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**Nalador**

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**Indications**

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Technical Data Overleaf

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## DATA SHEET

# PDS\* (Polydioxanone) Sterilised Absorbable Synthetic Suture

### Presentation

PDS (Polydioxanone) Monofilament Synthetic Absorbable Suture is prepared from the polyester poly (p-dioxanone). The empirical molecular formula of the polymer is  $(C_4H_6O_3)_n$ . PDS (Polydioxanone) sutures are coloured by adding D & C violet No 2 during polymerisation. These sutures may also be manufactured undyed (clear).

PDS (Polydioxanone) sutures are relatively inert, non-antigenic, non-pyrogenic and elicit only a mild tissue reaction during absorption.

### Action

Two important characteristics describe the in vivo behaviour of absorbable sutures. The first of these is tensile strength retention and the second absorption rate or loss of mass.

Data obtained from implantation studies in rats show that, at two weeks post implantation, approximately 70% of the suture strength is retained whilst at four weeks the strength retention is approximately 50%. At eight weeks approximately 14% of the original strength remains. *This indicates a significantly longer period of wound support than previously available with an absorbable suture.*

The absorption or loss of mass is minimal until about the 90th post implantation day and is essentially complete within six months.

### Uses

PDS (Polydioxanone) monofilament sutures are intended for use where an absorbable suture or ligature is indicated. They may have particular application where longer wound support is required. See strength retention data above.

### Dosage and Administration

By implantation

### Contraindications, Warnings, etc

These sutures, being absorbable, should not be used where extended approximation of tissues under stress is required.

As with all monofilament synthetic sutures, care should be taken to ensure proper knot security.

Conjunctival, cuticular and vaginal mucosal sutures could cause localised irritation if left in place for longer than 10 days and should be removed as indicated.

The safety and effectiveness of PDS (Polydioxanone) sutures in neural and cardiovascular tissue have not yet been established. The use of this material in the renal tract is currently under investigation.

### Pharmaceutical Precautions

Do not resterilise.

### Legal Category P

Pharmacy medicine sold to surgeons and hospitals through surgical dealers.

### Package Quantities

The gauge range initially available will be 0.7 metric (6/0) to 4 metric (1). Various lengths of material attached to non traumatic stainless steel needles are packaged in sealed aluminium foil sachets.

This primary pack is contained in a peel-apart secondary pack. The unit of sale is 24 packs contained in a film wrapped drawer style carton.

### Further Information

No suture related adverse reactions were reported during clinical trials, although a number of minor reactions were classified as being of unknown cause.

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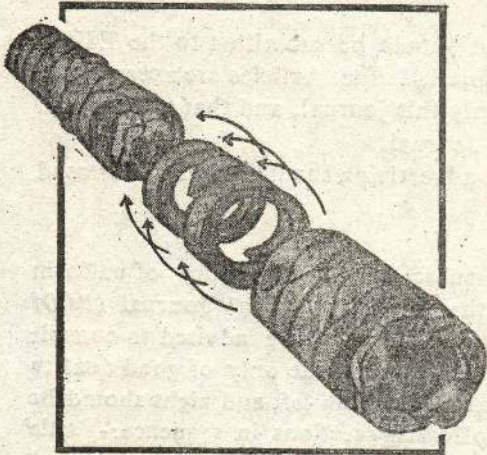
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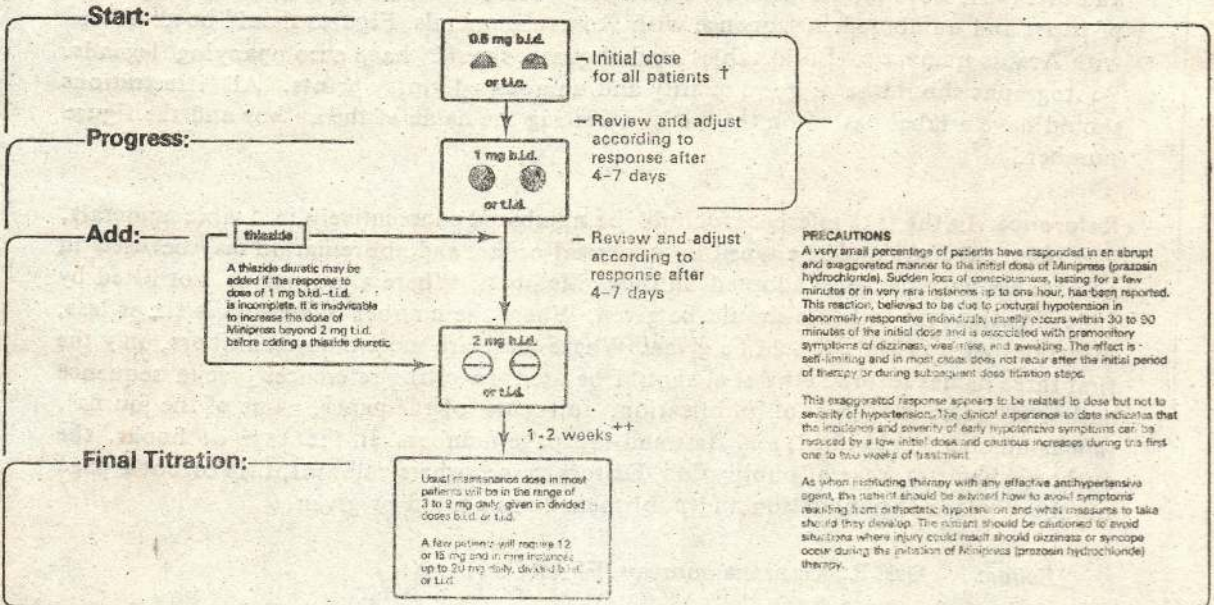
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**Manuscripts:** The Jaffna Medical Journal will subscribe to the policy of uniform requirements for manuscripts described in the British Medical Journal (1979) 1 : 532-535 and the Lancet (1979) 1 : 428-431. Intending authors are advised to consult these instructions. Two copies of manuscripts, typed on one side only of good quality white paper, with double spacing and 3 cms margins at both left and right should be submitted. Each manuscript should have the following sections in sequence:- title page (on a separate page) with authors names and listing their highest degrees and diplomas, their positions at the time of the study and present post if different from the above, the institution where the work was carried out and the address of the author who will deal with correspondence and reprints; summary; introduction; materials and methods; results; discussion; references. Tables should be typed on separate sheets of paper and numbered in sequence with Roman numerals. Figures should be numbered with Arabic numerals. Both tables and figures should have accompanying legends. Photographs should be of good quality and unmounted glossy prints. All illustrations should have a label pasted on the back indicating the name of the author and the figure number.

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Actifed\* Expectorant is indicated in all disorders of the upper respiratory tract including the sinuses and Eustachian tubes, which are benefited by taking a potent decongestant and antihistamine.

Guaiphenesin is commonly used as an expectorant and is reputed to have an expectorant action.

### Dosage and Administration

Dosage to be taken 3 times daily  
Adults and children over 12 years: Two 5 ml teaspoons  
Children 6 - 12 years: One 5 ml teaspoon  
Children 2 - 5 years: Half a 5 ml teaspoon  
Children under 2 years: As directed by physician

### Contra-Indications

Actifed\* Expectorant is contra-indicated in individuals who have previously exhibited intolerance to it or to any of its constituents.

Actifed\* Expectorant is contra-indicated in patients who are taking or have taken monoamine oxidase inhibitors within the preceding two weeks. The

concomitant use of pseudoephedrine and this type of product could occasionally cause a rise in blood pressure.

### Side Effects

Although the constituents of Actifed\* Expectorant are widely used, reports of side-effects are uncommon; occasionally mild sedation or insomnia may occur. Because Actifed\* Expectorant contains pseudoephedrine urinary retention may occasionally occur in male subjects where prostatic enlargement is present. Fixed drug eruption due to pseudoephedrine, taking the form of erythematous nummular patches, and lichenoid skin eruption due to triprolidine have been reported but both these reactions should be regarded as rare events.

## Prescribing Information.

### Composition

The active ingredients of **Septtrin** are:- Trimethoprim BP (2, 4-diamino-5-[3,4,5-trimethoxybenzyl] pyrimidine) and Sulphamethoxazole BP 3- (4-aminobenzenesulphonamido)-5-methylisoxazole.

Each tablet contains: Trimethoprim BP 80 mg; Sulphamethoxazole BP 400 mg.

Each paediatric tablet contains: Trimethoprim BP 20 mg; Sulphamethoxazole BP 100 mg.

Each 5 ml of paediatric suspension contains: Trimethoprim BP 40 mg; Sulphamethoxazole BP 200 mg.

### Properties

**Septtrin** is a bactericidal chemotherapeutic agent based upon fundamental scientific research. Its bactericidal action is the result of a recent concept, namely the sequential blockade of two enzymes acting within the bacterial metabolic pathway of the biosynthesis of folic acid.

**Septtrin** is bactericidal at concentrations at which the components are usually bacteriostatic, and it is often active against organisms which are resistant to one of the components. Because of the dual action of **Septtrin**, the risk of bacterial resistance developing is reduced to a minimum.

**Septtrin** is effective against a wide range of Gram-positive and Gram-negative organisms; for example, *Streptococcus* (including Group A  $\beta$ -haemolytic *Streptococcus*), *Staphylococcus*, *Pneumococcus*, *E. coli*, *Neisseria*, *Salmonella*, *Klebsiella/Enterobacter*, *Shigella*, *Vibrio cholerae* and *Bordetella pertussis*. **Septtrin** is particularly active against the problem organisms *Haemophilus Influenzae* and *Proteus*.

**Septtrin** is not active against *Mycobacterium tuberculosis* and *Treponema pallidum*. *Pseudomonas aeruginosa* is usually insensitive.

### Indications

Bacterial infections caused by a wide range of sensitive organisms.

**Upper and Lower Respiratory Tract Infections:** Acute and chronic bronchitis, bronchiectasis, pneumonia, tonsillitis, sinusitis pharyngitis.

**Renal and Urinary Tract Infections:** Pyelonephritis, pyelitis, acute and chronic cystitis, urethritis.

**Genital Tract Infections** - male and female: Including gonococcal urethritis.

**Gastro-intestinal Tract Infections:** Enteritis, typhoid, paratyphoid.

**Skin Infections:** Pyoderma, Furuncles, abscesses and wound infections.

**Septicaemias and Other Infections** caused by Sensitive Organisms

### Dosage

Adults and children over 12 years old

**Septtrin Tablets**

Standard dosage: Two **Septtrin Tablets** twice daily, Morning and evening after meals.

Minimum dosage and dosage for long-term treatment - (more than 14 days): One Tablet twice daily.

Maximum dosage (for particularly severe infections): Two Tablets three times daily.

Children under 12 years old

Children receive a dose corresponding to their ages:

**Septtrin Tablets**

6 to 12 years: One **Septtrin Tablet** twice daily.

**Septtrin Paediatric Tablets**

2 to 5 years: Two **Septtrin Paediatric Tablets** twice daily.

6 to 12 years: Four **Septtrin Paediatric Tablets** twice daily.

**Septtrin Paediatric Suspension**

6 weeks to 5 months: 2.5 ml (half a spoonful) twice daily.

6 months to 5 years: 5 ml (One spoonful) twice daily.

6 years to 12 years: 10 ml (two spoonfuls) twice daily.

In children, this corresponds to an approximate dose of 6 mg trimethoprim/kg bodyweight/day, plus 30 mg sulphomethoxazole/kg bodyweight/day, divided into two equal doses.

In acute infections **Septtrin** should be given for at least five days or until the patient has been symptom-free for two days.

### Adverse Reactions

At the recommended dosage **Septtrin** is well tolerated. Nausea, vomiting and skin rashes can occur. Haematological changes have been observed in some patients, particularly in the elderly. The great majority of these were mild, asymptomatic and proved reversible on withdrawal of the drug. The reported changes mainly consist of thrombocytopenia, leucopenia, neutropenia and very rarely purpura and agranulocytosis.

### Precautions

In patients with renal impairment a reduced or more widely spaced dosage is indicated to avoid accumulation in the blood. For such patients measurements of plasma concentration are advisable. Regular blood-counts are advisable whenever **Septtrin** is given for long periods. The remote possibility of asymptomatic changes indicative of folic acid impairment exists. These are reversible by folic acid therapy.

# Septtrin<sup>\*</sup>



- TABLETS
- D.S. TABLETS
- SUSPENSION



...a Wellcome

## solution for bacterial infections

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### Contra-indications

**Septtrin** is contra-indicated in patients showing marked liver parenchymal damage, blood dyscrasias, and in severe renal insufficiency where repeated measurements of the plasma concentration cannot be performed.

**Septtrin** should not be given to patients with a history of sulphonamide sensitivity.

**Septtrin** should not be given to premature babies nor during the first few weeks of life.

For the time being, **Septtrin** is contra-indicated during pregnancy. If pregnancy cannot be excluded, the possible risks should be balanced against the expected therapeutic effect.

### Presentations

**Septtrin Tablets**, each containing 80 mg Trimethoprim BP and 400 mg Sulphamethoxazole BP.

**Septtrin Paediatric Tablets**, each containing 20 mg Trimethoprim BP and 100 mg Sulphamethoxazole BP.

**Septtrin Paediatric Suspension**, each 5 ml containing 40 mg Trimethoprim BP and 200 mg Sulphamethoxazole BP.

Further prescribing information from  
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# Editorial :

## *The Trials and Tribulations of Jaffna Hospital*

Four years of living in an embattled zone, in which human life became progressively devalued, culminating in the most tragic event in which the Association's secretary and another member of the Council among forty-seven others were killed, makes one to contemplate on the agonizing moments of the past. The General Hospital (Teaching) Jaffna had to face many trials and tribulations, which have no parallel in the history of any other medical institution. It stands today as a worthy institution, because, it had responded to these unforeseen challenges in an appropriate and useful manner. If one were to realize the impact of these agonizing moments on the staff, the patients, their relatives and on the community as a whole, one must have an idea of the size and function of this hospital.

The hospital, which is situated in the Northern Province of Sri-Lanka, serves a population of about a million. Its bed strength is 1015 and is manned by 879 employees. It is the teaching hospital for 350 medical undergraduates, 150 student nurses and for many post graduates. Its specialised services include orthopaedics, thoracic, otolaryngology, ophthalmology, neurology and psychiatry.

The widespread ethnic violence in July-1983, resulted in an influx of refugees, who needed medical help at

this hospital. With the continuation of violence and the breakdown of communication and transport services, the supply of essential drugs was delayed and was inadequate. The supply of oxygen fell to half in 1984 and to one-third in 1985. Many patients died in the wards for want of oxygen. If not for the donation of two field anaesthetic machines and an oxygen concentrator, many operations could not have been performed resulting in many more deaths.

The atmosphere of political instability and insecurity resulted in an exodus of medical and other staff from the hospital. Seven consultants, one professor and three senior lecturers left the hospital during a period of two years. The clinical teaching was hampered and it came to a halt in October 1987. With the departure of the single electro-medical technician, the maintenance of all electro-medical equipment came to a halt. Furthermore, this exodus of staff had imposed a severe physical and mental strain on those, who had remained to serve the hospital.

The fear of being hit by a shell or a stray bullet on the way to and from the hospital was accentuated by the insecurity within the hospital. The hospital was for the first time damaged by gunfire in May 1986. Since then, the indiscriminate shelling had damaged

the House Officers' quarters, paediatric ward, venereal diseases department, eye ward and the out-patient department of the hospital. A tragic incident occurred on the 30th of March 1987 when mortar shells were fired into the general medical wards 19 & 20, which caused the death of ten patients and a hospital employee. It also caused injury to twenty patients and hemiplegia in a nursing officer. Despite these incidents causing fear, anxiety, sense of insecurity and even depression in all employees, it is laudable, that they continued to serve the community as best as they could.

