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*** Text**, in the order of **Introduction, Materials and Methods, Results, Discussion and Conclusion.**

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*** Acknowledgements** should be made to people and/or organisations who have made substantial contributions to the study. Authors are responsible for obtaining consent from those acknowledged. Financial contributions towards the study from granting bodies or commercial organisations must be stated.

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Editorial

Laboratory Technologist or Scientist?

Shirley Gainsford
Valley Diagnostic Laboratories
Lower Hutt

Why is the word technologist and not scientist still widely used by members of our profession?

A questionnaire that was published in the New Zealand Journal of Medical Laboratory Technology August 1990 stated that "a large majority of respondents indicated a preference for the title Medical Laboratory Scientists." In 1990 we changed the name of our professional society to the New Zealand Institute of Medical Laboratory Science. One would have thought that a change to calling ourselves Medical Laboratory Scientists would follow but on the whole this has not happened. Have we just not made the effort to use the word scientist or do we think we must have a degree or be undertaking research to use it?

My Oxford dictionary says that a scientist is an expert or student in science and science is defined as an organised body of knowledge on a subject. Expert is defined as practised, skilful or well informed. Surely we are practised, skilful and well informed in our medical laboratory science disciplines. The word technologist describes us too, as technology is defined as a practical or industrial art. However the word technologist invariably gets turned into technician by any one outside our profession. It is not a widely used word and therefore people do not identify with it. They do identify with scientist.

Unfortunately our registration board, the Medical Laboratory Technologists Board, has not changed its name. The Board is presently reviewing its regulations and I would urge them to make a change to Medical Laboratory Scientists Board.

A few years ago an NZIMLS Council member told me he thought we should not start calling ourselves scientists until students graduated with BMLS degrees. This year students will graduate from Otago and Massey Universities with a BMLS. My colleagues at Wellington Hospital have called themselves Medical Laboratory Scientists for some years so come on fellow Council members and colleagues. Let us follow their lead. Start thinking of yourself as a **Medical Laboratory Scientist** and the words will soon automatically replace those of Medical Laboratory Technologist in your language.

IN THIS ISSUE

Near-patient testing. P Godsell of the Royal North Shore Hospital Biochemistry Department reports on the implementation of a blood gas network to reduce turnaround time for patient test results for their hospital's Intensive Therapy Unit. He discusses the various issues of improtance when planning such near-patient facilities. Of particular consideration is choice of instrumentation, laboratory back-up support, quality monitoring, staff training and service.

Coagulation instrumentation. J Peters of the Middlemore Hospital Haematology Department reports how his laboratory managed to acquire a more versatile coagulation analyser without outlaying capital money. This was done on the basis of consumables cost savings. Additional benefits were reduction in staff time on the instrument with a resultant decrease in turnaround time. The new instrument was evaluated to ensure that accurate and comparable results were obtainable using patient samples, and to ensure that reagents in current use could be used on the new instrument.

Tunga penetrans. L Jones and Professor R Pilgrim from Valley Diagnostic Laboratories and University of Canterbury report on the first recorded specimen of Tunga penetrans found in New Zealand. They present laboratory methods for slide-mount preparation and the diagnostic criteria for differentiating Tunga penetrans from other fleas. Tungiasis, a cutaneous parasitic infestation by the fertilised female sand-flea Tunga penetrans, is normally only found in tropical areas, but as reported in this paper can turn up in non-tropical areas due to increased travel to these areas. They highlight the need for awareness of the existence of this tropical flea, and its laboratory preservation and storage for confirmatory diagnosis.

AIDS/HIV knowledge. R Siebers from the Wellington School of Medicine and colleagues from the Pacific Paramedical Training Centre, Palmerston North and Dunedin report on AIDS/HIV knowledge of second year undergraduate students of the Medical Laboratory Science degree programmes at Massey and Otago Universities. They administered an AIDS/HIV knowledge questionnaire to the students and laboratory staff in a section of a large hospital. Students scored slightly lower than laboratory staff (65.9% vs 73%). Various deficiencies in core AIDS/HIV knowledge were identified. The authors recommend on-going educational AIDS/HIV programmes for both students and laboratory staff.

Platelet volume. In this continuing education paper Dr J Carter and R Siebers from Wellington critically review the methodological problems associated with the measurement of the platelet indice, mean platelet volume (MPV). In particular the various effects different anticoagulants have on the measurement of MPV by different techniques is discussed.

Near-Patient Testing: The Blood Gas Network at Royal North Shore Hospital as a Model for a Near-Patient Testing Facility

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NZ J Med Lab Science 1994, 48 (4) 160-164

Introduction

The development of simple, compact or portable analytical systems which provide rapid and reliable analysis of patient samples, has made possible the decentralisation of pathology testing facilities. At a time of increasing demand for cost efficient health care and as pathology laboratories seek to provide better service, these technological developments have resulted in the evolution of a range of testing facilities located adjacent to the patient.

A number of examples may serve to illustrate this development.

(i) Ward based testing – it is relatively common in hospital wards to find urine dipsticks, haematocrit centrifuges, portable glucose meters, whole blood gas and electrolyte analysers and oximeters in continual use.

(ii) Office testing – medical surgeries now offer a range of analyses including urine dipsticks, haematocrit, peak flow meters for the asthmatic, cholesterol and triglyceride measurement and pregnancy testing.

(iii) Satellite laboratory based testing – a satellite labortatory located on specific wards may better serve patients egs: blood gas testing laboratories in critical care wards are relatively common and plans exist at Heidelberg Hospital for a satellite laboratory to be located in the out-patient's Department.

Reasons for Near Patient Testing

– Turnaround Time,
– Turnaround Time,
– Turnaround Time,

The single most important improvement provided by the near-patient testing facility is reduced turnaround time. In conversation with medical staff in the Intensive Therapy Unit (ITU) at Royal North Shore Hospital (RNSH) it was stated that "the availability of an immediate, accurate result, significantly improves the efficiency and quality of acute patient care. At times of crisis if treatment can be commenced or adjusted earlier, the prognosis for the patient improves". At RNSH, it is estimated that for the tests which are available at ITU (such as glucose, whole blood gases, electrolytes or total haemoglobin) the result is available on average 19 mins sooner (range 12-40 minutes) than the results of samples sent to the main laboratory.

In addition to reduced turnaround time several other features of near-patient testing are important. The near-patient instrument, using whole blood requires less sample, which in the longer term reduces the blood supplementation required in the seriously ill patient. The near-patient analyser reduces pre-analytical variation as less sample treatment or handling is required. Testing in the near-patient facility at RNSH is performed by local nursing and medical staff, which has resulted in reduced demand on the main laboratory staff. At RNSH, we have seen the additional benefit of improved communication between Departments, which has produced collaborative efforts to improve patient management.

Important considerations for Near-Patient Testing

In planning for the establishment of a near-patient test facility, several planning issues are worth particular consideration.

Instrumentation: perhaps the most important consideration in establishment of the near-patient facility is instrumentation. Careful evaluation and selection of equipment contributes to the acceptance and success of the service. The instrument should provide a profile of tests which are appropriate for the particular site. The equipment must be accurate and reliable as it will be used by non-laboratory staff, 24 hours per day under conditions of varying demand. It is valuable in the planning stages to seek input from non-laboratory staff who will use the equipment and to evaluate all aspects of operation. In addition, once selection has been made it is important to characterise comparison of results measured at the near patient facility to results produced in the main laboratory. In particular, the clinical accuracy of the results must be ensured.

Mentor support: support of the mentor laboratory is essential for continuity of an accurate, reliable service. The menor laboratory should adopt responsibility for continuous operation and this means laboratory staff are responsible for selection of instrumentation, supply of reagents and consumables, support for analytical issues which arise, particularly at times of trouble, performance of regular maintenance, feedback with problem analyses or analytes and performance of quality monitoring of the system. In summary the mentor laboratory is responsible for the service and provides regulatory accreditation of the facility.

The issue of quality monitoring is particularly important. It has been a failing of satellite laboratories that quality control and assessment is not performed well by non-scientific staff. At RNSH, it is estimated that in over 80% of cases of problems reported with quality control results, the cause of the error is pre-analytical handling of the material immediately prior to analysis rather than a significant analytical problem. Continued good performance and ready acceptance of the facility by operators is enhanced if the mentor laboratory accepts responsibility for quality monitoring of the system.

Staff: consideration of staff requirements are important in establishing and continuing the facility. The mentor laboratory designs the routine operator training programme and in our experience, a small group of local ward staff nominated and trained as on-site expert have become a valuable resource for both the local site and the mentor laboratory. The local experts attend advanced training courses and provide initial and continuing instruction to users. The reader access to the local expert at times of difficulty has considerably improved the speed of resolution of problems and provides continuing feedback for users, thereby enhancing education.

At RNSH, the training course includes

(i) sample collection techniques including venipuncture, collection from arterial lines and capillaries, specimen handling after collection, procedure if an air bubble is collected,

(ii) operation of the analyser,

(iii) safety issues including disposal of biological material, procedure if splash contaminations or skin puncture occur and cleaning the analyser.

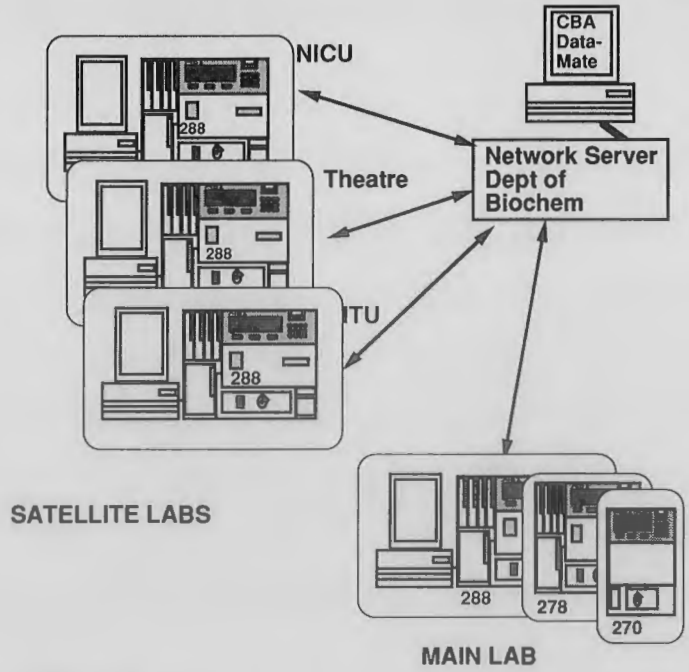

Figure 1
A schematic representation of the Blood Gas Network at RNSH, which allows bi-directional communication with analysers at satellite laboratories.

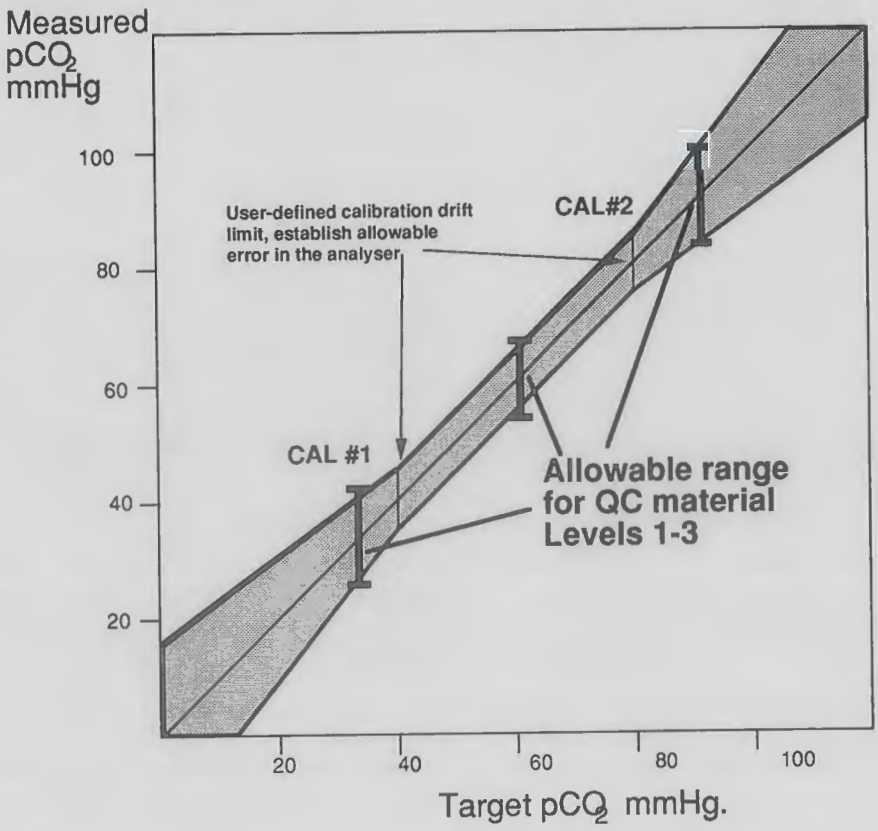

Figure 2
Quality monitoring of the blood gas system is maintained using the calibration drift log. Calibration drift limits are set by the system manager and limit the systematic error tolerated in the system. This is illustrated using pC02 as an example.

(iv) specimen problems such as haemolysis, contamination with IV solutions or air, effect of excess heparin in the collection syringe.

Authorisation of individual users of the system: to avoid expected resistance, at RNSH we do not require authorisation of individual users to operate the system. Clear instructions are provided for routine operation of the system, including contact numbers for training and problems.

Service Considerations: it is important for ease of use and therefore to the acceptance and continuity of the facility that issues of service be addressed. The analyser should be located in a central location and easily accessible to major users whenever required. The instrumentation should be identified as the responsibility of the mentor laboratory and relevant contact numbers provided. The instrument is located in a safe environment protected from light, draft, dust and temperature. Handwashing facilities should be readily available, together with sharp and biological waste disposal containers. The instrumentation requires continuing stable power supply, and should be provided with adequate lighting.

Whole BLOOD GASES and ELECTROLYTES at RNSH

Blood gas analysers were first available in the early 1970s. At RNSH the service commenced in 1975 and was introduced to satellite sites in 1983. The following lists the milestones in development of the current blood gas and electrolyte service.

History

1975 "Manual" Blood Gas service introduced in Biochemistry Department
1982 Automated Blood Gases (BGs) and CO-oximetry
1983 Near-patient facilities introduced to Intensive Therapy Unit (ITU), Neonatal Intensive Care Unit (NICU) and Main Theatre (Thtre) for measurement of blood gas parameters.
1984 Sodium and potassium added to the profile available at the STAT sites
1992 Blood Gas, Electrolytes and Total Hemoglobin introduced to STAT sites Ionised Calcium & Co-Oximetry available in Biochemistry laboratory, Computer management system installed to connect analysers to Biochemistry laboratory.

Description

The system developed at RNSH (Fig 1) incorporates

Three Corning 288 Blood Gas Analysers at ITU, NICU, Thtre measuring blood gas parameters, sodium, potassium and haemoglobin.

One Corning 288, one 278 Blood Gas Analyser and one 270 CO-oximeter in Biochemistry Department to include Ionised Calcium and CO-oximetry.

Corning CBA - DataMate software controlling and monitoring operation of the system, including 6 x IBM PS2 personal computers plus storage equipment.

The Blood Gas Service: The Biochemistry Department owns and operates the system. Local expert staff attend each site daily to check the facility for supplies and cleanliness. Biochemistry staff monitor performance of analysers several times daily using the computer monitoring system and attend the relevant site for routine maintenance and whenever problems are apparent staff member attends the site ASAP (witin 5 minutes during normal hours or ASAP after hours).

The system which is developed at RNSH is a collaboration between the individual sites and the Department of Biochemistry. The facilities have been developed to meet the requirements of the users and the continuing success of the system is a tribute to the communication which has developed.

At the present this sytem is analysing over 50,000 samples per annum at four locations on the RNSH campus. The Department of Biochemistry is responsible for recording patient results and for meeting all regulatory requirements. The introduction of computer based management via the DataMate software has made data management easier, more comprehensive and has had the additional benefit of increasing revenue generated. The DataMate software replaced a manual system of information collection and storage and an immediate consequence upon installation was a 25% increase in the number of patient results being recorded and retained in the patient file (increased from 3000 to 3800 samples per month). The increased revenue from this increased capture of results contributes significantly to the value of the system.

The software provides bi-directional communication which has aided in the troubleshooting process and has reduced the number of calls-back required for senior laboratory or engineering staff. The software includes maintenance and calibration logs and QC charts and the calibration log in particular has become invaluable in quality monitoring of the system. Instrument performance can be monitored using the calibration drift log, which ultimately provides a record of systematic error in the system. Successful calibration is based upon allowable drift limits which are nominated by the system manager and the system is established so that the systematic error is within acceptable limits for each analyte. In our installation, the calibration drift limits are set so that the range of performance corresponds to the acceptable limits of performance nominated by the RCPA-AACB Quality Assurance Program. (see Figure 2).

During the past two years operation of the system, in addition to routine operations and troubleshooting the Department has provided feedback regarding the following range of problems

(a) The effect of haemolysis,
(b) apparent bias in sodium as measured on the blood gas analyser (direct reading, whole blood sample) compared to the chemistry analyser in the Department (indirect reading ISE, serum sample; see Figure 3)
(c) procedure for measuring haemoglobin on the blood gas analyser particularly adequate mixing of the sample
(d) the effect of heparin concentration on measurement of cations (sodium, potassium and ionised calcium) on the blood gas analysers (Figure 4),
(e) the effect of storage time and temperature on blood gas analytes (Figures 5).

Summary of important points from RNSH

The success of the facility at RNSH may be summarised in the following points -

Accurate, reliable analysers: the instrumentation has proven to be accurate and reliable under the full range of applications from intermittent to continual use. The analysers are simple to use and largely self maintaining and self monitoring.

Close communication with Satellite laboratories: the acceptance and continuing success of the installation is due to strong and regular communication between the relevant staff.

Mentor laboratory prepared to provide full support: continuity of service and local staff trust in the system is ensured because the mentor laboratory is prepared to accept full responsibility for the analyser. The mentor laboratory assumes responsibility for the analyser, for maintenance, operation and trouble.

Local Experts for first line contact: a valuable adjunct to communication and training has been the utilisation of on-site experts at each facility. Staff on the ward are trained and act as first contact for information or to solve problems. It is valuable for the mentor laboratory to have this immediate contact with users as it provides a means of communication in both directions.

Training and operator support: the mentor laboratory has designed the training programme and readily supports the local operator when called upon.

Computer management of the system: the introduction of computerisation to manage the system has provided significant improvement in the blood gas service. The computer system stores all patient results, calibration and QC results and maintains a maintenance log. The availability of a calibration drift log means that comprehensive monitoring of the performance of the system is available for the first time and bi-directional communication has significantly reduced analyser down-time with minimal additional input required by the mentor laboratory staff.

To conclude, in discussion with the Deputy Director of ITU at RNSH, he stated that he regularly performs analyses on the system at ITU and is required to take immediate clinical action based upon the results. He stated that he is confident of the performance of the analyser and has no hesitation acting upon results produced and has not been let down by the system. This statement provides powerful support for the analytical and clinical success of the system at RNSH.

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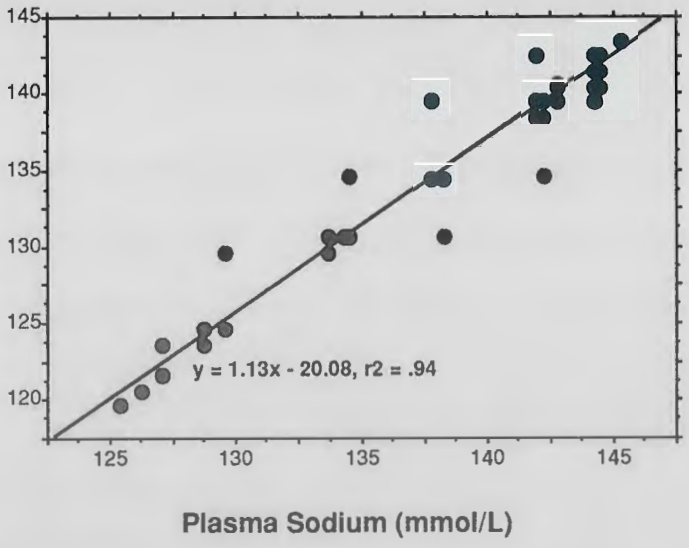

Figure 3
Whole blood sodium measured on the Corning 288 Blood Gas analyser versus plasma sodium measured on the Beckman CX-7, note that a negative bias is present in the blood gas analyser of 2-7 mmol/L.

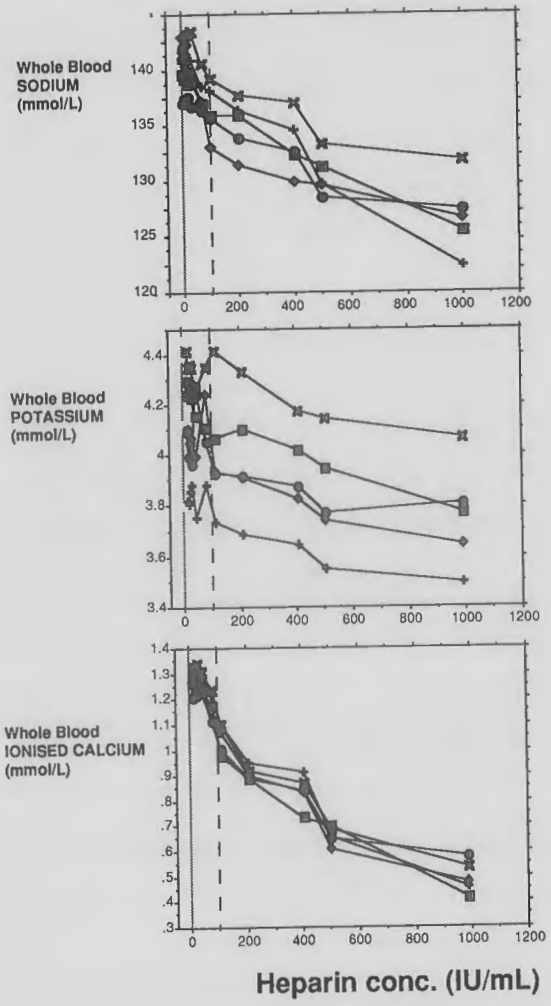

Figure 4
The effect of heparin concentration on measurement of sodium, potassium and ionised calcium on the Corning 288 Blood Gas analyser.

