

VOL. 48 No. 1 MARCH 1994

ISSN 1171-0195

NEW ZEALAND JOURNAL OF

MEDICAL LABORATORY SCIENCE



OFFICIAL PUBLICATION OF THE
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Subscriptions to the Journal for non-members requiring delivery in New Zealand is \$NZ33.00 for 1 year surface mail paid. Single issues are \$NZ12.00 surface mail paid.

Subscriptions to the Journal for non-members requiring delivery overseas is \$NZ39.60 for 1 year surface mail paid. All subscriptions except for single issues are due in February.

DIRECTIONS FOR CONTRIBUTORS

From Vol. 36 No.1 all papers published will be in the form known as "Vancouver Style" or Uniform Requirements for Manuscripts submitted to Biomedical Journals. Full details may be found in the New Zealand Journal of Medical Laboratory Science, Vol. 45, No. 4, page 108 to 111 or from the Editor.

Intending contributors should submit their material to the Editor, M. Gillies, Microbiology Laboratory, Auckland Hospital, Auckland, New Zealand. Acceptance is at the discretion of

the Editor, and no undertaking is given that any article will be published in a particular issue. The copy deadline for each issue is the first of the month prior to the month of publication.

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Inquiries regarding advertising rates and material for advertising should be addressed to the Advertising Manager, Trish Reilly, M.N.Z.I.M.L.S., 48 Towai St, St Heliers, Auckland 5, Phone 575 5057

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The months of publication for 1994 are March, May, August and November.

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Dr Diane Webster — National testing centre
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IMMUNOLOGY:

The many applications of PCR techniques

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"Working Together" — Public & Private Microbiology
Laboratory role in infection control
History and future of C.A.P.D. and haemodialysis
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CURRENT COMMENT

THE HEALTH REFORMS AND LABORATORY MEDICINE

John Aitken

Princess Margaret Hospital, Christchurch

The Government has signalled massive changes to the Health System. These changes will be mirrored in different delivery systems for laboratories. Much of the Laboratory groundwork has already been done by Raymond C. Bartlett and his co-workers in the U.S., modelled on industrial experience with continuous quality improvement (CQI)

The Role of the Laboratory:

Over the last 20 years the role of the Laboratory has undergone redefinition. This global reappraisal has paralleled the evolution of the Health Service into the Health Industry. It is therefore important to understand the future function of the Laboratory in terms of an Industrial Division rather than as a separate Service.

Previously the laboratory operated as an auxiliary Hospital service, providing test results from samples submitted to the laboratory by Clinical Services. The laboratory defined quality control in terms of an internal monitoring of processes, aimed at provision of a test result within the limits of the analytical process.

The clinical relevance of this result was often seen as secondary to the goal of accurate and precise internal measurement.

The pressure for reform of laboratory function along the lines of industrial quality assurance has largely come from the work of the Microbiologist, Raymond C. Bartlett. His efforts to transfer concepts of C.Q.I. from the factory floor to the laboratory bench span 15 years, and are now an integral part of U.S. laboratory medicine.

By using industrial models, and with constant reference to the work of Deming and other pioneers of product quality, Bartlett has been able to simplify understanding of laboratory processes. It is important to understand that this reappraisal of functions and goals arose from within the laboratory, and was not forced on the profession from external sources. In other words, there was a perceived need for change on the shop floor.

The Need for Change

No one in a laboratory, jammed into an endless spiral of downsizing in tandem with an increasing workload, would deny the need for change in the way we do things. The result of pouring money into a system which lacks positive incentives to economise is a collective paralysis of the will to restructure. The reluctance of Management to implement dramatic change, with employee and customer involvement, dooms the laboratory staff to a path leading down through stages of ignorance, indifference, helplessness, fear, and finally to system meltdown.

I believe there is a better way to do it.

The Process of Change

There is a desperate need to re-evaluate the way we do things. Because of the attitude that the laboratory is a service, we have painted ourselves into a corner. We are not alone. In the Hospital there are any number of services that operate without clear reference to each other. The relationship between laboratory and nursing staff has historically not been good. These lateral linkages require work.

We need to quickly move from our perception of the Laboratory as a separate service within the Hospital environment, to being a part of the Hospital team. This may seem easy when Heads of Departments already network at weekly meetings, but these meetings do not change the employees' perception of their function on the laboratory bench.

We will need facilitators, selected from within Departments for their motivational and communication skills, and trained in aspects of continuous quality improvement. The changes will need to come from within.

We need to reduce our workloads. Bartlett's ideas grew from a distaste for waste, and much of his early work was aimed at reduction of useless and inappropriate testing. To achieve this goal, liaison with clinical teams becomes essential. As clinicians become more indoctrinated on cost effective laboratory use, so it becomes easier to extend the influence and work of the laboratory into the hospital environment.

Later work on CQI has consolidated this beach head, and the use of specific outcome indicators will enable the laboratory to begin to analyse the effect of result production on patient outcome. The laboratory will be seen as part of a larger team. This extension of influence will allow the laboratory to be seen as a cost effective division of a health industry team.

This external perception is integral to workload reduction.

Our attitude to Quality Control needs to be reassessed in the context of patient outcome. Simply, we need to start doing the right things first time around, and stop worrying about doing the wrong things. We waste a lot of time because we try to do everything; our quality assurance needs to be directed towards having a positive impact on patient care.

Reduction in workload, by itself, is a small step. The process of change must lead onto measurement of progress in terms of patient outcome. In other words, staff must understand their job in the context of a larger process.

Once this is achieved, we are well on the way towards implementation of the Health Reforms within the laboratory.

NZJ Med Lab Science 1994; 48 (1) : 6-12

Antiphospholipid antibodies: Clinical and laboratory features of a unique family of autoantibodies.

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Key Words Anticardiolipin antibodies, antiphospholipid antibodies, lupus anticoagulant, thrombosis, fetal death, β_2 Glycoprotein 1, Apolipoprotein H.

Introduction

Antiphospholipid antibodies (aPL) are a family of autoantibodies that fall into 3 significant groups 1) anticardiolipin antibodies (aCL), 2) Lupus anticoagulant (LA), 3) Biological False Positive test for syphilis (BFP). Characteristically antiphospholipid antibodies react with negatively charged phospholipids. Patients with aPL suffer from a variety of thrombotic complications including, stroke, pulmonary embolism, transient ischaemic attacks, deep vein thrombosis, and migraine-like headaches. In addition there is a strong association between aPL and recurrent fetal death.

The Biologically False Positive Test for Syphilis.

Historically the Biologically False Positive test for syphilis was the first aPL to be identified. Flocculation type screening assays for syphilis such as the VDRL or RPR use an antigen comprised of a mixture of phosphatidyl choline, cholesterol and cardiolipin. It is the cardiolipin in this mixture with which aPL react. Cardiolipin is a negatively charged phospholipid so named because it was first isolated from heart tissue (1). A BFP is diagnosed when one of the screening assays for syphilis is persistently positive (for 6 months) in the absence of a *Treponemal* infection (past or present) (2). The absence of *Treponemal* infection is demonstrated by the *Treponemal* specific assays such as the TPHA being negative. The persistence of the false positive reaction is important in the diagnosis of this condition as a number of non-*Treponemal* infective agents have been known to cause a transient false positive result in syphilis screening assays, particularly during the acute phase of infection (2). At this point it should be pointed out that although the antibodies which cause a true positive reaction in the VDRL and RPR during syphilitic infection also react with cardiolipin they are not considered to be part of the antiphospholipid autoantibody family.

Lupus Anticoagulant

The Lupus Anticoagulant is an aPL which is detected by its ability to prolong phospholipid dependent coagulation assays. Lupus anticoagulant was discovered in 1952 by Conley and Hartmann (3) in patients with the autoimmune disease Systemic Lupus Erythematosus (SLE). The term lupus anticoagulant has turned out to be a misnomer for two reasons

- 1) Although originally identified in patients with SLE, LA is now more commonly found in patients who do not have this disease,
 - 2) Despite their ability to prolong coagulation assays LA are not associated with haemorrhagic complications except when another coagulation deficiency is present (4).
- Despite these considerations attempts to change the name of LA have not been successful (5).

The identification of LA requires 3 steps (6)

- 1) A phospholipid dependent screening assay such as the Activated Partial Thromboplastin Time (APTT), the Kaolin Clotting Time (KCT), or the Russell Viper Venom time (RVVT) must be prolonged.
- 2) The prolongation of the above tests must be due to an inhibitor (not a deficiency of one of the coagulation factors). This is demonstrated by mixing studies in which normal plasma is added to the patients plasma usually at 1:1 ratio.

The addition of normal plasma will shorten the clotting time in plasmas with a factor deficiency, but not those with LA.

- 3) The inhibitor must be shown to be an antibody reactive with phospholipids (not an antibody against one of the coagulation factors). This is demonstrated by the addition of phospholipid to the test plasma during the coagulation assay. The phospholipid can be added either as lysed platelets or as purified phospholipid vesicles. The addition of phospholipid will correct the prolongation of a clotting assay due to LA but not those due to factor inhibitors. The most common of these assays is the Platelet Neutralisation Procedure (PNP).

The above point illustrates one of the major drawbacks of testing for LA. That is, the phospholipid dependency of LA means sample preparation is crucial to the success of the testing procedure. All cells and cellular debris which could act as a source of phospholipid and neutralise the LA must be eliminated from the sample prior to assay. This requires either double centrifugation of plasma samples or filtration of the samples through 0.22 μ m filters as soon as possible after specimen collection. For the same reason any degree of haemolysis in plasma samples to be assayed is totally unacceptable.

In addition to idiopathic LA a number of drugs, including procainamide, chlorpromazine and hydralazine, are known to induce LA (7). Drug induced LA differ from idiopathic LA in that they are less common, are almost always immunoglobulins of the IgM class, are seldom associated with thrombosis or fetal death and resolve upon withdrawal of the drug responsible (4,7). It is important to distinguish between drug induced and idiopathic LA because the latter frequently require treatment whilst the former do not.

The Lupus Anticoagulant cofactor.

Several workers have demonstrated that the addition of normal plasma to some LA containing samples causes a significant increase in the prolongation of coagulation assays above that caused by the LA plasma alone. This effect occurs because LA require a cofactor to bind to phospholipid and in some patients the amount of this cofactor is reduced or it is functionally inactive. There is no consensus as to the identity of the cofactor with three early studies suggesting it might be prothrombin (8), a gamma globulin (9) or an unidentified protein of molecular weight of 200KD (10). In a recent study Bevers et al (11) also suggested that human prothrombin was the LA cofactor. Interestingly they demonstrated that prothrombin from other species would not act as cofactor to human LA. However, in the absence of further confirmatory studies the identity of the LA cofactor remains unclear.

Anticardiolipin Antibodies

Several groups noted that many patients with LA also had a BFP test for syphilis. Both of these antibodies were known to be aPL therefore, it was assumed that the same antibody was responsible for both activities and the syphilitic screening assays were merely insufficiently sensitive to detect all LA. Consequently, a Radio Immuno Assay (RIA) was devised as a more sensitive test to measure these antibodies (12). The

antigen used in this assay was cardiolipin and the antibodies detected are called anticardiolipin antibodies (aCL). Although a few laboratories still use RIAs most now use ELISA systems to measure aCL (13,14).

Cardiolipin is found only in the mitochondrial membrane of eukaryotic cells and therefore is never exposed to circulating antibodies (15). As a result it is unlikely that cardiolipin is the antigen for aCL *in vivo*. We, and others, in studies examining the reactivity of aCL with other phospholipids, have shown that these antibodies often cross-react with other negatively charged phospholipids such as phosphatidyl serine or phosphatidyl inositol (16,17). Both of these phospholipids are found in the plasma membrane of mammalian cells. This has led some workers to suggest that Phosphatidyl serine should replace cardiolipin as the antigen in solid phase assays for antiphospholipid antibodies (17). However, this idea has not received general acceptance and cardiolipin remains the antigen of choice in most laboratories. Some laboratories use assays employing several phospholipid antigens.

Several international workshops have been held to enable the standardisation of the aCL ELISA (18,19). As a result a set of standards, the KAPS (Kingston Antiphospholipid Antibody Study) standards, has been produced and is available for purchase from Dr E N Harris (University of Louisville, Kentucky). The KAPS standards use the units GPL and MPL where one GPL or MPL unit is equal to 1 µg of affinity purified antibody of the IgG or IgM class respectively (19). Samples containing greater than 4 GPL or MPL units are considered to be positive. The KAPS standards are now used in most laboratories and clinical results should always be reported using these standards.

The Anticardiolipin Antibody Cofactor

Anticardiolipin antibody assays have suffered from excessive inter-laboratory variation (20). Only those assays employing 10% bovine serum as diluent and blocking agent have demonstrated reliability (18). Other commonly used blocking agents such as BSA or gelatin solutions did not give reliable results (18). It is now known that aCL do not bind to phospholipids alone, they require an additional factor (Figure 1). This cofactor has been identified as the serum anti-coagulant protein β_2 Glycoprotein 1 β_2 GP1 (21,22). This protein is also known as apolipoprotein H. Patient serum samples are normally diluted 1:100 prior to aCL assay and at this dilution the patients own β_2 GP1 is no longer effective (23). Thus the bovine serum used as the assay "blocker" and diluent provides the extra cofactor which is necessary for aCL binding. Diluents such as solutions of BSA or gelatin do not contain β_2 GP1 and therefore aCL assays employing these agents underestimate the amount of aCL present. We have also demonstrated that the amount of aCL cofactor activity present in bovine serum differs significantly between batches (24). Thus it is important to test different bovine serum batches to ensure an adequate supply of the cofactor in the test. A large part of inter-laboratory variation of the aCL assay is likely to be eliminated by the use of standardised batches of bovine serum.

The discovery of the aCL cofactor also has important clinical ramifications. As described above aPLs produced in response to syphilitic infection differ from auto-antiphospholipid antibodies in that the former are not associated with thrombotic disease or recurrent fetal death whereas the latter are. An important finding which may explain this difference is that aPL from syphilitic infection do not require the presence of β_2 GP1, instead they bind directly to the phospholipid (23,25). Indeed β_2 GP1 inhibits these aPL from binding to phospholipid (25). Thus it seems likely that β_2 GP1 plays some role in the pathogenesis of aPL related disease.