It is regrettable, that a clash within a militant group in the hospital premises in March 1986, resulted in the death of a patient and injury to two employees. It is noteworthy, that a protest demonstration by the staff halted the occurrence of such incidents thereafter.

The hospital was shocked, when the Secretary to the Ministry of Teaching Hospitals ordered the closure of the hospital in May 1987, with only five days notice to carry it out. It is deplorable, that no thought was given to the fact, that this was the only teaching hospital with all the specialized services serving the entire Northern Province. Sane counsel prevailed following representations made by the hospital staff and the Government Medical Officers Association to the Honourable Minister of Teaching Hospitals and to the Honourable Minister of National Security. However, the request of the hospital staff to remove the army camp from the Fort situated near the hospital was turned down.

The hospital services were severely strained, when the Government imposed an economic blockade - on its own citizens - in January 1987. The supply of oxygen, medicines and food to the hospital became grossly inadequate. The staff and patients had to either walk or cycle long distances to reach the hospital. Imposition of indefinite curfews was an additional strain. The staff and patients risked their lives on their way to and from the hospital, watching the sky for the appearance of helicopters. The red cross, white flag or even an ambulance did not guarantee against gunfire. On the 4th of April 1987, an ambulance on its way to Jaffna Hospital was destroyed by gunfire. The driver and the patients were killed in this incident. Not only the curative services were crippled, but also the preventive services including the vaccination programmes had a set back.

A brief respite of two months following the signing of the Indo-Sri Lanka Peace Accord disappeared on the 10th of October 1987, when the Indian Peace Keeping Force (IPKF) launched its military operation code named "Operation Pawan". A continuous curfew was imposed from the 17th to the 28th of October. Despite this curfew, patients and staff continued to come to the hospital. On the 21st of October, when most of the population in Jaffna became refugees in places of worship and in schools, few dedicated staff trekked their way to the hospital, oblivious to what was to happen. To everyone's horror, a shell exploded in the middle of a female surgical ward at about 2-00 p, m, killing one patient and injuring few others. This made most of the patients and staff to move

into the ground floors of two storeyed buildings in the hospital. A large number took shelter in the ground floor of the administration block and the radiology department.

At about 4-00 p. m. the same day, the army charged into the administration block killing fifty people. The hospital came to a standstill without electricity, water, food and medical care. Patients in the Intensive Care Unit on ventilators died despite Ambubag ventilation. This was the time, when the casualties were mounting outside the hospital. Though cries of pain and death groans were heard throughout the night, yet no one alive or injured dared to move.

On the following morning 22-10-1987, Dr. A. Sivapathasundaram (Consultant Paediatrician & Honorary Secretary of the Jaffna Medical Association), on bearing the plight of those in the administration block entered it with his hands raised and accompanied by two Nursing Officers in their uniform. A soldier, on seeing them, ran, got a gun and opened fire, Dr. Siva was killed and the Nursing Officers were injured. An hour after this incident, when a few soldiers went to the surgical ward (number 25), the medical officers who were there, pleaded with the soldiers to permit them to treat the injured and the sick. The hospital started to function after it was paralysed for sixteen hours.

On the following day (23-10-1987), a total of eighty bodies were cremated in the hospital, which is an unprecedented event in the history of any institution in Sri-Lanka. Twenty one of these bodies were of hospital employees (three doctors, three nursing officers, two

overseers, an ambulance driver and twelve labourers). thirty four were of patients, seven were of relatives of patients and eighteen were unidentified. People of Jaffna can neither forget the brutality nor forgive those responsible for it.

During the last week of October and thereafter, the hospital had been functioning in the midst of armed soldiers, who neither knew the language, nor the ways, nor the identity of the people in the hospital. The friendly and sincere attitude of the army medical personnel stationed in the hospital, had helped the staff to regain their self confidence.

Though the hospital has been recovering steadily from its crippled state, the clinical teaching and medical research are at standstill. Telecommunication has not yet been restored. The supply of essential drugs has not been adequate and this cannot improve till the rail transport is established.

Despite these trials and tribulations, the hospital had maintained its service function. This was made possible due to the unreserved dedication of the staff. The Jaffna Medical Association salutes the staff, who by serving the people in their hour of need, have served God and have taken a permanent place in the hearts of the people. The Association's sympathies are with the families of those affected. It is hoped, that the sanctity of the hospital will not be violated in the future and the red cross will be respected and honoured by all,

"Learn To Respect Life, Lest We Perish"

R. G

17 th March 1988.

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**Dr. V. T. Pasupati Memorial Lecture — 1987****Teaching and Learning Medicine: Ideas  
From Eleven British Medical Schools**

\*Prof. C. SIVAGNANASUNDRAM, MBBS (Cey) DPH (Lond) Ph.D (Lond)

Mr. President, Members of the Council of the Jaffna Medical Association, Members of the family of Dr. Pasupati, Ladies and Gentlemen, Colleagues and Students; In commemorating a revered leader of our profession and society and a personal friend of mine, I have the privilege to talk on a subject that is so relevant to us, as teachers, students, members of the medical profession, parents and well-wishers. The Subject is Teaching and Learning Medicine: Ideas from 11 British Medical Schools. I thank the J. M. A for giving me an opportunity to deliver this lecture.

This subject is important because the standard of our profession depends on it; interesting because it is one that is perpetually open to controversy; difficult because it needs the co-operation of so many in so many ways for its success. It is therefore fitting that it is discussed and dedicated to a man whose name we honour today.

I had the good fortune to have known Dr. Pasupati and been guided by him in my dealings with the community, as a young Medical Officer of Health in early 1960s working in the Municipal Area of our own town. Dr. Pasupati has then retired from Government Service and was a member

of many welfare societies. The Cancer Society, Association for the Prevention of Tuberculosis in Jaffna, Jaffna Social Service Association, were some of them. As the MOH of Jaffna, I was associated with all of them. Dr. Pasupati was their elder and respected member, and being a member of our profession, it was easy for me to have a rapport with these associations, through him. That was a boon to a young MOH, enthusiastic but inexperienced in dealing with people.

Now in an equally difficult situation managing a medical curriculum, at my age, it is hard to find elders with the calibre and composure of Dr. Pasupati for moral support; and I rely upon, younger men and women to rally round for the benefit of good medical education.

Last year, as a Senior Commonwealth Fellow, I had the opportunity to acquaint myself with some processes in medical education by visiting 11 medical schools in UK and have discussions with the Deans and others concerned about their curricula. It is that experience that I wish to share with you today.

The schools visited by me are given in Table I. Most of them have long traditions and boast of some great men

\* *Dean, Faculty of Medicine, University of Jaffna.*

they have produced. Some - Nottingham, Southampton and Leicester - are new Schools. The new schools are in a better position to practice new ideas. However, all these schools have committed to make changes in the curriculum in response to new technique, new knowledge and changing needs of the community. In fact, they were given guidance and sanction by the General Medical Council (GMC) in 1967<sup>(1)</sup>, when it made its recommendation for changes in the curriculum.

Table I: Medical Schools Visited

School	Year of starting School	Degree* Confirmed	Other Information
F. M Aberdeen	1495	MBChB	Oldest Faculty of Medicine in English speaking world
** St. George's Hospital Medical School	1751	MBBS	Moved from Hyde Park Corner to new buildings in Tooting in 1976
** Charing Cross and Westminster Medical School	1818 1834	MBBS	Amalgated to one school in 1984
Newcastle-Upen-Tyne Medical School	1861		
** Royal Free Hospital School of Medicine	1874	MBBS	Founded to admit women students
F. M Manchester	1814	MBChB	Teaching began in 1753
F. M Liverpool	1834	MBChB	—
F. M Leeds	1831	MBChB	
<b>New Schools</b>			
F. M Nottingham		BMBS	
F. M Southampton	1971	BM	Second to start in UK Since 1893 New curriculum
F. M Leicester	1970	MBChB	

FM = Faculty of Medicine

\* All courses are of 5 years duration

\*\* London Schools



In Sri Lanka, we have always followed the pattern of education in United Kingdom (UK) and also maintain a craving for recognition of our degrees by G. M. C of UK, for quite understandable reasons. The unfortunate paradox is that we still have the old model like the Austin car on the roads in Jaffna, running with locally made spare parts, while UK has discarded it and adapted new shapes and methods in their curriculum models, aiming towards less autocratic methods of teaching and more practically orientated courses. It is therefore useful to examine the defects in the old model according to modern concepts and see how these schools responded to the call for change. We should be able to adopt many of them to suit our needs.

#### Defects in the Curriculum

A Study in Edinburgh<sup>2</sup> identified certain primary defects in the curriculum. These are common to most medical schools. We can identify many of them in our own setting. They could be summarised as follows:

- (1) An absence of defined educational objectives at all levels.
- (2) A curricular structure that makes only limited allowance for varying interests, aptitudes, and rates of learning of different students.
- (3) A curricular structure that does not easily allow amendment or modification with time.
- (4) Over-crowding of the curriculum and over-teaching of factual material.

- (5) Failure by students who lack clinical experience to appreciate the relevance of great deal of pre-clinical teaching.
- (6) Failure to reinforce science-based knowledge in the context of clinical problems in later years.
- (7) Over-dependence on the use of the lecture as an all-purpose teaching method.
- (8) A very limited use of teaching methods which develop self-reliant learning.
- (9) Teaching and subsequent examination of subjects in individual isolation and with over-emphasis on factual recall.
- (10) Widespread neglect of continuing student assessment with the possibility of student guidance at a time for further remedial teaching.

To these we could add some more, from our own, such as large size of clinical firms, lack of facilities and teachers, and so on.

In UK, the task of gearing medical education takes place in a gear box containing Medical Schools, Universities, Royal Colleges, a UGC (University Grants Commission), a NHS (National Health Service) and a GMC<sup>3</sup>. The problem is a complicated one and well-thought-of policies and constant monitoring are required to maintain standards in its 30 medical schools, which take a little over 4000 students a year.

#### Curricular Reforms

In 1967, the GMC of UK recommended flexibility in curriculum planning, while specifying certain basic require

ments<sup>1</sup>. This resulted in the medical schools revising their traditional curricula, some of them making major departures. The University of London made new regulations and offered its medical schools two options.

1. To follow the new university sponsored course and to use university exams, and
2. To submit proposals for a school sponsored course with school based exams.

All the three medical schools visited by me in London have evolved their own school sponsored courses. They have made substantial innovations in their curricula objectives, teaching methods and assessment. A few schools outside London like Southampton and Newcastle-upon-Tyne evolved completely new integrated curricula. It is convenient to discuss the changes made in the different schools, under suitable headings:

#### **Objectives of the school and curriculum**

When we were students, we never heard of objectives, and it is doubtful whether our teachers themselves knew about objectives, the way they are understood now. Of course, the students had one clear objective, that is in five years to become a doctor. To help us with this objective, one of our teachers came and read the English translation of the original Hippocratic oath.

Until recently, the schools in UK were no better, and even if they had been were vague, broad based and concentrated on the performance of the teachers and not on the behaviour

of the students. The formulation of objectives in terms of student behaviour, intended to bring about by learning, is comparatively new. Now all schools have well specified institutional goals and many have functional curriculum with clearly defined objectives in terms of behaviour and content.

In Sri Lanka, the Medical Education Unit at the University of Peradeniya, established in 1973 with its first Director, Prof. T. Varagunam opened the vista for reasoned approach to medical education. Coming from that exposure, we in Jaffna have formulated our objectives, in fact we have objectives even for sub-sets in the course, such as for clinical attachments at various levels. We continue to make modifications when required by the need and demand of our community and profession.

#### **THE COURSE**

The traditional orthodox course still provided in many schools in Britain, consists of two separate sections, a pre-clinical course of 2 years covering the scientific disciplines, followed by 3 years of clinical training. The term para-clinical course is rarely used.

#### **Integration and co-ordination**

The defects that were pointed out in the orthodox curricula were that this system, which exposed the student to succession of 'subjects' in different departments was wasteful (because of unnecessary repetition), disjointed (because of isolation from other 'subjects'), and confusing (because of departmental differences of opinion)<sup>4</sup>.

Attempts to correct these defects have been made in several ways at varying levels. When the departmental barriers are completely broken down and the content is shared by staff, concurred in teaching a topic the procedure is known as **Integration**. Integration could be done horizontally or vertically. "Horizontal" integration means that the departments teaching concurrently, for example: anatomy, physiology and biochemistry, merge their educational objectives and teach together. In 'Vertical' integration, this collaboration is between departments which in the traditional curriculum teach seriatim. For example: physiology and pharmacology, or anatomy and surgery teaching specific units. The integrated curriculum which should have an integrated examination is difficult to structure and to monitor. The idea of **co-ordination** is less demanding to structure in the curriculum. In the co-ordinated system, each department determines its content but co-ordinates the sequence in teaching, so that the same topic is taught by the departments about the same time. All the eleven schools have either integrated or co-ordinated programmes, or a combination of both at different stages in the curriculum. Southampton has a fully integrated course. St. Georges Hospital School, Manchester. Leeds and Nottingham have integrated some of their courses. Leicester has an integrated course in the first 2 years. Newcastle has both integrated and co-ordinated courses. Aberdeen describes its course as a co-ordinated one.

Different strategies can be adopted to achieve integration and co-ordination.<sup>5</sup> A method that is most often used is the **system oriented curriculum**. In this approach, curriculum is structured

according to organ systems, for example: cardiovascular system. The knowledge and skills pertaining to this system, involving all related subjects such as anatomy, physiology, pathology and pharmacology are taught at the same time. Clinical correlations are also demonstrated wherever necessary. This type of teaching would incorporate basic scientists and clinicians who present an integrated, logical, step-by-step approach to medical problems.<sup>5</sup> Table II shows a plan of the medical curriculum giving systems courses, and is from the Southampton Medical School. In this plan, in order to avoid the traditional division of the curriculum into pre-clinical and clinical sections, the first three years have been planned as a single exercise. There are some specific courses in basic medical sciences, and in psychology, sociology and epidemiology. But much of the teaching is organised according to systems of the human body. Clinical and non-clinical teachers take part from the beginning of the course. As a result students are given some contact with patients both in hospital and in their homes, very early in the course. The main part of these courses is completed during the first two years but some continue into the third year, when students take their first clinical attachments in the hospital. This is one plan, other schools giving system courses vary in structure according to their programmes.

In Aberdeen for example, the teaching by systems is introduced in the third year. They call it a co-ordinated course.

Another method of integration is the **Problem Oriented Curriculum**.

Table II  
**PLAN OF A MEDICAL CURRICULUM showing SYSTEMS COURSES**  
 (Faculty of Medicine, Southampton)

1st year		2nd year		3rd year	
Biochemistry		Pharmacology		Biochemistry Clin. Pathology Clin. Pharmacology Genetics	
I P N H T Y R S O I O L O G Y	SYSTEMS COURSES		Human Reproduction Cardio-Vascular Respiratory Neurology Gastro— Intestinal Musculo— Skeletal Nephrology Endocrinology		Clinical Attachments. Medicine Surgery Obstetrics & Gynaecology Child Health Psychiatry Medicine with Geriatrics
	Pathology & Microbiology				
	Anatomy				
Man Med & Soc	Psychology		Intro Clin Course		Primary Medical Care
	Sociology				
	Early Medical contact	Epidemiology			
Pass Primary B. M		Pass Intermediate Part I B. M		Pass Intermediate Part II B. M	

Note : The Systems Courses cover physiology, morphology, pathology and pharmacology etc. of each system

4th year : Electives, study in depth and special appointments

5th year : Clinical attachments

The teaching and learning is centered around problems, mostly in the clinical years. This approach is said to be more meaningful to the learner. The student is able to utilize the knowledge and skills he has learned, and also the attitudes he has acquired to specific

problems in health care. The Royal Free Hospital has successfully used this approach for some years, and uses the problem oriented record for this purpose. The ability to audit the quality of medical care given by doctors is another benefit of the problem

oriented approach,<sup>6</sup> This fundamental approach can also be applied to problems in research laboratories, to problems of family dysfunction and to issues relating to health care in the community<sup>7</sup>.

