually but sometimes it can also be in the upper outer quadrant of the abdomen.

**b) Ureteric colic** — This is a violent spasmodic pain caused by obstruction which produces distention and increased muscular activity.

**c) Vesical pain** — This varies from a mild suprapubic discomfort to a severe strangury:— an agonising pain referred to the external urethra with an intense desire to micturate but there is only straining with the passage of a few drops of blood stained urine.

**d) Prostatic and seminal vesical pain** — This is usually deep-seated in the rectum and often referred to the perineum but sometimes referred to the suprapubic region and iliac fossae.

**e) Urethral pain** — This is usually a scalding type of pain during micturition.

### 2) FREQUENCY

This may be due to bladder irritability — example in stone and in infection — or it may be due to incomplete emptying as seen in prostatism (overflow incontinence). It may also be due to the small capacity of a contracted bladder as in tuberculosis, or to diuresis and sphincter weakness.

### 3) HAEMATURIA

This is always a dangerous symptom and must always be investigated thoroughly. There is no question of symptomatic treatment before this is done. If the haematuria is painful then it is relatively easier to tackle the patients because they will seek treatment and will agree to anything. However very often the haematuria is painless and although this is the more sinister type of haematuria it is much more difficult to persuade the patients to undergo investigations.

When it comes to children be careful. If older

children they may complain of the usual symptoms — pain, frequency, dysuria, etc. On the other hand the mother may comment that the child's urine has become offensive and cloudy. There are however two groups which have an unusual mode of presentation. Firstly the under two years and secondly those with recurrent urinary infection.

**1) Under two years** — In a group of 85 children with upper urinary tract infection under two years the correct diagnosis was made in only one case prior to hospitalization. So see how vague the symptoms can be and the difficulty in diagnosis.

Refusal to feed, miserable child, cries a lot, vomiting, fever and rarely with convulsions, failure to thrive and may be mistaken for gastro-intestinal disturbance. Only by the routine urinary examination that these children are spotted.

#### 2) Those with Recurrent urinary tract infection

— The symptoms here are remarkable by their absence. Few of them may be diagnosed only when in renal failure. The chronicity of the disease is inversely proportional to the severity of the symptoms. That is the more chronic the less the symptoms. They develop relapses of infection which are completely asymptomatic. Again examination of the urine is the only way of making a correct diagnosis.

## Investigations

**1) Urine:**— FE, ME and culture. Catheter specimen of course is the best, especially in females but there is always the danger of introducing infection, and so we usually use a mid-stream specimen, after cleaning thoroughly the vulva or prepuce. There are many different techniques of counting the pus cells. The simplest is that by Stansfeld. One drop of fresh uncentrifuged urine is placed in an ordinary blood cell counting chamber and examined. The count of more than 10 pus cells per cū. mm. is significant.

**Bacteriuria** — This must always be done with fresh specimen because a delay of two hours permits contaminants to multiply and you get a false result. If the specimen cannot be sent immediately you may keep it in the fridge. A count of 100,000

organisms per c.c. is significant and means infection. If the count is 10,000 or less you can ignore it. In between best to repeat. Culture and sensitivity test must always be done.

## 2) Test of renal function

a) Specific gravity — 12 hour fast overnight first two morning specimens should reach 1020. A litre of water is given by mouth within 4 hours should be 1.002. A fixed specific gravity means impaired function of the distal renal tubules.

b) Blood urea — 20 to 40 mg.% (3.3 to 6.6 mmol-1 per litre). Serum creatinine is more accurate 0.7 to 1.5 mg.%. Average 1.2. Creatinine clearance 80 to 120 millilitres per minute.

3) I.V.P. — Double dose, infusion I.V.P. with tomography.

4) Instrumental examination of urinary organ:

a) Cystoscopy

b) Retrograde pyelography — This is very rarely necessary. Unlike old days when it was a routine; because of the danger of introducing infection especially in the presence of obstruction. Not only pyogenic but also chemical irritation by the dye. So when information cannot be got by all the I.V.P.s I have mentioned before, then this may be used as a last resort. Even then only as an immediate pre-operative measure; because the obstruction can then be relieved immediately by surgery.

c) Cystography — This can be an extension of the I.V.P. but seldom is the opacification good enough for details, so you have to do a retrograde cystography for such things as diverticulum and tumour.

d) Micturating cystogram — This is one of the most important investigations in children because this is the only way of demonstrating reflux and also posterior urethral valves.

e) Urethroscopy.

f) Ascending Urethrography for stricture and diverticulum.

g) Renal arteriography with or without tomography, especially to differentiate between cysts and tumours. You can also puncture the cyst at the same time and send the fluid for microscopic examination for malignant cells can also embolise the renal artery and make surgery easier in vascular tumours.

## PYURIA

There are more than 50 causes but the more commoner ones are:— (Going down from the kidney to the urethra)

Congenital anomalies of kidney and ureter;

pyelonephritis; pyonephrosis; infected hydronephrosis; tuberculosis; pelvic and calyceal stones; pelvic-ureteric obstruction; ureteral stones and strictures; retro-peritoneal fibrosis; vesico-ureteric reflux; refluxing megaureter; megaureter; uretero-coele; cystitis; bladder stones; tumours; diverticulum; prostatitis; prostatic abscess; seminal vesiculitis; congenital urethral valves; urethritis; stricture; stone; diverticulum.

## Haematuria

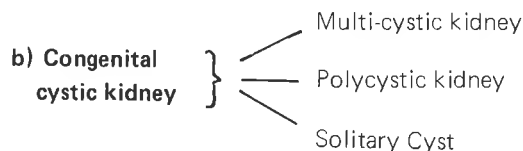
Commoner causes:—

Renal cell carcinoma; papilloma; polycystic disease; nephritis; ureteric stone; trauma; infarct; tuberculosis; papillary necrosis; ureteric stones and papillomas; cystitis; bladder stone; tumour; tuberculosis; foreign body; trauma; enlarged prostate; urethral stones; urethritis.

Bleeding diathesis, purpura and anti-coagulants.

## Congenital conditions (commoner ones)

a) **Horse-shoe kidney** — Ureters are angulated as they pass over the fused isthmus and often associated with congenital pelvi ureteric obstruction. The usual stasis, infection, stone formation.



These are different. Multi-cystic kidney is seen in infancy and childhood whereas polycystic kidney is seen in adults. In multicystic kidney the renal tissue is agenetic. It is non-functioning and usually there is no continuity between the kidney and the ureter. If bilateral it is of course incompatible with life. The cases are therefore usually unilateral. They may present with; difficulty in labour, as a mass in the abdomen, and the differential diagnosis is between Wilm's tumour and hydronephrosis. Polycystic kidney 18% are associated with polycystic liver, it is hereditary and can be transmitted. Rarely does it produce symptoms before the age of 40. Clinical features are renal enlargement, pain, dull ache in the loin, haematuria is common, infection, hypertension and finally uraemia they are off course functioning on I.V.P.

c) **Duplication of the pelvis and ureter** — These often present with pyuria and infection because of stasis. There is also reflux from one limb to the other and this leads on to hydronephrosis stone formation.

d) **Ectopic ureteric orifice** — In female the

ectopic ureter usually opens into the urethra below the sphincter or into the vagina and therefore incontinence is common. So if you have a girl or a woman who is incontinent, and at the same time can void urine normally, chances are she has ectopic ureter. In the male they open into the apex of the trigone, posterior urethra, seminal vesical or ejaculatory duct and so they are usually continent. They may present with recurrent infection and the entity is suspected on I.V.P.

**e) Mega ureter** (non-refluxing mega ureter, simple mega ureter, primary mega ureter) — The pathology is in the intra-mural portion of the ureter and may go on proximally to a varying length of the distal ureter. This part of the ureter is normal in calibre but the ureter proximal to it is markedly dilated and tortuous, and there may be associated hydronephrosis. For some reason there is a failure of the peristaltic wave to push the urine through this segment. Usually symptomless and may be found by chance I.V.P. in later life. Males more common than females and in children usually presents as infection, and occasionally haematuria.



**Simple ureterocoele** — More common in females than in males; and although seen in both adults and children, the simple is rare in children. Essentially it is due to a stenosis of the ureteric orifice and hence the intramural portion of the ureter dilates like a cyst. The cyst consists of two layers of mucus membrane an inner ureteric epithelium and outer bladder mucosa. Hence on an I.V.P. you will see the typical cobra head shaped shadow with a halo around it. Seldom produces symptoms and may present in later life with a stone in the ureterocoele. Hence if you see a bladder stone just to the left or right of the midline in the region of the ureteric orifice and it does not shift in position then almost certainly it is associated with a simple ureterocoele.

**Ectopic ureterocoele** — This is usually associated with ectopic ureter and the ureter draining the upper pole is inserted lower down in the bladder and this is the ureter that is affected. These ureterocoeles can be very large and can even be seen to come out of the external meatus when the child passes urine. Again more common in females than in males, and treatment is of course a heminephrectomy because the upper pole is usually associated with hydro-nephrosis and dysgenetic renal tissue.

## Hydronephrosis

There are many causes for hydronephrosis usually classified into **extramural, mural and intramural**. Extramural due to pressure by growth from outside or retroperitoneal fibrosis. Mural can be pelvi-ureteric obstruction, ureterocoele, strictures, tumours, tuberculosis. Intramural can be stones, tumours, etc.

**Pelvi-ureteric obstruction** — This is a fairly common condition. It can be unilateral or bilateral and although congenital presents only in later life. This is because it is usually asymptomatic, although occasionally it can present with pain, with infection or very rarely with haematuria. The textbooks still talk of aberrant renal artery causing this. This is false. The pelvi-ureteric obstruction is due to an abnormality of the pelvi-ureteric junction which fails to allow the urine to pass from the pelvis into the lower ureter. Very much like megaureter in the lower end of the ureter. Treatment is of course to excise this abnormal segment.

## RENAL TUBERCULOSIS

Always secondary to focus elsewhere although in many cases you can't locate this focus — lungs bones, and joints.

### Stages of the disease

**1) Bacilluria** — Bacilli found in urine and positive culture; although possible that it comes from foci elsewhere, there is probably a small lesion in the cortex which cannot be detected. Very occasionally the disease may not progress beyond this stage.

**2) Papillary ulcer** — A group of microscopic lesions coalesce and discharge pus and tubercle bacilli. The pyramid becomes ulcerated.

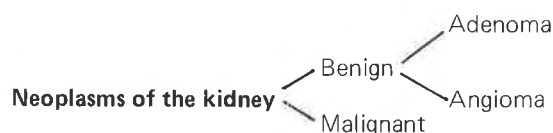
**3)** A macroscopic lesion progresses rather slowly and other similar lesions may appear in the same kidney.

**4)** The tuberculous process spreads along the calyx to the pelvis, to the ureter, "the bladder", the prostate, the seminal vesicle and the epididymus. This spread can be both intramural and also via the lymphatics. There is a proneness to stricture formation at certain sites, especially during the healing process when treatment is instituted. The calyceal neck, the pelvic-ureteric junction, the ureter and uretero-vesical junction. (So in the kidney itself you can have hydrocalycosis leading on to an abscess cavity) or this may heal leaving behind a calyceal cyst. There may be hydronephrosis, pyonephrosis, or tuberculous perinephric abscess.



The kidney can go on to what you call a caseous kidney and then on to calcification and may be autonephrectomy. Occasionally the prostate can be the primary site of genito-urinary infection and the spread can be from here on to the rest of the urinary system.

**Clinical features** — Frequency — this is usually the earliest symptom and is usually due to tuberculous cystitis, pyuria usually described as "sterile acid pyuria", painful micturition, haematuria, loss of weight and evening fever. **Investigation and treatment** you already know. Treatment medical mainly and the only point to stress is a careful follow up with I.V.P. every 2 to 3 months and if necessary with cystoscopy because as I said before as treatment proceeds stricture formation is very likely and hence if this is not looked out for you may lose the kidney in a few months. The bladder very often ends up in a contracted systolic bladder with a very small capacity. This will need surgery to expand its capacity later on by a cystoplasty.