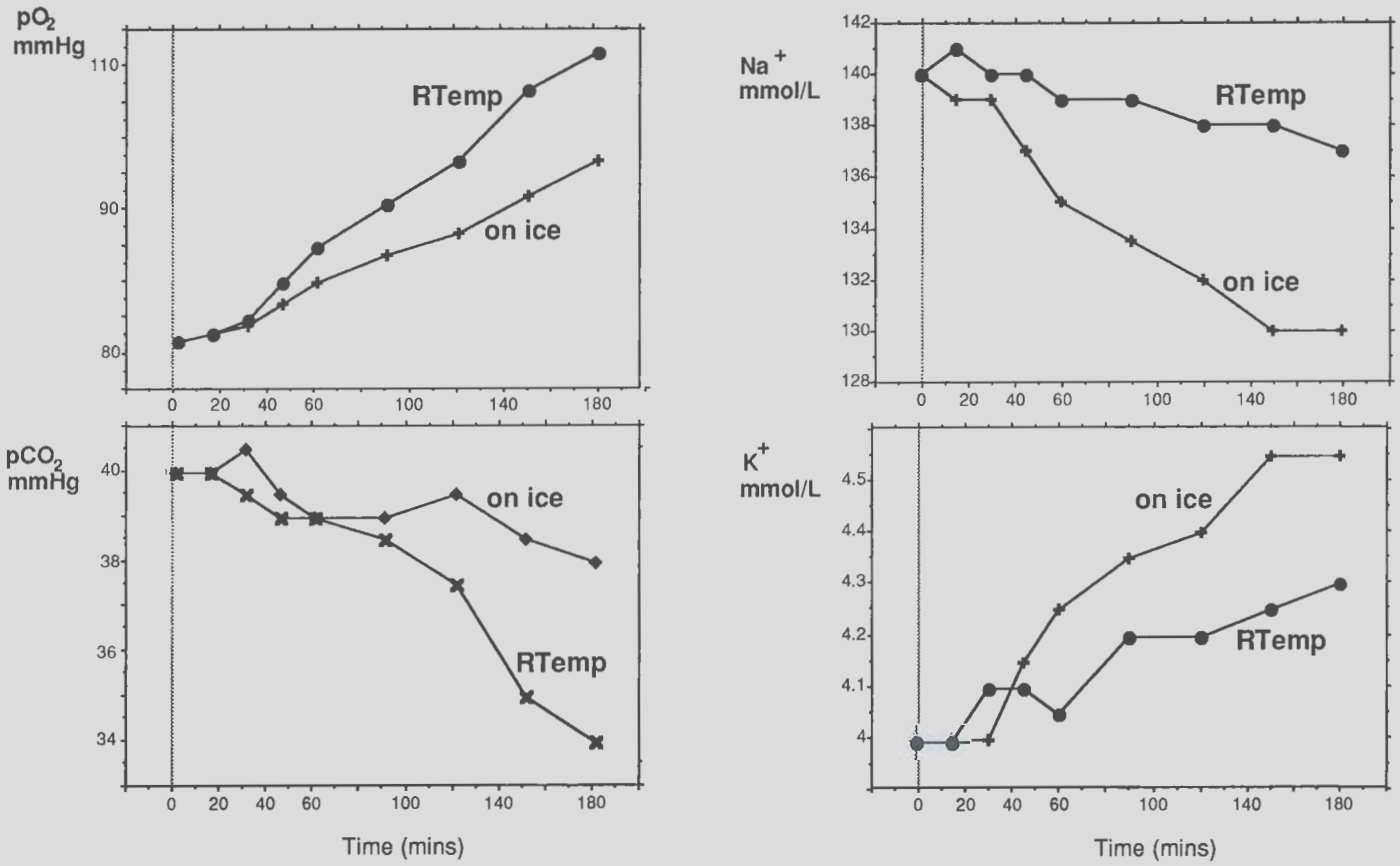

Figure 5
The effects of storage time and temperature on Blood Gas analytes, measured on the Corning 288 analyser.

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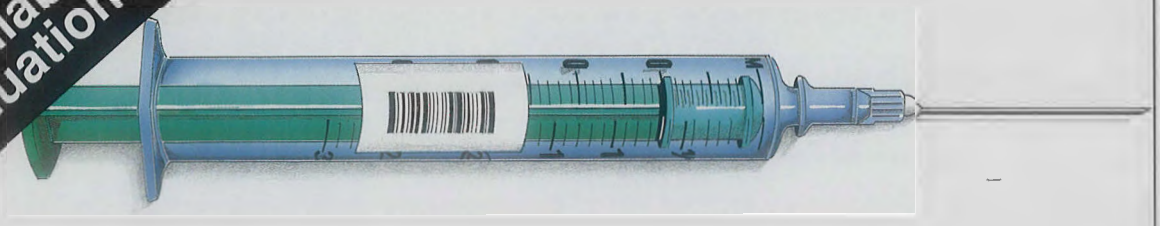

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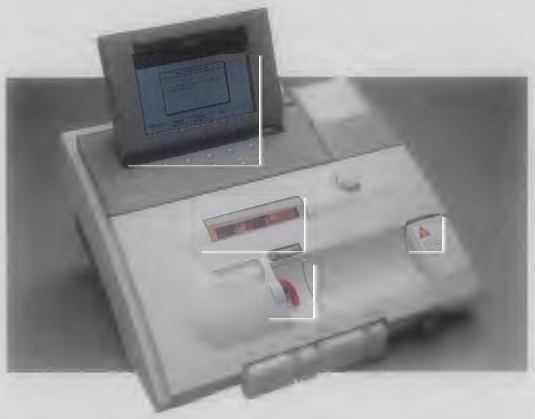

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HSJ 1634

Complaints About the Service Offered by the Coagulation Laboratory. No Money to Purchase a New Instrument — What Shall We Do?

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NZ J Med Lab Science 1994, 48 (4): 166-170

INTRODUCTION

The workload of the Coagulation Department at Middlemore Hospital was on the increase and expected to continue thus something had to be done about replacing the MLA700 (Medical Laboratory Automation, Inc) analyser with an instrument that was quicker and more versatile. The Department was constantly getting letters and phone calls of complaint about the long turn around time for results. We had no capital money and no chance of getting any for a considerable time.

After looking at the cost of the consumables for the MLA700 versus the MLA1000, we could see a way of getting the instrument based on the saving on consumables if we looked at a 5 year pay back period.

THE COST SAVINGS

Because of the set-up for the MLA700 the only safe way to run samples is to run all patients in duplicate (one double cuvette). The cuvettes are about 1.7 times the cost of the MLA1000 cuvettes. Because of the computer controlled fully automated nature of the MLA1000, single cuvette testing is the norm for all routine tests eg., Activated partial thromboplastin time (APTT), Prothrombin ratio (PR) and Fibrinogen.

The MLA 1000 can be set to use half volumes of sample and reagent and this is how we set the MLA1000 up. This means that for an APTT on the MLA700 we would use 200 µl of sample and 200 µl of both APTT reagent and $CaC1_2$, whereas using the MLA1000 we would use 50 µl of sample and 50 µl of both APTT reagent and $CaC1_2$. For PR's on the MLA700 we used 200 µl of sample and 400 µl of reagent, whereas using the MLA1000 we would use 50 µl of sample and 100 µl of reagent.

As can be seen, with large volume of samples that we process we would save almost enough each month on the cost of reagents and cuvettes alone.

Further savings were envisaged and have been made on control plasma. The MLA700 was controlled by running controls with almost every batch of tests and also used the greater volume of 100 µl/control so we used about 4 bottles of control/24 hours. We have found that with the MLA1000 using 50µl of control and having on-board storage that we use only two bottles of each level of control (1ml each) for a 24 hour period. Our control protocol is to run normal and abnormal controls at least twice each morning and afternoon and with each batch at 2000, 2300, 0200 and 0500 hours. In order to enter into the reagent instrument contract one is obliged to purchase the APTT and PR reagents from Baxter, the distributor of the MLA instruments.

TIME SAVINGS

There has been large savings in technologist time thus allowing the staff more flexibility to get on with other tasks and projects. This has been of particular benefit to the out of hours shift. The amount of work for the staff on the post-midnight shift was getting to the point that a second staff member would have been necessary. The quicker turn-around time of patient results has benefited the end-users in the wards (Medical staff). We have been able to provide a fast and efficient service to our heavy users eg. the Coronary Care unit and the Gastroenterology unit. An example of the time saved is:- a batch of 9 patients and controls took 47.75 minutes on the MLA700 and 17½ minutes on the MLA1000.

The turnaround time has been reduced by up to 1 hour in the morning because of the increased throughput of the MLA1000 and also because of our change in work pattern. We now process all specimens regardless of the time received within 3 hours of receipt.

The majority of our results are available in the wards within 1 hour of receipt if received during normal working hours and for our Gastroenterology and Coronary Care Units a half hour turnaround time after receipt of the specimen is offered.

TECHNOLOGIST TIME

A big advantage with the introduction of the MLA1000 has been in the primary tube sampling and full walk-away capability of the MLA1000. This allows the user to be released for other tasks. This is a major advantage for out-of-hours use as the staff can set the instrument running and go away to another area of the lab to do work and return to find the results printed out and the reagents pumped back into cooled reagent bottles.

EVALUATION

The evaluation of the MLA1000 was in two parts. Firstly we had to compare the MLA700 with the MLA1000 to see if the MLA1000 could do the task better than the MLA700. Secondly we had to compare the reagents that we were using on the MLA700 against the reagents that we would be using on the MLA1000.

The initial evaluations involved running specimens on the MLA700 and then on the MLA1000 using the then current reagents, namely for PR's – Thromborel S and for the APTT's – Platelet Excel LS. See Figure 1 for the regression comparison of MLA1000 and MLA700 using the same APTT reagent- Platelin LS.

The Pearsons correlation coefficient was 0.99 and the regression equation:-

MLA1000 = 6.17+0.807*MLA700 (n=19)

This data indicates that the two instruments give very similar results for the same patient samples.

See Figure 2 for the regression comparison of the MLA1000 and the MLA700 using the PR reagent- Thromborel S.

The Pearsons correlation coefficient was 0.97 and the regression equation:-

MLA1000=-6.35+1.05* MLA 700(n=41)

This data indicates that the two instruments give very similar

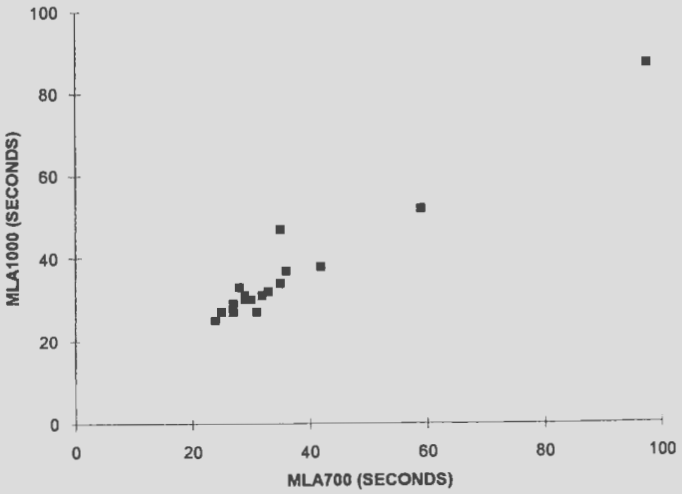


Figure 1
Correlation of APTT between MLA700 and MLA1000

results for the same patient sample.

PRECISION OF THE MLA1000

The precision figures quoted by the manufactures are shown in Table 1 as are the precision figures obtained within run using half volumes of reagents, and the between run figures over three days.

Table 1

	PR NORMAL	PR ABNORMAL	APTT NORMAL	APTT ABNORMAL
MLA LIMITS	<1.0	<1.0-<3.5	<2	<1.5-2.5
WITHIN RUN	0.5	2.2	0.77	0.59
OVER 3 DAYS	0.8	2.5	1.5	0.7

One can see from Table 1 that the MLA1000 performs well within the recommended specified limits.

REAGENT COMPARISONS

The comparison made between reagents indicated that some fine tuning of the reference ranges would be required. The APTT reagent that we evaluated was Actin FS and this was compared with Platelin Excel LS.

The evaluation was carried out on the MLA1000 and results are shown in Figure 3.

The Pearson correlation coefficient was 0.95 and the regression equation was:-

Actin FS = 3.55 + 0.86* Platelin LS. (n=36)

The reference range for normal patients would remain as for the Platelin Excel LS- (25-37 seconds). The therapeutic range also remained the same at 50-80 seconds although we did find that the Actin was a little less sensitive than the Platelin in these patients. These findings were supported by a heparin response curve that we plotted but the variation was not of clinical significance.

The Prothrombin Ratio were the most difficult to correlate as a decision was made to compare the Thromborel S with a new Baxter recombinant thromboplastin, Innovin. It was found that the corrrelation of the two reagents on patients within the normal reference range was excellent, however the actual clotting times were a lot shorter with the Innovin than with the Thromborel S eg. the normal pool value for Innovin was 10.8 seconds and with the Thromborel S the value was 13.5 seconds.

See Figure 4.

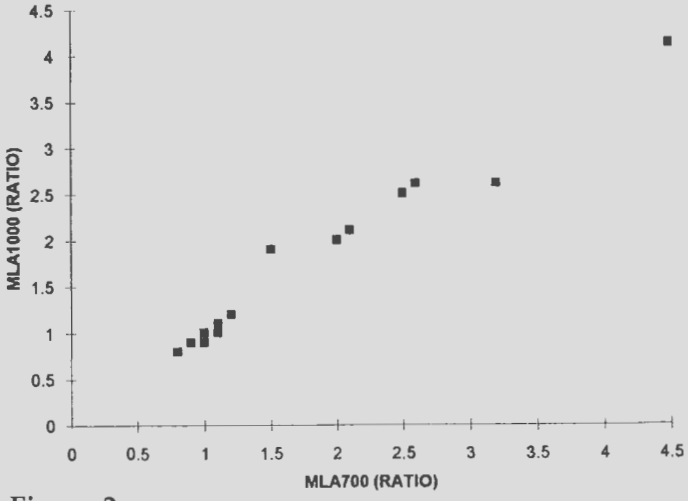


Figure 2
Correlation of PR between the MLA700 and the MLA1000

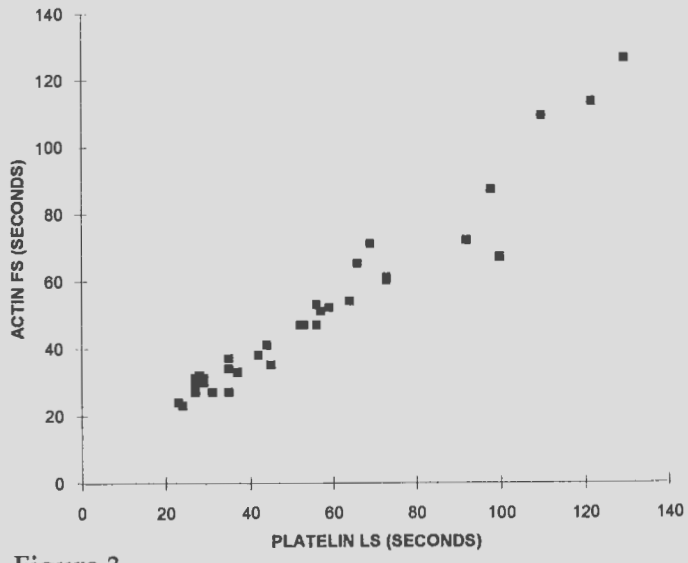


Figure 3
Correlation of APTT results between Platelin LS and Actin FS

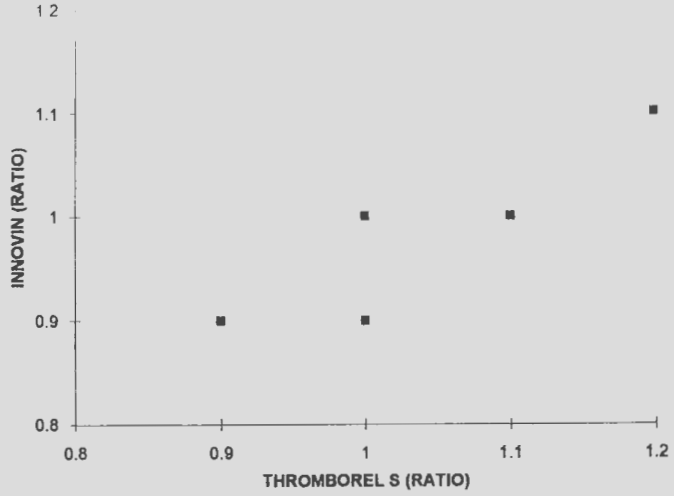
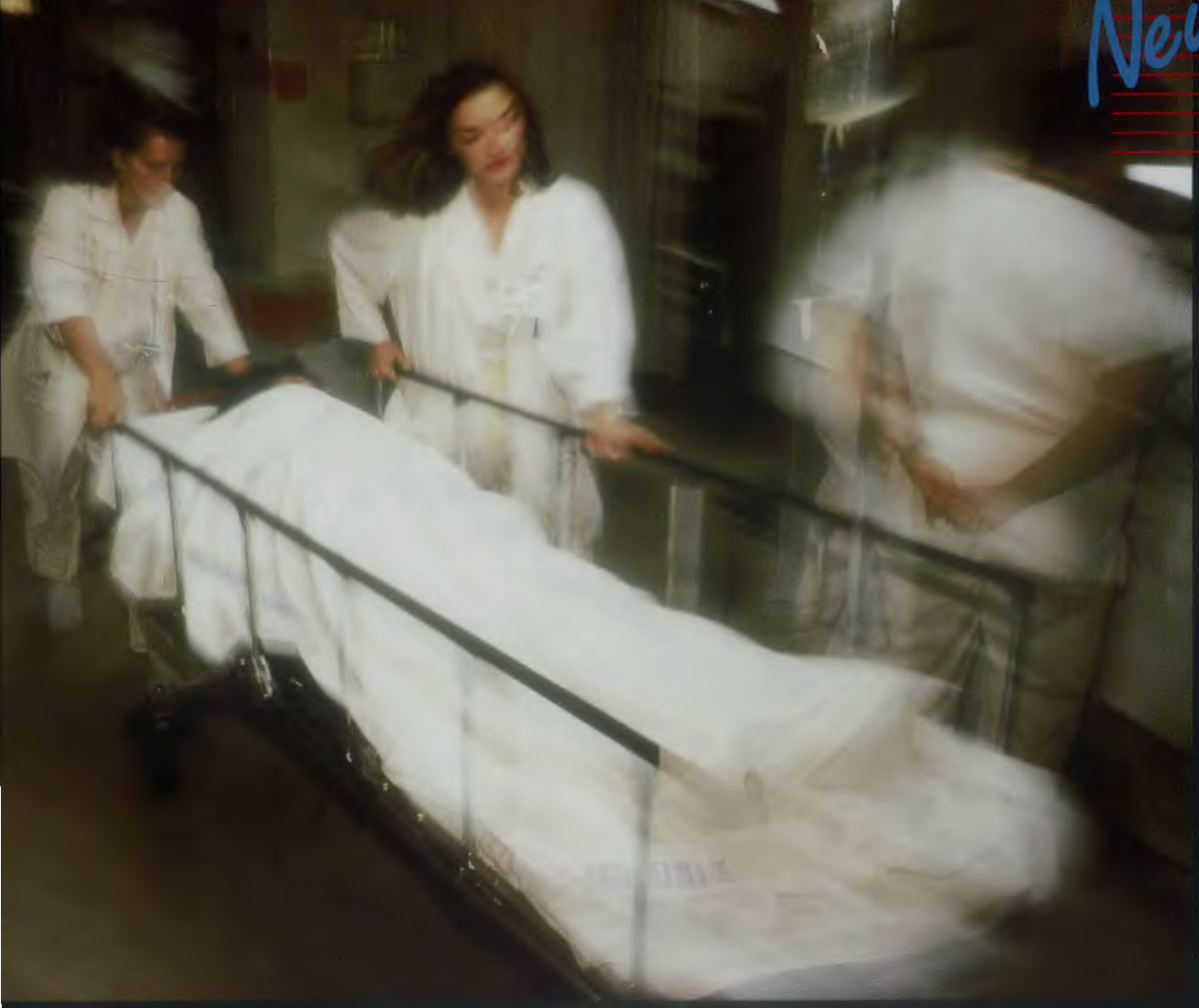


Figure 4
Correlation of PR between Thromborel S and Innovin reagents



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The Pearson correlation coeffioclent was 0.99 and the regression equation was:-

Innovin = 0.399 + 0.54* Thromborel S (n=16)

17 points were plotted but owing to the reference range being very tight (0.8-1.2) many points are superimposed.

This data obtained indicates that the two reagents give very similar results on normal patient samples.

The next comparison was of random samples on patients that were on anticoagulants, were normal or abnormal as a result of liver disease giving a variety of PR results. Once again the comparison was based on comparing Thromborel S and Innovin, and are shown in Figure 5.

The Pearsons correlation coefficient was 0.96 and the regression equation was:-

Innovin = -0.259 + 1.27* Thromborel S (n=60)

Subsequent to these findings further investigations on selected patients that gave discrepant INR's using the reagents above were carried out. After doing extrinsic factor assays it was found that the Innovin was more sensitive to the level of Factor VII than Thromborel S and therefore in patients that had not stabilised on their dose of Warfarin may have fluctuating levels of Factor VII thus giving the discrepant results.

It was found that some patients on warfarin that had concomitant infection and on antibiotics gave discrepant results with a low factor VII.

DERIVED FIBRINOGENS

Prior to the evaluation of the MLA1000 fibrinogens were not reported on a routine basis but only on patients with clinical conditions warranting the assay or with increased PR or APTT. We were therefore very interested in the derived fibrinogen as a screening test that cost no extra but involved a little extra time.

The derived fibrinogen depends on the increase in absorbance in the prothrombin time cuvette over a period of 106 seconds. A fibrinogen level is then calculated from a standard curve pre-set in the analyser software. The standard curve is prepared from the mean of quadruplicate tests on at least 7 plasma samples with a range of fibrinogen values as tested by the Clauss method on the MLA1000. The values that we used were 0.0g/L; 0.51g/L; 1.55g/L; 2.020g/L; 2.580g/L; 3.57g/L; 7.8g/L

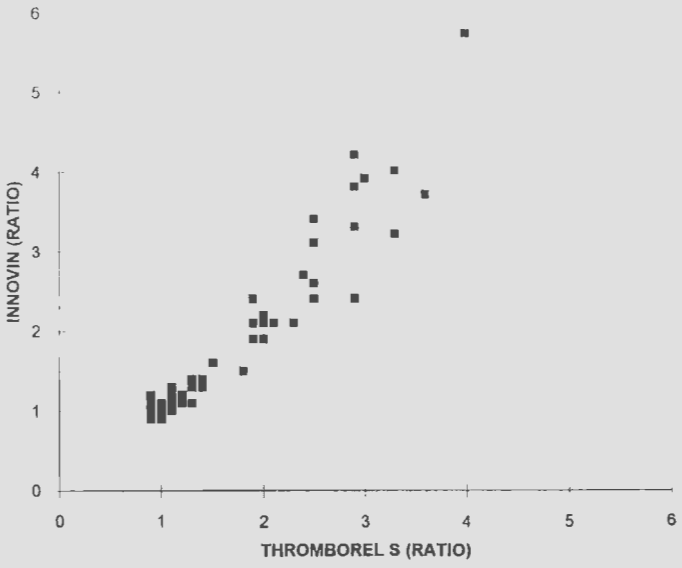

Figure 5
Correlation of anticoagulated patients PR's between Thromborel S and Innovin reagents

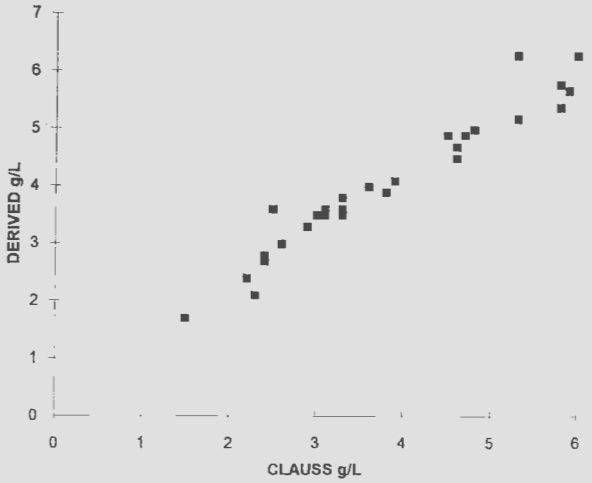

Figure 6
Correlation of fibrinogens by the Clauss and derived methods

Figure 6 shows the results obtained when patient samples were analysed for fibrinogen by the Clauss method and the values obtained by the derived fibrinogen on the MLA1000.

Pearsons correlation coefficient was 0.97 and the regression equation was:-

Clauss fibrinogen = -0.405 + 1.03* derived fibrinogen. (n=32).

