Volume 49 Number 4 November 1995 ISSN 1171-0195

New Zealand Journal of

Medical Laboratory Science

Official Publication of the New Zealand Institute of Medical Laboratory Science Incorporated

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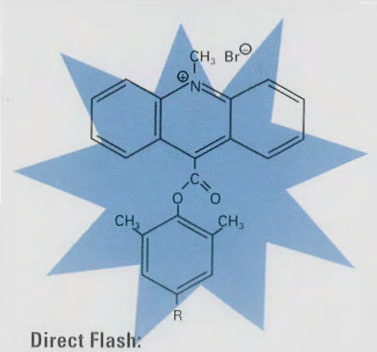

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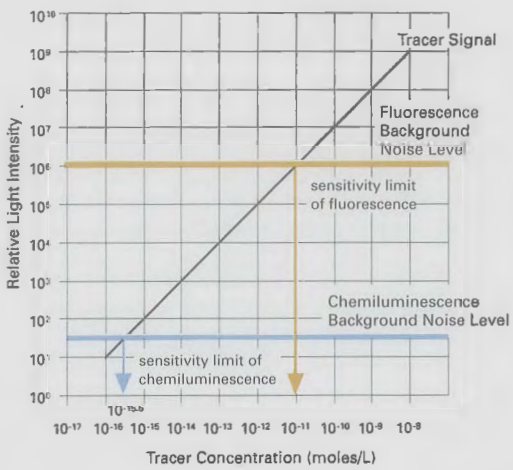

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New Zealand Journal of
Medical Laboratory Science
Volume 49 Number 4
November 1995
ISSN 1171-0195

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NEW ZEALAND JOURNAL OF MEDICAL LABORATORY SCIENCE

The New Zealand Journal of Medical Laboratory Science is published quarterly (March, May, August & November) on behalf of the New Zealand Institute of Medical Laboratory Science (Inc) by Institute Press Ltd, Auckland.

The Journal is indexed in the Cumulative Index to Nursing and Allied Health Literature (CINAHL).

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Evaluation of the Ciba Corning 850 and the Instrumentation Laboratory 1640 Automated Blood Gas Electrolyte Analysers

Donald J Mikkelsen BSc., FAACB, RMLT, *Evelyn M Clarke* RMLT

Department of Clinical Biochemistry, Waikato Hospital

Address for Correspondence: Don Mikkelsen, Dept of Clinical Biochemistry, Waikato Hospital, Private Bag 3200, Hamilton, New Zealand

NZ . Med Lab Science 1995, 49(4 159-162

Abstract

Blood gas equipment has evolved intro multi-analyte testing platforms measuring blood gas parameters as well as electrolytes and metabolites. This has necessitated the addition of new sensor designs and instrument configurations.

We report an evaluation of two modern blood gas electrolyte analysers, the Ciba Corning 850 and the Instrument Laboratory IL1640.

Correlation of analytical values on patient samples obtained on the candidate equipment with an existing Ciba Corning 288 and Hitachi 717 was excellent. Obtained r values ranged from 0.9958 for Pco_2 (IL vs. Corning 288) to 0.9779 for Na^+ (Corning 850 vs. Hitachi 717). Bias was evident in most analysers, slopes ranging from 1.21 for Na^+ (Corning 850 vs. Hitachi 717) to 0.84 for Po_2 (IL 1640 vs. Corning 288). Imprecision was low for both analysers but better for all analytes on the Corning 850 (CVs ranging from 0.02 for pH mean 7.40, to 1.17 for K^+ mean 3.37) this compares with IL1640 (0.06 for pH mean 7.32, to 3.24 for Ca^{++} mean 1.23).

Equipment realiability and reagent consumption are very similar for both instruments. A limited useability assessment showed user preference for the Corning 850 from both laboratory and non laboratory users.

We conclude that both machines perform acceptably. The Corning 850 is easier to use and we believe would be more suitable for an extra-laboratory site.

Introduction

The evolution of the original blood gas analysers has seen the development of new technologies which have enabled the determination of a range of analytes within the same measurement system[1]. Analytes that are routinely added to conventional blood gas equipment are those that logically make up part of a common test profile that is performed in association with blood gases. These analytes include ions (Na^+, Cl, K^+, ionised Ca^{++},) metabolites (glucose, lactate) and haematological parameters (Hb, Hct) and are performed by direct methods on whole blood samples. Instrument manufacturers have responded to a demand for flexible equipment which can be configured to the needs of a particular situation with a generation of equipment in which the final test menu can be selected from a range of analytes to 'tailor' the analysis profile. This equipment has found wide application in extra-laboratory[2,3] sites as well as in established laboratories.

We have recently evaluated two instruments which fall in to the above category. The Ciba Corning model 850 (Ciba Corning Diagnostics Corporation, Medfield, MA) and the Instrumentation Laboratory IL 1640 (Instrumentation Laboratory Company, Lexington, MA).

Materials and Methods

Instrumentation

Corning 850: The Corning 850 is a combination blood gas and electrolyte analyser which enables the simultaneous measurement of pH, Pco_2, Po_2 Po_2, Na^+, Cl, K^+, and Ca^{++}. The analyser is part of the 800 series from Ciba Corning which allows for the addition or removal of analytes from basic blood gases through to metabolites electrolytes, blood gases and CO-oximetry utilising the same single sample injection.

The blood gas and electrolyte sensors are modular units which require no membrane maintenance. They are the same as used previously in the Ciba Corning 200 series analysers.

Sampling is by aspiration utilising an intelligent sampler mechanism which senses the size of syringe used and interprets the volume of sample in the syringe from the position of the syringe plunger. Insufficient sample volume is thus detected. Sample volume required is 110 µL for normal sampling and 60 µL micro.

Fluidics handling and control is accomplished via 3 peristaltic pumps and a series of solenoid operated valves. The full sample flow path is visible to the operator.

The user interface is provided via a sealed soft touch keypad, a liquid crystal screen, and alphanumeric thermal printer. The system software controls all instruments functions and provides troubleshooting assistance. There are user definable options for data input; calibration frequency and values; parameters measured, calculated, and printed; quality control; and patient data management.

The Instrumentation Laboratory 1640: is similar in specification to the Corning 850 with a notable difference that it includes the determination of Haematocrit. Installed analytes on the evaluation machine were Hct, pH, Po_2, Pco_2, Na^+, K^+, Ca^{++},. Cl can be substituted for Ca^{++} in this analyser then designated model 1650. The electrodes are of a low maintenance design. Membrane cap replacement is required at intervals of two months for Pco_2, Po_2, K^+, Ca^{++}, and one month for the reference electrode. Sampling is accomplished by aspiration from a retractable sample probe. Detection of syringe size is not available. Insufficient sample warning occurs post sampling if insufficient sample reaches the measurement chamber. Sample volume required is 240 µL in normal mode and 120 µL in micro mode. Fluidics handling is essentially the same as previous IL models incorporating 2 peristaltic pumps for moving sample and waste and a centrally mounted rotary valve which partitions the measuring compartment allowing gas and electrolyte calibration to occur simultaneously. The sample flow path is largely visible through the perspex measuring block. The keyboard is a sealed soft touch variety, the screen is a green VDU type and the printer is alphanumeric. System software covers the same range of options as those outlined for the Corning 850.

Patient Comparisons

The performance of the candidate analysers was compared with that of existing laboratory equipment. For each of the analytes measured the appropriate comparison was made using patient samples. These samples were analysed on the candidate analyser and then analysed on the laboratory instrument. Care was taken to eliminate common sources of error when dealing with patient samples. The effect of the introduction of air bubbles at sampling [4, 5] was minimised by immediately expelling all air in the syringe and by using samples with a large volume of blood so that any possible effect was "diluted" by the large volume. The effect of metabolism [6 7] was minimised by keeping the sample in an ice slurry between samplings.

Electrolytes – 30 patient samples were compared with the Corning 288 direct ISE and the Boehringer Hitachi 717 Indirect ISE.

pH and Blood gases. – 30 patient blood gas samples were compared with the Corning 288.

Regression analysis was performed on these data.

Imprecision

A patient blood sample was assayed consecutively twenty times over a one hour period. Precautions as described for patient sample comparisons were observed to minimise sample deterioration. These results were used to calculate mean, standard deviation and coefficient of variation.

Equipment reliability

A log was kept of the analyser's performance during the trial. The log recorded:

1. Failed calibrations and their causes. 2. Down time and its cause. 3. Maintenance performed, both scheduled and non scheduled. 4. Replacement parts installed. 5. Reagent Usage. 6. The consumption of reagents was assessed during the normal use of the analyser. Assessment consisted of:

1. Baseline reagent use when no samples were processed and the analyser was normally calibrated. 2. Standby usage where the analyser was in a "sleep" mode. 3. Incremental usage from processing of samples. 4. Additional reagent or solution usage. eg. Cleaning or conditioning solutions.

Operational Issues

Sample volume: The minimum sample volume required for analysis was determined by processing samples using the micro mode and determining the amount of sample used by weight difference. This was converted to volume taking into account the density of the sample.

Sample processing time: The sample processing time was determined by determining the average time taken to produce results and the average total time taken by the instrument to return to sample ready state after processing a sample.

Calibration: The time the analyser was unavailable when calibrating was determined.

Maximum throughput: The achievable sample throughput (samples/hour) was calculated by operating the machine with a trained operator processing consecutive samples under normal operating conditions.

Individual users of the systems, (six laboratory staff and four nursing staff, were asked to complete a questionnaire rating the instrument from 1 (excellent) to 5 (poor) on: ease of use, training requirements, suitability of documentation, complexity of maintenance tasks, readability of display. Nursing staff did not comment on the documentation.

Results

Patient Comparisons

The results of the patient comparisons show generally good correlation with the laboratory instrumentation. The results are summarised in Table 1.

In all but one case the r values were greater than 0.95. Significant bias was evident in some comparisons eg. (Corning 850) K^+ = 1.21 (Hitachi 717) – 0.95. Both analysers have the ability to accept correlation data in order to obtain agreement with existing laboratory equipment.

Imprecision

The mean, SD, and CV, of the determinations of each of the analytes on the two candidate machines are summarised in Table 2. The Po_2 values obtained with the IL 1640 are not useful for comparison as they are based on a very low mean value Po_2 (22.2). As the two analysers were not present in the laboratory at the same time it was not possible to use the same sample on both for imprecision studies.

Equipment reliability

Both analysers showed acceptable reliability during the trial. It is of interest that both instruments exhibited problems with the Pco_2 analysis upon initial installation. The Ciba Corning 850 Pco_2 was unstable and often failed calibrations on the first attempt. The problem was remedied with the installation of a replacement electrode.

A similar experience was had with the IL 1640. The Pco_2 electrode became unstable and did not respond to blood conditioning as suggested by the service agents. A full service of the electode sensor remedied this problem. The Pco_2 problem on either instrument resulted in downtime of 20 minutes for the Corning 850 and 15 minutes for the IL 1540 whilst the electrodes were serviced or replaced. There were no other instances of requirement for unscheduled maintenance by either instrument.

Table 1

Correlation studies between candidate and laboratory instruments. n = 30

Analyte	r	Slope	Intercept
Corning 850 vs. Hitachi 717			
Potassium	0.9938	1.21	-0.94
Sodium	0.9779	0.94	7.28
Corning 850 vs. Corning 288			
Potassium	0.9904	1.09	-0.515
Sodium	0.9875	1.06	-7.5
pH	0.9947	1.02	-0.164
Pco_2	0.9955	1.02	-2.61
Po_2	0.9453	0.86	-0.85
IL1640 vs. Hitachi 717			
Potassium	0.9873	0.99	0.10
Sodium	0.9869	0.97	3.78
IL1640 vs. Corning 288			
Potassium	0.9824	1.09	-0.19
Sodium	0.9686	0.98	3.2
pH	0.9956	1.05	-0.39
Pco_2	0.9958	0.96	1.30
Po_2	0.9825	0.84	5.83

Table 2

Imprecision Studies, repeat sampling, n = 20

Corning 850							
	pH	PCO2	PO2	Na	K	Ca	Cl
Mean	7.402	40.5	199.8	129.6	3.37	1.07	98.9
SD	0.001	0.34	0.92	0.36	0.039	0.008	0.31
CV	0.02	0.83	0.46	0.28	1.17	0.75	0.31
IL 1640:							
Mean	7.315	63.5	22.2	138.1	4.30	1.23	
SD	0.004	0.76	0.59	1.57	0.095	0.040	
CV	0.06	1.20	2.68	1.14	2.22	3.24	

Reagent usage

Reagent usage for the two instruments is shown in Table 3. Measure reagent consumption was remarkably similar meaning that operating costs will hinge on comparative reagent costs that apply locally. The Ciba Corning 850 utilises an additional conditioning reagent which is automatically utilised in a conditioning cycle which occurs once daily and consumes 3.9 mL of solution.

Sample Volume

Mean sample volumes determined for the instruments are: Ciba Corning 850 syringe sampling, 133 µL, micro sample 60 µL. IL 1640, syringe sample 230 µL, micro sample 123 µL.

Sample Processing and Calibration Time

Average sample processing times and calibration times are shown in Table 4. The IL 1640 was slower in the mode that we used which involved the instrument performing a 1 point calibration immediately following each sample. It is possible to interrupt this calibration for 5 consecutive samples. IL claim that a throughput of 40 samples per hour can be achieved by doing this, we did not measure throughput in this mode.

Table 3

Reagent consumption for various analyser cycles.

Corning 850			
Reagent	1 Pt Cal (mL)	2 Pt Cal (mL)	Sample (mL)
Wash	0.48	0.88	0.53
7.3 Buffer	0.38	0.38	–
6.8 Buffer	–	0.70	–
C 1 conditioner	–	–	–
IL 1640			
Flush Solution	0.35	0.90	0.40
Cal 1 Solution	0.35	0.65	–
Cal 2 Solution	–	1.5	–

Table 4

Cycle times for calibration and sample cycles (sec) plus observed throughput.

	Cal 1	Cal 2	Time to result	Cycle time	Samples/ hour
Corning 850	184	315	47.5	97.5	26
IL 1640	92	390	68.4	154	16

Useability Survey

Results of the responses to the questionnaire are summarised in Table 5.

Table 5

Average score (1 = excellent 5 = poor) for aspects of analyser useability

Corning 850	Lab Staff average Score	Nursing staff average Score	Total
Ease of Use	1	1	1
Training	1.7	1	1.4
Documentation	1.5	–	1.5
Maintenance	1.6	2.5	2.0
Display	1.5	1	1.3
IL 1640			
Ease of Use	2	2.6	2.3
Training	2	3.3	2.6
Documentation	2	–	2
Maintenance	2.2	2	2.1
Display	2.5	3	2.7

Discussion

The two instruments under evaluation were very similar in their intended usage. Both are considered to be sufficiently automated to provide blood gas analysis at point of care. Our assessment of the analytical performance of the equipment shows that both machines have adequate performance in terms of imprecision. Results show a slightly better performance for the Ciba Corning 850 in comparison to the IL 1640. This is possibly due to the calibration routine which follows each analysis on the IL introducing extra imprecision as small adjustments are made to electrode calibration. Significant biases were observed between the instruments and this laboratory's own equipment. The accuracy of the analysers were not assessed in this study. It is a simple task with either of the analysers to adjust the data coming from them to closely match that coming from other laboratory equipment. Close attention must be paid however to methodological differences that may exist between the various methods employed and a full understanding of these differences is required before output is adjusted based on methodological differences. Some pre-analytical factors affected the correlation that we obtained for Po_2 between the Ciba Corning 850 and the Ciba Corning 288 was due to these analysers being separated by a distance in excess of 500 metres causing delays in taking the sample from the 850 to the 288. A separate comparison with the IL 1312 which was situated adjacent to the Corning 850 showed much better correlation. (r 0.984).

Equipment reliability issues were difficult to assess as both instruments suffered a minor problem with their Pco_2 electrodes during the assessment. On both instruments the problem was apparent upon installation and probably resulted from the rigours of transportation rather than from any inherent unreliability. It is the author's experience that blood gas equipment performs best in a constant environment with constant use. The length of this study precluded any in depth assessment of the equipment in "steady state" usage for a length of time. The design features of both instruments facilitate easy maintenance and troubleshooting should a problem arise. Local conditions relating to service and spares availability would be a bigger factor in instrument reliability long term than design issues.

The results of the sample throughput experiment were a little biased in favour of the Corning instrument due to the IL design feature that includes a calibration as part of the analytical cycle. STAT sampling allows 5 consecutive samples to be processed on the IL

before the analyser requires calibration. This will increase throughput to a very similar value as that obtained on the Corning. We evaluated the throughput using standard sample modes as this reflects the usual operational situation. It is worth noting that the IL provides greater confidence of result reliability due to its continuous calibration mode and the inclusion of a one point calibration immediately following each sample cycle. Any problems with excessive electrode drift or unrealiability will be highlighted immediately rather than at the next cal as is the case for the Corning. The Corning was slightly faster in generating a result than the IL from sample injection. The times we obtained may vary depending on the electrode endpoint times that apply at the time of testing.

The sample volume requirement is significantly more for the Il 1640 than for the Corning 850, this may limit its application in neonatal units.

In the very limited useability study we performed with laboratory staff and nursing staff the Corning 850 had overall a better user acceptance. Points that were noted to be specifically in favour of the Corning were the sampling mechanism with positive locking of the sample onto the sample port and display readability which was very good in the fluorescent lighting situation that was present at the test site.

Summary

These two analysers represent another step in the constant improvement of laboratory equipment. They are good examples of equipment that is able to rapidly and reliably process whole blood specimens for blood gases, and electrolytes. The future implementation of metabolite testing on these instruments will make them strong candidates for point of care testing as well as laboratory based STAT and backup equipment. It is the authors opinion that the Corning 850 would be more suited to a point of care testing situation due to its lower sample volume requirements, higher throughput in normal user mode, and greater user acceptability. The only notable disadvantage of this analyser was the lack of haemoglobin or haematocrit estimation. To provide these requires the installation of the integral co-oximeter module. Either machine would be equally suited to a laboratory based installation. The choice could be made on the basis of capital and running costs together with the local service and backup environment.

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High Titre IgG ABO Antibodies in Group O Polynesian and European Blood Donors. Incidence, Variability, Racial and Gender Differences

Stephen Henry PhD, FNZIMLS; ***Research Fellow; Paul Clark,*** RMLT, MNZIMLS; ***Grade Laboratory Officer; Graeme Woodfield*** MD, PhD, ***Medical Director***

Department of Transfusion Medicine, Auckland Regional Blood Centre, Auckland, New Zealand.

Address for correspondence. Steve Henry, Department Clinical Chemistry and Transfusion Medicine, University of Göteborg, S 413-45 Göteborg, Sweden.

NZ J Med Lab Science 1995, 49(4) 164-165

Abstract

Using data from group O blood donors, variability, racial and gender differences in the incidence of high titre IgG ABO antibodies in Polynesian and Europeans was analysed. It was found that high titre IgG ABO antibody positive status was very variable, having changed in the majority of donors within a year. Using data from 10,956 donors the incidence of high titre IgG ABO antibodies was found to be 2.1% in Europeans and 7.1% in Polynesians. There were also differences in incidence within the Polynesian groups. Further subdivision of the data by gender clearly showed that, as expected, females had about a 2% higher overall incidence of high titre IgG ABO antibodies than males. The factor(s) which cause these differences in the incidence of high titre IgG ABO antibodies between the races are uncertain, but may be related to genetic variation as well as environmental factors (micro-organisms, diet, social behaviour etc).

Introduction

In human plasma "naturally occurring" ABO antibodies are present in persons whose red cells lack the corresponding antigens. These naturally occurring antibodies are usually IgM in nature and often of low titre, however, in some individuals, usually group O, high titre IgG ABO antibodies are also present (as reviewed in Mollison et al.[1]. The stimulus for these antibodies is uncertain although it is generally believed micro-organisms and the environment are responsible[1,2,3]. These high titre IgG ABO antibodies may in some situations pose a transfusion risk, for example, when group O blood is transfused to a non-group O recipient[1,4]. As a consequence, blood donations are screened for the presence of these high titre IgG ABO antibodies.