**Malignant:- Wilms' tumour** or nephroblastoma; Grawitz's tumour or renal cell carcinoma; and papillary tumours of the renal pelvis.

**Wilms' tumour** — is a mixed tumour containing epithelial and connective tissue elements arising from embryonic nephrogenic tissues. Usually 1 to 4 year of life. Under one year is very rare but if present the prognosis is better. Clinical features usual; abdominal tumour, pyrexia, haematuria.

**Grawitz's tumour** — 75% of kidney tumours; one or other pole usually; less often in the central portion. Clinical features:— males twice as common as females. Haematuria is the earliest sign, dragging pain in the loins, palpable mass in the loins, a typical presentation;— secondaries in lungs or bones; P.U.O.; anaemia and lassitude. Diagnosis I.V.P., renal angiography.

**Papillary tumours** — These spread by seeding and give rise to multiple tumours in the ureters and bladder but remember that they can be multicentric tumours due to some carcinogenic agent in the urine. Usual presenting symptoms is haematuria.

**Vesico-ureteric reflux** — This is regurgitation

of urine from the bladder. This is normally prevented by a flap valve mechanism. During micturition the bladder pressure rises and compresses the intramural and sub-mucosal ureter. Also uretero-trigonal fibres aid in approximating the ureteric roof to its floor. Reflux occurs as a result of local anatomical change of various types and of various causation which interfere with the effectiveness of the uretero-vesical valve. It can be primary or secondary.

#### Secondary

- (1) Infravesical obstruction, like posterior urethral valves.
- (2) Neurological lesion, like spina bifida.
- (3) Inflammation, like T.B. The rigidity and incompressibility of the intravesical ureter and interference with the contractility of the uretero-trigonal musculature.
- (4) Iatrogenic — Intravesical ureter destroyed by incision for ureterocoele or slitting of the orifice for stone or reimplantation by faculty technique.

**Primary reflux** — Unilateral or bilateral in children, occurs in the absence of overt obstruction or neurological uropathy, and is really due to a congenitally anomalous uretero-vesical junction. The intravesical ureter is very short. There is no oblique tunnel and also a lack of fixation to the trigone. Spontaneous cure:— A new born intravesical ureter is about 5 mm. and in the adult it is about 13 mm., and so the child's ureter is more prone to reflux but with growth it may cure spontaneously. The likelihood is greatest in the first 2 to 3 years of life. Clinical features:— females 3 to 4 times more common than males. Occasionally pain in the loins during micturition but usually no symptoms. There is urinary infection and impairment of renal function. Symptoms of cystitis, dysuria, frequency, enuresis common. Fever and loin pain. In the first year of life fever, vomiting, diarrhoea, irritability, convulsions and meningismus.

#### Idiopathic retroperitoneal fibrosis

Backache for many months with anaemia suddenly becoming anuric. In other cases because renal disease is suspected I.V.P. done, and this shows rapidly developing unilateral or bilateral hydronephrosis and a rising blood urea. Ureters nearer the midline than normal due to an area of fibrosis centred around the aortic bifurcation. Sometimes drugs like Methyl Dopa or Methysergide for migraine.

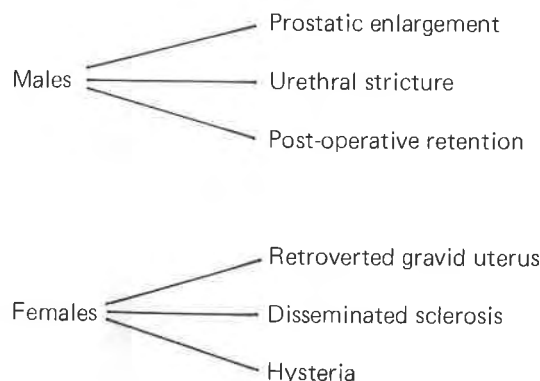
**Papillary necrosis** (Necrotising papillitis or renal medullary necrosis) — Is a severe complication of pyelonephritis or urinary obstruction. It is an ischaemic necrosis of the renal papillae and adjacent portion of the renal medulla, especially in patients with diabetes and pyelonephritis. Women who ingest large quantities of analgesics which contain phenacetin. Papillae with varying amounts of pyramid sloughs off. Clinical features:— Intensification of the symptoms of pre-existing pyelonephritis, pain in the lumbar region, ureteric colic, haematuria, high fever. I.V.P. may show ulceration of the central portion of the papillae; or delamination of cavity caused by sloughed papillae; negative shadows representing retained papillae may be seen. Later irregular calcified bodies containing radiolucent centres are diagnostic.

**Cystitis in women:**— you probably see them quite frequently in your practice. Usual symptoms frequency, dysuria, pyrexia, haematuria. Peculiarly enough haematuria is a fairly common symptom of cystitis in the young sexually active age group. Why are women more prone to cystitis?

- 1) Shortness of the female urethra.
- 2) The proximity of the urethral orifice to the vaginal introitus. This can be very variable. On the one hand there may be a good bridge of tissue separating the two orifices and on the other extreme, the urethral orifice can be almost on the anterior vaginal wall.
- 3) Urethro-hymenal fusion.
- 4) The rich lymphatic net work at the base of the bladder which communicates with the cervix uteri. Hence have always got to rule out other conditions like chronic cervicitis.
- 5) No doubt that sexual intercourse is related to the repeated attacks of cystitis. If you go into the history it is often found that the attack first started during the honeymoon period, hence the name "honeymoon cystitis". Very often the woman will be able to relate the attacks of infection to sexual intercourse. However one has to rule out other important causes of the symptoms (such as haematuria) before labelling them as due to cystitis and before giving them symptomatic treatment. In fact the modern woman not only has the contraceptive pill but also the antibiotic pill by her bedside.

**Retention of urine** — Acute  
Chronic

#### Causes of acute retention:—



#### Other causes:—

- Following spinal anaesthesia
- Blood-clot in the bladder
- Rupture of the urethra
- Neurogenic
- Faecal impaction in the rectum
- Acute urethritis or prostatitis
- Urethral calculus
- Ring around the penis
- Phimosis
- Muscular atony from advanced age
- Certain drugs

The drugs involved are things like Propantheline bromide, antihistamines, anti-hypertensives, anticholinergics and I.N.A.H.

**Chronic retention:**— The distension of the bladder is painless. The blood urea is often raised.

**Treatment** — The treatment is surgical. Never be tempted to relieve the obstruction in your clinic because:

- 1) the chances of infection are very high.
- 2) once the patient is relieved of his agony, refuses to go for proper evaluation and treatment.
- 3) The chances of recurrence of the retention after removal of the catheter are very high in enlarged prostate, and once infection is introduced, if the obstruction is not relieved the result can be cathostropic — ascending pyelonephritis going on to renal failure and uraemia.

The patient should be hospitalized and the proper management instituted depending on the cause, renal status, patient's general condition, etc.

#### Prostatism

The term is used to describe the clinical features that occur as a result of changes in the pros-

tatic gland.

**1) The irritative syndrome** — frequency usually nocturnal at first. Later urgency. When this becomes more severe the term precipitancy is used, that is the urgency cannot be controlled by cortical inhibition and the patient urinates in spite of trying not to do so. Hence it is almost like incontinence.

**Hesitancy** — This may be another important symptom. In some the hesitancy may be due to straining, while in others it is an intentional waiting and trying to relax. Straining is suggestive of fibrous prostate or stricture. Hesitancy with relaxation is characteristic of myo-adenomatous hyperplasia. By straining one is trying to overcome an obstruction. By relaxing one is trying to open up the sphincters whose function has been interfered with by the enlarged prostate.

**2) Obstructive syndrome** — Usually due to obstruction by an enlarged prostate, either by protruding into the lumen of the vesical outlet or by compressing the prostatic urethra. The calibre of the stream is narrow. The strength of the stream is weak. Whereas once it was "projectile" it is now a "dribble". The severest form of obstruction is of course acute retention which is painful. Retention with overflow is painless and presents with frequency and incontinence.

**3) Infective syndrome** — When infection occurs the symptoms of irritation and obstruction become worse. There will be pain in the perineum. There will be strangury. The urine will have an offensive odour.

**4) Haematuria and hemospermia** — either in the ejaculate or in the nocturnal emission.

**Physical examination** — One can't feel the prostate with the full bladder. Hence no use doing P.R. in acute retention. The normal prostate is soft to firm, smooth, pear-shaped with the base up — about 4 cms. x 3 cms. In an average patient you can get above the base; there is a median furrow. Normal gland is about 20 grams, slight enlargement is about 30 to 40 grams, moderate enlargement is 40 to 60 grams and anything above 80 grams is quite large. One should also note the consistency of the gland.

There are various positions for the rectal examination:—

- Lithotomy
- Left lateral; Sims
- Knee-elbow.

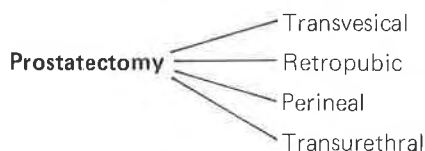
**Treatment** — The severity of the symptoms is what needs treatment and not the size of the prostate itself.

**Indications:**

- (1) Prostatism — patients with long standing

symptoms are unlikely to get more severe, that is about 9 years or so, while a similar degree of symptoms reached within 3 years — there is a greater indication.

- (2) Acute retention.
- (3) Chronic retention where the residual urine is more than 200 c.c.
- (4) Complications — such as stone, infection, diverticulum.
- (5) Haemorrhage — occasionally this can be severe enough to warrant an emergency prostatectomy.



Choice depends on various factors:

- 1) Expertise of the surgeon.
- 2) The general state of the patient.
- 3) The size of the gland.
- 4) Certain physical abnormalities which may preclude one or other method.

The results are generally good with all 3 methods. The complications that usually occur are also common with all the various methods of treatment, that is, haemorrhage, post-operative clot retention, incontinence, post-operative stricture formation, etc.

In general a fully trained, expert resectionist will probably deal with all enlargements by transurethral resection, because there is a minimal disturbance to the patient and early discharge from hospital. However, in general it is probably best to limit T.U.R. to glands that are less than 50 grams. This is because one must be able to resect the gland within a reasonable period of operating time or else the risk of complication becomes high:

- 1) Intravascular haemolysis and haemoglobinemia which will lead to renal damage.
- 2) Risk of over-hydration from massive absorption of irrigating fluid.

T.U.R. is not possible when patient cannot be placed in the lithotomy position because of an orthopaedic deformity.

**Retropubic prostatectomy**

This gives a good exposure and you can remove specially large glands in a minimal amount of time and you have good control of bleeding. But again this cannot be done when there is deformity in the bony structure of the symphysis pubis thus obli-



terating the retropubic space. There can also be extensive vascular malformation of the anterior prostatic capsule which will make this approach difficult. When both T.U.R. and retropubic prostatectomy cannot be done then **the transvesical approach** is probably the best. This is also a good approach when there is concomitant bladder pathology to be dealt with.

## URINARY LITHIASIS

### Reference:

- 1) Hospital Medicine, Vol. II, No. 9, June 1968.
- 2) Urological Clinic of N.A., June 1974.

### Management —

- (a) Find Cause of Stone Formation.
- (b) Remove Stone.
- (c) Prevent Recurrence.

### Pathogenesis of Renal Calculi

Saturated and super saturated solutions. Urine is a complex solute with numerous solvents. What is surprising is not stone formation but the comparative rarity of stone formation with such a solution.

- 1) Matrix — Muco-protein
- 2) Increased Crystalloid Concentration
  - a) reduced urinary volume
  - b) increased excretion of Ca; Ox; Cystine; Uric Acid.
- 3) P. H. of Urine
  - a) excessive Urine Acidity (Uric Acid)
  - b) excessive Urine Alkalinity (Struvite)
- 4) Inhibitor Deficiency  
Phyro-phosphate, Magnesium, Citrate, Trace Metals (Zn, Strontium, Manganese and Cadmium)
- 5) Inhibitor Blockage (?)  
Al; Trivalent Fe; Si.
- 6) Infection
- 7) Stasis
- 8) Foreign Bodies.