Similar findings were found by workers at the Royal Perth Hospital[2].

We have set an upper and lower limit beyond which a Clauss fibrinogen must be done, these levels are: less than 1.0g/L and greater than 10.0g/L

FACTOR ASSAYS

The requirement for factor assays in our laboratory is not high so I will not go into too much detail regarding the comparisons here. Factor assays were being done on the MLA700 and were more expensive and labour-intensive as all dilution's had to be done by manual methods. With the MLA1000 all dilution's are done by the instrument and half volume techniques can be employed thus saving on reagents and time.

From our experience after doing the full range of assays that is from Factor II to XII, is that all assays work very well on the instrument. Although the calibration curves can be saved in the instrument from our experience the variations in clotting times obtained from day to day are not accurate enough to be used for accurate factor quantitation, however they may be satisfactory for a screening test. Similar findings have been noted both in New Zealand and in Australia on other instruments ie. the Coulter/IL ACL instruments.

CHROMOGENIC ASSAYS

During our evaluation we did not attempt to run any of the chromogenic assays as the instrument was to be used for most of the time doing routine coagulation profile tests. However subsequent to the evaluation we have set up Protein C (clotting method) and chromogenic Anti-thrombin III.

STAFF CONSIDERATIONS

During the evaluation a number of staff members were given the opportunity to run the instrument. The majority of staff members found the instrument to be very easy to learn to use and to be a great improvement on the MLA700. Some staff members were a little put off by the computer side of the instrument particularly the menu's that can appear to be a little overwhelming at first.

THE INTRODUCTION OF THE MLA1000

Once we had established that we could get the MLA1000 on a reagent rental basis with ownership after 5 years we took delivery and began the task of implementation. The implementation of the instrument went very well with the changeover from MLA700 to MLA1000 being complete as far as reporting results to the clinicians in a couple of days. The staff training took about a month as a large number of staff had to be trained from all the shifts involved.

The protocol for out-of-hours coagulation was changed at the same time as was the specimen handling procedure. In the past all specimens for coagulation were spun down and aliquoted into a separate plastic test tube and then either tested urgently or frozen for future testing if not urgent. With the introduction of the MLA1000 with primary tube sampling this is no longer done. The samples are spun down and placed directly into the instrument.

The out-of-hours shifts (1700-0800) had a change in protocol, because it was found that the instrument was so quick and easy to use that it was able to process all of the specimens that were received on these shifts and not have to separate and store the samples. We now do batches of tests on these shifts at 2000, 2300 and 0200 and 0500 hours or on demand if the staff are located by pager for an urgent test.

All staff members are very happy with the instrument particularly the staff on the evening and post midnight shifts.

Because of the dramatic reduction in turnaround time for results we have alleviated the problem that we had with our Coronary Care Unit with regard to the long turnaround time that they were experiencing. We can now offer a quicker turn around time for our Gastroenterology patients that require pre liver biopsy PR's at short notice.

We have just interfaced the MLA1000 to our main frame computer and this has improved our efficiency even more. It has also reduced the chance of transcription error.

CONCLUSION

The concept of obtaining an instrument on a reagent/rental basis is not new in New Zealand but had been predominantly restricted to Chemical Pathology Departments as they are high users of reagents, kitsets etc. However, in this case we were high users of reagent and cuvettes and by the use of detailed cost analysis we were able to demonstrate savings sufficient to pay off the MLA1000 over a five year period. The instrument evaluation proved that the MLA1000 was a definite advance on the MLA700 and would be a very worthwhile replacement.

The reagent changes that we had to make in order to enter into the reagent contract has been a more favourable change than we first thought. Although the APTT (Actin FS) reagent in our opinion is not quite as versatile as the Platelin LS as it is not as sensitive to the lupus anticoagulant, however the Innovin in our opinion is superior to the Thromborel S as it has an anti-heparin additive which we find to be beneficial to the testing of the patients on anticoagulants ie. allows us to report the true INR when the patient is on heparin.

As a department we will be looking ahead for further instruments that can allow us to be more efficient and we will look at further reagent/contract deals.

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Tunga Penetrans — An Unwelcome Immigrant

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NZ J Med Lab Science 1994, 48 (4) 171-172

Abstract

The first recorded specimen in New Zealand of *Tunga penetrans*, the causative organism of tungiasis, is briefly described. Methods are given for the laboratory preparation of specimens of fleas, and for differentiating *T. penetrans* from other fleas likely to be submitted for examination.

Key words

Tunga penetrans, Tungiasis, flea, New Zealand, tropical disease.

Introduction

A New Zealand resident returned from a stay in the Congo, West Africa, complaining of a painful lesion under a toe nail[1,2]. Material removed from the infected site was submitted for diagnosis.

Two specimens were received in the laboratory – one in saline and the other in formalin. Initial microscopy revealed many fragments (considerably damaged at removal from the patient), including the body (cyst-like sac) and eggs, which from descriptions in a text book were thought to be those of *Tunga penetrans*[3].

The specimens were transferred to 70% ethanol and referred to the second author for examination. The initial identification was confirmed, based on the morphology of the body of the gravid female flea.

As this skin parasite has not previously been reported from New Zealand, but is likely to reoccur here, it is considered useful to provide methods for laboratory examination and identification of the flea.

Methods

Examination of material from a suspected infestation by *Tunga penetrans* can be carried out by inspection under a stereo-microscope. At *ca* x20, it should be possible to discern the flea's head, thorax and grossly inflated abdomen. However, during the process of excising the parasite, it may become damaged; hence a slide-mount should be made for examination under higher magnification (x100) using a compound microscope.

Slide-mount preparation for specimens of fleas:

1. Macerate in cold 10% potassium hydroxide (KOH) overnight.
2. Wash in water.
3. Neutralise the remaining KOH briefly in 5% acetic acid.
4. Place, moist, on a slide; using fine needles, arrange legs, mouth-parts and body to convenient orientations.
5. Cover with a coverslip; place the entire preparation in a Petri dish and flood with absolutely alcohol; leave for 2-4 hrs.
6. Remove the coverslip and ease the specimen gently into clove oil; leave overnight.
7. Slide-mount in Canada Balsam with the head facing left; allow to harden at 45° for 2 weeks (but with appropriate care may be examined immediately).

The encysted female adult can be recognised and differentiated from other fleas by its angulated forms, long stiff barbed lacineae, foreshortened thorax and enormously distended abdomen (Fig.1).

The white ovoid eggs (Fig.2) are visible to the naked eye. They should not be subjected to treatment with KOH, as they will be almost completely destroyed. For preservation and storage, 70% ethanol should be used. However, the eggs are of little use in the diagnosis of Tungiasis, as most flea eggs are very similar in size and structure as seen in light microscopy. Ott et al.[4] reported them to be 560 x 380 µm in a clinical case in Australia; in the case reported here they measured *ca* 700 x 350 µm, perhaps indicating different stages of maturation.

Specimens for confirmation should be referred to The Museum of New Zealand Te Papa Tongarewa, Wellington. The preferred transport medium is 70% ethanol (not saline or formalin) as it ensures death without hardening of the differentiating structures.

Discussion

Tungiasis is a cutaneous, parasitic infestation by the fertilised female sand-flea, *Tunga penetrans*, which is prevalent in southern India and tropical parts of America and Africa. Other commonly used names for it include: chigoe, chica, jigger, chique, nigua, and pico[5], (it should not be confused with "chigger", the term reserved for the larvae of Trombiculid mites which also burrow into the skin). Tungiasis was first reported in crewmen who sailed with Christopher Columbus and were stationed on Haiti in 1492.

Preferred habitats of the flea include warm, dry, shady and sandy soil, dust or ashes in poorly kept huts, cattle stables and other animal housing.

The life cycle of *Tunga penetrans* comprises four stages: egg, larva, pupa and the adult flea. It occupies about 4-6 weeks, although the encysted female may live a further several weeks, producing

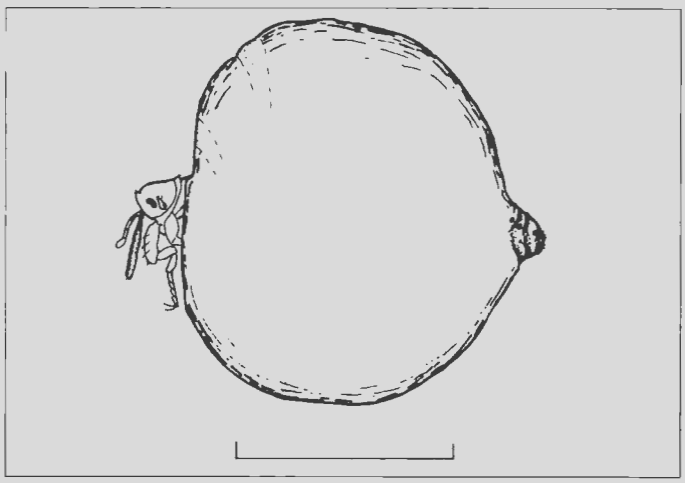

Figure 1

Engorged female *Tunga penetrans*. The entire flea, except the extreme tip of the abdomen (right), is embedded in the host's tissue. Scale bar = 5.0mm.

hundreds of eggs which are discharged onto the ground. Inside the egg the larva develops in 3-4 days and hatches to feed non-parasitically on organic debris in the surroundings. It moults once and spins a cocoon in which it pupates, transforming into the adult male or female flea. On emergence from the cocoons the adults actively seek a warm-blooded host on which to feed. In contrast to many fleas, their legs are poorly adapted for jumping, so they tend to attack those parts of the host in contact with the ground. The adult flea is reddish brown and measures about 1 mm in length.

The male *Tunga* feeds in the normal flea fashion, piercing the skin and taking blood without forming a permanent attachment to the host. The female, however, attacks the soft, moist skin e.g. beneath toe nails or between the toes, and enters the host dermis. It is believed that she becomes fertilised by the freely roving male at about this stage. The female burrows deeply, her mouth-parts penetrating capillaries in the dermis enabling her to feed continuously. Her abdomen swells enormously with vast numbers of eggs being produced. Together with the response of the host's tissues, a cyst up to 10 mm diameter results. The posterior end of her abdomen remains exposed through an aperture in the host's skin, where it is visible as a small dark spot at the surface. Mature eggs and excreta are discharged through this aperture, which allows access to the air enabling the flea to breathe.

After egg-laying is completed, the female flea dies and disintegrates, providing opportunity for secondary infections. Complications from untreated cases have included cellulitis, tetanus, and gangrene with resultant auto-amputation of toes.

Only the female of *Tunga penetrans* could be expected to arrive in New Zealand, as it would normally be imported embedded in the skin of a person who had recently visited an endemic area. The male flea, although a parasite, is free roving and is unlikely to arrive in this country. Hence with increased travel to tropical areas, this first reported New Zealand case highlights the need for: the awareness of the existence of Tungiasis, the need for prophylaxis (wearing shoes in endemic areas), early diagnosis and treatment by surgical removal of the flea, and antibiotic treatment of any secondary bacterial and fungal infection.

Figure 2

Tunga penetrans eggs, from cyst in patient's toe. Scale bar = 1.0mm.

Acknowledgements

RLC Pilgrim thanks the New Zealand Lottery Grants Board for the provision of microscope equipment used in this investigation.

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AIDS/HIV Knowledge of Medical Laboratory Science Students at Massey and Otago Universities

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ABSTRACT

The aim of this study was to determine basic AIDS/HIV knowledge of second year students from the Medical Laboratory Science degree courses of Massey and Otago Universities.

A questionnaire regarding various aspects of AIDS/HIV knowledge was answered by 27 Massey University and by 34 Otago University students. For comparison with working laboratory staff, 27 subjects from a large hospital laboratory section answered the same AIDS/HIV knowledge questionnaire. The different in results between groups was assessed by analysis of variance (ANOVA).

There was a minor but statistically significant difference between students and laboratory staff in overall AIDS/HIV knowledge. Students scored on average 65.9% (range: 38.8-91.0%) and laboratory staff 73% (range: 55.2-82.1%). Differences in AIDS/HIV knowledge between students and staff were mainly found to be regarding the destruction of HIV outside the body and the presence of HIV in various body fluids. No significant difference in overall AIDS/HIV knowledge was found between the Massey and Otago University students.

The results of this study show a reasonably adequate knowledge of AIDS/HIV amongst students of the Medical Laboratory Science degree programmes of Massey and Otago Universities. Various deficiencies in their knowledge, and that of laboratory staff, were identified and may form the basis of future educational targets.

Key words

AIDS, HIV, education.

INTRODUCTION

Previous surveys in New Zealand have demonstrated concerns, negative attitudes and misconceptions regarding the handling of HIV positive biological samples by medical laboratory scientists and nurses [3]. Results from those studies suggests that appropriate education is desirable during allied health professional training to alleviate misconceptions, fears and attitudes. Various overseas studies have demonstrated the beneficial aspects of increasing AIDS/HIV education on changing the attitude of health care workers towards caring for people with AIDS/HIV[4-6].

In order to evaluate or institute AIDS/HIV educational programmes it is desirable to document students' current knowledge on the topic. It was the purpose of this study to determine AIDS/HIV knowledge of 2nd year students of the Medical Laboratory Science degree courses at Massey and Otago Universities.

METHODS

The questionnaire on AIDS/HIV knowledge was based on the "Manual of the ELCAS Questionnaire Concerning HIV and AIDS" by I Robbins, A Cooper and MP Bender. This has previously been used to determine the relationship between knowledge, attitudes and degree of contact with AIDS by nurses in Great Britain, and has been statistically valided . It consists of a series of questions regarding factual knowledge of AIDS and HIV, such as risk category of HIV transmittance, HIV presence in body fluids and methods for destroying HIV.

The questionnaire was distributed to 2nd year students of the Medical Laboratory Science degree courses at Massey and Otago Universities, and for comparison, with laboratory staff at a section of a large public hospital laboratory. The questionnaire was completely anonymous and no special conditions or time limits were set. Demographic details of sex and age were recorded, and whether a previous lecture or workshop on AIDS/HIV had been attended.

The response to the questionnaire were checked for the corectness of the answers by one of the authors, and entered into a database on a Macintosh Classic computer. Results were analysed using the Stats View statistical package. Potential differences between groups were evaluated by analysis of variance (ANOVA) and 95% confidence intervals (95% C.I.) were calculated for the scores. A p value of <0.05 was deemed statistically significant.

RESULTS

Completed questionnaires were received from 61 students (34 from Otago and 27 from Massey) and 27 laboratory staff. The overall percentage scores of the students and hospital laboratory staff for the AIDS/HIV questionnaire are shown in Table 1.

TABLE 1

Overall score for AIDS/HIV questionnaire

	n	Score(± s.d.) %	range %	95%C.I. %
Massey students	27	64.9(12.0)	38.8-91.0	60.2-69.6
Otago students	34	66.6(8.8)	44.8-86.6	63.6-69.7
All students*	61	65.9(10.3)*	38.8-91.0	63.2-68.5
Laboratory staff	27	73.0(5.8)	55.2-82.1	70.7-75.3

* p = 0.0011 (ANOVA) compared to laboratory staff

There was a minor, but statistically signifcant, difference in the total score between students and laboratory staff, no difference being noted between Massey or Otago students. The main differences in the total score between students and laboratory staff related to questions 2, 3, 4 and 7 of the questionnaire (Table 2), and those relevant questions with the correct responses are shown in the appendix. Although the scores of students were lower in questions 4 and 7 compared to laboratory staff, this was not statistically significantly different. However, their lower scores in these two questions together with the statistical significance in questions 2 and 3, had a main

influence on the slightly lower total score of the students compared to laboratory staff.

For all the questions no male/female differences were noted, nor had the attendance at previous AIDS/HIV lectures or workshops any affect on the scores. However, only five students and five laboratory staff had indicated that they had previously attended a lecture or workshop on AIDS/HIV.

TABLE 2

Score for individual questions

	n	Q.2 %(±s.d.)	Q.3 %(±s.d.)	Q.4 %(±s.d.)	Q.7 %(±s.d.)
Students	61	73.3(33.3)*	58.5(14.2)**	69.4(15.2)	42.5(34.2)
Laboratory staff	27	86.7(23.3)	66.9(17.7)	75.0(10.4)	56.7(20.0)

* $p = 0.018$ and ** $p = 0.011$ (ANOVA) compared to laboratory staff

DISCUSSION

The main findings of this study are that students of the Medical Laboratory Science degree courses at Massey and Otago Universities had a reasonably good factual knowledge of AIDS/HIV. Their overall scores were slightly lower than those of a comparison group of laboratory staff of a large hospital. The latter would be expected to have more knowledge regarding HIV/AIDS than students, due to their work situation, education and age. The results from this study suggest there is room for improvement in AIDS/HIV knowledge in laboratory staff, especially in the light of previous surveys in New Zealand showing concerns and negative attitudes of laboratory staff in regard to biological specimen handling[1,2].

The main purpose of this study was to determine AIDS/HIV knowledge of the 2nd year Medical Laboratory Science students at the beginning of their training, and then to ultimately compare it with their AIDS/HIV knowledge at the end of the third year of their training. This will be compared with their attitudes and concerns towards biological specimen handling once exposed to practical laboratory work experience.

The scores from students to questions regarding HIV presence in various biological fluids, HIV transmittance, and agents able to destroy HIV outside the body, were responsible for students' overall lower total scores compared to laboratory staff. This is to be expected as laboratory staff, through education and work experience, should show for instance, what is required to destroy HIV in a potential spill of HIV positive biological specimens (covered in questions 3 and 7, see appendix).

There were some interesting and unexpected responses to other questions from the questionnaire from both students and laboratory staff. Various respondents thought that being a blood donor, being bitten by an insect, swimming in a public pool, kissing on the cheek or shaking hands, carried a possible to high risk of HIV being transmitted from an affected person to another. Some respondents also thought that AIDS could be cured, that AIDS is more easily contracted than Hepatitis B, that HIV cannot be transmitted to an unborn baby, or that if a person has a negative HIV test that they could not be HIV positive.

In conclusion, the results from this study form the basis of a database from which AIDS/HIV education during the Medical Laboratory Science degree courses at Massey and Otago Universities can be assessed and/or modified. Ultimately effectively and appropriate AIDS/HIV education may improve attitudes and concerns regarding biological specimen handling, which is previous surveys have been found to warrant improvement both in New Zealand and overseas[2,3,8,9]. This study also suggests that laboratory workers could benefit from continuous AIDS/HIV education in the workplace. As previously identified, a large number of laboratory staff have not attended AIDS/HIV lectures or workshops in the past[1,2].

Acknowledgements

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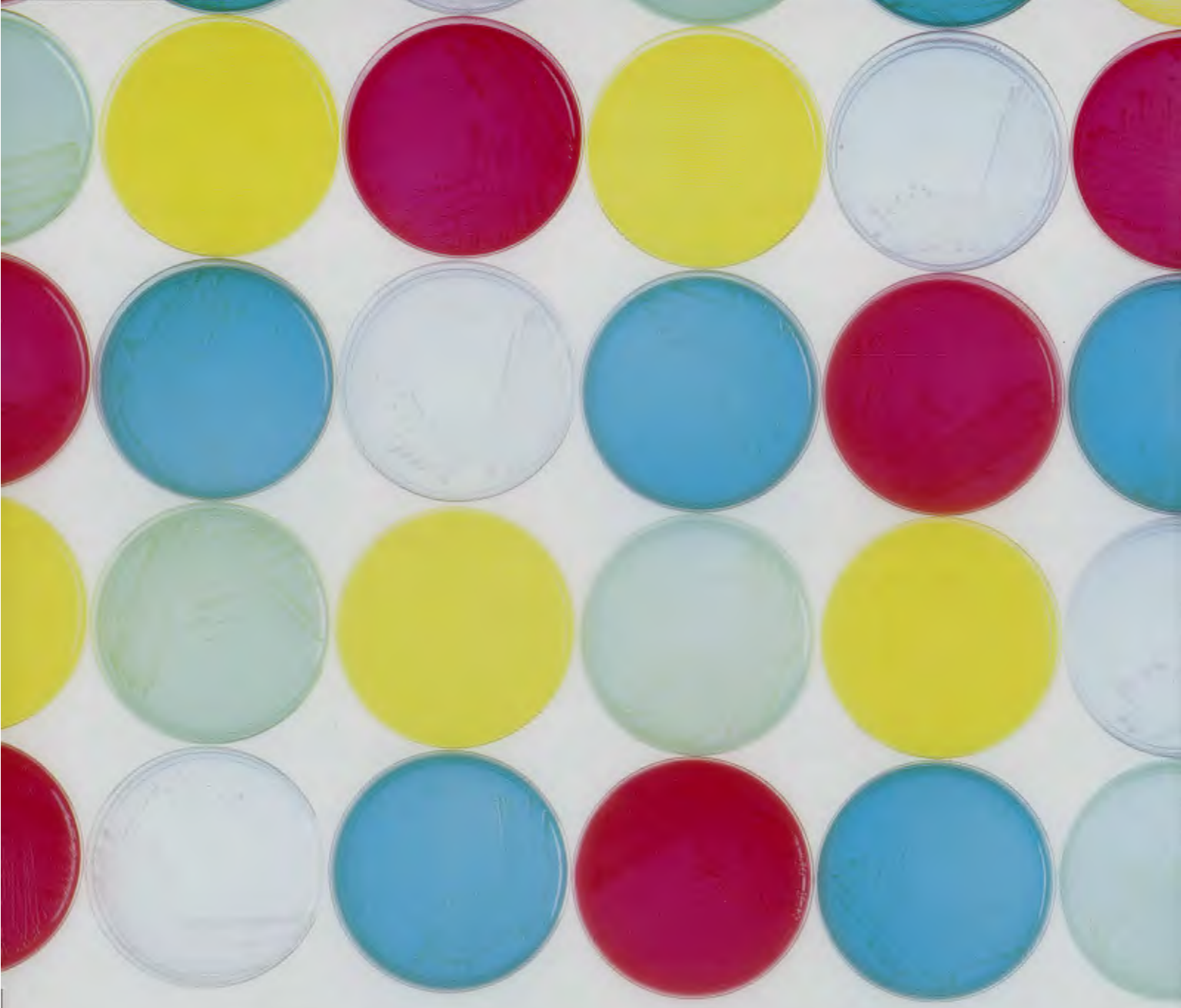

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APPENDIX

Question 2: What do the initials H.I.V. stand for? Answer: Human Immunodeficiency Virus. Points possible: 3

Question 3: In which of the following has HIV been found? Please tick one box only for each. Points possible: 13

	Yes	No		Yes	No
Vomit	✔		Urine	✔	
Tap Water		✔	Menstrual Blood	✔	
Blood/blood products	✔		Smoke		✔
Sweat	✔		Vaginal fluid	✔	
Semen	✔		Tears	✔	
Faeces	✔		Air		✔
Saliva	✔				

Question 7: Please tick either yes or no for which of the following that will destroy HIV outside the body. Points possible: 6

	Yes	No
Boiling	✔	
Bleach	✔	
Soap	✔	
Freezing		✔
Detergent	✔	
Cannot be destroyed		✔

Question 4: For each of the following please tick (one only) the risk category you think applies to HIV being transmitted from an affected person to another. Points possible: 24

	High risk	Possible risk	No risk
Shaking hands			✔
Spitting		✔	
Kissing on the cheek			✔
Biting		✔	
Coughing			✔
Needle-stick injury		✔	
Being a blood donor			✔
Anal intercourse	✔		
Mouth-to-mouth resuscitation		✔	
Hugging			✔
Vaginal intercourse	✔		
Sneezing			✔
Sharing flannels/towels			✔
Sharing hypodermic needles	✔		
Oral sex		✔	
Being bitten by an insect			✔
Receiving a blood transfusion		✔	
Sharing drinking glasses/cups			✔
Swimming in a public pool			✔
From a lavatory seat			✔
Ear piercing		✔	
Having a tattoo		✔	
Sharing a toothbrush		✔	
Sharing a razor		✔	

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(a) Appropriateness of content of paper.
(b) Layout and presentation.
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(d) Previous publication experience of the author(s). Quality papers by first time authors are encouraged.
(e) The paper which makes the most valuable contribution to a branch of medial laboratory science.