#### Some notable features in the courses

The following features are noteworthy, and are common to almost all schools, varying only in content,

- i. Introduction of subjects like Principles of Biometry and Medical Statistics, Psychology, Sociology and Medical Ethics in the pre-clinical years. In many schools the behavioural sciences have been dealt with, in a unit known as "Man in Society".
- ii. Introduction of fundamentals of Pathology and Pharmacology in the pre-clinical years.
- iii. Early clinical exposure of the student in varying degrees in the Pre-clinical years.
- iv. Attachment of students to General Practice for variable times. As is well known, General Practice in UK is the backbone of Primary Health care and is a component of the National Health Service.
- v. The use of several hospitals in the region for clinical attachment of students. For example, in Manchester and Newcastle, clinical attachments, are made in 21 and 19 hospitals respectively. Some of them are specialised hospitals.
- vi. Use of high technology.  
All schools have well-developed departments for the production of

audio-visual aids. Closed-circuit television is used extensively in the lecture rooms and laboratories. Many produce their own video tapes. Some have introduced Computer assisted learning (Eg. Newcastle-upon-Tyne). At Charing Cross and Westminster Medical School, students could follow a lecture given at one place, from the five teaching hospitals by means of a two-way television arrangements—a system termed 'distance learning'.

#### Development of student's initiatives

One of the criticism of the orthodox curriculum was that it gave very little scope for the student to think for himself, and gave him no chance to study in depth a subject he is interested during the undergraduate course. I wish to deal herewith three different approaches that have been used to correct this defect, namely the provision of an intercalated year, inclusion of electives, and project work in the curriculum.

##### 1. Intercalated year

During the medical course, students with a good academic record are given an opportunity to spend another year to study in depth, a subject of their choice. The year is known as the intercalated year. Eight of the schools visited by me have provision for an additional inter-calated year, and is after the completion of the first two years of the undergraduate course. At the end of the intercalated year, if they are successful, they are awarded a degree-B. Sc Honours, Bachelor of Med. Sc. or B. Med. Biol. depending on the school.

The students rejoin the medical school at the point at which it was interrupted. During the intercalated year, the students may study one or other subject anatomy, biochemistry, pathology, genetics etc; or take 3-4 course units as is given at St. Georges where they have units such as Behaviour Disorders and Modification, Developmental Biology, Human Biochemical Genetics, Human Pharmacology and Endocrinology. In some schools for example, at Leeds the intercalated year can be done with the Faculty of Science and Engineering.

Students who undertake the intercalated degree generally find it a useful experience, whether or not they eventually proceed to careers involving research or teaching. Almost all these students finish the medical course, which in their case would be six years.

## ii) Electives

All the medical schools have an elective period and it is for a period of about 8 weeks. Timing is usually between the fourth and fifth years. Wide range of choices are allowed and the elective period can be carried out in any country; the subject and place of work must have the approval of the Faculty. In general, it is agreed that the elective period is useful for the students to demonstrate initiative and imagination. The objectives given by the medical schools can be summarised into the following statements:

- (a) To explore some field of medical practice: (i) that particularly interests the student; (ii) that he wants to know about, possibly with a view to future career choice;

(iii) that he feels has been covered inadequately for his own needs in the course.

- (b) To see the practice of medicine in an unfamiliar setting where the scientific, social, economic or cultural standards are different. Many students in UK come to developing countries as ours.
- (c) To learn something about research techniques by taking part in an inquiry or experiment.

Many schools tell the students that the period is not to be used for revision or relaxation. The Manchester University however allows the students to use this period to make up for the part of the course missed through illness or poor attendance, or to repair weaknesses in knowledge or skills which the student feels are important. The students invariably spend their own money for expenditure involving electives. However, certain grants are available in the schools and for certain disciplines like mental health and cancer, various organizations do give grants to students. The students submit a report on the elective period to the Faculty

## III. Projects

Apart from electives most schools encourage students to do smaller projects. The project to be done in Southampton is a major one and is done in the fourth year and is known as the study in depth. More than 50% of the fourth year is devoted to the study in depth, so that together with clinical elective, about 75% of the fourth year is devoted to students own work. The rest 25% is for clinical attendance in specialised subjects

and lectures. The success of the projects, whether it is of the magnitude as in Southampton or smaller one like in other schools, depends on the number of teachers available for supervision.

Under this section, I wish to include another appointment, that gives confidence to the student :

#### iv) Students as "House Officers"

In three medical schools-Manchester, Leeds and Liverpool, I found that there was a provision for some medical students in the final year to be given greater responsibility for patient care, and be paid for it. These assignments are known as 'Senior Residential Clerks' at Manchester, 'Standing-in for House Officers' at Leeds and 'Unqualified clinical assistantship' at Liverpool. In all these situations, the appointment is closely supervised, and is in the final year and must have the permission of the Dean and the hospital authorities. The students assist in routine ward work during the day. He cannot act as a locum. At Manchester a weekly honorarium equivalent to 50% of the minimum point scale of a House Officer is given.

At St. Georges' Hospital Medical School, in the final, nine months after the written exam, the students have advanced clinical experience and they are required to undertake 'Shadow' H. O. appointments, one month each in medicine and surgery. At Newcastle, in the final year, in most departments students work in the capacity of assistant house officers, most of the training being on the apprenticeship principle.

#### Examinations

The medical profession has been described as the most examination oriented in the world<sup>4</sup> and we have inherited from Britain a curriculum with a heavy examination schedule, of which we are all familiar. There are several types of assessments, each with its merits and flaws; time does not permit me to go into these considerations at present. I would attempt to give some salient features in the assessment procedures of the schools visited by me. The GMC allows the medical schools in UK, an enormous amount of flexibility in the way in which they assess the performance of their students. The schools make use of this flexibility in a remarkable way in the various stages of assessment—continuous, intermittent and end of course.

The schools have identified the errors in the traditional examinations and made attempts to correct them. Some of the important considerations by the different schools are ;

1. Assessments should give a feedback to students, so that they could improve their performance, and the marks should not contribute to the formal examinations.
2. Students' general performance should be taken into account in deciding results of examinations.
3. Weightage given to the subjects should correspond to what he is expected to do when he graduates. In this respect, the traditional Final Examination was noted for its deficiency. For example, such subjects like dermatology, paediatrics and

psychiatry which take so much of time in general practice received scant attention, while a candidate might be requested to identify a series of surgical instruments, which he would almost entirely never handle, unless he later trained as a specialist surgeon or obstetrician.

4. The potential inability of the student to complete the course should be diagnosed early, ideally before he starts the clinical studies. No student should be allowed to get as far as his Finals and fail repeatedly.
5. For the integrated course to be meaningful, the examination also should be integrated.
6. The subjects for examination should be broken up or divided and the examination done serially, so that the student is able to study in greater depth. At St. Georges' London, for example: the clinical exam is in the Final year, when the theory exam finishes in the Fourth year. Hence the student is able to learn the skills without the anxiety of cramming factual knowledge necessary for the theory.

All the schools visited by me have given thought to these necessities and adjusted their curriculum in various ways.

Table III shows the schedule for formal examination of the University sponsored course of the University of London.<sup>8</sup> It consists of 8 parts. The pre-clinical course examination is divided into 2 parts, one after the 3rd term and the other after the sixth term, thus giving the student a chance to study

Table III  
University of London. Examinations  
(University sponsored)

Part I : After 3 Terms —	(a) Human, Anatomy I
	(b) Biochemistry I
	(c) Physiology I
Part II : After 6 Terms	(a) Human Anatomy II
	(b) Biochemistry II
	(c) Physiology II
	(d) Psycho, Biometry, Medical Statistics, Sociology
<hr/>	
Part III : After 6 Terms—	Pharmacology
Part IV : After 9 Terms —	Microbiology
	Morbid anatomy
	Haematology
	Immunology
	Chemical Pathology
<hr/>	
Parts V, VI, VII, VIII (56 months)	
Part V :	Medicine (incl: Paediatrics, Psychiatry, Com. med) (2 papers)
Part VI ;	Clinical Pharmacology & Therapeutics
Part VII :	Surgery
Part VIII :	Obstetrics & Gynaecology (may incl. Com. med)
(Source : University of London) <sup>8</sup>	
<hr/>	

parts of subjects in depth and not burdened with a load of factual knowledge at one examination. Part V-medicine includes paediatrics, psychiatry and community medicine. The candidate may elect to sit one or more of the writt-



en papers in V-VIII in advance after 44 months of the course. Again the opportunity for the student to concentrate on factual knowledge at staggered times is given.

The London Schools who opted to have the school sponsored courses have made adjustments to this schedule. At Royal Free Hospital Medical School, the examination at the end of the 5th year consists of major subjects; they are pathology (one paper), obstetrics & gynaecology (one paper) and medicine and surgery combined (two papers). The combined paper also has questions in clinical pharmacology, psychiatry, paediatrics and clinical epidemiology. There are orals in each of these and a 20 minute clinical in obstetrics and gynaecology. There is only one long case and is of one hour duration. It relates to more than one speciality. The student is given access to, British National Formulary, MIMS, ABPI Data sheet compendium and List of normal laboratory values at the exam.

At St. Georges' Hospital Medical School, as was mentioned earlier, the theory and clinicals of the major subjects are separated by one year.

Outside London, similar innovations are met with. In Leeds, at the end of relevant instruction in the fourth year, examinations are held in paediatrics, psychiatry and obstetrics and gynaecology. Medicine and surgery are tested in the Final year.

At Liverpool, Final examination consists of 2 parts:

Part I: Pathology, Medical Microbiology and Pharmacology

Part II: The four major clinical subjects; of which medicine includes community medicine, general practice and forensic medicine.

At Newcastle, all written papers in the Final year examination are of a multi-disciplinary nature reflecting the philosophy of the curriculum. As in Royal Free Hospital School in London, students are examined in only one long case and it may represent any one of the clinical disciplines.

Most clinical units of the Newcastle School arrange tests in clinical skills at the end of the various clinical attachments.

These are a few examples to show the different approaches to examinations in order to see that objectives of the school have been achieved by their students—objectives that agree on fundamental principles.

#### Translation of ideas into action

Between the idea  
And the reality  
Between the motion  
And the act  
Falls the shadow

(T. S. Eliot)

I have attempted to place before you, some ideas that are worth our consideration for the betterment of our teaching and learning medicine.

Not all of these ideas are new to us. We started with well-defined objectives in our curriculum. Last year, our Curriculum Committee was very active, and has formulated specific objectives for the different clinical appointments.

In the pre-clinical years, we have a co-ordinated programme, and are developing a co-ordinated course for the third and fourth years.

We have implemented one of these ideas which is new to us, namely the introduction of basic pathology and pharmacology in the pre-clinical years. The 1986 batch has this in their curriculum. Medical statistics has been introduced in the pre-clinical years, but behavioural sciences need to be made a well structured unit during this period. Our students do three projects during their course in the pre-clinical, 3rd MBBS and the clinical stages. Electives have been introduced as an option this year, and it is hoped that it could be made compulsory in the future. With the financial assistance of the WHO, we are developing a medical education unit with an audio-visual centre, and an inter disciplinary clinical laboratory.

All this sounds encouraging.

However, accomplishment of these innovations-co-ordinated programmes, electives and projects depends on the availability of teachers. Our academic cadre is meagre in comparison with the staff in British Schools; but the tormenting truth is that even this cadre-from professors to lecturers-remains vacant in spite of repeated advertisements. For this reason, we are unable to adopt other ideas, such as early clinical contact for students, smaller clinical firms and personal tutors, and experiment on integrated systems courses even on a limited scale.

An intercalated year for selected students could serve a different purpose, in addition to what it is meant for in UK. The students at the end of the

six years of training would possess a B. Sc. Honours and MBBS degrees, and would be ideally suited for joint appointments in the Faculty as teachers in the pre-clinical (or para-clinical) and clinical disciplines. For this purpose, the intercalated year may be after the 3rd or 4th year, instead of after the 2nd year only. For some units like anatomy, microbiology and parasitology, the intercalated year may be in conjunction with the Faculty of Science; or for some students with an interest in community medicine, it may be with the Department of Sociology. Well, there are several possibilities.

Our examinations are outmoded in comparison to those in most British Medical Schools. It would be difficult to make changes in the system of examinations because of the politics involved with the results. It is time that all our medical schools evolve a more useful examination, or leave the schools to their own type of examination for certification, but have a common test or some sort of thing for recruitment to Government service.

The execution of a modern medical curriculum needs several hospitals, specialising in different disciplines including Primary Health Care. We have only one teaching hospital, which itself is in a morbid condition, and was described by its Consultant Pathologist, in his Presidential address to the esteemed association<sup>9</sup>, not many years ago, as having developed from a dispensary over a century, haphazardly, while a bazaar grew around it making the place dusty and noisy, etc. His 'report' regarding its suitability as a Teaching General Hospital shows poor prognosis. This hospital needs rehabilitation, and its

satellite hospitals in Chavakachcheri, Tellipallai and Point Pedro need stepping up with consultant facilities, so that our students can be attached to them. In addition, the proposed modern teaching hospital should be considered a priority by the University.

With all these handicaps, we did well. The Faculty of Medicine at Jaffna draws some of the brightest youths in Sri Lanka, the "cut-off" marks at the G.C.E (A/L) Examination for the Jaffna student being the highest in the whole country. We had a remarkable team of teachers, in the Faculty and in the Teaching Hospital, when we assembled our curriculum. But a shadow did fall after April 1985, when within a period of six months, several of them went abroad on leave, and left us.

I do not propose to end this lecture in a saturnine mood, by listing all the vacant posts or by analysing the reasons why our teachers and consultants left us. You have by now contemplated on the reasons why they

should come back and join us. I view the situation at the Faculty and the Hospital as critical or as an emergency.

In conclusion, permit me to make use of this platform to make an appeal to them, and to our students to join us and develop our Faculty. I use a platform, given in the name of a man, appropriately described in the inaugural lecture in this series,<sup>10</sup> as a patriot who served his native land every moment of his life, under the most demanding circumstances; and as a person who showed great interest in medical education, at a time when the only institution catering for medical education in Jaffna, was the clinical society of Jaffna.

I appeal to my colleagues, in the name of this patriot, to come back to serve our country. I appeal to our students to join us as teachers. After all, this Faculty is to me and to my colleagues, our Love; but to you Students she is your Mother. If you do not serve her, who else will?

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## Death Registration In The Jaffna Division

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### Summary

*A convenience sample of 311 deaths which occurred in the Division of the Regional Director of Health Services, Jaffna, was investigated. Only 144 (46.3%) of the total deaths were registered. Even among the hospital deaths only 44.9% were registered. Out of the deaths which occurred in the homes 46.8% were registered. Registration was very low in the case of infant deaths. Only 9.1% of the infant deaths had been registered. 28 (19.4%) were registered within the stipulated period of 5 days. Even in hospital, only 10 (28.6%) out of the 35 deaths which occurred there, were registered within 5 days.*

### Introduction

A few surveys have been carried out in Sri Lanka to estimate the completeness of registration of vital events. A survey in 1953 indicated that approximately 88% of the births and deaths were registered (1). Another survey in 1967 gave estimations of 99% for births and 92% for deaths (2). The latter survey indicated that birth and death registration was 100% in urban and estate sectors while under-registration was in rural areas.