Historically this was done with the 'haemolysin' test, which equated with testing for the presence of haemolysing ABO antibodies, however, this manual test can be replaced with an automated method of detecting potentially dangerous donations, that is the detection of high titre IgG ABO antibodies[4]. Because ABO antibodies may have a potential biological role (eg in protection from micro-organisms), we examined the incidence of high titre IgG ABO antibodies in Europeans and Polynesians.

Key words

Polynesians, ABO antibodies

Materials and Methods

High titre IgG ABO antibodies were routinely determined in the course of accreditation of blood donations. In brief, using a continuous flow automated analyser (Autogrouper 16C, Technicon, Basingstoke, England) plasma was treated with dithioerythritol to destroy IgM[5] antibodies and diluted. The ability of the treated plasma to cause the agglutination of enzyme treated A$_1$B erythrocytes determines the presence of high titre IgG ABO antibodies. This method cannot discriminate between the specificity of the ABO antibody detected, ie. whether the antibody is anti-A, anti-B or anti-A,B. The automated level of detection has been tested and found to equate with a manual serology titre of IgG ABO antibodies greater than 1:50.

From computer records of donors whose blood was accredited at Auckland Regional Blood Centre in 1993, a subset of data from group O donors who gave one (n=10956; 1403 Polynesians, 9553 Europeans) or two donations (n=5550; 448 Polynesians, 5002 Europeans) and whose gender, age, and race was identifiable as either European or Polynesian, were analysed.

Results and Discussion

Initially, donations of all ABO groups were analysed, however, of 601 donations with a high titre IgG ABO antibody, only six were from non-group O donations. This observation is in agreement with published reports, where it is shown that immune antibodies in A or B individuals are most often IgM, while immune antibodies in group O's are most often IgG[1,6,7]. As a consequence, the analysis of high titre IgG ABO antibodies was restricted to group O donors.

Using data from group O individuals the incidence of high titre IgG ABO antibodies was analysed. Variability (?reliability) was assessed by analysing the results of 5550 donors who gave 2 donations within a year. Of the 196 donors with a positive result, 40% (n=78) were positive on both occasions and 60% (n=118) gave a different result at the second donation. There was no association of variability with the race of the donor, nor was there a constant direction of change, (ie positive to negative, or negative to positive). It is probable this variability reflects new immunisations in some individuals, and declining titres in others, as well as experimental error, especially in individuals with antibody titres near the cutoff level.

Because of variability in the incidence of high titre IgG ABO antibodies in individuals, frequencies and associations were studied only in donors who gave a single donation as this best reflects the average. The racial incidence and gender distribution of high titre IgG ABO antibody producers was analysed (table 1). It was clear that

there is a difference between the incidence of high titre IgG ABO antibodies between Europeans (2.1% of donors) and Polynesians (combined 7.1% of donors). Furthermore, despite the low numbers of some data sets, there appeared to also be differences in incidence within the Polynesian groups (eg. Maori vs Samoan). Further subdivision of the data by gender clearly showed that both European and Polynesian females had about a 2% higher overall incidence of high titre IgG ABO antibodies, which is possibly attributable to child bearing.

The possibility that age was a contributing factor was considered as the median age of the Polynesian donors was 24 yrs and that of the Europeans was 32 yrs. However, when only younger donors (those ≤30 or ≤20 years) were considered there were no significant differences from the overall data.

The possibility that Polynesians can more easily produce high titre IgG ABO antibodies may have important implications in the susceptibility of these people to disease, as it is recognised that the ABO system is associated with a variety of diseases (as reviewed in Mourant et al.[8]). The factor(s) which cause these differences in the incidence of high titre IgG ABO antibodies between the races are uncertain, but may be related to genetic variation as well as environmental factors[9]. It is known for example that IgG levels are higher in blacks[10], and this may account for the higher incidence of high titre IgG ABO antibodies in Polynesians, although this has not been determined for Polynesians. Alternatively, other factors may be involved, perhaps diet, social behaviour etc. Which factors cause the higher incidence of high titre IgG ABO antibodies is uncertain, but micro-organisms are the likely candidate. If micro-organisms are involved in stimulating these antibodies, what organism(s) is involved and what role, if any, do high titre ABO antibodies play in controlling pathogenesis? These and other questions make up part of the void of knowledge in understanding the complex biological relationship of blood group antigens, their antibodies, and disease.

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Table 1

Distribution of gender and race in group O individuals with high titre IgG ABO antibodies. Data has been sorted for Europeans, and both cumulated (Polynesian) and subdivided into Polynesian ethnic groups.

	overall			females			males		
	n	+	%+	n	+	%+	n	+	%+
European	9553	198	2%	5117	160	3%	4436	38	1%
Polynesian	1403	99	7%	722	57	8%	681	42	6%
Maori	822	40	5%	431	26	6%	391	14	4%
Samoan	356	34	10%	181	18	10%	175	16	9%
Tongan	96	14	15%	43	7	16%	53	7	13%
Niuean	66	2	3%	30	1	3%	36	1	3%
Cook	57	7	12%	33	3	9%	24	4	17%
Tokelau	6	2		4	2		2	0	

Evaluation of the Johnson and Johnson Clinical Diagnostics Ektachem E250 System

Lance Little, Equipment Specialist; Dennis Reilly, Principal Technologist, Diagnostic Laboratory, Auckland

Address for Correspondence: Dennis Reilly, Biochemistry Department, Diagnostic Laboratory, P.O. Box 5728, Auckland, New Zealand

NZ J Med Lab Science 1995, 49(4): 166-168

Abstract

An evaluation was performed on the Johnson and Johnson Ektachem 250 analyser to establish how well the instrument would suit a routine laboratory, and to establish its reliability and performance. The accuracy and precision of the results obtained were within acceptable limits, with all CV's less than 5%.

The robustness of the analyser proved to be very good and the support provided by Johnson and Johnson when required was of a high standard.

The ease of use of the instrument was a major factor, which also contributes to its ability to be used easily by many staff members. Training time for routine testing would be minimal.

The analyser proved to always be "ready-to-use" and would lend itself to out of hours work and on call type situations.

Maintenance and calibration did not prove to be inconvenient, as both take minimal time, and calibration can be performed at the operators convenience.

Reagent preparation proved to be simple and easy to control, although some forward thinking would be required in a busy situation, as reagents may need some time to equilibrate to room temperature.

Key Words

Ektachem 250 (E250), Hitachi 747 (H747), dry slide, reflectance, imprecision

Introduction

After attending the Johnson and Johnson Clinical Diagnostics Division Ektachem-250 (E250) training course the instrument was delivered to Diagnostic Laboratory and initial setup procedures were performed by Johnson and Johnson Clinical Diagnostics staff and Kodak engineers. The aim of this evaulation is to determine the suitability of an E-250 analyser for use at Diagnostic Laboratory, either as an "urgent" analysis instrument used in conjunction with the Hitachi 747 (H747) or for use in a peripheral site.

The evaluation was performed using patient samples assayed in real-time with the H747.

The E250 was required to meet specific criteria required by Diagnostic Laboratory.

Materials and Methods

The E250 autoanalyser utilises dry slide technology to assay a number of analytes required in clinical chemistry. The analyser is a random access, fully interfacable (uni or bidirectional), multi chemistry analyser. The chemistries are not user definable and the whole system is a "closed shop" in terms of method development by the user. The instrument has full bar code reading capability and will accommodate Code 39, Codabar, Interleave 2 of 5, and Code 128.

Routine biochemistry tests that are currently available include:

Albumin	CO2	Potassium
Alcohol	Creatinine	Salicylate
ALP	GGT	Sodium
ALT	Glucose	Theophylline
Ammonia	HDL	TIBC
Amylase	Iron	Total Bilirubin
AST	Lactate	Total Protein
Calcium	Lipase	Triglyceride
Chloride	Lithium	Urea
Cholesterol	Magnesium	Uric acid
CK	Neonatal Bilirubin	
CKMB	Phosphate	

With the addition of an Immuno Rate module the test repertoire is increased to protein type chemistries and therapeutic drugs. (Refer to Johnson and Johnson Clinical Diagnostics Division for further information).

Using multilayer film techniques, Johnson and Johnson, are able to manufacture specific slides for each assay. A slide consists of at least 3 layers (spreading layer, reagent layer, and support layer) and often have more layers depending on the complexity of the chemical reaction required. Approximately 10-11µL of the specimen to be assayed is applied to the spreading layer. A wetness detector checks the slide has been correctly dispensed onto, and the pressure transducer is capable of detecting clots. The specimen diffuses into the slide within a short time, where it reacts with a reagent which is present in a gelatine or agarose matrix. The colour that forms can be measured using reflectances. The electrolytes are assayed by means of single use ion selective electrodes[1].

The specimens were heparinised plasma and assayed immediately after being run on the H747. All assays were performed in random access mode on the instruments. The E250 was not interfaced, therefore the tests were selected manually. Due to the wide range of tests a population number of 30 was established for statistical analysis of the methods. Glucose analysis was performed using a mixture of heparin and fluoride specimens (as in the case for routine analysis on the H747) Control material used during the evaluation were Kodak Performance Verifier I and II (multi analyte controls specific for Ektachem systems) and Boehringer Mannheim Precinorm and Precipath (used routinely on the H747). The controls were run once a day after daily maintenance was performed. We wanted to establish the robustness of the system by performing the minimum maintenance and tracking CV's on the controls over a period of time.

Precision test data was obtained from the control data run once a day over the months (batch to batch), and through multiple assays of a patient pool run during a day (within batch), and through multiple assays of a patient pool run during a day (within batch).

After initial setup and correlation of the E250 (part of the standard installation) we proceeded to run in random access mode

the combinations of tests that were being requested routinely, both on the H747 and the E250.

Results

Correlation

The condensed data for the correlations between the H747 and E250 are represented in Table 1. Slope and intercept data of the correlation lines are shown.

Table 1

Analyte	Slope	Intercept
Total Protein	0.989	-0.815
Albumin	1.005	0.527
Total Bilirubin	1.202	-8.653
ALP	1.075	1.839
GGT	0.929	1.832
ALT	1.107	-4.323
AST	0.645	7.743
CK	1.321	-11.311
Amylase	1.027	1.211
Glucose	1.007	-0.007
Calcium	0.917	0.148
Phosphate	1.041	0.023
Urea	0.996	0.365
Creatinine	0.844	0.018
Uric Acid	0.949	0.014
Sodium	0.996	1.020
Potassium	1.024	0.070
Lithium	0.798	0.104
Magnesium	0.625	0.228

Impression

Within run imprecision and batch to batch imprecision values are shown in Table 2.

Data for mean (x), standard deviation (SD), and coefficient of variation (CV) are shown using pooled, heparinised patients plasma (within batch) and Precinorm control material (between batch).

Discussion

Correlation

The correlation between the E250 and H474 (dry vs wet) are at times quite different. This is undoubtedly due to the vastly different chemistry methodologies employed in some cases.

To combat this, the E250 has the facility to manually input slope and intercept data in order to align the instrument to an existing analyser, or to maintain current reference ranges.

Imprecision

The between batch imprecision shown is in most cases within acceptable limits (eg <4%), with the noteable exception of AST.

The imprecision shown here has been addressed, and improved methodology has come in the form of a visible wavelength AST. The reaction is as follows:

$$\text{Asparate + x ketoglutarate} \xrightarrow[\text{P5P}]{\text{AST}} \text{Oxaloacetate + Glutamate}$$

$$\text{Oxaloacetate} \xrightarrow{\text{Oxaloacetate Decarboxylase}} \text{Pyruvate + } CO_2$$

$$\text{Pyruvate + Phosphate + } O_2 \xrightarrow{\text{Pyruvate Oxidase}} \text{Hydrogen Pyroxide + Acetyl Phosphate}$$

$$\text{Hydrogen Pyroxide + Leuco Dye} \xrightarrow{\text{Peroxidase}} \text{Coloured Dye (670 nm)}^2$$

The imprecision has improved, as can be seen from the figures in Table 2. - (AST Vis). This improvement has now brought the assay into the same precision range as the H747. Other laboratories have seen a similar improvement in the AST performance[2].

Table 2

Analyte	n	x	SD	CV (%)	n	x	SD	CV (%)
		Within Batch				Between Batch		
Total Protein	30	71.03	0.61	0.87	34	49.74	0.58	1.14
Albumin	30	45.83	1.34	2.93	34	31.45	0.62	1.97
Total Bilirubin	30	17.07	0.25	1.49	34	34.20	0.68	1.98
ALP	30	80.60	2.06	2.56	34	167.00	5.32	3.18
GGT	30	45.43	0.50	1.11	34	60.48	1.00	1.63
ALT	30	31.77	0.86	2.70	34	51.97	1.83	3.49
AST	30	28.07	2.24	7.99	34	60.10	3.28	5.37
AST-Vis	30	24.95	0.38	1.52	20	58.14	1.03	1.77
CK	30	102.66	4.84	4.71	34	292.45	11.02	3.76
Amylase	30	164.10	5.65	3.44	34	278.06	7.24	2.62
Glucose	30	6.37	0.06	0.94	34	6.54	0.10	1.50
Calcium	30	2.01	0.11	4.01	34	2.29	0.05	2.20
Phosphate	30	1.05	0.01	1.28	34	1.38	0.04	2.63
Urea	30	6.08	0.19	3.08	34	5.27	0.12	2.31
Creatinine	30	0.10	0	0.00	34	0.20	0.004	1.86
Uric Acid	30	0.39	0.01	1.29	34	0.31	0.01	1.93
Sodium	30	150	1.22	0.81	34	131	1.00	0.76
Potassium	30	4.2	0	0.00	34	4.85	0.09	1.84
Lithium	30	0.99	0.05	4.67	34	1.35	0.05	3.83
Magnesium	30	0.99	0.01	1.41	34	0.89	0.03	3.37

Throughput

The analyser was subject to a regular workload of 80-100 patients per day or 800-1000 tests per day over a 3 month period. This workload with the instrument interfaced was satisfactorily completed in 4-4.5 hours, thus maintaining a workload very close to that quoted by Johnson and Johnson (250 tests per hour).

On one occasion 1400 tests were performed in 6.6 hours = 212 tests per hour. In this case there was some downtime which slowed up the sampling (refer to "Problems Encountered" later in this section).

Reagent Handling

The reagents are the key to the whole system. Careful control must be taken with the preparation of the reagent slides. Slides are available in barcoded cartridges containing 18 or 50 slides to suit individual laboratories test volumes. Slides are easily stored, either in the fridge or in the freezer (although all slides may be stored in the freezer if this is more convenient). Slides must be allowed to equilibrate to room temperature before use. The time required for slide equilibration ranges from 30-120 minutes. This requires some management from the operator, as the "slide low" warning is given when there are 6 slides left, and this may not give the operator enough time to equilibrate the new cartridge before the on board supply is exhausted. However, with management of reagents based on daily workflow the E250 can be loaded up with enough reagent for a full days work, either in the morning or at some other convenient time. Reagent cartridges can also be added during sampling.

Reagent cartridges are loaded past a barcode reader which reads all the details on the cartridge. Lot numbers are recorded by the E250 and the operator is warned if a particular cartridge is uncalibrated. If calibration data is present on a new lot number the E250 will automatically use that lot number when required.

Calibrations

Calibration must be performed on any chemistry where there is a change in lot number, or when maintenance has required a recalibration. This procedure requires making up the appropriate calibrator materials, selecting the tests required to calibrate, and performing the assays. Multiple calibrations can be performed at one time and calibrations can be performed in advance ie. when a new lot number of reagent arrives in the laboratory it can be calibrated during a quiet period so it is ready for use when the current lot number is used up. Johnson and Johnson have been able to provide the same lot numbers over an extended period of time. As a result recalibration has only been required once since initial setup, and that was to evaluate the AST Vis methodology.

Maintenance

Maintenance is minimal (<10 minutes per day) however, it is important that it be performed regularly. The E250 is moving "solid" slides around during the sampling and incubation stages of analysis, and buildup of slide dust has the potential to cause slide jams, although a slide jam has not been encountered during this evaluation.

Other daily maintenance tasks involve general cleaning and emptying waste containers.

Weekly and monthly maintenance tasks are easy to perform and take very little time (<1hr per month).

All instructions are clearly written in the manual although on board software prompts are more than adequate for a moderately experienced user.

Software

The E250 has good, usable software. The touch screen provides prompts for all situations and there is a very extensive "Help File" on board, which tends to negate the use of the operators manual. If a fault is experienced, the "Help" menu guides the operator through the problem until it is fixed, or engineer support is required.

There is a built in Quality Control (QC) program which would be ideal for the laboratory without a mainframe computer. One minor inconvenience with the QC package is that the 8 digit passcode is required to access any part of it. This tends to discourage its use, although it is only a minor inconvenience.

The on board "Help" software is a good tool that the operator can use in conjunction with the Johnson and Johnson 24 hour Hotline for technical help.

Problems Encountered

There have been two significant problems encountered with the E250 during this evaluation.

During routine daily maintenance we developed an internal communication problem, which required the instrument to be reset. The engineers remedied the situation by replacing a circuit board. Total downtime was less than half an hour.

During the course of running 1400 tests, a sample tip was lost in a specimen with a very low level of plasma and the proboscis was immersed in plasma. As a result the following sample tip was unable to be held on the wet proboscis and it also was lost in the sample. The immediate problem was solved by stopping the analyser from sampling and cleaning and drying the proboscis. No results were released by the instrument in these cases. The proboscis was slightly out of alignment for short samples and adjustment of this will fix the problem. Total downtime was 10 minutes.

In both of the above cases the E250 did not jeopardise the patient results in any way as none were released to the operator. Kodak engineers were very quick to respond when required, and both situations were remedied quickly.

Conclusions

The E250 has been assaying approximately 1000 routine tests per day for the 8 weeks following installation. We have grown more and more confident in the results as time goes on and feel the E250 is a good instrument for a laboratory of this size. The E250 has proved to be reliable and very easy to maintain. It lends itself to be run by a very wide range of staff, as training on routine procedures is very simple. We feel the instrument is improved somewhat now that the bidirectional interface has been completed as test requests are already known by the time the sample is centrifuged, and all that is required is the placement of a barcode on the sample that is then placed on the analyser.

References

1. Sonntag O. In: Laboratory Techniques in Biochemistry and Molecular Biology. Dry Chemistry – Analysis with Carrier Bound Reagents. Pg 57.
2. "Slide Talk" Quarterly Newsletter, Johnson and Johnson. Vol 1. April 1995. Pg 7.

Pacific Paramedical Training Centre

An Announcement

The management committee of the PPTC are pleased to announce that the Centre has re-located into a building on campus at Wellington Hospital.

This year the PPTC has completed 15 years of operation and during this time was housed in a vacant laboratory area at Wellington Hospital.

The PPTC has gained international recognition in its field, is now a Collaborating Centre of the World Health Organisation with responsibilities for training medical laboratory personnel for Pacific Island hospitals and the provision of Laboratory Quality Assurance Programmes.

On the occasion of the centre's re-location, the management committee wish to acknowledge that the development of the PPTC was made possible largely because of the generosity of the Wellington Area Health Board and more recently, Capital Coast Health, in making accommodation and support available. For this the committee extend sincere thanks.

Please note address, telephone and fax numbers remain the same:
Pacific Paramedical Training Centre,
P.O. Box 7013,
Wellington South
Telephone 04-385-5599
Fax: 04-385-5890

Cambodia

Mike Lynch, the Tutor Co-ordinator of the Pacific Paramedical Training Centre, undertook two consultancies in Cambodia for the World Health Organisation during 1995. In March/April his assignment was to review the laboratory capabilities and facilities of the Cambodian Health Service, to run a training course for laboratory technicians in HIV antibody testing, to investigate quality control systems and recommend HIV antibody testing protocols for the provincial hospitals.