Winner of the Med Bio Journal Award for the August 1994 issue was Ann Thornton of the Wellington School of Medicine for her paper "Proliferating cell nuclear antigen (PCNA) expression in archival tissue. Evaluation of Microwave pretreatment.

Continuing Education

Laboratory Measurement of Blood Platelet Volume

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Introduction

Automated haematology analysers routinely measure the platelet indices MPV (mean platelet volume) and PDW (platelet distribution width). These platelet indices are increasingly being utilised by clinicians in the diagnosis of pathological states of thrombopoiesis[1] and alterations thereof have been demonstrated in various other medical conditions such as respiratory disease[2], hyper- and hypothyroidism[3,4], renal failure[5], septicaemia[6], AIDS[7], diabetes[8,9], myocardial infarction[10,11], cerebrovascular disease[12], and pregnancy induced hypertension[13,14]. Additionally physiological changes in the MPV due to exercise have been demonstrated[15] most likely through the action of increased catecholamines[16].

Platelet count differences have been demonstrated between races[17,18], but has no affect on the MPV or PDW[17] despite the known relationship between platelet count and MPV[19]. Neither weight, nor systolic or diastolic blood pressure affects the platelet indices[20] despite the known effect of weight on blood cell numbers[20] and their interrelationship[20,21].

Accurate and precise measurements of platelet indices are dependent on several methodological problems, such as differences in measurement technologies, and the effects of anticoagulants, time and temperature. These fundamental problems must be understood if platelet indices are to be of clinical use. It is the purpose of this paper to briefly review the methodological problems associated with the measurement of platelet indices.

Keywords

Platelet indices, mean platelet volume

Principles of MPV Measurement

Prior to automated haematology analysers, the platelet size was assessed by microscopic estimates of platelet diameters. Subsequently the Coulter™ haematology analysers using aperture impedance technology, and the Technicon™ instruments using optical light-scattering technology provided most routine haematology laboratories the facility to routinely produce platelet indices.

With the aperture impedance analysers (Coulter) cells are suspended in an isotonic solution and passed through a small aperture where a voltage pulse is generated which is proportional to the cell volume. A log-normal curve is fitted to the raw platelet volume diagram. An algorithm is then used to analyse a momogram devised on the inverse relationship of the platelet volumes to the platelet count to obtain the MPV.

With the laser-based optical light-scattering analysers (Technicon) the amount and angle of the light scatter from the incident light beam that is passed through the cell suspension determines the cell volume. The amount and angle of the light scatter is influenced by the wavelength of the incident light, the shape, size and refractive index of the cell, and by the suspending medium. By measuring the amount of light scatter at a high angle a platelet histogram is derived and the MPV calculated therefrom as the mode of the measured platelet volumes.

Thus differences exist using these two technologies which is reflected by the effects that anticoagulants and time have on their respective measured MPVs. The initial MPV is lower with the Coulter analysers by up to 40% compared to the Technicon analysers. Using EDTA as an anticoagulant the Coulter analysers demonstrate a progressive increase increase in MPV over time, while with the Technicon analysers there is a converse decline in MPV. Citrate has no effect over time using the Coulter analysers, but show a progressive increase in MPV when analysed using the Technicon analysers.

Table 1

Medical conditions in which MPV is altered.

INCREASED MPV	DECREASED MPV
Immune thrombocytopenia purpura[22]	Marrow aplasia[23]
Hereditary macrothrombocytosis[23]	Reactive thrombocytosis[24]
Hypoxia[5]	Post-chemotherapy[25]
Hyperthyroidism[3]	Hypersplenism[26]
Bacteremia[27]	Hypothyroidism[14]
Diabetes mellitus[8]	Ureamia[5]
Myocardial infarction[10]	Severe sepsis[6]
Prengnancy-induced hypertension[13]	HIV infection[7]
Spenectomy[25]	

Numbers in parentheses refer to references

Anticoagulant Effects

The variable and inconsistent effects of different anticoagulants on the measured MPV by both technologies have been known for some time[28,30,34,40]. EDTA, the most commonly used anticoagulant, transforms platelets from their native elliptical shape to spheres which occur immediately upon exposure to the anticoagulant. EDTA also increases intracellular cyclic AMP and alters membrane permeability, thus the cell swells and optical density decreases. This is why the measured MPV increased over time with the aperture impedance technology, but

decreases over time with the light-scattering technology.

The effect of EDTA on MPV is comprehensively documented using the aperture impedance technology of the Coulter instruments[28-32], less so with the light-scattering technology of the Technicon analysers[30,33]. With the Coulter instruments the maximal EDTA-induced changes in MPV occur within the first 2 hours after venepuncture[33, 34], although changes have been found for up to 40h[30]. Generally the MPV increases up to 30% within 5 min of exposure to EDTA, and then progressively increases by another 10-15% during the 2h period. Using the light-scattering technology of the Technicon analysers, upon exposure to EDTA the MPV progressively declines over a 40h period[33], although others have found unpredictable effects[35]. If ACD is added to EDTA platelet activation is inhibited and therefore discoid morphology of the platelets is maintained. The measured MPV using this combination anticoagulant remains very stable over time but unfortunately is temperature-dependent[26].

With citrate containing anticoagulants, the measured MPV is lower than with EDTA partly due to the fact that normal discoid morphology is maintained[26, 36]. The MPV does not vary as significantly when citrate is used as anticoagulant unlike with EDTA. The change in MPV is less than 3% when stored in citrate for 3h at 37°C, but increases up to 20% when stored at room temperature[25].

Studies using citrate as anticoagulant have generally used 9:1 v/v blood: citrate (0.12 mol/L). Recently it has been shown that by using a 4:1 v/v blood:citrate mixture, the MPV can be measured more accurately and reproducible than using either 9:1 v/v blood:citrate or EDTA[37]. Additionally using the 4:1 v/v blood:citrate, MPV measurements were not influenced by time exposure to this anticoagulant. Unfortunately the dilution of the blood with the liquid sodium citrate renders it unsuitable for measuring platelet or other cell counts.

Conclusions

The advent of automated cell analysers such as of the Coulter and Technicon series, has provided the haematology laboratory the means to provide precise platelet indices to the clinician. Numerous reports are appearing in the literature attaining to the usefulness of the MPV in various medical conditions[1-14]. However differences in measuring techniques, and different effects of anticoagulants, time and temperature all have an effect on the MPV value that is reported by the laboratory. Despite this, various studies have demonstrated that the MPV is very stable over time in individuals[15-17] irrespective of sex or menopausal status[34]. In order for the MPV to be used effectively by clinicians there must be dialogue between them and the laboratory so that the latter can inform them of the methodology in use in the laboratory and the methodological problems that could affect the reported MPV. Additionally due to the fact that there is an inverse relationship between MPV and the platelet count[26,34] it would be advantageous for laboratories to provide normal ranges for MPV adjusted for the platelet count[15].

Acknowledgements

The authors wish to thank Maureen Gordon and Helen Bark for secretarial assistance. Studies from our group mentioned in the paper have been supported by the National Heart Foundation of New Zealand, the New Zealand Lottery Board and the Wellington Medical Research Foundation.

Table 2

Effect of anticoagulants on MPV by different methodologies

	Coulter™	Technicon™
Methodology:	Aperture impedance	Optical light-scattering
Initial MPV:	Lower	Higher
EDTA effect:	30-40% increase	Progressive decrease
Citrate effect:	No significant change	Progressive increase

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CURRENT COMMENT

Responsibility and Accountability of the Medical Laboratory Scientist

Paul McLeod
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You walk into your lawyers office to seek advice on a house you wish to purchase. The title and deed, along with all other legal issues need to be checked and their advice sought before you decide whether or not to proceed with the purchase. You speak with a well dressed person in the office and then leave. A few days later, legal advice is received and you decide to buy the property. Some months later an issue arises over a shared title driveway access with your neighbour. On investigation you discover that your neighbour has a legal right to do what he proposes because of a covenant on your title you are not aware of. You legal advisor failed to highlight this covenant to you and quite understandably you now want to seek retribution. When you raise the issue with your lawyer, it comes to light that the person you consulted with originally was not a lawyer but a law clerk. Such people often are involved with a lot of the straight forward manual legal work which is then checked by a lawyer before the advice is given. The law company in this case accepts responsibility for the lack of advice in your case, but the damage has now been done.

This scenario is of course simply a story and not factual, but I would like to use it as an example of our responsibilities as medical laboratory scientists to the public. In the case above, several issues arise:

1. Confusion about the status of the person with whom you had made initial contact.
2. The acceptance of the advice received as being the work and considered opinion of a qualified person.
3. Who is ultimately responsible for any problems that may arise from the advice received?

It is not difficult to relate these issues to our own work place in medical laboratories. It is not readily apparent as to who is who, and the public, medical practitioners, nurses and other health professionals do not have a clear understanding of our staffing structures. Equally, our written reports are taken at face value as being accurate and professionally considered. Those who receive our reports accept without question, that they have been checked and validated by an appropriately qualified person. But most importantly, the ultimate responsibility for the reports lies with those professionals recognised as appropriately trained and qualified to authorise them. For the vast majority of test results produced in our laboratories, the person accountable is the registered medical laboratory scientist who was either responsible for performing or supervising the test performances.

There seems to be an opinion held by some, that an erroneous report is likely to end up being defended by the charge laboratory scientist,, the pathologist or even the general manager of a Crown Health Enterprise. The fact is, that the registered laboratory scientist performing or supervising the test performances is the person who will be held accountable. This is the person who is recognised under our statues as holding a qualification and training experience appropriate to allow him or her to practise as a medical laboratory scientist. With this status comes responsibility and with responsibility comes accountability.

As much as you would be aggrieved receiving bad or inappropriate legal advice, the same can be said for the users of our services, including the public. Equally, as much as the law firm accepted responsibility for an error, so too would the lawyer involved be accountable for the actions of those he or she should be supervising and therefore accept full responsibility for their actions. A laboratory scientist supervising laboratory assistants must be prepared to accept responsibility for their work. It does not necessarily mean checking every aspect of their work, but it does mean having in place protocols for training and verification of work and a level of supervision that the public would see as appropriate.

The safety of the public is the paramount issue for our registration board, the Medical Laboratory Technologists Board. In fact, this board exists for the express purpose of protecting the public. It achieves this through three avenues. Firstly, it ultimately approves the training courses within New Zealand by comparing them with its competency document. This is an ongoing process and if a course of training becomes inappropriate, the board can withdraw its approval. Consequently, training institutions listen carefully to what the board has to say about their training courses. Secondly, the board acts as the gate keeper to those arriving in New Zealand and wish to practise as laboratory scientists. These people must apply for registration along with evidence that their qualifications meet the competency document requirements. Thirdly, the board plays a disciplinary role whereby complaints of malpractice are investigated and if necessary establish an inquiry empowered with statutory powers.

The board does not exist for the purposes of registered technologists – it exists for the protection of the public. Without doubt though, we as a profession receive a certain amount of respectability with our status as a registered profession.

The board is currently reviewing its regulations and is also updating some of the definitions used or missing. For example, a definition is required for what "supervision" means in the context of a medical laboratory. It is proposed that at the least, supervision should be "on site" and not at the end of a telephone. Such a definition would protect unregistered staff from exploitation and most importantly, protect the public from unsuitable staff validating and authorising test results.

The economics involved in appropriate supervision are, to put it bluntly, a managerial matter rather than a professional issue. The professional issue involves the supervising laboratory scientist who will ultimately be held accountable. A good example of the importance placed by other health professionals on registration is pharmacy. A pharmacy must close its doors if a pharmacist is not on the premises, even for a short time. They take their responsibility seriously and it is time we too moved towards that position.

A registered medical laboratory scientist is a person who can practise in their own right and professionally be responsible for their own actions. The role of the senior laboratory scientist is to manage

their staff in a way which will let them work to their best ability. Only when managerial issues are involved in a mishap, should the senior position be held accountable to some degree for the actions of a subordinate technologist.

The employers of laboratory scientists in New Zealand have the advantage of utilising the M.L.T.B. to help guide them in employing appropriately trained people in their laboratories. Without the board, they would be forced into the expensive process of evaluating applicants qualifications and comparing them against some variable or unspecified standard. It is my opinion that all employers of laboratory scientists should meet the cost of the annual practising licence as a recognition of the costs incurred by the board to achieve a recognised standard for all. This is indeed the case for most employer organisations, but some employers still insist on their staff meeting this cost. Registration is a form of independent quality assurance which the employer requires before employing a medical laboratory scientist.

In the near future, the M.L.T.B. will be introducing a programme of "continuing competency" for registration. This programme will be ongoing and require evidence that those seeking their annual practising certificate have been maintaining their knowledge base. This is not a threat to registered technologists but rather it should be seen as a major asset. It will ensure that all employers are obliged to create the environment for their staff, which assures ongoing education, relevant to each individual.

Although many laboratory scientists misunderstand the role and function of the M.L.T.B., none of us should underestimate its importance to not only the public, but to us as a professional group. The role and function of the M.L.T.B. is quite distinct from the Institute. Where the board acts in the interests of the public and patient, the Institute exists for the betterment of its members, and the profession as a whole for the overall benefit of the patient. The registration of our profession is a status which we should be proud of and if necessary defend, should this status come under threat.

OBITUARY

Colin Watts

Colin had a distinguished academic career. He gained great respect from his University colleagues as a researcher, lecturer and administrator. However to us in the profession of Medical Laboratory Science, he was a key person in helping to set up and implement a degree course for our profession at the University of Otago, namely Bachelor of Medical Laboratory Science (BMLSc).

Colin started his career as a Clinical Biochemist (B.Sc.Hons.) in a Hospital Laboratory in Glasgow. While working there he gained his doctorate. (Ph.D.)

In 1970 Colin and his family immigrated to New Zealand where he had an appointment as a Senior Lecturer at the University of Otago. From 1974-1978 Colin was also the Clinical Biochemist for Chemical Pathology at Dunedin Hospital, while still continuing his lecture responsibilities. In 1982 he was accorded the title of Associate Professor.

His association with medical laboratories continued through assessment and grading of Scientific Officers throughout the 1980's. His familiarity with hospital laboratories was such that in 1985 he was asked to evaluate and compare Senior Hospital Technologists and Senior Government Science Technicians for the Health Service Personnel Commission. This report was extremely favourable to Medical Technologists and helped to support salary negotiations in that pre-Union era.

When discussions started between the University of Otago and the NZIMLS Colin was appointed to the working party set up by the University of Otago to formulate a prescription for the new degree – BMLSc. During these early years Colin was known to fewer of us but he was always a friend to our profession as well as to us. The early working party days were considerably more work for Colin and his colleagues than for those of us involved as professional representatives.

The BMLSc course took in its first students in 1991. Colin was appointed as Course Director and Jim Le Grice and myself were the Institute's professional representatives on the Board of Studies and Examinations. Colin was our best friend. He was always available to help us understand the maze of university procedures, jargon and traditions. In short, he ensured we had the knowledge to gain the most benefit for our profession, from our positions as two professional representatives on a university committee of twelve. Both Colin and Jim had good (and different) senses of humour, so our work was often brightened by a good laugh.

As the 4th year of the degree course approached it was Colin who corresponded and travelled around New Zealand to bring the reality of the degree course into the workplace. Many hours went into this function. Colin's friendly charm brought a human face to the apparent machinery of the University system. He took the time to talk to members of our profession and I know he appreciated the friendliness reciprocated by offers of a beer or dinner.

From the beginning Colin was enthusiastic about the BMLSc and committed to it's students. Student evaluations of Colin were consistently high in all areas of teaching and organisation. Students were given every opportunity to not only learn more about the profession of Medical Laboratory Science but also to meet and socialise with each other as a small but special group within the Division of Health Sciences.

It is a tragedy for all, but particularly Colin and his first class, that his premature death prevented him from seeing the first class graduate in December of this year. One of the first things Colin did after he learned of his terminal illness was to endow a prize to be awarded to the top BMLSc graduate. I'm sure his generosity will be appreciated by all but most especially by this years, as yet unknown, recipient of the ***Colin Watts Prize,*** commemorating his contribution to Medical Laboratory Science.

Colin faced his illness with honesty and courage. He remained as involved as he could with his work despite periods of great discomfort. He had and took the opportunity to say goodbye to family and friends. On behalf of the profession and students of Medical Laboratory Science, I offer our sincere condolences to his wife Allison, daughter Janet, son Duncan and their families.

Anne Patterson

Presidential Address

Dennis Reilly
Diagnostic Laboratory, Auckland

1994 has been a paradigm year in our history of Medical Laboratory Science. On the 7th August 1945 Gordon McKinley, the fourth president, reported to the conference of the Association of Bacteriologists that there was a strong desire by the Society of Pathologists for the minimum educational qualification of laboratory workers to be a BSc degree or its equivalent.

Today I stand here as the 17th President and as you know at the end of this year we will see our first Bachelor of Medical Laboratory Science graduates. This is a tremendous achievement, not only by the students and their tutors but also those, who before us have put so much effort into reaching this goal. There is no doubt in my mind that this achievement will extend the horizons for laboratory scientists in many ways. The new graduate will fit into the new demands of the profession, but all laboratory scientists will need to adapt and move with this shift from accent on practical skills to a comprehensive and thorough knowledge of laboratory medicine. Certainly with this qualification laboratory scientists have upskilled their knowledge, but the challenge has only just begun. The skills acquired by the laboratory scientists during their initial years of training are now no longer enough to see them through their working lives.

The BMLS graduate will have a higher level of medical knowledge as well as the scientific skills to practice in a high tech modern laboratory, however, because of the continual arrival of new technologies and increases in workload they and indeed all of us will be pushed into the process of continuing education.

This type of education cannot be gained before entering the laboratory and so it will be done in the workplace, Annual Scientific meetings and SIG Seminars. The NZIMLS shall have to provide this service on an ongoing basis. The list of programmes held during the past year as shown in the annual report is very impressive
ASM in Christchurch; 247 participants
Biochemistry: Immunoassay Seminar, 60 participants, Excel Computer Workshop, 30 participants.
Haematology: Blood Films revisited, Coagulation Seminar.
Immunology: DNA Workshop, Taupo Seminar.
Microbiology: Antimicrobial Symposium, Potpouriri Seminar.
Transfusion Science: NICE Weekend.
Examiners and Moderators workshop.

There were approximately 650 attendees at these courses which is very high percentage of our total membership of 1300.

In addition to this list, is Journal Club, book reviews and newsletters. By using these programmes the laboratory scientists of today, using their sound education base is able to graft on other appropriate qualifications to ensure that they remain an information centre for the laboratory medicine team.

This concept of continuing education and competency is being taken up by the Medical Laboratory Technologist board in their pilot scheme "The Maintenance of Laboratory Professional Standards" (MOLS). As the Institute representative on the Board this is a programme that I have proposed. The purpose of MOLS is to ensure that laboratory scientists are involved in a wide spectrum of ongoing educational activities which maintain laboratory standards once registration has been granted, so that they continue to provide the highest quality of patient care.

A career in MLS should involve a commitment to a lifetime of learning and a long term unequivocal desire by laboratory scientists to the principle of mandatory continuing education as part of their role in the laboratory medicine team.

MOLS is based upon your participation in continuing education and quality assurance activities, Laboratories will become learning organisations where staff will apply their learning to their laboratory practice.

By emphasising self assessment, the effectiveness of maintaining and improving your standard of laboratory practice will therefore depend on how effectively and honestly you are able to assess your own practical needs. How you design your MOLS is up to you and the laboratory environment you work in. The pilot scheme will operate on a credit point system where points are tallied depending on what areas the laboratory scientist has focused their learning. Recent events have illustrated how laboratory staff must be personally responsible for their competence and not allow themselves to become isolated from an ever evolving science.

The 1993/94 year has been a busy one for council members. Four years ago Walter Wilson in his address asked members to maintain their support of the institute at a time when negotiations and industrial matters were being split off. The NZIMLS certainly hadn't diminished and indeed we have grown in many ways. The SIGS which are at the heart of the organisation are providing the educational services the membership want. We have a sound financial footing and a sound collection of council members. Unfortunately last year we lost a valuable Council member and friend when Jim Le Grice died tragically in a mountaineering accident. To mark his contribution to the profession, there is to be a prize offered to the top BMLSc student at Otago, where Jim was our representative on the Board of Studies, the ASM ice breaker and an award for student to travel to the ASM have been put in place to remember Jim. Barbara Le Grice and the family are thrilled that we have done this to keep Jim's memory alive. We now have a new Editor for the Journal, and I would like to acknowledge Maree Gillies contribution to our Journal. Maree was Editor for 5 years and these days it is not an easy task to publish four issues per year as well as fulfil the requirements of a full time senior position. To other Council thank you for your help and assistance.

The new Council has strategic plans to reach the goals it has set itself over the next 12 months. Figures show what they are, and when they will be completed. We can tick off after 45 odd years the BMLSc but of course now comes the constant tuning to ensure that this first step in our education will lead to a long, happy and satisfying career in Medical Laboratory Science.

PULLAR MEMORIAL ADDRESS

Walter J Wilson *MNZIMLS*
Auckland Regional Blood Service

Mr President, Your Worship, Honoured Guests, Ladies and Gentlemen it is an honour and a privilege to be invited to deliver the Pullar Memorial Address at this the 49th Annual Scientific Meeting of our Institute. Unfortunately I was not privileged to know Dr Thos Pullar in who's memory this address honours but in preparation I reviewed some of the earlier address' and indeed found all to show remarkable insight into both the immediate and medium future and it is with some trepidation that I put in my tuppence worth.

The theme for this meeting is 'One year Down the Track' and for this presentation I wish to consider the effect of the last year's changes on the New Zealand Medical Laboratory Services in two parts. Firstly the impact of the structuring process and its implementation and secondly the effect of various allied legislation and their impact on Health Professionals which very much includes Medical laboratory Scientists.

In spite of what it may seem it is now 11 years since the formation of Area Health Boards which heralded the first major reform of the New Zealand Health Service in decades although all through the 70's we were undergoing subtle change from the annual 1% expenditure cuts. Thus the need to change to meet new demands is not unknown to our industry, indeed if we look at the Medical Laboratory history alone it is one of remarkable change. From my own experience, I entered the laboratory in the days of manual testing and today find it hard to accept the awe and reverence that we were required to give the first Autoanalyser installed in the Chemistry department of Auckland Hospital. I find it hard to reconcile the practises of those days with the modern laboratory. How does one explain to today's trainee the 'skill' required to 'digest' the protein in the TNPN test without destroying the process, or how to use a pair of scissors to measure out 2.5ml of Gastric Aspirate to undertake a Fractional Test Meal analysis. Such practises today would be considered fraught with risk and dangerous. These are examples of the degree of what I consider to have been natural changes and development and to a large extent the Health Reforms of the last year can also be seen as a natural development and as such should hold no more fear or concern than does the future impact of DNA technology or high tech bedside automation for our industry.