However, recent studies (3 & 4) have questioned the reliability of certain mortality data, especially in the case of infants and children.

In official publications the Crude Death Rates (CDR) and Infant Mortality Rates (IMR) for the Jaffna Dis-

trict have been consistently low. The CDR for Jaffna is 4.4 compared to the national figure 6.2 and the IMR for Jaffna is 18.4 compared to 29.5 for Sri Lanka (5)

A study of infant & childhood deaths in a health area in the Jaffna District, revealed that 64% of the infant deaths and 66% of the childhood deaths were not registered (4).

The present study estimates the extent of registration of deaths of all age groups in the Jaffna Health Division.

### Area of Study

The study was carried out in the area of the Regional Director of Health Services (RDHS) Jaffna, which comprises of the administrative districts of Jaffna

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and Kilinochchi, with an estimated mid year population of 892,000 (for 1985). The area is provided with a Teaching Hospital, a Base Hospital, 6 District Hospitals, 4 Rural Hospitals and 10 Peripheral Units, with a total of 2508 beds. There are in addition 12 Government maternity homes with 122 beds (5).

There are 8 Health Areas-each under a Medical Officer of Health (MOH).

At the time of the survey there were 156 Public Health Inspectors (PHI) and Public Health Midwives (PHM) working in these health areas.

#### Methodology

This study was carried out during 1985. Each PHI and PHM working in the division of the RDHS Jaffna was requested to investigate two deaths which had occurred nearest to their office, during the period between 3 months & one year prior to the date of interview. One PHM had only one death in her area during the period of study.

The investigation of deaths was carried out using a questionnaire. The PHI & PHMs who were the interviewers were trained for the purpose.

Completion of the questionnaire required visiting of the homes of the deceased, hospitals and the local Registrar of Deaths. When a death was not

registered it was checked with the District Registrar.

#### Results

Three hundred and eleven deaths were investigated; 214 (68.8%) of these deaths occurred in the homes, 78 (25.1%) in a state or private hospital and 19 (6.1%) elsewhere. The last group included deaths due to drowning, accidents, homicides and heart attacks which occurred outside their homes and before admission to a hospital. In the analysis these 19 deaths have been grouped with the home deaths.

#### Registration by MOH areas:

Only 144 (46.3%) of the 311 deaths were found to have been registered (Table I). Out of the 78 deaths which occurred in the hospitals 35 (44.9%) were registered and of the 233 deaths in homes 109 (46.8%) were registered. The difference in the registration rate is not significant.

The percentage registration by M. O. H.'s areas varied from 18.8% in Chavakachcheri to 62.5% in Jaffna. The registration of hospital deaths was 100% in the areas of M. O. H, Jaffna and Point Pedro, while in the area of MOH Chavakachcheri it was nil.

The registration of deaths which occurred in the homes, also showed variation between M. O. H areas. In the area of M.O.H Kayts, the registration of deaths at home was 70.6% while in Chavakachcheri it was 27.3%.

Table 1  
Registration of deaths by area of MOH and place of death

M.O.H area	Hospital Deaths		Home deaths		All deaths	
	Number	Number Registered*	Number	Number Registered*	Number	Number Registered*
Jaffna	08	08 (100.0)	16	07 (43.8)	24	15 (62.5)
Kopay	13	04 (30.8)	39	22 (56.4)	52	26 (50.0)
Manipay	08	02 (25.0)	30	10 (33.3)	38	12 (31.6)
Tellippalai	21	07 (33.3)	51	20 (39.2)	72	27 (37.5)
Kayts	09	05 (55.6)	34	24 (70.6)	43	29 (67.4)
Point Pedro	06	06 (100.0)	38	17 (44.6)	44	23 (52.3)
Chavakachcheri	05	00 (00.0)	11	03 (27.3)	16	03 (18.8)
Kilinochchi	08	03 (37.3)	14	06 (42.3)	22	09 (40.9)
Total	78	35 (44.9)	233	109 (46.8)	311	144 (46.3)

\* Percentage in parenthesis

#### Registration by age groups :

Table II gives the distribution of deaths and registration by age groups.

#### Time lapse between death and registration:

The distribution of the time lapse between death and registration, of cases registered is given in Table III. Out of the 78 hospital deaths 28.6%, and out of the 233 home deaths 16.3% were registered within 5 days, which is the stipulated time within which a death has to be registered.

Table 2

#### Registration of deaths by age groups

Age group (in years)	Number of Deaths	Number Registered	%Registered
Under 1	11	01	9.1
1 — 4	12	05	41.7
5 — 14	05	00	00.0
15 — 44	57	27	47.4
45 — 64	76	39	51.3
65 +	150	72	48.0
Total	311	144	46.3

Table 3  
Time lapse between death and Registration

Time interval between death and Registration (in days)	Place of Death					
	Hospital	Home				Total
	Number	%	Number	%	Number	%
up to 5	10	28.6	18	16.5	28	19.4
6 - 30	15	42.9	42	8.5	57	39.6
31 - 90	08	22.9	38	34.9	46	31.9
over 90	01	2.9	10	9.2	11	7.6
Not known/Not recorded	01	2.9	01	0.9	02	1.4
<b>Total</b>	<b>35</b>	<b>100.2</b>	<b>109</b>	<b>100.0</b>	<b>144</b>	<b>99.9</b>

### Discussion.

The maintenance of accurate vital statistical data forms an important component in the planning and evaluation of the health care services. Morbidity data in Sri Lanka is considered unreliable and more emphasis is laid on mortality data.

Published official data have shown a rapid fall in the Crude Death Rates and Infant Mortality Rates starting from the latter part of 19 0. There was much inter district variation in the CDR and IMR. S. L. N. Rao (6) in 1976 suggested that a comprehensive study of death registration should be carried out.

Studies carried out in the 1950's and 1970's showed that registration of

death was almost complete (1 & 2). However more recent studies (4) have shown that there is under registration of infant and preschool deaths.

This study used a convenience sample (7) to study the extent of registration of deaths. A convenience sample is usually used in social surveys. This method has been found to be useful in studies of this nature. It is economical and convenient although rates for the whole area cannot be calculated. In our study, if there is a bias, it is towards registration since the selected deaths were close to the health workers office; under-registration would be more in areas situated further from the office of the health worker.



In the present study only 46.3% of the 311 deaths investigated were registered. The reported CDR for the Jaffna District in 1985 was 4.4. The actual CDR is therefore in the region of 9.5. This is more than the national figure of 6.2 per 1000 population.

#### Hospital Deaths:

Out of the 78 deaths which occurred in a hospital only 44.9% were registered. The percentage registration in the different hospitals varied from 100% to none. All 8 deaths which occurred in the General Hospital (Teaching) Jaffna and 6 deaths which occurred at Base Hospital, Point Pedro had been registered.

In an earlier study (4) in 1982/83, the registration of infant deaths at General Hospital (Teaching) Jaffna was 55.5% and at Base Hospital, Point Pedro was 60%. The improvement in registration at General Hospital (Teaching) Jaffna may be partly due to the subsequent introduction of a form for the certification and registration of deaths.

#### Home Deaths

Out of the 233 deaths which occurred in their homes, only 46.8% were registered. In a previous study of infant and preschool deaths (4), only one out of 45 deaths of infant and preschool children which occurred in the homes, were registered.

#### Deaths Registration by age groups

Death registration was poor in all age groups (Table II), but marked in infants and 5-14 age groups. Only 9.1% of the infant deaths had been registered. The IMR for Jaffna, accord-

ing to official publication, is very low- 18.4 per 1000 live births. The figure for Sri Lanka is 29.5. One of the reasons for this low mortality rate is poor registration. In the 5-14 age group none of the five deaths was registered. The reason for this is not apparent

#### Interval between death and Registration

Deaths have to be registered within 5 days of occurrence of the event. However the local registrar could register up to 90 days after the death, if he is satisfied with the explanation given for non-registration during the stipulated period of 5 days. The District Registrar could register a death up to one year after the event if he is satisfied with the explanation. Registration of a death, one year after the event will have to be done by the Registrar General.

In this study, among those deaths registered, only 19.4% had done so within 5 days. Among the hospital deaths registered, 28.6% did so within 5 days (Table III). It is also observed that 8% of the deaths have been registered after 3 months.

#### Reason for poor Registration

Registration of deaths does not carry any remuneration to the next of kin or the parent of a child who dies; except in the case of a person with a pension, employees provident fund or insurance claim. Therefore, except in these instances parents or next of kin are not interested in the registration of the death.

In addition most of the crematoriums in this area do not insist on a death certificate for cremation,

Another contributory factor is the withdrawal of the Rice Ration Book in 1977. Every citizen had a Rice Ration book and weekly rations were drawn from Multipurpose Co-operative Societies. The Rice Ration books were distributed through the Grama Sevaka Niladhari (Village headman) and it was the duty of the Gramasevaka Niladhari to see that it is not misused or used by someone after the death of the owner. Therefore when a person dies, the Gramasevaka Niladhari made an extra effort to withdraw the Rice Ration book, and in this process the deaths got registered.

Since the abolition of the Rice Ration book in 1977 the Gramasevaka Niladhari do not actively pursue a death and the Death Registration has also decreased.

We suggest further studies in other parts of the country to confirm whether poor registration is peculiar to this part of the country or is a common feature. Further it is our view that the sampling adopted by us is an easy and economical way of detecting under-registration of death and under-notification of diseases, and could be carried out at the Health Unit Level.

#### Acknowledgements

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## Persistent Diarrhoea in Childhood. A Study of Associated Factors, and Factors Contributing to the Morbidity and Mortality

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(Lecture delivered in July 1987)

### Summary:

*In a one year study of children admitted to a Paediatric Unit of a Teaching Hospital, it was found that 14% of children admitted with diarrhoea had persistent diarrhoea. Mortality amongst these children was 12%. Age distribution, nutritional status, socio-economic status accompanying features, presence of associated infections and duration of stay in hospital of these children were studied. 97% of these children were under 5 years of age.*

### Introduction

"It is difficult to give a precise definition of diarrhoea, because the usual frequency of passing stools and the consistency and bulk of the stools depend very much on diet and varies from individual to individual. In general terms, diarrhoea may be defined as the passing of liquid or watery stools. These liquid stools are usually passed more than three times in a day; however, it is the consistency rather than the number of stools that is the more important feature. Frequent passing of formed stools cannot be considered as diarrhoea. Breast fed babies often pass loose, "pasty" stools; this also is not diarrhoea." (1)

"In most cases the mothers will know when their children have diarrhoea and may themselves provide a useful working definition for the situation." (1)

"Diarrhoea lasting more than fourteen days is usually called persistent (protracted) diarrhoea." (2)

While it is known that acute diarrhoea in childhood can be managed essentially by preventing and treating dehydration and electrolyte imbalance and by using antibiotics where indicated, the management of persistent diarrhoea still remains a challenge to the paediatrician in our country, and many other developing countries. Some children are admitted to our units with a

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Author was killed on 22-10-1987 during a Military operation conducted by the Indian Peace Keeping Force:

history of diarrhoea of longer than two weeks duration. Some others who are admitted with diarrhoea of shorter duration fail to respond to rehydration, and the usual antibiotics given where indicated. Most of them are malnourished. At some stage we found that we could predict that some of these children were going to die over the next few days. These children were anorexic and cachectic and at this stage even oral bland fluids resulted in brisk and oopious diarrhoea and vomiting. It becomes difficult to maintain the electrolyte and water balance even with parenteral fluids and the disease terminates in death. This type of natural history in persistent diarrhoea is described in text books too (3).

We found that we were helpless in preventing these deaths. Attempts were made at feeding these children with high protein diet, administering blood or plasma transfusions and giving various antimicrobials. Most of these methods failed to prevent deaths in these children. This frustrating experience made us to do a study of these children. This study was carried out over a period of one year in 1986, in one of the two paediatric units in teaching hospital, Jaffna in Sri Lanka.

#### Objectives

The objectives of the study were to find out :

- (1) the incidence of persistent diarrhoea in these children admitted to the Unit,
- (2) what factor or factors prolonged the diarrhoea in these children, and
- (3) what method or methods could reduce the duration of the diarrhoea and prevent mortality in these children.

#### Method

Two groups of children were included in the study. They were :

- (1) children admitted to the unit with a history of diarrhoea of longer than two weeks duration
- and (2) children who were admitted with a history of diarrhoea of shorter duration, but whose diarrhoea persisted for longer than two weeks while in the ward.

The following details were noted on admission.

- (a) age
- (b) Nutritional status - Weight, height and skin fold thickness
- (c) Economic status of the family
- (d) Duration of diarrhoea before admission
- (e) Accompanying features  
vomiting, fever, convulsions, blood in stools
- (f) Treatment given before admission  
Western or native
- (g) Type of milk feeding

During the stay in the ward the following observations and investigations were carried out

- (h) Presence of any associated infections
- (i) Stools microscopy
- (j) Stools culture
- (k) Stools pH and reducing substances

Stools pH was measured in the laboratory. The test for reducing substances in the stools was carried out in the ward. Fluid part of freshly passed stool was used for this test.

1 volume of stools was mixed with 2 volumes of water and eight drops of this mixture were added to five millilitres of Benedict's reagent taken in a test tube. This was boiled for two minutes and allowed to cool. The results were recorded as for Benedict's test. If the stools pH was less than 5.5 and reducing substances more than  $\frac{1}{2}$  percent the patient was treated as having lactose intolerance. If the amount of sugar was between  $\frac{1}{4}$  and  $\frac{1}{2}$  percent the test was repeated.

During the stay in the ward the following line of management was adopted.

- (1) Correction of dehydration and electrolyte imbalance by oral rehydration salts solution. If this failed intravenous fluid therapy was resorted to.
- (2) Anaemia was corrected by blood transfusion.
- (3) Attempt was made to give high protein diet like "Jeevaharam", "Thripasha", egg etc in addition to the normal diet, if this was tolerated.
- (4) Antimicrobials including antibiotics and metronidazole were used in children who had blood and mucus in the stools and in others whose diarrhoea was not responding to the above methods. Antibiotics were also used in severely ill children and children who had associated parenteral infections.

On discharge or death the following data were collected

- (l) Duration of stay in the ward.
- (m) Total duration of diarrhoea

(n) Nature of treatment given by us

Intravenous fluids

Blood transfusions

Antihiotics

Metronidazole Oral or intravenous

Lactose free milk

## RESULTS

Table I

Admissions To The Paediatric Unit In 1986, and Deaths Due To Persistent Diarrhoea

Month	*Total Admissions	All Diarrhoeas	Persistent Diarrhoea	Deaths due to persistent diarrhoea
January	298	58	12	1
February	272	32	6	1
March	299	30	9	1
April	309	36	5	2
May	220	18	3	1
June	189	34	5	1
July	323	60	10	0
August	289	53	3	0
September	267	45	9	1
October	237	51	3	1
November	170	33	2	0
December	309	77	8	0
<b>Total</b>	<b>3182</b>	<b>527</b>	<b>75</b>	<b>9</b>

\* Admissions to the special care baby unit have not been included in this.

The above table shows that about 17% of admissions to our Paediatric unit were diarrhoeas.

About 14% of children admitted with diarrhoea had persistent diarrhoea.

12% of children admitted with persistent diarrhoea died.

Table II  
Age Distribution of persistent Diarrhoea Admissions and deaths

Age	Number of persistent diarrhoea admissions	Number of persistent diarrhoea deaths
0 -1yr	36	2
1+ -2yr	29	5
2+ -3yr	3	1
3+ -4yr	3	1
4+ -5yr	2	0
5+ -10yr*	0	0
10+ -11yr	1	1
11+ -12yr	1	0
<b>Total</b>	<b>75</b>	<b>9</b>

\* Table II shows that persistent diarrhoea is essentially a problem of preschool children with 73 of the 75 children (ie. about 97%) in the under 5 years age group. 65 of these children (ie. about 87% of persistent diarrhoea admissions) were under 2 years of age.