Heat Induced Anticardiolipin Antibodies

Heating normal serum samples to 56°C for 30 minutes (for example, as would be done for complement inactivation prior to VDRL testing) results in the induction of antibody reactivity

with cardiolipin. This phenomenon has been reported by several groups and occurs in up to 80% of all otherwise non-reactive serum (26,27). That the heat induction of aCL is a specific event was demonstrated by Hasselaar et al (27) who found that similar treatment caused no alteration in the serum levels of tetanus, DNA or lymphocytotoxic antibodies. Heat induced aCL are believed to be natural antibodies which are normally bound to an inhibitor. Heating separates the inhibitor from the natural antibody and allows their binding in aCL assays (26). Although these antibodies are not clinically significant it is important to remember this phenomenon when preparing serum samples for aCL analysis in order to avoid false positive results. It has also been shown recently that bovine serum contains heat inducible aCL (28). This also has an important implication for the assay of aCL. The use of heat to thaw the bovine serum to be used as the assay blocking agent may result in the production of heat-induced bovine aCL. These antibodies can then bind to the antigenic sites on the cardiolipin inhibiting the binding of clinically relevant aCL from patients serum to the cardiolipin. The result of this inhibition will be false negative results in the aCL assay (28).

The Inter-relationship of Antiphospholipid Antibodies

Although it was initially believed that aCL and LA were the same antibody we and others have now demonstrated that they are different antibodies. This has been achieved both by showing that many patients who have aCL do not have LA and visa versa and also by chromatographically separating the two antibodies (29,30,31). It is important to recognise that both aCL and LA are different antibodies because both antibodies are risk factors for fetal loss and thrombotic disease. Thus both antibodies must be tested for before aPL can be eliminated as a possible cause of recurrent fetal death or thrombotic disease.

The Cross-Reactivity of Anticardiolipin Antibodies

Much attention was focused in the last decade on the cross-reactivity of aCL with nucleic acids (32,33). This led to the suggestion that the epitope for aCL was a repeating phosphodiester group separated by three carbon atoms. This structure is found in both DNA and cardiolipin (32). However, other workers have found that many serum derived polyclonal aCL failed to demonstrate significant cross-reactivity with DNA (34,35). It has been suggested that the observed cross-reactivity of monoclonal aCL may be due to low affinity binding of these antibodies to a variety of antigens. Conversely, aCL derived from patients with autoimmune disease are believed to have high affinity for cardiolipin. We and others have demonstrated considerable cross-reactivity of aCL with other polyanions in particular the glycosaminoglycans heparin, heparan sulphate, and chondroitin sulphate (36,37,38), (Figure 1). Inhibition studies also demonstrate that these cross-reactive antibodies are not always low affinity. These results imply that electrostatic forces brought about by repeating anionic sites serve as the cross-reactive antigen/epitope for polyclonal aCL. Alternatively, the aCL cofactor β_2 GP1, which is known to bind to DNA may mediate the apparent cross-reactivity of aCL with DNA.

Clinical Associations of Antiphospholipid Antibodies

Antiphospholipid antibodies are associated with thrombotic disease with the thrombosis occurring in almost any vascular bed. Originally conditions such as, pulmonary embolism, renal thrombosis, thrombotic stroke and thrombosis of the deep vessels of the limbs were associated with aPL (39). More recently a much wider variety of thrombotic conditions have been reported in association with these antibodies including neurologic complications such as transient ischaemic attacks, amaurosis fugax, migraine-like headaches and multi-infarct dementia, and cardiac disorders including valvular lesions and coronary artery occlusion (39). Other organs may also be affected by antiphospholipid antibodies

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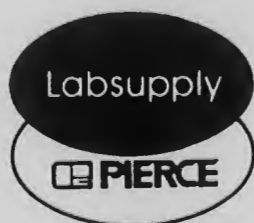
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Figure 1

The ability of polyanions to inhibit aCL binding was tested by incubating increasing concentrations of polyanions (X axis) with a standard dilution of aCL for 1 hour prior to measuring aCL binding by ELISA. Values shown in the figure represent mean percent inhibition (Y axis) of anticardiolipin binding for duplicate samples in the presence of the indicated polyanion.

A) IgM specific responses. B) IgG specific responses.

Cardiolipin (———)
 Heparin (-●●-)
 Heparan Sulphate (-●-)
 DNA (●●●●)
 Phosphatidyl Serine (- - -)
 Phosphatidyl Ethanolamine (·····)

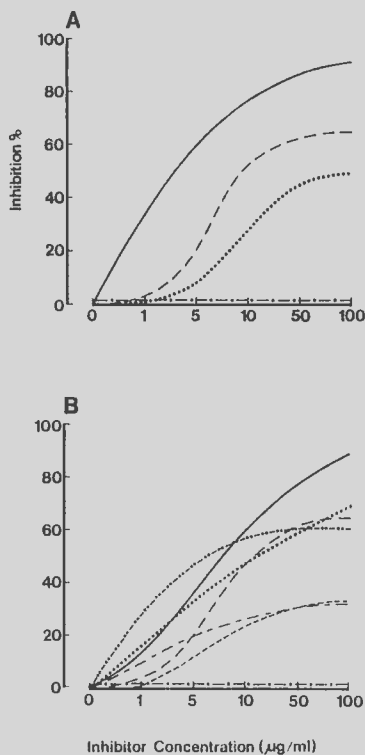
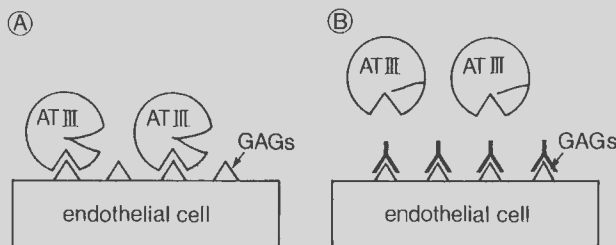


Figure 2

A schematic model indicating how the binding of aPL to glycosaminoglycans (GAGs), such as heparin or heparan sulphate, on the surface of vascular endothelial cells could inhibit the activation of antithrombin III.

- A) Binding of antithrombin III to endothelial cell GAGs is necessary to activate antithrombin III as an anticoagulant.
- B) Binding of aPLs to endothelial cell GAGs could prevent the activation of antithrombin III by these molecules leading to uncontrolled coagulation.



including the skin and adrenal gland where the manifestations are levido reticularis and Addisons disease respectively (39).

A major area of clinical interest is the association of antiphospholipid antibodies with recurrent pregnancy failure. The prevalence of aPL in the general obstetric population is approximately 2% (40). In contrast the incidence of these antibodies in women with recurrent miscarriages is 41% and in women with otherwise unexplained stillbirth it is 29% (41). Other pregnancy complications associated with aPL are gestational hypertension, intra-uterine growth retardation and chorea gravidarum. These obstetric complications associated with aPL are also believed to result from thrombosis with the thrombosis posulated to occur in the utero-placental circulation.

The association of aPL with thrombotic disease has lead to the proposal of a unique syndrome, the Antiphospholipid Antibody Syndrome (APS) to describe patients with these antibodies (42). To fulfil the criteria for diagnosis of APS a patient must have at least one aPL persistently and have a thrombotic complication or fetal loss. Fetal losses occurring in association with aPL may be either recurrent miscarriages (at least three in consecutive pregnancies) or late fetal deaths occurring in the second or third trimester of pregnancy.

Treatment of Patients who have Antiphospholipid Antibodies

Patients with recurrent life threatening thrombosis (eg pulmonary embolism) are usually maintained on oral anticoagulation with warfarin. Many patients with aPL also have SLE and may be receiving corticosteroids in low dosage (5-10mg/day) to control their SLE. This treatment may also ameliorate the levels and effects of aPL but it is not usually administered for this purpose. In pregnancy a variety of treatments have been proposed ranging from the use of high dose corticosteroids (up to 100mg/day) which has significant side-effects to low dose aspirin (1/4 of a tablet/day) which has no documented side-effects. None of the treatments for this condition have been verified by controlled clinical trials. It is important to recall when testing for aPL that diagnosis of APS particularly during pregnancy may result in patients being treated with potent drugs. Thus laboratory testing should be carried out with utmost diligence.

Mechanisms of Action of Antiphospholipid Antibodies

Injection of pregnant mice with purified aPL has been demonstrated to result in fetal loss (43). These experiments demonstrated that not only are aPL associated with fetal death but they also caused fetal losses. The mechanism by which they induce thrombosis and fetal loss still remains unclear. Several mechanisms have been proposed. Originally it was believed that aPL disrupted the balance between the vaso-dilating substance prostacyclin and the vaso-constricting thromboxane (44). However, there is now much conflicting evidence surrounding this theory and it is no longer considered to be the major cause of thrombosis in patients with aPL (45). Other workers have shown that some but not all aPL can inhibit the Protein C/ProteinS/Thrombomodulin anticoagulant pathway (46). We have recently demonstrated that some aPL can inhibit the antithrombin III anticoagulant pathway (Figure 2) (37). This pathway is the principle anticoagulant system in man. None of the above mechanisms can account for all of the thrombotic events seen in association with aPL but each may account for the events seen in some individuals. The importance of the aCL cofactor, β_2 GP1, is a phospholipid dependent anticoagulant. It is likely that the formation of an immune complex involving phospholipid, an aPL and β_2 GP1 would inhibit the anticoagulant activity of the β_2 GP1 (Figure 3). This may lead to thrombosis. This is substantiated by the finding that aPL from patients with syphilitic infection do not require β_2 GP1 as a cofactor, and these patients do not suffer thrombosis (25). In contrast cofactor dependent aPL are associated with thrombosis (23,25). This correlation between

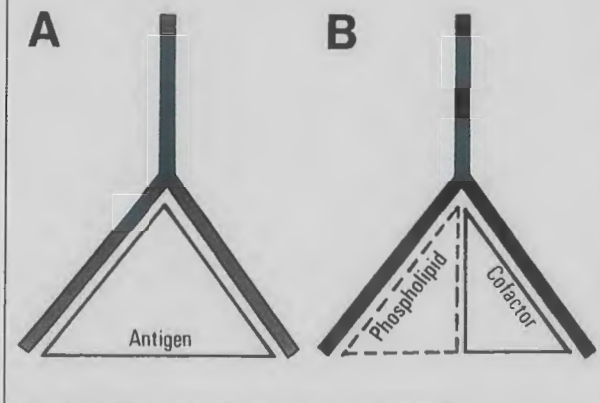
cofactor dependent aPL and the occurrence of thrombosis suggests that β_2 Gp1 does play a central role in the pathogenesis of antiphospholipid antibody syndrome. However, further work is required to establish whether this is the major mechanism of action of aPL.

Much work remains to be done to elucidate the mechanism by which aPL cause both thrombosis and fetal death. However, it is now clear that these antibodies represent a clinically significant entity and many research groups around the world are concentrating on determining not only how aPL induce thrombosis and fetal death but also on finding the most appropriate method for detecting these fascinating antibodies.

Figure 3

Recent studies have demonstrated that aPL from autoimmune patients are unusual in that they require a cofactor to bind to phospholipids.

- A) Most antibodies bind directly to their antigen without the involvement of any other molecules.
 B) Antiphospholipid antibodies bind to a complex of phospholipid and cofactor, β_2 GP1. Formation of this trimolecular complex may inhibit the normal physiological function of the cofactor.



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James Edward Le Grice (1951-1993)

I have a very clear memory of my first meeting with Jim Le Grice. I had gone to The Princess Margaret Hospital on a stormy May morning in 1978 for training in trace metal analysis. The person responsible for my training had long hair, earrings and clothes that were a little different to those normally worn by laboratory staff at that time. However, first impressions are often deceptive. Jim quickly demonstrated his proficiency in trace metal analysis and a strong desire to ensure that I had a good knowledge of the subject. Close to lunch time Jim excused himself for the day. I later learnt that he had cycled across town, in terrible weather, to attend lectures at Canterbury University. The result of this first meeting was a friendship that extended to our respective families, and embraced both our professional, social and recreational lives.

Jim spent his early years in Auckland, and attended Mt. Albert Grammar in form three. During the year, the Le Grice family shifted to Christchurch, where Jim completed his secondary education at Papanui High School. His final year was one of distinction, with Jim being head boy and dux of the school.

During his last year or two at school, Jim started to enjoy an ever increasing social life. This became one of many notable characteristics of his life. Many people have enjoyed socialising with Jim since then.

On completing his seventh form year, Jim was unsure of his future career moves. However, on seeing an advertisement for medical laboratory technology training at Christchurch hospital, he decided to apply. He later admitted that he had no real knowledge of what the job involved. Jim was accepted for training, and started in 1970. A regular part of Jim's training involved lunch meetings at the Grenadier hotel, close to the hospital. However, Jim completed his exams successfully, and went on to major in clinical biochemistry gaining his specialist certificate in 1974.

Jim spent a year at Pearson Laboratory before deciding in 1976 that a degree in chemistry would be useful. He attended Canterbury University full time for a year, until family commitments, in the form of Edward, the first of the three Le Grice children to arrive, necessitated a return to some form of paid employment. Jim returned to the hospital system, working part time at the Princess Margaret Hospital, while continuing with his studies at University. In 1979, Jim was offered the position of Charge Technologist in Biochemistry at Pearson Laboratory. He accepted the position on the basis that he would be allowed to complete his degree. This he did, and graduated as a Bachelor of Science (Chemistry) in 1980. A good reward for hard work, often under difficult circumstances.

Jim retained his position as head of biochemistry through the transition of Pearson Laboratory to Canterbury Pathology and then Medlab South Limited. The final transition resulted in the charge position being a shared position. This had the potential of being a difficult and possibly unworkable situation, but Jim and Richard worked closely together to ensure that department responsibilities were shared and their respective strengths were well utilised.

During the last 14 years I have seen the biochemistry department at Pearson Laboratory (and then Medlab South) develop from a very ordinary routine department in a private laboratory to a department that was recognised by peer laboratories, as providing excellence in clinical biochemistry. Under Jim's direction, suitable automated equipment was chosen, and methods updated, which enabled the laboratory to expand their service while also improving their quality.

I believe that the responsibility that Jim assumed in 1979 resulted in a change in his approach to the profession of Medical Laboratory Science. He applied his considerable academic skills, enthusiasm and organisational abilities to his chosen vocation. During the past 10 years, Jim enthusiastically supported the affairs of the Institute. Very few meetings went past, either annual meetings, South Island

Seminars or Biochemistry meetings, when Jim didn't present at least one paper.

At the Nelson conference in 1987 Jim was elected onto council. During the next six years he worked hard, on behalf of all members of the Institute, to help ensure that the Institute provided the services that members expected. In particular, Jim had a special interest in Education. He chaired the committees on education, examinations and fellowship. He was also a member of the Board of Studies at Otago University, which oversees our degree course. While Jim was one of many who actively worked to achieve the reality of a degree course, this achievement, coupled with his contributions to the format of the course, were probably the achievements on Council that he was most proud of.

The most recent Institute position that Jim held, was secretary and Council representative on the 1993 conference organising committee. This is a position that he filled with ease. Those of us who worked with Jim on this committee remember the enthusiasm and sense of humour that he brought to every meeting. He often had meeting minutes completed and distributed one or two days after the meeting. The minutes always showed some aspect of his sense of humour. Jim was always prepared to accept responsibility for organising difficult aspects of the meeting. While we were all busy, he seemed to have a capacity for fitting in that little bit extra. The effort that Jim made to organise this meeting certainly contributed to its success.