Unfortunately, however well intentioned and worthy the vision and aims of the reforms I consider it an excellent example of how not to implement change. The practises used defy all modern management theory and recommendations. We are told that a principle aim of the reform is to make the Health Service more business-like and service orientated and that with the introduction of more direct accountability at the Health Professional level there will be efficiency improvements and better quality of service. This is a very worthy vision and one of which I have no doubts that all those involved in the Health Service genuinely believe in and accept. But a vision is not enough it must be translated into Missions and Objectives and this is where our directors, the Government have failed. To develop missions and objectives requires the active participation of those who have to make and implement the changes. The Nurses, Medical Practitioners, Laboratory staff, Cleaners and Orderlies etc., all have to be involved in setting the missions and objectives and not just management who are very skilled in their fields but do not possess the health business knowledge to lead the discussions in developing the missions and attainable objectives for the health work force to implement. This lack of 'selling' to and 'buy-in' of the health reforms by those responsible for delivering the changes is in my opinion the most important reason for the widespread disbelief that the restructured Health Service can deliver an improved health service. It is not good enough to merely state that the Health Service is inefficient and wasteful and not acknowledge that we spend less as a developed nation on health than our peer nations and achieve as high if not higher overall standard of health care than they. It is necessary to explore together opportunities for change and new ways of operating to produce identifiable benefits before directing that changes be made without mutually agreeing the objectives.

I personally am very proud to be a Medical Laboratory Scientist and of the standard of Medical laboratory practice in New Zealand and take exception to being told that it is wasteful and inefficient. We are more wasteful and inefficient than who or where, to date nobody has told us of a better national service. I am not saying that their are not inefficiencies and waste but I do not believe that these exist on the scale which is implied.

In spite of the failure of our directors to lead us into the change I believe that their vision as promoted is fundamental to making the New Zealand Health Service again one of the best in the World at a cost New Zealand can afford. It is not too late for this to be achieved. However, this will require a new approach based on trust and a mutual acceptance of the vision. If we are to seek improved efficiency and better quality of service then the best people to identify the opportunities for improvement are those who know the job.

Only a few Laboratory professionals have been involved in running or developing a business but surely it is effective both in the short and medium term to give us the additional knowledge as it is to appoint and develop the knowledge of the medical laboratory industry in managers experienced only in commercial business. There needs to be a balance of both to efficiently and effectively achieve the necessary change. The history of the laboratory service as stated is one of an ability to cope and indeed thrive on the challenge of change. We welcome the opportunity to add to our knowledge of molecular biology, biochemical physiology and anatomical functionality, the theory and practises of marketing, production, service and project management, quality systems, organisation restructuring and people management. Already Laboratory managers are having to come to grips with profit and loss statements, cross functional organisations, core business definitions, key performance indicators and preparing business plans. Clearly the willingness and ability to contribute to the settling of new missions and objectives is present, we only ask that we be taken into trust. We are on the same side!

And what is in it for the Laboratory Services: Firstly, the clinical services through their contracts with the Regional Health Authorities now know the number of treatment processes they are funded for, and they can give the Laboratory Services a fair indication of the number and type of diagnostic services they will require to support their contracted patient treatments. This allows the Laboratory to be able to plan its resource utilisation to provide these diagnostic services.

Secondarily, by establishing better contact with the clinical services the Laboratory can develop and change its range of services to match the changes in clinical practise. The improved contact should allow easier and more frequent dialogue between the patient care and support services such as the laboratory. In this way both sections of the health care services grow and develop strengthening the role of each.

Thirdly, the Laboratory can develop its customer base. It is not restricted to its traditional clinical customers. It can provide supplementary services for other Laboratories to utilise spare resources, to develop specialist or new diagnostic services by way of joint investment and to provide overflow services to other Laboratories when

they are temporarily overwhelmed. Modern data transfer systems provides the key to this interaction and the development of business liaison between Medical Laboratory Services.

The second major effect of the health reforms relates to the change of status and personal responsibility of Health professionals as a result of establishing Crown Health Enterprises as commercial organisations with no special State protection. The Crown Health Enterprises operate as any other trading organisation and must comply with all commercial trading as well as health specific legislation. We, as the former 'State' employees now have to operate in the same legislative and commercial environment as our private colleagues. We all have to be very aware and conversant with the impact of changes to the ACC system, Privacy legislation and the Consumer Guarantees Act and update our practises accordingly.

We must be conscious of the 'Risk Exposure' to our Companies of our decisions as well as the professional risk and liability. The ACC changes in particular and consumer protection legislation both require more professional accountability of us as health professionals. The recent publicity of the Wanganui Laboratory service must service notice on us all that as Registered Health Professionals we are singly responsible for our professional actions. Such is the nature of our business but it is inevitable that mistakes will happen and as a profession we must do what ever possible to minimise their occurrence. At all times we must practice with honour using the highest ethics and work habits possible. Similarly with registration there is a requirement for competence of the registered health professional and we like all other registered health professionals will have to demonstrate our competence at the renewal of our annual practising certificates. I commend the initiatives that the Medical Laboratory Technologists Board is taking to introduce competency assessment for Annual Practising Licence renewal.

Recent consumer protection legislation also impacts on our actions as it guarantees the right of the patient to receive appropriate and cost competitive diagnostic information from our laboratory services irrespective of who pays. Failure to deliver such value allows the patient right of redress and if incompetence or exploitation is established provides for both direct and punitive compensation to be awarded.

The requirement for ACC to investigate and report cases of negligence to the appropriate registration authority emphasises the personal accountability of Registered Health Professionals. However, the ambiguity that exists for non-registered health workers and the possibility of their errors and mishaps being excluded from the definition of 'Medical Misadventure' or 'Medical Mishap' remains a major cause of concern. The possibility of Common Law action against either Registered or non-Registered Health workers under the Consumer Guarantees Act and other Civil Law is always present if ACC does not accept a 'medical accident' as medical misadventure or personal injury and I suggest that the time is now for this profession to consider the need for personal professional insurance as have a number of our health professional colleagues.

The introduction of privacy legislation has also had a major impact on the way we operate. We now have to consider the need to not only make our laboratory environment a safe working place from the Health and Safety perspective but also that it is a 'safe place' for personal medical information entrusted to us by our patients. For this we must consider restricting the free movement of people and control access to patient information in our laboratories. Restrictions may also have to apply to staff moving between departments within a laboratory to ensure full compliance for privacy of confidential patient information. We as Health Professionals are the trustees of this information and have a personal responsibility to ensure that only those who need to know have access to the information. This requires redesigning the way we collect, record and store patient information. The explosive growth of personal computers and the need for interconnecting systems for efficient information transfer poses a special risk to keeping personally identifiable medical information confidential. We have to consider such possibilities as the risk of confidentiality breaches from visitors who inadvertently or casually see patient information while visiting a laboratory and the risk this places on making a security system work, let alone to implement a retrospective audit of who could have viewed certain information. All these represent new challenges for us to overcome and incorporate in our restructured laboratories over the next decade.

There is also the laboratory supply industry which is not only the traditional commercial supplier but also other Medical Laboratories supplementing each other's services. Together we face the challenge of ISO certification and the responsibility of Total Quality Assurance. Suppliers are now having to find business solutions rather than merely making a sale. They have to work with us to ensure that their goods and services not only function as promoted but that they improve our service delivery to our clinical clients. In this way the supplier retains an interest in the risk for the quality and value of the laboratory service we provide. Jointly we must develop new ways of doing business in particular establishing partnerships where each accepts that the relationship is mutually beneficial. The laboratory which delivers a high quality, cost efficient clinical laboratory service will gain business from its clinical customers. In return the laboratory supplier gains a loyal customer with the potential for a lifetime of business.

In conclusion while we have found this past year difficult and we may be suffering from a little shell shock there is a bright future for the New Zealand Medical Laboratory Service, but with much still to be done. However, the opportunities are there and with true leadership and in a partnership based on trust the Government's vision for the New Zealand Health Service is attainable.

BOOK REVIEWS

Flow Cytometry and Clinical Diagnosis

by D Keren, C Hanson & P Hurtubise.
American Society of Pathology, 1994. ISBN 0-89189-346-6. Hard cover.
Reviewed by: Dr Rohan Ameratunga, Immunologist, Department of Molecular Medicine, School of Medicine, University of Auckland.

This is the second edition of this text which has been written from a clinical perspective. It begins with introductory chapters on the history of flow cytometry, and then reviews basic concepts of the design of a flow cytometer before reviewing monoclonal antibodies, fluorochromes and software. There is also a chapter on the operation of a flow cytometry laboratory.

The book then deals in detail on the use of flowcytometry for DNA-related applications and cell surface marker analysis. Chapters are devoted to various clinical applications such as the use of flow cytometry in immune deficiency diseases, transplantation medicine and malignancy. The book is very much slanted towards the clinical interpretation of data.

The book is an excellent buy and should be purchased by laboratories undertaking clinical flow cytometry.

Essential Immunology

by Ivan Roitt.
8th Edition, Blackwell Scientific Publications, ISBN 0-632-03313-4, Retail Price $80.00
Reviewed by: Dr E John McKay, Dept of Virology, Immunology, Auckland Hospital.

Professor Ivan M. Roitt is an acknowledged author of many immunologic texts of which **ESSENTIAL IMMUNOLOGY** is probably his best known. This text was first published in 1971 – a slim text (100+ pages) that Medics and Scientists alike could use as a "Ready Reckoner" for immunologic concepts. Since then, 7 further editions have evolved during which continued radical revision and updating have occurred providing a much more "in depth" sophisticated theses now that should, in my opinion, grace the shelves of all Immunology Departments, laboratories and those individuals who are serious about the Discipline of Immunology.

This edition has 25% more text and illustrations than its predecessor, amply illustrating the speed with which this scientific field is advancing. Nonetheless, it is still written in a lucid manner. The final product that has emerged is, I believe, much more "user friendly" with the text arranged into six separate sections:

The Basis of Immunology;
The Recognition of Antigen;
Technology;
Acquired Immune Response;
Immunity to Infection;
and Clinical Immunology.

The changes, expansion and updating of all chapters is considerable. Each section now has its own introduction and Menu while each chapter finishes with a well presented, succinct summary.

An appealing addition, for me at least, is the introduction of a series of very pertinent "Historical Milestones" scattered throughout the text. The "role of antibody and its protective effects" by Von Behring and Almiroth Wright or the "Discovery of Thyroid Autoimmunity" are but two examples.

The new section entitled **Technology** which is divided into two parts – Immunochemical and Immunocellular techniques is a welcome addition. The latter discusses newer applications of the FACS analyser to probe intracellular events e.g. gene regulation, or phage selection of artificial antibodies from Antibody Gene libraries.

The chapter on the production of **Effectors** with the disucssion on cytokines and their functions is written in a very clear manner with "up to the minute" descriptions of the new Interleukins (up to IL13) and their role.

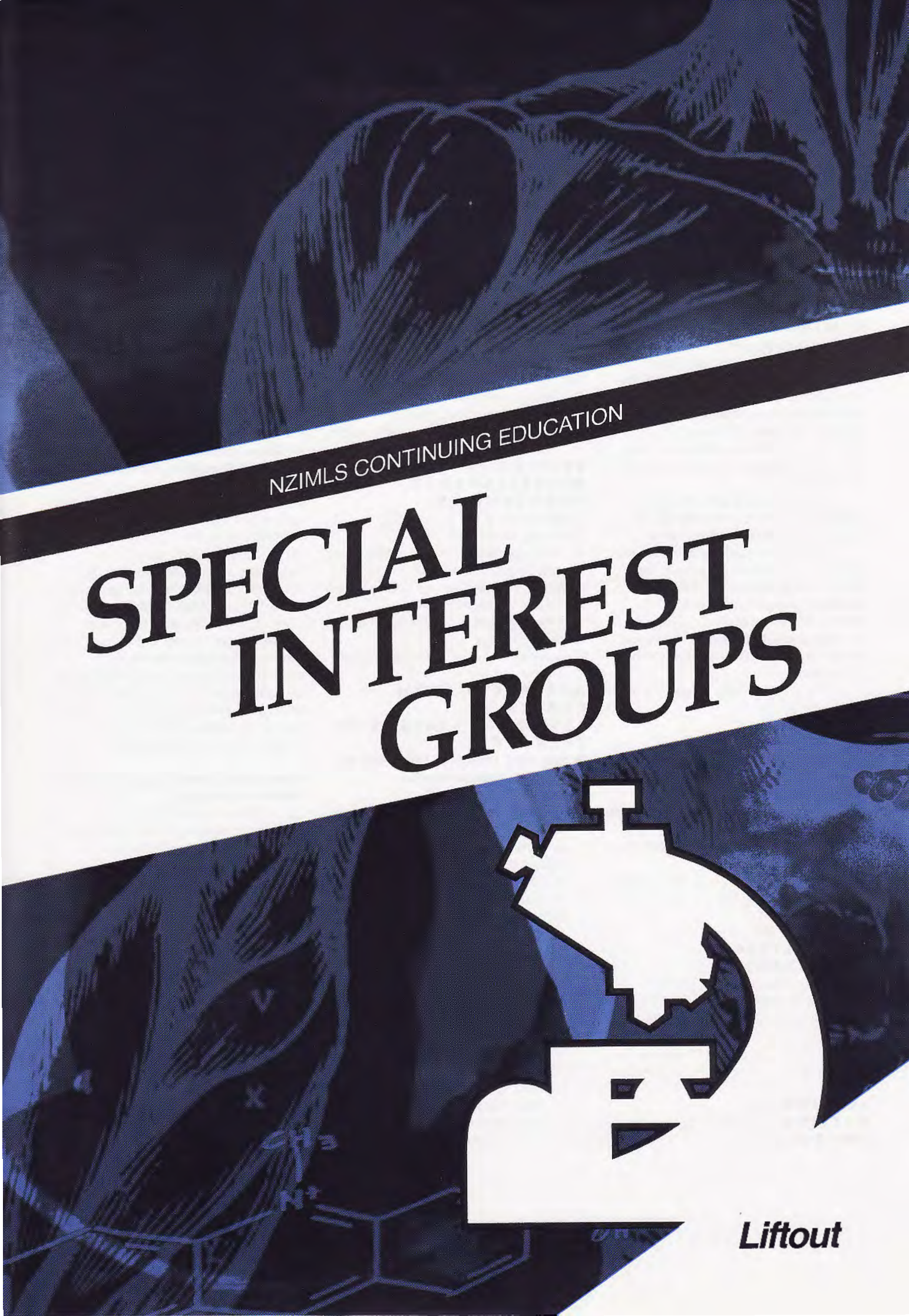
The section pertaining to **Prophylaxis** and **Vaccination** has been noticeably revamped, discussing current and future vaccination regimes and newer delivery systems. The section on feto-maternal interaction has been completely remodelled.

Tumour **Immunology** now rates separate consideration with further discussion on mutant peptides as Tcell targets and their use in immunotherapy.

As a tutor in Immunology, I look forward to the additional teaching aids in the form of multichoice questions that will shortly be available on computer disks together with the slide atlas that is currently being updated to correspond with this Edition.

It is text that I use routinely and recommend to my students to purchase as it is great "Value for Money"!

It is a book that has captured my immunological "fancy", and I trust that it will do the same to all who read it.



NZIMLS CONTINUING EDUCATION

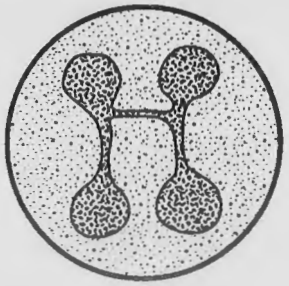
SPECIAL INTEREST GROUPS

Liftout

Haematology

Special Interest Group

Convenor: Ross Anderson
c/o Diagnostic Laboratory,
Symonds Street,
AUCKLAND.



EMERGENCY HAEMATOLOGY SEMINAR.

A seminar on Emergency Haematology organised on behalf of the Haematology Special Interest Group, was held prior to the 49th N.Z.I.M.L.T. Annual Scientific Conference, in the Seminar Room, Angelsea Clinic, Hamilton, on Tuesday 30th August. The organising committee for this seminar were: Robin Allen, Sally Bower, Tony Day and Mary-Ann Thomson.

Invited speakers were Dr Gillian Corbett, Dr Jack Havill, Dr Rowan Hyde, Dr Stephen May, and Dr Humphrey Pullon.

All who attended or participated were enthusiastic about the day. Interest in the seminar was reflected by the nunber of registrations received – over 60 from 19 centres around New Zealand, ranging from the deep South – Invercargill (Ian Campbell, always a stalwart supporter of HSIG seminars) to Auckland.

The programme for the day is outlined below:

SESSION I INTENSIVE THERAPY

Chairperson Robin Allen

The Intensive Therapy Unit and the Haematology Laboratory	Dr Jack Havill
The Trustbank Air Ambulance Service	Dr Rowan Hyde
Acute Blood Loss/Massive Transfusion	Dr Gillian Corbett
An Unfortunate Young Man	Raewyn Bluck

SESSION II HAEMOLYTIC EMERGENCIES.

Chairperson – Mary-Ann Thomson

Thrombotic Thrombocytopenic Purpura/Haemolytic Uraemic Syndrome (TTP/HUS)	Robin Allen
PNH	Dr. Stephen May
A case study	Jacquie Case

SESSION III HAEMOSTASIS EMERGENCIES

Chairperson – Dr Stephen May

Antithrombin Glasgow	Tony Day
A Wolf in Sheep's Clothing	Barbara Harrison
Laboratory Experience of Factor VIII inhibitors in Non-Haemophiliac Patients	Janine Madgewick
One Years Experience of Bedside Heparin Monitoring in a Coronary Care Unit	Viviene Muffty

SESSION IV MISCELLANEOUS EMERGENCIES.

Chairperson Mr A. Day

Community Laboratories/ Thrombocytopenia	Sally Bower
Neonatal Sepsis: Haematologic Contribution to Diagnosis	Barbara Walton
Acid Elution Slide Test for HbF – the Kleihauer Test	Bronwyn Sheppard
Haemato-Oncology Emergencies	Dr Humphrey Pullon

ABSTRACTS FROM PAPERS

SESSION I – INTENSIVE THERAPY

Dr Jack Havill, Director of Emergency and Critical Care, Waikato Hospital

This talk is in 2 parts:

1. The logistic relationship between the two areas is very important to the delivery of good care to patients. Tensions and stresses should be sorted out by face to face consultation. Delays in receiving the bloods and getting results need to be constantly examined and obstacles overcome. Not only cane they mean patients get unnecessary treatment but it may be incorrect.
2. Some particular situations are examined to explain the clinical reasons why tests are being done or how blood is being used. These include:
   (a) Continuous Veno-venous Haemodialysis.
   (b) Extracorporeal Life Support.
   (c) Effect of cold on patients and coagulation tests.
   (d) Ultrafresh blood.
   (e) Consumptive coagulopathy or DIC.

The knowledge of Haematology Technicians becomes very specialised and exceeds that of most clinicians. They should be used as a teaching resource more frequently.

ACUTE BLOOD LOSS AND MASSIVE TRANSFUSION

Dr Gillian Corbett, Haematologist and Director of Transfusion Services, Waikato Hospital

Acute blood loss usually occurs in critically ill patients. The possibility of a pre-existing haemorrhagic diathesis must be considered. With shock and tissue hypoperfusion, coagulation abnormalities including DIC occur. Treatment of acute blood loss aims initially to maintain tissue perfusion and oxygen supply. Coagulation factors and platelets may also be required. Massive transfusion is usually defined as the administration of an amount of blood equal to or greater than the patient's blood volume (about 10 units in the adult) within 24 hours. Some of the adverse effects and results of massive transfusion are presented.

Raewyn Bluck, Haematology Department, Middlemore Hospital

This unfortunate young man had been travelling in Indonesia for some seven weeks prior to returning to New Zealand for Christmas.

On New Years Day he woke with what he thought was a hangover but felt progressively worse as the day passed.

He had blood taken at an Emergency Medical Clinic on January 2nd, when although malarial parasites were looked for, they were not found. On January 5th he was admitted to an Intensive Care Unit via the hospital Emergency Department with Disseminated Intravascular Coagulation precipitated by a heavy infestation of Plasmodium falciparum. This progressed to multiple organ failure and required a month's long stay in the unit. He has not yet fully recovered from this experience.

SESSION II – HAEMOLYTIC EMERGENCIS

Thrombotic Thrombocytopenic purpura/Haemolytic uraemic syndrome (TTP/HUS)

Robin Allen, Haematology Department, Waikato Hospital

TTP/HUS is a rare disorder characterised by its abrupt appearance in previously normal individuals. Within a matter of hours or 1 to 2 days, the affected patient is commonly transformed from a state of good health to near death.

It is generally agreed that TTP and HUS are manifestations of a similar pathogenetic process involving microvascular platelet aggregation. In TTP, aggregates of platelets obstruct reversibly the arterioles and capillaries of various organs and produce fluctuating ischaemia. The microcirculation of the brain is involved in 50-71% of cases. In HUS the ischaemia is predominantly renal. Thrombocytopenia, and erythrocyte fragmentation along with intravascular haemolysis that result in increased LDH concentrations, provide important laboratory clues to diagnosis.

In this presentation, 2 cases will be used to illustrate the clinical and laboratory features of TTP/HUS. Current concepts of pathogenesis, diagnosis and treatment will be reviewed.

PNH

Dr Stephen May, Haematologist, Waikato Hospital

A case of suspected Paroxysmal Nocturnal Haemoglobinuria (PNH) has been investigated using monoclonal antibodies of CD59 against erythrocytes and a ficolled mononuclear cell layer. Results show that there is a reduction in the amount of CD59 in the mononuclear cell layer. This agrees with the previous screening of CD59 in PNH patients which also shows this abnormal CD59 expression.

A brief review of the biochemical abnormalities in PNH cells will be presented, followed by a description of CD59 in terms of its molecular aspect, functional aspect and its relevance in the pathogenesis of PNH. In particular, the relevance of cytofluorimetric assay utilizing monoclonal antibodies of CD59 in the diagnosis of PNH will be discussed.

A CASE STUDY

Jacquie Case, Haematology Department, Middlemore Hospital

A Vietnamese man presented to the Emergency Department with a febrile illness. His medical history included leprosy and two bouts of malaria contracted in his own country, prior to coming to New Zealand in 1986. Further haematological investigation revealed more than one inherited haemolytic disorder in this patient.

SESSION III – HAEMOSTASIS EMERGENCIES ANTITHROMBIN GLASGOW

Tony Day, Haematology Department, Waikato Hospital

Mr A, a 41 year old male with a six week history of being generally unwell with some left sided chest pain, was brought into the Emergency Department. On examination he was shown to have increasing shortness of breath, a productive cough, with mild haemoptysis, rigors and pleuritic chest pain. He was admitted to the Intensive Therapy Unit and placed on heparin and oxygen. Mr A showed rapid improvement and was transferred to a general ward.

Three days later the patient demonstrated shortness of breath and was deteriorating rapidly. He was transferred back to ITU with pulmonary embolism and was given Streptokinase.

This case history will demonstrate the diagnosis of a variant of Antithrombin, the clinical course and treatment during this event.

A WOLF IN SHEEP'S CLOTHING.

Barbara Harrison, Haematology Department, Waikato Hospital

Mr A was admitted to the Intensive Therapy Unit with a deteriorating condition symptomatic of an atypical pneumonia. This presentation will cover the difficulties encountered when the patient's medical history and conditions complicated the usual investigative course. The delay in arriving at the correct diagnosis may have resulted in inappropriate testing and treatment. Earlier intervention may have prevented worsening of the patient's condition. We stress the importance of appropriate coagulation screening in the emergency situation.

LABORATORY EXPERIENCE OF FACTOR VIII INHIBITORS IN NON-HAEMOPHILIAC PATIENTS

Janene Madgwick, Haematology Department, Auckland Hospital.

Acquired inhibitors of coagulation presenting in an Emergency Department are almost always detected in the laboratory when a prolonged Activated Partial Thromboplastin Time (APTT) fails to correct with the addition of normal plasma. Most commonly the inhibitor will be identified as Lupus Anticoagulant, however the laboratory must be able to quickly differentiate this from the clinically more serious Factor VIII inhibitor.