### Causes Proper

#### 1) Non-Metabolic

- a) Stasis:— (Stasis, infection, stone formation)
  - i) Congenital conditions.
  - ii) Acquired conditions.

#### Congenital —

Polycystic kidney  
Horseshoe kidney

Duplex kidney  
P. U. obstruction  
Megaureter  
Ureterocoele  
Bladder neck obstruction  
Medullary sponge kidney.

### Acquired

Inflammatory (stricture, T.B., bladder diverticulum)  
Neoplastic (renal ca; renal papilloma; enlarged prostate)  
b) Analgesics abuse and Worcestershire Sauce. This is really an example of "dystrophic" calcification.

### 2) Metabolic

- a) Dehydration — Cooks, pilots and engine and boiler room workers.
- b) Hypercalciuria —  
Primary hyperparathyroidism  
Thyrotoxicosis  
Hypothyroidism  
Renal tubular acidosis

#### Bone disease

- (1) Osteoporosis — prolonged immobilization; Paget's Disease.
- (2) Destructive Bone Disease — primary osseous malignancy; metastatic ca.; multiple myeloma; lipid granulomatosis; chronic osteomyelitis especially with immobilization

Sarcoidosis  
Hypervitaminosis D  
Milk-Alkali Syndrome  
Idiopathic Calciuria

- c) Uric Acid Stone
- d) Xanthinuria
- e) Primary Hyperoxaluria
- f) Cystinuria

### 3) Regional

	Developed Countries	Underdeveloped Countries.
Age of patient	Adult	Children
Site of Stone	Upper U.T.	Bladder
Composition	Ca Salts	NH <sub>4</sub> Hydrogen Urate

- 4) Idiopathic — Although last, the most common.

## **SURGERY OF URINARY LITHIASIS**

### **PRE-OP EVALUATION**

- 1 Definite evidence of stone:- modified or casualty officer's IVP
- 2 Exact size
- 3 Exact number
- 4 Exact location
- 5 Pre-disposing cases
- 6 Standard IVP — Double Dose IVP; Infusion I.V.P. with or without Tomography Retrograde pyelography, arteriography.

### **INDICATIONS FOR SURGERY**

- 1 Causing obstruction
- 2 Causing undue pain
- 3 Causing progressive renal damage
- 4 Infection

### **URETERIC CALCULI**

- 1 Infection — urgent
- 2 Objective assessment of degree of persistent upper U.T. obstruction (Straight X-Ray no use; 1 or 2 films I.V.P.)
- 3 Condition of contra lateral kidney

- 4 Personal commitment of patient
- 5 Size of stone.

### **STONES IN PELVI-CALYCEAL SYSTEM**



- 1 Pyelolithotomy
- 2 Partial nephrectomy
- 3 Gil-Vernet or renal sinus approach
- 4 Nephrolithotomy
- 5 Nephrectomy

In Conclusion:- So you see how much you may be missing when you treat urinary symptoms symptomatically. So at least do an I.V.P.

# Handling the emergency

**Dr. Joseph Levenstein**

Chairman of Standing Committee on Emergency Call  
W.O.N.C.A.

## THE RESPONSIBILITY OF THE GENERAL PRACTITIONER TO HIS PATIENT AND THE COMMUNITY

The issue of the handling of the emergency call and whose responsibility it is, is at the centre of controversy in several countries throughout the world. With the advent of sophisticated and expensive emergency care delivery systems the general practitioner has handed management over to emergency care specialists, in some instances gratefully, in others reluctantly and in most, without much thought.

I believe that an overall policy for the management of emergencies should be instituted, which should take into account contributions from all disciplines and utilise all facilities for the best possible cost-benefit ratio.

An emergency may be defined as any situation which is interpreted by the doctors as requiring immediate attention.

It is assumed that a doctor has had adequate training for emergency care management. But is this in fact so?

What educational objectives have been stipulated for medical students or alternatively what knowledge, psychomotor skills and attitudes should the qualified doctor possess for the handling of emergencies?

To look at only the possible psychomotor skills the qualified general practitioner could be expected to have mastered:

- the eliciting of physical signs and assessment of the clinical condition of the patient
- intravenous and I.V. fluid administration
- cardio-pulmonary resuscitation
- splinting and other first aid procedures
- positioning and moving of patients
- maintenance of respiration, use of ambubag, oropharyngeal tube and endotracheal tube catheterisation
- performance of ECG's
- trochar and cannula insertion
- stomach washout
- minor surgical procedures e.g. suturing

Other areas covered in such training would

include the knowledge of the natural history of emergency conditions and their complications and basic equipment and drugs required. Also, the practice management arrangements needed to cope with emergencies, off duty cover and the training of receptionists. There are good reasons why a general practitioner should handle emergencies in his own patients as part of their continuing care. He has prior knowledge of their illnesses and behaviour and is therefore in the best position to meet the patients physical and psychological needs in a situation. He also knows which of his patients are at special risk. As he usually serves a circumscribed area, and has knowledge of the local geography he can render his services **promptly**. Also, as he is part of the existing medical structure, his services can be provided at no extra cost of the community.

The general practitioner has a most important function to perform in predicting and preventing emergencies. As a result of his unique relationship with his patients he can educate them according to their own individual needs. If, for example, he accepts that every "unexpected" status asthmatics, acute heart attack or suicide bid could be regarded a therapeutic failure and investigate what could have been done to prevent these — for example did he ignore warning signs? Did he educate patients to report deviations from their norms? Then, by this self-audit he may go a long way towards the possible prevention of further emergency situations in his practice.

The general practitioner should use every opportunity for patient education. Should we not display in our waiting rooms "buckle up" for example? His educational responsibilities should also extend to the training of ambulance men and first aid men.

In arguing against the general practitioner continuing his traditional function of treating emergencies in South Africa, there are those that maintain that emergency care is too disruptive of modern day family medicine. There are no hard data to support this claim. In fact in the commonest and most important emergency of all, acute myocardial infarction, it was shown in



the Cape General Practitioner Coronary Care Project, that in line with other Western countries, most participating General Practitioners did not receive more than 12 calls per year. Of the 119 participants who completed a questionnaire, after the project was completed, 71% stated that the policy of an **immediate** response to all suspected cases of acute myocardial infarction had only "negligibly" disrupted their practices, 19% maintained that their practices were "slightly" disrupted, while 10% thought their practices had been "grossly" disrupted.

Information from morbidity surveys indicates that there are only 1 - 10 emergency calls per month, many of these occurring after hours and consequently not disruptive of the practice routines.

In fact, I have undertaken to do a study in South Africa on this very issue and would like to request your help. The purpose of the study is to record every emergency that requires immediate attention in your practice over a 3 month period.

The emergencies would fall under the following headings:

1. Chest pain
2. Respiratory distress
3. Severe haemorrhage or dehydration
4. Debilitating pain
5. Multiple injury
6. Any psychiatric condition which can result in destruction or harm to self or others
7. Poisonings
8. Sudden loss of consciousness
9. Convulsions under certain circumstances
10. Severe allergic reactions
11. "Shock" like states not already mentioned as in septicemia
12. Any other problem requiring immediate attention

This list in fact comprises the conditions that a general practitioner should exhibit adequate knowledge of in the area of emergency care. He should know the natural history of diseases causing such symptoms or signs, and the drugs and equipment needed to treat them.

The forms will be constructed to allow for the minimum amount of effort and time needed for their completion.

Perhaps we can now discuss the General Practitioner's role in areas where centralisation in management has become commonplace, with reference to why this has come about and whether in fact these strategies of emergency care are cost-effective.

The centralisation of emergency care has come

about in situations where hospitals, existing services or newly created services have been extended into the community, thereby rendering the general practitioners redundant, or in situations where there are no primary care doctors at all.

The general practitioner has accepted this for a variety of reasons. These include his disinclination to perform these services because of his inadequate training and limited equipment, his belief that "specialist" services are of necessity "better" than those he can provide.

The public, too, have demanded sophisticated, specialist care. Egged on by dramatic media coverage they appear to accept without question that this system must be more effective.

In the light of these powerful influences should the general practitioner bother to question this trend?

There are several compelling reasons why he should. In order to fulfil his responsibility to the community and his patients he should ask for the data that prove these strategies more effective and in view of the economic situation examine whether it is worth the cost.

In fact a searching re-examination of this centralisation policy is beginning. The WONCA Standing Committee on the Emergency Call has been asked to investigate this very issue. Enquiries have come from nations who normally support this approach in the belief that even the richest nations are not bottomless pits to provide unlimited money for these purposes. Let us examine what limited evidence there is available.

The medical area which has received the most attention from centralised agencies is the pre-hospital management of acute myocardial infarction. This stands to reason as it is the most common and lethal of all medical emergencies. Several delivery care systems have evolved. Principally they can be divided into 3 types:—

#### **Firstly:**

The Mobile intensive coronary care Unit (MICCU) pioneered by Pantridge where a hospital based ambulance, manned by medical personnel, responds to calls usually from a general practitioner to a patient with a suspected AMI.

#### **Secondly:**

A highly sophisticated network of MICCU's squad cars, ambulances, fire engines, manned by paramedics which are dotted around the city in order to reach a collapsed patient within 4 minutes. This type of unit has predominantly evolved in the U.S.A. in a situation where there was a distinct shortage of primary care physicians. In certain

areas, notably Seattle, there has been extensive population education on the skills of cardiopulmonary resuscitation as well.

A **third** means of delivering care in the early prehospital phase is by a prompt and effective management by the general practitioner. As he has no resuscitative or monitoring equipment he must accent his management on the prevention rather than the reversal of terminal arrhythmias.

There are certain inherent differences and similarities in these three types of care. Both the Pantridge type MICCU and the primary care physician response represent an attempt to reach the patient with chest pain while the emphasis of the USA type MICCU is usually on the "collapsed" patient. The former two also usually rely on medical personnel as opposed to the USA type which uses other trained non-medical personnel. The USA type, by virtue of its emphasis on the "collapsed" patient, gears its efforts to get to patients within 4 minutes after onset of collapse, while the other two systems by their very nature cannot hope to emulate these "doctor-to-patient" times.

It is easy enough to compare the services provided by the Pantridge type MICCU and the Cape General Practitioner group since the latter's study had as its main objective to assess whether general practitioners who had been educated to respond promptly to chest pain, could approximate the services of such a MICCU. The advantages that the 129 Cape General Practitioners had in their management of these patients have already been referred to!

In comparing the Pantridge type MICCU and the Cape General Practitioners it was seen that in fact the Cape General Practitioners could get there quicker than his or any comparable service. The one month mortalities were similar. The Cape General Practitioner regimen of management proved effective at preventing VF as opposed to reversing it as was the practice of the Belfast and other MICCU groups. It was thus concluded that the Cape General Practitioners could approximate the services provided by a Belfast type of a MICCU.

A direct comparison with the American type MICCU is difficult as they concentrate on the collapsed patient. The natural history data they have provided is limited and I believe that by extrapolating the limited data they have made available, both the Pantridge type MICCU and the

Cape General Practitioner's, considering the whole natural history of acute myocardial infarction, delivers far more effective care.

There is thus no evidence to support the spending of vast sums of money in delivering centralised emergency care for acute myocardial infarction. As this is the most important and common medical emergency it stands to reason that the South African general practitioner should continue to provide this emergency service for his patients and other medical emergency services as well. With regard to general practitioners providing immediate care in the management of motor car and other accidents there are schemes in the periurban and rural areas in Britain, Austria, West Germany, New Zealand and Australia. The most well documented schemes are those initiated by Dr. Ken Easton of the United Kingdom. Already 53 general practitioners' immediate care schemes function in the UK where trained general practitioners respond to calls by ambulance men or police.