Prior to 1995 HIV antibody testing was only carried out in those hospitals that were supported by international NGO's, the Pasteur Institute and in some blood banks. The methods used varied considerably with most of the diagnostic work being done with ELISA's and the blood bank work being done using the rapid Capillus Latex test or the PATH Dipstick method. Considerable difficulties were experienced with performing the ELISA tests and Mike was asked to go to Cambodia and train technicians in the use of the Serodia Particle Agglutination test. Mike had already introduced the Serodia test into the countries of the Western Pacific WHO region while he was on the WHO permanent staff.

A training course for 21 laboratory technicians was held at the School for Sanitary Staff in Phnom Penh. Theory and practical classes were held with the help of translators. Allowing for the obvious difficulties Mike thought that the training went well and achieved its objectives, and as a follow up Mike went with the National AIDS Team to Koh Kong Province near the southern Thailand border to carry out an HIV sentinell surveillance survey among the commercial sex workers. Two of Mike's trainees performed all of the Serodia testing in a laboratory where there was no daytime electricity, refrigeration and very little laboratory equipment. The WHO supplied all the materials for performing the tests. About three hundred initial and repeat tests were performed in two days of testing.

Mike's second visit to Cambodia involved more HIV sero-surveillance surveys in three other provinces. Again all of the testing was carried out by technicians that Mike had taught on his first visit. Again the emphasis was on testing commercial sex workers and army and police personnel. None of those tested was identified by name as the objective of these surveys is to identify the presence and the size of the HIV problem. All serum that was repeat test positive by the Serodia method was taken back to Phnom Penh, the capital, and tested by ELISA and if necessary Western Blot at the newly built Pasteur Institute.

The results of all this testing? Well comments have been made in the Cambodian press about the HIV situation in Cambodia so the figures are not secret. In the 1995 HIV sero-surveillance surveys approximately 38% of all commercial sex workers tested have been found positive for HIV antibody. In voluntary blood donors in the capital in the first four months of 1995, 5.6% were HIV antibody positive. Further surveys are planned for tuberculosis patients and pregnant women. How good was the Serodia test? Well, every serum that was repeat test positive by Serodia was confirmed as positive by ELISA. Mike says that the health services are going to have a major problem coping with the problems associated with AIDS in the coming years.

Wanted: A Guide for Selecting Laboratory Equipment in Developing Countries

A review of the recent WHO publication "Health Laboratory Facilities in Emergency and Disaster Situations", was featured in a previous edition of the Journal. The book was written for aid workers intending to work in emergency situations and refugee camps, but contained much useful information at a very basic practical level for laboratory workers in developing countries.

There is however, still a need for an equipment guide for use by laboratory workers in developing countries. It is so difficult when working in isolation, in remote parts of the world to obtain information from any existing testbook on

- selection and purchase of major laboratory equipment, eg., microscope, balance, incubator, autoclave, spectrophotometer.
- important equipment safety features.
- use of solar energy in a laboratory.
- list of medical firms who are able to assist with procurement and supplies.
- cost effective purchases. An important consideration for Health Departments of Local Governments and for Governments and non Governmental organisations (NGO's) or countries providing aid.

Warren Johns, a New Zealand Medical Laboratory Technologist, writing of his experience in Sudan, illustrates the plight many laboratory workers in developing countries find themselves in.

"I was sent by Save the Children Fund, in mid-February 1985 to Sudan where I was asked to establish laboratories in refugee camps for people from Ethiopia and Chad. It was planned as a six week assignment. Their Telex about the job was brief and to the point "Laboratory technician is to provide basic training to refugees with no previous experience. No equipment needed as UNHCR kits are here. Work will involve training people to use microscopes, making slides, tests on stools, urine, blood slides for malaria."

On my first day at Wad Kowli, the resettlement camp for 90,000 Ethiopians in Eastern Sudan, I opened the laboratory kits which were labelled "Prepared for UNHCR/WHO."

The UNHCR/WHO emergency kits were poorly prepared. Essential stains were missing, and the kit contained items that were not needed for a Refugee Camp Laboratory. Essential components for the

Gram and Ziehl-Neelsen staining technique were missing, for example crystal violet stain, acetone and hydrochloric acid decolouriser. Other important items such as methanol were also not included and three hundred slides were provided.

I wondered why glass beakers and tubes had been included when surely polypropylene ware would have been better?"

In June 1992 recognition was given to the fact that many of the items on laboratory and consumable equipment contained in the UNICEF warehouse were out of date. The UNICEF warehouse catalogue includes a section on laboratory and clinical equipment and supplies. When UNICEF representatives were contacted in Copenhagen, it was apparent that the equipment had been chosen for training purposes more than 20 years ago and that UNICEF depended on WHO to make suggestions for any necessary alterations. It was agreed that a thorough review of the catalogue was necessary and the Health Laboratory Technology and Blood Safety Unit of WHO agreed to participate in the review.

A project proposal was drawn up at that time as follows:

Objective

To define a list of equipment and consumables for health laboratories, blood transfusion and clinical services in developing countries with a view to reviewing and updating the relevant sections of the UNICEF warehouse catalogue. The list will be specified and will include prices and manufacturers. The list will not include specialised equipment but will be directed mainly at peripheral and district level hospitals.

Activities

1. A list of equipment and consumables, including specifications, for peripheral and district level health laboratory, blood transfusion and clinical services in developing countries, will be drafted.
2. A market search of manufacturers in the field will be conducted.
3. Manufacturers of chosen equipment and consumables will be identified and the list, including prices, will be submitted to UNICEF.
4. Product information sheets will be produced by WHO Laboratory Blood Safety (LBS), WHO Global Programme for AIDS (GPA) and WHO/CLI to advise governmental and non governmental agencies, AIDS Programme managers and all those involved in strengthening laboratory, blood transfusion and clinical services in developing countries.

In 1993 the Health Laboratory Technology and Blood Safety Unit of WHO, based in Geneva, employed a consultant to review equipment, manufacturers' literature and draw up specifications. The same Consultant is being contacted to assist in drafting a book which will serve as guidelines to select appropriate equipment for laboratories with limited resources.

It is to be hoped that it will not be too long before this much needed guide will be available as there is a real need for such information. This book should contain much valuable information, not only for medical laboratory workers in third world countries, but also for those who work in laboratories in the more affluent areas of the world where basic "grass roots" information is often in short supply. The proposed book hopefully is now close to publication. The PPTC and others who work in developing countries look forward to its appearance.

The PPTC is now located in this building on campus at Wellington Hospital.

Pacific Paramedical Training Centre

The Pacific Paramedical Training Centre provides training courses in medical laboratory science subjects for laboratory staff from Pacific Island and S.E. Asian countries.
The courses are usually held at the Centre which is based at Wellington Hospital.
It is proposed that in future some courses will be run overseas.
As a pre-requisite to this the PPTC is presently compiling a list of experienced medical laboratory scientists who are interested in undertaking teaching assignments or consultancies in the main medical laboratory disciplines at overseas locations.
The assignments would be of short term duration.
If you are interested, contact Mike Lynch at the PPTC for further information.
PO Box 7013, Wellington or telephone (04) 3855999 ext 6971 or Fax (04) 3855890.

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All membership fees, change of address or particulars, applications for membership or changes in status should be sent to the Executive Officer at the address given above.
Members wishing to receive their publications by airmail should contact the Editor to make the necessary arrangement.

Membership Report – September, 1995

Membership	19.09.95	19.07.95	07.06.95	20.02.95
	1079	1084	1174	1177
Less resignations	68	6	28	11
Less G.N.A.	7	6	16	7
Less deletions	–	–	109	–
Less deceased	2	–	–	–
Less duplications	–	–	–	–
	1002	1072	1021	1159
Plus applications	4	5	62	15
Plus reinstatements	–	2	1	–
Total	**1006**	**1079**	**1084**	**1174**

Composition

Life Member (Fellow)	12	12	12	12
Life Member (Member)	9	9	9	9
Fellow	21	21	21	21
Member	621	645	644	684
Associate	266	311	317	367
Non Practising	50	54	54	54
Honorary	27	27	27	27
Total	**1006**	**1077**	**1084**	**1174**

NEW ZEALAND INSTITUTE OF MEDICAL LABORATORY SCIENCE 1995 CALENDAR

1 November	QTA examinations
15/16 November	Specialist Certificate examinations

New Members
C MARTIN, Cardinal, A HERYET, Greenlane, I MACKAY, Auckland, M KILGOUR, Auckland

New Zealand Institute of Medical Laboratory Science

Minutes of the Annual General Meeting Held at the Wellington School of Medicine on 27 July 1995

Present:

The President (D Reilly) presided over the meeting.

Apologies:

It was resolved that the following apologies be accepted:
E Norman, E Crutch, P Searle, J Humble, S Paine, J Hoggetts
R Siebers/C Green

Proxies:

A list of 3 members representing 7 proxies was read by the Secretary.

Minutes:

It was resolved that the Minutes of the 50th Annual General Meeting held on Wednesday 31 August 1994 be taken as read and confirmed.
T Rollinson/R Anderson

Business Arising:

There was no business arising from the Minutes of 31 August 1994.

Remits:

It was resolved that Policy Decision Number 1 be reaffirmed.

"Policy Decision No 1 (1971): that all committees and meetings convened under the auspices of the New Zealand Institute of Medical Laboratory Science (Inc) be subject to a standard reference of parliamentary procedure and that this be 'A Guide for Meetings and Organisations' by Renton.
R McLeod/A Paterson

It was resolved that Policy Decision Number 2 be reaffirmed.

"Policy Decision No 2 (1989): That all persons wishing to undertake any examination offered by the Institute at the time of application and taking of the examination be financial members of the Institute.
P McLeod/S Gainsford

It was resolved that subscription rates for membership be adjusted from April 1, 1996 to be:

Members	$98.40
Associate members	$43.80
Non practising members	$40.00

P McLeod/W Wilson

Annual Report:

It was resolved that the Annual Report be received.
C Green/J Elliot

Speakers to the report were S Gainsford, Education Convenor, L Mayhew, Communications Convenor, and R Siebers, Journal Editor.

It was resolved that the Annual Report be adopted.
A Buchanan/C Green

Financial Report:

It was resolved that the Financial Report be received.
P McLeod/K McLoughlin

P McLeod spoke to the report.

The accounts have now been audited and adjustments to be made to the Statement of Income and Expenditure are as follows:

- Income
  Seminar registrations (SIG income) should be $6,267 instead of $11,042
  Total will then equal $73,015 instead of $77,790.
- Expenditure
  Seminars/conferences (SIG expenditure) should be $8,415 instead of $5,676. The total will then equal $95,225 instead of $92,225.
- Excess of Expenditure over Income should be $22,210 instead of $14,696.

The coordination fee on the conference account relates to the cost of the professional conference organiser.

It was resolved that the Financial Report be adopted.
P McLeod/C Green

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 2 Representative	A Paterson
Region 3 Representative	C Kendrick
Region 4 Representative	T Rollinson
Region 5 Representative	L Milligan

Awards:

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

Qualified Technical Assistant Award

Clinical Biochemistry	Kirsten Ah Chee, Diagnostic Laboratory
Haematology	Bridget Coup, Medlab South
Histology	Lois Staessens, Tauranga Medical Laboratory
	Kirsten Stack, Cardinal Community Laboratories
General	Nicola Burns, Timaru Hospital
Immunology	Tracey Gourlay, Northland Pathology
Medical Cytology	Allison Betts, Taranaki Base Hospital
Microbiology	Janet Hookey, Medlab Auckland
Transfusion Science	Jan Hutchins, Palmerston North Hospital

Certificate Awards

Clinical Biochemistry	Jennifer Trustum, Palmerston North Hospital
Histology	John Howes, Wellington Hospital
Immunology	Nikki Phillips, Diagnostic Laboratory
Medical Cytology	Daphne James, Tauranga Medical Laboratory
Microbiology	Jennifer Castle, Medlab Auckland
Virology	Padma Patel, Auckland Hospital

Specialist Certificate Awards

Clinical Biochemistry	Wendy Carter, Waikato Hospital
Histology	Anna Wiles, Dunedin Hospital

Journal Awards

Roche Diagnostics

Microbiology Award	Lynette Jones, Valley Diagnostic Laboratory
Hilder Memorial Prize	Linda Pinder, Auckland Regional Blood Centre
	Stephen Henry, University of Goteborg, Sweden

Honoraria:

It was resolved that no honoraria be paid.

C Kendrick/W Wilson
Carried

Auditor:

It was resolved that Hillson, Fagerlund and Keyse be appointed as the Institute's auditors.

P McLeod/T Rollinson
Carried

General Business:

H Robertshaw expressed good wishes to the Institute from F Lawrey.

The following deaths were acknowledged:

- George Tait
- Barry Cresswell

Medical Laboratory Technologists Board

K McLoughlin spoke to the meeting:

- Changes to the MLTB regulations. Although changes are non controversial, it requires the Act of Parliament. Therefore important that this is completed before MMP comes in.
- MLTB will be auditing the training courses at the University of Otago, Massey University and Auckland Institute of Technology to ensure that the course meets the Boards competency document.
- There is a threat of deregistration of medical laboratory technologists. Registration was put in place for the benefit of the public so that laboratory procedures are performed by qualified laboratory people.

It was moved that this meeting expresses great concern at the discussion to deregister medical laboratory technologists. As a profession we feel that the public deserves and must have confidence in the delivery of diagnostic laboratory services throughout New Zealand and that this can only be guaranteed via a registered health professional group.

P McLeod/C Green

Future Annual Scientific Meeting:

There were no offers to organise the 1997 Annual Scientific meeting.

It was noted that in 1996 we are celebrating our 50th anniversary. A lot of effort is being made to ensure that this will be a special celebration.

There being no further business, the Chairman closed the meeting at 6.45pm.

President's Report

Greetings and Welcome to this Annual general meeting of the membership. The format of the meeting will follow the Agenda that has been distributed.

I have now served 2 years as President and I would like to give my sincere thanks to my colleagues on Council and the Executive Officer for their assistance.

The report this year will centre around Education training and Communication.

For me the highlight of the year has been the graduation of the first group of BMLSc graduates from the Universities and their subsequent registration with the medical Laboratory Technologist Board. At present there is a shortage of qualified staff with some laboratories actively recruiting overseas. I understand that all those graduates looking for positions were accommodated around the country. Council has been beavering away to ensuring that these courses maintain their relevance to the laboratories, and it was very pleasing to hear from the representatives of the Australian Institute of Medical Science that our graduates would be accepted into their corporate membership.

Council has attempted to arrange with the NZ Qualification Authority the placing of our examinations onto the framework, but unfortunately I have nothing to report. Hopefully during the course of next year Council members will make more progress for their efforts.

The MLTB has started a move towards on-going competency through their MOLS program. I am pleased to advise that the MLTB has approached the NZIMLS with regard to setting up a programme to be developed jointly by the MLTB and the Institute. The MOLS programme will be a key quality indicator and will help maintain credability of the medical laboratory technologist. A strong focus on continuing education and training can only bring out the best in us and prepare us for the future. Life in the laboratory has become more demanding as the complexity of laboratory testing has undoubtedly increased, the increased reliance on clinical laboratory data for diagnosis and prognosis, the rate of change of technology employed in the laboratory and the undeniable awareness that continuing education and training are essential to one's career.

Our Journal is our primary method for communicating with the membership. Council is very keen to maintain its presence as the premier journal of Medical Laboratory Science in New Zealand and has attempted to keep it up to date with the evolution of medical laboratory science. Recent changes in cover and layout have resulted in an attractive publication that has covered a wide range of topics as well as communicated the work of the Special Interest Groups.

I believe that the life blood of the NZIMLS is its membership. This diverse body of technologists in hospital, community, academic research and scientific companies provides the impetus for the changing science of the profession today.

The NZIMLS is always looking to improve communication through the collegial associations amongst the members where sharing of ideas problems and solutions are possible. The Special Interest groups continue to act as the heart of the organisation and are providing the educational requirements the membership want. The Statement of Income and expenses highlights how much has been spent on this important activity.

As we look ahead to next year and the future beyond we see the laboratory of tomorrow will be quite different from what we know today. The concept of managed care will push departments into an integrated service under the one laboratory unit.

Instrumentation both at the processing end and in the analytical process will bring these disciplines together. This means cross-training in laboratory medicine for everyone. The NZIMLS needs to take an active role in ensuring that its members are helped with this integration.

We are now only 12 months away from the celebration of our 50th anniversary at the Annual Scientific meeting in Auckland, August 24-30 1996.

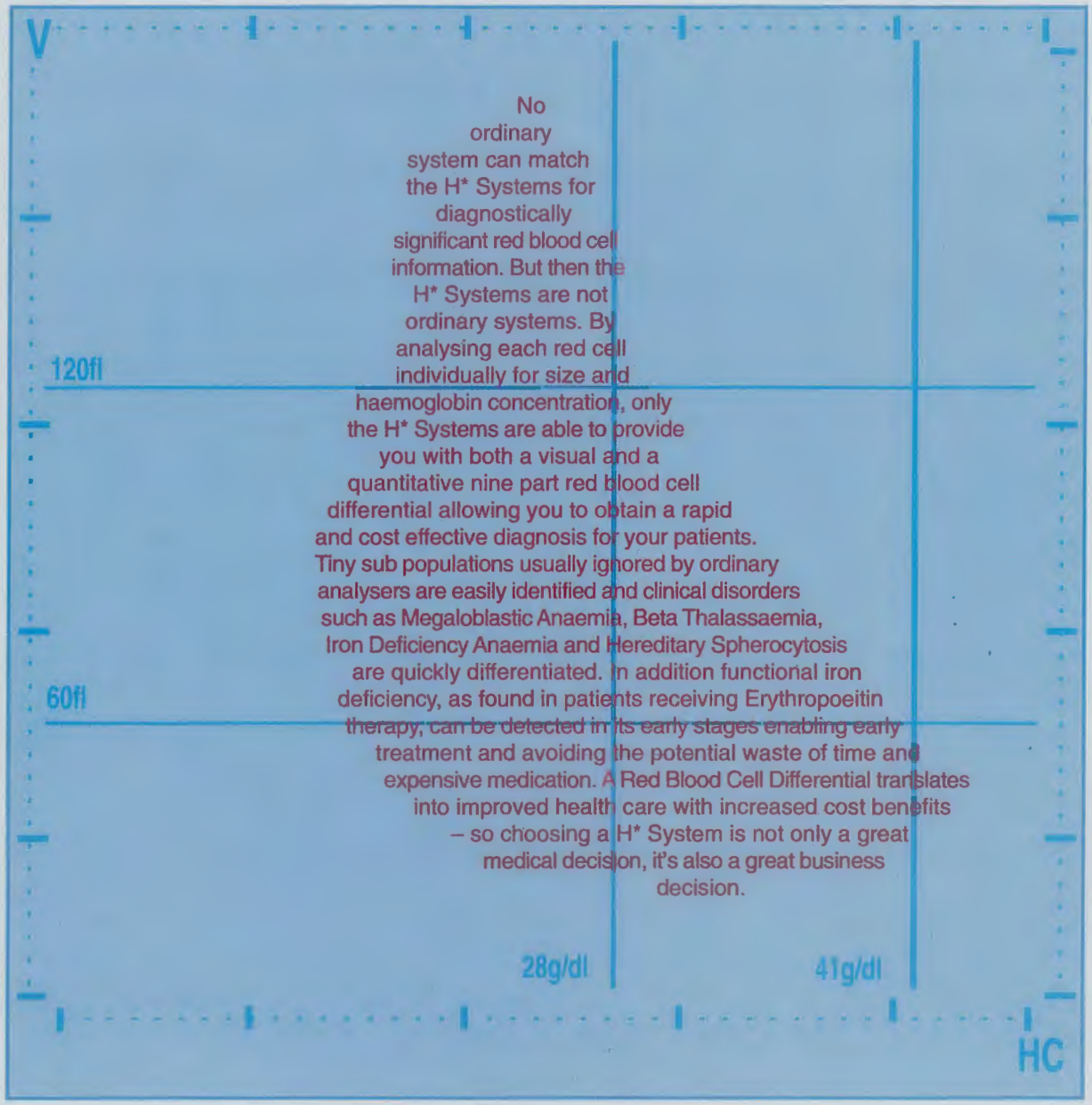
This momentous occasion will be a cause for celebration of our history and achievements in the field of laboratory medicine.