Table III  
Detailed Age distribution of Persistent Diarrhoea Admissions and Deaths in Under 1 Year Old Children

Age in months	Number of persistent diarrhoea admissions	Number of persistent diarrhoea deaths
0+ - 1months	0	0
1+ - 2months	0	0
2+ - 3months	0	0
3+ - 4months	4	0
4+ - 5months	0	0
5+ - 6months	2	0

6+ - 7months	7	1
7+ - 8months	4	0
8+ - 9months	5	0
9+ - 10months	8	0
10+ - 11months	1	0
11+ - 12months	5	1
0-12months		
<b>Total</b>	<b>36</b>	<b>2</b>

Table III shows that infants under 3 months of age are spared of the problem of persistent diarrhoea.

Table IV  
Nutritional Status of Children Admitted With Persistent Diarrhoea

Weight (Percentile)	Number of patients	Number of deaths
Below 3rd percentile	45	7
3rd to 50th percentile	28	2
Above 50th percentile	None	None
<b>Total</b>	<b>73</b>	<b>9</b>

I could not find an appropriate percentile chart for weights of children over 5 years. Hence the two children over 5 years are not included in this table.

The family health bureau / ministry of health growth chart which was issued in collaboration with UNICEF was used to classify the weights. 45 of the 75 children (ie. 60%) had weights below the 3rd percentile. None was above the 50th percentile. The dehydration would have caused loss of some weight. These weights were taken on admission. It would have been more appropriate to weigh these children after rehydration.

Unfortunately this has not been done. However the fact that none of these children's weight was above the 50th percentile is significant.

The poorer families are represented much more among the children presenting with persistent diarrhoea and those dying of this condition.

Table V  
Economic Status  
Family Income

Income in Srilankan Rupees per month	Number of patients	Number of deaths
Nil	1	1
0-500	33	4
501-1000	20	3
1001-1500	6	0
1501-2000	3	1
2001-2500	2	0
2501-3000	3	0
3001-3500	1	0
3501-4000	0	0
4001-4500	0	0
4501-5000	2	0
Not recorded	4	0

Table VI  
Average Income per Family Member

Income in Sri Lankan Rupees per month	Number of patients	Number of deaths
Nil	1	1
0-100	32	4
101-200	19	2
201-300	3	0
301-400	4	1
401-500	2	1
501-600	1	0
601-700	1	0
701-800	2	0
801-900	2	0
Details not available	8	0

Table VII

Duration of Diarrhoea Before Admission

Period	Number of patients	Number of deaths
No diarrhoea on admission	4	0
1 day	4	1
2 days	2	0
3 days	9	3
4 days	7	1
5 days	1	0
6 days	5	0
1 - 2 weeks	21	0
More than 2 weeks	22	4

56 percent of the children had diarrhoea for longer than one week duration on admission. 4 children developed diarrhoea after being admitted to the hospital. Two of them were admitted with respiratory tract infection. Third child was admitted with measles bronchopneumonia and the fourth one with congenital heart disease. None of these 4 children died.

Table VIII  
Accompanying Features

	Vomiting	Fever	Convulsions	Blood in stools	Mucus in stools	None
Number of patients	49	35	4	22	31	6
Number of deaths	5	5	0	1	3	2

The above table shows that none of these features was helpful in predicting the outcome of the illness.

Two of the children who died had no other accompanying features apart from diarrhoea.

8 of the 75 patients had coffee ground gastric aspirate and only one of them died.

This total number in this table is at variance with the Table II because some of these children had more than one accompanying feature.

Table IX  
Treatment Given Before Admission

	Western	Ayur- vedic	House hold remedies
Number of patients	35	12	26
Number of deaths	2	2	5

9 children had been given antibiotics before admission to hospital. 2 children had been given drugs which we would not have recommended to be given to these children. i.e. Tetracycline for a 2 years old child and Prednisolone for another child, Details of treatment were not known in most cases.

5.7% of children who were treated by Western Medical Practitioners before admission subsequently died in our ward.

16.7% of children who were treated by Ayurvedic Practitioners before admission subsequently died in our ward.

19.2% of children who did not take any treatment from a Western or Ayurvedic Practitioner before admission subsequently died.

Table X  
Type of Milk Feeding at the time of Admission

	Breast milk only	Breast milk+ Artificial milk	Artificial milk only
Number of patients	15	24	33
Number of deaths	2	3	4

68 of the 75 mothers had breast fed their infants at some stage. 4 mothers had never breast fed their infants. The details of milk feeding were not available in three children.



Table XI

## Presence of Associated Infections

Nature of infection	Number of patients	Number of deaths
Respiratory tract (includes 5 measles)	15	2
Urinary tract	4	1
Skin (Abscesses)	4	2
Meningitis	1	1
Malaria	1	0

53 of the 75 patients did not have any other associated infections. 4 children who died were free of any other associated infections.

Table XII

## Stools Microscopy

Results	Number of patients	Number of deaths
Nil abnormal	31	0
Entamoeba histolytica Trophozoites	1	1
Whipworm ova	1	0
Giardia Lamblia Trophozoites	2	0
Pus cells	30	5
Red blood cells	10	2
Oil globules	9	2
Results not available	4	2

All stools were negative for round worm ova. But one child did pass roundworms per rectum.

(j)

Table XIII

## Stools Culture Reports

	Number of patients	Number of deaths
No pathogens isolated	61	7
Escherichia coli	5	0
Shigella	2	1
Reports not available	7	1

One of the children who had Shigella also had Entamoeba histolytica. This child died. The other child who had Shigella, had Giardia lamblia trophozoites and cysts in the stools.

(k) In the case of 4 children the stools pH was less than 5.5 and stools reducing substances more than 1/2 percent. They were treated as transient lactose intolerance and they responded to lactose free diet. Prosobee or Cow & Gate formula S was used for a few weeks. After a few weeks they were able to tolerate ordinary milk formula. None of the children who died had evidence of lactose intolerance.

Table XIV

## Duration of stay in the ward

Duration	Number of children	Number of deaths
0-7 days	10	1
8-14 days	33	2
15-21 days	21	4
22-28 days	9	1
29-35 days	1	0
36-42 days	0	0
43-49 days	1	1

The shortest duration of stay in the ward of any child with persistent diarrhoea was 2 days. The longest stay in the ward of any child was 46 days. Both these children died. The shortest stay of any survivor was 3 days and the longest stay of any survivor was 33 days. Average duration of the hospital stay in children with persistent diarrhoea was 14.6 days. Average duration of hospital stay in children who died was 18.4 days.

Table XV  
Total Duration Of Diarrhoea

Duration	Number of children	Number of deaths
15 - 21 days	33	2
22 - 28 days	19	2
29 - 35 days	11	3
36 - 42 days	6	0
43 - 49 days	1	0
50 - 56 days	2	1
57 - 63 days	1	1
64 - 70 days	1	0
71 - 77 days	1	0

Average duration of diarrhoea in the children admitted with persistent diarrhoea was 26.6 days.

The average duration of diarrhoea in the children who died was 32.3 days.

Table XVI  
Nature of Treatment given by us

Nature of treatment	Number of patients	Number of deaths
No intravenous fluids or drugs	11	0
Intravenous fluids	46	9
Antibiotics	59	9
Metronidazole	28	3
Lactose free milk	4	0
Blood Transfusion	17	5

11 of the 75 children improved with oral rehydration and feeding alone. 4 more children improved on rehydration alone, with intravenous fluids. i.e. 20% of children with persistent diarrhoea did not need any drug treatment. 11 of the children who were given metronidazole were commenced on intravenous metronidazole and then changed over to oral metronidazole.

#### Analysis of outcome of treatment

58 out of the 75 children recovered completely. Seven children were removed by the parents after some improvement. one child was removed by the parents, as there was no change in the child's condition after 9 days stay in the hospital. 9 children died.

#### Discussion

The magnitude of the problem of persistent diarrhoea in childhood is seen from the fact that out of 527 admissions with diarrhoea in one year, 75 children (i.e. 14%) had persistent diarrhoea. 9 of the 75 (i.e. 12%) died.

73 out of the 75 children were in the preschool age group. (i.e. children under 5 years). Out of them 65 children were under 2 years of age. Among the under 1 year group none of the affected infants were under 3 months of age. Hence it may be said that this problem essentially affects children between 3 months and 2 years of age. All the deaths too were in this age group.

5.6% of patients under 1 year died

17% of patients between 1 & 2 years of age died.

Among the 73 preschool children affected, all had weights below the 50th percentile. Among them 45 had weights even below the 3rd percentile. Part of the weight loss may be due to dehydration. It would have been more useful to record the weights after rehydration. But this had not been done. Nevertheless dehydration alone cannot be the cause of such very low weights. It is very difficult to say whether the low weight is a consequence of the diarrhoea or the diarrhoea is a consequence of the malnutrition or whether both these are caused by some other common factor or factors. The heights and skin fold thickness too were recorded but they could not be analysed as I could not find any percentile charts for these, for Srilankan children.

15.6% of patients with weights under 3rd percentile died.

7.1% of patients with weights between 3rd & 50th percentile died.

Most of the parents of these children were in the poor income group. Families of 34 children had incomes less than Rs. 500/= per month. Families of 20 children had income between Rs. 500/= & Rs. 1000/= per month. (One U. S. dollar = 28 Rupees)

Specific enteral infections and infestations formed only a very small group.

*Entamoeba histolytica* (trophozoites) were seen in the stools of 1 patient. *Giardia Lamblia* (trophozoites & cysts) were seen in the stools of 2 patients and whipworm ova in 1 patient. One child passed a roundworm even though no ova were found in the stools. The above findings contrast with the findings of Nageswaran C. & Sivarajah N. in their study of intestinal parasitic

infestations in children living in the under privileged sector of the Jaffna Municipality. They found a general infestation rate of 50%.<sup>4</sup>

5 of the 9 children who died had pus cells in the stools. Only 2 patients had shigella isolated from stools culture. *Escherichia coli* had been isolated from 5 patients. But our laboratory could not type the *E. coli*. Perhaps improving the laboratory techniques could give us more positive culture for pathogenic organisms. Some of the relatively newer organisms like *Campylobacter*, *Cryptosporidium* and *Yersinia enterocolitica* may be involved in the infection in some of these children.

Palasuntharam C. & Wijesekere. D. S. in Colombo have isolated *Campylobacter* in 3 male children aged 1 — 2 years<sup>5</sup>. Stools microscopy in these cases revealed the presence of red cells and pus cells in 2 cases and only pus cells in the 3rd case. They used skirrow's medium to isolate the organism.

Bissenden J. G. in an article "*Cryptosporidium* and diarrhoea" says "bacteriologists wishing to reduce the number of stool culture negative should discover how to look for *Cryptosporidium* in patients with diarrhoea"<sup>6</sup>. The *Cryptosporidia* are described as coccidian parasites and are in the same group as *Toxoplasma*. At some times of the year in some parts of the world, it will be second only to rotavirus in frequency of isolation.

On the other hand most of these children may be having an overgrowth of nonpathogenic bacteria and anaerobic organisms which cause and aggravate the diarrhoea in these children, who are unable to fight the infection because of their poor nutritional status.

Mary E. Penny, D. G. Harendra de Silva and Alexander S. Mc Neish studied the duodenal microflora during the first week of diarrhoea in 40 infants with acute infectious diarrhoea of various aetiologies and compared with that in a convalescent group and in a group in whom diarrhoea of known aetiology had persisted for more than 14 days after an acute onset<sup>7</sup> They found that infants with persistent diarrhoea had significantly more faecal type bacteria in the duodenum than either those with acute diarrhoea or the convalescent group. In addition there was a significant further increase in Enterobacteriaceae in infants whose persistent diarrhoea occurred after infection with enteropathogenic E.Coli: They conclude that infections with enteropathogenic E. Coli may have a predilection for disturbing the duodenal microflora which may contribute to the development of persistent diarrhoea.

Only 4 out of the 75 children had transient lactose intolerance. All of them responded to Lactose free milk formulae.

The extent of the morbidity is also shown by the fact that 33 patients stayed in the ward for 1-2 weeks, 21 for 2 - 3 weeks and 9 for 3-4 weeks

In managing these children we initially attempted to rehydrate them orally. However in the majority we had to resort to intravenous rehydration due to persistent vomiting, severity of the illness in the child and abdominal distension. Antibiotics were used if there was any parenteral infection and also when the children were severely ill. If there was no ready response or if antibiotics had been used before admission, oral metronidazole

was added to the treatment with a view to eliminating anaerobic organisms. If the children were very ill the metronidazole was given intravenously as unimezol. Blood-transfusions were given to the children who were severely anaemic and to those who had coffee ground gastric aspirate and melaena.

Celiac disease and Fibrocystic disease of pancreas could not be excluded as jejunal biopsy capsule is not available and sweat electrolytes cannot be done in our laboratory. There is a general impression that coeliac disease and fibrocystic disease of pancreas are not found here. But it cannot be definitely said whether any of the 9 children who died had either of these diseases which contributed to the failure to thrive and the persistent diarrhoea. However the fact that almost all the children who died of persistent diarrhoeas come from families with poor economic status, tempt one to assume that the failure to thrive is more likely to be due to malnutrition.

There are several factors which contribute to the persistence of diarrhoea in children.<sup>8</sup> We have not looked into all the aspects.

Rita Mirakian., Anne Richardson. Peter. J. Milla, John. A. Walker Smith Joseph Unsworth. Martin. O. Savage & Gian. Franco Bortzso have detected circulating auto antibodies to enterocytes by indirect immunofluorescence in 14 out of 25 patients with protracted diarrhoea of infancy.<sup>9</sup> No other cause for the diarrhoea was found in these children. Similar specific antibodies were not found in 50 control children with non gastroenterological diseases.

In the children who died, we encountered difficulty in maintaining the electrolyte balance. They tended to have hyponatremia and hypokalemia stubbornly resistant to treatment. Only one child who died had hypernatremia. Towards the end of the study we found that giving a broad spectrum of antimicrobials such as Penicillin, Gentamycin and intravenous metronidazole in children who were becoming cachectic and vomiting and purging even when bland fluids were given, helped us to save some of them. Of course other aspects of management like diligent attention to electrolyte balance and hydration and correcting any severe anaemia by blood transfusions had to be looked into. However further studies are required to confirm this impression.

#### Conclusions

1. 14% of admissions with diarrhoea to the unit had persistent diarrhoea. 12% of the children with persistent diarrhoea died.
2. Persistent diarrhoeas in childhood in Jaffna is essentially a problem of the preschool child. The under 2 years group of children are most vulnerable. Infants under 3 months of age are usually spared.
3. Most of the children admitted with persistent diarrhoea are grossly undernourished. Most probably this is due to underfeeding and inadequate protein intake due to the poor economic status and ignorance in the families of the affected children.

However further studies are required to find out if any of them have conditions like coeliac disease and

fibrocystic disease of pancreas which contribute to both the failure to thrive and to the chronic diarrhoea.

4. Specific infestations and infections play only a small part in persistent diarrhoeas in children in Jaffna. However improvements in techniques of investigations and search for organisms like *Campylobacter*, *Cryptosporidia* and *Yersinia* may increase this percentage.
5. Persistent diarrhoeas in children in Jaffna are probably mostly due to an overgrowth of nonpathogenic aerobic and anaerobic bacteria in malnourished children.
6. In the management of these children diligent attention to maintenance of electrolyte balance and hydration, correction of severe anaemia by blood transfusions and giving lactose free milk if lactose intolerance is present are probably the important aspects, in addition to improving the nutritional status.
7. However in cachectic children who present with vomiting and purging even after intake of bland oral fluids the use of broad spectrum combination of antimicrobials like Penicillin, Gentamycin and intravenous metronidazole seems to tip the balance towards recovery. Further studies are required to confirm this.

