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New Zealand Journal of

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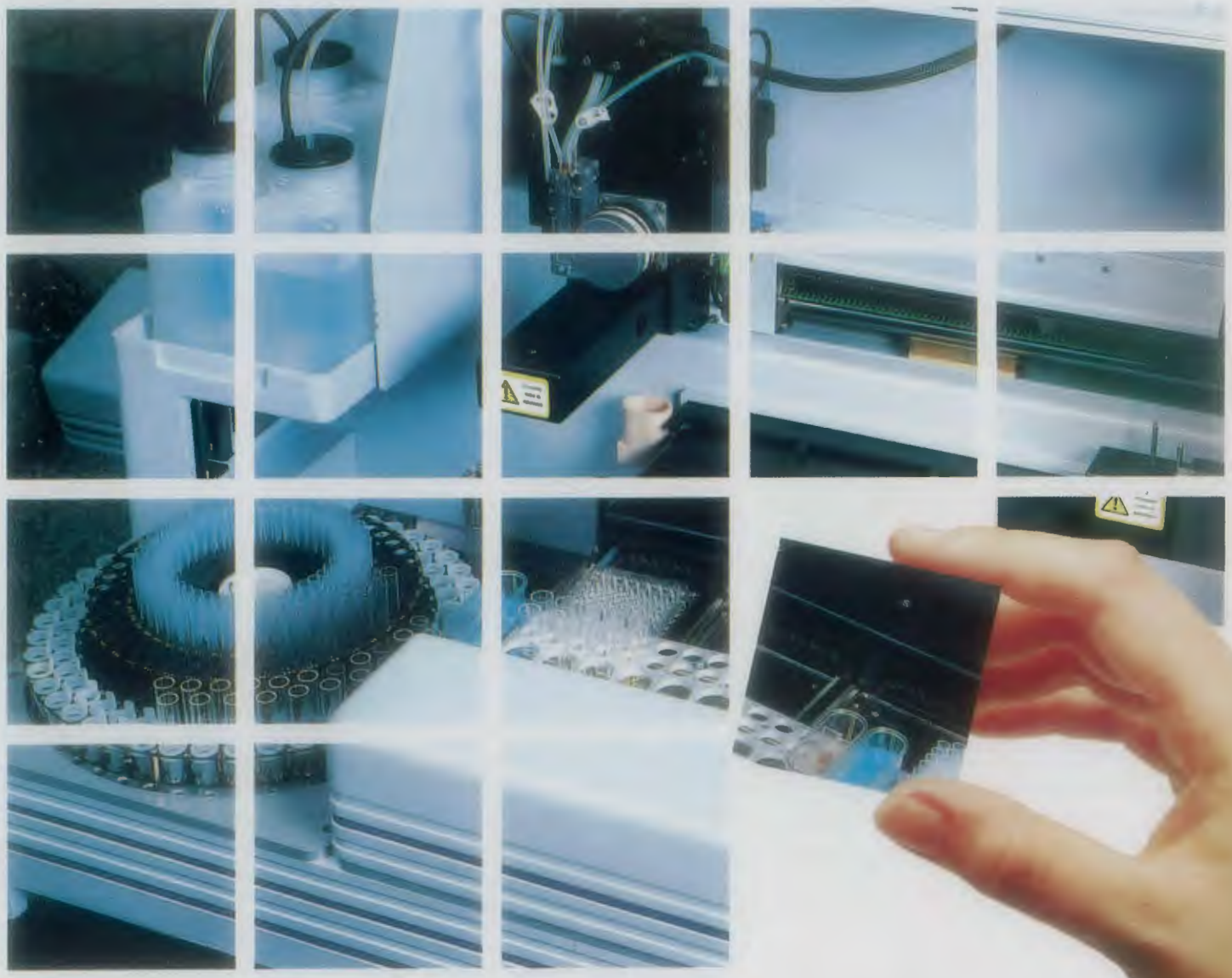

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# NEW ZEALAND JOURNAL OF MEDICAL LABORATORY SCIENCE




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Submitted papers (**in duplicate**) should be typewritten, in double spacing throughout on one side of A4 paper. Generally each component of the manuscript should begin on a new page in the following sequence.

* **Title of paper**, authors (including first name and qualifications), and institution(s) where the work was carried out. Address for the corresponding author should also be given.