Those who knew Jim will know that he was always keen to ensure that his point of view was known. He was never backward in expressing himself. However, he presented logical well-reasoned arguments. If you challenged his point of view, you had to be prepared to defend your argument against searching questioning that was often very direct. Jim never beat around the bush and diplomacy was not a strong point. Perhaps this was most noticeable in social settings. There are certainly a number of times while Jim was on his daily run around Hagley Park, when his comments or statements would offend at least one member of the group that he was running with. However, to his credit, Jim did realise that his manner was abrasive, and in recent years, he made efforts to be more diplomatic.

Work was only a part of Jim's life. Many sales reps will have experience of their call being quickly terminated about 11.40am, with a suggestion that the discussion could be continued at a certain venue later that evening. It wasn't just that Jim enjoyed to chat over a beer. Every day, regardless of the prevailing weather, Jim would join with a group of like minded individuals for a daily run around Hagley Park. This wasn't just for fitness. Jim ran competitively in races from 5 km to the marathon. While he was never an outstanding athlete, he was consistent. Jim could always be relied upon to give 110% effort in a relay. He was always a team man. Jim ran several marathons under three hours, and completed the Garoka marathon in Papua New Guinea. True to form, Jim not only ran competitively, but was actively involved in the administration of his running club. Over the years, he held many of the administrative positions within the club. Perhaps the best example that I remember of Jim's dedication to his family's sport was the organisation of the Port Hills relay. This is a handicap road running relay run around the Port Hills in Christchurch. This event was frequently run on the Saturday immediately following our annual conference. In recent years, Jim has co-ordinated the organisation of this relay. This is a huge task, involving the allocation of race responsibilities to a wide variety of different individuals. Some years, Jim has had to have the race organisation completed before he left for conference. Perhaps the ultimate acknowledgement of how well this task was accomplished, was that this relay was widely recognised as the best run event of its type in Canterbury. I believe it would be hard to find a better organised event of its type anywhere in New Zealand.

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Jim's interest in running was not limited to competitive running. Jim had a huge love of the outdoors. He combined his running with this love, by running in the mountains. He was often the organiser for groups of friends to run many of the South Islands more scenic alpine and sub alpine tracks. Tracks such as the Milford, Routeburn, Rees/Dart, St. James Walkway and many others all felt Jim's feet as he passed over them on a one or two day running trip.

After moving to Christchurch with his family some 30 years ago, Jim spent time with them in the outdoors, camping, tramping and fishing. This quality time stayed with Jim forever, and gave him values that he went on to share with his family. First there was the bach at the Boyle River, in the Lewis Pass. This was a joint venture with the Gratton family. At times the building venture seemed to be shared with half of the pathology department at Christchurch hospital. Over the years the spartan shell progressed to be a comfortable refuge from the city. It was enjoyed by many as Jim and Barbara shared their love of the outdoors with their family and friends. The family spent many weekends and holidays at the Boyle. They all learnt to appreciate the outdoors, be it the solitude, high country fishing, tramping or later on, climbing amongst the mountains in the Lewis Pass region.

More than a decade ago, Jim discovered mountaineering. He was a late starter in the sport. Most mountaineers do most of their climbs in their late teens and early twenties. Jim had some catching up to do, and he was intent on catching up. Climbing became the new passion in Jim's life. He completed some climbing courses early on, then set out to practice what he had learnt. During the last ten years, very few months went by, winter or summer, when Jim didn't complete at least one major climb. Jim had multiple ascents of Cook and ascents of most of New Zealand's higher peaks to his credit. He had a goal to complete all of New Zealand's peaks over 3,000 metres. This would have been an achievement that would have put Jim amongst a small band of elite climbers. With only a few summits left to achieve, it will be one goal that will remain unattained.

Jim not only climbed in New Zealand, but had two major ventures overseas. In 1988 he had a very successful trip to Peru. In a few short weeks, many peaks were climbed, including several notable ascents. Then in 1992, Jim and Barbara, with a couple of friends, went to Europe. Again, Jim successfully climbed several peaks. However, the highlight for Jim, was being able to climb Mt. Blanc with Barbara.

Jim's approach to climbing reflected his approach to life. You get out what you put in. Climbing became a very important part of his life, and Jim had a very strong commitment to his climbing goals. In all things that Jim did, he explored his own limitations, both mentally and physically. He prided himself on being able to push his own limits. This made him a successful climber as well as being successful in life. However, when Jim died on Malte Brun at Labour weekend last year, he wasn't pushing his limits. He ran out of luck. While descending the South ridge, after successfully completing a climb of the South face, a piece of rock broke away from the ridge. Tragically, Jim fell with it. This was a ridge that Jim had been both up and down before. It wasn't difficult or dangerous terrain for a climber of Jim's ability.

Barbara, Edward, Michael and Claire were always a very important part of Jim's life. He was proud of all their achievements. Even with all his other responsibilities and interests, Jim still had time and energy to invest in his family. We have lost a friend and valued colleague. The family has lost far more. It is so little to offer, but we offer our sincere condolences to Barbara, Edward, Michael and Claire.

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Brief Communication

There is no apparent association between the unusual secretor phenotypes of Polynesians and the Lutheran blood group system

Steve Henry and Linda Pinder.

Department of Transfusion Medicine, Auckland Regional Blood Centre, Park Ave, Auckland.

The Lutheran and secretor genes are known to be linked, and as Polynesians have an unusual secretor gene these two systems were examined for any apparent associations or anomalies. None were found, with all Polynesians, many of whom are postulated to have the Se^w gene, being of the common $Lu(a-b+)$ phenotype.

The Lutheran and secretor loci are on chromosome 19 and are known to be in linkage (1,2). Four major phenotypes are found in the Lutheran system being $Lu(a-b+)$, $Lu(a+b+)$, $Lu(a+b-)$ and $Lu(a-b-)$, the latter two phenotypes being very rare. The $Lu(a-b-)$ phenotypes can arise from three different genetic backgrounds; homozygous inheritance of a recessive silent allele lu ; inheritance of a dominant inhibitor $In(Lu)$ not at the Lu locus; and inheritance of an X-borne recessive inhibitor $XS2$ (as reviewed 3). The $Lu(a-b-)$ phenotype caused by $In(Lu)$ is not a true null phenotype but rather represents a marked suppression of the Lutheran antigens. Several antigens that are unrelated to Lutheran have also been shown to be suppressed by $In(Lu)$, namely P_1 and i ; $AnWj$; Cs^a , Yk^a , Kn^a , McC^a , In^a , In^b and $MER2$ (as reviewed 3).

In Polynesians Lu^a typing has been previously undertaken in a few populations (Easter, Marques, Tubuai Islanders, Tuamotu Archipelago and Tuhoe Maori as reviewed in Mourant *et al* (4)). No report of Lu^b typing could be found leaving open the possibility that some of the $Lu(a-)$ samples may belong to the rare $Lu(a-b-)$ phenotype. In view of the fact that; Polynesians have the very unusual (and possibly suppressed) Se^w gene (5,6); no full Lutheran phenotyping has been reported on Polynesians; the suppressive effect of $In(Lu)$; and the linked relationship between Lu and Se , we considered it possible that they may be a phenotypic relationship between the postulated Se^w gene and Lutheran.

Sixteen selected samples of which seven had serological evidence of a Se^w gene (5,6) were recovered from liquid nitrogen and tested. The Lewis phenotype (as defined by goat antiserum) and ABH secretor phenotypes of these samples were as follows; 1 $Le(a-b-)$ partial secretor, 4 $Le(a-b-)$ secretors, 1 $Le(a-b+)$ partial secretor, 2 $Le(a+b+)$ partial secretors, 4 $Le(a+b+)$ secretors and 4 $Le(a-b+)$ secretors. These cells and the appropriate controls were phenotyped with Biotest (Frankfurt, WG) anti- Lu^a and anti- Lu^b . All Polynesian samples were found to be of the $Lu(a-b+)$ phenotype and reacted with identical score to each other and the Caucasian controls. This result suggests that there is no relationship between the partial secretor phenotype (as postulated to be caused by a Se^w gene) and the Lutheran blood group phenotypes.

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NZIMLS ANNUAL STAFFING SURVEY

Medical Laboratory Technologists

Currently employed

	1985	1986	1987	1988	1989	1990	1991	1992	1993
Clinical Biochemistry	187	186	187	187	175	208	182	202	221.5
Microbiology	168	172	176	186	189	204	183	206	209.8
Haematology	160	163	168	176	174	180	162	167	184.5
Transfusion Science	90	92	97	102	96	105	101	120	126.7
Histology	24	24	24	28	26	29	34	35	32.9
Cytology	5.2	7.2	5.7	7.8	9.5	22	26.6	23.5	23.0
Nuclear Medicine	8.5	8.0	5.8	9.0	7.0	8.4	9.2	12.2	9.4
Immunology	22	28	22	21	30	31	34	38	47.4
Cytogenetics	7.5	6.5	7.5	8.0	6.4	5.8	12.6	14.7	12.4
Virology	2.0	6.0	4.5	6.5	10	12	13.5	13.6	8.8
Administration (full time)	34	39	34	33	33	30	29	39	36.2
On rotation	41	55	41	44	40	31	31	34	40.6
Other	7.3	2.4	3.0	11	7.8	13	8.6	9.7	6.4
TOTAL	756.5	789.1	775.5	819.3	803.7	879.2	826.5	914.7	959.7

Medical Laboratory Technologists

Currently employed

	1985	1986	1987	1988	1989	1990	1991	1992	1993
Clinical Biochemistry	193	183	169	174	177	154	133	135	127.3
Microbiology	186	168	152	188	176	185	156	150	140.6
Haematology	145	143	117	112	118	120	92	85	84.8
Transfusion Science	118	118	114	112	100	98	83	87	86.1
Histology	77	85	76	96	76	74	56	66	36.4
Cytology	32	36	40	35	56	59	49	56	47.3
Nuclear Medicine	12.5	16.8	11	13	9	4	3.2	5	3.2
Immunology	32	42	31	48	46	42	31	29	31.7
Cytogenetics	4.0	7.5	5.5	13	3.5	3.5	1.2	2	1.2
Virology	7.0	7.0	8.0	6.5	5.5	6.5	6.5	1	-
Blood collection	96	91	91	75	77	71	68	108	-
On rotation	44	51	56	67	64	28	40	26	41.5
Other	31	44	49	49	66	50	47	52	11.2
Administration									11.2
TOTAL	977.5	992.3	919.5	988.5	974.0	895	765.9	802	622.5

Students (as at 1st February 1994)

		1993	1994
Auckland Technical Institute (NDMLS)	Year 2	10	-
	Year 3	20	11
	Year 4	31	20
Massey University (BMLS)	Year 2	30	30
	Year 3	20	20
	Year 4	-	18
Otago University (BMLSc)	Year 2	40	40
	Year 3	30	33
	Year 4	-	25

NZIMLS CONTINUING EDUCATION

SPECIAL INTEREST GROUPS



Liftout



IMMUNOLOGY

SPECIAL INTEREST GROUP

Convenor: Gillian McLeay

Please note new address: Laboratory Training Centre,
Auckland Regional Blood Centre,
2-6 Park Avenue, Grafton, AUCKLAND.

BEHIND THE SCENES

One of the problems for the NZIMLS in the past has been that between the annual Conferences and Scientific Meetings (and of course the yearly examinations) in the perception of many of the profession at large, nothing much appears to be happening.

In reality, the business of the Institute in the hands of the elected Council, continues throughout the year and the proceedings are recorded in the quarterly publications of the NZ Journal of Medical Laboratory Science and more recently in the Institute News.

However, to many workers in Medical Laboratory Science, the NZIMLS still appears a remote organisation, frequently confused with the Medical Laboratory Technologists Board — perhaps understandably as some MLTB members are also NZIMLS councillors.

The Special Interest Groups are a recent innovation which bring the NZIMLS to the individuals in their laboratories, although the advice and support offered to assist groups holding seminars and other opportunities provided for continuing education are mainly taken up by the main centers despite the encouragement given to smaller centres.

Since the annual gathering of ISIG members at Christchurch in August, work has been going on with various projects. Exams were set, sat and marked (the successful candidates will be receiving their certificates shortly), the Virology/Immunology log book for the Massey fourth year students was completed and the Immunology QTA syllabus was revised.

This latter project was not without its problems. The Auckland Branch of ISIG, which traditionally undertakes the syllabus reviews, had previously produced a syllabus which the Council decided to use as a model for all other disciplines.

The final version of a common core section, (agreed upon by consensus between the SIG convenors and Council) which was to be incorporated in all syllabi, was based on the Basic Laboratory Practice section in the Immunology prototype with certain additions, some of which the Auckland group felt were irrelevant or inappropriate for the "redefined" medical laboratory assistant.

In addition, the two hour papers from 1994 onwards will be replaced by one three hour paper (a decision reached also by consensus, but with one notable exception) thereby increasing the amount of material to be learned and reducing the time in which to examine it.

The Auckland group modified the core section for the Immunology syllabus according to its views on what was appropriate and as a result the revised syllabus was not accepted.

Recently the role of the SIGs and their accountability to the NZIMLS has been put on a more formal footing. A document has been produced by Council, with input from the SIG convenors, and the final draft will be circulated shortly. The SIGs, amongst other requirements, advise the Council "on matters pertaining to their discipline".

In the case of the QTA Immunology syllabus, the

contentious issue was the section common to all syllabi, which the SIG convenors had agreed to and so the Auckland ISIG group has been forced to comply. Democratic decisions do not please everybody but the majority rules. A new draft has been submitted which conforms to the content agreed upon and the group is awaiting confirmation that this draft will be accepted.

Preparations for the North Island Seminar at Anzac Weekend are underway, and the Treasurer has been busy advancing funds to secure bookings for that event and the Coulter Users' meeting the following day.

Matters such as these, plus organising examiners and moderators, preparing budgets, writing articles for the Journal and producing and publishing the *Network News* have continued to keep certain SIG members well occupied over the last few months.

* * *

ACCREDITED EXAMINERS AND MODERATORS

ISIG wishes to thank the following people who attended one of the two Examiners/Moderators Workshops held in Auckland and Christchurch in 1993 thus making themselves available to act as accredited examiners or moderators for Medical Laboratory Science examinations in Virology or Immunology:

IMMUNOLOGY

Kamala Dullabh	Auckland Hospital
Arran Salter	Auckland Hospital
Mark Warden	Auckland Hospital
Sharon Clode	Auckland Hospital
Mary-Ann White	Diagnostic Laboratory, Auckland
Gillian McLeay	Auckland Hospital
John McKay	Auckland Hospital
Ian Wilkinson	Auckland Hospital
Michael Crowther	Diagnostic Laboratory, Auckland

VIROLOGY

Judy Cull	Auckland Hospital
David Featherstone	NZCDC
Judith Millar	NZCDC

IMMUNOLOGY/VIROLOGY

Paul Austin	Medlab, Auckland
Karen Stanley	Auckland Hospital

Some of these people have already served in one or both capacities for Virology and Immunology, and ISIG would like to thank those especially who prepared, moderated and marked the 1993 examinations. In the interests of objectivity for disciplines with small numbers such as ours, it is felt that examiners and moderators for specific years should not be named.