#### Acknowledgements

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## Prophylactic Aspects of Urolithiasis

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### Summary:

*Chemical analysis of 50 stones removed at surgery from 36 patients were done. A single sample of urine from these patients was also analysed. Some of the aetiological factors relating to urolithiasis are considered and appropriate prophylactic measures for the different types of stone formers are discussed.*

### Introduction

Urolithiasis refers to calculus disease of the urinary tract and the calculi may be of vesical or renal origin. In Sri Lanka this is essentially managed surgically. Perusal of the literature (1, 2, 3, 4) on this subject we find that prophylactic measures could be adopted atleast in some instances to prevent recurrence of the disease. This is supported by statements made in two recent articles in esteemed journals.

"Appropriate medical therapy may decrease significantly the number of new stones formed and may obviate the need for a repeat stone operation" (1).

"Modern methods of investigation and treatment have greatly improved the outlook in patients with recurrent renal calculi" (2).

### Method of identification of the type of stone

Identification of the type of stone is important if appropriate advice is to be given. It is a simple matter, when

stones are passed or obtained at surgery to analyse them by chemical methods (5) and determine the type of stone. This was the method adopted in our department in 50 stones removed at surgery from 36 patients. These stones were classified as oxalate, uric acid/urate, calcium phosphate or magnesium ammonium phosphate, when composed of one of these substances to the extent of 65% or more and as mixed stones if any one of these substances was not the main component. There were 100% urate stones, but no 100% oxalate stones. Oxalate stones by far were predominant among both renal and vesical calculi.

The problem becomes different when stones have to be indentified in vivo. This is possible in the advanced countries by sophisticated methods like x-ray diffraction. In our country however where these facilities are lacking, alternate methods were sought. A fresh sample of urine from patients and controls were analysed (6,7) in order to find out whether the type of stone could be determined. A 24 hour urine analysis could not be

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done because of the difficulty in collection, hence random sampling was done. Therefore the results cannot be compared with other studies where a 24 hour urine was analysed.

**Results**

Tables I, II, III & IV show the results of analysis of samples of freshly voided urine from 24 patients and 10 Normal people,

**Table I**  
**Non-Stone formers**

Urate (mg / 100ml)	Oxalate (mg / 100 ml)
20	0
66	0
19	0
21	0
24	0
49	12
83	0
66.4	8.4
41.4	0
53.9	0
<u>Mean 44.39</u>	<u>Mean 2.04</u>
S. D: 22.9	S. D. 4.4

**Table II**  
**Oxalate stona formers**

Urate (mg / 100ml)	Oxalate (mg / 100ml)
83	13
133	28
84	24
115.2	48
125.5	30
158	28
111	22
273.3	22
166	25
398	46
<u>Mean 164.6</u>	<u>Mean 28.7</u>
S. D: 98.5	S. D. 10.7

**Table III**  
**Mixed stone formers**

Urate (mg / 100ml)	Oxalate (mg / 100ml)
99.6	28.5
116.6	23.5
49.8	27.6
378.4	25
74	26
166	29.6
141	50
74	28.8
41	30
149	50
<u>Mean 128.9</u>	<u>Mean 31.9</u>
S. D: 97.2	S. D: 9.7

**Table IV**  
**Urate stone formers**

Urate (mg / 100ml)	Oxalate (mg / 100ml)
116.6	0
166.0	0
215	0
232.4	0
<u>Mean 182.5</u>	<u>Mean 0</u>
S. D: 171.3	S. D: 0

- (1) The difference between the mean urate content of :-
- (a) oxalate stone formers and controls is significant. (t = 3.7, P < 0.01)
  - (b) Mixed stone formers and control is also significant. (t = 2.67, p < 0.02)
  - (c) 100% urate stone formers and control is also highly significant. (t = 7.1, p < 0.01) although n=4 in this instance



- (ii) The difference between the mean oxalate content of
- oxalate stone formers and control is significant. ( $t=7.2$ ,  $p 0.01$ )
  - Mixed stone formers and controls is significant ( $t=8.7$ ,  $p 0.01$ )
  - 100% urate stone formers and non-stone formers is not significant. ( $t=0.8$ ,  $p 0.2$ )

### Discussion

There are differences in the results of urine analysis of the different types of stone formers when compared with the controls: In oxalate stone formers and in mixed stone formers (of which oxalate is a component) the urine shows uricosuria in addition to oxaluria, while in 100% urate stone formers there is uricosuria but no oxaluria. This will help to identify the common types of stones viz; oxalate stones, urate stones and mixed stones of which oxalate is a component.

The pH of urine is helpful in identifying calcium phosphate and magnesium ammonium phosphate stones as these are formed in urine on the alkaline side and the latter in the presence of infection by urea splitting organisms.

Rare types of stones like cystine and xanthine when suspected can be confirmed by the estimation of cystine and Xanthine concentrations in urine.

### Prophylaxis:

Having identified to some extent the nature and site of the calculus from the history, radiography and chemical

analysis; the following advice could be given:-

- In general drinking water ad-lib is a universal measure as this would lead to a flushing out of the urinary tract and dilution of the solute concentration (4, 8)

However some thought should be given to the calcium content of the water. For instance a study from Israel (9) brings this to light. The study has shown that by boiling water for 10 minutes the calcium content was reduced to one-fifth of the original value and drinking of boiled water by several oxalate stone formers made them free of renal colic for 2-3 years.

- Urate stone formation** can be prevented by allopurinol therapy as in gout (4) and by alkalinising the the urine. It is said that one can guarantee against uric acid/urate stone formation if the pH of urine remains above 6.5 (4)
- Cystine stone formers** tend to pass stones very frequently and can be treated with D-penicillamine which forms a soluble compound with cystine (4)
- Xanthine stones:** A low purine diet and avoiding drugs which inhibit xanthine oxidase will help these patients (4)
- Even for idiopathic calcium oxalate stone formers much can be done by means of dietary control, correction of certain factors which are lacking, and allopurinol therapy. Allopurinol treatment is useful in

oxalate stone formers (10,11,12). This follows from the fact that hyperuricosuria is universal in oxalate stone formers. In a study by Fredric L Coe and Lynn Raisen (10) it was shown that the incidence of recurrent stone disease was reduced from 73 stones in 21 calcium oxalate stone formers over a mean of 8.8 patient years to 1 in a mean of 1.85 years when these patients were treated with allopurinol. A watch must be kept to see whether xanthinuria occurs.

A high fibre content with a low content of, sugar, refined carbohydrate and animal protein in the diet seems to be beneficial (13, 14). This will reduce the nutrient density of the diet.

Low calcium and low oxalate diets should be employed (4). Thiazides are used to reduce the hypercalciuria (4,15)

Certain substances like glycosaminoglycan, magnesium and citrate seem to play a beneficial role and one or more of these factors are lacking in the urine

of oxalate stone formers. Hence potassium citrate is used in the management of these patients. It has been shown that the combination of thiazides with potassium citrate is more effective than thiazides alone or potassium citrate alone. (16)

These are some of preventive measures which may be worth considering in urolithiasis apart from the numerous methods to dissolve calculi (17, 18, 19).

It is our hope that this communication will stimulate further studies on urolithiasis so that the validity of the above observations could be confirmed.

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## Radiographic Diagnosis of Malignant Lesions of Duodenal Loop: Two Case Reports

DR S J V. RICHARDS\*

### Summary:

*Case reports of two patients admitted and operated upon for obstructive jaundice are presented. Diagnosis of malignant lesion of the medial wall of the duodenal loop was made radiologically, because of a positive 'Frosberg Sign'. Clinical details of the two patients and the significance of the 'Frosberg Sign' are dealt with, in the main report.*

In Medical Institutions which are devoid of fluoroscopy and image intensification facilities, lesions of the head of the pancreas and papilla of Vater, could be diagnosed by radiographic contrast studies of the medial wall of the duodenal loop (swesp), using barium sulphate as the contrast medium. The best radiographic view is obtained by positioning the patient in the right anterior oblique at 45° and 60° angulations.

Two case reports are presented, where radiography has helped in making a diagnosis of carcinoma of ampulla of Vater in the first patient, and carcinoma of head of pancreas in the second patient.

### Case History I

A 43 year old female patient was admitted with features of obstructive jaundice of two months duration to the General Hospital (Teaching) Jaffna in October 1986. Examination of the abdomen revealed a palpable gall bladder

and the edge of the liver 2 cms below the costal margin. The laboratory findings were as follows:

Urine Bile present,  
Urine Urobilin absent,  
Serum bilirubin 26% mg  
(direct 20 mg)  
Prothrombin time 25 Secs  
(control 20 sec)  
S G P T 46 I U,  
Serum Alkaline phosphatase 65 K A  
Units,  
Serum protein 6 gm.%,  
Albumin 3.5g  
Globulin 2.5g

Hb 8 gm%

W B X	
W B C / D C	11,600
N	56
L	13
E	1

Serum Electrolytes Na	140 mEq/l
K	4.5 mEq/l
Bl Urea	20 mg%

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On the second day, a barium meal series was done. Radiographic finding was an alteration of normal pattern of the mucosa in the second part of duodenum, showing a positive inverted three sign of Frosberg. This finding suggested the presence of carcinoma of ampulla of Vater.

This patient was operated on the tenth day of admission. At operation, a growth in the region of the ampulla of Vater was found. This was resected and the subsequent histological examination confirmed this growth as that of a differentiated adenocarcinoma of ampulla of Vater, infiltrating the muscular coat of the duodenum.

No radical surgery was performed on this occasion. Serum bilirubin decreased to 5.5 mg% post operatively, and the patient was discharged on the 21st day. The patient was readmitted for radical surgery and 42 days later, she succumbed to the illness.

### Case History II

A 55 year old female patient was admitted with signs and symptoms suggestive of obstructive jaundice, of two months duration, to the General Hospital (Teaching), Jaffna in December 1986. Abdominal examination revealed, tenderness in the right hypochondrium, with an enlarged palpable liver 5 cms below the costal margin. Gall bladder was not palpable. The laboratory findings were as follows:

Bile present in urine  
 Urobilin present in normal amounts  
 Serum bilirubin 10.6mg (direct 7.8mg)  
 Prothrombin time 30 secs  
 (control 20 secs)

Serum Total protein 6.3 gs albumin 3.3g  
 Globulin 3.0 g%

H b	10.2 gms
W B C / D C	5600
N	66
L	30
E	04
S G O T	90 I U
S G P T	65 I U

On the 13th day of admission, barium meal radiographic examination was carried out, and the radiographic findings were an altered mucosal pattern in the medial wall of the second part of the duodenal loop, with positive Frosberg sign which suggested a carcinoma of the head of the pancreas.

An exploratory laparotomy was performed on the 18th day of admission. At operation, the findings were;

- Gall bladder was found to be of normal size and contained only 50 cc of bile stained fluid
- A mass was felt in the under-surface of the left lobe of liver
- Nodular enlargements were felt along the lesser curve of the stomach and
- Duodenum and pancreas were felt normal. Small portions of tissues from the mass in the liver and lesser curve were taken for microscopic examination

Histological examination confirmed the presence of an infiltrating mucinous adenocarcinoma of the pancreas.

Patient's jaundice was not relieved and the serum bilirubin increased to

13 mg on the eighth day of operation. She was discharged on the 17th day of operation, and was asked to come to the clinic for further management.

### Discussion

Two commonest conditions that have to be considered when an abnormality in the medial wall of the duodenal loop is seen, are pancreatitis and neoplastic lesion of either head of pancreas or ampulla of Vater. Pancreatitis will show a stiffening and straightening of the mucosa of the medial wall, local oedema of mucosa and enlargement of papilla of Vater, whereas neoplastic lesion will show an inverted three.<sup>(1) (2) (3)</sup>

This inverted three sign is due to the infiltration of the mucosal folds, stenosis and ulceration of the opening of the ampulla of Vater. The ampulla of Vater becomes fixed when a tumor originates from it or when a tumor invades it. The surrounding areas become enlarged or swollen, giving the appearance of an inverted three of

Frosberg in contrast duodenography. One must always remember, that neoplasm and inflammation can coexist. The inverted three sign was described by Frosberg, as pathognomic of neoplastic lesion in this region.

Clinical diagnosis of obstructive jaundice was made in the two patients without any difficulty. The site and nature of obstruction became obvious at operation in the first patient, whereas, in the second patient, the surgeon did not observe any abnormality of the medial wall of the duodenal loop. In this second patient, the histopathologist reported a malignant lesion of the head of the pancreas.

It is interesting to note, that the radiology had revealed the nature of the lesion in these two patients, which had greatly helped in the management of these patients. These are some of the instances, where a radiologist can make a diagnosis with certainty, using simple imaging techniques. Positive Frosberg's Sign was detected in two out of 293 Barium meal series done in 1986.

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Abstracts of papers read at the Fifth  
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Chief Guest :

Prof. P. CHANDRASEGARAM

B. A. (Ceylon); Dip. Ed. (Ceylon); M. A. (Lond.)

Head of the Department of Education; University of Jaffna.

**Ischaemic Heart Disease in Patients with Bronchial Asthma**

Sunderamoorthy R, Ponnambalam S and James R F.  
 Medical Unit, General Hospital (Teaching) Jaffna

Bronchial Asthma is a common disease in Sri Lanka. Most of the patients restrict their activity to limits which make them to wheeze. Chest pain in Bronchial Asthma can be due to so many factors such as tight bronchospasm, spontaneous pneumothorax, chest infection with pleurisy and tachycardia. However chest pain can also be due to ischaemic heart disease. We analysed 30 female patients and found 14 of them suffering from ischaemic heart disease, the youngest being 22 yrs and the oldest 73 yrs of age. Only 4 out of 14 had chest pain on moderate exertion. None of them were Hypertensives and their Haemoglobin was between 9.7G and 12.8G. One patient had a normal ECG but she persistently complained of chest pain and therefore an echocardiogram was done and this showed Hypertrophic obstructive cardiomyopathy. The Bronchial Asthmatic patients in the developed countries lead almost a normal life and some of them are world recognised sportsmen and sports-women whereas the patients in the developing countries limit their activities and have not learned to lead a normal life. Therefore in this situation where there is lack of exertion, bronchial asthma may be acting as a safety valve. The fact that we have chosen female patients in whom the incidence of Ischaemic Heart Disease is low, compared to men, our figure of 14 out of 30 is percentagewise significant. To make it statistically significant more patients have to be analysed with an age matching people from the normal population. It is also worth noting that the incidence of unexplained sudden deaths in Bronchial Asthma was originally attributed to Isoprenaline inhalers but even after the ban on the use of Isoprenaline inhaler there are cases of unexplained sudden death reported and some of them may be very well due to Ischaemic Heart Disease.

**Study of Some Aspects of Children who Presented with Fever and Seizures**

Kugathan S, Pasupati Jega d, and Ramadas D.

Dept of Paediatrics, University of Jaffna and Neuro-Science Unit,  
General Hospital (Teaching) Jaffna

Children admitted to the University Paediatric Unit with fever and seizures were studied over a period of seven months, from 1st September 1986 to 31st March 1987. There were 56 children in all; 25 with febrile seizures, 13 with meningitis, 9 with encephalitis and another 9 with various problems like epilepsy, brain damage etc.

The febrile seizure is the commonest reason for admission with incidence similar to those reported in other countries. Fever is often triggered by respiratory tract infection and no underlying predisposing factors have been found. The criteria for the use of prophylactic anticonvulsants is discussed, along with their side effects and toxic manifestations.