* **Abstract and keywords**. Abstracts should be structured and contain concise and precise information regarding the study's **Objective(s)**, **Method(s)**, **Result(s)** and **Conclusion(s)**. List up to 4 keywords using *Index Medicus* medical subject headings.

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

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* **Illustrations** must be provided with a suitable legend typed on a separate sheet. Graphs should be 2-3 times larger than they would appear in the journal and contain a minimum of lettering. Legends for these should also be typed on a separate sheet. Photographs should be original sharp, glossy black & white prints. Authors wishing to submit colour photographs must contact the Editor in the first instance.

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

**Two** copies of the manuscript are to be addressed to the Editor NZ J Med Lab Science, c/- Department of Medicine, Wellington School of Medicine, PO Box 7343, Wellington South, together with a letter from the corresponding author stating that the work is original, is not under consideration for publication elsewhere, and in the case of multi-authorship that all authors have contributed directly to the planning, execution, analysis or to the writing of the paper.

# Editorial

## Author or co-author? Guidelines and recommendations.

***Rob Siebers,*** *MIBiol, FNZIMLS*
***Wellington School of Medicine***
***PO Box 7343***
***Wellington South***

A recent case of scientific fraud in Great Britain has highlighted the not too uncommon practice of including heads of departments or senior persons as co-authors in publications[1]. In this particular case a British gynaecologist's name was removed from the medical register as it was determined that two papers he had published in the British Journal of Obstetrics and Gynaecology described fictitious research findings. The head of his academic institution accepted gift co-authorship. Even though this journal sent the paper out for peer review, both medically and statistically, the scientific fraud was not detected at this stage. However, the author was on the editorial board of the journal and his academic head who accepted gift authorship was editor in chief. A more rigorous appraisal of the submitted publication may have detected the scientific fraud[1].

In the past other biomedical journals have been the victim of scientific fraud, notably the cases of Darsee[2] and Slutsky[3] whom both produced fictitious laboratory data. Upon investigation it was discovered that Slutsky produced one publication per every ten day period! Unfortunately many co-workers of Slutsky accepted co-authorship without checking the validity of the research reported.

Why do some authors commit scientific fraud and why do some researchers accept gift authorship? As Smith[4] noted in her British Medical Journal editorial *"authorship of a scientific paper leads to grants, jobs and reputations."*

Papers submitted to the New Zealand Journal of Medical Laboratory Science are refereed and published in the form known as the "Vancouver Style". The Vancouver Group, which is an international group of medical journal editors, has published and periodically updates their recommendations on uniform requirements for manuscripts submitted to biomedical journals[5]. Their policy on authorship states that all persons designated as authors should qualify for authorship. They define authorship as follows: *"authorship credit should be based only on substantial contributions to (a) conception or design, or analysis and interpretation of data; and to (b) drafting the article or revising it critically for important intellectual content; and on (c) final approval of the version to be published. Conditions (a), (b), and (c) must all be met. Participation solely in the acquisition of funding or the collection of data does not justify authorship. General supervision of the research group is not sufficient for authorship. Any part critical to its main conclusions must be the responsibility of at least one author"*[5].

This paragraph is part of a lengthy document. Huth, a former editor of the Annals of Internal Medicine (and a member of the Vancouver Group), eloquently proposed five principles of what constitutes authorship of submitted publications[6]. As editor of the New Zealand Journal of Medical Laboratory Science I have adopted Huth's guidelines that are listed below. Additionally as published in each issue of the Journal there is a requirement by the corresponding author to state in an accompanying letter with the submitted manuscript that (a) the work is original, (b) is not under consideration for publication elsewhere, (c) and in the case of multi-authorship that *all* authors have contributed *directly* to the planning, execution, analysis or the critical writing of the paper.