I sincerely hope that the following year will be the epitome of opportunity for improving your knowledge, exploring a new field of technology and participating in the new health directions.

Dennis Reilly

THE RED CELL DIFFERENTIAL

CAN YOUR SYSTEM PROVIDE ONE?



No ordinary system can match the H* Systems for diagnostically significant red blood cell information. But then the H* Systems are not ordinary systems. By analysing each red cell individually for size and haemoglobin concentration, only the H* Systems are able to provide you with both a visual and a quantitative nine part red blood cell differential allowing you to obtain a rapid and cost effective diagnosis for your patients. Tiny sub populations usually ignored by ordinary analysers are easily identified and clinical disorders such as Megaloblastic Anaemia, Beta Thalassaemia, Iron Deficiency Anaemia and Hereditary Spherocytosis are quickly differentiated. In addition functional iron deficiency, as found in patients receiving Erythropoeitin therapy, can be detected in its early stages enabling early treatment and avoiding the potential waste of time and expensive medication. A Red Blood Cell Differential translates into improved health care with increased cost benefits – so choosing a H* System is not only a great medical decision, it's also a great business decision.

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Bayer

New Zealand Medical Laboratory Science Trust Annual Report

The trust has again maintained its financial position this year.

The annual meeting of the trustees was held by teleconference on 18 July 1995. All the trustees and the executive officer Jim Mann took part. The trustees wish to again thank Abbott Diagnostic for their generosity in supporting the profession in 1995. We are delighted to advise that Abbott Diagnostics have confirmed that it is their intention to provide similar funding in 1996.

The trustees would like to highlight the work of Mr Rob Siebers in utilising a grant from the trust to investigate the awareness of HIV among laboratory workers in Fiji. It is pleasing to be able to support research of this nature as funding for this type of work is very limited from other sources.

Following a recommendation from the Honorary Auditor some of the accummulated funds have been invested in fixed term investments with the ANZ bank.

Trustees

The trustees have been the same this year. They are:
Mr J.S. Beattie, Mr C.H. Campbell, Mr B.T. Edwards, Mr D.J. Phillip and Mr W.J. Wilson.

Grants: In the past year five grants were approved from the Abbott study award to allow technologists to attend meetings both in New Zealand and overseas. These were Suzanne Williams, Diane Whitehead, Roger Austin, Sharon Sims and Julie Torrie. Grants from the trust were made to Graeme Broad, Steve Henry and John Peters.

Chairman: Colvin Campbell was elected chairman in place of Walter Wilson. The 1995 Abbott study awards will have two closing dates in 1996. These will be January 26 and June 3. Other grants will have a closing date of 3 June 1996.

Any correspondence should be addressed to Jim Mann, the executive officer, c/o Pathology Department, Palmerston North hospital.

Colvin Campbell
Chairman

N.Z. Medical Laboratory Science Trust (Inc)

Income and Expenditure Account
for year ended 31 December 1994

INCOME:		
Interest Received:	301.13	
Grant: Abbott Laboratories	4,078.00	
Donations:		
Examiners	741.67	
Other	11.60	
Sale of HPLC	535.50	
TOTAL INCOME		$5,667.90
EXPENDITURE:		
Travel Grants:		
L. Milligan	1,550.00	
E. Chappell	200.00	
K. McLoughlin	528.00	
R. Siebers	1,200.00	
TOTAL EXPENDITURE		$3,478.00
Excess Income		$2,189.00

N.Z. Medical Laboratory Science Trust (Inc)

Balance Sheet
As at 31 December 1994

Accumulated Funds:	
Balance as at 1 January 1994	$15,757.43
Excess income	2,189.90
Accumulated Fund as at 31 December	$17,947.33
Represented by:	
A.N.Z. Banking Group	
Current Account	$17,947.33

Auditor's Report:

To the Trustees of N.Z. Medical Laboratory Science Trust (inc)

I have examined the financial records of the trust and confirm that the balance in the Trust's Account at the ANZ Bank is $17,947.33 as at 31 December 1994.

In my opinion the above statements give a true and fair view of the financial transactions of the Trust for the year ended 31 December 1994.

David R Gordon
Hon Auditor

Palmerston North
2 February 1995

BMLS Graduation Massey University 1995

On the 19th May 1995, the first class of BMLS students graduated from Massey University. The celebrations began with a gathering of students, their families and friends at an afternoon tea set in the picturesque surroundings of Wharerata on the Palmerston North campus. To mark this special occasion the University invited the profession's representatives, Dennis Reilly, Shirley Gainsford and members of both previous and current Boards of Study, Ted Norman, Ann Paterson and Trevor Rollinson to commemorate the occasion. In the informal and relaxed environment graduates and their guests met with the academic staff and the representatives from the profession of Medical Laboratory Science.

The more formal part of the Faculty of Science graduation was set in a crowded Palmerston North Opera House which was full to overflowing with many guests left to view the proceedings in the foyer via closed circuit television. The Chancellor and Vice-Chancellor spoke of the social responsibilities of scientists and the opportunities awaiting new graduates of science in NZ. They spoke further on the financial burden for students and their families that have become the price of a University education in the late 20th century.

The ceremony was full of the pageantry that is reserved for such occasions and I remember feeling a sense of pride and satisfaction mixed with a little disbelief when it was the turn of the BMLS students to receive their degrees from the Chancellor of the University. At the completion of the ceremony the entire cast of officials, academics, guests and graduates assembled outside the Opera House for a march to the Palmerston North Square and the 'after-match' function hosted by the Massey University Student Alumni Association.

Later that night 84 graduates and guests gathered for a celebratory dinner at the 'Coachman' restaurant. The special nature of the occasion was recorded with a series of speeches which reflected upon the history leading up to the commencement of the BMLS programme with special mention made of the efforts of Dr John Clarke for his persistence in getting the BMLS programme started and Dr Mary Nulsen for her efforts as Director. Dr Nulsen also took the opportunity to officially thank the many people who played a part in the establishment and consolidation of the BMLS programme. Special mention was made of the help and advice extended to the staff of the University by various members of the NZIMLS Special Interest Groups and other Medical Scientists. Mr Dennis Reilly president of the NZIMLS concluded the speeches when he spoke about the 'future of Medical Laboratory Science'. He welcomed the new graduates into the profession and complimented the staff of the University involved in the BMLS programme for their commitment and the standard of the graduates produced by the programme.

The day was indeed memorable for me and I felt proud to be part of this special occasion which marks the beginning of a new age for Medical Scientists in NZ.

Chris Kendrick

Back row: Dr John Clarke, Mr Mervyn Birtles, Dr Mary Nulsen, Mr Dennis Reilly; Row 5: Shelly Irving, Rochelle Dudley, Che Dearing, Reuben Martin; Row 4: Catherine Bridson, Sarah Lee, Andrew Milne; Row 3: Anne Jamieson, Deborah Venimore, John Moodie, Mr Trevor Rollinson; Row 2: Lisa Jorgensen, Helen Daniel, Julia Petersen; Front row: Belinda Reilly, Richelle Roxburgh, Catherine Marson, Mr Chris Kendrick; Absent: Stacey Hurley, Claire Robson

NZIMLS CONTINUING EDUCATION

SPECIAL INTEREST GROUPS

Liftout

STAPHAUREX PLUS*

STAPHYLOCOCCUS

RAPID LATEX TEST

Staphylococcus aureus

Distinguishing features :

Gram positive, spherical cocci 0,8-1 µm in diameter, occurring in grape-like clusters, with some single or paired cells ; non-sporing, non-motile predominantly unencapsulated ; colonies frequently golden yellow in colour. Found in the nasal cavity, skin flora and wounds ; responsible for suppurative lesions, food poisoning and cross-infections particularly in hospitals

Identification of *Staphylococcus aureus* methicillin sensitive and methicillin resistant strains

3 tests in one for detection of

- clumping factor
- protein A
- surface antigens characteristic of *S.aureus*

by sensitising the test latex with

- **fibrinogen**
  to detect clumping factor
- **rabbit IgG**
  specific for *S.aureus* strains that are negative with traditional tests (1st generation)
  The Fc portion of IgG reacts with protein A while the specific Fab portions react with cell surface antigens

Performance of the test

Sensitivity on methicillin sensitive or resistant strains

Independant studies carried out in Europe and USA

Fresh isolates	MSSA : 99,6 % - MRSA : 99,6 %
Stored isolates	MSSA : 98,2 % - MRSA : 99,7 %

Improved specificity

with the control latex sensitised with bovine serum protein

The easiest-test-to read with yellow latex and black background

Rapid and easy-to-use test : reading in 30 seconds

Staphaurex Plus	ZL33 (150 tests)	ZL34 (450 tests)
Test latex (yellow cap and label)	1 dropper bottle (6 ml)	3 dropper bottles (3 x 6 ml)
Control latex (grey cap and label)	1 dropper bottle (6 ml)	3 dropper bottles (3 x 6 ml)
Disposable reaction cards	52	2 x 78
Disposable mixing sticks	2 x 150	not supplied

Latex range : Staphaurex Plus, Streptex, Wellcogen, Wellcolex, Rotavirus, Cryptococcus.

Murex Diagnostics New Zealand
731 Great South Road, Otahuhu, Auckland, New Zealand
P.O. Box 22 305, Otahuhu, Auckland 1106
Telephone 0-9-276 9970. Fax 0-9-276 0704

murex

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 Willson, Blood Bank, Gisborne Hospital; Kevin McLoughlin, Transfusion Medicine, Christchurch Hospital; Diane Whitehead, Transfusion Medicine, Christchurch Hospital; Suzanne Williams, Blood Bank, Otago Hospital, Dunedin

Transfusion Medicine Audio Update Tapes

Just as we were getting used to them, the circulation of audio-visual tapes has ended. Unfortunately the producer of the tapes, TMAU Inc. has gone out of business. Please notify Sheryl or Sue if you have information about another similar system of updates.

4th South Pacific Congress 9-13 October 1995, Gold Coast

We will be interested to receive comments or a brief report from those who attended the conference.

Continuing Education

Good luck to students taking the QTA examination, Certificate and Specialist level examinations, Massey and Otago BMLS students and the Massey Postgraduate Diploma students. We trust that the results will reflect the effort put in.

From the other side, many thanks to all those who have helped with setting and marking the examinations and to those involved with updating the syllabi.

South Island Seminar 16 March 1996, Methven

This is an ideal setting for Mainlanders to give a paper or poster presentation in readiness for Wairakei.

7th NICE Weekend 13-14 April 1996, Wairakei

It isn't too early to start working on contributions for the 1996 NICE weekend. Perhaps some 'directional persuasion' needs to be given to technical assistants, BMLS students and donor attendants to encourage them to participate as well in this worthwhile weekend.

50th Anniversary NZIMLS Conference 24-30 August 1996, Auckland

The theme of the conference will be "Looking back as well as looking forward". A history of MLS in New Zealand is being compiled, so please check your basements for old photographs, methods, standards, equipment, donor room equipment, texts or 'memorable incidents'. Please send communications to the Executive Officer NZIMLS, PO Box 3270, Christchurch, or to Roger Austin (06) 753 6139, Fax 06 753 2956.

The Fractionated Product Entitlement Scheme in Action

On July 1st this year, a formal system for the supply of Fractionated Blood Products to Blood Transfusion Services throughout the country, was put into operation by the Blood Transfusion Trust.

The scheme was designed to meet the following basic objectives:

- Forecast the clinical demand for Fractionated Blood Products throughout New Zealand.
- Ensure adequate plasma is available for the timely manufacture of the required products.
- Ensure access to Fractionated Blood Products according to clinical demand.
- Provide transparency with regard to the costs of provision of Fractionated Blood Products.
- Allow for the recovery of costs incurred by each party involved in the provision of Fractionated Blood Products.

The Blood Transfusion Trust, through its Agent Auckland Healthcare Services Ltd, is required to manage the scheme to enable achievement of these objectives. The Auckland Regional Blood Service carries out the duties on behalf of Auckland Healthcare Services Ltd.

In brief, the scheme operates as follows:

1 **Forecasting.**
Each processor (CHE) forecasts the clinical

requirement for the various Fractionated Blood Products for the next financial year, and notifies the Agent.

Each processor forecasts the amount of plasma it will provide to the national pool during the next financial year, and advises the Agent.

2 Match Resource with Demand.
The Agent calculates the amount of plasma required to produce the forecast product requirements, based on production yield data supplied by CSL, and notifies processors of plasma shortfalls or surpluses which may exist.

Negotiations between Agent and Processors, and between Processor's take place in order to result in each Processor's requirement for Fractionated Product being supported by the forecast availability of an appropriate amount of plasma. A forecast shortfall in plasma by one Processor, needs to be offset by a forecast surplus from another Processor.

Once a balance is achieved, Processors are committed, through Plasma Supply Contracts, (yet to be put in place) to the forecast plasma supply they have agreed to, and through Product Supply Contracts for their forecast product requirements.

3 Establishment of Manufacturing Schedules.
The Agent notifies CSL of the forecast plasma supply and required product volumes as agreed under the contract between CSL and the Blood Transfusion Trust, so that CSL can establish its production schedule in order to fulfil its obligations.

4 Management of Product Entitlements.
As Processors despatch plasma for shipment to CSL, the amount of that plasma is notified to the Agent.

At the end of each quarter, the agent collates each Processor's plasma input, in order to establish that Processor's entitlement to product. This entitlement is calculated based on the percentage of that Processors contribution to the national plasma pool and additionally in the case of hyperimmune plasmas, the relative strength of the specific immunoglobulin. Each batch of product received from CSL is allocated on this basis.

In order to satisfy clinical demand, Processors with insufficient entitlement to specific products, may trade any surplus entitlement held by another Processor.

5 Recovery of Costs.
The costs of management of the Product Entitlement Scheme, together with the costs of handling (receipt, warehousing, and distribution) of Fractionated Products is added to the CSL processing cost and charged to the Processor receiving the products.

When product is obtained from another Processor's entitlement, a charge will also be made by that Processor for the cost of the plasma they have contributed for its production.

6 Monitoring and Management of the Scheme.
The Agent is required to monitor product stock levels throughout the country and the input of plasma to CSL. If trends are detected which indicate that product demand or plasma inputs are deviating from forecast levels, appropriate measures are required to be taken to manage the situation.

The Fractionated Product Entitlement Scheme is in its infancy, with teething problems emerging as the practicalities of the processes are encountered. Factors which have emerged as being critical to the efficiency of the process include:

- Accurate forecasting.
- Adherence to deadlines for the provision of required data.
- Standardised systems for reporting of required data.
- Timely availability of product from CSL.

To date, a few notable features of the scheme in action include:

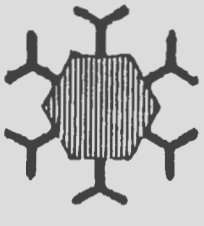
- Difficulty in meeting clinical needs for AHF in some areas although there is sufficient AHF in the country. Various CHEs remain protective of their entitlement in the absence of any predictable clinical demand.
- Delays associated with CSL forecast delivery dates affecting available entitlement.
- Trading between CHEs at levels which are at this stage not known to the Agent.
- Very few complaints so far.

It is too soon to make any judgements with regard to the success of the scheme, as the reality of true entitlement will not be obvious until the calculations are made at the end of the first quarter. One fact is however clear, and that is that if there is to be success, it will be dependent on all parties meeting their respective obligations within the scheme.

Immunology

Special Interest Group

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



50 years

The New Zealand Institute of Medical Laboratory Science

NZIMLS 50th Anniversary Auckland Scientific Meeting

27th - 30th August 1996

"going for gold"

" our cup runneth over "

- A Rich Heritage
- Information Technology
- State of the Art Workshops
- Mind Mapping
- Special Interest Group Forums
- Quality Communication
- 50th "Golden Ball"

Circle your calendar now

NZIMLS Scientific Meeting

27th-30th August 1996

ISIG North Island Seminar, 1995

Historical and Philosophical Perspective

The Annual Scientific Meeting (ASM) of the NZIMLS is the premier event of the Immunology Special Interest Group's year, with Immunology and Virology forums and workshops, and the ever-popular AGM (more an Annual Gathering of Members than an Annual General Meeting) where ISIG business is conducted in an informal and convivial manner over lunch.

Coming a very close second is the North Island Seminar, instituted in 1993, which has become an important feature in the ISIG scientific programme. The financial constraints of the times deny many of the more junior members of our profession the opportunity to participate in the Annual Scientific Meeting. This group needs to gain skills, confidence and experience to be able to present papers in a professional manner at more august scientific gatherings, and the ISIG seminar provides a friendly and supportive forum to do just that.

Not to be overlooked is the South Island Seminar, an annual multi-disciplinary event enthusiastically supported by our ISIG colleagues in the South. More on that later.

Okoroire, A Winter Haven

This year the NZIMLS calendar has not followed its customary course. There was no Annual Scientific Meeting in August, as it is Australia's turn to host the four-yearly South Pacific Congress, 9th-13th October on the Gold Coast in Queensland.

As a result there was a vacuum in August, with only the NZIMLS Annual General Meeting and Special General Meeting in Wellington, the rest of the action being across the Tasman.

The Auckland ISIG group agreed it was time for a change after having gone to Lake Taupo the last two years in early autumn, and decided to hold the Seminar on 12 August at Okoroire, which is situated near Tirau at a central point between Cambridge, Matamata and Putararuru, and not too distant from Rotorua and Tauranga.

Okoroire Hot Springs Hotel, a very popular spa resort in the late 1800s and early 1900s, is enjoying renewed popularity, both as a conference venue and a weekend retreat, especially in the winter months. The great drawcards are a nine hole golf course which is continuing to be developed, and the famous hot springs; these have been upgraded also since our grandparents' and great-grandparents' day.

The hotel retains its "old world charm" (one can still sit in cane chairs on the verandah and enjoy the winter sun) and has been modernised only to the extent of meeting the increasing demands in the 1990s for comfort and for private facilities in bedrooms. The essential ambience of the hotel remains in the public rooms, where the wallpaper and drapes are still an appropriate backdrop for ladies in crinoline gowns and gentlemen in tall beaver hats, while the present jeans-clad generation does not look out of place either.

The Arrival

August 12th started off typically fog-bound for the central part of the North Island, but the fog soon rolled away, leaving a clear blue sky and a brisk temperature which mellowed as the sun climbed higher. Folk drifted in from 11 o'clock. The hardy few, flown in from a snow-bound South Island arrived in short sleeves, marvelling at the spring-like weather. Drinks on the verandah, passed the time pleasantly before lunch.

The Programme

1200 Welcome and Lunch

Mary-Ann White, Auckland Regional Representative and convenor of the Auckland committee, welcomed members and especially our colleagues in industry. She thanked the latter for their generous support of the Seminar.