The SIGs, in addition to nominating examiners and moderators for the NZIMLS QTA and Specialist Certificate examinations, now provide names for the MLTB examinations also. This not only eases the burden of the Executive Officer, but ensures the continuity of the standard of examinations from year to year.

I should like to take this opportunity to thank those who continue to put their names forward for this essential service to our profession.

* * *

ROHAN AND THE NETWORK NEWS

Dr Rohan Ameratunga first began his association with the Immunology Department at Auckland Hospital in the late 1980s when he became the Immunology Registrar.

The Immunology group in Auckland (in pre-ISIG times) consisting of representatives from Auckland Hospital, Diagnostic Laboratory and Medlab met regularly for weekly seminars. These seminars were attended and participated in by all levels of staff. Rohan took an active part in these sessions as did other invited speakers from what is now the Department of Molecular Medicine at the Auckland School of Medicine.

The group also took responsibility for the teaching of Immunology in the Auckland area until the appointment of the first official Immunology Tutor at the School of Medical Laboratory Technology in 1988.

Members of the group continued to provide tuition and support for the more formal teaching programs instituted, and some are now involved with teaching Immunology for the National Diploma in Medical Science at the Auckland Institute of Technology — notably Dr John McKay who is the Immunology tutor for the course.

As a result of all this interest and enthusiasm, Rohan encouraged one of the staff technologists in the department to produce a small newsletter, which kept immunologists informed of events and developments (especially relating to interesting journal articles and new publications). He took it upon himself to provide much of the material for the latter.

This modest little publication was so successful that when ISIG was formed in 1990 it seemed logical to extend its circulation beyond the confines of Auckland — and so the *ISIG Network News* came into being, linking people interested in immunological knowledge and techniques in a national network which stretches from Dargaville to Invercargill.

Rohan moved on to become Clinical Immunologist at the Starship Children's Hospital and joined the Department of Molecular Medicine at the Auckland School of Medicine. Recently he has rejoined the combined Virology/Immunology Department at Auckland Hospital as Immunopathologist.

As a member of the *ISIG Network*, Rohan has continued to support the newsletter he instigated, with reviews of new publications. Maree Gillies, the editor of the *NZ Journal of Medical Laboratory Science*, has had a number of requests for abstracts of these reviews and was puzzled because they had not been published in the *Journal*. A couple of telephone calls solved the mystery — they had been published in the *Network News*.

Rohan has consented to allow his book reviews to be published under the ISIG banner in the *Journal*, which is perhaps a more appropriate publication for them.

The first three reviews which follow were published in the *ISIG Network News* in December 1993, the fourth was destined for the February newsletter, but was held over for this March edition of the *Journal*.

* * *

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Sunday 24 April 1994

at the

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(Final program details April ISIG Network News or from Mary Ann White, Secretary ISIG.)

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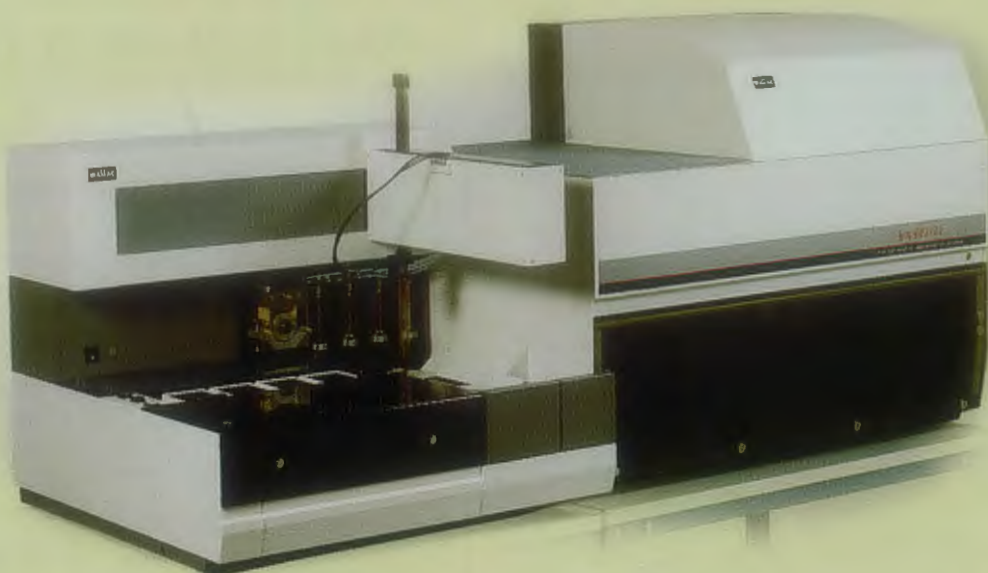
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Applications will be judged on your professional and academic abilities together with your active participation in your discipline of Medical Laboratory Science.

Applications/Nominations must be on the official form and received by the Executive Officer, NZIMLS no later than 5pm, June 30th 1994.

Late applications or nominations will not be accepted.
The decision as ratified by the council of the NZIMLS will be final.

The successful person would be expected to report back to the AGM of the NZIMLS on return.

Current office bearers of the IAMLT or employees of Murex Diagnostics New Zealand cannot apply.

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AGE:.....

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(B) ANY OTHER UNRELATED INDIVIDUAL

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NEW ZEALAND INSTITUTE OF MEDICAL LABORATORY SCIENCE
 Application to sit Specialist Certificate Examination
 10th and 11th November 1994

SECTION A — TO BE COMPLETED BY THE CANDIDATE

Name: Mr
 Mrs
 Miss (Surname) (First Names)

Laboratory

Laboratory Address

Examination Subject

Medical Laboratory Technologist Board Certificate Examinations passed:

Subject Year Sat

Subject Year Sat

EXAMINATION FEE: \$400 (GST Inclusive)

The full examination fee must be paid with the application.

SECTION B — TO BE COMPLETED BY THE PRINCIPAL OR CHARGE TECHNOLOGIST

"I certify that the above candidate will meet the requirements of the
Specialist Certificate Examination"

Signed

Designation

Please state the name and address of the person responsible for receiving
the papers and supervising the Examination in your laboratory or centre.

Name

Address

.....

.....

APPLICATIONS CLOSE FRIDAY 27 MAY, 1994

Please forward application forms accompanied by fees to: Executive Officer, NZIMLS, PO Box 3270, Christchurch.

NO LATE APPLICATIONS WILL BE ACCEPTED

Special Note to Applicants

*If not already members of the NZIMLS applicants to sit this examination **must** submit a valid membership application along with this examination application.*

NEW ZEALAND INSTITUTE OF MEDICAL LABORATORY SCIENCE CERTIFICATE OF QUALIFIED TECHNICAL ASSISTANT EXAMINATION SUBJECTS

Public Health Microbiology
Clinical Biochemistry
Cytogenetics
General Certificate (See prerequisite 2)
Haematology
Histological Technique
Medical Cytology

Transfusion Science (Blood Products)
Medical Microbiology
Mortuary Hygiene and Technique
Radioisotopes and Radioassay Technique
Transfusion Science
Immunology (Microbiology)
Immunology (Tissue Typing)

PREREQUISITES

1. Candidates for the examination must be employed as medical laboratory assistants in an approved laboratory and have worked continuously in the subject for two years prior to the examination or accumulated not less than two years practical experience in the examination subject.
2. Small laboratories which require their medical laboratory assistants to work in more than one subject can apply to the NZIMLS for students to train for the General Certificate Examination.
3. Candidates for the Immunohaematology Examination must have completed not less than 320 hours and candidates for the General Certificate Examination not less than 160 hours in practical cross-matching of blood for clinical use.
4. **Candidates must be financial members of the NZIMLS at the time of sitting the examination and be a financial member or have submitted a valid membership application form at the time of applying to sit the examination.**

SYLLABUS

The syllabuses for all subjects are available from the NZIMLS, P.O. Box 3270, Christchurch.

(NOTE: LATE APPLICATIONS WILL NOT BE ACCEPTED)

EXAMINATIONS

1. Q.T.A. candidates who began their practical experience, on or before 31 January, two years prior, will be eligible to sit the examination.
2. Candidates must complete an examination application form and forward this, together with the appropriate fee, to the Executive Officer before the closing date.
3. The examination will consist of one written paper, of three hours duration. Candidates for the Medical Cytology Examination will also be required to complete a practical examination.
4. The candidate must obtain an overall mark of 50% to pass the examination. Candidates for the General Certificate Examination must obtain a minimum of 40% in each of the four sections and 50% overall to pass the examination.
5. The results of the examinations will be announced by the New Zealand Institute of Medical Laboratory Science.
6. The candidate's script will be returned upon receipt of written application by the candidate. No copy will be retained and no correspondence relating to the marking of the script will be entered into.
7. Candidates must be financial members of the NZIMLS at the time of sitting the examination.

NEW ZEALAND INSTITUTE OF MEDICAL LABORATORY SCIENCE
Application to sit the Examination of Qualified Technical Assistant
2nd November 1994

SECTION 1 — TO BE COMPLETED BY THE CANDIDATE

Name: Mr
 Mrs
 Miss (Surname) (First Names)

Laboratory

Laboratory Address

Subject (Haematology, Microbiology, etc)

EXAMINATION FEE: \$80 (GST Inclusive)

The full examination fee must be paid with the application.

SECTION B — TO BE COMPLETED BY THE PATHOLOGIST OR CHARGE TECHNOLOGIST

Date candidate commenced work in examination subject

“I certify that the above candidate meets the requirements of the Q.T.A. Regulations”

Signed

Designation

Please state the name and address of the person responsible for receiving the papers and supervising the Examination in your laboratory or centre.

Name

Address

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Office use only

APPLICATIONS CLOSE FRIDAY 27 MAY, 1994

Please forward application forms accompanied by fees to: Executive Officer, NZIMLS, PO Box 3270, Christchurch.

NO LATE APPLICATIONS WILL BE ACCEPTED

Special Note to Applicants

If not already members of the NZIMLS applicants to sit this examination **must** submit a valid membership application along with this examination application.

THE NEW ZEALAND INSTITUTE OF MEDICAL LABORATORY SCIENCE (INC.)

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The appropriate membership subscription must accompany this application for this to be a valid application.



TRANSFUSION SCIENCE

SPECIAL INTEREST GROUP

Convenor: David Wilson

Contact Address: c/- Sheryl Khull, Transfusion Laboratory, Wellington Hospital, Wellington. Fax: 04-389-5608.

PERSONAL NEWS

David Wilson has taken up the position of Quality Manager at Cardinal Community Laboratories. His address there is P.O. Box 202, Christchurch. David will retain his interest in Transfusion Science and, at least for the meantime, continue as Convenor of the TSSIG and organiser of the NICE Weekend. Any NICE correspondence can be sent to his previous address in Palmerston North for collation and forwarding.

Allison Dent, another member of the Transfusion Science Special Interest Group, is to marry Paul Wilson on 23 April 1994. I believe they are planning a Hawke Bay wedding, but will continue to make their home in Auckland. Congratulations and best wishes, Alison.

N.I.C.E. NEWS

The deadline for registration at the 1994 NICE Weekend was 18 February. Any stragglers who don't want to miss out on this lively, informative and fun weekend of Immunohaematology can still register, but will incur a late penalty. There is a registration form printed elsewhere in this Journal.

Since this is the fifth anniversary of the first NICE Weekend, Abbott Laboratories have **doubled your chances** of getting an all-expenses-paid trip to the NZIMLS Scientific Meeting, by offering two awards this year, for the best two papers presented at the NICE Weekend.

For those participants coming from the Wellington area and points south, we may be able to arrange a rental car or van to travel from Wellington to Wairakei on Friday and return to Wellington on Monday. This could help keep your travel costs down. Anyone interested please let David or Sheryl know.

CALLING CERTIFICATE LEVEL EXAM CANDIDATES

There aren't likely to be many candidates for the last two years of the Certificate level examination, so you may be feeling a bit isolated as you struggle with the syllabus. If you would like to form a study group, or are interested in getting someone to mark and comment on your attempts to answer previous exam questions for practice, please contact David or Sheryl or any TSSIG member.

A.H.S. COMPUTER USERS MEET

The Australian Health Systems computer software is used by Blood Banks in Northland, Waikato, Rotorua, Gisborne and Dunedin. AHS used to be known as I.C.S. Raewyn Clark of the Transfusion Laboratory, Lakeland Health, Rotorua sends us this report on a recent meeting.

"On 6 October 1993 an AHS user group meeting was held between Blood Bank user representatives and AHS in their Auckland office.

The purpose of the meeting was to get our heads together to come up with ideas and specifications for a software system that could meet the demands of all Blood Banks, i.e. user friendly for both large Regional Centres and smaller hospital based Blood Banks.

The recent audit by the Department of Health certainly had

a major effect on what was required and the general discussion proved enlightening in terms of the variation between current system capabilities. A word of thanks at this point for the fantastic lunch provided. Good food always helps the flow of conversation.

Now that all participants have put together their requirements we await the overall report and look forward to keeping the software people on their toes and up with the play from a user point of view.

Here's hoping this will prove a worthwhile exercise for all concerned and thank you to all those involved in setting up this discussion."

TRANSFUSION MEDICINE AUDIO UPDATES

The latest issue of Transfusion Medicine Audio Updates is entitled "Red Cell Antibody Case Studies: Beginning to Intermediate Level". It is a step-by-step discussion of the elucidation of four cases with red cell antibodies. The level of difficulty involved is about equal to that expected of registered technologists (i.e. Certificate Level exam). I recommend it to anyone who wants to maintain or develop their skills in this field.

Copies of Transfusion Medicine Audio Updates are available through the Transfusion Science Special Interest Group at a cost of \$6 per topic for tape and transcript for NZIMLS members. See the box advertisement elsewhere in this Journal.

NEWLY RELEASED TEXTBOOKS

Technical Manual, American Association of Blood Banks, 11th edition 1993. Reviewed by Sheryl Khull, Transfusion Laboratory, Wellington Hospital.

Over the years, successive editions of this work have grown from a simple collection of technical methods with associated explanations, into a comprehensive reference suitable for most transfusion scientists.

The methods are still there — 132 of them, covering a range of tasks from the preparation of phosphate buffered saline, to the mononuclear phagocyte assay, to the quality control of leucocyte-reduced platelet preparations. The theoretical knowledge presented also has a practical slant, with information on such topics as the collection and processing of blood and other tissues, the investigation of immunohaematological problems, clinical considerations in transfusion practice, transfusion-transmitted viruses, and management. The underlying principles are also expounded, in chapters about immunology, genetics, and red cell and leucocyte groups.