## Huth's Guidelines on Authorship.

*Principle 1. Each author should have participated sufficiently in the work represented by the article to take public responsibility for the content.*

*Principle 2. Participation must include three steps: (1) conception or design of the work presented by the article, or analysis and interpretation of the data, or both; (2) drafting the article or revising it for critical important content; and (3) final approval of the version to be published.*

*Principle 3. Participation solely in the collection of data (or other evidence) does not justify authorship.*

*Principle 4. Each part of the content of an article critical to its main conclusions and each step in the work that led to its publication (steps 1, 2, and 3 in Principle 2) must be attributable to at least one author.*

*Principle 5. Persons who have contributed intellectually to the article but whose contributions do not justify authorship may be named, and their contributions described – for example, "advice," "critical review of study proposal," "data collection," "participation in clinical trial." Such persons must have given their permission to be named. Technical help must be acknowledged in a separate paragraph.*

Contributors to the New Zealand Journal of Medical Laboratory Science who are perhaps unsure of whom to include as co-authors on their submitted manuscript would benefit from reading Huth's excellent article[6] that goes into more detail regarding the above mentioned five principles for authorship and contains further guidelines for specific kinds of articles.

It is not suggested that any article published or submitted to the New Zealand Journal of Medical Laboratory Science has not in principle followed these guidelines, or that scientific fraud has been perpetuated. New Zealand medical and scientific journals have to date been free from detected scientific fraud. However, as Robinson, editor of the New Zealand Medical Journal notes in his recent leading article *"prevention is better than cure."*[7].

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# Boehringer Mannheim Award Article

# Modification to the Boehringer Mannheim Tina Quant Microalbumin Assay on the Hitachi 747

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## Abstract

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 Hitachi 747 (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.

## Key Words

Microalbumin. Prozone, Antigen, Antibody, Hitachi 747 (H747), Heidelberger.

## Introduction

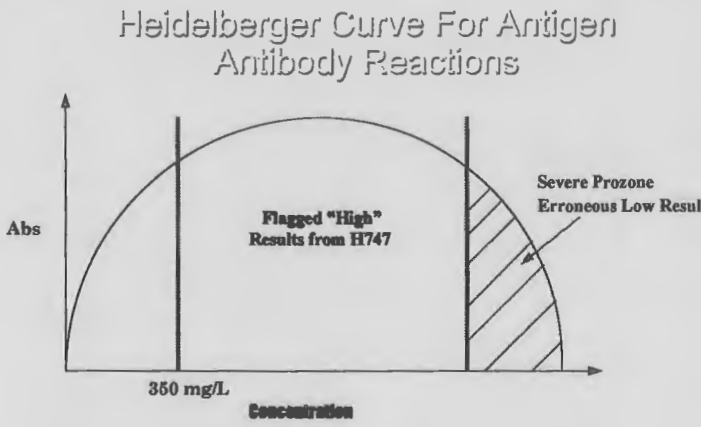
Slightly elevated urinary albumin concentrations have been shown to be a powerful early indicator of glomerular defects in early diabetic nephropathy[1].

This modification of the immunoturbidimetric assay for microalbumin estimation came about from the need to solve two problems.

- The assay is prone to prozone effects at high concentrations, and therefore has the possibility of giving false low/normal results. This problem can be overcome by employing a prozone check in the chemistry parameters. This, however would not solve our second problem, that of reagent volume in the kitset.
- The kitset is designed for use on smaller throughput analysers eg. H911, H704. The R2 reagent volume per bottle is only 8.7mL. On the H747 a 7 cycle prime is required to prime the reagent down to the dispense nozzles using 400µL of reagent per prime. The volume used is 2.8mL out of a total of 8.7mL, which proved to be unsatisfactory for routine running.

Both problems could be solved by modifying the standard R1 and R2 assay into a single reagent assay. This would increase the reagent volume to approximately 200mL while freeing up the R2 channel to be used as a standard prozone check ie. dilute antigen added after the microalbumin reaction has taken place.

Fig. 1




The Heidelberger curve shows what happens to the absorbance of a reaction as the antigen concentration increases.[2]

As the antigen concentration increases so does the absorbance, until it reaches a point where prozone takes effect and the absorbance decreases as the antigen concentration continues to increase.

The effect is that a high concentration is able to exhibit an apparent low absorbance, leading to an erroneous result.

## Methods and Materials

The instrumentation used is the Boehringer Mannheim Hitachi 747 analyser. The kitset is the Boehringer Mannheim Tina Quant Microalbumin kit Cat # 1203622.

Calibrators are incorporated in the kit and range in concentration from 0-350mg/L. Control material is the Boehringer Mannheim Albumin Precinorm (Cat # 1205846) and Precipath (Cat # 1205838) with target values of 19 mg/L and 101mg/L respectively. In order to stay within the confines of a 2 reagent system, the R1 and R2 reagents are added together in the same ratio as that of the final reaction mixture of the standard methodology, and placed in the R1 position.