Seizure in meningitis is again a common presentation. Three of these children presented with only fever and

seizure. There were no other clinical features suggestive of meningitis. Further it is found that 68.4% of our children with meningitis presented with seizures, as compared to figures by John Lober Sheffield, England where only 30.9% of meningitis children presented with seizures.

The role of lumbar puncture in children with fever and seizure is discussed with special reference to those with doubtful meningitis as well as the severely ill.

All the 9 children with encephalitis have presented with seizures including the 4 with Japanese encephalitis. All were noted to have neurological deficits.

In the latter group of 5 children with varying neurological problems were those with epilepsy, underlying brain damage etc. They were managed in the usual manner.

**Malarial Parasite Rate Among Blood Donors.**Nageswaran A, Nageswaran C, Suthaharan K and Phillipupillai M J R.  
Dept of Medicine & Division of Parasitology, University of Jaffna.

The blood of everyone who donated blood to the Blood Bank, General Hospital (Teaching) Jaffna from 8-12-86 to 7-1-87 was examined for the presence of malarial parasites, by the Division of Parasitology, Univ. of Jaffna. All the donors were clinically examined by one of the authors before donation of blood.

A total of 246 persons (males-234, females - 12) donated blood to the bank during this period and of them 17 were positive for malarial parasite giving a parasite rate of 6.9%. 82 donors belonged to the group of "Professional Donors" and of them 11 (13.4%) were positive for parasite.

There were 100 blood donors from areas within a three mile radius from the Jaffna Town and among them 11 (11%) were positive for malarial parasite. 4 of these Positive donors (36.4%) had visited definitely known malarial areas, and the other 7 (63.6%) had not. Out of the 146 donors who came from outside the 3 mile radius, 6 were positive for malarial parasite giving a parasite rate of 4.1%.

None of the blood donors had malaria or symptoms suggestive of it within the last one year. Only one donor had a just palpable spleen and his blood was positive for parasite. A highly selective healthy adult population showing a parasite rate of 6.9% is considered significant both epidemiologically and in view of their blood being used for transfusion.

### An Analysis of Ectopic Pregnancies in the University Unit.

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Dept of Obstetrics, University of Jaffna.  
General Hospital, (Teaching) Jaffna.

Our paper analyses the ectopic pregnancies managed in the University Gynaecological Unit, from October 1980 to January 1987,

Thirty three cases were encountered amongst a total 8860 deliveries giving an incidence of the order of 1 per 270 mature intra-uterine pregnancies.

Analysis was in respect of age, parity, clinical type, pathology, morbidity and mortality.

Of the 33 cases, 19 (57.6%) presented as the 'Acute' type with features, of severe intraperitoneal haemorrhage, of whom 13 (39.4%) were severely shocked with a systolic blood pressure recording of less than 90mm Hg. The remainder (36.4%) belonged to the 'Sub-Acute' type or the 'Slow leaking' type.

The peak incidence was between the ages 25 to 29 with 51.5% occurring in

multigravidae in their second to the fourth pregnancies.

All, except for one, were tubal gestations; the oddity was an abdominal pregnancy. The ampullary region was the site of the ectopic in 17 (51.5%) with tubal rupture as the commonest finding: the rupture was intraperitoneal in 22 (66.7%) and extending into broad ligament in one (3%). Tubal abortion and tubal mole occurred in 8 (24.2%) and one (3%) respectively.

Two (6.1%) recurrent ectopics and another following a previous tubal ligation (LRT) were also encountered.

There was one death, the patient dying immediately on admission despite intensive resuscitation. Postoperative morbidity comprised 3 cases (9.1%) of Urinary Tract infection and one case (3%) of burst abdomen.

### An Analysis of Caesarean Sections Performed in an Obstetric Unit of a Teaching Hospital, During One Year

Gowribalan R, Ratnam N, Gunaratnam M & Somasekarampillai K.  
Obstetric Unit ; General Hospital (Teaching) Jaffna

Sixty six caesarean sections performed in one of the three Obstetric Units of General Hospital (Teaching) Jaffna, during the year 1986, were analysed.

The analysis showed a caesarean section rate of 3.2%. The indications were: cephalopelvic disproportion/failure to progress 42.4% two previous caesarean sections 16.6%; placenta praevia 10.6%; foetal distress 9.1%; shoulder presentation 9.1% and others 12.2%. Repeat sections

formed 42.4% of the total sections performed.

There were two maternal deaths, which were not directly due to the operation. There were six perinatal deaths, and out of these three were still born.

The reason for the low section rate and how this rate can be further lowered are discussed.

### Retrospective Analysis of Patients Ventilated in an I. C. U of a Teaching Hospital

Selvakumaran M

Dept of Anaesthesiology, General Hospital (Teaching) Jaffna.

Case records of 206 patients ventilated in the I.C.U of General Hospital (Teaching), Jaffna during a period of three years from 1984 are reviewed in this study. These patients formed 14.65% of the total number of patients treated in the I C U.

Indications for IPPV were as follows:- Cardiac arrest 9 (4.37%), LVF 24 (11.65%), Respiratory diseases 28 (13.59%) Trauma 16 (7.76%), Post operative respiratory failure 25 (12.13%)

Pesticide poisoning 35 (16.99%), Neurological diseases 37 (17.96%), Tetanus 11 (5.34%), Envenomization 7 (3.39%), Drug over dosage 2 (0.97%) and miscellaneous 12 (5.82%).

143 patients died in the unit and another six died in the ward subsequently. This gives an overall mortality of 72.3%.

The age distribution, duration of ventilation and causes of mortality are discussed.

### Reinfestation of Intestinal Nematodes in a Peri-Urban Population

\* Nageswaran C, \*\* Sivarajah N, \*\* Jegatheesan, J.

\* Division of Parasitology, \*\* Depart of Community Medicine  
University of Jaffna

This study was undertaken to ascertain the period taken for re-infestation, under the existing socio-economic and environmental conditions, following the recommended single dose mebendazole (500 mg) therapy.

Sixty two children (0-15 yrs) found to be free of intestinal nematode infestation on single stool examination following mebendazole, were followed up for 5 months. The stools of these 62 children were examined monthly from the 2nd month to the 5th month. At 2 months 29% of the children were rein-

festated with one or more intestinal nematodes. At 3 months, 38.7%, at 4 months, 61.3% and at 5 months, 75.8% of the children showed reinfestation.

It was found that re-infestation with whip worm and hook worm occurred earlier than round worm.

It appears that, anti-helminthic therapy alone is not enough to control the nematode re-infestation, without improving the existing socio-environmental condition in a place.

### Perinatal Mortality in the Area of the Jaffna Municipal Council

Ponnampalam G, M O; M. C. H, Jaffna.

A retrospective case-control study of 111 perinatal deaths during the period of 1 year from 01.07.85 to 30.06.86 in the area of the Jaffna Municipal Council was done.

During the one year period of study there were 2,502 live births in an estimated population of 125,250 giving a birth rate of 20.1 per 1,000. The 111 perinatal deaths composed of 61 (55%) still births and 50 (45%) early neonatal deaths. The perinatal death rate was 43.3 per 1,000 total births; still birth rate 23.8 per 1,000 total births and early neonatal death rate 20 per 1,000 live births.

Deaths due to maternal causes account for 46.8% of the perinatal mortality. The leading causes in that group was Toxaemia of pregnancy (16.2%) half of which was associated with abruptio placenta and the other half with intra-uterine growth retardation. This was followed by death due to prematurity in 14 (12.6%) and then by antepartum haemorrhage (9%). The other maternal causes were small for dates, diabetes complicating pregnancy and Rhesus incompatibility.

Obstetric causes ranked second contributing 21.6% of perinatal deaths. Birth Asphyxia, breach delivery and prolon-

ged second stage of labour being the causes.

Placental cause was (45%). Among the foetal causes, congenital abnormalities accounted for 8.1%.

Convulsion, Septicaemia, Pyrexia and Pneumonia were found in 8.1% of the deaths. 10.8% of the deaths were due to unspecified causes.

### Association Between the Rh Factor and the Position of Mars in the Astrological Chart of a Person

Thurairajah Ramanie

2nd year Student, Faculty of Medicine, University of Jaffna

It has been an age old practice among most Hindus to read the horoscopes of the prospective partners before marriage. It is well accepted principle in Astrology that the position of Mars in certain "houses" make the marriage incompatible and such marriages are discouraged.

This study was undertaken to investigate if there was any Physiological

correlates among Astrologically 'mismatched' partners and the ill effects of such matches. In this study a survey was made to find out the distribution Rh factor among people with their Mars in different positions of the birth chart. Sixty three percent of the ladies with Mars in seventh house were found to be Rh negative, a risk factor in successive pregnancies and transfusions.

### Resumption of Menstruation After Childbirth

Sivapathasundram P. Sriskanthan R, Sriskandarajah M N and Sivasuriya M.  
Dept of Obstetrics, University of Jaffna,

An attempt was made to determine the time of resumption of the menstrual period after delivery amongst the patients who attended the University Post-Natal Clinic during the period April to December 1985.

Of a total of 3,783 deliveries during this period only 643 attended the Post-Natal clinic reflecting a high default rate of 83%. 643 patients were seen during the puerperium. The time of the visit to the Post-Natal clinic varied

from 4 to 8 weeks after delivery. In the group who attended the clinic between 6 and 8 weeks, which is normally considered to be the end of the puerperium, only 52 had resumed menstruation, giving an incidence of 16.8%. In the other categories seen at the Post-Natal clinic we cannot infer that menstruation has not resumed for all in the puerperium,

because it is possible that had we seen them at a later date in the puerperium some of them might have resumed their menstruation,

Of the 643 mothers who attended the Post-Natal clinic, except for 65 (10%), all the others were breast feeding.

### Less Common Types of Anaemia in Malaria

Murugavel G, Saravanapavan P, Jayachandran K and James R F.  
Medical Unit, General Hospital (Teaching) Jaffna

Malaria has become a global problem now and about 1,620 million people are exposed to malarial and more than 300 million people are infected by the malarial parasite. In Sri Lanka the incidence of malaria has increased; about 30% of hospital admissions in Jaffna, are due to malaria. Approximately 60%—70% of these patients have varying degrees of anaemia. Even though common type of anaemia is normocytic normochromic, less common types of anaemias such as Megaloblastic anaemia and autoimmune and acquired immune haemolytic anaemia are seen. We are reporting three cases, two of which are megaloblastic anaemia and the third is a case of autoimmune haemolytic anaemia

The two patients with megaloblastic anaemia did not have their serum B<sub>12</sub> and folate levels done but they responded to Vitamin B<sub>12</sub> folate with a very good reticulocyte response on the 5th day.

Also one of those patients had a flat glucose tolerance test suggestive of malabsorption. Temporary malabsorption has been reported in cases of Malaria. There are different mechanisms described to explain the deficiency of vitamin and folate. Autoimmune haemolytic anaemia is rare but seen in 50% of Cambian children who developed malaria. IgG eluted from the red cell has specific antibody activity against plasmodium falciparum schizont antigen.

Recognition of these rare anaemias are important because megaloblastic anaemia can cause bleeding tendency and autoimmune haemolytic anaemia can persist for a long time because the antigen eluted, persists long after the disappearance of malarial parasite. Therefore administration of vitamin B<sub>12</sub> and folate for megaloblastic anaemia and corticosteroids for autoimmune haemolytic anaemia becomes very important.

### Epidemiology of Plasmid Mediated Enterotoxigenic Genes Among Shigella, Salmonella and Enteropathogenic E Coli

Nadarajah M, Vinayagamoorthy T & Balasubramaniam K

Dept of Biochemistry, Faculty of Medicine, University of Jaffna

Inadequate basic bacteriological facilities for routine testing has led to the treatment of bacterial infections very often without antibiogram determinations. This leads to a heavy selection pressure in the community and to the subsequent emergence of resistant bacterial strains. This project was to evaluate the incidence of antibiotic resistance genes carried by various genome.

Stool samples were obtained from 75 children under the age of 2 years admitted to General Hospital, Jaffna. These samples were analysed and were identified by Api (Appareils et procedes d'identification) system. Antibiogram of these isolates were determined by paper disc method. The ability of the

transferable genome was tested by conjugating with E coli K12 EC1005 (met, Nal<sup>R</sup>) and the plasmid profile of these strains were found by isolating the plasmid DNA by phenol extraction method.

Among these clinical isolates 80% possessed multiple drug resistance, of which 40% were found to carry transferable antibiotic resistant genes. More than 70% of these isolates were resistant to ampicillin and tetracycline, while 60% and 45% were resistant to chloramphenicol and trimethoprim respectively.

Among isolates that were resistant to ampicillin and tetracycline, 60% were found to transfer the Ampicillin resistance to E coli under laboratory conditions.

### A Preliminary Study of the Hypoglycaemic Effect of *Gymnema Sylvestre* (T. Sirukurrinja) in Diabetes Mellitus Patients

Thirumagal K, Seevaratnam S, Vinayagamoorthy T,  
Nageswaran S, and Balasubramaniam K.

Dept of Biochemistry & Dept of Medicine,  
Faculty of Medicine, University of Jaffna

Ayurvedic system uses *G sylvestre* (T. Sirukurrinja) as a drug in the treatment of diabetes mellitus. Earlier project study showed that *G. Sylvestre* extract given orally to one diabetic patient did reduce the blood sugar level. In this preliminary study, which was undertaken as a student project, eight

diabetic patients attending Kopay Hospital volunteered to stop their treatment and take *G. sylvestre* orally daily for 10 to 20 days. Their oral glucose tolerance tests were done which confirmed that they were suffering from diabetes mellitus. Their fasting blood sugar levels were in the range of 97.2



mg/100 ml to 226.8 mg/100ml and their 2 h blood glucose levels never reached the fasting blood glucose levels. Body weights were noted on 0, 10 & 20 days respectively. *G. sylvestre* was dried, powdered and packeted into 10 g samples and each patient was given 10 packets, one to be taken daily orally for 10 days. Modified oral blood glucose tolerance test was done at 0 and 2 h on the 10th day.

This treatment was continued for further 10 days and modified oral glu-

cose tolerance test was repeated and body weights noted

The results show that there was a very marked improvement in their Tolerance to glucose and in 4 of the 8 subjects, body weight also increased.

These results indicate that *G. sylvestre* has hypoglycaemic effect on diabetes mellitus patients and treatment of diabetes mellitus patients with *G. sylvestre* leads to an improvement in glucose tolerance with concomitant improvement in body weight in 50% of the patients.

### Some Aspects of Schizophrenia in Sri Lankan Tamils

Somasundaram D J, Yoganathan S, Ganeswaran T.  
University Psychiatric Unit, Tellipallai

Schizophrenia is a major mental health problem in Northern Sri Lanka due to its severity and chronicity in addition to having a high incidence among Tamils of Sri Lanka and South India (Murphy, 1968).

All patients admitted to the University Psychiatric Unit in the first six months of 1986 receiving a diagnosis of Schizophrenia were studied and some relevant aspects are presented.

Schizophrenia accounted for 61% of the admissions. The cohort consisted of 148 patients of whom 85 were females and 63 were males. For 75 patients (51%) this was the First ever admission to a psychiatric unit while 73 (49%) were re-admissions. In keeping with Schizophrenia being an illness of young adults, 56% were from the 20-34 age

groups. A family history of Schizophrenia was found in 63% of the patients, of these 49% had a first degree relation with the same illness and 14% had a second degree relation affected. The strong family history in our series suggests an important genetic contribution towards the etiology of the illness in our area.