1300-1530 Presentations

1. **ANCA.** Diane Sieganthaler, Palmerston North
   Diane outlined the reasons why Palmerston North Hospital began to test for Anti-neutrophil cytoplasmic antibodies and the trials and tribulations along the way.
2. **ANAs (sensitivity).** Paul Bolton, New Plymouth
   Paul finds that the varying sensitivity of standard ANA tests used continues to cause interpretation problems for diagnosis of connective tissue disorders.
3. **Hepatitis C Testing.** Ruby Yee/Lillian Martin, Lower Hutt
   A joint paper prepared by Ruby and Lillian, but Ruby was the presenter. A topic of continuing interest to Virologists and Immunologists, Ruby spoke on the same subject at the Microbiology SIG seminar earlier in the year.
4. **Yersinia antibody testing.** Lyn Smith (Henderson), Auckland
   Why do we test for Yersinia antibodies? A lighthearted and enlightening description from Lyn of VIM on the value of this test for both clinician and patient.
5. **Hepatitis B Testing, a molecular/serological approach.** Paul Austin, Auckland
   An interesting, highly technical paper presented with style and simplicity, so that those not altogether familiar with the subject could follow the complex details and conclusions with ease. Paul will present this paper in Australia in October at the South Pacific Congress.
6. **Endomysial antibodies.** Penny Newton, Christchurch
   Great to see the younger members of the profession giving papers with all the aplomb of more experienced presenters. Penny's paper was very professional, with excellent coloured slides and she was well organised with cue cards so the audience got her full attention. Endomysial antibodies are a valuable tool in diagnosing coeliac disease, and as few labs are performing this test at the present, it was a topic of some interest.
7. **Allergy testing – theory and practical.** Jennifer Hillas, EBOS
   Jenny is Immune Products specialist for her company with a background in diagnosis of hypersensitivity conditions, having worked with Dr Doug Wilson, formerly Clinical Immunologist, Auckland Hospital and Associate Professor at the Auckland School of Medicine. A sound knowledge of the products she sells, coupled with her practical skills in performing skin tests, including checking patients for bee and wasp sting allergy, makes her a welcome visitor in many labs and doctors' surgeries around the country.

Change in Programme

John McKay of Auckland, as many will know, is also a boxing coach of international renown, having gone with the New Zealand team to the Barcelona Olympics in 1992 when his prodigy, David Tua, made such an impact. While David makes his name as a professional boxer, John continues to train and encourage the next generation of young hopefuls in his spare time. Sometimes this requires trips overseas, and on the occasion of the North Island Seminar, John had to go away and was unable to present his paper, **"Anti-Foetal Protein in Hepatitis Carriers."**

Mary-Ann White filled the gap in the programme with her paper entitled **"Antibodies are Alive"** – a review of some of the traditional serological tests and their continued place as economical diagnostic tools. The presentation was enhanced by excellent colour slides.

1600-1800 Discussion

After a break for afternoon tea, we returned to the seminar room for the second part of the programme, which consisted of pre-arranged topics introduced by the person who had placed

them on the programme and then opened for discussion. This has become a popular feature of the Seminar programme; a "brain-storming" session which defines and gives direction to national incentives and frequently resolves problems some labs are experiencing. Those discussed were:

1. **dsDNA Tests**
2. **Rheumatoid Factor**
3. **Chlamydia**
4. **Unusual Tests – Tryptase, LKM, ENA**
5. **Progress in Laboratory Training and Degree Courses**
6. **The Future of ISIG**
   Agreed unanimously to keep the SIG going. A drawback had been the Network News going out of production. The Editor apologised, but said due to an increased work commitment and a lack of news items from outside Auckland, she no longer had the time available.

   The North Island Seminar considered to be vital to ISIG. Convenor, Ian Wilkinson, suggested the Seminar be held in conjunction with the popular South Island Seminar next year. This was greeted with enthusiasm, especially as the 50th NZIMLS Conference and ASM is to be held in the North in Auckland.

7. **QC – Are existing programmes adequate?**
   Those available are not fulfilling requirements. Proposed setting up a national Quality Control programme under the auspices of ISIG. David Haines to check out feasibility such as types of assays, source of material, transport and cost.

8. **Health and Safety.**
   Gillian McLeay, now Health, Safety & Environment Coordinator for Auckland Healthcare Laboratory Services, briefly outlined the legislative requirements of the **Health & Safety in Employment (HASE) Act 1992**, the responsibilities and practicalities of non-compliance. (Copies of the overheads are available).

9. **50th Conference 1996**
   Two members of the Conference committee were present; Leanne Mayhew (Abbott) and Mary-Ann White (Diagnostic Laboratory, Auckland):
   * Leanne reported the committee was very enthusiastic and an exciting programme was well under way.
   * Mary-Ann said the Auckland ISIG committee's organisation of the Immunology and Virology forums was proceeding well and arrangements, including the AGM and annual lunch, were going to be something special.

10. **Other Business.**
    Transport of Diagnostic Specimens
    Consternation and frustration expressed over the new regulations for transport of hazardous substances, designating all diagnostic specimens as *Infectious Substances*. The regulations, which came into force at the end of last year, did not have much impact until NZ Post ceased to accept diagnostic specimens and there were few couriers licensed (or wishing) to provide a service. The few who do impose high charges.

    A number of labs have contacted various authorities, but Auckland Healthcare has taken up the challenge in a more positive way, making a submission to the Land Transport Safety Authority and the Ministry of Health to have the regulations changed. Gillian said Dangerous Goods Management Ltd, Auckland has been approached about supplying their IATA-approved packaging. The more purchased, the lower the cost. She has agreed to keep ISIG members updated on progress.

Election of Committee
It was agreed unanimously that Ian Wilkinson and his Christchurch group plus the Regional Representatives, continue to look after ISIG affairs for the next year. The Auckland group will organise the ISIG forums and the AGM for Conference 1996.

1800-1930 Happy Hour (and a Half!)
A wonderful chance to relax and catch up with friends and their news and meet others, some of which have been names only prior to the Seminar.

1930 Annual ISIG Dinner
This was a festive occasion, with a set of photos to record the action. Some of the subjects were unaware of the camera, others took full advantage of being recorded "for posterity". The party went on to the early hours, the pool table being a popular item.

Penny's Double Scoop
One of the innovations last year was a prize for the best presentation; the reward a free registration to attend the NZIMLS Conference and present the paper at the ASM. This year, with no NZIMLS ASM, a prize was donated by Endeavour Scientific and to be presented by Susan Harland-Smith.

The panel of three judges (Tim Taylor, Hamilton, Gillian McLeay, Auckland and Susan) had a difficult choice between two of the papers for the top prize, but the winner, by consensus, was Penny Newton of Christchurch for her paper Endomysial Antibodies.

Much to her delight and amazement, Penny also won the Lucky Dip Dinner draw, having the winning receipt number. This and various other fun prizes were donated by the companies.

The Next Day
It was commendable that everybody turned out for breakfast, despite what time they went to bed; a strong Laboratory tradition.

Unfortunately this year, the change of dates was not suitable for the **Coulter Flowcytometry Workshop**, sponsored and run by *Coulter Electronics (NZ)* Ltd on the Sunday after the Seminar.

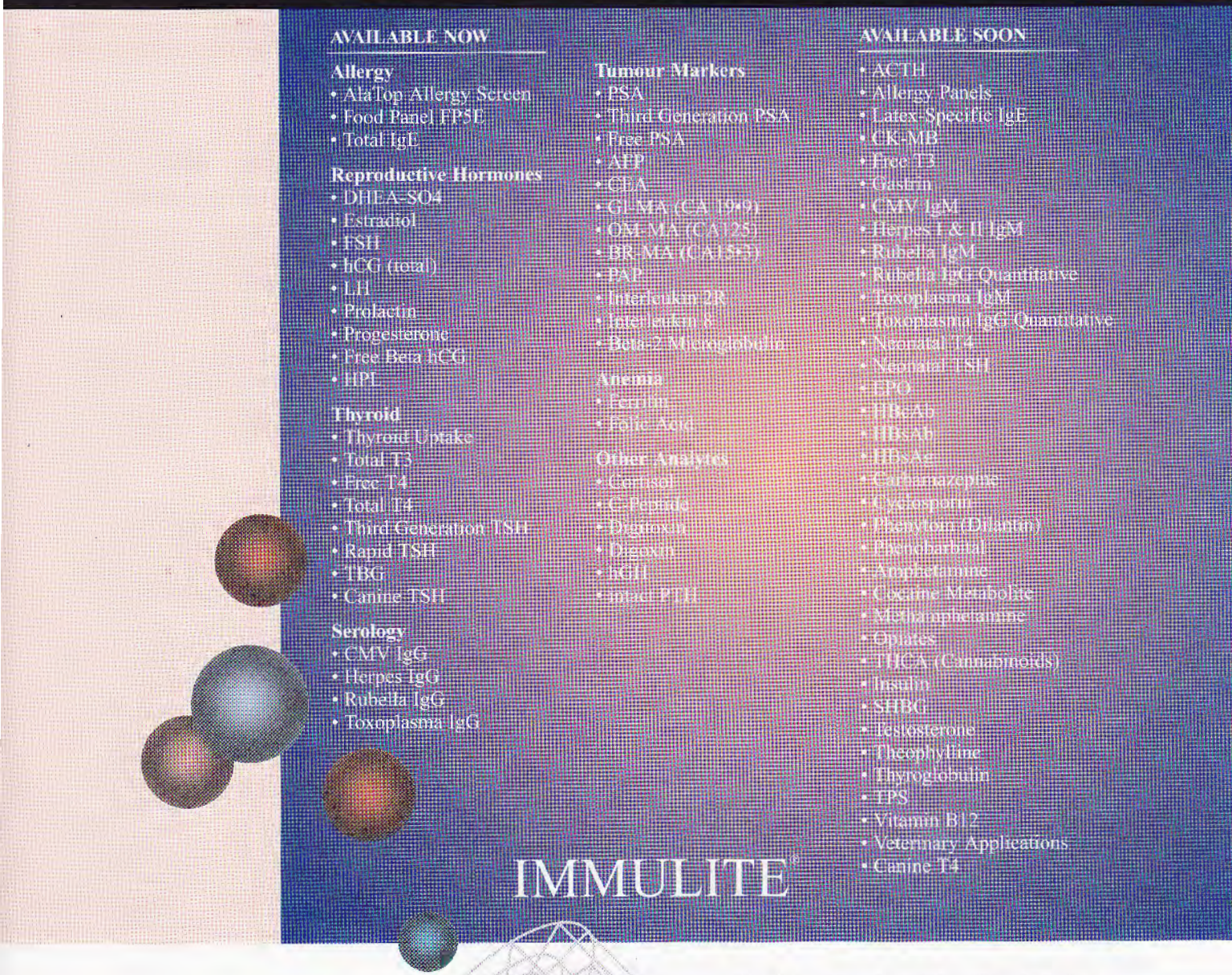
However, this meant that Sunday was free for people to relax and enjoy the hot pools, golf course and beautiful surroundings, or just proceed home at a leisurely pace.

Acknowledgements
The Auckland ISIG organising committee for the North Island Seminar wishes to thank the following people and their companies for their participation and support:

• Leanne Mayhew	Abbott
• Joanne Lovell	Dade
• Jennifer Hillas	Ebos
• Susan Harland-Smith	Endeavour Scientific
• Katya Dimitrieff	Hoechst
• Hilary Anderson	Intermed Scientific
• John Knowles	John Knowles Scientific
• Jennifer Campbell	Medical & Laboratory Supplies
• George Bongiovanni	Medica Pacifica
• Susan Whineray	Murex
• Chandra Salvadurai	Pharmaco
• Phillip Wyatt	SCIANZ
• Anne-Louise Weaver	Syva

Thanks also to all the people from the North Island who attended and contributed to the programme, espeically Paul Bolton from New Plymouth, whose injured Achilles tendon did not prevent him from taking an active part; and those hardy souls from the South Island – Ian Wilkinson, Dianne Phillips, Penny Newton (Christchurch) and Rodger Linton (Timaru).

The menu designed to feed you new business.



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A Special Tribute

Finally, I should like to express, on behalf of all ISIG members, our appreciation for all the hard work that Mary-Ann White put in to make the Seminar such a success. Mary-Ann as convenor of the ISIG Organising Committee for the 1996 Conference, has the organisation well in hand; her enthusiasm is infectious, her energy boundless. We look forward to a great turnout in Auckland, August 1996. See you there.

Roy The (VIM, Auckland) in his element. Michael Crowther (Diagnostic Laboratory, Auckland) tries to get a look in.

Penny Newton (Christchurch) expresses delight at winning a second prize.

John Knowles (John Knowles Scientific) announces one of the prizewiners.

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

Thank you to all those who came to our first seminar on the 22nd July, and helped to make the day a success. It was pleasing to see so many there and to put faces to the names I'd become familiar with.

This was the first time many participants had had the chance to meet with other histology workers, so there was a great deal of interest in what others were doing, and the talks given and problems raised generated a great deal of discussion.

The seminar was held at the Taranaki Base Hospital, from 10am to 5.30pm, and covered a wide range of talks and discussion. Forty four people attended, a really pleasing turnout.

The program consisted of talks from twelve people on topics ranging from the technicalities of using microwaves and pressure cookers for fixation and unmasking antigens, health and safety from A to Z, QC, and much more, to "Histology the Hard Way" and concluding with a quiz on various stains. Details from the talks are in the September newsletter. (If you are not on the newsletter mailing list, please contact me at the above address.)

A number of problems were aired, and some solutions offered. The solution to "glassy effect", or nuclear "meltdown" continues to elude us, with some causes elicited.

Products that were useful were noted, along with some that weren't.

The QTA syllabus was looked at in depth, and a conclusion was reached to produce a study guide for this, as it was felt that it was difficult to find the information at a suitable level. Five people have formed a group to do this.

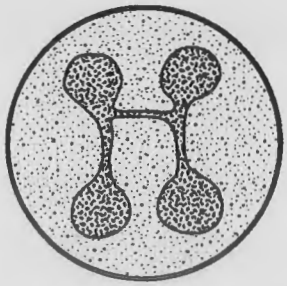
The day ended (for most!) at the Plymouth Hotel, where we had dinner. A number went on to a local night club. From feedback I have received, it appears most participants had an interesting and stimulating day.

The next seminar will be in Christchurch in 1996.

Haematology

Special Interest Group

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



Seminar "Cytopenias"

Over 100 registrations have been received for this seminar. The highest number recorded for any seminar run by HSIG indicating that there is obviously an increasing requirement for continuing education. The committee are encouraged by the overwhelming response and currently are researching a topic for the next seminar and also a venue that will more adequately cope with numbers greater than 100.

Abstracts and/or papers from this seminar will appear in the HSIG news in future journals.

Standardisation of EDTA Anticoagulation for Blood Counting Procedures

Kathryn Schollum, Charge Technologist, Haematology Department, Greenlane/National Women's Hospital on behalf of HSIG

The choice of anticoagulant for routine haematology remains controversial. The argument has been refuelled by the move to K3 EDTA for some commercial controls and calibrators.

Two years ago the Haematology Special Interest Group recommended to all laboratories, using a diversity of analysers, that K2 EDTA was the anticoagulant of choice. This recommendation was based on a number of articles and conclusions which appeared in current publications. I quote from these sources:

1. **JA Koepke et al.**
   Standardisation of EDTA anticoagulant for blood counting procedures. Labmedica International, December, 1988/January, 1989.
   – "Throughout the world three different salts of the chelating agent EDTA are currently being used for haematologic testing. While in the past this did not have any evident effect on testing results, the vastly improved precision and accuracy of instrumentation indicate that there are significant differences in packed cell volume (haematocrit) measurements when the different salts of EDTA are used as anticoagulants".

   – "On the basis of these studies a recommendation for a worldwide standardisation for EDTA anticoagulation has been made".

   – "Results of these studies using all 3 EDTA salts are presented".

   – "Of the 3 EDTA salts studied K3 EDTA is the least suitable for anticoagulation because it causes the largest red cell shrinkage with increasing EDTA concentration, the largest change in cell volume and results in lower MCV values".

   – "However taking into account the widespread use of K2 EDTA in Europe and Japan it would seem logical for interlaboratory comparison to recommend the use of K2 EDTA".

2. **Barbara Bain.**
   Blood Cells – a practical guide, p. 17, Fig. 2.5.
   1989. Lippincott Philadelphia, Gower Medical Publishing.

   – "Consequent on cell shrinkage (anticoagulant effect on cells) (a) excess EDTA, (b) K3 EDTA rather than K2 EDTA or Na2 EDTA".

3. **W. Goosens et al.**
   K2 or K3 – the Anticoagulant of choice in Routine Haematology?
   Clin, Lab. Haematol, 1991, 13(3), 291-95.

   – "The choice of K2 or K3 EDTA as the preferred anticoagulant for blood counts remains controversial. We compared the effect of different concentration of both anticoagulants on normal blood. In optimal conditions (appropriate anticoagulant concentration and measurements done between 1-4 hours after phlebotomy), no marked differences are seen between either EDTA salt. Important discrepancies appear however, in less optimal conditions,as often happens in day to day practice. The packed cell volume when measured on centrifuged blood, decreases with increasing anticoagulant concentrations and this is most pronounced with the K3 — ascribed to shrinking of erythrocytes in an hypotonic medium".

4. **Assessment of the need for blood film examination with blood counts by apertureimpedance systems.**
   Prepared by The General Haematology Task Force Working Party, S.M. Lewis & R.M. Rowan

   – "Confusion in interpretation and unnecesssary flagging may be caused by the effect of incorrect concentration of EDTA and prolonged storage of the specimen before testing".
   – "The form of EDTA may also effect the MCV and differences of 3% in MCV have been shown between K2 and K3 EDTA (van Assendelft & Parvin, 1988). It is thus essential to standardise the specimen collection containers and to set a limit on the time delay between collection and testing. Our personal experience indicates that this should not exceed 3-4 hours".

5. **Additives to blood collection devices: EDTA:**
   NCCLS Document H35-T, Vol. 12, No. 17, Tentative Standard September, 1992.
   Summary of Comments – General.

   – "Consensus on a single EDTA salt for all vendors' blood collection tubes would help standardise automated CBC calibration issues in haematology labs".
   – "As yet, it has not been established that the K2 salt should also be adopted in the USA (as in Europe and Japan). However, as indicated in the Forward, the subcommittee will pursue the use of a single EDTA salt as a general standard".
   – "The document states "The K2 EDTA

could be adopted as the anticoagulant of choice. It has the least undesirable effect".

6. **A. Richard-Jones, Assignment of Assay values to Coulter controls and Calibration. Clin. Lab. Haematol, 1990: 12, Suppl. 1; 23-30.**

– "Increasing recognition is being given to the need to adopt K2 EDTA salts as global standards for reference specimen anticoagulants".

To Summarise

1. Under optimal conditions there is little difference between K2 and K3 EDTA but in day to day practice optimal conditions do not always ensue.
2. There is a 3% decrease in MCV as a result of increased red cell shrinkage when K3 EDTA is used.
3. The packed cell volume decreases with increasing anticoagulant concentration and this is most pronounced with the K3 salt.
4. It is proven that K3 EDTA is one of the contributing factors in erratic Mean Platelet Volume measurements along with time and temperature.
5. Some analysers are more sensitive to differences between K2 & K3 EDTA anticoagulants especially in the parameters referred to previously.
6. K2 EDTA blood collection tubes are available for use in New Zealand. Most manufacturers will endeavour to provide them if requested to do so.

The H.S.I.G. reaffirms that K3 EDTA is the anticoagulant of choice.

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

Title	**Med Bio Journal Award.**
Donor	Med Bio Enterprises Ltd. P.O. Box 33135 Barrington Christchurch
Nature	This award is intended to encourage and foster the submission of quality scientific or management papers to the New Zealand Journal of Medical Laboratory Science (NZJMLS).
Eligibility	All fellows, associate members and members of the NZIMLS are eligible. Applications will not be required and all papers published in each edition of the NZJMLS will be considered for the award.
Frequency	The award will be made following the publication of each edition of the NZJMLS.
Amount	The award will be for an annual sum of $600.00 which will be divided evenly between the number of journals published in each 12 month period.
Judging	Responsibility for selecting the most suitable paper in each journal will rest with the convenor of the awards committee. Where necessary the convenor will consult with the editor of the N.Z.J.M.L.S. The decision of the convenor will be final.
Period of Award	The Med Bio Journal Award is offered for an initial period of one year and will be reviewed annually thereafter.
Selection	Factors which will be taken into account when selecting the best paper in each journal will include: (a) Appropriateness of content of paper. (b) Layout and presentation. (c) Evidence of original work or ideas. (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.

NZIMLS
50TH ANNIVERSARY

On 13 May 1995, Des Philip, Anne Paterson, Harry Hutching and Colvin Campbell met at Anne's house in Rotorua to plan the approach to produce a history of our profession.