This enables the R2 position to be used for the prozone check, employing dilute albumin once the microalbumin reaction has finished.

Modified R2 reagent – dilute human albumin. The antibodies are specific to the human albumin molecule, therefore bovine albumin is not satisfactory.

Correlations were performed using control material and patient samples. Linearity study was performed using a high albumin standard diluted down to give a range of concentrations from 5.0g/L to 25 mg/L.

Sensitivity was established by assaying the 0 calibrator over a period of 9 days. The requirement was to run the assay in random access mode in conjunction with serum samples.

In order to determine whether or not there was any significant carryover between serum assays and urine microalbumins I sampled the same urine 35 times in groups of 5, during an entire day. The first specimen in each group of 5 was immediately following a serum sample. If significant carryover was present I would expect the first sample in each block of 5 to be higher than the rest.

**Parameters:**

| | | | |
|---|---|---|---|
| TEST | [MAU] | | |
| ASSAY CODE | [1POINT][22][50] | | |
| WAVELENGTH (SUB) | [700] URINE | | (MAIN)[340] |
| SAMPLE VOL. | [20][20] | | |
| EXPECTED VALUE | [USER DEFINED] | | |
| PANIC VALUE | [0] - [350] | | |
| ABS LIMIT (INC/DEC) | [0] | [INCREASE] | |
| PROZONE LIMIT | [300] | [LOWER] | |
| R1 REAGENT VOL. | [300] | | R2 REAGENT VOL. [20] |
| R1 DUMMY INTERVAL | [0] | | R2 DUMMY INTERVAL [0] |
| DILUTION VOLUME | [ ] | | |
| CALIBRATION METHOD | | [NONLINEAR1] | |
| POINTS | | [5] | |
| SD LIMIT | | [250] | |
| DUPLICATE LIMIT | | [400] | |
| SENSITIVITY LIMIT | [0] | | |
| TEST | [MAUBLK] | | |
| ASSAY CODE | [1POINT][22][0] | | |
| WAVELENGTH (SUB) | {700] URINE | (MAIN) [340] | |
| SAMPLE VOL. | [20][20] | | |
| EXPECTED VALUE | [USER DEFINED] | | |
| PANIC VALUE | [-99999}-[99999] | | |
| ABS LIMIT (INC/DEC) | [32000} [INCREASE] | | |
| PROZONE LIMIT | [32000] [UPPER] | | |
| R1 REAGENT VOL. | [300] | | R2 REAGENT VOL. [0] |
| R1 DUMMY INTERVAL | [0] | | R2 DUMMY INTERVAL [0] |
| DILUTION VOLUME | [ ] | | |
| CALIBRATION METHOD | | [LINEAR] | |
| POINTS | [0] | | |
| SD LIMIT | [0.1] | | |
| DUPLICATE LIMIT | [100] | | |
| SENSITIVITY LIMIT | [0] | | |

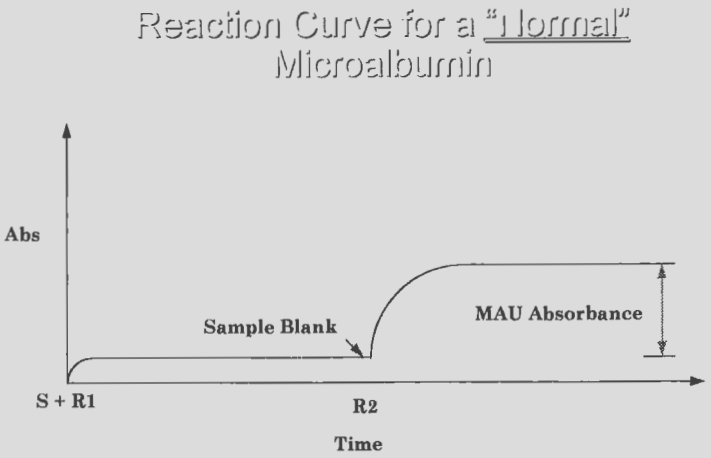
S1 calibrator for the Microalbumin blank is saline with a value of 0 mg/L.
S2 calibrator for the Microalbumin blank is 0.15g/L Potassium dichromate, with a value of 23 mg/L.