If one takes the Richmond scheme, for example, in 1977 doctors were called to 103 of 553 accidents. There are 30 general practitioners involved in the scheme, 1 Anaesthetist, 1 Orthopaedic Surgeon and 1 Dentist. There were never more than 12 doctor calls in 1 month and the work load is not excessive. The GP immediate care in the UK schemes were investigated by the Medical Commission on Accident Prevention — the Dooley Report. The latter found that the GP schemes were 20% more effective than the usual accident services.

## CONCLUSIONS

The basic knowledge and skills in the GP management of emergency care should be defined.

General Practitioners by careful audit of their own practice and patient education should try to prevent or predict emergencies in their own practice. There is no evidence that centralised emergency medical services are of greater cost benefit than GP services. Likewise GPs have shown in peri-urban and rural areas that they can provide effective accident care.

Accident services in densely populated urban areas, at this stage of our knowledge, should be centralised and GPs should participate in and encourage better ambulance training and assist where possible.

from WONCA News.

# Feeling at home

## (The James Mackenzie Lecture)

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### James Mackenzie

The story of James Mackenzie is both remarkable and inspiring, and Gillie (1962) in her Mackenzie Lecture applauded the wisdom of the founding members of this College in choosing him for our model.

Many of my distinguished predecessors have described his life, and several have made valuable contributions to the history of his career. I can offer nothing new in historical fact; instead, I shall try to show as I develop my theme how the main principles which guided his life as a general practitioner can still guide ours today. These principles were: an unusually early recognition of the importance of preventive medicine; an abiding interest in his patients' homes and environment; a tremendous and continuing struggle to understand the medical problems presented by his patients; an endless capacity for hard work; an acceptance of the discipline of publishing his results in medical journals; a great love of teaching; and above all a rare gift of critical analysis and intellectual integrity.

### General practice

General-practitioner care can be classified into six components:

1. Primary.
2. Family.
3. Domiciliary.
4. Preventive.
5. Continuous.
6. Holistic.

At different times in different countries, different aspects predominate. Each one can be delegated either to a colleague in another caring profession or to a consultant. However, it is the unique blend of these six aspects of medical practice which comprise our job.

We know that one of the great skills of the consultation in general practice is noting what the pa-

tient is *not* saying, because this may be particularly significant and so it is logical on such an occasion to review an aspect of our work which we as doctors, for one reason or another, are *not* talking about.

Primary, family, holistic, and continuity of care are constantly discussed; the gap — the silence — seems to lie in the place of domiciliary care. I therefore propose to examine three important aspects of general practice — preventive medicine, the environment, and human behaviour — in relation to the home. I shall then consider the home as the patient's territory, the scope for our work there, the trends of today, and the challenges of tomorrow.

### The supreme objective — prevention

All medical activities can be arranged in a hierarchy by the point at which the doctor intervenes in the disease process:

1. The prevention of disease.
2. The pre-symptomatic detection of disease.
3. The early diagnosis of disease.
4. The diagnosis of established disease.
5. The management of disease.
6. The management of the complications of disease.
7. Rehabilitation after active treatment has been completed.
8. Terminal care.
9. Counselling the bereaved.

The higher in this hierarchy the doctor is able to work, the better for the patient. As generalists we have a unique opportunity to operate at all nine levels of medical care, although traditionally we have primarily been concerned with the diagnosis and management of disease.

While preventive medicine has never had much glamour for personal doctors or community physicians, our patients have no doubt that "prevention is better than cure". Certainly they want to



be diagnosed, treated, and if possible, cured. But most of all they would prefer not to be ill in the first place. If medicine is to serve society, then its single most important function must be to prevent ill health.

As early as 1832, Charles Turner Thackrah, the general practitioner who founded the Leeds Medical School, "realized the need for the education of masters, workmen, doctors, and legislators always towards *the supreme objective — preventive*" (Vaughan Jones, 1960, quoting Meiklejohn, 1954); and in 1919 James Mackenzie established his Institute (Mair, 1973) "with the object of studying disease *with a view to its prevention*" (my italics).

### *The teaching hospitals*

Mackenzie was one of the first to recognize that many of the problems general practitioners had in orientating themselves to general practice lay not in themselves but were the result of the teaching they had received. He wrote: "The great majority of students of medicine become general practitioners and in the teaching schools, with rare exceptions, there is not one teacher who has obtained a knowledge of many of the problems which will meet the general practitioner. Probably in this respect medical education is unique in that in all the other branches of knowledge, whether of trade or profession, the teachers or instructors have a practical acquaintance with the subjects they teach" (Mair, 1973).

One of the inherent problems for specialists is that the very act of specializing requires a doctor to draw a boundary of interest. This has three serious side-effects.

First, specialist thinking is, by definition, confined within fixed boundaries and may sometimes become rigid. Secondly, patients are forced to fit in with doctor-determined definitions of interest or be rejected. Thirdly, in time, specialties tend to fragment or contract, not expand, so that the specialist's subject tends to become narrower and narrower. The generalist is spared the restriction of working within a limited field and can be completely flexible to fit in with all the patient's needs. He is free to think laterally across all "the 'three dimensions' of physical, psychological, and social care" (Gray, 1970).

More recently, teaching hospital training has been criticized by the Pemberton (1976) and McKeown (1976). They have argued, and I agree, that the concentration on selected cases, the emphasis on pathology and on active investigation and treatment, and above all the ethos of a big bureaucracy (Susser and Watson, 1971) have large-

ly contributed to generations of general practitioners entering practice with the wrong set of priorities. It is difficult to unravel the physical, psychological, and social origins of disease in teaching hospitals and hard to practise personal preventive medicine. Thackrah's "supreme objective" has been systematically diminished.

James Mackenzie thought that the future for preventive medicine lay "in the hands of the 'family doctor'" and later wrote, "Preventive medicine can progress only so far and so fast as the family physician is prepared to go" (Pinsent, 1963 quoting Fyfe, 1933).

### **The environment**

If we agree that prevention is our supreme objective, we must next decide where we as general practitioners have the greatest scope for practising it. Over two thousand years ago Hippocrates said, "The physician must study the patient and his environment." How important is the environment today?

My own awakening to its importance came when I learnt that the infant mortality rate for social class 5 babies born in Britain in 1960 was worse than the infant mortality rate for social class 1 babies born in 1939. I realized that even the combined effects of several separate revolutions — the introduction of antibiotics, of planned antenatal care, of a comprehensive NHS for every mother and baby, the increased use of hospital for deliveries, specialization by paediatricians and obstetricians — had all failed to bridge the social effects on infant mortality for more than 20 years (Morris, 1967a).

I learnt that social and environmental factors are major if not pre-eminent factors affecting the death of babies and that they may be much more important than technical advances in medicine. How much more are they factors affecting morbidity?

McKeown (1970, 1976) believes that the main determinants of health during the past 300 years have been environmental. In other words, most people are born well and are subsequently made ill. He has shown that mortality rates improved all through the nineteenth century while environmental reforms in sanitation and hygiene occurred. Snow, a general practitioner in the nineteenth century, altered the environment by stopping the Broad Street pumps from working, thereby curing a cholera epidemic years before the cholera vibrio was identified.

Clearly scientific treatment by doctors began only in the twentieth century and, even now,

scientific treatments do not counteract bad environmental conditions in the poor countries. McKeown argues that in technically advanced countries behavioural influences are more important than all others, citing patterns of behaviour such as smoking, drinking, eating, lack of exercise, childbearing, and childrearing.

Pemberton in his 1976 Milroy Lecture classified current medical research into five categories or 'levels':

1. Molecular.
2. Cellular.
3. Organs.
4. Multi-organs or clinical.
5. Man in his setting or environment.

Most medical research in the past has been undertaken at the first four levels. Perhaps one of the great contributions to medicine which we in general practice can now make is at level five — man in his environment?

James Mackenzie understood. Two of the aims of his Institute (Mair, 1973) were:

"To study the conditions under which the patients live (food, work, and surroundings)."

"To record all cases and keep in touch with patients who have been seen with the aim of *discovering the relation between environment, ailments, and subsequent disease*" (my italics).

### **Behaviour as a cause of ill health**

#### ***Infectiousness of human behaviour***

After working in general practice for several years, I gradually realized that my professional concern as a doctor was focusing more and more on my patients' feelings. Wherever I looked I found that it was their personalities, their fears and feelings that mainly decided what happened in the consultation. In other words, I was affected by the way they behaved. Nor was I alone. My partners, nursing colleagues, and all the practice staff were similarly affected by the patients' feelings, and feelings are one form of behaviour.

I slowly came to realize that although we spend years studying the infective process and the characteristics of invading micro-organisms, we still do not know why only a few patients catch infections and most do not. Only rarely, I noticed, were my staff or I infected by our patients pathologically, whereas behaviourally there was evidence every day that one or more of us had been affected, and we can, I believe, say 'infected' by our patients' behaviour. As a doctor becomes more sensitive to his patient's feelings, so he is more affected by them. I learnt that an angry receptionist usually

meant a frightened patient and later I began to diagnose depression by feeling depressed myself. It seems we are more affected and infected by our patients' sorrows and joys than by their germs.

One of the most important behavioural objectives for our vocational training scheme in the University of Exeter is "That the trainee shall demonstrate his/her ability to know what it feels like to be the patient" (Gray, 1977). We know that the management of so many consultations hinges on knowing just what the patient is feeling and asking ourselves such questions as: Why has he come at all? Why was the call late? What does the patient think the symptom means? Two patients with identical symptoms may have quite different feelings if, for example, for one the symptom was the start of an uncle's leukaemia.

#### ***The behavioural causes of hospital admissions and deaths***

For years general practice has been almost alone in its preoccupation with human behaviour, sharing only with psychiatry the idea that doctors should study behaviour in relation to illness. However, the general principle of the importance of human behaviour is now becoming clear to doctors in other disciplines and also to Western governments.

Lalonde (1975), for example, a minister in the Canadian Government, analysed mortality and morbidity in Canada by measuring certified deaths and admissions to hospitals. He found that the top four causes of death between the ages of one and 70 in Canada were: accidents, ischaemic heart disease, respiratory disease and lung cancer, and suicide. Similarly, the top three causes of admission to hospital were: mental illness, diseases of the cardiovascular system, and accidents and violence.

Given that behavioural factors such as smoking, obesity, lack of exercise, and probably fat consumption are all behavioural influences on cardiovascular disease, it is clear that all the main causes of death and hospital admission arise from causes in the environment and especially human behaviour.

The pattern is the same throughout the Western world: the conditions causing the greatest concern are ischaemic heart disease, lung cancer, alcoholism, obesity, depression, accidents, self-injury, abortion, and venereal disease. All have one common factor, conscious human behaviour — especially what Lalonde calls "self-imposed risks".

#### ***Behaviour at home***

Evidence from many disciplines is accumulat-

ing to show that behaviour at home is strongly associated with ill health. Colley and colleagues (1974) linked smoking by parents with an increased incidence of bronchitis and pneumonia in pre-school children. Alas, Colley (1976) also showed that half of all boys and a third of all girls smoke by the age of 17.

Fundamental research work on the behavioural aspects of general-practice medicine is already being done — but not often by general practitioners! Some medical sociologists are already investigating this concept of disease and have started research on depression. Brown and his colleagues (1976) in a sophisticated and exciting analysis of the "social causes of disease" have identified four 'vulnerability factors' in working-class women in London. Three of the four — having three children under 15, not going out to work, and low intimacy with husband — are behavioural.

Melia and colleagues (1977) have shown a statistically significant increase in the prevalence of "coughs and colds going to the chest", and "bronchitis" in children in homes where the cooking is done by gas.

Douglas and colleagues (1977) have linked exposure to a significant emotional event, such as parental separation or divorce, in children under the age of five with an increased proportion of sexual or violent crimes in boys and subsequent diagnosis of stomach ulcers. Macdonald and Macdonald (1977) found a significant association between falls in the elderly at home, leading to fractured femurs, and the taking of barbiturates. Perhaps some of the pollutants in the home are pharmaceuticals which we have ourselves prescribed?