The language is straightforward and the style of presentation is clear, enlivened and clarified where necessary by charts, tables and diagrams. This book is palatable even to first year trainee lab assistants, and yet contains enough detailed information to serve as a standard reference for Certificate level students and for most transfusion laboratories.

The contents are relevant, useful and up-to-date, and in spite of its American origin (some spelling and protocols are different here), I would recommend that a copy of the AABB Technical Manual be available in every Blood Bank in New Zealand.

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- 0293 Prevention of Rh Immunization
- 0493 Red Cell Crossmatch : Evolution, including the Use of the Computer

New topics:

- 0593 The Gel Test
- 0693 Managing Standard Operating Procedures
- 0793 Managing Risk in Transfusion Medicine
- 0893 Red Cell Antibody Case Studies : Beginning to Intermediate Level

Order from Sheryl Khull, Secretary, TSSIG, Transfusion Laboratory, Wellington Hospital.

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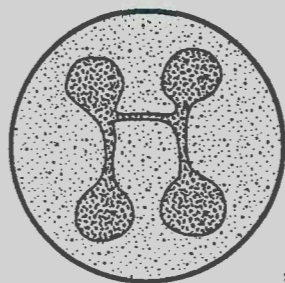
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haematology

SPECIAL INTEREST GROUP

Convenor: Rennie Dix

Contact Address: Cf Anne Cooke, Laboratory Training Centre, Auckland Regional Blood Centre, 2-6 Park Avenue, Grafton, AUCKLAND.

PAEDIATRIC LABORATORY SEMINAR

On November 11th 1993 approximately 50 technologists, clinicians and industry representatives participated in a very successful afternoon seminar, held at the Starship, Auckland Children's Hospital.

The laboratory seminar was part of a 3½ day visit by Dr Marilyn Manco-Johnson, Paediatric Haematologist from the University of Colorado School of Medicine in Denver, whose visit here was supported by the Kirsty McDermott Memorial Trust.

Dr Manco-Johnson currently is the Associate Professor of Paediatrics at the University of Colorado School of Medicine. She is also the Director of the Mountain States Regional Haemophilia Treatment Programme. Previous appointments include Medical Director of the Special Coagulation Laboratory at the University Hospital, Colorado, and Director of the Premature Infant Follow-up Clinic at the University of Colorado Health Sciences Centre.

Dr Manco-Johnson's major scientific interests are neonatal and paediatric thrombosis, the ontogeny of the protein C system, mechanisms of hypercoagulability in infants of diabetic mothers, haemophilia, and paediatric AIDS. The fact that Dr Manco-Johnson has in the past and still works actively in these fields is supported by an impressive list of current and past grants held, representation on a number of committees including the current ISTH Neonatal Haemostasis Working Party, and numerous publications.

Without doubt Dr Manco-Johnson's visit promised to be a rare opportunity to learn from a very experienced clinician and local Haematologists who had the opportunity to meet her on recent trips to international conferences assured us that this petite, vibrant woman was an ideal guest.

The laboratory seminar was arranged by the Auckland Haemostasis Group, supported by the Haematology Special Interest group. A series of short presentations by technologists from local laboratories was chaired by Dr Elizabeth Berry. Dr Manco-Johnson commented briefly at the end of each presentation, then expanded on the issues raised in a lecture after afternoon tea.

Keiry Belton from Diagnostic Laboratory presented "*Aspects of Blood Collection for Haemostasis in Neonates and Children*"

Cord Blood

- requires planning for collection prior to delivery
- using blood drawn from a double-clamped umbilical segment
- two-syringe technique
- fractionate sample eg. 3 tubes

Capillary Sampling

- puncture site must be warmed for at least 5 minutes
- bedside whole blood monitors are useful
- microtainer type most preferable
- unsuitable for APTT and Factor VIII:C

Venous Sampling

- 2 syringe technique preferable
- directly into anticoagulant in syringe
- adjust anticoagulant volume for HCT
- samples drawn from catheter to clear line may be re-infused (approx 5mls)

Bleeding Times

- a rare requirement

Simon Jones's presentation from Medlab Auckland, raised issues pertaining to "*Reference Ranges*". The ranges most widely used in the Auckland area are those published by Maureen Andrew et al in *Blood*, Vol 70, No 1 (1987) pp 165-172 and Vol 72, No 5 (1988) pp 1651-1657. These ranges have been widely accepted but laboratories that use them must be aware of variations due to instrumentation and reagents.

In addition to this Dr Manco-Johnson advocated:

- establishing reference ranges for cord blood samples in busy obstetric hospitals
- the value of specific factor assays such as PR and APTT tend to be unreliable on neonate samples
- the use of family and clinical history in the diagnosis of Von Willebrand's Disease when patient is less than six months old

Vivienne Muffty from Greenlane/National Women's Hospital presented three case studies dealing with "*Aspects of Heparinisation in Neonates and Children*".

One of the problems with samples from low birth weight babies and newborns is that often little or no effort is made by ward staff collecting the samples to clear lines of heparin before taking the sample. Dr Manco-Johnson and Dr Lochie Teague, Paediatric Haematologist at Auckland Children's Hospital, agreed that there ought to be no problem with reinfusing the sample used to clear the line if correct procedures were followed. In any event an optimal sample is paramount.

Other issues discussed:

- difficulty in predicting heparin level in neonate
- APTT response affected by lower levels of Factor XI and XII
- shorter half-life (greater clearance rates) of heparin in neonates
- nevertheless aim to achieve therapeutic level within 24 hours, monitor daily and maintain for 7 days.

Anita Karpik from Middlemore Hospital presented a case of "*DIC in a Neonate*" with a view to discussing the value of laboratory results. Some recent literature (Schmidt et al, *Thrombosis and Haemostasis*, 69 (5) 418-421 (1993)), demonstrated that the sensitivity of coagulation screens is poor in neonates at risk of DIC, but the specificity is high.

Dr Manco-Johnson made the following points:

- Best tests to diagnose DIC in children are APTT (not capillary), Fibrinogen assay and platelet count.
- The Ethanol Gelation test is of no value in children.
- When the PR is raised in neonates it is difficult to differentiate between Vitamin K deficiency and DIC. The Echis Ratio or specific factor assays may be helpful.

The final presentation was by Melissa Huizer from

Auckland Hospital. She presented a case of multiple thrombosis in an infant leading to a discussion about the protocol for evaluating such cases. The case was of particular interest to Dr Manco-Johnson as she is carrying out further investigations on this patient.

Work completed in New Zealand on patient and parents:

- Basic Screen and Full Fibrinogen Studies
- Lupus Anticoagulant Screen
- Physiological Inhibitors of Thrombosis
- Fibrinolytic Studies
- Other studies which may be completed in Colorado
- Thrombomodulin
- Activated Protein C Cofactor
- Factor Va Inactivation
- Tissue Factor Pathway Inhibitor
- Lupus Anticoagulant Binding to Endothelial Cells
- Antibodies to Protein S, Protein C and Factor II

Dr Manco-Johnson noted that Lupus Anticoagulant is detected in 5% of healthy children.

- APTT usually 30-50 seconds
- Often post-infection, resolving in 3-6 months
- Look for evidence of autoimmunity

Clinical thrombosis due to Lupus Anticoagulant is usually associated with underlying autoimmunity. APTTs are usually in the range of 60-90 seconds.

One of the most exciting aspects of Dr Manco-Johnson's presentation was her obvious "hands-on" experience, starting with the way she collects samples herself, and directly supervises analysis if not carrying out the technical work. She addressed pertinent technical issues and common clinical problems.

At the conclusion of the seminar participants headed home, to as far afield as Whangarei, Rotorua and Tauranga, with plenty of useful information.

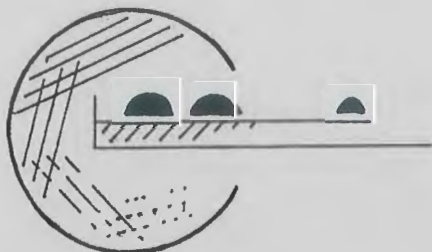
How exciting it will be to further our knowledge in the challenging field of Paediatric Haemostasis at the 1994 NZIMLS Annual Scientific Meeting in Hamilton.

The Haematology Special Interest Group and Auckland Haemostasis Group sincerely thank Dr Elizabeth Berry, Dr Lochie Teague, and the Kirsty McDermott Trust for the opportunity to meet Dr Marilyn Manco-Johnson.

CYTOLOGY SPECIAL INTEREST GROUP

Convenor: Carol Green

Contact Address: Valley Diagnostic Laboratory, PO Box 30-044, Lower Hutt



MICROBIOLOGY SPECIAL INTEREST GROUP

Convenor: Shirley Gainsford

Contact Address: Valley Diagnostic Laboratories Ltd, P.O. Box 30-044, Lower Hutt.

HAEMATOLOGY SEMINAR

A one day seminar will be held
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the NZIMLS Annual Scientific Meeting
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McMaster University

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All membership fees, change of address or particulars, applications for membership or changes in status should be sent to the Executive Officer at the address given above.

Members wishing to receive their publications by airmail should contact the Editor to make the necessary arrangement.

NEW ZEALAND INSTITUTE OF MEDICAL LABORATORY SCIENCE 1994 CALENDER

24/25 February	Council Meeting — Auckland
12/13 May	Council Meeting
27 May	Applications close for Specialist Certificate examinations
27 May	Applications close for QTA examinations
31 May	Proposed rule changes and remits to be with the Executive Officer
1 July	Annual Staffing Survey
5/6/7 July	Fellowship examinations
22 July	Nominations close for election of Officers
24 August	Ballot papers and proxies to be with Executive Officer
29/30 August	Council Meeting — Hamilton
31 August	AGM and SGM — Hamilton
31 Aug — 2 Sept	Annual Scientific Meeting — Hamilton
2 November	QTA examinations
10/11 November	Specialist Certificate examinations
17/18 November	Council Meeting

Membership Sub-Committee Report November 1993

Since the August meeting there have been the following changes:

	05.11.93	19.08.93	04.05.93	23.02.93
<i>Membership</i>	1178	1135	1237	1242
less resignations	2	16	6	3
less G.N.A.	4	10	2	8
less deletions	-	-	118	3
less deceased	1	1	-	-
less duplications	-	-	1	-
	1171	1108	1110	1237
plus applications	4	66	20	10
plus reinstatements	2	4	5	-
	1177	1178	1135	1237
<i>Composition</i>				
Life Member (Fellow)	12	10	12	12
Life Member (Member)	8	8	8	5
Fellow	20	20	20	20
Member	684	686	686	679
Associate	371	372	325	436
Non-practising	56	56	58	59
Honorary	26	26	26	26
Total	1177	1178	1135	1237

Applications for Membership

C. FARMER, Diagnostic, G. JONES, Waikato, C. O'NEILL, Auckland, C. VAN TILBURY, Green Lane/National Womens

Resignations

E. STEPHENSON, Christchurch, K. ROWE, Waikato

Gone no address

J. RAYNER, National Womens, S. TURTREY, National Womens, R. THE, National Womens, W. HOOPER, National Womens

A report on the National Diploma of Medical Laboratory Science Survey.

Jan Nelson, FNZIMLS, MPhil(Hons) and Shirley Gainsford, MNZIMLS, Dip. Bus. Studies.

NZIMLS representatives on the Course Advisory Committee of the National Diploma of Medical Laboratory Science.

Address for correspondence: J. Nelson, Department of Molecular Medicine, University of Auckland, Private Bag 92 019, Auckland.

Introduction

The Course Advisory Committee of the National Diploma of Medical Laboratory Science (NDMLS) was required, under its Terms of Reference, to undertake a major review of the course at the end of the fifth year. The NDMLS was established in 1989 at the Auckland Institute of Technology (AIT) with considerable contributions and monitoring from medical laboratory professionals in the Auckland area. Graduates of the NDMLS are eligible for registration by the Medical Laboratory Technologist's Board. The course produced 26 graduates in 1992 and currently there are 11 second year, 20 third year and 29 fourth year students. The course has the potential to provide a total of 86 registrable medical technologists for the profession.

Although the present course will only continue for three more years, it was considered that the information from this review would be invaluable for any further modifications to the existing course as well as being applicable to the Degree in Applied Science which will succeed the NDMLS. The review included a survey of employers and supervisors, to seek constructive comments regarding the training of the course graduates and students and their standing in the profession. The survey elicited an excellent response with a total of sixty-five replies received. A summary of the survey results is presented and a synopsis of representative comments. The conclusions from this survey raise a number of issues which are relevant to other training courses.

Circulation and limitations of the Survey

The survey was circulated in August 1993 to all Charge Technologists in Auckland and Laboratory Managers or Principal Technologists in Gisborne, Rotorua, New Plymouth, Hawera, Napier and Palmerston North where students or graduates had been employed. Recipients of the survey were requested to circulate copies to other staff in their department where appropriate and were advised that individual questionnaires would be kept confidential. Comments and suggestions for improvement to the course were also invited.

There are some limitations to the survey which should be considered when interpreting results. Replies and comments were often based on experience with only one or two students and in a number of cases, the same students were being commented on by different people. The size, type of laboratory and whether located outside Auckland were not taken into account when summarising the data.

Survey Results

1. Position in the Department

Charge technologists/laboratory managers/scientific officers	27 (42%)
Graded technologists	30 (46%)
Staff technologists	8 (12%)
TOTAL	65

2. Laboratory Discipline

Clinical Biochemistry	16 (25%)	Histology	2 (3%)
Microbiology	21 (32%)	Cytology	3 (5%)
Haematology	12 (18%)	Transfusion Science	3 (5%)
Immunology/Virology	5 (8%)	General	2 (3%)
Unspecified	1 (1%)		

3. Contact with graduates in the laboratory

Heavily involved in supervision:	28%
Some supervision:	52%
Little contact:	12%
No response:	8%

4. Overall performance

	Graduates	Students
Very good	23%	17%
Adequate	43%	68%
Poor	3%	4%
No response	31%	11%
Further comments made by	49%	

5. Lectures, laboratories and tutorials at AIT

	Academic knowledge of the students	Integration of theoretical and practical components
Very good	22%	12%
Good	68%	57%
Poor	6%	28%
No response	4%	3%

6. The Logbook System

	As a means of assessing practical laboratory skills	Did the NDMLS logbooks assess practical competence?
Very good	15%	Yes 32%
Adequate	78%	Partially 53%
Inappropriate	4%	No 12%
No response	3%	No response 3%

	Relevance of contents	User friendly
Very	23%	6%
Fairly	75%	82%
Not very	2%	9%
No response	-	3%
Further comments made by	74%	

	Laboratory visits by tutor	Orientation (Blocks 1,2 and 3)
Useful	12%	37%
Not very useful	51%	23%
No response	37%	40%

8. Attributes of NDMLS Students and Graduates

	Professional attitude	Motivation
Very good	31%	38%
Average	58%	51%
Poor	5%	3%
No response	6%	8%

	Technical skills	Theoretical knowledge
Very good	25%	28%
Average	66%	60%
Poor	5%	8%
No response	4%	4%

9. Would you recommend NDMLS graduates for employment?

Yes	29%
Some	60%
No	3%
No response	8%

10. *Suggest ways the NDMLS course could be improved*

Comments were made by 69% of the respondents (Refer to Summary of Comments)

Summary of comments

1. *Comments on overall performance*

The overwhelming criticism was of insufficient laboratory experience at the end of the course. A number of respondents emphasised however, that their comments were based on just one or two students or graduates. Although some students and graduates were rated very good to excellent, the conclusion was that there was the usual variation which one would expect within any course.