**NOTE:** These parameters are not endorsed by Boehringer Mannheim. Compensated Test is MAU = MAU - MAUBLK

## Results

The reaction curve for the standard Boehringer Mannheim assay is shown below.

Fig.2

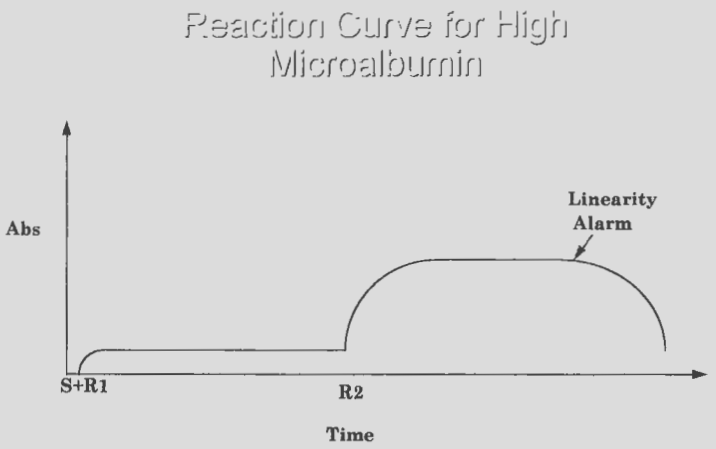



The sample plus R1 reagent (Tris Buffer) are added and stirred at Time 0 and incubated for 5 minutes. During this time the sample blank reading is taken and used later in the calculation.

R2 reagent (Antibody) is added and stirred at Time 5 minutes, the reaction curve flattens out and the final absorbance is measured at Time 10 minutes. The sample blank absorbance is subtracted from the final absorbance and the result calculated and reported.

A high microalbumin will often give the reaction curve as shown (Fig 3), and the result will be flagged as invalid because the linearity check on the analyser has detected the drop off in absorbance.

Fig 3.



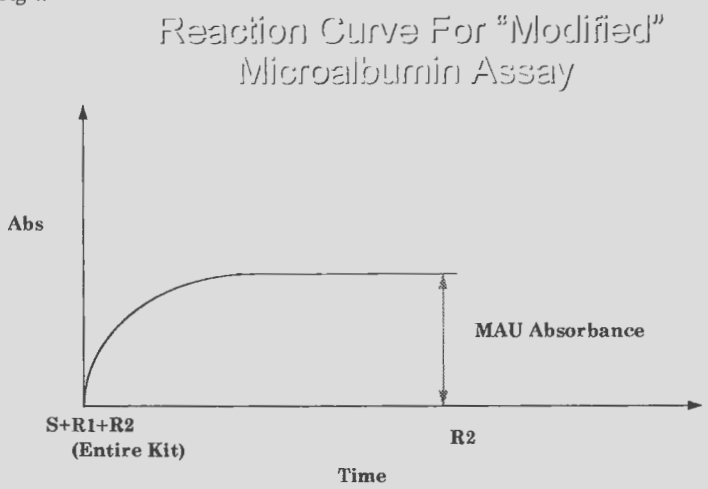
However, we found in very high concentrations, the curve may appear normal and no linearity flag will result. This could lead to false low/normal result being reported instead of the correct high result (see Heidelberger Curve Fig 1.)

By using the modified reagent preparation (R1 and R2 from the kitset at a ratio of 5:1) the reaction curve now looks like Fig 4.

At Time 0 the sample + R1 (now the kitset R1 + R2), is added to the cuvette and stirred. Incubation lasts for 5 minutes where the change in absorbance due to the Antigen/Antibody complex is measured.

At this stage any prozone effects may still be taking place.

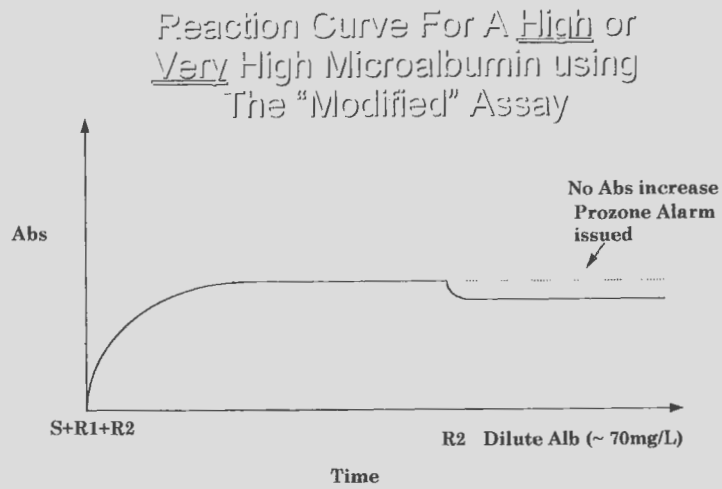
Fig 4.