First rank symptoms of Schneider are reliable and specific for the diagnosis of schizophrenia in the absence of organic illness. In addition, it is easily elicited and recognised, particularly auditory hallucinations in third person discussing or commenting, by the non specialist with some basic training. In our cohort, 76% had first rank symptoms and 64% had pathognomic auditory hallucinations. Diagnosis was based only

on behavioural changes in 4%. 55% had persecutory delusions, perhaps reflecting the present situation.

Paranoid schizophrenia was diagnosed in 43% of the patients, while 30% had chronic schizophrenia. There were 2 cases each of catatonic schizophrenia, post-partum schizophrenia and schizoaffective disorder. 60% of the patients were brought by relations for admissions, while 26% were sent by the consultants. 20% of the male readmissions came by themselves for admission reflecting development of some insight. Only 3% were referred by other medical officers while there were no referral by courts during the study period due to disruption of the judicial services.

Most patients were treated with Chlorpromazine (82%), sometimes in combination with Trifluoperazine (64%). 25% of the cohort were given E C T, gen-

erally for acute excitement, catatonic states and depression.

The mean period of stay was 21 days. The majority (75%) were discharged within one month and only 2% continued for over 2 months.

22% of the patients had recovered completely while 59% showed marked to moderate improvement on discharge, 15% were the same, while only one patient had become worse. 5 patients left the ward against [our knowledge ('escaped'). Readmissions and chronic patients showed less favourable outcome with 20% remaining the same despite treatment. There were no deaths during the study period.

Schizophrenia in Tamils of Sri-Lanka is thus characterised by high risk, strong family history, first-rank symptoms and a good short term but relatively poor long term prognosis, suggesting a high gene frequency in the population.

### Practice of Contraception During The Period Between Marriage and First Pregnancy

Ravindranathan P.

Final year Medical student: University of Jaffna.

Although contraception is widely practiced after few children, yet, information on its practice soon after marriage is lacking in Jaffna. This study is intended to supply this information.

130 primigravid mothers were interviewed in the ante-natal clinics and in the obstetric Units of General Hospital (Teaching) Jaffna.

None of these mothers have practiced any form of contraception after marriage. 81.5% of them had conceived

within a year of marriage. Their reasons for not practicing contraception were: desire to have a baby quickly (81.5%), older age (5.4%), combination of the above two (10.8%) and religious belief (2.3%)

92 mothers (70.8%) expressed a desire to practice contraception after their first pregnancy. 60.9% of them preferred oral contraceptives to other methods. Among the mothers, who did not

want to practice contraception after the first child, 13% did not have any knowledge of contraception, 21% considered it bad for the body and 26%

wanted to complete the family as quickly as possible.

"A child cements the bond of marriage" — (Saying in Jaffna).

### A Prospective study of Breast Lumps

Raveendran A.

Final year Medical Student, University of Jaffna.

One hundred female patients, who were admitted with breast lumps to Jaffna Hospital, were interviewed and the features of their lumps were analysed.

Breast lumps were found to be common in the 11 to 40 year age group (70%). Pain was a feature in 52% and 92% of those, who had pain were found to have a benign lesion. 98% of the

lumps were detected by the patients. Abscesses (35%), fibroadenoma (25%) and malignancy (17%) formed 77% of the lumps.

64% of the malignant lumps were in stage I and the others were in stage II. One of these patients was treated for eczema of the nipple, which later turned out to be malignant.

### Anaesthesia In The Face of Gas Shortage A Three Year Experience.

Sripathy A, Murugesampillai M & Ganeshamoorthy R.  
Dept of Anaesthesiology, G. H (Teaching) Jaffna.

The supply of oxygen and nitrous oxide from Colombo to General Hospital (Teaching) Jaffna, had not been adequate and prompt from July 1983 onward. Alternatives to inhalational anaesthesia were resorted to, to overcome this crisis.

34,308 administrations of anaesthetics during a period of three years from 1984 were analysed to find out, how successful we were in overcoming this problem of gas shortage. The percentage contribution of different techniques of anaesthesia were as follows: Inhalational anaesthesia was 89% in 1984 but fell to 55.6% in 1986. Total intravenous anaesthesia was 2% in 1984 but increased to 27.2% in 1986 and

Regional analgesia was 9% in 1984 which increased to 17.2% in 1986.

The supply of gases fell to half in 1985 and to one-third in 1986 from the quantity in 1982. The total number of operations had slightly decreased in 1984, but had returned to the 1982 figure in 1986.

Conservation of gases by eliminating wastage, resorting to total intravenous and regional analgesia whenever possible, use of ketamine, use of draw-over vaporizers, the adaptability of our Surgeons and the cooperation of our patients had helped the institution to overcome this crisis of gas shortage. There was no compromise made on the safety of these patients.

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## Dr. M. K. Ganesharatnam

08. 08. 1959 — 21. 10. 1987

The untimely death of Dr. M. K. Ganesharatnam under tragic circumstances on the 21st of October 1987, has created a void in many a place especially in the Teaching Hospital, Jaffna.

Dr. Ganesharatnam, popularly known as Ganesh, was born on the 8th of August 1959. We came to know him at St. John's College, Jaffna, as a contemporary and a sincere friend. He was an allrounder doing well in academics, sports and other activities.

He entered the Jaffna Medical Faculty with his first attempt at the G.C.E A/L examination in 1977. At the Faculty, he kept his college flag flying by maintaining a good academic record and by passing the final MBBS with second class honours.

After completing his internship at The Jaffna Teaching Hospital, he chose surgery for specialization and joined the University Surgical Unit as Registrar. Here, he showed great interest in acquiring new surgical skills and was conscientious and kind in the treatment of patients. He was also keen to impart knowledge to students. His relationship with the staff and the public too was

cordial. No wonder, he was loved and respected by all. Ganesh took an interest in many other activities in hospital. He was an Honorary Assistant Librarian of the Jaffna Medical Association, Secretary of the Jaffna Branch of the GMOA and a member of the Hospital Development Committee. In these capacities, he served efficiently and with responsibility.

When the military operation began in October 1987, Ganesh stayed back in the hospital quarters to look after the patients admitted with injuries sustained by shelling and gunfire. This, he did after leaving his mother at Nallur temple as a refugee.

On the 21st of October 1987, when the military operation took place in the hospital, our Ganesh was one of the many, who succumbed. Even though Ganesh stayed in the hospital to look after the injured at a time of crisis, it was not possible for anyone to help him, when he got the bullet.

Jaffna hospital has lost a conscientious, kind and efficient doctor. We have lost a sincere friend. But his memory will and remain with us for ever.

Dr. A. Sripathy &  
Dr. S. Raviraj.

## Dr. Samuel Gunaratnam Luther

18. 10. 1924 — 26. 05. 1987

Dr. S. G. Luther obtained his MBBS degree from the University of Ceylon, Colombo in 1950 and his DTM & H (Ceylon) in 1963. He had served as a Government Medical Officer in Jaffna, Kandy, Colombo, Valaichenai, Bogawanthalawa, Dambulla, Kalmunai, Mannar and Point-Pedro, which was his last station before retirement. He entered into general practice after his

retirement from government service. He was a lovable and a friendly doctor. On that fateful 26th day of May 1987, while he was talking to his friend near the gates of his friend's house, a shell fired by the Sri-Lankan Army killed him and his friend on the spot. He is survived by his wife and two sons. May God protect his family from any more disaster.

## Dr. Kathirgamu Parimelalagar

09. 09. 1947 — 21. 10. 1987

Dr. K. Parimelalagar obtained his MBBS degree from the University of Peradeniya in 1980. He did his internship at General Hospital (Teaching) Jaffna and went to Vavuniya as Medical Officer of Health for two years. He came back to Jaffna Hospital in 1984, as Medical Officer at the Out-Patients Department. He was an easy-go type of person and was able to strike a

friendship with anyone. On that fateful 21st day of October 1987, he was shot dead near the gates of the Jaffna Hospital. His body was cremated in the hospital along with the bodies of several others, who met the same fate. He is survived by his wife. May God give her the courage to face this tragic loss.

## Dr. Kathamuthu Vishvaranjan

03. 05. 1953 — 21. 10. 1987

Dr. K. Vishvaranjan had his secondary schooling at Wesley College and at Royal College in Colombo. He obtained his MBBS degree in 1977 and did his internship at Base Hospital, Kalutara. He had served as Medical Officer of Health at Kekirawa and at Rambukana. After a period of service as Medical Officer at the Lady Ridgeway Hospital in Colombo, he came to Jaffna Hospital as Medical Officer at

the Out-Patient Department in July 1983. He was an energetic and a kind doctor. He was a source of courage and inspiration to the people around him. While he was on his way home from the hospital, he was shot dead during a military operation by the Sri-Lankan Security Forces. He leaves his wife Sivasunthary and his infant son Rajaratnam. May God protect his wife and son from any more disaster.



## Dr. Arunasalam Sivapathasundaram

### An Appreciation

(23. 11. 1939 — 22. 10. 1987)

Dr. A. Sivapathasundaram was born on 23. 11. 1939 at Puloly in Point Pedro in the Northern Province of Sri Lanka. He passed out as a Doctor in 1963 from the University of Colombo. He obtained his D. C. H. (Ceylon) in April 1970 and M. R. C. P. (U.K) in 1977. As a Doctor he had served in Ratnapura, Baian-goda, Ragama, Kuliypitiya, Matara, Anuradhapura, Lady Ridgeway and Chilaw Hospitals before coming to the North to serve as Paediatrician at Base Hospital Point Pedro on 01. 01. 1974. He assumed duties as Consultant Paediatrician in the Teaching Hospital, Jaffna on 02. 02. 1983 and served in this Institution till a burst of gun fire ended his life on 22. 10. 1987 in the Hospital.

Siva my best friend and Colleague is no more. Dedication to duty and cause, courage in adversity, simplicity, honesty and integrity are the attributes of Dr. A. Sivapathasundaram. When the Hospital was the target of repeated shelling, he was one of those who were against closing or reducing the work in the Hospital. I can still remember how he marched in the vanguard of a long procession of the Hospital employ-

ees to the office of the Government Agent. There, when the Government Agent promised that he would contact Colombo and inform us later, Siva was the person who said "we did come all the way to get an assurance from Colombo that the Hospital will not be shelled again. We will not leave your Office till we get that", and sat down on the floor. The rest of us followed him. Siva left the Secretariat only after Colombo was contacted (Government Agent's telephone was the only telecommunication link between Jaffna and Colombo during this period). This just shows Siva's tenacity. He would come cycling; or even walking to the Hospital whether there was curfew or not to look after the sick children in the Hospital. During the critical period he was the Paediatrician on whom the Hospital depended for patient care. This became clearly evident after his death.

Whenever a child was referred by Siva, I always knew that the child would need surgery, for such was his clinical acumen. He never failed to take responsibility for the shortcomings of his staff. On such occasions he used to contact the Surgeon personally and

explain. He took keen interest in the activities of the Jaffna Medical Association. He was elected Secretary to the Association in July 1987. He demonstrated his ability to coordinate and enhance the educational and other activities of the J. M. A during his tenure of office till October 1987.

He followed the Gandhian principles sincerely without making any noise about it. He instilled a sense of responsibility and a spirit of service in those who worked with him. He never sacrificed principles for expediency. He could have amassed wealth with his clinical ability and popularity, but he elected to serve the poor patients in the Hospital. He was honest in his words and deeds. He never failed to express his views. These attributes have on occasions brought him into conflict with those in power and authority. He was never perturbed by the outcome of such conflicts. The community requires men of Siva's calibre at this juncture but fate has decided otherwise.

On the fateful day (22nd October 1987) Siva was the only Consultant who braved the curfew and cycled to the Hospital to treat his patients. Before leaving his house, he had promised his wife and children that he would come back to take them to a safer place away from the Jaffna Town which was the area of intense military operations. When he arrived at the Hospital, he realised that some calamity had occurred on the previous day in the Administration Block where staff and patients took shelter whenever there was shelling in the vicinity of the Hospital. He walked into the Administration Block to see what had happened to the large

number of staff and patients. I am told that he had come there to see me particularly. He took the risk which he probably thought was not one inside a hospital and he adopted all measures to avoid any mis-understanding of his honest intentions in the mind of anyone who saw him by taking three staff nurses in uniform, the Stethoscope round his neck and his two arms raised. All his precautions were in vain and the cruel fate took him away from us, from his patients, from his wife and three children (two of these children require care like his patients) and from his relations and friends.

It agonises my mind to think that I could not help a person who came to save me and when that person who needed a Surgeon's attention was only a few feet away from me. This friend of mine was laid to rest unwept, unhonoured and unsung in the absence of his friends, family or relations. I do hope and pray that I will not be placed in the same predicament again in my life. This should not happen in the history of mankind.

Although fate was unkind, Siva will have a place in the Kingdom of Heaven for he led a life that was close to God in this world. May his "AATHMA" be with Lord Muruga, which was the word he uttered last in this world.

May Lord Muruga give his wife and children courage and succour.

**Dr. S. Ponnampalam**  
Surgeon  
General Hospital (Teaching),  
Jaffna.



## NEWS AND NOTES

### Honorary Life Members :

Dr. N. A. Ranjithan and Dr. S. Kulathungam of U. S. A, were conferred Honorary Life Membership by the Jaffna Medical Association.

\* \* \*

### Academic Sessions :

The weekly academic sessions were suspended since September 1987 due to the war-like situation in Jaffna.

\* \* \*

### Examination Success :

Dr. S. Selvakumaran was successful at the M. S. examination held in August 1987 by the PGIM of Colombo. He has now been appointed as Assistant Surgeon to the University Surgical Unit of General Hospital (Teaching), Jaffna.

\* \* \*

### Retirement from Government Service :

Dr. V. S. Pathmanathan MBBS (Cey), D. Path (Eng), Consultant Pathologist at General Hospital (Teaching), Jaffna, retired on 8th March 1987. He is a Past President of the Association and is now a member of the Board of Trustees.

\* \* \*

### JMA News Letter :

The publication of this monthly News Letter was suspended in October 1987 due to the unsettled situation in Jaffna.

\* \* \*

### Jaffna Medical Journal :

The policy of the Association to publish this Journal at least twice a year, could not be executed in 1987, due to the war-like situation in Jaffna. Despite several constraints, the Association has managed to publish this single volume combining the two numbers. The Editor regrets the delay in publishing this Journal.

\* \* \*

**Vacant Posts at General Hospital (Teaching), Jaffna :**

Consultant Posts in Paediatrics, General Medicine, Cardio-Thoracic Surgery, Orthopaedics, and Neuro-Surgery remain vacant. There is also an acute shortage of Senior House Officers in all units and Medical Officers at the OPD. Furthermore, Two General Surgeons and a Neuro-Physician are due for retirement shortly. These vacancies have affected the training of medical under-graduates and the service function of the hospital.

\* \* \*

**"Save The Jaffna Medical Faculty" Campaign :**

The lectures and clinical work came to a halt in October 1987. The shortage of Teachers is so acute, that the Faculty is on the verge of collapse. This had made the students to start a campaign code named "Save The Jaffna Medical Faculty". They urged the young graduates of the Faculty to join. Their appeal did not bring the desired effect. They also published a booklet and sent it to several expatriates. Only a few cared to acknowledge it and none had responded to it in a positive manner. During an informal discussion, a Professor compared this situation with that of an old car running on bald tyres without a spare wheel. It is true, that when the Professors retire, there will be no Senior Lecturers, who will be senior enough and experienced to take over the professorship.


It is hoped that when peace comes to North, the staff situation will improve. Till then, we have to carry on. It is in a crisis, that the true nature of an individual or an institution is revealed.

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patients were already significantly reduced.  
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significant reduction in anxiety scores, and  
15 days for placebo to achieve this effect.

FRISUM, E.: Clobazam und Diazepam in der ambulanten psychia-  
trischen Behandlung neurotischer Patienten. Therapiewoche 30 (1980),  
S. 1-5.

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