This review of three cases of Factor VIII inhibitor demonstrates that positive Lupus Anticoagulant screening tests may suggest an incorrect diagnosis.

ONE YEARS EXPERIENCE OF BEDSIDE HEPARIN MONITORING IN A CORONARY CARE UNIT.

Vivienne Muffty, Department of Haematology, Green Lane & National Womens Hospital.

Efficient and speedy treatment of the patient with myocardial infarction is essential for salvaging myocardial function. Thrombolysis and heparin anticoagulation therapy is currently the cornerstone of treatment regimes in the coronary care unit. In the first 24 hours it is particularly critical that the plasma heparin level is in the upper therapeutic range. Coagulometers that can be used at the patient's bedside and return results within minutes of the blood being drawn are ideally suited to the coronary care unit requirement for close heparin monitoring. The most efficient laboratory system cannot compete with the turnaround time offered by the bedside instrument.

Such a coagulometer had been in use in the coronary care unit of Green Lane Hospital for a year. Such a coagulometer has been in use in the coronary care unit of Green Lane Hospital for a year. A full evaluation of its performance will be given with special consideration to integration of results with the "mainframe" coagulometer. The International Guidelines on "Near patient testing devices" and its implementation will be covered.

SESSION IV – MISCELLANEOUS EMERGENCIES

Community Laboratories/Thrombocytopenia

Sally Bower, PathLab, Hamilton.

This presentation will discuss the role of the Community Laboratory and the relationship between Accident and Emergency centres and public hospitals in emergency cases. A case of thrombocytopenia will be presented and used as a basis for a discussion of the types of thrombocytopenia likely to present to a Community Laboratory.

NEONATAL SEPSIS: HAEMATOLOGIC CONTRIBUTION TO DIAGNOSIS

Barbara Walton, Department of Haematology, Green Lane & National Womens Hospital.
We present a case of clinically unexpected neonatal sepsis, detected during a routine weekly full blood count. The haematology results were both unexpected and clinically important, as the baby was asymptomatic. The left shift in the neutrophils and the toxic changes alerted the paediatrician and resulted in the baby having a full infection screen. Our interpretation of these toxic changes was confirmed by positive microbiological cultures.

ACID ELUTION SLIDE TEST FOR HBF – THE KLEUHAUER TEST

Bronwyn Sheppard, Department of Haematology, Green Lane & National Womens Hospital.
The Kleihauer Test is considered the most appropriate test to assess the presence and extent of foetal-maternal haemorrhage. There is a demand for the test to be performed in emergency situations (such as abdominal trauma, abruption etc)., where it is considered critical in acute management of patients. There are many unknowns – What is the normal range in pregnancy? – How do clinicians interpret results? Does the Kleihauer qualify as an urgent test available 24 hours per day? We present an overview of the Kleihauer Tests performed at Green Lane/National Women's Hospitals over a 18 month period. We invite discussion on the facts and figures presented and the usefulness of the test in an obstetric hospital.

HAEMATO-ONCOLOGY EMERGENCIES

Dr Humphrey Pullon, Haematologist, Haematology Department Health Waikato, Hamilton.
Hameatological malignancy can present in a variety of ways, however on occasions acute presentation can result in immediate life threatening complications. Presentation and discussion will revolve around the urgent diagnosis and treatment of a number of haematological malignant conditions, including hyperviscosity in relation to plasma cell dyscrasias, hyperleucocytosis, the management of superior venacaval and/or tracheal obstruction and priaprism. The role of emergency red cell exchange transfusion, leucophoresis, and plasmaphoresis will be explored. In addition the place of urgent chemotherapy, and its possible complication of tumour lysis syndrome will be discussed.

TAPES AVAILABLE

All sessions at the HSIG seminar were taped by Robin Allen and are available from him for purchase. Cost $8.00 per session.

Tapes of all sessions at the conference are also available for $8.00 per session from Robin Allen. Please address your requests to:

Robin Allen,
Charge Technologist,
Haematology Department,
Waikato Hospital.

FUTURE SEMINARS

As there is no national N.Z.I.M.L.S. National Conference planned for 1995, HSIG is intending to hold a HSIG seminar sometime in mid-1995 if sufficient interest is expressed by members. The Committee would be interested to know your suggestions for possible future topics and format for seminars. Please send your ideas to Ross Anderson, c/o the above address.

Transfusion Science

Special Interest Group

Convenor: Sheryl Khull,
Transfusion Medicine,
Palmerston North Hospital
Members: Ray Scott, Auckland
Regional Blood Centre
Roger Austin, Blood Bank,
Taranaki Base Hospital, New
Plymouth
Sue Baird, Blood Bank,
Lakeland Hospital, Rotorua
Marie Wilson, Blood Bank,
Gisborne Hospital
Zandra Mitchell, Blood Bank,
Napier Hospital
Kevin McLoughlin, Transfusion
Medicine, Christchurch
Hospital
Diane Whitehead, Transfusion
Medicine, Christchurch
Hospital
Les Milligan, Blood Bank,
Otago Hospital, Dunedin

As you can see from the list above, the membership of the Transfusion Science Special Interest Group has changed. We think this is a good thing, and it's great to get the input of some new and enthusiastic Blood Bankers. We hope to see more of it in the future – sooner or later perhaps you might consider taking your turn?

Of course we didn't really want to lose anyone, and all of us in Transfusion Medicine owe a debt of thanks to David Wilson for getting the TSSIG up and running and for all the years of hard work he has put in. I'm sure we haven't heard the last of David though.

Transfusion Science had some lively fora at Conference. The need for a group which can deal with day to day implementation of policies and other practical matters was again reiterated. Walter Wilson agreed to set up a steering committee to look into the possibility of forming such a group under the NZIMLS (see below).

Plans for the TSSIG this year include updating the syllabi for both Specialist Level,

and Blood Products QTA. These should both be ready for use for exam candidates in 1995.

And plans for next year? The Annual Scientific Meeting will be at the South Pacific Congress in Queensland. At this stage we are not sure how involved we Kiwi Blood Bankers will be.

Of course we will have another NICE Weekend next April – in fact it is looking like 1995 should be a bumper year and it could be a NICE LONG Weekend!

A Voice for Blood Bankers

A Report by Walter Wilson, Auckland Regional Blood Services

Following an expression of real concern for the total lack of information and direction from the Ministry of Health and the inability of the Blood Transfusion Trust to give direction or act as a national facilitator for the operational co-ordination of the NZ Transfusion service, it was decided in Hamilton at the NZIMLS Annual Scientific Meeting that the initative should be taken by the profession. Those present at the Transfusion Science forum decided that a New Zealand Blood Bankers association should be formed to act as a national co-ordinating body for disseminating information on new initiatives or changes in Blood Bank operation or where it was in the national interest that matters be considered by all involved before policy or changes were to be implemented. The organisation should also represent both the professional and political wishes and opinions of all those involved in the Blood Transfusion Service.

An establishment committee of Walter Wilson and Geraldine Heta from Auckland, David Fisher from Masterton, Kevin McLoughlin from Christchurch and Les Milligan from Dunedin was appointed to prepare the rules for the association, its aims and objectives. As a basis it was to incorporate the relevant functions for a national co-ordinating group proposed from the Ministry of Health meeting held in May last. Membership is to be open to all involved in Transfusion science with the association incorporated as a branch of the NZIMLS.

New Technologies Workshop

A Report by Sue Laird, Lakeland Health, Rotorua

On the afternoon of Tuesday 30 August before the NZIMLS Conference in Hamilton an intrepid band of fourteen Transfusion Medicine pioneers embarked on a "hands-on" New technologies Workshop.

After a brief introduction by Roger Austin on the format of the afternoon, the band split into three groups with the aim of moving through each of the new technologies on offer in the time allowed. Success was maintained most of the time, with only a few backtracking!

The technologies available for our intrepid band to use were the Immucor solid phase system, Ortho Biovue column agglutination system and the Diamed IO microtyping system.

The successful afternoon was rounded off with discussion led by Kevin McLoughlin on the merits, benefits and potential problems of such systems. We realised the different direction routine use of such systems may take our discipline.

The last word was left to me to say thank you to all those attending, and to all those who made the workshop possible, in particular the following:

Andrew Mills et al from Waikato Blood Centre for all specimens and consumables

Intermed Scientific

Diamed

Alphatech Systems

Med Bio Enterprises

Scianz Corporation

Sue Baird.

(Convenor's Note: We also have to thank Sue, Roger and Kevin for organising and running the workshop.)

Trivia

Did you know the I blood group system was named after "Individuality"?

LITERATURE REVIEWS

Platelet Agitation

A question from a recent AABB News Briefs: What is the maximum time platelets can be stored without continuous agitation? Are there visual indications that the platelets have been adversely affected by being stored without agitation?

The ideal storage for platelets will keep the pH of the platelets at or near 7.0. Three conditions that affect the pH levels of platelets are container size and volume, plasma volume and agitation. Agitation facilitates the flow of gases through the walls of the plastic containers thereby maintaining the pH. Continuous agitation is required for the storage of platelets. If continuous agitation does not occur, the pH may fall to around 6.0.

A visual check, referred to as the "shimmer" test, can be used to determine if the platelets are at the appropriate pH. Viable platelets will shimmer when the platelet bag is held up to a light source and given a flip or twist. Platelets that do not shimmer when subjected to this test are probably at an inappropriate pH. (<6.2).

Moroff and George (Transfusion 1990; 30; 427) showed that platelets could be stored in a cardboard box at 20-24°C without agitation for 24 hours without adversely affecting the pH of the platelets.

Histology

Special Interest Group

Convenor: Elaine Mullins
Contract Address: C/o Pathology, Taranaki Base Hospital, Private Bag, New Plymouth
Phone: 06 7536139 Ext 7874
Fax: 06 7532956

Our group is now one year old and it is time to do something for ourselves, and move past the newsletter only stage.

It seems that Histologists are a bit shy about presenting papers at conferences and we're not doing much to educate each other, so to try and overcome this, we are going to have a get together/seminar next year. The time and venue have yet to be decided. We have a variety of members, from hospital and community laboratories, as well as from animal health and agricultural laboratories. It would be beneficial and interesting for all of us to meet, have a chat about what we are doing, and present a short item. So, start thinking about your contribution, maybe an interesting case study, a book or journal review, a method modification, or whatever, and we'll see what we can do.

To make our SIGS group work well, it would be useful to have a small group of people who can contact others in their region and assist in organising any activities. If anyone would like to help in any way, please contact me.

Thanks to all who have written to me with suggestions and queries. This will be answered as soon as possible, and included in the next newsletter. Keep those letters rolling in!

Immunology

Special Interest Group

Convenor: Ian Wilkinson
Serology Section –
Microbiology Department
Canterbury Health
Laboratories
Private Bag 151
CHRISTCHURCH

NEW CONVENOR AND TEAM IN CHARGE. ISIG COMMITTEE MOVES SOUTH

Members of the Network attending the ISIG annual lunch and AGM of the Roundabout Cafe, Hamilton on Friday 2 September were unanimous in accepting the nomination of Ian Wilkinson as convenor and ISIG members in Christchurch have pledged him their full support. Ian and the Christchurch group will select the Secretary and Treasurer and any other committee members.

There are changes to regional representation also. Gerry Campbell has stepped down as representative for Region 3 (lower part of North Island and upper part of South Island); Lilian Mary Ann White (Diagnostic Laboratory, Auckland), formerly ISIG's Secretary, is now Auckland representative; Jill Jones (Northland Path. Lab) will continue to look after the interests of the far north and Tim Taylor (Medlab Hamilton) those of the Waikato/Bay of Plenty region.

As Christchurch is now the control centre for ISIG, there is no longer a need for a regional representative for Region 4 which incorporates most of the South Island (Canterbury, West Coast, Otago, Southland); will no doubt have a role to play on the newly-formed committee.

It is a tradition that committee and representatives stand down every year, but most indicate they are available to serve another year. As a result, there have been few changes to the national committee or regional representation since ISIG was founded four years ago on the 10 October 1990. This has provided stability to the fledgling group which is now firmly established. (There was a recommendation from the NZIMLS Council earlier this year that committees and representatives of all the SIGs make a 3 year commitment to ensure stability and continuity is maintained).

Tributes were paid to the outgoing convenor, committee and representatives. Judith Hodgetts (Wellington) ISIG's Treasurer was not present to accept the group's appreciation for managing ISIG's financial affairs so well that we remained in the black. She sent her letter of resignation accompanied by a very healthy financial report.

The *ISIG Network News* was considered to be an important asset in keeping members of the Network informed and in touch with each other. Gilliam McLeay will continue to be editor for another year (September 1994 to August 1995), but suggested that it was preferable for the newsletter to be based wherever the committee is (ie. where all the action is taking place). There were solemn undertakings from the assembled group to provide information for the newsletter by the first day of the even months. (It takes another two weeks to type, print, collate and mail it out) Any items of interest, typed or hand written, are welcome. Send to Gillian McLeay, Editor – ISIG Network News, c/o Auckland Regional Blood Centre, Private Bag 92024, Auckland.

TRIBUTE TO WAIKATO

On behalf of the ISIG Network, thank you to Hamilton (especially Alison Idema, Tim Taylor and the scientific committee) for great hospitality and a varied and interesting annual scientific meeting. The virology forums in particular were welcome addition to the programme and of general interest to many members from other disciplines.

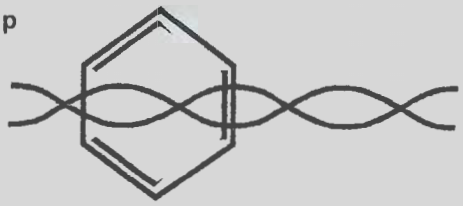
The lively evening at the vineyard was a memorable one and enjoyed by the two hundred or so people who attended. The only low point for our hosts, in an otherwise highly successful week, was the loss of the "Log Of Wood" (ie. Ranfurly Shield to those who do not follow the national game). It seems that Canterbury made a clean sweep – ISIG and the shield.

However, both Canterbury and Waikato have each run a very well-organised and professional annual scientific meeting over the last couple of years. The goal of Auckland, host to the 50th NZIMLS Conference and Annual Scientific Meeting in 1996, will be to not only match these achievements, but win the shield back into the bargain.

Biochemistry

Special Interest Group

Convenor: Ian Wilkinson
Serology Section –
Microbiology Department
Canterbury Health
Laboratories
Private Bag 151
CHRISTCHURCH



Congratulations to both Sandy Woods and Jenny Walters, prizewinners in our BISIG competition. Thank you for presenting your papers at conference. They were both well received and they helped to make a very successful Biochemistry day at the Hamilton conference. The comments below are from our first time presenter and winner Jenny Walters.

Intrigued by the advert on page 24 of the Journal (Volume 48 No. 1 March 1994) – I replied, and it was the subsequent correspondence which I received that caught my imagination. To present at conference had always been to me something that I would never get the opportunity to do. Preoccupied with the "your on!" and the "whats to lose!" type thoughts, I started visualising my actually doing it. I must confess however, that this state of mind was only short lived. The all too predictable doubt soon took over – "Who me?" "How could I possibly?" "What have I got to offer?" questions began to consume all.

So it is with a special personal gratitude that I extend my thanks to the NZIMLS Biochemistry Special Interest Group for offering the competition and giving novices like myself the opportunity and indeed the courage to present at conference.

The paper – "An Evaluation of a Monoclonal Fluorescence Polarisation Immunoassay for Cyclosporin", was collated in 1992 to fulfill course requirements for the certificate level in Nuclear Medicine.

Many hours had been involved with the evaluation and the presentation gave a sense of completion of the project. It was both personally satisfying and rewarding, if not at the time a little daunting, to be able to share this work. The prize was an added bonus.

It is only natural in a situation such as this for one to raise negative responses and feel a lack of self confidence. However for me, the challenge proved well worth accepting and culminated in an experience which I can now thoroughly recommend.

Grateful thanks must be extended to Dr Roger Johnson and Mr Terry Wilson of Auckland Healthcare Services Ltd, for the constructive comments and willing support given me.

The competition is being repeated so get your entries in for next year. See the full page advertisement in this journal for further information.

Brickbats and Bouquets: Fourth Year and Postgraduate Courses. The Massey Report

Associate Professor M. Nulsen

The Bachelor of Medical Laboratory Science (BMLS) degree programme was recently assessed by two representatives of the Australian Institute of Medical Scientists (AIMS) (with a view to recognition of the BMLS degree in Australia). Professor Tony Webber and Mr Bryan Day were very favourably impressed. This was in no small part due to all the help we have had from members of the NZIMLS – both individuals and members of SIGs – people too numerous to name. Thankyou all. We do appreciate the time and effort you have devoted to this course.

Still, even though our BMLS degree is good, I am sure it could be better. There is always room for improvement so I would welcome any comments you have on our course.

The BMLS is, as you know, a four year degree and in the first three years we aim to give the students a good grounding in the biological sciences and an introduction to virtually all the disciplines of Medical Laboratory Science. Students must pass all the third year papers before they can proceed to fourth year.

Fourth Year

In their fourth year students specialise in two of the following disciplines:

Clinical Biochemistry
Medical Microbiology
Haematology
Transfusion Service
Immunology and Virology
Histological Technique
Medical Cytology

They enrol in one theory paper and one practical work paper in each 15 week semester and during each semester they should:

i) spend at least 30 hours per week at the bench working on routine diagnostic procedures;
ii) learn and satisfactorily complete tests and/or methods listed in the Log Book;
iii) send fortnightly progress reports to the Massey Course Controller; (These reports enable us to monitor the work the students complete in the previous two weeks and basically should list what they have done and why e.g. the rationale of tests/methods, the controls used, how the results are interpreted and the clinical significance of those results.)
iv) work their way through the appropriate Study Guide; (These give the theoretical basis for the practical work the students are doing.)
v) complete three assignments:
   a) Literature Review
   b) Methods Critique or Comparison
   c) Quality Assurance – spread across two disciplines.

Assessment is as follows:

Practical Work Papers

Pass or fail based on Log Book

Theory Papers

Progress reports 21%
Assignments 15%
Final Examination 64%

Having completed the BMLS degree, the other big hurdle for graduates is registration. This is regulated by the NZ Medical Laboratory Technologists Board and they have recently decided that graduates will have to work for an additional six months in a medical laboratory before they can apply for registration.

In summary, we see the fourth year as a very valuable part of the BMLS programme for

the students,
the BMLS teaching staff at Massey and, I venture to say,
the laboratories training the students

I just want to pause here to mention money. There has been lots of publicity recently about the Todd Report and increases in student fees. How does this affect the BMLS students? A significant number of the current fourth year class (students who will have completed their degrees in the "halcyon" pre-Todd days) owe more than $20,000 in student loans. These fourth year students are remarkably blase about these large debts. This is not the case with the first, second and third year classes. Many of the younger students are very anxious about their future financial situation and are seriously tempted by the opportunity to complete a degree (BSc) in three years rather than the four year BMLS.

I mention this because I can that we are going to have work hard in the future to convince the students and their parents that the fourth year is worth the extra cost.

Postgraduate Programmes

1. For Currently Registered Medical Laboratory Scientists

Diploma in Medical Laboratory Science (DipMLS)
One year full time equivalent
Extramural
Commencement in 1994 or 1995 only*
At least 90 points from the following papers, with a maximum of three 14 point papers
Must have at least two years experience post-registration
Candidates who obtain sufficiently high grades in the DipMLS may proceed to an MSc by thesis alone

*We are offering the DipMLS because we believe that it would be unfair to people who qualified under the old schemes not to offer the opportunity to obtain a University qualification. Nonetheless it is a costly undertaking for the University and there is a limited market for it. For these reasons we have limited our intakes to 1994 and 1995 only.

Diploma in Medical Laboratory Science:

Paper	Points		Years Available			
62.681 (Bio Gen Microorg)	14	1994	1995			
22.681 (Biochem)	14		1995	1996		
62.684 (Med Micro Immun)	14		1995		1997	
22.682 (Clin Biochem)	16			1996		1998
62.683 (DNA Technol)	16			1996	1997	
26.220 (Management)	14	Every Year				
62.682 (Human Genetics)	14	Every Year				
XX.688 (Research Project)*	20	Every Year				

*Research Project to be completed in the candidate's laboratory. Enrolment is for one year only.

2. For BMLS graduates:

a) Master of Science (MSc)
Approximate two years full time
Internal only
Four advanced papers 50%
A thesis (based on ~2 years research) 50%

b) Masters of Medical Laboratory Science (MMLS)*
One year full time equivalent
Extramural
Four advanced papers in:
Medical Laboratory Science discipline (any one)
Epidemiology
Molecular Biology
Management
[may not be available every year]
A research project conducted in candidates laboratory

*Subject to approval by Massey University Academic Council and the Committee for University Academic Programmes (CUAP).

NOTE added in response to questions at the Education Forum: It is possible for people who wish to change or broaden their specialities to enrol in a fourth year BMLS papers (theory and practical work) and, if they successfully complete the course, obtain a Certificate of Proficiency (COP). This option is available to both BMLS graduates and registered Medical Laboratory Scientists already working in a laboratory.

The third year papers deal with basic theory whereas the fourth year courses are much more practically oriented. This has the perhaps surprising effect that registered Medical Laboratory Scientists will be able to cope more easily with a four year course than a third year course. However some extra reading may be appropriate and we could supply our third year study guides for this purpose. The COP is not regarded as a qualification in itself but, if granted in a specific area for staff already qualified, could indicate a willingness to learn and also competence in a new area, so it would probably be well received by laboratory managers.

Computer Equipment for Tender

Commodore 286. 4 Years old. Hard disk 40 Mb plus 1 floppy disk drive 3". Highest or any tender not necessarily accepted. Tenders for this computer equipment close with the Executive Officer of the NZIMLS, F van Til, PO Box 3270, Christchurch on February 1, 1995.

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  - absence of any toxic residues that may inhibit bacteria
  - high transparency to enable easy visual inspection of the sample
  - low moisture permeability to minimise dehydration of the transport medium during the products shelf life.
- Colour coded swab caps for easy recognition.
- Materials used can be safely incinerated because all plastics used contain the lowest possible levels of CFC.

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N.Z.I.M.L.S.
BIOCHEMISTRY SPECIAL INTEREST GROUP

WINNERS REQUIRED
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and this may be only the beginning .....

If you are working or involved in a Clinical Biochemistry Department and, for example:

— are doing, or have done in the last couple of years, a Project,
— are investigating a method or a new piece of equipment
— have established a reference range
— have an interesting case you would like to tell people about
— have any other topic or information that would interest even one other Clinical Biochemist

WRITE AND TELL US ABOUT IT!

All that is needed is an outline, it can be hand written, can contain sketches — no frills necessary.

YOU COULD BE A WINNER

Further information from, or entries to:-

Alison Buchanan
The Convenor, Biochemistry Special Interest Group
Clinical Biochemistry Dept
Main Building
Auckland Hospital

Phone: (09) 307 4949 Ext 7553
Fax: (09) 307 4939

Closing date: March 1995

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Please address all correspondence to the Executive Officer, including Examination and Membership enquiries.

Editor
Rob Siebers
Dept. of Medicine, Wellington
School of Medicine, P.O. Box 7343
Wellington South.

Membership Fees and Enquiries
Membership fees for the year beginning April 1, 1994 are:

For Fellows – $88.40 GST inclusive

For Members – $88.40 GST inclusive

For Associates – $33.80 GST inclusive

For Non-practising members – $33.00 GST inclusive

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.