The R2 reagent (dilute albumin) is then added to the reaction mixture at T=5 minutes. If the antibody has been depleted by the microalbumin reaction, there will be no antibody left to react with the R2 albumin and no increase in absorbance will be seen. If the reaction has not achieved antigen excess the absorbance increase in the second half of the reaction will be greater than a pre-determined level. Through trial and error studies a good concentration of R2 albumin is 70 mg/L, which will give an absorbance increase approximately 350 abs units at a microalbumin level of 360 mg/L. Therefore by setting the prozone limit to 300 abs units in the chemistry parameters a good prozone check is in place (Fig 5).

A high or very microalbumin will exhibit a curve as shown (Fig 6), and no result will be reported, as the prozone alarm will be triggered because the increase in absorbance from T=5 (immediately prior to the R2 addition) to T=10 (end of the reaction) is less than 300 abs units.

Fig 6.




In the case of a high or very high result, all the antibody has been used up by the microalbumin assay. At Time 5 min when the diluted albumin is added, there is no antibody left to react with it, therefore there is no increase in absorbance. The H747 issues a prozone flag and the result is not released to the operator.

In reality there is a decrease in absorbance as the 300µL of R2 reagent added acts as a dilutent and the overall absorbance decreases.

The assay worked well in this form with aqueous standards as patients, however, higher results were experienced with patient urines, when compared to the standard methodology. This appeared to be the effect of having no blanking system as part of the assay.

A blank channel must be set up using either Tris buffer or saline as the R1 reagent, with no R2. The blanked reaction curve is shown (Fig 7).

Fig 5.

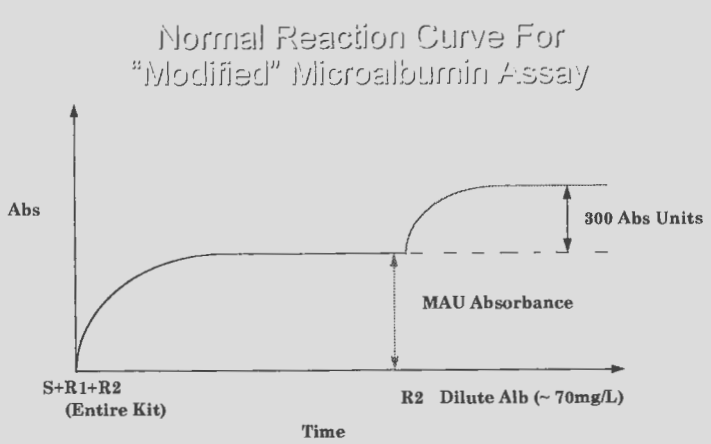
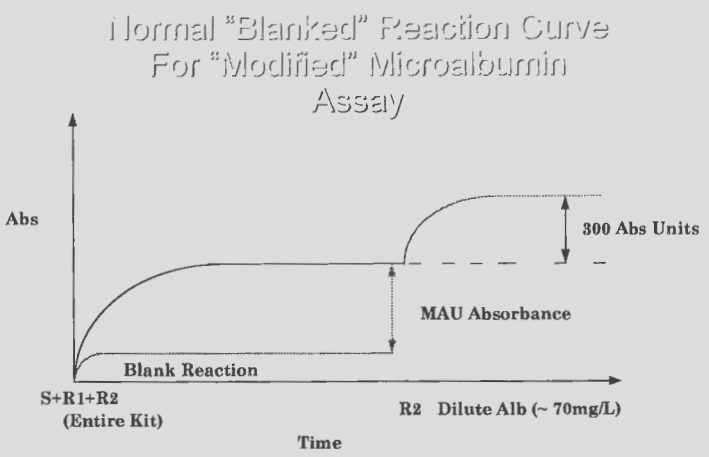
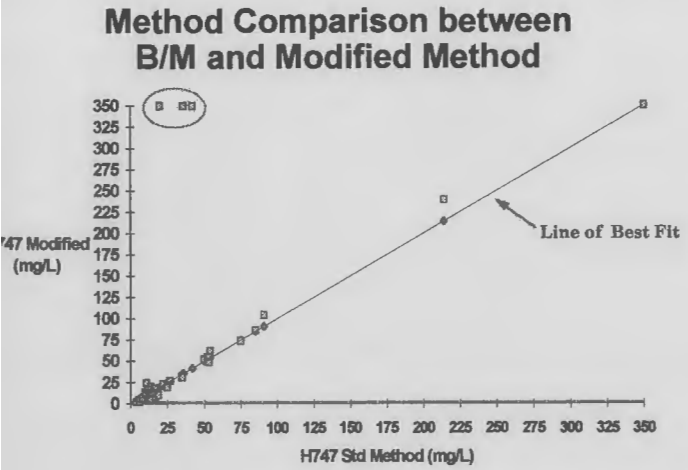