Carpenter and Emery (1977) show that many children at risk of ill treatment can be identified at birth. They started an intensive health visiting service in the home and Sheffield's post-neonatal mortality rate has fallen.

Finally, Sibert and colleagues (1977) report a highly significant fall ( $p < 0.001$ ) in the number of children under the age of five admitted to hospital with self-poisoning using one form of aspirin after the introduction of a child-resistant container. But where were we as domiciliary doctors in the cry for reform of childproof packaging? Why were we so silent while children in our care at home were left at risk so long after the technical solution was available?

#### **James Mackenzie**

The most famous incident in the life of James Mackenzie was when a young woman died in front of him in childbirth. It is clear that that tragic mo-

ment, which occurred in her home, so affected Mackenzie that he decided immediately to study as best he could the diseases which made the greatest impact on his patients. But where to start? In his own words, he chose on a logical basis: "A great number of symptoms presented themselves to me and at first I did not know which to select. Finally, I decided to attack two *kinds of symptoms which were the most common*, i.e. pain, and the irregular action of the heart" (Mair, 1973; my italics).

That process of logical selection is still valid today. Just as medicine as a whole must serve society, so each general practitioner must serve the needs of his particular population of patients. In short, our task now is to concentrate on those symptoms which are most common in our patients today, and the evidence is that these are particularly associated with patterns of human behaviour.

#### **Injuries in the home**

A classic example of ill health occurring as a result of human behaviour lies in the problem of injuries in the home.

This country is rightly concerned about the tremendous loss of life through road accidents. Bills are debated in Parliament about compulsory seat belts but during recent years the number of patients dying as a result of accidents at home was greater than the number of patients dying from accidents on the road (Registrar General, 1973). Accidental death in childhood is now the commonest single cause of death in the 1 to 15 year-old age group and the commonest place of accidental death under the age of five is the home (Jackson, 1977).

Such information as we have so far has arisen from workers other than general practitioners, and most of it comes from accident and emergency departments. General practice has largely failed to analyse the injuries at home which are managed by us and not referred to hospital.

The Department of Health and Social Security has recently been criticized for its silence on this subject (Roberts and Dale, 1977), but perhaps the blame lies nearer home? Can the Government be blamed if the domiciliary doctors who work in patients' homes show little interest in the causes of injuries and deaths at home and do next to nothing about preventing them?

Why do we have this blind spot? Why is it that this colossal cause of death and disease has not been studied systematically?

One reason, I suggest, is to be found in linguistics, which Tanner (1976) has emphasized is a behavioural science. Words can cloud as well as clari-



fy. I believe we may be misled by the linguistic connotations of the word 'accident' which imply a 'chance happening' which cannot be prevented. I suggest that we should relabel 'accidents' at home as 'injuries' at home. This would not only do away with the connotation of the word 'accident' to mean 'accidental' but encourage us to think of it as a serious cause of damage to living tissues.

Another, more important, reason lies in the subtle relationship between behaviour and pathology. Husband (1975), a paediatrician, and many others have shown the importance of family relationships in the home and the problem of 'accident-prone' children. Accidents occur relatively more often in homes where the interpersonal relationships are tense. Husband maintains that it is the role of the family practitioner to help. Are we collectively shrinking from some of our major responsibilities?

It follows that the key to prevention will lie in altering human behaviour. The word 'doctor' means 'teacher' — we are all educationalists now.

### **Pathological and behavioural sciences**

#### *The disproportionate importance of pathology*

We have to face a fundamental realignment of our priorities. Our generation of doctors, both in hospital and general practice, has been brought up in a tradition which has until now accepted the dominance of the sciences of anatomy and pathology, and underrated the sciences of behaviour.

At Cambridge, in the 1950s, I started my medical course in the dissecting room. Can anyone imagine a less appropriate setting in which to start the training of a future general practitioner? Can anyone devise a better way of ensuring that 18 year olds, late adolescents, should feel distant from their patients and that the first docile, dependent, and very dead patient should be seen as an inanimate object — which indeed it is — an object which above all has no feelings and no home?

Throughout my course we were taught that "pathology is the basis of medicine". It fell to Crombie, Pinsent, and their colleagues to remind us that in half the consultations in general practice doctors did not have an adequate pathological basis for diagnosis (Research Committee of the College of General Practitioners, 1958). This still holds good today.

We were brought up to believe that the behaviour of patients was usually a consequence of their pathology; today we are learning that their pathology is often a consequence of their behaviour.

The integration of the traditional pathological model with the new behavioural model of medi-

cine can now be achieved by regarding pathology as the behaviour of organs, tissues, and micro-organisms, and the behavioural sciences as the study of the behaviour of the whole man. Both are essential, but it may well be that the behaviour of man, especially in his natural setting, is now more important in affecting health than the behaviour of particular organs or tissues, and offers much more scope for the prevention of disease.

The physico-chemical sciences will, of course, continue to advance, particularly in hospitals, and I see general practice continuing as an applied science in these disciplines.

By contrast I believe that general medical practice will increasingly be seen as a behavioural science in its own right. Fundamental advances will be made in our discipline which will later be applied in hospitals. Our study of the doctor/patient relationship is one example.

Thus the physico-chemical sciences lead inevitably to the laboratory: the behavioural sciences lead to the environment. Where is the patient's natural environment? I suggest that one stands out above all others. The behavioural sciences leads us to the home.

#### **Home territory**

Many of the behavioural sciences, especially zoology, psychology, anthropology, and ethology underline the importance of territory. Time and again fundamental insights into animal behaviour have been possible only when animals have been observed in their natural habitat. Morris (1967b) looked at man as a primate and analysed perceptively both ape-like and human behaviour. Most of the basic physiological functions of eating, sleeping, mating, and child-rearing predominantly occur in the home, and Young and Wilmott (1973) have shown that, contrary to what we might expect, we all spend most of our time there.

However, many important behavioural reactions, such as fear and aggression, are also first felt in and around the home, and patterns of behaviour to deal with them first tested there. Most deaths from injuries, for example, occur in the home than at work and are often the result of behaviour. Yet this is not really surprising when we realize that the relationships formed in the home — the marital, parent/child, and sibling relationships — forge patterns of behaviour.

Hodgkin (1970), in his Mackenzie Lecture, was one of the first general practitioners to emphasize the importance of territory and I believe that we should use our privilege of observing our patients in what is for them the most important territory of all — the home.

However, on entering general practice, young doctors are often so concerned with organizing their own territory, getting the premises, staff, and the records right, that they tend to forget the importance of the patient's territory.

Most of our meetings with patients take place on our territory, at times of our choosing. We and our staff decide when, with whom, and often whether the consultation will take place. The patient sits where we decide.

All human relationships involve giving and taking. How much 'give' is there in general practice today?

I often do home visits with trainees and frequently they tell me how insecure they feel when orientating themselves in a patient's home. If such feelings commonly occur among highly intelligent, highly educated, social class 1 colleagues, how much more intense may be the feelings of social class 5, poorly educated people when confronted in our surgeries with all the trappings of our territory?

The fact that social classes 4 and 5 have disproportionately high death and sickness rates suggests that logically we should seek behavioural change in just these groups. Patterns of behaviour in society do change and often originate in small and privileged groups (for example, the reduction of smoking among doctors), and most people learn best when they feel 'at home'. Thus the meeting between patients in the lower social classes and their doctors in the patients' own homes is uniquely significant.

Where else in our society do working-class patients receive social class 1 professionals into their homes and discuss their problems with them? If behaviour is as infectious as I suggest it is, not only are we affected by our patients' behaviour, but they may be, far more than we realize, affected by ours; so that those who most need our help have most to gain from contact with us in their homes.

I believe we need to be reminded day by day that the struggle between the patient and the illness takes place in the home. The home is the battleground, the home is the boundary for most people where the transition from health to ill health and back again takes place, where limitations are most damaging, and where most of the main adjustments of our lives take place.

We can now construct a new model of the consultation. I regard it increasingly as a precious fragment of the pattern of the patient's way of life at home. I struggle and often fail to understand how the patient is feeling at home. What does the patient fear? What does this symptom mean to family and friends? How does the disease strike

home?

I suggest that we should define one aim of the consultation as understanding the patient at home.

### Homes and health

Many books have been written about occupational medicine. Why is there no comparable literature for domiciliary medicine?

Few general practitioners have written much about their work in patients' homes. However, Carne (1961) in a sensitive study found that well over half his families did not have a bathroom in the house and two thirds did not live in self-contained accommodation. Goodman's (1974) survey of a council estate was also disturbing, and only 14 months ago the Department of the Environment confirmed that "One million families in Britain live in houses that lack either hot water, a bath, or an inside lavatory" (Shelter, 1977). What kind of castle is the Englishman's home?

Whatever the economic state of our nation surely we can afford to invest in healthy homes? Quite apart from social justice, can we, as the health professionals in the home, stay silent on the slums?

But do homes really affect our patients' health? The striking and persistent social class gradients certainly suggest it. In general practice as early as 1960 Hodgkin in a classic study showed that children living in caravans had a highly significant ( $p < 0.001$ ) increase in the prevalence of acute upper respiratory disease compared with age/sex matched controls in houses from the same practice. Fanning's better known article, "Families in Flats" (1967), came later and showed that the range of significantly increased morbidity between families in flats and families in houses included respiratory, urogenital, and emotional conditions.

The medical team which works in the home is very small compared with the great teams of doctors, nurses, and technicians who work in hospitals. There are only four of us — the general practitioner, the health visitor, the district nurse, and district midwife. The very names of our colleagues, health 'visitor' — a visitor to the home — and 'district' nurse or midwife indicate their function. Each has an honourable tradition, and I hope we four will continue to work together in the future. When considering health visiting, the Court Committee (1976) concluded, "We are convinced that home visiting has an indispensable and increasing place in the future child health services".

However, as doctors we know that in every aspect of our work we have to both see and feel. It is always dangerous to take a history by proxy or rely exclusively on someone else's examination. I suggest the same is true for the home. We must

sometimes see it and feel it for ourselves.

### Examining the home

Each doctor assessing the home should be aware of the historical development of the housing in the area. In cities like Exeter, for example, a medieval core can still be identified, surrounded by a Georgian ring of development with outlying Victorian and Edwardian buildings. Postwar housing estates, both private and council, form a further ring which eventually meets the Victorian mental hospitals originally placed well away from the city centre.

The doctor can often predict the pattern of living merely by glancing at the patient's address. He will know what is usual in each area, whether it is likely to be multi-occupational, bedsitter-land with student residents, flats for the rich or the poor, and which are the council houses and which are owner-occupied. It follows that before entering the house at all he will be able to estimate the type of accommodation inside, how many rooms there are, and what furniture and fittings to expect.

We have the unique privilege of access over a long period of time to virtually all the rooms in our patients' homes and this enables us to discover facts which may not be offered in the consulting room. Cigarettes may be seen at the bedside and a change from a double bed to single beds noticed long before marital difficulties are presented in the consulting room.

A child's room often shows how much stimulation the child is receiving in his own environment, and the kitchen, which can vary from being a cramped and dirty cupboard to a planned work area fitted with expensive labour-saving devices, is the key to hygiene.

Most of all, it is the 'feel' of the living room which indicates better than anything else I know the general feeling of the family. To the perceptive eye a room can reflect happiness or unhappiness; order or disorder. Nor should extreme order necessarily be taken to be healthy. Our health visitor has shown me how a mother can be too house-proud, too tidy, for the good of her family (Chapman, 1970-77).

The garden should not be forgotten — if there is one. Its size and whether the emphasis is on flowers or food should be noted, and whether or not the young mother can watch a pram from her living rooms.

All the time he is in the home, the doctor is looking for influences which might be causing the patient's ill health, evaluating the impact of disease on the patient and the household, and determining the capacity of the household to care for a sick

member.