Membership Sub-Committee Report

Since the August meeting there have been the following changes:

	14.09.94	11.05.94	14.02.94	05.11.93
Membership	1138	1172	1177	1178
less resignations	22	35	7	2
less G.N.A.	48	21	4	4
less deletions	-	-	-	-
less deceased	-	-	-	1
less duplications	1	-	-	-
	1067	1116	1163	1171
plus applications	88	21	7	4
plus reinstatements	4	1	2	2
	1159	1138	1172	1177
Composition				
Life Members (Fellow)	12	12	12	12
Life Member (Member)	9	8	8	8
Fellow	20	20	20	20
Member	671	662	683	684
Associate	365	355	367	371
Non-practising	56	56	56	56
Honorary	26	26	26	26
Total	1159	1138	1172	1177

Applications for Membership

S. NORRIS, Gisborne Laboratories, S. TURFREY Diagnostic, B. COUP, Medlab South, H. RANDALL, Middlemore, W. BELL, Northland Pathology, H. SWITZER, Diagnostic, L. PLATT, Diagnostic, J. HUTCHINS, Palmerston North, K. DE MANSER, Dunedin Medlab, N. BENFELL, Medlab South, R. GREENLEES, Christchurch, Micro, J. HOOKEY, Auckland Medlab, M. ROCHESTER, Palmerston North, E. BARBER, Wellington, Histo, A. RICHARDSON, Wellington, Histo, J. BULFORD, Hastings, O. STEWART, Wellingtoj, Immunohaem, A. WILES, Dunedin, Histo, W. CARTER, Waikato, E. PRINGLE, Diagnostic, C. WALSH, Diagnostic, L. GOODMAN, Palmerston North, K. CURD, Tauranga Medlab, P. NEWTON, Christchurch,m Immuno, J. SEXTON, Medlab South, A. VERHEYDE, Medlab Wellington, J. LEAMAN, Christchurch, Micro, G. MILLER, Medlab Auckland, J. O'BRIEN, Diagnostic, J. DOWLING, Diagnostic, K. HARRIS, Diagnostic, G. PENNELL, Diagnostic, B. WATSON, Diagnostic, P. MURDOCH, Diagnostic, Y. WONG, Overseas, B. NG, Wellington, Histo, J. CASTLE, Medlab Auckland, J. FORD, Dunedin, D. SMITH, Waikato, S. SMITH, Tauranga Medlab, J. KENDALL, Wanganui Diagnostic, V. THOMPSON, Royston, J. DUNGEY, Royston, R. HAWES, Christchurch, Trans Med, S. JERARD, Christchurch, Sero, N. PHILLIPS, Diagnostic, S. THIRLWALL, Waikato, J. SHEWAN, Waikato, D. HOOPER, Auckland, Haem, R. HELLOWELL, Auckland, Immunohaem, R. BENREDHEM, Middlemore, Histo, P. SARCICH, Middlemore, haem, R. BOWMAR, Northland Pathology, T. NERHENY, North Shore, M. HARRISON, Waikato, L. PALMER, Middlemore, E. STEPHENSON, Christchurch, Biochem, D. PASCO, Auckland, Haem, T. TAYLOR, Medlab Hamilton, D. FARR, Middlemore, K. MURRAY, Medlab Hamilton, J. BIRD, Medlab Hamilton, O. PESE, Wellington, Haem, L. COOK, North Shore, R SCOTT, Northland, C. BOWDEN, Christchurch, Cytol, S. WEBBER, Whakatane, C. CRUICKSHANK, Taranake Medlab, N. FLEWELLEN, Christchurch, Trans Med, L. BIRKS, Tokoroa, B. MONTGOMERY, North Shore, P. SMITHYMANS, Diagnostic, D. HOOPER, Auckland, Haem, D. AUSTIN, Christchurch, Mort, R. HORN, Christchurch, Mort, R. GEORGE, Christchurch, Histo, L. RAYNER, Southland, Micro, H. HENSHAW, Timaru, Blood Bank, G. LAWRENCE, Diagnostic, E. JEFFRIES, Diagnostic, M. KANG, Greenlane, S. PETERSEN, Hamilton Medlab, D. HALL, Taranaki Medlab, M. GEURTS, Waikato Hospital, S. WALLACE, Hastings Hospital, B. SHEARER, Medlab South, E. YATES, Mercy Hospital, S. BIRCH, Diagnostic Laboratory

NEW ZEALAND INSTITUTE OF MEDICAL LABORATORY SCIENCE 1994 CALENDAR

2 November	QTA examinations
9/10 November	Specialist Certificate examinations
17/18 November	Council Meeting, Wellington

From time to time members confuse the functions and role of the Medical Laboratory Technologists Board (MLTB) with that of the New Zealand Institute of Medical Laboratory Science (NZIMLS) and vica versa. For clarification a chart outlining the main functions of both bodies is presented below.

NZIMLS

Council
Elected by members.

Membership
Voluntary – open to all laboratory workers.

Purpose
To promote professional excellence in medical laboratory science.

Main Functions
1. Represent and act where appropriate in the interests of the profession and its members.
2. Support ongoing education:
   - SIG workshops/seminars.
   - Annual Scientific Meeting.
   - South Pacific Congress.
3. Publish a scientific journal newsletter
4. Conducting examinations:
   - Fellowship, Specialist and QTA levels.
5. Develop and maintain contacts with kindred societies overseas:
   - Membership of the IAMLT.
   - Support of the PPTC.

Responsible to
The members of the Institute

MLTB

Board
Appointed by Minister of Health.

Membership
Compulsory for all those who practice medical laboratory science in New Zealand as medical laboratory Scientists.

Purpose
Act as guardians of the public interest in professional standards in medical laboratory science.

Main Functions
1. Maintain register of recognised technologists.
2. Issue the Annual Practising Certificate.
3. Establish and maintain the recognised competencies required for registration.
4. Conduct examination of certificate level.
5. Consider concessions to registration.
6. Maintain disciplinary functions set out in legislation.
7. At all times, act in the interests of the public and patients.

Responsible to
The Minister of Health

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

Title	**Jim Le Grice Award**
Nature	An annual award in memory of Jim Le Grice to sponsor a full time student, qualified staff technologist or qualified technical assistant to the Annual Scientific Meeting.
Eligibility	1. Any student who is a member of the NZIMLS and in full time tertiary education. 2. Any qualified technical assistant or staff technologist with less than 5 years total work experience. (Work experience to be verified on application form).
Conditions	No conditions apply to student applications. However, qualified staff will present a paper or poster at the Annual Scientific Meeting.
Applications	Applications should be completed on the official application form published in the NZIMLS Journal and available from the Executive Officer, NZIMLS, PO Box 3270, Christchurch.
Selection	Will be made by ballot by the convenor of the NZIMLS Awards Committee.
Amount	The prize awarded will vary yearly and will consist of travel to and from conference, accommodation and registration with the successful applicant making all arrangements.
Term of Award	Initially offered in 1995 and subsequent 9 years with a review at that time.

Boehringer-Mannheim NZ Ltd – Best exhibit at the 1994 NZIMLS Conference in Hamilton.

Our Australian colleagues who decided that our institute should have won the best exhibit award.

Dennis Reilly presenting Life Membership of the NZIMLS to Kevin McLoughlin.

View of the trade exhibits.

Liz Fox of Murex presenting the **Murex International Travel Award** to Carol Green of Valley Diagnostics Laboratories.

Caption Competition. Write a caption for this photo. Send entries to the Editor before February 1, 1995. Best caption wins the Editor's prize of a bottle of wine.

IMPROVED HBsAg SCREENING

Safety across the spectrum

Murex Diagnostics announces a colourful safety enhancement to Hepatitis B testing.

The new microtitre-based Murex HBsAg EIA is easy to use and offers state-of-the-art sensitivity and specificity. In addition, the assay extends the safety of Hepatitis B testing still further by incorporating in-process controls at each step.

Murex HBsAg in-process controls include colour-coded reagents and a unique Sample Addition Monitor which changes colour when samples are added. Simple visual or spectrophotometric checks will therefore identify sample or reagent pipetting errors for greater confidence in test results.

In clinical and transfusion virology, samples which test reactive are only reported as positive after confirmatory testing. Yet for non-reactive results, reliance is frequently placed upon a single test. The in-process controls in Murex HBsAg help to ensure that the assay, upon which so much dependence is placed, has been carried out correctly. For laboratories striving to ensure the quality of their results Murex HBsAg is the logical choice.

Murex HBsAg joins a growing range of Murex assays adding colour to your laboratory and safety to your testing.

murex

CONFIDENCE FROM COLOUR

Ask for Murex Diagnostics sales office or distributor: Australia (02) 8785855 **Belgium** (053) 839700 **Brazil** (011) 262 5511 **France** (1) 46 12 49 12 **Germany** (05) 139 899444 **The Netherlands** (030) 412550 **Eire** (01) 6267111 **Italy** (06) 911 891 **New Zealand** (09) 276 1877 **Portugal** (01) 476 2531 **Spain** (01) 673 7385 **Far East Region (Singapore)** (065) 5682106/2177 **Middle East Region (Dubai)** (04) 822835 **Southern and Eastern Africa, Johannesburg** (011) 975 1146 **United Kingdom and Nordic region** (0322) 282568. **All other countries:** (44) 322 282569 or write to International Sales, Murex Diagnostics Ltd, Central Road, Dartford, Kent, DA1 5LR, England.

MEDICAL LABORATORY SCIENCE (INC)

MINUTES OF THE 50TH ANNUAL GENERAL MEETING HELD AT THE WAIKATO CONVENTION CENTRE, HAMILTON ON WEDNESDAY 31 AUGUST 1994

CHAIRMAN

The President (Mr D Reilly) presided over the attendance of approximately 130 members.

APOLOGIES

It was resolved that the following apologies be accepted:
J Cull, Auckland
S Baird, Rotorua

R Siebers/W Wilson

PROXIES

A list of 18 proxies representing 22 proxies was read by the Secretary.

MINUTES

It was resolved that the Minutes of the 49th Annual General Meeting and Special General Meeting held on Wednesday 25 August 1993 be taken as read and confirmed.

L Mayhew/D Dohrman

BUSINESS ARISING

There was no business arising from the Minutes of 25 August 1993.

REMITS

It was resolved that Policy Decision Number 4 be reaffirmed.

"Policy Decision No 4 (1991): That the Code of Ethics as circulated to all members and amended by the meeting be adopted by the New Zealand Institute of Medical Laboratory Science Inc)."

W Wilson/G Cameron

It was resolved that Policy Decision Number 6 be reaffirmed.

"Policy Decision No 6 (1979): That the Council must be informed in advance of national workshops, seminars or similar gatherings which are being conducted under the aegis of NZIMLS branch organisations."

P McLeod/A Paterson

ANNUAL REPORT

It was resolved that the Annual Report be received.

L Mayhew/G Cameron

Speakers to the report were as follows:

S Gainsford, Convenor, Education Committee

Further to S Gainsford report it was noted that:

- MLTB have made a decision on the registration for degree students
- S Gainsford accompanied Professor Tony Webber and Mr Brian Day representing the Australian Institute of Medical Scientists on a visit to the Auckland Institute of Technology, Massey University and the University of Otago. The reason for this visit was to assess the degree courses with a view to membership of AIMS and reciprocity for employment in Australia.

S Gainsford, Convenor, Continuing Education

At the time of the AGM, the following are the Convenors of the SIGs:

A Buchanan, Biochemistry
R Anderson, Haematology
G McLeay, Immunology
S Khull, Transfusion Science
C Green, Cytology
E Mullins, Histology
J Deroles-Main, Microbiology

D Wilson, R Dix, A Cooke and M Jackson, as well as the above and the SIG committees were thanked for their contribution to the SIGs and the Institute.

K McLoughlin presented a list of items that registered scientists can gain MOLS credits for and how the MLTB envisages these credits would come. A total number of 2500 credit points is to be gained over a four year period.

It was noted that:

- This is a pilot scheme and any issues will be tackled as they become apparent
- it is expected there will be difficulties for those working only a small number of hours
- acknowledged that there will be difficulties for people coming back into employment
- list of credits will be published
- the NZIMLS will administer on behalf of the MLTB

D Reilly, Overseas Aid

D Reilly reported on his recent attendance at the 21st World Congress in Hong Kong.

- congratulations went to S Henry on being awarded a scholarship from the IAMLT
- acknowledgement of PPTC for their work in the Pacific

A Paterson, Convenor, Communications Committee

It was noted that:

- Council are trialling different venues for Council meetings and it is hoped that meetings will be held in conjunction with SIG activities, South Island seminars etc
- Services and the activities of the NZIMLS will be published in each Journal and updated accordingly

L Milligan, Convenor, Membership Committee

- membership drive under way
- a plea to encourage all non-members to join

R Siebers, Convenor, Publications Committee

- acknowledgement and thanks to M Gillies for her help and guidance in the change over of editors
- a plea for papers for publication

W Wilson complimented R Siebers on the new format of the Journal.

FINANCIAL REPORT

It was resolved that the Financial Report be received.

P McLeod/A Paterson

P McLeod spoke to the report.

It was noted that:

- the amount of $6851.00 for the deficit for the past financial year should read $9,836.00
- examination account is reflecting a drop off in enrolments
- advertising revenue has increased compared to the previous year
- 30% increase in journal/newsletter account is due to the increase in size and the decrease of 40% for postage is due to newsletters being sent in bulk
- would like to run NZIMLS activities with a slight profit as funds are needed for continuing education etc, examinations fees are to cover expenses only
- not intending to increase membership subscriptions, recommending an increase in membership numbers and an increase in other activities

It was resolved that the Financial Report be adopted.

P McLeod/S Shepherd

ELECTION OF OFFICERS

The following members of Council were elected unopposed:

President	D Reilly
Vice President	S Gainsford
Secretary/Treasurer	P McLeod
Region 1 Representative	L Mayhew
Region 3 Representative	C Kendrick
Region 4 Representative	T Rollinson
Region 5 Representative	L Milligan

An election was necessary for the position of Region 2 representative.

The election result is as follows:

E Norman	25
A Paterson	20

E Norman was declared elected.

AWARDS

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

Qualified Technical Assistant Awards:

Clinical Biochemistry	Erica Benge, Diagnostic Laboratory
Haematology	Leanne Butler, Middlemore Hospital
Histology	Lorryn Thomas
Medical Cytology	Kimberley Ashcroft
Microbiology	Trudi Smith, Dannevirke Hospital
General	Bridget O'Keefe, Auckland Regional Blood Centre

Certificate Examination Awards:

Clinical Biochemistry	Karen Fitzgerald, Diagnostic Laboratory
Haematololgy	Catherine Baird, Southland Hospital
Histology	Alan Staurt, Dunedin Hospital
Medical Cytology (Theory)	The late Glynnis Fitzsimons
Microbiology	Joanna Willis, Auckland Medlab

Specialist Certificate Awards:

Clinical Biochemistry	Gordon Sutton, Christchurch Hospital
Cytogenetics	Colleen Myers, Dunedin Hospital
Histology	Ann Thornton, Wellington Hospital
Virology	Trevor Anderson, Christchurch Hospital

Journal Award:

Baxter Diagnostic Award (Haematology/Immunohaematology)	Holly Perry, Auckland Regional Blood Centre

Life Membership: Kevin McLoughlin, Christchurch

HONORARIA

It was resolved that no honoraria be paid.

C Kendrick/R Siebers

AUDITOR

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

P McLeod/S Gainsford

GENERAL BUSINESS

Membership Drive

Non-members in laboratory have been identified and a letter has been sent to them outlining the advantages of being an Institute member. The response after the first letter was approximately 32 new members. A second letter is to be sent shortly.

NZIMLS Display Stand

Another form of promotion of the Institute is the stand at conference. Council are available to meet delegates and to

discuss any issues. It is also an opportunity to look at any information.

Discount for members at SIG functions
This issue is being considered and Council will be recommending to the SIGs that there should be some differential for members and non-members.

FUTURE ANNUAL SCIENTIFIC MEETING

The 1996 Annual Scientific Meeting is to be held in Auckland.

The 1995 Annual Scientific Meeting will be part of the South Pacific Congress. This is a combined meeting of the Australian and New Zealand Institutes. Council will be releasing details of bulk fare discounts with Air New Zealand and details of accommodation. More information will be advertised in the Journal.

An Annual General Meeting will be held in 1995, probably July and it is likely to be held in Wellington.

There being no further business, the Chairman closed the meeting at 5.05pm.

JIM LE GRICE MEMORIAL AWARD

APPLICATION FORM

Date (Month/Year):.....

Name:.....

Contact Address:.....

.....

.....

.....

Full time students, please complete Section A.

QTA, Staff Technologists, please complete Sections B, C, D.

A. Which institution are you attending as a full time student?.....

Signature:.....

B. What year did you gain your qualification?.....

Signature of applicant:.....

C I declare that the applicant has total New Zealand work experience of less than 5 years since qualification.

Signature:.....
(To be verified by Charge Technologist)

D. Please provide a brief outline (abstract) of the paper or poster you will be presenting at the Annual Scientific Meeting.

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Send your completed application to the NZIMLS Executive Officer, PO Box 3270, Christchurch to be received no later than 5pm, 31st March 1995.

PACIFIC PARAMEDICAL TRAINING CENTRE (PPTC) NEWS.

Updated Course September/October, 1994

The Tutor Co-Ordinator (Mike Lynch) is currently supervising and teaching a General Laboratory Update Course covering the basic elements of Microbiology (including Parasitology), Biochemistry, Haematology and Blood Bank techniques. Students from Vanuatu, Western Samoa and Palau (new name Velau) are participating in this three month course.

Papua New Guinea Feasibility Study

Dr Ron McKenzie is currently (that is September 1994) in PNG investigating the feasibility of the PPTC running training courses for Rural Health Assistants. The plan is that during 1995 two courses, each of five weeks duration will be conducted at the College of Allied Health Sciences, Port Moresby and/or Goroka.

The current qualifications for the Diploma Course and for the Rural Health Technicians Course have now been taken over by the University of Papua New Guinea. There is a real need for people trained in basic laboratory diagnostic tests to be available in the rural health clinics. The PPTC has been asked to assist in this project which is in line with current WHO policies.

Quality Control

As a result of the quality control programme run by the PPTC, Rarotonga had been identified as requiring assistance with quality control procedures. Gilbert Rose recently spent 3 weeks in Rarotonga assisting and advising the laboratory staff on quality control.

The Quality Assurance Course (similar to the one held in Fiji in 1993) originally intended to be held in Tonga during 1994, has been deferred until March/April 1995. Arrangements for this course are ongoing, but due to communication problems have been delayed.

Qui Nhon Hospital, Vietnam

Graham Paltridge and Peter Skidmore have recently been in Qui Nhon discussing and outlining a laboratory development project. The PPTC will be assisting with this project in the future.

Bhutan

The Minister of Health, Bhutan, has been in contact with the PPTC re the possibility of training medical laboratory technical personnel. This project is in the early stages of negotiation.

Western Samoa

Mike Lynch, the Tutor Co-ordinator, PPTC, is to spend four weeks in Western Samoa in November advising, observing and conducting examinations for the second medical technician training course held in Western Samoa under the auspices of WHO and the PPTC.

Hospital Attachments for Pacific Island Students

Requests for training in specific aspects of Medical Laboratory Technology keep arriving at the PPTC. Often these requests do not coincide with courses begin run at the PPTC and suitable placements in New Zealand Laboratories are sought for these students.

Currently 12 students are awaiting for attachments to a hospital suitable for, and willing to provide their specific training needs. Some of these have already been offered places at Wairau, Hawera, Tauranga, Wellington, Masterton and Middlemore Hospitals.

If any laboratory is interested in training a Pacific Island student, please contact Mike Lynch at the PPTC. Mike will endeavour to match the student requirements with the facilities you have to offer.

ADDRESS: Pacific Paramedical Training Centre. P.O. Box 7013, Wellington South.
PH: 04-385-5999 EXT. 6971. Fax: 04-385-5890.

Workshop on management of tuberculosis programmes and leprosy elimination

The WHO Western Pacific Regional Office in collaboration with the Pacific Leprosy Foundation, (PLF) and the South Pacific Commission (SPC) is planning to hold a workshop on Management of Tuberculosis Programmes and Leprosy Elimination in the Pacific at the PJ Twomey Hospital in Suva, Fiji, from 21st-30th November, 1994. The objectives of the workshop are:

1. To provide knowledge of effective management methods of a National Tuberculosis Control Programme.
2. To transfer newly acquired skills to upgrade the management of National Tuberculosis Programmes.
3. To review the leprosy situation in Pacific countries/areas.
4. To identify activities which still require technical support in leprosy.
5. To plan a two year strategy for intervention for tuberculosis and leprosy.

It is expected that there will be approximately 26 participants and 6 WHO Secretariat members. The participants are National Tuberculosis and Leprosy Control Officers from 19 countries and areas in the region, namely American Samoa, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Republic of the Marshall Islands, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, Naura, New Caledonia, Papua New Guinea, Republic of Palau, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu, and Wallis and Futuna.

Health initiatives in the South Pacific

Over the years New Zealand has made significant contributions to the health sector in the South Pacific. The contributions have taken many forms from sending experts, training of nurses and doctors, building hospitals, providing equipment, primary health care, water projects, and medical treatment in New Zealand when this is not available in the countries concerned. Our primary involvement for the 1993/94 year was:

1. Provision of medical treatment in New Zealand for 7 Pacific countries, $1.8 million.
2. Support for the Fiji School of Medicine, $250,000.
3. Water supply projects in Cook Islands, Solomon Islands and Vanuatu, $470,000.

In the 1993/94 financial year New Zealand Overseas Development Aid (NZODA) made two special grants to the Hepatitis Foundation.

(a) $170,000 to provide Hepatitis B vaccines for immunization programmes in the South Pacific.
(b) $30,000 to support a workshop on Hepatitis and a Child Health Forum for representatives of Pacific and South East Asian countries.

This was held over three days in April at Whakatane, with over 90 participants from New Zealand, the Pacific Islands, Asia and representatives from UNICEF and WHO.

World Bank study on health priorities and options in Pacific member countries

In 1993 a study by the World Bank on Health Priorities and Options in Pacific Member countries identified many deficiencies. Some countries were identified with high infant mortality, relatively low life expectancy, high fertility, and populations which continue to be susceptible to infectious and parasitic diseases and reproduction related health problems commonly associated with poverty. Other countries in the region are experiencing incidents of cardiovascuar ailments, neoplasms and injuries, sexually transmitted diseases and various non-communicable diseases and health problems linked to changes in diet, sexual practices and exercise patterns.

The general orientation of the World Bank study is towards:

1. Primary health care facilities in peripheral areas.
2. Prevention of communicable diseases through vaccination and vector control and the provision of water and sanitation services.
3. Dissemination of preventive health information and advice.

Australian assistance – cardiovascular ailments

A four member team of Australian Cardiologists led by Dr Fred Nasser, under a programme sponsored by the Sydney Adventist Hospital, has operated, without charge, on 15 adults and 7 children in Fiji, suffering from heart related ailments. Dr Nasser said incidents of heart diseases did not seem to have changed since a previous visit in 1992. "Heart related problems" he said "needed to be looked at very seriously because they are crippling the children of Fiji." The Australian cardiologists felt that it would be possible for Fiji to have its own cardiac centre so that local patients did not have to travel abroad for heart treatment. It would however be very costly. The Colonial War Memorial Hospital, in which the team carried out the operations, has a very good Intensive Care Unit and other related service units to cater for heart patients after surgery.

The South Pacific alliance for family health. (SPAFH)

SPAFH is a regional, non-government, non profit organisation whose primary objective is the promotion of family planning and population activities in its member countries, namely the Cook Islands, Fiji, Kiribati, Papua New Guinea, Solomon Islands, Vanuatu, Tonga, Tuvalu, Niue and Western Samoa.