Fig 7.



**Correlation:**
Slope (0.996) and Intecept (1.4) figures are shown in figure 8. Results are close to the line of best fit. Three outliers at the top are samples that the standard method gave results as normal, whereas the modified method picked them up as greater than 350 mg/L from the prozone check. UCTP on each of these were well over 1.0g/L. These have been excluded for the correlation study.




**Accuracy and Precision:**
Using the Boehringer Mannheim Urine Albumin control material with target values of 19mg/L and 101mg/L respectively.

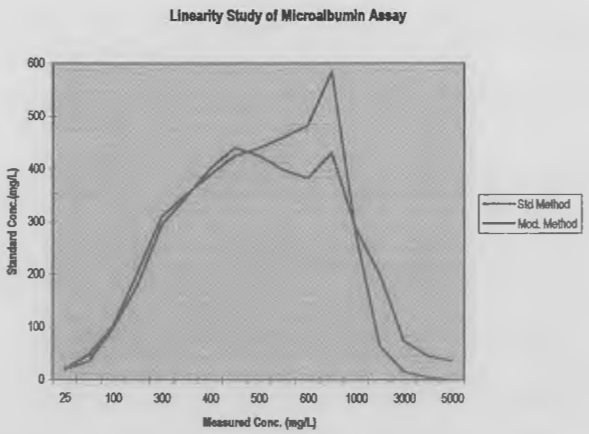
| | Mean (n = 30) | 2 SD Range |
|---|---|---|
| Precinorm Albumin | 17 | ±4 |
| Precipath Albumin | 100 | ±8 |

**Linearity:**
Linearity achieved from a serial dilution of an aqueous albumin is 385 mg/L.

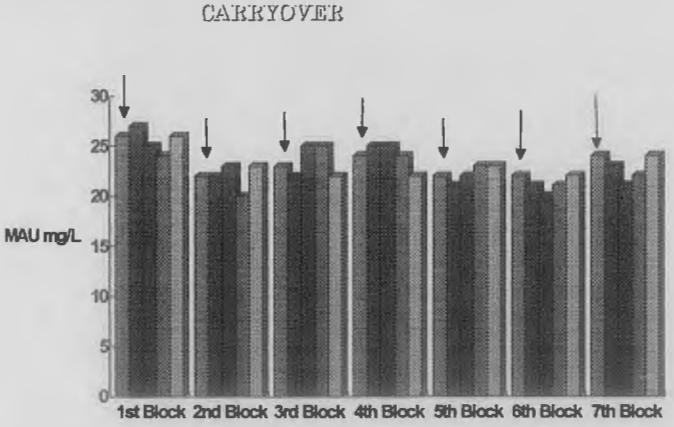
| Concentration (mg/L) | Standard Methodology (mg/L) | Modified Methodology (mg/L) |
|---|---|---|
| 5000 | 37 | 0 |
| 4000 | 46 | 5 |
| 3000 | 74 | 16 |
| 2000 | 201 | 65 |
| 1000 | 287 | 277 |
| 900 | 431 | 585 |
| 600 | 383 | 482 |
| 550 | 399 | 460 |
| 500 | 426 | 440 |
| 450 | 441 | 425 |
| 400 | 401 | 390 |
| 350 | 347 | 351 |
| 300 | 295 | 310 |
| 200 | 180 | 204 |
| 100 | 98 | 101 |
| 50 | 35 | 47 |
| 25 | 20 | 21 |

The peak in both curves are most likely due to poor dilutions. The shape of both curves follows the Heidelberger example.