One of the most important assessments of all is to determine whether a home places greater value on human relationships or on inanimate objects. In some homes a beautiful and valuable collection may be a cold comfort, a silent substitute for close and caring relationships.

Often it is only on a home visit that a doctor discovers the presence of another person in the home. A dominant grandmother or a lingering lodger may well be the key to relationships which seem mystifying in the surgery. Meeting other members of the family helps the doctor to establish a relationship with the family as a whole and not just one patient. Rapport is much more easily achieved, particularly with children, by means not available in our consulting rooms. Pictures, posters, prizes, and particularly books make it infinitely easier to learn about patients as people.

Patients express their feelings more easily at home and are often able to reveal not just the focus of their feelings, but their depth. Nor do they always need words to do this. Argyle (1975) has shown that non-verbal messages are more important than verbal if we can only learn to recognize them. Actions speak louder than words. I well remember a young married woman severely depressed after the death in hospital of her second child, three years after the death of her first, suddenly pulling open a drawer of baby clothes and bursting into tears. I do not believe I could have understood fully without being in her home and able to see as well as hear. Two years later in the middle of the night she rang me from a bus stop to say she had just discharged herself from hospital late in her third pregnancy. I met her and took her back to my home, gave her a cup of coffee and was able to persuade her to re-enter hospital, where with superb scientific care she was later successfully delivered. My ability to persuade her stemmed, I believe, directly from the relationship established earlier on home visits.

Argyle (1975) notes that only friends are normally allowed to invade the privacy of the home. I suggest that I am privileged to be treated as a kind of friend when I am told, "Don't knock, Doctor — just walk in" or, during terminal care, when I am given the key of the front door. Such a relationship is difficult to achieve simply in the surgery.

### Working in the home

Having learnt what insight can be gained from people's homes in both physical and emotional terms, we ought to decide what work we are going to do there.



### *The home and the hierarchy of care*

If we apply the above hierarchy of care to home visiting, we find a special application at each level.

**1. Prevention.** The opportunities for preventive medical work are unparalleled in the home and the impact of advice is vastly heightened when the patient is both physically and emotionally 'at home'. When the doctor sees tablets within reach of the toddler or actually slips on a mat himself in the home of an old person, his advice really does strike home.

**2. and 3. Pre-symptomatic and early detection of disease.** Although most clinical screening will be done on our premises, the whisky bottle in the bedroom will continue to aid detection long before symptoms of disease are presented. In future, patients will increasingly screen themselves at home under our direction, for example by testing their own urine, and more sophisticated diagnoses, such as detecting 'morning dippers' among asthmatics (*Lancet*, 1977) will often be made at home by portable flow meters.

**4. and 5. Diagnosis and management of established disease.** The list of serious disorders which we will continue to treat by visiting at home is long. I suggest we shall continue to care for many patients with coronary thrombosis, acute heart failure, strokes, croup, pneumonia, prolapsed disc, severe depression, schizophrenia, brain failure, and post-operative complications.

**6. and 7. Management of complications and rehabilitation.** The full impact of chronic handicap on patients is best evaluated at home and delicate discussions about possible ill-treatment of children are often much more productive there. Visits for both these reasons may be doctor-initiated and I suggest that just as one of the characteristics of good general practice today is the doctor-initiated surgery consultation, so in the future could selected doctor-initiated home visits become a hallmark of good care.

If we go to see for ourselves what difficulties our patients face, we are often often led away from our traditional over-emphasis on drug treatment and find other ways of helping. We may be able to offer practical help such as suggesting an aid (Disabled Living Foundation, 1973; Dobson, 1974; Equipment for the Disabled, 1976a and b) or providing emotional support in the care of the dying. We have to become as skilled in caring for incontinence as for coronaries.

**8. Terminal care.** As family doctors we are privileged to provide terminal care at home. Given willing families and highly trained district nurses the home is often the natural and optimal setting.

Many of us hope to be allowed to die at home.

**9. Counselling the bereaved.** Much support can be offered to the bereaved in our surgeries or by our nursing colleagues, but a cup of tea given to the doctor at home by a widow who wants to talk about her dead husband may be worth several counselling sessions in the surgery.

Home visits do take more time, it is true. I see eight patients an hour in the consulting room and four an hour in their homes. Home visits may take twice as long; but they are sometimes twice as valuable.

### **The future**

Moreover, our future work in the home has several exciting possibilities.

In the distant past it was usual for medical care to be provided in people's homes. It was only when the great voluntary hospitals were built in the mid-eighteenth century that medical care began to move into hospital (McKeown, 1976). The explosive increase in scientific knowledge which occurred towards the end of the nineteenth century, and is still continuing in the twentieth, made the hospital the focus for the scientific care of patients.

Is the wheel of history turning again? Is the pendulum of care swinging back from the hospital to the home? Many recent scientific developments have improved the opportunity of caring for people at home. The recent trend towards outpatient investigation and day-care surgery means that patients may be away from their homes for only a matter of hours.

### **Miniaturisation**

#### **Three mechanical revolutions of mankind**

I interpret the history of the last 200 years to show three separate, but related mechanical revolutions. First came the industrial revolution in the eighteenth and nineteenth centuries. This was followed in the twentieth century by the scientific revolution.

Now I suggest that we are on the threshold of a third technical revolution — miniaturisation. At first sight the process of miniaturisation hardly seems to merit a title such as 'revolution', but it may be that its effect on the lives and health of our patients may be truly revolutionary.

After major scientific advances have been made there is a subsequent process of simplification and refinement. Several years after each new instrument or machine is invented, a modified version appears which is simpler, smaller, often portable, and hence more widely available. Calculators are a

classic example and within two decades have changed from being expensive machines to children's toys.

Miniaturisation has two important consequences: decentralization and cost effectiveness, and the importance of both these principles is being recognized increasingly (Schumacher, 1974).

The main scientific revolution will continue, but it may begin to be subject to the law of diminishing returns. Increasingly expensive equipment requires rising real resources, yet produces only marginal benefits. By contrast, miniaturisation is subject to a law of increasing returns. The smaller the equipment, the more become the possible applications; benefits for the many become possible at only marginal increases in costs.

The second general principle is that just as the scientific revolution led inevitably to a concentration of resources — to centralization — so miniaturisation leads to their dispersal — to decentralization. For example, the district hospital plan represented the logical consequence of economic pressures to centralize hospital medical care for both men and machines; by contrast, machines in miniature can be moved or dispersed away from big hospital complexes into homes.

I am quite confident that machines at which today we merely marvel will become the day-to-day tools for the general practitioner of tomorrow.

The historic deprivation of equipment in British general practice has blinded us to the implications of this third revolution. Because we are still struggling to equip our surgeries, we have not yet begun to consider the problem of medically equipping our patients' homes.

#### *Medical equipment in the home*

However, several specialists have already started to use medical equipment in patients' homes. In 1969, Epstein and colleagues successfully gave patients peak flow meters to use at home and in 1975 Burns-Cox and colleagues concluded that selected patients could measure their own blood pressure at home. In the same year, I learnt from one of my trainees (Kratky, 1975) that in future diabetic patients will probably test their own blood sugars at home with new machines and adjust their doses within guidelines set by the general practitioner. Burns-Cox pointed out that patients on kidney machines at home are able to undertake much sophisticated self-investigation and treatment. In 1976, Pickering reported the use of electrocardiographs by patients who succeeded in taking satisfactory tape recordings at home, which helped to control episodic arrhythmias.

Rosemary Evans (1978), the daughter of Mr

Ancrum Evans, in whose home our College was founded, now works with handicapped children using videotape in their homes.

The Exeter computer already supplies its general practitioners with portable microfilm records of all their patients for home visits (Bradshaw Smith, 1976).

The medical applications of micro-electronics are almost unlimited. Mini computers are coming. This year the cost of a pocket computer terminal, 12.7 cm x 5 cm (5 in x 2 in), fell to only £900 (*Economist*, 1977) the equivalent of the annual telephone bill of our three partner practice.

Chemical advances will provide us with instant and increasingly accurate bedside investigations; 'Labstix' just points the way. Last year our practice provided each partner with a peak flow meter. This year a new mini flow meter is available at a cost of only £8 and one of my patients has already been lent one. With falling prices patients will increasingly use these themselves at home.

#### *Adjusting attitudes*

I believe as domiciliary doctors we shall have to make substantial adjustments in our attitudes. Most British general practitioners are reluctant to tell their patients what their blood pressure is: yet, within the foreseeable future, I believe it may become usual for patients not only to know, but to record readings of this kind for themselves. We may begin to permeate all our work with the counselling relationship and form practical working partnerships with our patients in organic as well as psychological medicine. Perhaps one of our roles during the next 25 years will be ensuring the application of existing knowledge to the whole population.

James Mackenzie wrote in 1920: "My great desire was to make the panel doctor a superman in medicine, by giving him facilities for the investigation of disease and the examination of patients which no one possessed. This in addition to his peculiar opportunities would achieve that object" (Pinsent, 1963).

Now with miniaturisation, the 'panel doctor' at last has the chance of becoming, in Mackenzie's words, "a superman in medicine".

#### *Home truths*

But that is for the future. What is the truth about our work in patients' homes today?

Throughout the lifetime of James Mackenzie, and later during the professional careers of my grandfather and father, home visiting was a fundamental and important part of general practice.

When I entered practice in 1962 it formed at least a quarter of the work, and this was also true nationally (Office of Population Censuses and Studies, 1975).

Only 11 years ago Eimerl and Pearson (1966) found that home visiting took between 40 and 60 per cent of general practitioners' time.

In the late 1960s, however, a succession of reports appeared confirming a steady and progressive downward trend in the number of home visits to patients. Marsh (1968) showed this clearly, and indeed by 1972 Fry, my distinguished predecessor last year, reported only 0.1 home visits per patient per year. For a doctor with an average sized list this is equivalent to four or five visits per week — less than one home visit a day.

Similarly the home visiting rate on my own personal list (which has fluctuated between 2,700 and 3,000 patients during the last four years) has fallen from 0.50 visits per patient per year in 1974 to 0.43 in 1975, to 0.35 visits per patient per year in 1976.

#### *Home confinements*

One form of home visiting, home deliveries, is now being abandoned altogether. It must surely be one of the great academic failures of general practice since the war that this is happening without satisfactory scientific evidence. A prospective, randomly-selected, home-versus-hospital trial, with controls matched for age, parity, and social class would have given us evidence one way or another. Measures of outcome should have included perinatal mortality, the mothers' opinions, breast feeding rates, and subsequent ill-treatment of children.

#### *Records*

It is another sad truth that even in 1977 we have not yet begun to work out any way of classifying homes or recording their essential features in our notes.

Walford (1955) and Zander (1977) noted that as family doctors we rarely record family history. I suggest that as domiciliary doctors we rarely record the home.

#### *Withdrawing from the home*

Nor is Great Britain different from other countries; indeed home visiting in North America has declined even faster, and in many places has virtually been abolished.

Kuenssberg (1976) has summarized the reasons: the reduction in the number of bedridden patients, the change in medical attitudes to bed rest, greater demands on the doctor's time, traffic con-

gestion, and parking difficulties. In addition, general practitioners now have nursing colleagues and better equipped premises, patients have better transport, and cities are spreading out.

Graphs of the total number of home visits per patient each year show a trend-line pointing steadily downwards. As general practitioners, we face three crucial questions: will the proportion of home visits rise again? Will there be a plateau? Or will the rate continue to fall, perhaps a zero?

For the first time in our history we face the question — is home visiting going to go? For the first time we now have the power to end domiciliary care. This question is usually evaded, I believe, because it touches a deep anxiety among many of us. Our silence is significant.

While we are relieved that the number of our visits is falling, we are worried because we know the home is important. Can it be right for the patient for us to withdraw from the home?

#### *Vacuum of care*

If it is simultaneously true that on the one hand the home is important in relation to health and on the other hand that general practitioners are withdrawing from it, I conclude that a vacuum in medical care is being created.