We plan to produce something both factual and containing the human side of laboratory life (see competition page).

It is hoped to cross-reference with booklets already produced about different parts of our evolution such as two already kindly received:

"History of Pathology in Christchurch 1875 - 1990" by D T Stewart

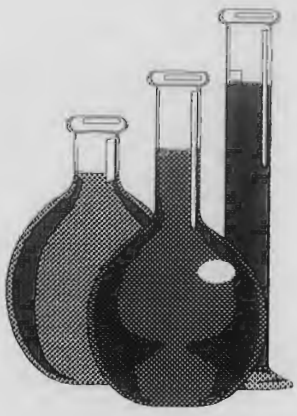
"The 1st 25 years of Auckland Hospital Board
School of Medical Laboratory Technology" by Jeanette Grey

Any help will be greatly appreciated. Please forward any information to:

Executive Officer
NZIMLS
P O Box 3270
Christchurch

or

Anne Paterson
Co-ordinator
P O Box 1038
Rotorua



HISTORICAL EQUIPMENT

We **need** your obsolete laboratory equipment for a

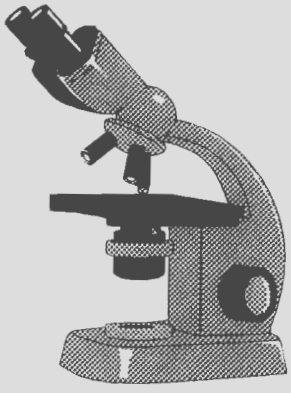
HISTORIAL DISPLAY OF

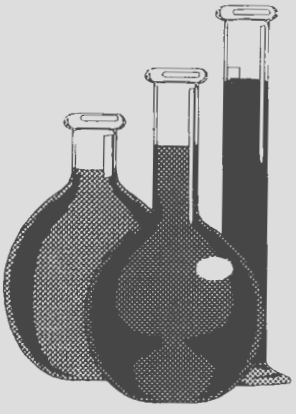
PAST LABORATORY TECHNOLOGY

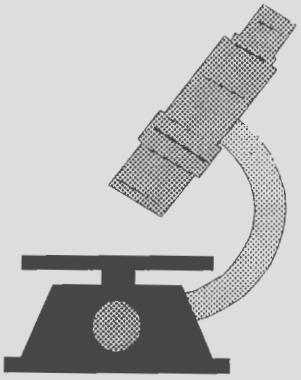
for the 1996 Anniversary Conference

Please inventory items in the basement or back storeroom. Send the list of a brief description of purpose to: Executive Officer, NZIMLS, P O Box 3270, Christchurch.

So we can compile the best display possible







Abstracts of oral and poster presentations by New Zealand delegates at the 4th South Pacific Congress, October 1995, Gold Coast, Australia

New Zealand Requirements For Professional Registration
Gainsford, Shirley
Valley Diagnostic Laboratory, Lower Hutt, New Zealand.

In New Zealand the practice of medical laboratory science and the title medical laboratory technologist is restricted to **registered** medical laboratory technologist. Registration is performed by the Medical Laboratory Technologist's Board (MLTB) which is a statutory authority established under a parliamentary act.

Bachelor of Medical Laboratory Science degrees are taught at Massey University, the University of Otago and the Auckland Institute of Technology (AIT). They consist of a three year academic degree followed by a fourth year spent in a clinical laboratory practising in two disciplines. Post graduation another six months of clinical practice is required before registration can be achieved.

The degree programmes are audited by the MLTB to determine whether they meet the registration requirements set out in the document "Registration Requirements: Competencies, Learning Outcomes and Performance Criteria."

Polytechnic courses such as the BMLS at AIT are also accredited by the New Zealand Qualifications Authority.

Nominees of the New Zealand Institute of Medical Laboratory Science serve on the MLTB, the Boards of Studies of the Universities and the Course Advisory Committee of the AIT.

Clinical Practice – A New Zealand Model
Nulsen MF
Director of Medical Laboratory Science, Department of Microbiology and Genetics, Massey University, Palmerston North, New Zealand

The Massey University Bachelor of Medical Laboratory Science (BMLS) consists of three years of full time study at the Palmerston North campus followed by one year of 'clinical practice.' In this final year students are placed in medical laboratories throughout New Zealand for two fifteen week semesters. The students specialise in two disciplines selected from a list of seven options, namely: Clinical Biochemistry, Medical Microbiology, Haematology, Transfusion Science, Immunology-Virology, Histological Technique and Medical Cytology.

For each of the two disciplines the students enrol in a practical work paper and a theory paper. The practical work paper is defined primarily by the relevant Log Book. This lists the various tests or techniques with which the student should become familiar during the 15x30 hours we expect the student to engage in bench work. The practical work paper has a final grade of pass or fail and this is based on the overall assessment of the Log Book.

The theory paper is intended to provide the principles underlying the practical work. For this, the students are supplied with a Study Guide, a Work Book, an Administration Guide and, for some subjects, some additional reading material. The students are required to submit fortnightly progress reports (worth a total of 21% of the final mark), plus three assignments (15%) and sit a final examination (64%).

Overall responsibility for the students in each discipline in each laboratory is assigned to the Honorary Associate of Massey University, a Medical Laboratory Scientist employed by the laboratory concerned and who is engaged in routine bench work in that laboratory. In order to cover the 'slow down' costs associated with training the students Massey University pays the laboratories some thousands of dollars per student per semester.

Distance Education – A New Zealand Example
Clark JNT
Department of Applied Science, Auckland Institute of Technology, Auckland, NZ.

The experience of Distance Learning or Open Learning within the Department of Applied Science will be presented. Open Learning includes practical sessions in Block courses. The reasons for deciding on this form of instruction include such factors as the distance the student may have to travel to attend classes, the work commitment that does not allow any time to be released for study, and New Zealand's population spread. The advantages include the approval of employers, and the resultant student profile of well-motivated and organized students. Disadvantages can include the problems of lack of classroom discussion with peers, and the problems students face if employers fail to recognise the commitment students have to their study. Particular attention has to be addressed to the provision of the practical component of modules offered by Distance Learning. TV Learning and Interactive Video are two examples of possible future technological aids to Distance Learning.

1. Cull M & Walker R Moments of Truth: managing the face-to-face Encounter in Distance Learning
Jnl of Distance Learning Vol 1 No 1 1995
2. Leal B Doing more with much less: The Open Learning Initiative
HERDSA News Vol 15 No 2 1993

Case-Based Learning in the Bachelor of Medical Laboratory Science Course
Lovell-Smith CJ, Schwartz PL, Loten EG
Department of Pathology, Otago Medical School, Dunedin, NZ.

Case-based, self-directed learning has been promoted as having major advantages for students and teachers. It has been used successfully since 1988 to teach Clinical Biochemistry to third year medical students at Otago Medical School.

In attempting to transfer similar methods to a newly-established BMLSc programme, we were mindful of the slight differences in student performance (already established by the selection process), and the need to include a significant amount of hands-on practical work, which was not essential for the medical students' course.

The Clinical Biochemistry Third Year course is based on twelve self-contained modules, each running over one week. Student learning is facilitated by early small-group discussion about problems, often (but not always) of a clinical nature. Suggested readings are given, with a list of objectives for the week, and a self-assessment quiz covering the major areas of content is also provided. Each student also receives the logbook sheets covering the relevant tests for the week.

After a second tutorial session, a practical class is held for each group. Samples with relevance to the clinical cases are assayed. About half the practical work is performed in the University, using a Cobas Mira. The remainder of the time is spent in the local public hospital laboratory, where special tests may be demonstrated or performed by the students.

At the end of the week, a further tutorial is held, at which the data collected during the practical class is discussed, the self-assessment quiz questions may be reviewed, and further brief

problems worked through. Tutors, throughout the week, act as facilitators of discussion and resource persons, rather than pedagogues.

Assessment is largely internal, with marks allocated for small group work, and performance in two written tests within the semester. A further short written paper is administered at the end of the semester, and students participate in a laboratory practical examination. Assessment is based on performance in working out problems and cases similar to those experienced during the semester.

An informal setting is provided, with tea/coffee and biscuit breaks, in which students can learn to research ideas, work effectively in groups, and solve problems. Student performance is excellent, and their feedback through formal evaluations has been very positive[1].

1. Schwartz PL, Lovell-Smith CJ, Loten EG, *Clin Chem* 1995; 41: (in press).

The Source of "HUS"
(Haemolytic Ureamic Syndrome)

Sharon Kirk
Blood Bank, Southland Hospital, Invercargill, New Zealand

This case study examines a patient who presented himself at Southland Hospital Invercargill with severe haematuria. After much investigation by medical staff at both Southland and Otago Hospitals, a diagnosis was determined from his clinical picture to be a rare life threatening disease known as Haemolytic Ureamic Syndrome (HUS). This condition was acquired suddenly and to this day medical staff are still unable to identify its source.

Multiple plasma products were used successfully in the treatment of this condition at both Otago and Southland Hospitals. The patient underwent treatment for a six week period and has had no subsequent transfusions. Close monitoring of this patient continues with regular blood tests.

Spontaneous Factor V Inhibitors – A Short Case Presentation

Bowering CJ
Department of Haematology, Auckland Public Hospital, New Zealand.

Spontaneously occurring Factor V inhibitors are rare with only twenty seven reported cases worldwide by 1986.[1]

The occurrence of a Factor V inhibitor, in a seventy four year old woman, three months post coronary artery bypass surgery is described. The patient presented acutely with a two week history of maleana and laboratory tests revealed a grossly abnormal Prothrombin Ratio and Activated Partial Thromboplastin Time. These initial results and a normal Echis Ratio suggested an element of Vitamin K deficiency but subsequent mixing studies with normal plasma and factor assays led to the diagnosis of a Factor V inhibitor.

The patient was treated successfully with blood transfusion, alkylating agents and prednisone.

In view of the significant mortality and morbidity associated with coagulation inhibitors, prompt diagnosis is crucial for correct management of these patients.[2,3]

1. Nesheim ME, Nichols WL, Cole TL, Houston JG, Schenk RB, Mann KG, Bowie EJ. *J Clin Invest*. 1986; 77:405-415.
2. Brandt JT, Britton A, Kraut E. *Arch Pathol Lab Med* 1986; 110:224-227.
3. Grigg AP, Dauer R, Thurlow PJ. *Aust NZJ Med* 1989; 19:310-314.

HAPS – Hepatitis Interlaboratory Quality Assurance

Faulkner J, Rimmer L
Quality Control Laboratory, Auckland Regional Blood Centre Auckland, New Zealand.

For 10 years the Auckland Regional Blood Centre has prepared, distributed and reported the Hepatitis Antigen Proficiency Survey (HAPS) to laboratories in Australia, New Zealand and the United Kingdom. This survey is prepared under contract to Telarc NZ.

The New Zealand Code of Laboratory Management Practice requires: "Participation in proficiency tests and other interlaboratory comparisons". Other accreditation authorities have similar requirements.

Parameters assessed by HAPS include **HBsAg, HBeAg, anti-HBs, anti-HBc, anti-HBe, and anti-HCV**. Additionally quantitation of Hepatitis B antigen and Hepatitis B antibody are surveyed.

The Primary Standards are

HBsAG[1,2] International Standard for Hepatitis B Surface Antigen (HBsAg), (subtype ad), 80/549, 100 International Units

anti-HBs[3] World Health Organisation Std – 1st Reference Preparation 1977 for anti-Hepatitis B Lot 26.1.77, 50 International Units.

Good Laboratory Practice[4] is observed at all stages of the survey's production. This includes validation of laboratory equipment and precision in sample production. Samples are packed and distributed according to the 1995 IATA Regulations.

Cumulative Data, with statistical analysis performed by Telarc, is reported as soon as possible after the "Return By" date. This is followed by the HAPS Final Report with analysis of results for each marker, comments about the survey, a newsletter, meeting/conference dates and current journal references. Correspondence and comments received, are also published.

Trends that have been noted over the last 2 years include

Anti – HBs

Quantitation of the antibody has produced wide result ranges. There are 10 method groups quantitating anti-HBs, using reagents from 5 manufacturers. The mean of all method results is usually within 10% of the Issuing Laboratory (Reference) quantitation.

HBsAg

Recent surveys have shown that the ability to detect HBsAg is not related to antigen concentration within the scope of HAPS, and fewer nonconforming results.

1. Seagroatt V, Magrath DI, Ferguson M, Anderson SG, Schild GC, Cameron CH. *Med Lab Sci* 1981; 38: 335-339.
2. Ferguson M, Pipkin PA, health AB, Minor PD. *Vox Sang* 1993; 65: 303-308.
3. Barker LF, Lorenz D, et al. Expert Committee On Biological Standardisation. Geneva 1977.
4. Westgard JO, Klee GG. In: Burtis CA, Ashwood ER, eds. Tietz Textbook of Clinical Chemistry. Philadelphia: WB Saunders 1993; 548-592.

Correlation study of weakly reactive HBsAg sera with HBV DNA

Austin PM
Virology/Immunology Laboratory, Auckland Healthcare Services Ltd, Private Bag 92024, Auckland, New Zealand

An ongoing study was initiated in February 1995 to determine the relationship between patient sera that demonstrated weak (0.1-0.5ng/ml) reactivity to HBsAg and presence of HBV DNA.

Serology was performed using Abbott Laboratories Axsym reagents. Sensitivity of the HBsAg assay was established at approximately 0.1ng/ml, after testing dilutions of a WHO standard supplied by the QC department, Auckland Rgional Blood Centre. HBV DNA analysis was performed using PCR technology. The PCR used a core target sequence, and had a limit of detection of 6 x 10^{-5}pg/ml, which equates to genomes in the order of 10-100. After an initial round of 40 cycles an additional 20 cycles (nested amplification) was performed for confirmation of weak positives. The Axsym HBsAg assay has a cut-off point of sera expressing a sample/negative ratio [S/N] of ^{3} 2.0. Selection criteria for study inclusion were any sera with a S/N ratio of 2.0-10.0. To date, 17 patients have been included in the study, 3 of whom have been tested on more than one occasion.

Five patients (29%) were initially reactive for HBV DNA, four of which required nested amplification for confirmation. Two (40%) HBV DNA positive patients were reactive for total core antibody, two (40%) were not tested for this marker and the remaining patient was negative. The patient who was negative for HBcAb demonstrated a double banding on gel, indicating a mixed population of HBV. Non-reactivity of this patient to HBcAb, HBeAg and anti-HBe is supportive evidence for the presence of a core deletion mutant of HBV. In the HBV DNA negative group, 7 (58%) patients were non-reactive for total core antibody, 4 (44%) were untested and the remaining patient was positive.

No sex/age bias was detected in the 'true' HBsAg positive group as compared with the test population. The S/N intensity of the HBsAg assay was not related to the presence or absence of HBV DNA [Student-t-test $P<0.05$].

Of the three patients in the study who were tested on more than one occasion, one demonstrated clearance of both HBsAg and HBV DNA, one gave persistently negative HBV DNA results despite having strong reactivity to HBsAb, HBcAB and HBeAg. The third patient was initially reactive for HBV DNA as part of a routine STD screen. Subsequent bleeds demonstrated an acute HBV infection. Transaminase elevation and clinical indications of viral hepatitis occurred 5 weeks after the initial HBV DNA positive result was obtained.

In conclusion, it has been demonstrated that a proportion of weak positive HBsAg sera will have HBV DNA. Normal serologic methods of confirmation (neutralisation) are not appropriate for low level reactive sera. The schedule of testing outlined has proven beneficial in (a) discriminating between true and false weak HBsAg positive sera (b) demonstrating viral clearance (c) identifying potential HBV mutants and (d) early detection of HBV infection.

Evaluation of the Syva EMIT® 2000 Digoxin and the Boehringer Mannheim TinaQuant® Digoxin Assays

Mikkelsen DJ, Glen DL, Pearse GP
Dept of Clinical Biochemistry, Waikato Hospital, Private Bag 3200, Hamilton, New Zealand.

The assay of digoxin in blood is an often requested drug analysis in Clinical Biochemistry. Rapid direct assays of digoxin have until recently been the domain of automated immunoassay equipment. We have evaluated two new immunoassays for determining digoxin in blood. These assays are distinguished by being direct assays which are applicable to mainstream clinical biochemistry analysers. The candidate assays Syva EMIT 2000 digoxin and Boehringer Mannheim Tinaquant digoxin were performed on a Boehringer Hitachi 704 analyser using assay parameters as specified by the manufacturers. The assays were compared with the routine Abbott TDx digoxin assay.

Correlation of digoxin results showed EMIT = 1.03 TDx + 0.12, r=09624 and TinaQuant=0.73 TDx + 0.1, r=0.8634. Between run imprecision showed CV 8.2% (EMIT) and CV 7.6% (TinaQuant) at a mean value of 1.7 nmol/L. Estimation of digoxin like immunoreactive substances showed similar performance for both assays. Levels of up to 0.3 nmol/L on neonatal patients known to not be receiving digoxin were obtained.

Spurious negative interference was observed in 2% of patient samples tested with the TinaQuant assay. The worst case observed had digoxin measured at 1.8nmol/L by TDx, 1.4 nmol/L by EMIT and 0.0 nmol/L by TinaQuant. This phenomenon has been observed independently by other reviewers of the TinaQuant assay and is thought to be due to a specific protein interference in the assay. This has resulted in a reformulation of the assay by Boehringer Mannheim. The authors have not tested the reformulated product.

Interference aside both candidate assays show acceptable analytical performance. The Syva EMIT 2000 assay has been adopted as the routine assay in our laboratory.

A Modification to the Boehringer Mannheim Microalbumin Assay on the H747

Lance Little
Diagnostic Laboratory, 43 Symonds St, Auckland, New Zealand

The current Hitachi Boehringer method for Urinary Microalbumin is subject to two problems.

Firstly, microalbumin concentrations of greater than 350 mg/L are prone to antigen excess and can be mistakenly reported as normal. The reaction will proceed in a linear fashion therefore the linearity alarms on the H747 will never be triggered, leading to the possibility of a false normal result being reported.

Secondly, the volume of R2 reagent in the kit at 8.7mL is barely sufficient to prime the H747 and is extremely expensive to run as a routine channel. To overcome this problem we would need to increase the R2 volume substantially.

Both problems could be solved by employing a standard antigen/antibody prozone check, namely, the addition of more antibody once the reaction has finished. In order to stay within the confines of a 2 reagent system, such that the H747 employs, the R1 and R2 reagents in the kit would have to be mixed together prior to being placed on the instrument. Therefore both problems would be solved.

An Evaluation of the Boehringer Mannheim Advantage Capillary Blood Glucose Monitor

Alistair Kerr[1] and Janet Lockhart
Biochemistry Department, Palmerston North Hospital, Private Bag, Palmerston North, New Zealand.

This paper describes the evaluation of the Advantage capillary blood glucose monitor using blood taken from outpatients attending the laboratory for glucose series. The result obtained from a fingerprick sample measured on the Advantage was compared with the venous sample drawn 1 to 2 minutes prior to the fingerprick sample and analysed on an Hitachi 737 analyser.

We perform a number of glucose series in our laboratory (these being 3 blood tests to assess the control of a patient with diabetes and are taken 2 hours after breakfast, immediately before lunch and 2 hours after lunch). Many of these patients have their own monitors and when pricking their fingers for correlation with the venous samples were asked if they wouldn't mind contributing an extra drop of blood for the evaluation of a new monitor – none declined!

The venous bloods were taken into either a Lithium Heparin or Sodium Fluoride/Potassium Oxalate tube which was separated within 30 minutes of collection. The Hitachi 737 uses a Glucose Oxidase reaction to measure glucose. During the evaulation period

more than 120 comparison samples were taken. The range of results on the Hitachi 737 was between 2.8 and 24.2 mmol/l.

Glucose monitors have far greater accuracy and reliability now than they used to. The advantage is no exception. The correlation study showed results that compared very well with venous samples which will therefore result in better control for patients with diabetes.