2. *Comments on logbooks*

The logbook system was found to be an adequate way of assessing practical skills by the majority (78%) of medical technologists with a further 15% finding them very good. Similar numbers found them fairly relevant and user friendly and only 12% thought that the system did not assess practical competence. Further comments and suggestions were made by 74% of the respondents. It was noted that the standard of training relies on the diligence and scruples of the assessors which may vary considerably. It was also influenced by the standard of the training laboratory and workload during the student's block. The practice in some logbooks of including a list of requirements common to many tests was found to be confusing, with some of the requirements not considered relevant for all tests. Regular revision was considered important and the inclusion of some clinical results or case studies was suggested to assist integration of practical and theoretical knowledge. Some theoretical training in the laboratory is usually necessary to complement the logbooks.

It was concluded that the logbook was an adequate guide for assessing practical skills but mastery of a logbook test does not necessarily equate with competence in the test and students need more experience to be considered competent to work unsupervised.

3. *Comments on laboratory visits by tutors and orientation*

Only 12% thought these visits were worthwhile although liaison between AIT and the workplace was seen as desirable. If they were to continue, the visits would benefit from a more structured approach concentrating on liaison between tutor and supervisors rather than just the charge technologist.

Opinion was divided on the value of orientation sessions prior to students entering a department. Comments ranged from those who found them very worthwhile, particularly if organised by their own department, to those who preferred the students to spend their time in the allocated laboratory.

More than one third of respondents replied that they had insufficient information to comment on these issues.

4. *Comments on course improvements and areas of concern*

- (a) There is a need for better integration between the theoretical course and the practical training with more practical bench training required. Some specialist areas are best taught in the laboratory where they are being performed routinely.
- (b) Training laboratories should be TELARC registered and monitored.
- (c) Graduates employed as Staff Technologists lack practical laboratory experience compared with those from previous courses. Further work experience prior to registration was seen as necessary by some technologists.

- (d) Insufficient time was often allowed for the preparation, setting and moderation of the examinations, in particular the final examinations at major level. The standard of the Major examinations should be similar to that of the MLTB Certificate level examinations.
- (e) Some laboratories found that there was a conflict between a student's desire to complete their logbook and the requirements of the laboratory for the student to perform routine service work.

Conclusions

This report summarises the results of a survey of employers of NDMLS students and graduates. It was apparent that a number of respondents took the opportunity to express general comments on the future of medical technologist education. The major concern of senior medical technologists which emerged from the survey was that graduates lacked practical laboratory experience compared with previously employed staff technologists.

Due to the limited life of the NDMLS and the lack of widespread serious criticisms, no major changes to the current course are envisaged. However, several issues that are raised in the survey are very relevant to future courses in medical laboratory science.

Acknowledgements

The Course Advisory Committee would like to thank the medical laboratory staff who completed the survey and contributed many valuable comments. The assistance of Elaine Rush in the preparation and analysis of the survey is gratefully acknowledged and also Jim Clark and Jo O'Warn for their role in the distribution.

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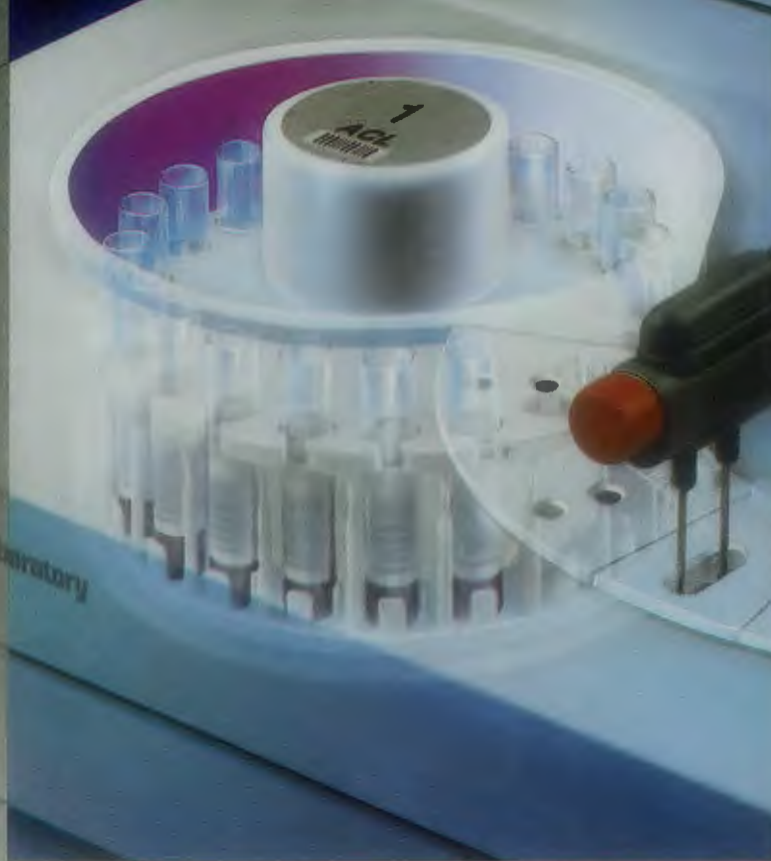
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T.H. PULLAR MEMORIAL ADDRESS

Barrie Edwards

Canterbury Health Laboratories, Christchurch Hospital

I would like to begin by thanking the Institute for inviting me to deliver the T.H. Pullar Address. In his day, Dr Pullar was recognised as one of the best clinical pathologists in the country. It is through his dedication to the training and assessment of medical laboratory scientists, that since his death in 1966 he is honoured at every Annual Scientific Meeting of the Institute.

"Registration of medical laboratory scientists will become a necessity. A degree in science should be our educational aim". So said Ron Bridger in his prize winning junior essay in 1947. Twenty five years later our profession was registered. Forty seven years later the first students with a Bachelor of Medical Laboratory Science are due to graduate. Such is the speed of change. Or rather such was the speed of change. In contrast the last four years have seen hospital boards transformed into area health boards and now into competing Crown Health Enterprises. We have never witnessed anything like it before and if some politicians have their way the health service will continue to be disrupted with change in the future.

I would like to take time to reflect on the effects the health reforms will have on us, the people who work in medical laboratories.

For years hospital laboratory workers have argued for a level playing field in terms of funding. While hospital laboratories have been funded through Area Health Boards capped annual grants, private laboratories have had access to the open ended Laboratory Benefit. Hospital laboratories could not claim on this benefit, yet private laboratories could — if they wished — perform hospital work on a contract basis. This was seen to give the private laboratories an unfair advantage as they had opportunity to "cost shift" outpatient work to the Laboratory Benefit.

On 1 July the Social Security regulation providing for the Laboratory Benefit was revoked, although transitional "fee for service" arrangements remain in place until the RHA's develop alternative methods of funding. So the playing field is being levelled. But can hospital laboratories really compete with their private counterparts? They usually claim they can. Some have produced crude costings to support it. While it may be the case in small centres, I doubt it is so in base hospitals. The high cost of maintaining a 24 hour service, conducting research, performing specialist laboratory tests and training medical and technical staff usually mean their overhead costs are too high. I don't believe they can compete, nor do I believe they should. Efficient private laboratories with high investment in automation, a lower ratio of qualified staff and offering a smaller range of tests can usually meet the needs of the general practitioner at a lower cost.

In smaller centres the situation is somewhat different. These hospital laboratories have frequently been meeting the needs of the general practitioner and refer specialist testing to a base hospital. In some centres general practitioner work is couriered to private laboratories in main centres and I believe there will be the opportunity for the hospital laboratory to claim this market back. In the past it was to the advantage of the hospital to see this work couriered out-of-town, but this will now be seen as a revenue opportunity and marketing strategy for the Crown Health Enterprise. Even the general practitioners will have some sympathy in supporting the "local lab" because without their support, the laboratory may close and that may place the future of the hospital at risk. My advice to smaller hospital laboratories is to ensure you provide a quality and cost

effective service. You should continue to talk to your clients (both hospital and community) and minimise your overheads. If it is more cost effective to contract out specialist testing — then do it! Attempts to preserve an empire is akin to inviting management to move in and downsize.

What of the private laboratory? For years private laboratories have been functioning as efficient businesses performing community work at low cost. Obviously this role will continue and opportunities will develop for strategic alliances between hospital and private laboratories. As yet, it is too early for such alliances to develop — at this stage we are still watching each other like two wrestlers circling each other in the opening seconds of a bout.

The mechanism of funding adopted by the RHA will also have an effect on workload. Currently laboratory testing is fully subsidised and invariably this can result in overuse. Whatever method of funding the RHA decide to use it will be designed to get doctors to do less or for the laboratories to be paid less.

Already the Southern Regional Health Authority has signalled its intention to review the method of funding community laboratory services. In Christchurch this may be achieved through transferring the purchasing responsibility to the general practitioners independent practice association, the Pegasus Medical Group which has 188 members. I would anticipate that before the next Scientific meeting there will have been substantial changes to the way community laboratory services are funded.

The hospital situation is somewhat different. A study conducted some years ago in Christchurch revealed that 90% of all laboratory testing is performed during a patient's first 48 hours in hospital. Shorter patient stays could result in an increase in demand for diagnostic services such as laboratory and radiology. In time, shorter stays should translate into fewer beds and fewer hospitals.

Assuming I am right, there are a number of things that we should now be doing.

Firstly, we should assess the needs of our clients and develop a customer focus.

In 1990 Canterbury Health Laboratories engaged an outside consultant to establish the perception that our existing clients have of the service we provide. For this exercise the clients were hospital consultants, registrars, house surgeons, trainee interns and nursing staff. One hundred and eighty people were surveyed through personal interview or by completing a survey form. Generally clients were satisfied with the service provided. However, over 50 recommendations were made for improvement. As a result of this survey we have introduced a rapid transport service for urgent specimens; installed faxes in nearly every ward, introduced a new single requisition form (complete with tick boxes) to replace the individual form used by clinical biochemistry, toxicology, haematology, microbiology and immunology; increased reception and telephone enquiry resources; reviewed the location of outpatient bleeding services in all hospitals; introduced weekend ward rounds and established our own post office box with daily mail delivery and collection. This has all been done in the interest of improved service delivery to better meet the needs of our clients.

Of interest was that technical quality was not at issue. Our clients have every confidence in the accuracy of our work. The problem was that the results did not always reach the right place, at the right time.

Secondly, we must identify and focus on our core business. Be it a community or hospital laboratory, it is

essential that we clearly identify the focus of our business and question the need to provide services outside of it. For example non-core testing may be better provided under contract to another centre, or support services, such as purchasing, personnel; information services etc, may be more efficiently accessed through another source.

Next, we need to understand our costs. I have no doubt that the private laboratories have a full understanding of their costs. I doubt many hospital laboratories have. In the past hospital laboratories saw their costs as their budget responsibility and identified costs without considering capital, corporate overheads, depreciation and tax liability. It is essential that we know what our true and marginal costs are in relation to every procedure performed in the laboratory. Armed with this information we are then in a position to decide if we continue to provide this service or access it on a contractual basis. These costs will be determined by laboratory scientists working alongside cost accountants.

We must review our personnel policies and procedures.

Remuneration must be tied to performance. Most agree with this philosophy but very few adhere to it in practice. Progression through salary scales is still driven by years of experience and historical grading of job content rather than by the level of performance. Staff must have clear and measurable goals and objectives, must be reviewed regularly and rewarded on results. This is now used for senior management staff of the Crown Health Enterprises and I believe needs to be extended throughout the Organisation. If the Organisation is successful then all the staff responsible for that success must share in the rewards.

Next, transfer your budget. If the opportunity exists considerable benefit can be accrued to the Crown Health Enterprise laboratory; it can transfer its budget to its users. This system was gradually introduced in Canterbury in 1991. We have this financial year concluded our first full year without any guaranteed income, being fully dependent on our users purchasing services from us. The costs associated with setting up such a system are minimal for any laboratory which is computerised. The main advantages of transfer pricing are:

Firstly, the user, not the provider becomes responsible for the expenditure and over-expenditure. We are all familiar with the situation of having to explain why our budget was over-spent when we did not control the demand on the service. It also avoids the development of the 'free good' mentality.

Secondly, the laboratory staff become pro-active rather than re-active. As we are dependent on our users for income the staff are conscious of the need to ensure clients get the best possible service. The issue is not "can we afford to provide it", but rather "have they got the funds to purchase it".

Thirdly, your financial performance can be measured by monitoring income against expenditure, rather than the traditional method of tracking actual expenditure against that budgeted.

Without a history of transfer pricing Canterbury Health Laboratories did not know what impact it would have on the work demand. When budgets were devolved last year many clinical teams identified some of the newly acquired funds for other purposes, signalling through their reduced budget that demand for laboratory testing was likely to drop by about 10%. In fact, workload increased by 11.6%. While clinical teams overspent the laboratory service over-recovered. However, these over-recoveries were returned to the client in the form of rebates.

It is important therefore, to have an accurate forecast of potential work demand so that over-heads can be apportioned over the correct number of procedures. This is best achieved through negotiation with users and by developing contracts between the laboratory and clinical team. Unfortunately many teams are not yet in a position to know what their demand is likely to be and many have "wish lists" of the new services they would like to introduce without the guarantee of funding.

Finally, we must review our management structure. For

laboratories to respond to the demands of clients, decentralisation of the decision making process is required, with greater delegation to what is commonly called 'the coalface'. This requires a review of the management structure. The traditional method of managing major laboratories through disciplines has to be challenged. These historical structures often do little more than add a layer of management to the Organisation. It is also time to question the management role of the pathologist. Dr Steven Williams in delivering the 1969 T.H. Pullar Memorial Address said "In all laboratories, however, there is the important interface between the purely medical and the purely scientific aspects of a patient's illness and it is only by a properly regulated and continuous flow across this interface that the laboratory can perform its true functions of medical diagnostic support. The pathologist must place himself in this area and, by the virtue of this medical qualification and experience, he must ensure that the vital communications are maintained".

Other than the false assumption that all pathologists must be male, I fully concur with Dr Williams' comments. The pathologist is an essential member of the laboratory team. But it is as a consultant, not manager that the pathologist is so essential.