If this is so, then it will be filled in some way by some other kind of medical service. The question is, what service, and who will supply it?

There is not enough time to review adequately the variety of medical workers who are now developing an interest in home care, but their services now include: paediatric, psychiatric, geriatric, contraceptive, and terminal care.

#### *Children*

In London, the Paddington Home Care Scheme is well known, but more recently there have been many papers arguing that hospital-based home care should be arranged for children. In the south, Gow (1976) described the paediatric home nursing service started in Southampton in 1969; in the north, Hally and colleagues (1977) pioneered a scheme for home nursing for small children; and in the west, Brimblecombe and colleagues (1977) are assessing the needs of families with handicapped children by home visits.

#### *The mentally ill*

In psychiatry, the number of hospital-based community mental nurses is steadily increasing (Harker *et al.*, 1976). Davies (1977) from Gwent has advocated a hospital-based community service for the mentally subnormal where patients are



"visited regularly by one of the domiciliary hospital nurses".

### ***The elderly***

The first national random survey measuring the temperature of old people living at home was carried out in 1972 (Fox *et al.*, 1973). What might have been a natural study for general practice was led by geriatricians and showed that low body temperature is statistically associated with low income. More than half the elderly had room temperatures below the minimum legally specified for offices.

### ***Chronic medical conditions***

Barber and his colleagues (1977) showed that in the continuing care of patients with thyroid disease "over one third" of general practitioners had abdicated their responsibility *and* failed to answer reminders. They successfully bypassed this vacuum of care with home visits by their office staff.

### ***The dying***

Terminal care schemes are now appearing. Lamerton (1975), in London, has made valuable contributions to the care of the dying at home through another specialized home care service. We are increasingly retreating from caring for the dying at home by sending them into hospital. Nationally the number of deaths at home has fallen from just under a half in 1960 to only a third today (McMahon *et al.*, 1977).

### ***Home visits out of hours***

Home visiting shares much with out-of-hours work, and of course most consultations out of hours do take place at home. At present about one third of British general practitioners use commercial deputizing services. For some practitioners these services cover as many as three quarters of all the hours in the year. Another medical vacuum is being filled, often by doctors who have not been trained in primary care.

### ***Multiple domiciliary specialist services***

General practice and this College face a crucial choice. On the one hand we can continue to withdraw from the home and become office-based workers spending our day at the desk. On the other hand, we shall have to define a home visiting policy.

If we do withdraw, it is likely that this country will develop a multiplicity of specialist domiciliary services, which could extend rather like the social services before Seeborn. One home could then

have several specialist services providing medical care. In homes where this has begun to happen I have been struck by the recurring difficulties in obtaining information and co-ordinating care. The greater the number of sources of advice, the greater the problems of communication and the greater the difficulty of one doctor in understanding the whole patient and the whole family (*Journal of the Royal College of General Practitioners*, 1974).

In the seventeenth century the powerful physicians left their patients and fled from the plague (Copeman, 1968). The humble apothecaries filled the vacuum and served the needs of that society.

Are we now failing to meet the needs of our society? Are we being replaced in the home? General practice seems poised to abandon its traditional power base. But if we move out of the home, we can hardly complain if many others move in.

### ***Conclusion***

I have tried to show that four great aspects of general practice — preventive medicine, the environment, human behaviour, and domiciliary care — are all related and that each leads naturally to the other. Indeed, I believe that the consultation can be considered from a new perspective: with the "supreme objective" prevention always in mind, we can regard it, wherever it is held, as a struggle by the doctor to understand in environmental and behavioural terms what the patient is feeling at home.

The trends are already apparent, but I myself believe that it would be wrong for us to give up home visiting altogether. For me, it is still an important part of general practice to work with my patients in their homes. For me, knowledge and understanding of the family, especially one with children, the elderly, the disabled, or the dying is always incomplete if I have never visited the home.

I am aware that this view will be unpopular. It will, of course, be opposed. It is contrary to every trend in this country and across the Western world. History may show me as a latter day Canute proverbially struggling to stem the tide.

I do not know, because there is no evidence, what proportion of our work ought to be in the home. There is much that our colleagues in the health visiting and nursing professions can do and are already doing very well. I am not suggesting that the number of home visits should necessarily be increased, but that there is a problem and we should not evade it. The message from Mackenzie is that it may take much hard work and many

articles published over many years to clarify a problem. Those of us who care about home visiting should discuss and document our work while there is still time.

### The College

Twenty-five years ago this College was founded — founded from the depths of despair, when general practice was in danger of disintegration. I have already suggested that history will see this as a unilateral declaration by the generalist of academic independence from the specialist (Gray, 1977). It was also a liberation from the dominating territory of the teaching hospital bed.

Twenty-five years ago this month the Foundation Council took up the task of building for the first time in Europe an academic body of general practitioners. How well they succeeded, how far their dreams came true, we celebrate in this silver jubilee today.

Twenty-five years ago, this very day, general practice as an independent discipline was born. It is our privilege now as members of this College to rise to the challenge of our founders. Inevitably, in its first generation our College had to fight for its very existence, to struggle to break into the universities, to initiate vocational training, and above all to raise our standards of care.

I have not hesitated to point out some of the problems and some of the failures of general practice, but our task now is to look ahead, certainly to our Golden Jubilee, an indeed much further still. I am quite confident that we have now come of age and that our discipline will respond to our patients' needs.

In responding, I hope we shall follow the example of James Mackenzie and continue to analyse our work critically. "The inquirer must keep his mind ready to review his most cherished beliefs", he wrote, and later: "What is accepted today is axiomatic may be shown tomorrow to be but part of the truth" (Mair, 1973).

I would like to end by thanking you again for allowing me to share with you today. "One crowded hour" (Mordaunt, 1791).

Good general practice will always consist of patients feeling at home with their doctor and of doctors feeling at home with their patients.

I believe in this College. I believe in general practice. I believe that as we move together into the last quarter of the twentieth century we shall continue to raise the standard of care for our patients through integrating the natural with the behavioural sciences. *Cum Scientia Caritas*. Compassion, like charity, may begin at home.

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## News from the Council

### The Seventh Council (1979-1981):

The Eighth Annual General Meeting of the College of General Practitioners Singapore was held on Sunday, 27 May 1979. The following are the office bearers of the Seventh Council (1979-1981):

President	—	Dr Victor L Fernandez
Vice President	—	Dr Frederick Samuel
Censor-in-Chief	—	Dr James Chang Ming Yu
Honorary Secretary	—	Dr Lim Kim Leong
Honorary Treasurer	—	Dr Gabriel Chiong Peck Koon
Council Members	—	Dr Paul Chan Swee Mong
		Dr Alfred Loh Wee Tiong
		Dr Tan Tian Cho
		Dr Moti H Vaswani
		Dr Wong Heck Sing
Honorary Editor	—	Dr Leong Vie Chung

### College Standing Committees

At the Second Meeting of the Seventh Council held on 14 June 1979 the following College Standing Committees were formed:

#### The Board of Censors

Censor-in-Chief	—	Dr James Chang Ming Yu
Censors	—	Dr Gabriel Chiong Peck Koon
		Dr Lee Suan Yew

#### Continuing Education Unit

Chairman	—	Dr Frederick Samuel
ex-Officio	—	Dr Victor L Fernandez
Education Programme Coordinator	—	Dr Alfred Loh Wee Tiong
Examination Coordinator	—	Dr James Chang Ming Yu
Home Study Programme Coordinator	—	Dr Moti H Vaswani
Library: Books and Tapes & Video	—	Dr. Ho Gien Chiew
Cassettes Coordinator		

#### Undergraduate and Postgraduate Training Unit

Chairman	—	Dr Victor L Fernandez
ex-Officio	—	Dr Frederick Samuel
Undergraduate Teaching Coordinator	—	Dr Moti H Vaswani
Postgraduate Training Unit Coordinator	—	Dr Wong Heck Sing

#### Research Committee

Chairman	—	Dr Leong Vie Chung
ex-Officio	—	Dr Frederick Samuel
Coordinator	—	Dr V P Nair

#### Publications Committee

Chairman	—	Dr Koh Eng Kheng
ex-Officio	—	Dr Frederick Samuel
Journal Coordinator and Editor	—	Dr Leong Vie Chung
Newsletter Coordinator	—	Dr Lim Kim Leong

#### Finance Committee

Chairman	—	Dr Wong Heck Sing
ex-Officio	—	Dr Victor L Fernandez
College Finance Coordinator	—	Dr Gabriel Chiong Peck Koon
Fund Raising Coordinator	—	Dr Tan Tian Cho

#### College Fellows

At the Eight Annual General Meeting the following were unanimously elected Fellows of the College of General Practitioners Singapore:

Dr James Chang Ming Yu  
Dr Leong Vie Chung  
Dr Frederick Samuel

### Pentazocine Abuse Rises — Schedule IV Status Proposed

Sharp increases in the incidence of drug abuse involving pentazocine (Talwin) have led the Drug Enforcement Administration to propose moving this analgesic to Schedule IV of the Controlled Substances Act. FDA recommended to DEA the proposed change in the drug's status.

Schedule IV status would limit individual pentazocine prescriptions to 6 months, including up to 5 refills, and would require manufacturers, distributors, and pharmacists to keep records of prescriptions.

Pentazocine is an analgesic for the relief of moderate to severe pain and is available in tablet and parenteral form.

Pentazocine has been on the market for 10 years. Original tests in humans found its abuse potential to be relatively low. Subsequent tests in monkeys, however, found physical dependence and behavioral toxicity associated with pentazocine use.<sup>1</sup>

The recent jump in diversion, illicit marketing, and abuse of pentazocine has coincided with and may be a result of reductions in the amount and quality of heroin available. There is an increasing demand for pentazocine as a substitute for heroin in opiate-dependent individuals. The spread of pentazocine abuse, especially in concert with the use of pyribenzamine, has created an epidemic-like pattern in several cities.

Further evidence on pentazocine's potential for psychological and physical dependence includes: (1) demonstration that even low doses of pentazocine are addictive in humans<sup>2</sup> and (2) findings that infants born to women dependent on pentazocine experience withdrawal immediately after birth.<sup>3</sup>

The pattern of abuse of addictive drugs frequently varies from geographical area to area. For

example, Chicago is experiencing a particularly severe abuse problem with pentazocine; addicts are mixing it with the antihistamine pyribenzamine and using the combination as a heroin substitute.<sup>4</sup> Several States which have experienced particularly severe abuse problems with pentazocine have imposed their own controls on the drug. For example, Illinois has placed pentazocine into Schedule II.

Individual States' criteria for the various schedule categories sometimes differ from the Federal ones. For Schedule II substances, however, this restriction typically means that prescriptions for the drug cannot be refilled and that extensive records must be kept on prescriptions. Whenever Federal and State restrictions differ, the more stringent requirements prevail.

Health professionals can check with their State Board of Medical Examiners for information on local scheduling controls on pentazocine if they suspect these may be more stringent than the Federal requirements proposed by DEA.

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(from the FDA Drug Bulletin), Jan. 1979.

## MEDICAL NEWS

**THE PILL AND ARTHRITIS . . . .** The latest results from the Royal College of General Practitioners' Oral Contraceptive Study — a large-scale continuing survey which began in 1968 — show that the rate of reporting rheumatoid arthritis in oral contraceptive users is half of the rate in non-users (controls). Also, the expected rise in the rate of reporting in women over 35 is apparent in the controls but is suppressed in oral contraceptive users. The authors conclude that oral contraceptives protect against the development of rheumatoid arthritis.

**CHINA'S MALE PILL:** The Chinese have developed a male contraceptive which is 99.8% effective, it was reported in Michigan.

American doctors who spent three weeks in China in November were quoted by the Ann Arbor News as saying the "Gossypol" contraceptive pill does not restrict sexual activity, and produces no undesirable side effects. Nor are there any known conditions under which use of Gossypol would be dangerous.

The male pill, produced from cotton seeds, has to be taken daily for three months and continued at less frequent but regular intervals. The main effect is to block the production of sperm rather than destroying the existing spermatozoa, the Americans quoted their hosts as saying.