A Deployable/Mobile Medical Laboratory

Rees MT
Pathology Department, 2nd Field Hospital, Linton Camp, Palmerston North, NZ.

The New Zealand Army has, as part of its mobile medical capability, a fully mobile 25 bed surgical hospital. Part of that hospital is a fully functional mobile laboratory complete with reticulated water, power and with a full complement of equipment.

The laboratory is based on an Amercian design by Brunswick who utilised the concept of an expandable 20 ft container as the basis of their design. This paper highlights the features of this laboratory, the means by which we deploy and operate the facility and some of the likely operational uses for the equipment in the South West Pacific.

Hepatitis B Positive Blood Donors in Auckland during 1993 and 1994

Wai-Poi I S
Auckland Regional Blood Centre, Department of Transfusion Medicine, Auckland

Objective

To review the frequency of Hepatitis B surface antigen (HBsAg) in blood donors in Auckland during the years 1993 and 1994 and to analyse the data by age, sex and ethnicity. Results of the frequency of Anti HBc, Anti HDV and HBeAg were also assessed.

Method

Demographic data was obtained on all donors from routine records. HBsAg testing was performed using the Wellcozyme methodology and all initial reactives were repeated in duplicate using the same method. The repeat reactive samples were also tested for HBsAg by an alternative method (Abbott Auszyme). HBc, Anti HDV and HBeAg were detected using Abbott EIA methods.

Results

HBsAg was detected in 132 donors in 1993 and 116 donors in 1994. In both 1993 and 1994, all HBsAg positive donors were Anti HBc positive. 22.7% of the HBsAg positive donors were also HBeAg positive.

In 1993, 39 HBsAg positive donors were tested for Anti HDV and 7.7% tested positive, while in 1994, 1.7% were positive.

In 1993, 60336 donations were collected from 40641 donors.

In 1993, the gender distributio showed that 70.5% of HBsAg positive donors were male as compared with 67.2% in 1994. The donor pool in 1993 showed that 48.5% were male.

In 1993, 22.6% of donors were in the 16-19 year old age group but 47% of the HBsAg positive donors were in this age group. In 1994, the percentage increased to 62.9%.

Of the 132 HBsAg positive donors detected in 1993, 31% were Maori, 21.2% were Chinese, 13.5% were European, 11.4% were Samoan, 9.1% were Tongan and 13.6% were of other races. Similar figures were found in 1994. The ethnicity of all donors was 6.2% Maori, 1.7% Chinese, 81.9% European, 2.5% Samoan, 0.6% Tongan, and 7.1% other races.

HBsAg positive donors are more likely to be male, be in the 16-19 year old age group and to be Polynesian or Chinese. This information may be useful in targeting blood donor collects.

House dust mite allergen measurement by ELISA in New Zealand homes

Siebers RWL, Wickens K, Ellis I, Crane J
Wellington Asthma Research Group, Wellington School of Medicine, Wellington, New Zealand.

The major allergen of the house dust mite *Dermatophagoides pteronyssinus* (Der p 1) is an important allergen in the development of allergic disease, including asthma. This case control study was undertaken to quantitate the exposure of New Zealand children to the house dust mite allergen Der p 1. Dust was collected by vacuum cleaner from the child's bedding and mattress, the child's bedroom floor and from the living room floor by a standardised technique[1]. The case control study comprised 469 school children aged 8-9 years (231 cases=Doctor's diagnosis of asthma and on current medication, 238 controls=no history of wheezing or diagnosis of asthma). Der p 1 levels in dust was measured by the ELISA monoclonal assay and expressed as 1g of Der p 1 per gram of dust[2]. Results are presented in the table below as geometric mean µg/g and 95% confidence intervals.

Geometric mean µg/gm fine dust (95% CI)

	Cases	Controls
	n=231	n=238
Mattress & bedding	40.1 (35.6-47.1)	52.1 (45.7-59.4)
Bedroom floor	26.2 (22.8-30.2)	25.8 (22.1-30.2)
Living room floor	25.6 (21.8-30.0)	25.1 (21.4-30.0)

Various studies have demonstrated that exposure to more than a threshold level of 2_1g/g will increase risk of sensitization and that exposure to levels of 10_1g/g or above will increase the risk for overt asthma symptoms[2]. This case control study has demonstrated that almost all the asthmatic children were exposed to Der p 1 levels capable of provoking attacks of asthma, and over one third are exposed to 10 times these levels. The child's bedding seems to be the most important source of the house dust mite allergen.

1. Luczynska CM, et al. *J Immunol Meth* 1989;118: 227-235.
2. Platts-Mills TAE, et al. *J Allergy Clin Immunol* 1992;89: 1046-1060.

Evaluation of the Ciba Corning 850 and the Instrumentation Laboratory 1640 Automated Blood Gas Electrolyte Analysers

Donald J Mikkelsen, Evelyn M Clarke
Department of Clinical Biochemistry, Waikato Hospital, Private Bag 3200, Hamilton, New Zealand.

Blood gas equipment has evolved into multi-analyte testing platforms measuring blood gas parameters as well as electrolytes and metabolites. This has necessitated the addition of new sensor designs and instrument configurations.

We report an evaluation of two modern blood gas, electrolyte analysers, the Ciba Corning 850 and the Instrument Laboratory IL1640.

Correlation of analytical values on patient samples obtained on the candidate equipment with an existing Ciba Corning 288 and Hitachi 717 was excellent. Obtained r values ranged from 0.9958 for PCO_2 (IL vs. Corning 288) to 0.9779 for Na^+ (Corning 850 vs. Hitachi 717). Bias was evident in most analyses, slopes ranging from 1.21 for Na^+ (Corning 850 vs. Hitachi 717) to 0.84 for PO_2 (IL 1640 vs. Corning 288). Imprecision was low for both analysers but better for all analytes on the Corning 850 (CVs ranging from 0.02 for pH mean

7.40, to 1.17 for K^+ mean 3.37) this compares with IL1640 (0.06 for pH mean 7.32, to 3.24 for Ca^{++} mean 1.23).

Equipment reliability and reagent consumption are very similar for both instruments. A limited useability assessment showed user preference for the Corning 850 from both laboratory and no laboratory users.

We conclude that both machines perform acceptably. The Corning 850 is easier to use and we believe would be more suitable for an extra-laboratory site.

SCAP – A Coagulation Interlaboratory Quality Assurance Survey

Dickinson MC, Faulkner J
Quality Control Laboratory, Auckland Regional Blood Centre, Auckland, New Zealand.

The Quality Control Laboratory, Auckland Regional Blood Centre prepares, distributes and reports the Survey of Coagulation Assay Proficiency. (SCAP) under contract to TELARC, NZ.

The survey programme, now in its thirteenth year consists of 4 postings/annum, with each distribution containing 4 samples.

The 7 assay parameters available are; PR/INR, APTT, Fibrinogen, Factor VIII, Factor IX, von Willebrands antigen, Ristocetin Cofactor activity and in alternate distributions 2 specimens for D-Dimers.

All samples are freeze dried plasmas. Included in each survey is a normal control plasma, an abnormal (artificially depleted) plasma and two plasmas with specific coagulation abnormalities. To follow longer term precision and accuracy trends, some plasmas are sent out several times over an extended period.

Statistical analysis of results is reported within 2 weeks of the "return by date". This is followed by a full commentary, a newsletter and a listing of current journal references. Results are compared to the consensus mean of the method group and overall results.

When examining cumulative results and comparing them to data collected over the past 47 survey issues many quality problems are identified. All the common laboratory errors, eg transposition of results, and reconstitution biases are found. In recent commentaries, determination of the mean normal clotting time for PR calculation and determination of the instrument specific ISI have been discussed. This has assisted several laboratories overcome long standing problems.

The Coefficient of Variation (CV%) for fibrinogen assays is generally below 15%. However, the normal ranges stated by individual laboratories for fibrinogen are variable. In SCAP 47 of the lower limit ranged between 1.3g/L and 2.0g/L. This is reflected in variable clinical interpretation for specimens with a fibrinogen level in the clinical decision range.

Methaemoglobinaemia

Murton D Carnoutsos S
Haematology Laboratory, Canterbury Health Laboratories, Christchurch, NZ

The ferrous iron of haemoglobin is exposed continuously to high concentrations of oxygen and is therefore oxidised slowly to methaemoglobin, a protein unable to carry oxygen. To restore haemoglobin function, methaemoglobin must be reduced to haemoglobin. Under physiological conditions this reduction is accomplished by the red cell enzyme NADH methaemoglobin reductase (MHR). Should methaemoglobin levels increase eg due to the presence of oxidant drugs, Hb, M, or a deficiency in MHR – methaemoglobinaemia will result.

Most methaemoglobinaemias have no adverse clinical consequences and need not be treated. Under certain conditions such as exposure to large amounts of oxidant or in young infants, rapid treatment is necessary[1].

Patients presenting with methaemoglobinaemia must be differentiated between congenital MHR deficiency, presence of Hb M or the acquired form to enable correct treatment.

Two cases of methaemoglobinaemia presented to Canterbury Health Laboratories within six months of each other. The first was a cyanosed neonate – delivered on the West Coast of the South Island. The second case was a 78 year old woman from Christchurch presenting with pallor.

The investigation involved spectroanalysis, enzyme quantitation, electrophoresis and compilation of an extensive drug and medical history. This could determine the cause of each subjects methaemoglobinaemia and their correct treatment.

1. Wiley – Liss. *Am J Haem* 1993;42:7-12.

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Labsystems Oy Liquid Handling and Microplate Instrumentation Divisions have the pleasure in informing you that from 1.6.1995 **Medica Pacific Ltd** has been nominated our exclusive distributor in New Zealand.

The Liquid Handling Division develops, manufactures and sells the world known **Finnpipettes and Finntips**. Labsystems was the pioneer in the pipette business in being the first company in the world to develop a variable volume pipette in the beginning of the 70's. Labsystems was also the first company to introduce the first multichannel pipette in the world. Today Labsystems is the clear market leader in multichannel pipettes and joint leader in single channel pipettes. To date we have sold over 1.5 million pipettes. The Liquid handling division also manufactures a comprehensive range of microplates.

The Microplate Instrumentation Division develops, manufactures and sells photometric, luminometric and fluorometric readers. Labsystems was again the first company to introduce a microplate reader in the 70's and today after selling over 15,000 **Multiskan** photometric readers we are one of the leaders in this field. This division also supplies a comprehensive range of auxiliary instruments such as microplate washers, incubators and shakers.

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A rapid sensitive hCG assay helps clinicians to identify early pregnancies and to treat appropriately patients who are scheduled for surgery, X-rays or other emergency procedures. With its dual monoclonal antibody, the membrane based ICON serum/urine test delivers sensitivity down to 10mIU/ml with serum samples and 20mIU/ml with urine samples. The built-in positive & negative procedural controls ensure good performance at all times. The positive control corresponds to serum hCG value of 25mIlU/ml (WHO 3rd IRP). This feature allows the semi quantitation of patients serum hCG results. The combination of serum sample pre-treatment with a specimen diluent and the negative control spot reduces to practically zero the possibility of a false result due to heterophilic antibody interference.

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CSL Biosciences have introduced a new cell line (LDMI) to their Anti-D blend reagent. Product specification as follows:

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The New Formaldemeter 3

Formaldehyde is a very useful and commonly used substance. But exposure to excessive amounts is harmful.

In medicine and laboratories, formaldehyde is used as a very active disinfectant to kill micro-organisms.

In aqueous solution it seals and hardens animal tissue and is widely used by undertakers and others for its embalming and preservation properties.

In the Food and Pharmaceutical Industries, formaldehyde is used extensively as a preservative.

The tissue sealing and hardening properties have led to use of formaldehyde as an anti-perspirant in deodorants, and it is used extensively as an anti-microbial agent in hair shampoo preparations, dishwashing liquids, fabric softeners, and household cleaning agents.

In the purely industrial context, formaldehyde is used at varying concentrations in the manufacture of synthetic resins, adhesives, fertilisers, paper resins and in particular a wide range of compression moulding resins/amnioplastics, such as those used in the Chipboard, Woodworking and Laminated Plastics Industries.

In terms of occupational health and exposure, the widespread uses and applications for formaldehyde are such that it is virtually impossible not to come into contact with this chemical. It is even present in cigarette smoke!

But formaldehyde is harmful. Short term exposure to vapour can lead to severe irritation of nose and throat, especially at concentrations above 3 ppm (parts per million). And eye irritation may occur at 0.3 ppm with serious eye damage above 10 ppm. Long term inhalation can cause respiratory irritation, severe pain in mouth, throat and intestinal tract and in some cases, occupational asthma and impaired lung function. Formaldehyde is a suspected carcinogen.

Governments world-wide have imposed occupational control limits on formaldehyde vapour. In New Zealand, a ceiling limit of 1 ppm has been set. It is therefore every employer's duty, under the Health & Safety in Employment Act 1992, to ensure that processes which utilise formaldehyde are controlled in such a manner that the workers are not exposed to excessive levels of formaldehyde vapour.

The newly released Formaldemeter 3 represents a convenient way to check that a process involving formaldehyde is controlled so the staff are not at risk.

The Formaldemeter 3 is a hand-held monitor manufactured by PPM in the UK and can detect formaldehyde vapour down to levels below 0.03 ppm. It is accurate to 10% and incorporates

BOOK REVIEW

Basic Medical Microbiology (5th Edition)
By Robert E Boyd
Pub. Little, Brown 1995

This is the 5th edition of this text however having not seen earlier editions I can not compare it with them however the author in his preface says that he has made a number of changes to this edition so "that students will find (this text) easy and enjoyable to use."

The book is aimed at undergraduate and other students of Medical Microbiology and will be a very useful adjunct to libraries of training institutions. Because of its format with every chapter commencing with objectives and outline and concluding with a series of questions for study, the student is provided with a means of ensuring good comprehension of the material provided in the chapter.

There are thirty five chapters divided into 9 parts and 6 appendices in this book along with a section of excellent colour photographs showing both clinical conditions and photomicrographs of micro-organisms. In addition all the chapters are well illustrated with charts, figures and photographs.

As its title indicates this is a basic text in medical microbiology and so covers a very large area and much of it not to a great depth. The 9 parts cover, general microbiology including a brief history of microbiology, the characteristics of bacteria, microbial metabolism, growth and genetics and an introduction to genetic engineering. Section 2 covers the control of micro-organisms with chapters on sterilisation and disinfection and chemotherapy. Immunology is covered quite extensively in the third section with host-parasite interaction covered in the fourth. Section 5 is titled "Bacteria that Cause Infectious Disease" and gives an overview of the majority of the common pathogenic bacteria and simple means of identification, it is of note that there is virtually no mention of the anaerobic gram negative bacilli. Virology is the subject of part 6, part 7 covers medical mycology and medical parasitology in part 8. The final section gives an overview of hospital infections. There is a very comprehensive glossary and list of references following the appendices.

This text does not compete with the more comprehensive texts on medical microbiology nor is it a bench manual to be used on a day to day basis in assisting in the identification of micro-organisms but it is a text which should prove very useful to students of medical microbiology.

Reviewed by John Elliot, Microbiology Department, Wellington Hospital

software to detect whether other gases (such as alcohols) are interfering with the formaldehyde measurement. It also has the facility to store the last ten readings.

For more information, contact the distributor, Total Air Care on (09) 630-4358 or fax (09) 630-9601.

Coulter Corporation and Immunotech Unite

French Company's Expertise in Monoclonal Antibodies Gives Coulter the Edge in Cell Analysis

Describing Immunotech as a "gem" and the two companies as "an ideal match" Coulter Corporation announced that it is joining together with Immunotech, a French company which has become an industry leader in monoclonal antibodies and diagnostic testing reagents.

Thirteen-year-old Imrnunotech, headquartered in Marseille, France, launched its first monoclonal antibody products in 1984. "It has experienced an annual growth rate of over 30% a year for the last ten years," said Mike Brochu, Coulter's Director of Business Development.

The two companies are joining forces through Coulter Corporation's purchase of Immunotech. Terms of the sale were not disclosed. The previous owners of Immunotech were financial institutions and venture capitalists who were shareholders since the company's founding. Immunotech's founders, Antoine Beret and Michel Delaage, will continue to manage its business.

One of the reasons why Immuntech is so successful is its ability to develop new monoclonal antibody products and rapidly bring them to market. Immunotech now markets nearly 800 monoclonal antibody products, more than any other company in the world.

The respect in which Immunotech is held by its customers reflects the expertise of its personnel, its excellent two-way technical communication, and its commitment to innovation. Immunotech's brilliant and responsive research team can create a new product or application requested by a customer in record time.

Coulter/IL Introduces the new IL682™ Co-oximeter System

The IL 682™ is the latest in Co-oximetry from the company that introduced it twenty-five years ago. From whole blood samples of 65µL, the IL 682 measured total Haemoglobin (tHb), oxyhaemoglobin (O2hB), carbonxyhaemoglobin (COHb), methaemoglobin (MetHb) and deoxyhaemoglobin (HHb).

The system's user-friendly operator interface guides you with clean, step-by-step instructions. It delivers results in under 60 seconds, automatically correcting for such factors as turbidity and foetal Hb and detecting the presence of sulhaemoglobin.

The IL 682 is designed to maximise operator safety and ease of use, even for the relatively inexperienced user. IL's exclusive self-wiping probe eliminates the need to manually clean the tip after sampling. The waste system features a non-contact level sensor and disposable bottle. These added safeguards help the user to avoid direct contact with blood during operation.

With the advanced fluidics system, you are assured of reliable performance. In addition, an automatic cleaning cycle guarantees that you are always ready to run a sample. The IL 682 is easily customised to the needs of STAT labs, respiratory care, or the central laboratory.

The system interfaces to IL Blood Gas and DMS system in addition to having an onboard printer.

Coulter's comprehensive package includes dedicated reagents and QC products, data management systems, on-going training and full customer support.

For further information please contact:
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New Breast Cancer Marker

SCIANZ Corporation is proud to announce the availability of yet another test for the ACS:180. ACS BR is the name of our newest tumour marker for breast cancer and detects the CA 15-3 antigen. CA 15-3 is one of the most commonly used circulating tumour markers for monitoring metastatic breast cancer. Nominal concentrations of this antigen are found in the circulation of normal women, while significantly elevated CA 15-3 concentrations are found in the serum of many patients with this disease.

Clinical studies have shown that the CA 15-3 tumour marker is not sensitive or specific for screening, pre-operative diagnosis, or prognosis of breast cancer. The CA 15-3 antigen assay, however, has demonstrated clinical utility in following the clinical course of breast cancer, detecting metastases, and monitoring response to therapy. For example, rising serum CA 15-3 levels indicate that the patient should be considered suspect for recurrent disease.

Ciba Corning has developed an automated immunoassay for determining serum CA 15-3 concentrations in breast cancer patients. Automation allows for considerably improved assay precision. The reproducibility of assay results is particularly important for accurate monitoring of breast cancer patients. The performance characteristics of the Ciba Corning automated assay allow the laboratory to establish solid baselines, and thus, increase the physician's confidence in reported results.

Vidas D-Dimer The First Immuno-Haemostasis Assay For The Diagnosis Of Venous Thromboembolism

The bioMérieux VIDAS system has been part of immunoassay laboratories for 3 years, and is now extending its range of tests to the field of haemostasis with a first parameter; VDAS D-DIMER.

This reagent was developed in collaboration with internationally-reputed European specialists, who had already been won over by the way in which the VIDAS system suited their own laboratory and needs.

Current clinical examinations cannot establish a 100% certain diagnosis of venous thromboembolism. Even when used in conjunction with additional radiological examinations (lung and Doppler ultra-sound scans), a complete picture cannot be obtained, and reference diagnosis techniques (angiography or phlebography) entail numerous contra-indications and secondary effects.

However, the combination of a non-invasive radiological technique with the D-Dimer assay provides reliable, safe diagnosis of venous thrombosis or pulmonary embolism. A D-Dimer level lower than the limit value, combined with a negative Doppler ultrasound or lung scan, excludes the presence of thrombus in the lower limbs or lungs.