The health reforms are about change. Change has been described as being threatening when done to you, and exciting when done to others. Most of all change will create opportunities. It is now over to each of you to make the most of the opportunities that lie ahead.

ERRATUM

Biochemical effects of inhaled bronchodilators in asthma.

R.W.L. SIEBERS, C.D. BURGESS, J. CRANE AND R. BEASLEY

Department of Medicine, Wellington School of Medicine, Wellington.

Volume 47, no. 4, p. 128: the table of plasma/blood changes should read

"cAMP ↑"

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SPECIAL INTEREST GROUPS

Rationale

At times the Council of the NZIMLS needs advice on the various disciplines of Medical Laboratory Science.

All technologists, trainees and laboratory assistants need to develop their practical and theoretical skills. After gaining their qualification, technologists need to enhance their knowledge and practical competency through continuing education.

Special Interest Groups in Haematology, Microbiology, Clinical Biochemistry, Immunology, Transfusion Science, Histology and Cytology have been formed to help with the above.

Objectives

To advise the Council of the NZIMLS on matters pertaining to their discipline.

To assist with Continuing Education by providing planned education programmes including scientific meetings, seminars and practical workshops.

To nominate technologists to act as examiners and moderators for NZIMLS examinations.

To liaise with the Annual Scientific meeting.

To organise reviews of syllabi.

Composition

Appointments will be reviewed on an annual basis coinciding with the August meeting. SIGs will be responsible for finding their own committee members who will be confirmed by the Council. It is envisaged that there will be a 3 year time commitment. SIGs will appoint their own Chairperson, Secretary and Treasurer.

Programmes

SIGs will endeavour to produce a Continuing Education Programme and budget for the following year, for approval at the November Council meeting.

All programmes funded, supported or under the auspices of the NZIMLS will be known as NZIMLS Continuing Education Programmes.

Other

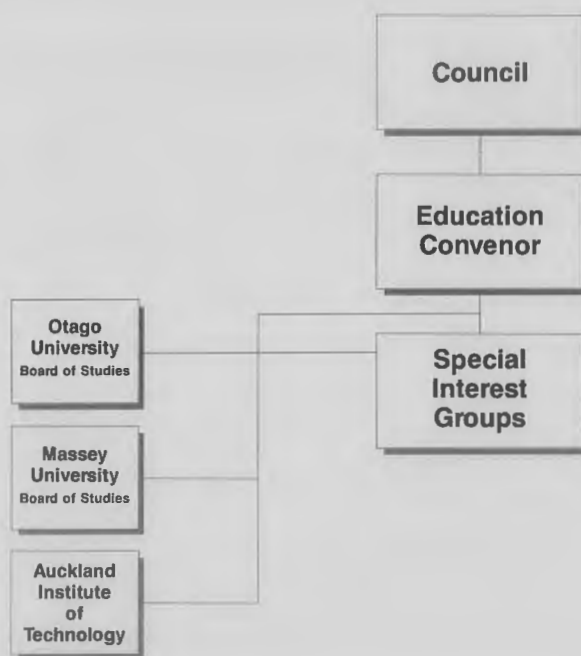
SIGs will produce an annual report for their activities by 31 March each year.

SIG bank accounts: A cash book showing income and expenditure must be kept up to date. SIGs must be able to provide the NZIMLS Treasurer with details for GST reconciliations at the end of February and August. At the end of the financial year SIGs must be able to forward their cash book, invoices and receipts to the treasurer for the annual audit of the NZIMLS accounts.

SIGs should keep minutes of their meetings.

Communication

The SIGs are accountable to the Council of the NZIMLS through the Education Convenor.



All correspondence will be through the Education Convenor to the Council. It may be appropriate for SIGs to communicate directly with training institutions but copies should be sent to the Education Convenor.

Course Announcement

Introduction to Molecular Genetics and Gene Manipulation

A one week non-credit introductory workshop will again be held in the Microbiology and Genetics Department of Massey University during the May Holidays 1994 namely 16-20 May. The aim of the course will be to provide a working introduction to the powers and limitations of molecular genetic techniques, for people with a professional interest in the subject. This year we shall endeavour to focus on topics in applied molecular genetics relevant to agriculture and medicine. Lecture material to be covered will include DNA and genome structure, gene regulation, the molecular genetics of plasmids and transposons, basic strategies of recombinant DNA research and the applications of "genetic engineering" to plants and humans. Practical work will include plasmid isolation, transformation/electroporation, restriction enzyme mapping, DNA cloning, PCR and RFLP analysis. Background assumed will be the equivalent of Introductory Genetics and Introductory Biochemistry (200-level).

Although Boehringer-Mannheim are continuing their generous sponsorship for this course in the form of biological materials, there will be a charge of \$450 (plus GST), in order to cover the cost of additional materials and facilities. Accommodation will have to be arranged off campus, as unfortunately, extramural fully books the campus accommodations. The enrolment will be limited to 30 (the capacity of the teaching laboratory). For further information and an enrolment form, please contact:

Dr Rosie Bradshaw,
 Department of Microbiology and Genetics, School of Biological Sciences
 Phone: (06) 350 4025

Minutes of the 49th Annual General Meeting held at Christchurch on Wednesday 25 August 1993 at 10.30am

Chairman

The President (Mr P McLeod) presided over the attendance of approximately 110 members.

Apologies

It was resolved that apologies be accepted from the following:

A Nixon, Auckland J Cull, Auckland
C Green, Lower Hutt A Cooke, Auckland
G Rimmer, Auckland

Proxies

D Reilly/A Buchanan

A list of 28 proxy holders, representing 49 proxies was read by the Secretary.

Minutes

It was resolved that the Minutes of the 48th Annual General Meeting held on Thursday 27 August 1992 be taken as read and confirmed.

R Dix/E Norman

Annual Report

It was resolved that the Annual Report be received.

E Norman/D Reilly

Speakers to the report were as follows:

E. Norman — Convenor, Awards Committee

Murex Award changed in objectives

- emphasis will be on professional and academic achievements
- monetary reward and prestige will remain the same

Med Bio Award

- best paper published in each edition of the NZIMLS Journal
- \$150 per paper totals \$600 per year
- to encourage production of papers for Journal

SCIANZ Award

- amount of award will be \$1,000
- full details still being progressed

Council has investigated the possibility of a student award and has agreed to offer \$200 to an undergraduate student who presents the best paper at an Annual Scientific Meeting.

M Gillies — Convenor, Publications Committee

- asked for more support from membership for scientific papers to publish in the NZIMLS Journal

J Le Grice — Convenor, Education Committee

- Auckland Institute of Technology have gained approval for their Bachelor of Applied Science degree course
- exceptional response from laboratories for degree student placements
- MLTB will cease to offer the Certificate level examination after 1995
- NZIMLS upgrading QTA syllabi and decreasing scope of QTA examinations.

Financial Report

It was resolved that the Financial Report be received.

S Gainsford/J Le Grice

S Gainsford spoke to the report.

- the difference in the 1992 Statement of Income and Expenditure compared with previous years is mainly due to the influence of the Special Interest Groups. The SIG accounts are audited along with the main account and there was a considerable increase in SIG activities.

D Pees questioned who the debtors at \$10,000 under Current Assets were. The NZIMLS had a credit of \$1,058 with Air New Zealand and advertising credits for the NZIMLS Journal owing at the time of publishing accounts.

G Cameron requested an explanation of the \$4,000 outstanding. This was a very late account received for the meal at the New Zealand Pavilion at the time of the South Pacific Conference.

It was resolved that the Financial Report be adopted.

D Pees/R Dix

Election of Officers

The following members of Council were elected unopposed:

President	D Reilly
Secretary/Treasurer	P McLeod
Region 3 Representative	C Kendrick
Region 4 Representative	J Le Grice
Region 5 Representative	L Milligan

Elections were necessary for the positions of Vice President and Region 1 and 2 Representatives.

Election results were as follows:

Vice President	S Gainsford	212
	E Norman	36

S Gainsford was declared elected.

Region 1 Representative	L Mayhew	75
	H Perry	28

L Mayhew was declared elected.

Region 2 Representative, A Paterson was nominated to Council unopposed.

Awards

The award winners were announced and the awards presented by the President.

Qualified Technical Assistant Awards:

Clinical Biochemistry	Linda Gordon, Invercargill Medical Laboratory
Haematology	Tracey Crosby, Tauranga Hospital
General	Paulette Brenkley, Diagnostic Laboratory
Immunology	Paul Bau, Diagnostic Laboratory
Medical Cytology	Karen Sullivan, Diagnostic Laboratory
Microbiology	Cynthia Traynor, Invercargill Medical Laboratory
Transfusion Science	Amanda Hayward, Tauranga Hospital

Certificate Examination Awards

Cytogenetics	Colleen Myers, Dunedin Hospital
Haematology	Wendy Maynard, Napier Hospital
Histology	Ann Thornton, Wellington Hospital
Medical Cytology	Amanda Goodall, Hamilton Medical Laboratory

Specialist Certificate Awards

Clinical Biochemistry	Chitra Subramanian, Telarc
Haematology	Keiry Belton, Diagnostic Laboratory
Immunology	Jane Clark, Wellington Hospital
Transfusion Science	Geraldine Heta, Auckland Regional Blood Centre

Journal Awards

Roche Diagnostic Microbiology Award	Shirley Gainsford and Gwenda Young, Valley Diagnostic Laboratory
-------------------------------------	--

Hilder Memorial Prize	Trevor Walmsley, Princess Margaret Hospital
Life Memberships:	Bert Nixon, Auckland Ron Mckenzie, Wellington Jan Parker, Dunedin

Honoraria

It was resolved that no honoraria be paid.

J Le Grice/D Reilly

Auditor

It was resolved that Deloitte, Touche, Tohmatsu be reappointed as the Institute's auditors.

S Gainsford/W Dellow

Future Annual Scientific Meeting

The 1994 Annual Scientific Meeting is to be held in Hamilton. The President announced that in 1995 the South Pacific Congress is to be held in Australia. Therefore, an NZIMLS Annual Scientific Meeting will not be held that year.

There being no further business, the Chairman closed the meeting at 11.28am.

Minutes of the 49th Special General Meeting held at Christchurch on Wednesday 25 August 1993 at 11.30am

Chairman

Mr P McLeod

Minutes

It was resolved that the Minutes of the 48th Special General Meeting held on 25 August 1993 be taken as read.
D Wilson/R Dix

Business Arising

The President informed the meeting that Council had investigated the possibility of offering reduced membership fees and conference registration fees to all undergraduate students. It is not feasible to institute another category and therefore there will not be a reduction in students membership fees.

With regard to student registration for conference, this is an issue to be dealt with by each conference organising committee.

Students are being issued with complementary copies of the NZIMLS Journal and Newsletter.

Remits

1. It was moved by J Le Grice, seconded by D Pees that the Near Patient Testing Report as published in the NZIMLS May 1993 Journal be adopted by the New Zealand Institute of Medical Laboratory Science (Inc.)

After discussion the motion was put to the meeting and declared carried.

2. It was moved by E Norman, seconded by D Pees that in the following Rules the words Secretary or Treasurer be replaced by Secretary/Treasurer.

8(a), 8(c), 9(b), 10(a), 12(d), 12(f), 13(e), 13(f), 14(b), 14(c) 16, 19(c)(v), 24, 26(a), 29 and 30(c).

The motion was put to the meeting and declared carried.

3. It was moved by E Norman, seconded by D Pees that Rule 10(a) be amended to read "The Rules of the Institute may be amended (whether by way of repeal, substitution or addition) by resolution at a General Meeting of the Institute. All such amendments must be notified by the Secretary/Treasurer in writing to each member of the Institute not less than sixty (60) days prior to the date fixed for the General Meeting".

The motion was put to the meeting and declared carried.

4. It was moved by E Norman, seconded by R Dix that Rule 13(d) be amended to read — "One ordinary member of the Council shall represent each of the following regions:
 - Region 1 The Northern portion of the North Island comprising the provincial areas of Northland and Auckland.
 - Region 2 The Central portion of the North Island comprising the provincial areas of Waikato, Bay of Plenty and East Coast.
 - Region 3 The Southern portion of the North Island comprising the provincial areas of Taranaki, Hawkes Bay, Wanganui, Manawatu, Wairarapa and Wellington.
 - Region 4 The Northern portion of the South Island comprising the provincial areas of Nelson, Marlborough, Westland and Canterbury.
 - Region 5 The Southern portion of the South Island comprising the provincial areas of Otago and Southland.

After considerable discussion as to how the provinces are defined, the motion was put to the meeting and declared carried.

5. It was moved by E Norman, seconded by R Dix that the following sentence be added to Rules 14(b) and 14(c) — 'With the consent of Council the Secretary/Treasurer may delegate any or all of these duties to the Executive Officer'.

The motion was put to the meeting and declared carried.

6. It was moved by E Norman, seconded by G Cameron that a further subclause be added to Rule 19(c) — '19(c)(viii) To enter into employment contracts to assist with the day to day running of the Institute.'

The motion was put to the meeting and declared carried.

7. It was moved by E Norman, seconded by D Pees that Rule 26 be as follows.

Executive Officer

(a) The Executive Officer shall attend all formal meetings of the Institute and all meetings of Council and shall record all proceedings.

(b) The Executive Officer shall undertake any other duties as may be determined by Council. These duties may be altered by mutual agreement".

All subsequent Rules will be renumbered as follows:

Rule 27 Bylaws and Regulations

Rule 28 Dissolution

Rule 29 Indemnity to Council

Rule 30 Remuneration

Rule 31 Branches

8. It was moved by E Norman, seconded by R Dix that as Rule 26 was accepted, the second sentence of Rule 14(b) be amended to read — "The Secretary/Treasurer shall attend all meetings and ensure that records of all proceedings are kept".

After discussion, the motion was put to the meeting and declared carried.

9. It was moved by S Gainsford, seconded by D Reilly that Policy Decision Number 3 (1982) be reaffirmed.

Policy Decision No 3: Council will make and administer awards to members of the Institute, the details of each award will be recorded and may be amended from time to time by resolution of Council. The summary of these details shall be published annually in the Newsletter.

Carried

10. It was moved by D Reilly, seconded by D Pees that

Policy Decision Number 5 (1978) be amended to read:

Policy Decision No 5: That medical supply companies should not be approached to aid in the finance of branch and SIG meetings; companies may be invited to attend and although donations may be accepted, money should not be solicited.

After discussion, an amendment was moved by D Wilson, seconded by R Austin that Policy Decision No. 5 (1978) be amended to read:

Policy Decision No 5: That medical supply companies should not be approached to aid in the finance of Branch and SIG committee meetings, companies may be invited to attend and although donations may be accepted, money should not be solicited.

After considerable discussion for and against, the amendment was put to the meeting and declared carried.

The amendment then became the motion and was put to the meeting and declared carried.

There were no remits from the floor.

General Business

With regards to the amendments to the NZIMLS Rules, D Pees asked that a new Rule book be printed and circulated as soon as possible.