The Ann Arbor Daily quoted the doctors as saying that Gossypol has been available in Chinese specialised clinics since mid-1978. Chinese specialists told the visitors that men recovered their fertility a year after stopping regular treatment with Gossypol. (Sunday Nation, January 7, 1979).

### FACTS ABOUT THE B.T.S.

The blood transfusion service in Singapore was started in 1947.

Over 90% of the blood collected annually by the Singapore Blood Transfusion Service is used in the government hospitals and about 6% in the private hospitals.

In Singapore, only 22 blood donations per 1,000 population are collected annually compared with between 30 and 50 per 1,000 population in most European countries. This is mainly be-

cause most donors here do not donate regularly.

There were 33,948 donors in 1968. Only 10,481 gave more than once during the year and could be called regular blood donors.

An average of 10.25 blood donations a year are required to support one acute hospital bed case in Singapore.

An annual collection of around 48,000 donations is just sufficient to cover present need with little reserves to cope with mass disaster emergencies.

53% of the blood is used in surgery including cardiovascular surgery; 20% in obstetrics and gynaecology; 22% in internal medicine, and 5% in paediatrics.

Dr. Ong Yong Wan, Senior Haematologist, Singapore Blood Transfusion Service.

### KILLER VIRUS IN ITALY

Italian physicians began emergency measures today against a mysterious virus epidemic that has already taken the lives of at least 59 infants in Naples.

The heightened health measures, including increasing use of artificial respirators, were ordered by city and regional medical commissions after doctors said about 400 babies in the area were suffering from acute respiratory infections.

Dr Tarro, now head of the virology section of Naples Cotugno Hospital said there is evidence that most, if not all, of the infants who have died over the past year suffered from a "syncytial" virus, though other factors were also involved.

He said Naples area physicians could only combat the epidemic with "symptomatic therapy" administering artificial respiration to infants with breathing difficulties and guarding against secondary bacterial infections.

Dr. Tarro said babies in Naples were apparently more susceptible to the virus because of poor hygienic conditions in the city. — UPI

(The Straits Times, Thurs. 8-2-79)

### USE OF THE SI UNITS IN MEDICINE

The use in medicine of the Systeme international d'Unites (SI) developed by the Conference



generale des Poids et Mesures is here to stay. We doctors should not and must not resist the use of the SI units. We should make every effort to know and use this system in our everyday practice.

The use of SI in medicine was endorsed by the Thirtieth World Health Assembly in May 1977.

Mindful nevertheless of the confusion that can arise if new units of measurement are introduced without adequate preparation;

1. It recommends the adoption of the SI by the entire scientific community, and particularly the medical community throughout the world;
2. Recommends that, to minimize any confusion due to the simultaneous use of more than one system of units, the period of transition to the new system should not be unduly prolonged;
3. Recommends that, in addition to the scale in kilopascals, the millimetre (or centimetre) of mercury and the centimetre of water be retained for the time being on the scales of instruments for the measurement of the pressure of body fluids, pending wider adoption of the use of the pascal in other fields;
4. Recommends that, in making the change, institutions, scientific associations, and the like secure the best available advice and information, and give their personnel or members a course of intensive instruction in the theory and application of the SI prior to the time when the change takes effect.

#### NEW MICROSCOPES IN SIGHT

Two new microscopes may offer scientists other ways of looking at the world in miniature. One uses light from lasers, and the other sound waves. Both are still under development. But if they fulfil their promise, they could unveil discoveries in biology and lead to new techniques for testing industrial materials.

The drawbacks of today's microscopes are several. Optical microscopes cannot see details much smaller than one micron (1,000th of a millimetre). Electron microscopes can achieve a definition up to 500 times finer. However, they require the object to be observed in a vacuum.

Worse, they can damage the delicate, minuscule objects scientists would like to investigate; for example, they cannot normally handle living specimens.

The laser microscope, being developed at Oxford University, avoids the drawbacks of electrons and may (possibly) be able to achieve a definition five or ten times better than that of an optical microscope.

The acoustic microscope, invented at Stanford University in California, and being further developed at University College, London, also produces a television picture and uses electronic gadgetry. But there the similarity stops. Instead of light it uses very high frequency ultrasound.

(The Mirror, January 8, 1979)

#### "BRAIN DEATH IS POINT OF DEATH"

A person is truly dead when the brain ceases to function, not when the heart or other organs stop working, top medical specialists said last week.

Their conclusion supports doctors who maintain the time to switch off life-supporting systems comes when brain activity ceases.

"The point at which brain death occurs . . . is the point of no return," said a memorandum from the Conference of Medical Royal Colleges and their Faculties, published in the medical press.

The memorandum, *Diagnosis of Death*, attempts to provide a final answer to a dispute over when death occurs. British medical experts have been puzzling over the question for several years.

The memorandum said the ceasing of the heart beat was accepted for centuries as the moment of death. But modern skills of resuscitation after cardiac arrest have made this test out of date.

Whatever the mode of its production, the memorandum continued, brain death represents the stage at which a patient becomes truly dead, because by then all functions of the brain have permanently and irreversibly ceased. It is not difficult or illogical in any way to equate this with the concept in many religions of the departure of the spirit from the body. — AP

(The Straits Times, 5-2-79)

L.K.L.

## BOOK REVIEW

### **Some aims for Training for General Practice**

Occasional Paper published by

**Dr. D. J. Pereira Gray**

on behalf of the Royal College of  
General Practitioners

"The general practitioner is a licensed medical graduate who gives personal, primary and continuing care to individuals, families, and a practice population, irrespective of age, sex and illness. It is the synthesis of these functions which is unique". So begins the Statement on The Work of the General Practitioner by the working party of the Second European Conference on the Teaching of General Practice.

The Statement — which sets out the educational aims of knowledge, skills and attitudes to be attained by a doctor before he enters independent general practice — sets the tone for the three papers presented on training general practitioners in psychiatry, child care and geriatric medicine. These papers are the fruit of work done by the Royal College of General Practitioners together with the Royal College of Psychiatrists, the British Paediatric Association and the British Geriatrics Society.

The foreword rightly warns that the educational objectives and contents, and the teaching methods proposed are only a scaffolding — to be "examined, criticised and changed" with usage and experience. In fact, the paper on training in psychiatry is already in the process of being revised by the two Colleges.

In spite of this, I consider this Occasional Paper "must-read" material for anyone interested in vocational training of general practitioners. The paper on training in psychiatry, for example, sets out the objectives of such training, and goes on to outline the different schemes used in different parts of the United Kingdom, and concludes that there is ample room for improvement. However, not everyone would agree with the importance attached by the authors to the Seminar method of training as compared to factual instruction.

The articles on training in child care make two

very important points:— first, that such medical education or training **must** be a continuing process, through school, the under-graduate period, early post-graduate training and continuing education till retirement; and second, it goes on to recommend that an elective period in general practice in the training of Consultant paediatricians. In Singapore, where General Practice as a Specialty has still to come of age, this will definitely give the academicians something to chew upon.

The last paper laments the alarmingly scant regard paid to the training of doctors in the total care of the elderly, and in view of the increasing percentage of the elderly in the total population in United Kingdom as in most other countries, and calls for obligatory hospital posts in geriatric medicine on equal standing with those in paediatrics, adult medicine, psychiatry, and obstetrics and gynaecology.

In the local context, a vocational training programme for intending general practitioners is yet to be formulated and approved. When it is, the "institutional" part of this training will involve the reservation for trainee general practitioners of sufficient hospital posts in the various disciplines (including general surgery together with its subspecialties i.e., orthopaedics and E.N.T.) particularly relevant to general practice. These postings will offer a concentration of experience of a wide range of disorders and of opportunities to practise clinical method. The "general practice" aspect of such training would have to be undertaken at accredited Teaching Practices or by a Department of Family Medicine set up within the University Medical Faculty, or both.

The writing is on the wall. With a great majority of medical graduates in Singapore choosing General Practice as their vocation, a system of training of these doctors **MUST** be implemented, so that they become Family Physicians by special training and not by default. In outlining such a system, this Occasional Paper will be an invaluable work of reference.

MOTI VASWANI

## Letter to Editor

### BANNED DRUGS

Dear Sir,

Thank you for the time you so kindly extended to us on May 15, 1979 to discuss the question of the re-formulation of banned amidopyrine containing products.

May we clarify one point mentioned in the editorial of the Jan/Mar 1979 issue of the Singapore Family Physician commenting on the speed with which some "modified" products were re-introduced to the market following the importation ban on amidopyrine containing products?

As the manufacturers of SPASMO-CIBALGIN and IRGAPYRIN — two of the products involved — our organisation had already taken the decision to re-formulate these products and substitute propyphenazone for amidopyrine several years earlier.

The first of the re-formulated products were not available until late 1977, and were scheduled for local market introduction in the latter part of 1978.

Thus, in June 1978 when the Ministry of Health banned amidopyrine containing compounds, our logistical and introductory plans for the new formulations were already in an advanced stage of development, resulting in a minimum time delay before the 'modified' products were launched.

Singapore and Malaysia were among some of the first countries worldwide to receive supplies of the re-formulated SPASMO-CIBALGIN 'N' and IRGAPYRIN 'N' products.

We fully endorse your call for closer co-operation and more 'getting together' between the medical profession and the pharmaceutical trade.

With kind regards,

Yours sincerely

CIBA-GEIGY S E A (PTE) LIMITED

T H FOK

Marketing Manager

### CANCER RESEARCH GRANT

The Singapore Cancer Society will consider applications for cancer research grant from those engaged in Cancer research. Preference will be given to work on common cancers in Singapore. Please apply giving details of the project and personal particulars to the Administrative Officer, Singapore Cancer Society, 334 Peace Centre, 1 Sophia Road, Singapore-0922. Government officers will have to get prior written approval from the Ministry of Health.



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vasodilation  
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- Controls blood pressure without compromising cardiac or renal function
- Combines long-term antihypertensive efficacy with excellent toleration
- No development of tolerance reported

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Ka  
Br  
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Lai

# A gleam of light for the hypertensive

Despite treatment many of your hypertensive patients may have a gloomy prognosis, because reducing blood pressure does not prevent myocardial infarction. More patients die from infarction than from any other consequence of hypertension, *whether or not blood pressure is controlled*.<sup>1,2</sup>

If your patients are treated with 'Inderal,' however, their prospects may be brighter. Although other antihypertensive drugs have failed to reduce the probability of myocardial infarction,<sup>2,3</sup> 'Inderal' has now been shown to reduce it *fourfold*.<sup>3,4</sup> Only 'Inderal' has been associated with a protective effect against infarction in hypertensive patients who have no signs of heart disease.

## Fewer infarcts with Inderal

Kannel, W. B. and Dawber, T. R. (1974). *British Journal of Hospital Medicine*, 11, (4), 508-523.  
Breckenridge, A., Dollery, C. T. and Parry, E. H. O. (1970). *Quarterly Journal of Medicine*, 39, 411-429.  
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Lambert, D. M. D. (1974). *British Medical Journal*, 3, 685.



'Inderal' is a trademark for propranolol hydrochloride.

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**High blood pressure  
is usually characterized  
by increased peripheral resistance<sup>1</sup>**

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**ALDOMET**  
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**lowers high blood pressure  
by reducing peripheral resistance...<sup>1</sup>**

**and because it also maintains cardiac output<sup>2</sup>:**

- There is a favorable effect on blood flow to the heart<sup>3</sup>
- Cerebral blood flow is maintained<sup>3</sup> (usually avoiding postural and exercise hypotension)
- Renal blood flow is maintained<sup>3</sup>
- The work load of the heart is reduced<sup>4</sup>

Contraindicated in active hepatic diseases and hypersensitivity. It is important to recognize that a positive Coombs test may occur. Hemolytic anemia and liver disorders have been reported with methyldopa therapy. Detailed prescribing information is available to physicians on request.

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