SPAFH's mission statement is "Community Health and well being is our No. 1 concern". SPAFH is recognised by both the International Organisations in the region as well as member countries and it has been acknowledged by the major donors as a channel of funds to provide service and family planning to the countries concerned. The organisation enjoys a good working relationship with government and non-government organisations in the countries.

There were mixed responses to the formation of SPAFH. Some saw it as a competitor while others welcomed it on the grounds that it would lead to the building up of indigenous capabilities in population and family planning sectors in the South Pacific region. However, with the adoption of an open policy attitude and its willingness and interest to welcome close collaboration with other regional and international agencies in the discipline of family, health and population issues, SPAFH is presently recognised as an important regional organisation in population and family planning activities in the South Pacific.

SCIANZ IMMUNOASSAY AWARD

APPLICATION FORM

Applications are invited for the Award (of $1,000) from all members of the NZIMLS using immunoassay techniques.

The Institute and SCIANZ anticipate that the Award will be used by the successful applicant to foster their knowledge and/or career in medical laboratory science (i.e. attend a course, conference or specialist laboratory).

All members of the NZIMLS are eligible to apply for this Award.
Applications must be received by the Executive Officer, NZIMLS, PO Box 3270, Christchurch on the official application form by the

5pm, 31st MARCH 1995

Late applications will **not** be accepted.

Selection of the successful applicant will be on professional and academic ability, performance/application of immunoassay techniques and benefit of the Award to the applicant.

The decision as ratified by the Council of the NZIMLS will be final.

The successful applicant will be notified by mail.

Date (month/year): .....

Name: .....

Contact Address: .....

.....

A. Experience with immunoassay techniques:

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B. Other achievements in your discipline of medical laboratory technology:

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C. What do you intend to do with the Award (200 words or less):

.....

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D. Please provide a brief outline (abstract) of a paper/review to be offered for publication in the NZIMLS Journal:

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Report on the World Congress of Medical Technology

Annmarie Clarkin,
Waikato Hospital.

"ADVANCED TECHNOLOGY ADVANCES HEALTH"

"Despite the obvious differences in ethnics and culture between the East and the West, and the variations in standards of living between the developed and the devloping world, workers of the profession have but the same goal in mind – to make advances in technology for the advancement of health, which is the theme chosen for this congress."

Mr T.T. Cheung
Chairman, Scientific Subcommittee
21st World Congress of Medical Technology

Introduction

In July of this year, I had the privilege of attending the World Congress of Medical Technology in Hong Kong.

The World Congress is held every two years, and provides a great opportunity to meet, learn from, and exchange ideas with medical technologists from around the world.

This year, about fifty countries were represented by approximately twelve hundred delegates.

Scientific Programme

A dominant theme throughout the Microbiology sessions was the use of PCR and gene probe technology as important diagnostic tools, particularly in Mycobacterial infections. It was reassuring to discover that in New Zealand we seem to have access to the same techniques as the rest of the world, although PCR is seen more as a routine method in some countries than it is here. Mycobacterium tuberculosis was the subject of several interesting papers, perhaps reflecting the problem it presents in some areas of the world.

– The incident of M. tuberculosis infection has risen approximately 20% since 1987, with an increasing number showing drug resistance.
– It is estimated that one third of the world's population (or 1,700,000,000 people) are infected with or carrying M. tuberculosis.
– M. tuberculosis contributes to approximately 7% of all deaths.

Occupational health and safety seems to be the subject of increasing interest in many countries. Dr AW Van Rijswijk from South Africa summarised the findings of a survey he conducted regarding stress among medical technologists. This session was very well attended! I came away with the impression that no matter where in the world a medical technologist is working, the causes and effects of stress are essentially the same. It is important, however to remember that a certain amount of stress is healthy.

Dr Clem Persaud of Ontario, Canada presented a very interesting paper on latex allergy – a problem that is more common, and can be more dangerous than most of us realise.

Two papers addressed AIDS and the healthcare worker. The first was more general and dealt with transmission of the virus, putting the occupational risk into perspective. There have been between 150 and 200 occupational cases recorded worldwide (about 60 of those cases are in lab technologists), compared with a total of 17 million cases. Of those healthcare workers infected, only 33% were as a result of unavoidable accidents. The remainder were due to procedures contravening Infection Control guidelines, eg: recapping needles. The other paper outlined an AIDS education programme for medical technologists in South Africa, which uses videos, lectures, discussions, role playing and hospital visitation in an effort to educate staff about different aspects of AIDS, eg: the reality of living with the virus, and the need for confidentiality in HIV positive colleagues.

One of the most practical presentations I attended was an outline of a paperless workflow in the Microbiology laboratory. This definitely seems to be the way of the future. Although expensive to set up initially, I can see that a system like the model presented would be an ideal way to streamline the workflow and reduce the amount of clerical work involved in specimen processing, enabling technologists to spend more time doing technical work.

Social Functions

No trip to Hong Kong would be complete without experiencing the culture and cuisine of the Chinse people. A very enjoyable social programme was planned for congress delegates. This included a reception hosted by the President of the IAMLT, a dinner at the Repulse Bay Hotel, and a Civic Reception at the Middle Kingdom, Ocean Park. The Middle Kingdom is a series of full size replicas of temples, shrines, street scenes, shops and public squares. They recreate the sights, sounds and atmosphere of China's thirteen dynasties. As well as a wonderful meal, we were entertained by acrobats and traditional Chinese dances. A fantastic evening!

Summary

The overall impression I came away with from the Congress is that essentially, medical labortatory services throughout the world are heading in the same direction. As technology advances, we are able to provide more accurate results, often in a shorter time frame, and this can only improve patient care, and therefore patient health, moving towards the goal of the World Health Organisation – "Health for all by 2000". Attending the Congress was an amazing experience, and I found it very interesting and rewarding to exchange ideas with colleagues from many different countries. It was also very encouraging to see that the technology and methods being used in New Zealand compare favourably with the "world leaders".

Acknowledgments

In conclusion, I would like to thank Health Waikato Laboratories and Credit Union Waikato for their financial support, without which I would not have been able to attend the World Congress.

NEW PRODUCTS AND SERVICES

BALANCED HEPARIN ARTERIAL BLOOD GAS SYRINGES

Radiometer has recently extended their range of balanced heparin blood gas syringes to include a paediatric sampler, the PICO, a narrow barrelled arterial blood gas syringe. The PICO is preheparinised with 60IU of patented lyophilised balanced heparin. The sampler ensures accuracy of all blood gas and electrolyte values, eliminating binding and dilution errors.

Other blood gas syringes from Radiometer include the QS90 range, with a volume of 3ml and the option of needle sizes. Radiometer needles have a super thin needle wall and extra sharpness designed for minimal patient discomfort.

The QS90 has a dual mode for automatic filling or as a conventional aspirating syringe. The new vent design has a large surface area, ensuring bubble-free filling at any angle.

Another syringe in the Radiometer range is the QS50, designed for A-line sampling. This 1ml short barrelled syringe minimises the surface area contact with room air, ensuring accurate results.

For further information on Radiometer arterial blood gas syringes or for a booklet on "Avoid errors in Sampling", please contact Radiometer Pacific.

NEW DATA MANAGEMENT SYSTEM FOR BLOOD GAS ANALYSERS FROM RADIOMETER

Radiometer Pacific Ltd announces the latest release of Clinifile3; the PC based data management system for Radiometer Blood Gas, Electrolyte and CO-oximetry analysers. Clinifile3 is an efficient and time saving programme for the documentation and reporting of up to eight Radiometer analysers.

With Clinifile3, all patient results, quality control results, calibration data and system status data are automatically downloaded onto the PC for user interpretation. Patient information can be accessed in seconds; trending results and plotting acid-base charts for immediate viewing. All patient results can be verified before sending to the hospital mainframe. QC data is automatically collated, plotted on Levey-Jennings graphs and, if selected, interpreted using Westgard rules. Calibration data is automatically collected with sensitivity and status trends available for all electrodes. There is a built-in maintenance schedule and log book that provides organised documentation of maintenance and trouble shooting.

Clinifile3 incorporates automatic database backup, data integrity checking, result index creation/regeneration, along with automatic database self-diagnosis and maintenance to ensure you of the highest system reliability. Clinifile3 enhances the already onboard data management of the ABL500/600 series and is ideal for monitoring remote analysers.

For further information, please contact your local Radiometer Pacific office.

INTRODUCING THE ABL5 FROM RADIOMETER

Radiometer Copenhagen has just released its latest blood gas analyser, the ABL5, incorporating the essentials of blood gas for the smaller throughput department.

The ABL5 provides essential blood gas and acid-base information from an 85µL whole blood sample measuring pH, pCO_2 and pO_2 and then calculates sO_2, HCO_3, tO_2, $AaDpO_2$, SBC, ABE, SBE and tCO_2, all in 60 seconds.

Designed to be extremely straightforward, the operator simply positions the sample collecting device against the probe and presses the aspiration button. Operation is menu driven.

The ABL5 is a true STAT analyser where calibrations can be interrupted at any time for emergencies. A standby mode is incorporated as standard and is ready in a few minutes when brought out of standby. The ABL5 is compact and lightweight making it easily transferred and shared between departments.

Little maintenance is required on the ABL5, limited to checking the solutions and gas pressure. The ABL5 uses the unique "Click and Go" remembraning for all electrodes and is most cost effective compared with disposable electrodes.

The ABL5 is the perfect main analyser for departments with a smaller throughput of blood gas samples or as a second analyser for larger hospitals.

For further information relating to the Radiometer products, please contact Radiometer Pacific Ltd on (09) 5730110

Radiometer Pacific Ltd, Unit A, 10-20 Sylvia Park Rd, Auckland, New Zealand.

ABL600 MULTI-PROFILE SYSTEM FROM RADIOMETER

This year, 1994, is the 40th anniversary of Blood Gas Analyses for Radiometer Copenhagen and coincides with the release of their latest range of blood gas analysers, the ABL SYSTEM 600 series. In 1954 Radiometer Copenhagen released the world's first blood gas analyser, the E50101, a device which measures pH, pCO_2 and pO_2.

Continuing "firsts in blood gas", Radiometer's newest Blood Gas Analysers, the ABL600 series, offer an integrated random access system with on-board data management. The analysers provide the flexibility to select the parameters: choosing from pH, blood gas, oximetry, and electrolytes or any combination, making the analysers the most economical cost per test analyser on the market.

The on-board data management stores and trends patient, QC and calibration data. For a multi analyser site, Clinifile3, Radiometer's PC data management system is available, allowing the monitoring of remote analysers.

THE HISTORY OF BLOOD GAS

Michael Fatouris, General Manager, Radiometer Pacific Pty Ltd

In the scientific world we often find that tradition plays an important role in the various fields of research. We are generally inspired by the promising research work in the field done by an outstanding scientist.

In Denmark the work of Christian Bohr initiated a Danish tradition for oxygen and carbon dioxide research in physiology and medicine and the work of S.P.L. Sorensen and Nils Bjerrum for acid/base research in chemistry.

Their work and others was the start in what was to manifest itself in the world's first blood gas analyser in the 1950s, built in Denmark by Radiometer.

In 1964, D.D. Van Slyke said "For the start of what we may term the modern epoch of the blood gases we turn to Denmark and Christian Bohr."

Christian Bohr, Professor of Physiology at the University of Copenhagen became interested in blood gases and wrote a treatise on the oxygen content of blood in 1885. In 1904 he discovered that the dissociation curve of oxyhaemoglobin of whole blood was S-shaped. He further established in collaboration with his students, K.A. Hasselbalch and Augustus Krogh that the position of the oxyhaemoglobin dissociation curve in whole blood was influenced by the carbon dioxide tension in blood. Today, we describe this as the "Bohr effect".

An interesting sideline to Christian Bohr was that his elder son, Niels Bohr, the physicist, and Neils' son Aage were both awarded Nobel prizes in physics.

Whilst Bohr was involved with oxygen physiology, fellow Danes were developing the concept of pH. In 1909 S.P.L. Sorensen, based at the Carlsberg Laboratories in Copenhagen, published his works on a method for the determination of the hydrogen ion concentration, introduced the Ph concept and buffers for checking pH in enzymatic studies. In 1923, Bronstead introduced a new acid base definition which characterised acids and bases by their ability to accept or donate protons. K.A. Hasselbalch used the work of his fellow Danes to rework Henderson's original equation into what we know today as Henderson-Hasselbalch equation. Hasselbalch also was the first to carry out reliable measurements of blood pH at 38°C by means of a hydrogen electrode and used these to define clinical acid base disturbances.

The contribution of early work of Danish oxygen and acid base research was mainly theoretical. The application of the new knowledge and new methodology (with the exception of the Van Slyke manometric apparatus for measuring carbon dioxide and other gases in blood, 1924) was to wait until the early 1950s and the tragic polio epidemic in Copenhagen. Patients died because of the confusion between respiratory and metabolic acid/base disturbances. These could not be clearly separated and quantified using either the Van Slyke or Hasselbalch techniques.

So a new method was devised by Poul Astrup, based upon measuring the pH after equilibrating blood or plasma at two known pCO_2 values. This could now distinguish between respiratory and non-respiratory components of acid base status. The pCO_2 expressed the respiratory component while the new term, Base Excess, expressed the non-respiratory component.

The development of this method took place in close co-operation between the Department of Clinical Chemistry at Rigshospital and Radiometer Copenhagen, who developed the capillary electrode and later made the analytical equipment commercially available.

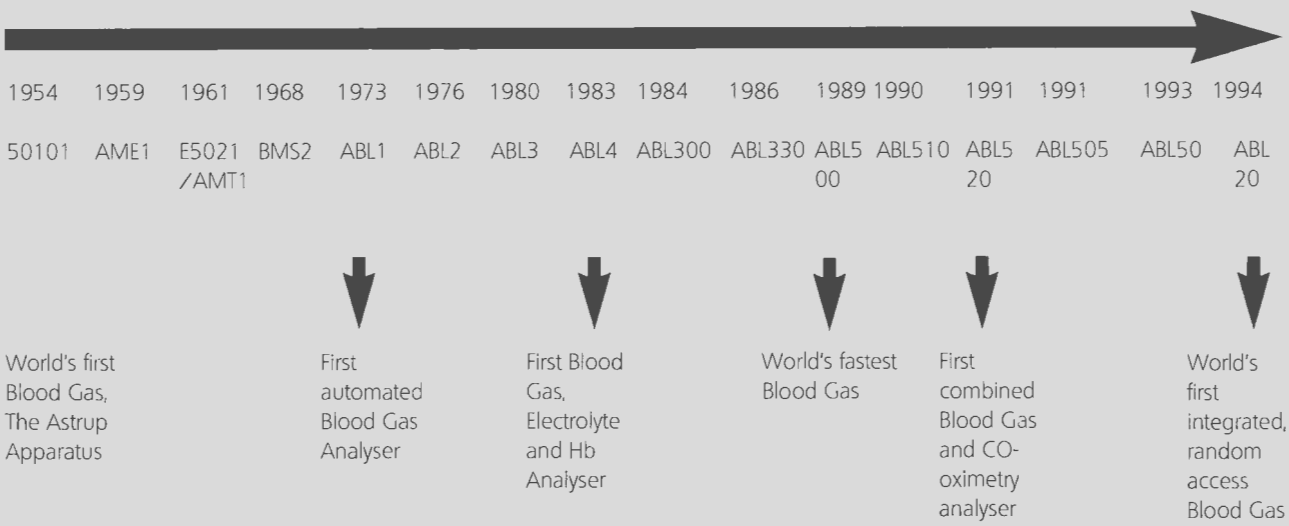
In Denmark the pioneering work of Astrup was continued by Ole Siggaard Andersen, Knud Engel, Kjeld Jorgensen and others. Siggaard-Andersen worked with Astrup and, in 1963 developed his nomogram for calculating base excess and bicarbonate for pH and pCO_2. This began what Severinghaus describes as "the great transatlantic acid base debate", between the Boston and Copenhagen schools.

Of the living "pillars" of modern blood gas and acid base methodology Astrup, Siggaard-Andersen, Stow (developed the pCO_2 electrode) and Clarke (developed pO_2 electrode), Siggaard-Andersen continues his work today in collaboration with his son Mads in his laboratory in the Herlev University Hospital in Copenhagen.

Excerpts from:

"The History of Blood Gases, Acids and Bases", by Poul Astrup & John W. Severinghaus

Radiometer Blood Gas Time Line



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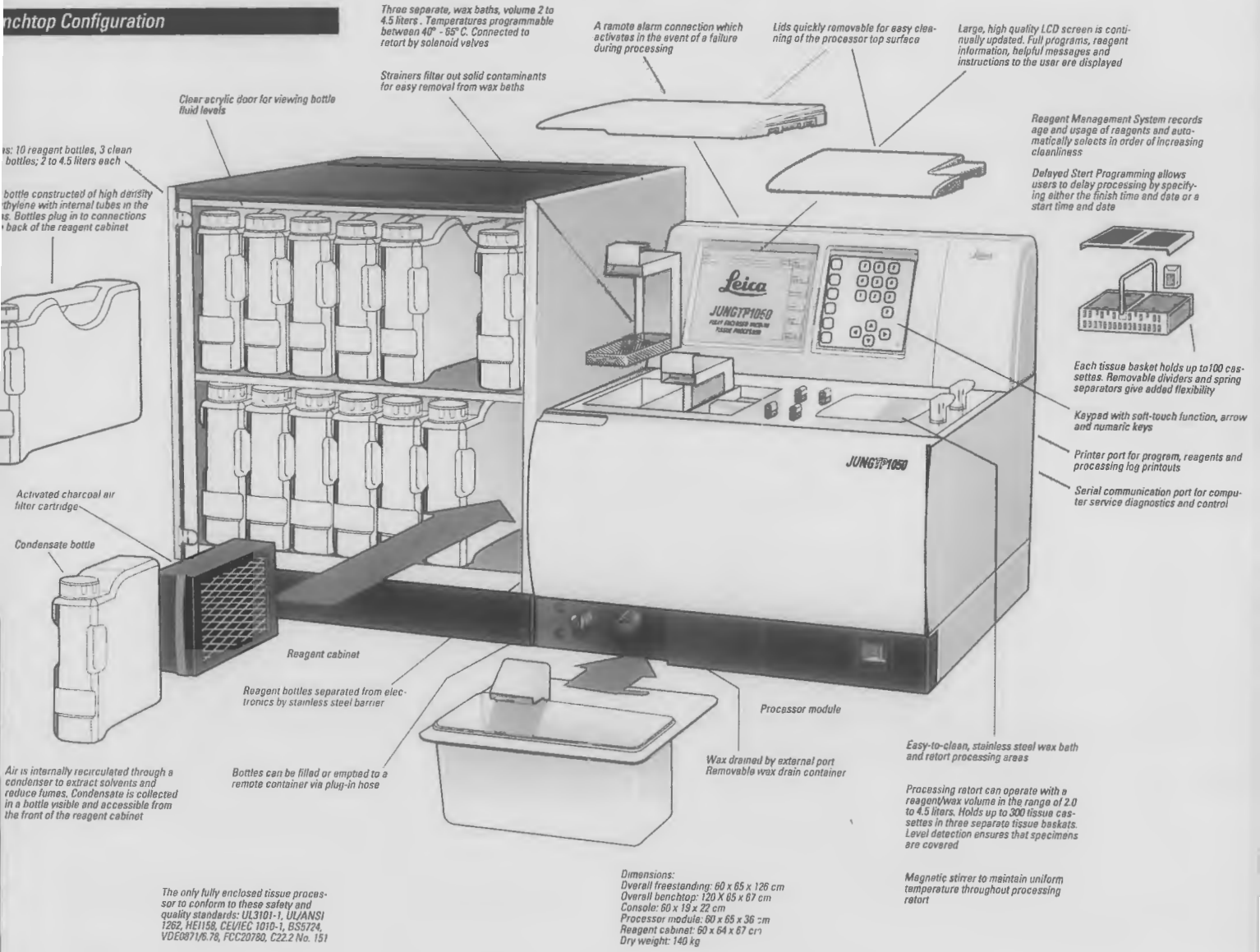

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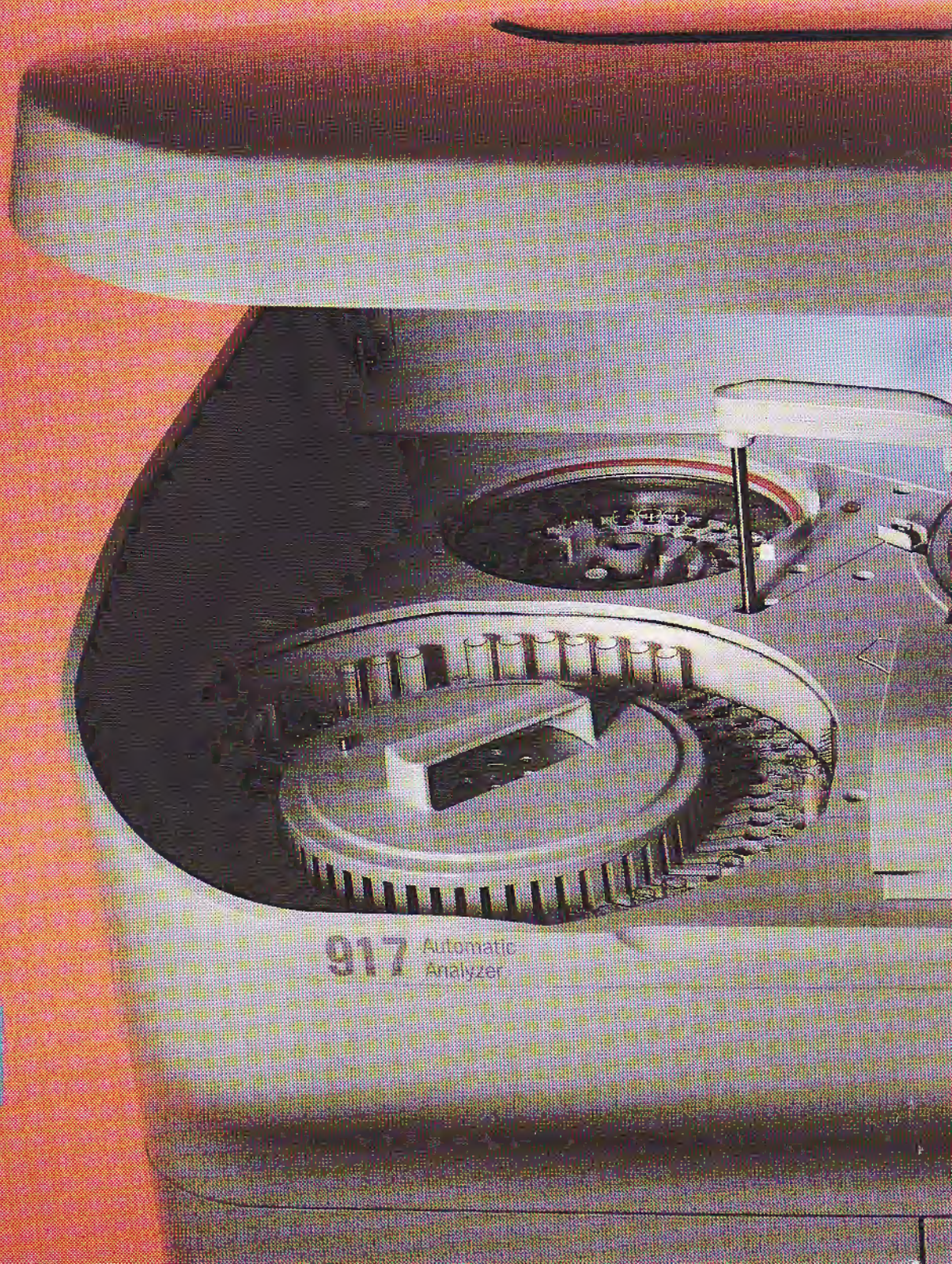

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