G McLeay requested that the NZIMLS ask the MLTB to resolve the issue of registration for degree students.

K McLoughlin replied to G McLeay's request that until the Universities release the full details of the fourth year course, it is not known by the Board how the University competencies will fit in with the Board's competency document. It is difficult at this stage to make a decision whether the university students will be registered as soon as they come out or not.

MLTB and NZIMLS are taking a close watching brief on all degree courses as they appear, to ensure that they will reach the Board's competencies.

J Parker stated that the curriculums of both Universities will be matched against the Board's competency document. Once completed, then the Board will know if they will meet the competency. It is hoped to have this exercise completed early next year.

There being no further business, the Chairman closed the final Special General Meeting at 12.27pm.

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The Pacific Way

In this issue we welcome the opportunity to print a paper presented at the Fiji Medical Laboratory Technologists' Association 10th Anniversary Mini Congress in September, 1993.

Since "The Pacific Way" page began in the N.Z.I.M.L.T. Journal in 1983, the objective has always been that articles written by our Pacific Island colleagues would feature on this page. We hope that there will be more made available to us to publish in future editions.

"Technologists versus Automation"

**Berenadeta Lutua,
Labasa Hospital, Fiji.**

"The human versus the machine". These are the two prominent features one encounters on entry into any of our major hospital laboratories. The technologist, defined as a "specialist in technology" has as his best friend and great helper "automation" which is defined as "the act or practice of using machines that need little or no human control especially in place of workers".

It is appropriate to say "best friend" because without all these machines associated with modern technology, the technologist would still be preoccupied with the time-consuming manual methods of the past years. Moreover, with these machines the ability to handle increased workloads has merely permitted further growth of those loads and more dependence on the machines.

If the technologist lost this friend, he would feel handicapped. The dependence technologists place on machines can be attributed to the increasing demand for laboratory tests that these machines are able to produce at the press of a button.

Nevertheless, no matter how sophisticated and expensive a machine may be, it is still lifeless and should never be considered more important than the most important resource ever created, which money cannot buy — we, the technologists.

Automation in the laboratory should have as its goal standardisation of the method with improved accuracy and increased sensitivity. Automation hopefully achieves three things.

These are:

1. An increase in the rate of test performance.
2. A decrease in the cost per test.
3. A reduction in the number of personnel needed to handle the workload.

Due to foreign systems which may not be fully understood being idolised, the installation of a new machine is like a long awaited solution and the technologist is full of glee. What the technologist has to bear in mind is that these machines are only as good as the proper maintenance they receive. Moreover, taking into consideration factors such as power supply, reagent quality, ventilation, humidity and temperature as well as technical expertise, the machine's indication of a problem is a source of apprehension for the technologist. This is especially so if the source of the problem cannot be pinpointed. To further add to the technologist's cause for worry is the knowledge that one is only aware of a fault *after* it has occurred. This may cause all the samples run earlier to be rerun.

The technologist should take some time to read the manufacturer's manual in detail so that he/she knows how

to take corrective action when required and also knows how to carry out the necessary maintenance.

Despite the sophistication of a machine, errors still occur. For example, an error introduced into the memory of a computer can be more troublesome to locate and rectify than the same error being recorded by hand. Nevertheless, with many of the machines being quantitative i.e., they are able to produce so many results at the press of a button, work has greatly become simplified. But what the technologist should bear in mind is that *quality is more important than quantity*.

The key to successful use of automation to simplify work and produce quality results is quality assurance and quality control. And holding this important key is the technologist, without whom machines cannot function and whose basic responsibility is to constantly check and search for errors so that results produced will be reliable. Bearing this in mind, one cannot dispute the fact that the *key to quality itself are the technologists*.

Moreover, with the current trend associated with technology development, more machines seem to indicate more development. Therefore, the technologists have become outnumbered by machines in their workplace (hopefully, they will not be replaced by machines).

Even though both are associated with development, the technologist can be further developed and improved upon, whereas machines only need preventive maintenance to keep functioning.

Machines may replace technologists in quantity but not in quality. For the technologists to stay ahead in the competition with machines, they need to successfully produce and deliver top quality results. For this the technologist needs a commitment to development and improvement and should be looked upon as an investment and not a cost. This is essential because it must be accepted that technologists are not only the greatest and most important asset but that they alone are the creators of quality. With their actions and reactions becoming quality-related, expensive failures and the accumulation of hidden costs may be reduced or prevented altogether. Technologists need to be encouraged, educated and assisted to develop themselves. If this is to occur the support and involvement of senior management is crucial. It is the responsibility of management to create a system that allows quality to be pursued. Powerful tools to achieve such a system are training and education. This should be an on-going process, as quality itself is a never-ending process.

Standardization should not be the goal of automation alone. It is necessary to have technologists of the same calibre, whether it be a major hospital or a small one, because patients being all human need to be treated alike with regard to the service provided by technologists. Let us not forget that without patients, technologists would not be required and automation would be meaningless. Standardisation can be achieved with the help of management for technologists to develop themselves through orientation, training and advancement in job skills, modifying their attitudes and cultivation of managerial and leadership skills.

It must be further stressed that development should be regarded as an invaluable investment which will be beneficial for long term purposes, especially if the technologists are to provide an effective and efficient service.

Worthy of mention here is how technologists in Fiji have

come a long way in recent years to improve patient care. Recommendations for further improvement should be left to the discretion of those who make the important final decisions, namely the individual technologists themselves, management or the employer.

Taking orientation into consideration. In our situation this is the beginning of on-the-job training for the students and it begins on the first day of employment at work. Impressions and attitudes about the job and how important it is will be formed through the student's daily contacts at work. It is necessary to relay accurate impressions and a good attitude because students of today are technologists of tomorrow.

Recommendation: "Senior technologists responsible for teaching at work should not be rushing around at the same time to finish the work".

This is to remove the pressure of the workload which may cause the technologist to be placed in a stressful situation whereby he is trying to teach and at the same time trying to complete the day's work. This stressful situation will place the student at a disadvantage because he will be learning in a not-so-orderly manner and the instruction may be inadequate.

Other problems which may arise out of this situation include the following:

1. Senior staff may be abrupt in communication without really intending to be abrupt.
2. The student's morale will be lowered because of the above.
3. Due to inadequate training arising from the senior technologist not being able to teach well, the student may have a feeling of inefficiency and lack confidence which in itself is a barrier to success.
4. The proper attitude towards quality service will not be attained.

Recommendation: "Students to learn from patient samples only after they have been analysed by a senior staff member".

This is to safeguard the patient. No one is perfect all the time due to our being human, and mistakes are bound to happen in the learning process. The student may learn from his mistakes but human life is at stake.

The student's mistakes will also be an added burden for the senior technologist, who may have to repeat one or more tests, answer questions or have a repeat sample collected, which is going to inconvenience the patient.

Moving a step further to where development is needed, with respect to training and advancement in job skills, the facilitators and officials of F.M.L.T.A. (past and present) should be complemented on the stand for continuing education. This is by running seminars and workshops. The support of the Ministry also should not be forgotten, even if minimal.

Moreover, the current practice of on-the-job training is powerful and has its advantage in that no special facilities are required and one can be efficient practically while learning from and helping senior staff with productive work.

Recommendation: "Before any technologist starts tutorials for students, he/she should first have further appropriate training. A training college or university would be preferred if resources are available or get someone with skill, qualifications, experience and knowledge, even if it has to be from overseas".

The standard of tomorrow's technologist will depend to a great extent on how efficient and knowledgeable the teacher is and the skill with which he imparts his knowledge. Improving the skill and knowledge of the technologist will be a credit to management, who should not regard the technologist as the problem but the answer to the problems, if properly trained. The work of the present tutors should be acknowledged, but there is still room for improvement, as there is no limit to education.

Recommendation: "Resources for the degree course in Medical Laboratory Technology at the University of the South Pacific."

With regard to our theme, it would be appropriate to be geared towards the above and it should be of benefit, instead of what we face nowadays. It is difficult to obtain a degree from overseas. A degree is a recognised qualification. I feel our profession is not getting the recognition it should have in Fiji considering the contribution we make to patient care. A degree will also mean more knowledge — so why not? Let us not be discouraged by those who say it is not necessary because the people saying it already have a degree themselves and are proud of it and do not regret studying to obtain it.

Recommendation: "Technologists should be sent for further training in machine maintenance or make the most use of expertise in the country".

Machines will only remain in good condition if they receive the necessary maintenance at the right time. What needs mentioning is that, at present, a technologist from China who is at the Biochemistry Department in Suva, had undergone (prior to coming to Fiji) a 120 hour course in "Machine Analysis". He is able to diagnose and remedy almost any fault in the new machines the laboratory has acquired so far. This knowledge and expertise on machine analysis should be tapped. The subject could be introduced in the curriculum later on, but for the time being there is no harm if all technologists acquire whatever knowledge our Chinese friend can impart in maintenance of machines. This will almost be like going to China for training. If everyone knows then we do not have to lament the emigration of the few who had been taught. Please send him to Labasa if possible. The technologist, being the daily operator needs the expertise to detect any slight variation from the norm. The Biochemistry Department in Suva is also short-staffed and has its priorities in medical equipment. Staff are only called in or informed when there is a problem. I presume this problem could be delayed or prevented if regular maintenance is carried out. Therefore it is left to the technologist to maintain his helper in patient care.

The manufacturer's manual is provided, but necessary maintenance such as changing of pumps, tubing and some internal cleaning is not carried out because the technologist is hesitant and apprehensive to do it because of lack of knowledge and skill.

Recommendation: "Refresher course and seminar on self analysis."

Refresher courses on-the-job are needed to go hand in hand with seminars and workshops to refresh staff with new concepts and ideas and be kept up-to-date with recent changes and trends. Seminars on self-analysis would help in modifying attitudes, e.g., work ethics, how one relates to others, weaknesses and how to improve them, are just some of the things that should be included.

Recommendation: "Incentives."

This is needed so that staff do not leave for greener pastures. It is usually the senior staff who leave, which is a waste of resources after the training they have received. Despite the trend to move towards automation, an increase in technologists is still necessary. Extra staff are needed for the following reasons:

1. to teach.
2. to maintain machines regularly so that they are in good working condition.
3. to be responsible for the successful application of quality control which is the cornerstone to having confidence in laboratory results.
4. to enable staff to take annual or study leave and not to be held back as is often the case, due to shortage of staff.

Furthermore, having one's hard work recognised and rewarded is an investment in itself because technologists will

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have a sense of belonging and will want to do better. Security, safety and compensation are also needed for the technologist's peace of mind. The attitude of the technologist is the most important feature in any quality control and development programme. Attitude is the key to quality. Technologists hold this key in their staff relationships. With good human relations and thoughtful activities, cumulative errors and costly repairs can be prevented. Of importance here is the need for flexibility, which means free and regular communication among all employees. The sense of togetherness and team spirit should start from the top and extend to everyone else, right down to the students.

Voluntary co-operation can be attained by free and unbiased communication, with absence of barriers when talking to one another. Free and fearless communication can improve efficiency at work and prevent a build-up of stress. Lack of communication and awareness can cause failures and costs. Equally as important is respect. This includes respect for patients, for fellow technologists, and all other health personnel. Barriers between different departments should be removed and one should see things from an overall viewpoint. Even though individuals with different ethical frameworks, attitude patterns and behavioural experiences are thrown together, they need to co-operate and move in the same direction with the same goal — to provide an effective and efficient service for the patients.

Technologists should accept each other as individuals and appreciate what one can do, instead of focusing always on what one cannot do. I would like us all to share the following quotation:

"A wise person is one who looks into himself and finds out his own mistakes and faults, but the one who finds faults in others, he can neither know himself, what he really is nor what his faults are".

Attitude modification, management and leadership go hand in hand because how management treat the technologist is going to affect his attitude to the job. Therefore I feel that it is an advantage if all technologists get this training.

Everyone has a personal life to manage and it is interesting to note and be aware of the fact that everybody was born a leader. All that needs to be done is to tap this potential and provide the proper training for it to be effective. This potential is proved by one's ability to think, which people regularly use in their personal life, for example, leadership at home, girl guides or scout troops, youth functions or church work etc., and they do it well. Encourage them to think for themselves at work to get out of their own way. Instead of always telling them what to do, learn to ask them what they think should be done. Many may know the answer but traditionally always expect management to do the thinking because it has always been the trend. People should be inspired and encouraged to take the "you can do it" attitude and to make decisions for themselves. Also, your assumption about people will affect them and their performance. A pleasant, sympathetic and motivational environment help bring out behavioural changes, and with it the practice of excellence.

Furthermore, one should demonstrate a care for people. This can be a strong motivational factor and there will be a desire by all to do only the best. The individual's sense of commitment may be increased.

To conclude, I would like to point out that the recommendations made here are not cheap. Automation is not cheap either. Investment in machines can be short term. This has been proved when an expensive machine is not functioning and there is no back up and no one available to remedy the fault. Purchasing the machine in the first place was a wasteful exercise. Machines decrease in efficiency with increase in years whereas with the technologist it is vice versa.

Therefore before any development in technology, the technologists should be developed first, and we should not sit back because no one else is going to initiate our

development. And nothing, I repeat nothing, should be impossible if technologists are united and work as a team because "TOGETHER WE WORK BETTER".

The Ministry and politicians have their priorities but with diplomacy, the right representation, and talking to the right people at the right time, we should be able to initiate a chain of response which may possibly take effect within 5-10 years time. If we are hesitant and do not voice what we need, then no one is going to do it for us. We will always be left behind while every other profession gets the resources. The resources provided at the University of the South Pacific are an example. While others have gone from one strength to another, *we have not even started*. Let us go forward then with determination and confidence along the pathway which has been paved for us when the laboratory services started in the country. The same pathway FMLTA has been determinedly striding along in the past 10 years.

Lastly, as a reminder to us all. On our way forward and with increased technology, let no two technologists spoil their relationship because of our inanimate friend "the machine". It may be expensive and a great helper in patient care, the help it gives is very specific and limited, whereas your fellow technologist will help in almost anything. In the workplace as well as outside, I regard technologists as more valuable because they are able to give you a smile.

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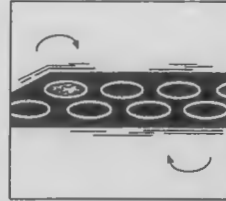
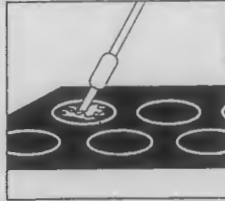
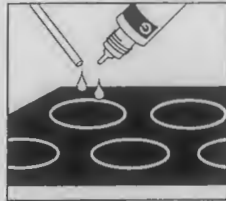
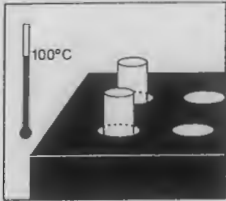
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