Latex agglutination test are not considered to be suitable for the diagnosis of venous thromboembolism, since several clinical studies have shown them to have low sensitivity.

Up until now, D-Dimer tests using an ELISA technique were only available in manual microtitration plate form. These tests are time consuming and expensive when used for isolated cases, and therefore are not appropriate for the diagnosis of emergencies.

Now, the new VIDAS D-Dimer test combines the sensitivity of an ELISA test with the advantages of the VIDAS system: automation, rapidity and a single-dose reagent adapted to emergency requirements.

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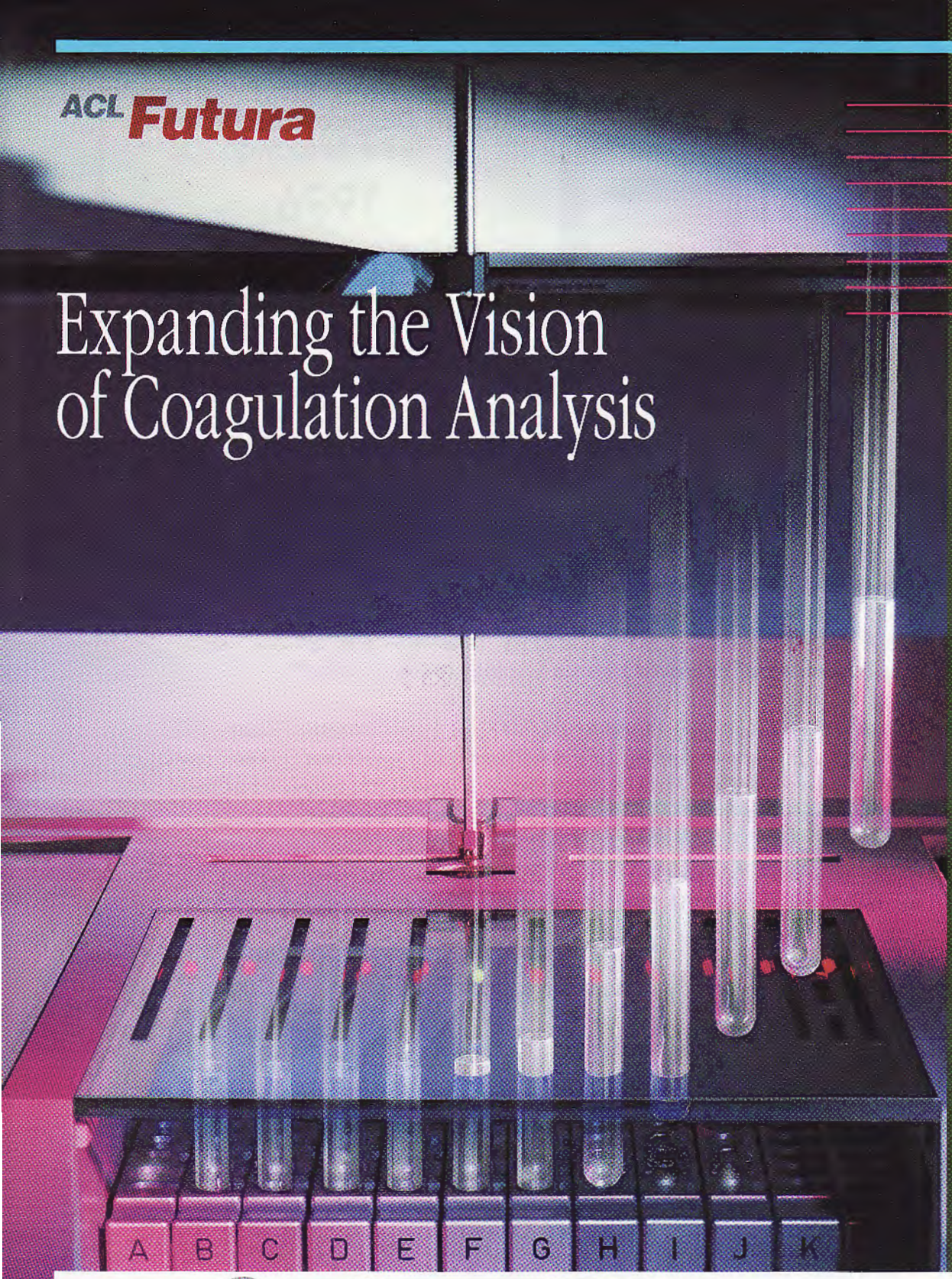
Coagulation



IL continues its tradition of leadership in coagulation analysis with the ACL Futura™ system. This versatile random-access analyser provides both turbidimetric (clotting) and absorbance (chromogenic) channels on board.

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DO YOU WISH TO ADVANCE YOUR KNOWLEDGE AND UNDERSTANDING IN INFECTIOUS DISEASE SEROLOGY ?

Through the generosity of ABBOTT Diagnostics Division the trustees of the New Zealand Medical Laboratory Science Trust are pleased to offer the opportunity for members of the New Zealand Institute of Medical Laboratory Science to apply for assistance to advance "their knowledge and understanding of Infectious Disease Serology in New Zealand"

ABBOTT Diagnostics have again made the sum of **$ 5,000.00** available to the Science Trust to award to members of the Institute to further their understanding in Infectious Disease Serology in accordance with the objectives of the Trust. Applications are invited from financial members of the Institute, not necessarily employed with the New Zealand Blood Services.

Applications will be judged on the expected benefits from an award and where appropriate, the advancement of knowledge and understanding in Infectious Disease Serology.

Applications should be made on the official form and sent to :

The Executive Officer
New Zealand Medical Laboratory Science trust,
C/- Pathology Department,
Palmerston North Hospital
PALMERSTON NORTH

1st Round applications close 26th January 1996
2nd Round applications close 31st May 1996

Application forms are available from Abbott Representatives or your local Blood Transfusion Service.

I was a recipient of an ABBOTT Science Trust Grant and, in April 1995 I participated in the Transfusion Medicine NICE Weekend held at Wairakei. The formal and informal parts of this meeting always provide enthusiastic and rewarding discussion. It was also helpful to me to attend the User Group Meetings to discuss technical aspects, quality assurance and disease testing updates for our donor accreditation laboratory.

I encourage others to participate in NICE Weekends and similar meetings and to apply for support from the ABBOTT Science Trust.

Diane L Whitehead
Staff Technologist
Department of Transfusion Medicine
Canterbury Health Laboratories
Christchurch

In a weeks time I will be enjoying lively discussion and lots of new ideas in the bustling city of Sydney.

I will be attending the 12th National Workshop on Retrovirus Testing, a two day conference at which I will present a poster on the past three years of Hepatitis C testing of Auckland Donors.

This opportunity has been made possible by the support given at my workplace, ARBC, and by a grant from the NZIMLT Trust.

This money is made available to the Trust each year by Abbott and is called The Abbott Transfusion Medicine Grant.

Julie Torrie
Staff Technologist
Auckland Regional Blood Centre

Report of Attendance at 29th Annual Scientific Meeting of the Australasian Society of Blood Transfusion and the VIII Congress of the Asian Pacific Division of the International Society of Haematology 15th-18th October Brisbane.

I am grateful to the New Zealand Medical Laboratory Science Trust for financial assistance toward attendance at the above meeting.

Medical ethics in Transfusion Medicine. Four very interesting presentations dealing with informed consent, the advent of AIDS and its (legal) effect on the blood supply and a range of associated applications of the law of negligence etc. One of the more interesting aspects to come out of this and later seminars is the attitude toward Autologus Transfusions is rapidly changing away from its continuing use as the dangers of autologus transfusions become apparent. It is fortunate that NZ did not proceed down that path very far.

The future of Transfusion Medicine concerned such topics as Code of GMP, RhD Genotyping by PCR based DNA amplification, Erythropoictin, Gene Therapy and a lawyer dealing with Class Actions. A further legal session on Medical Law and Blood Transfusion came later in the congress.

Dr Al Lovric gave a comprehensive and informative presentation on the use of plastic bags in blood transfusion and their development over the last 20-30 years. This paper, along with Dr Jack Morris "The Passing of an Age of Innocence" truly reflected the great changes that have occurred in our industry in recent years. For me the most exciting paper came from the University of Wollongong group reporting on their trapping of RBC in polymer layers and having what would amount to a disposable slide to undertake blood grouping, antibody screening and infectious disease screening at the same time.

R. J. Austin
Taranaki Healthcare

Serology	Toxo G, Toxo M Toxo Comp Rub G, Rub M CMV G, CMV M Measles IgG Mumps IgG VZV IgG Lyme Screen II	Immunochemistry	T3, T4, TSH FT3, FT4 T Uptake Estradiol (2), HCG LH, FSH IgE, Ferritin, Cortisol B2-Microglobulin Prolactin D-Dimer
AIDS/ Hepatitis	anti-HBc IgM anti-HBc Total HBsAg II anti-HAV IgM anti-HBs HBeAg, anti-HBe	Antigen Detection	Chlamydia - one hour C.difficile Toxin A RSV Rotavirus
Tumour Markers	PSA (mono/mono) AFP CEA	Industrial	E.coli O157 Listeria L.monocytogenes Salmonella Staph. Enterotoxin
TDM	Digoxin Theophylline		

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Publications in Overseas Medical Laboratory Science Journals

We exchange journals with various overseas medical laboratory science organisations. These journals are kept in the **Medical Library** of **Wellington School of Medicine**. Members wishing to obtain articles of interest should forward their requests through their own institution's medical library through the Interloan service.

Australian Journal of Medical Science. 1995; Volume: 16, No: 3.

Cole H. **The tissue factor pathway of coagulation**. p. 87-93.
McAdam AJ. **Transfusing blood and other products to counteract massive blood loss: An overview**. p. 94-101.
Love DN, Binas M. **The use of SDS-Polyacrylamide-gelatin gels to detect SDS stable proteinases of feline strains within the genus *Porphyromonas***. p. 102-5.
Iles-Mann J. **A comparative evaluation of the technical performance of four automated haematology analysers: Coulter STKS, Technicon H*2, Sysmex NE 1500 and Abbott CD 3000**. p. 106-14.
Bernstein D, Tyler JPP, Driscoll GL. **A comparison of WHO and Tygerberg strict criteria for assessing human spermatozoal morphology**. p.115-7.

British Journal of Biomedical Science. 1995. Volume: 52. No: 2.

Ross JCD, Weir M, Horn CK, Moyes A, Young H. **Gonococcal serovar patterns in Glasgow: 1990-1992**. p. 87-92.
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Crighton PB, Taylor A. **Biotyping of *Escherichia coli* in micowell lates**. p. 173-7.
Gualano MP, Grundy MA, Coakley WT, Parry SH, Stickler DJ. **Ultrasound-enhanced latex agglutination for the detection of bacterial antigens in urine**. p. 178-83.
Ramnarain ND, Waker NPJ, Markey AC. **Basal cell carcinoma: rapid techniques using cytokeratin markers to assist treatment by micrographic (Mohs') surgery**. p. 184-7.
Faulkner Pulsford JF, Sargent JM, Elgie AW, Williamson CJ, Taylor CG. **Comparison of P-glycoprotein expression with *in vitro* drug sensitivity in fresh blast cells from acute myeloid leukemia patients**. p. 188-94.
Cheney JE, Collins CH. **Formaldehyde disinfection in laboratories: limitations and hazards**. p. 195-201.
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McCaskie AW, Roberts M, Gregg PJ **Human tissue retrieval at post=mortem for musculoskeletal research**. p. 222-4.
Griffin RL, Rogers DJ, Spencer-Phillips PTN, Swain L. **Lectin from *Codium fragile* ssp. *tomentosoides* conjugated to colloidal gold: a new histochemical reagent**. p. 225-7.

Malaysian Journal of Medical Laboratory Sciences. 1994. Vol: 11. No: 2.

Tan TG, Kachenje EM, Tosaka M, Yamane N. **RapID STR system for the identification of streptoccai species**. p. 43-5.
Lee HL, Eng KL, **Adulticidal effect of ivermectin (MK-933) on adults of *Mansonia uniformis* and *Aedes togoi***. p. 46-8.
Rhodes A, Miller K. **A review of the UK National External Quality Assessment Scheme for Immunocytochemistry**. p. 49-54.
Wee KF, Ngeow YF. ***In vitro* antimicribial activity of pefloxacin**. p. 55-6.
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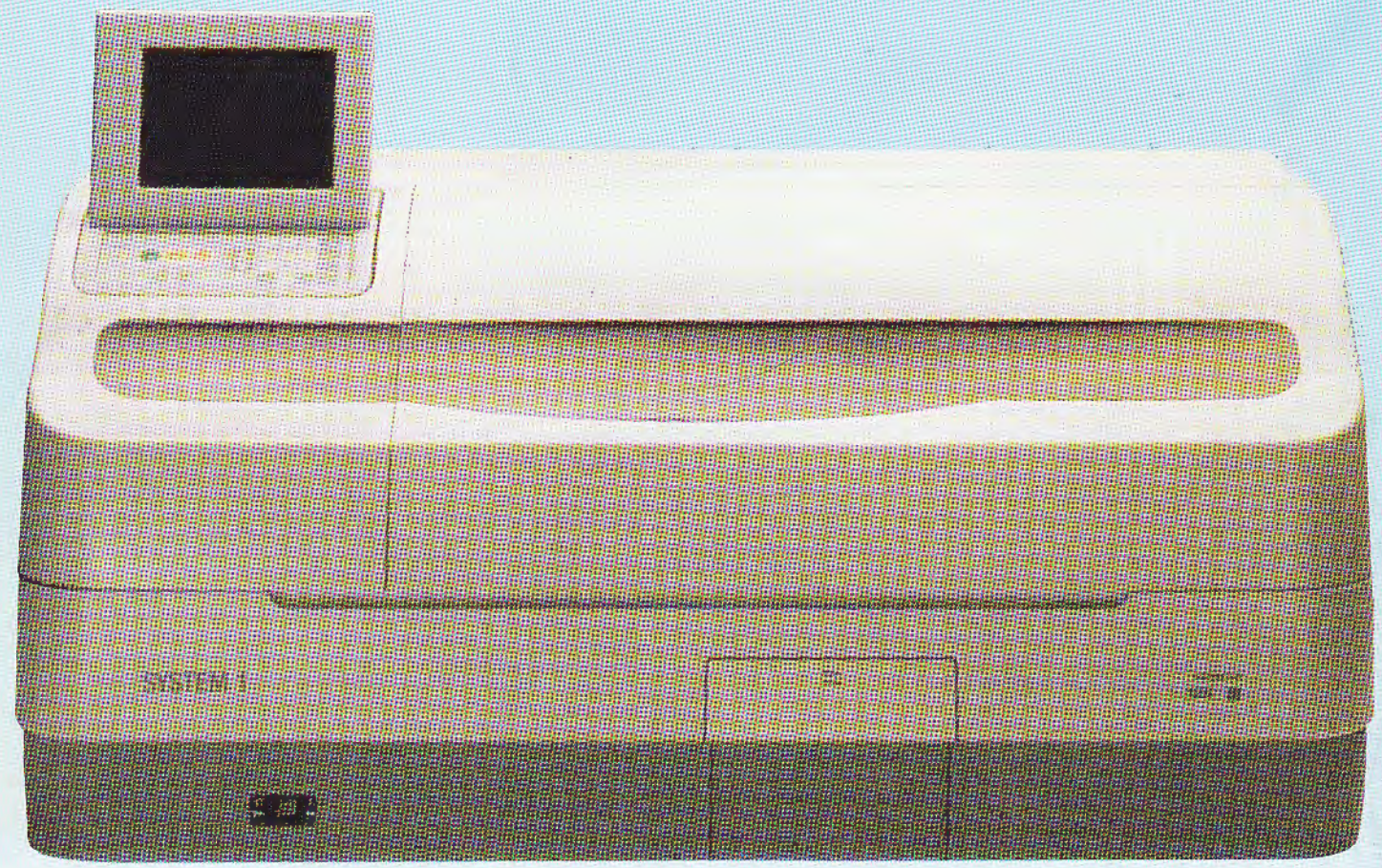

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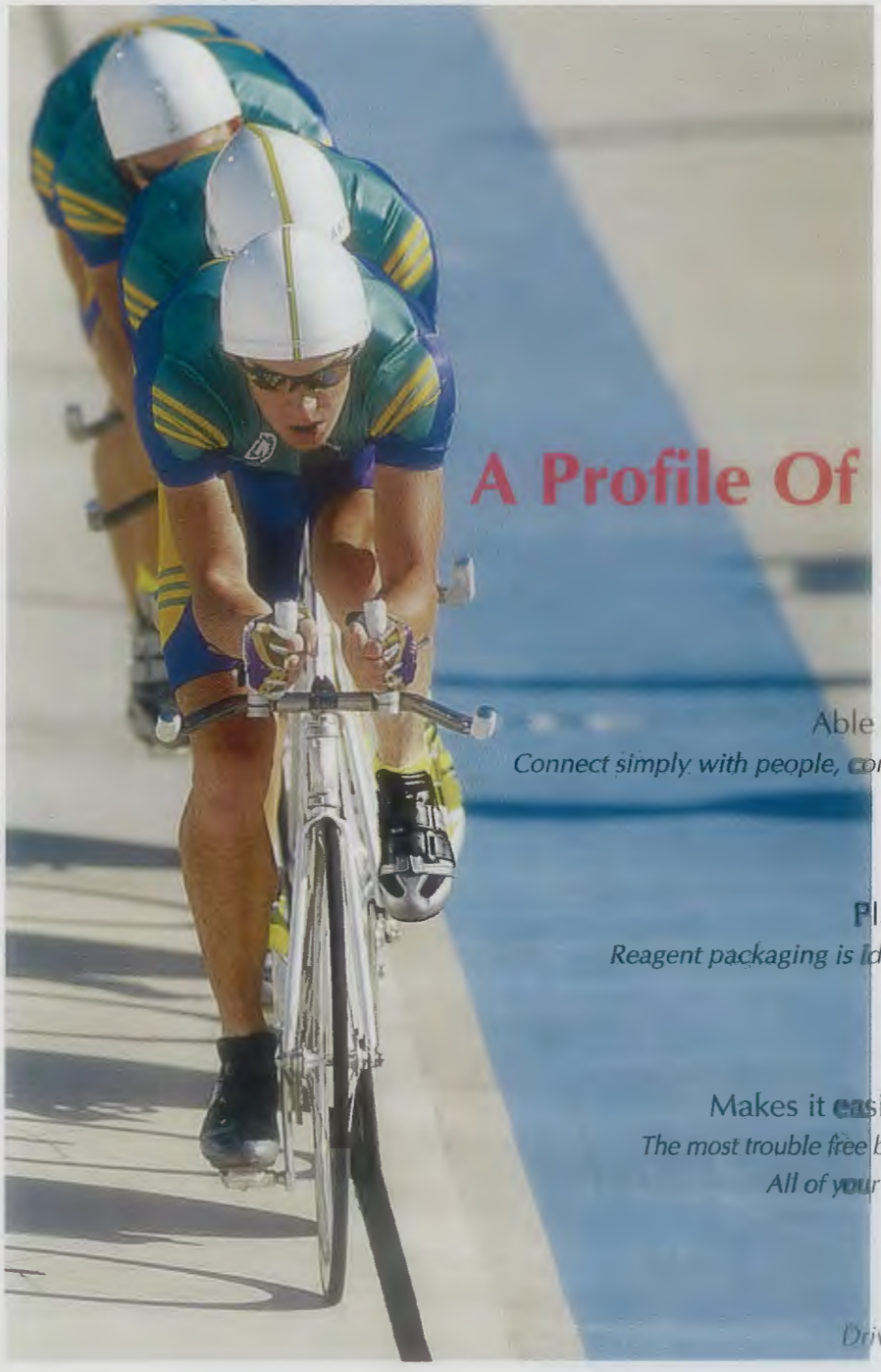

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