**Sensitivity:**
Zero calibrator results over 9 days are as follows:
0 0 1 5 3 0 2 2 3 mean = 1.7 mg/L




**Carryover:**
The first sample in each block follows a serum specimen and shows no tendancy to be higher than any other sample. A similar pattern is shown with samples with a value of 14 mg/L.




## Conclusion
The change in methodology has enabled us to overcome our initial problem of the potential of false normal/low results.

An added advantage is that of convenience. The automated prozone check saves technologists time and ensures a smooth workflow, as dipstick methods do not need to be employed to check for prozone errors.

Reduction in kit usage from 6 kits to 2 kits per month, by increasing the reagent volumes and therefore, reducing the priming and switching loss.

This modification does not solve the prozone problem, what it does do is provide the operator with a fully automated check procedure to ensure that no false low microalbumin results to prozone are reported.

## References

1. Hoffman W, Guder, WG, Hubbach A. Multicentre evaluation of a sensitive automated urinary albumin method. Boehringer Mannheim.
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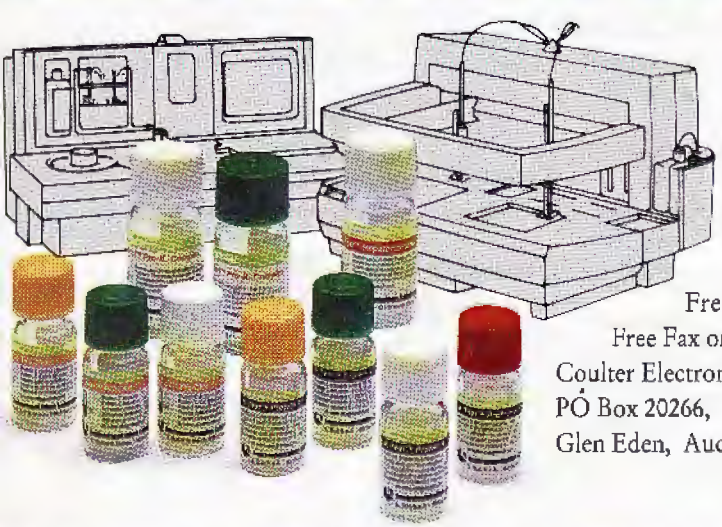
# Powerful Synergy

Coagulation



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# Letters to the Editor

### Options for funding private laboratory services

Dear Sir

The paper by Goodman [NZJMLS 1995; 49(1) p22] seems to offer the opportunity for impartial and scientific analysis of a problem which is current and global in nature, and has not so far been subject to critical review. The content and conclusions of the paper, however, do not in my view contribute significantly to the debate on health resource management in this or any other country. It comprises a restatement of views expressed in one of several RHA policy documents, and a limited range of publications, none of which are written by authors with experience in the delivery of primary healthcare services.

In the absence of hard data on utilisation rates, and no information on cost-benefits of the use of diagnostic procedures in primary services it is impossible to derive any meaningful index applicable to resource allocation or distribution. This deficit does not inhibit the publication of policy and strategic direction documents by health funders and purchasers and their consultancies. Goodman quotes opinions based on the complex and costly multi-funder systems of HMOs in urban North America as if they have relevance in this country. Anyone with a passing acquaintance of the North American health funding system will be aware that it is crippled by compliance and transaction management costs, suffers from internationally recognised gross inequities in access and delivery, and is of less than average quality in epidemiologic effectiveness.

This country is in a unique position to evaluate the performance and cost-benefit of diagnostic services in the primary-care setting. The Laboratory Diagnostic Services Benefit must be one of the few state-funded health services which is fully accountable, auditable, and assessable in monetary terms. All claims are presented electronically and processed centrally in a unique bulk-invoicing system with the potential for analysis and reporting. Despite the rich potential for the acquisition of cost-benefit and management information from this database, no effort has been made to invest in such research. This is surprising in view of the fact, not recognised by Goodman or by strategic decision-makers in this country, that the New Zealand Diagnostic Services Benefit delivers the cheapest and most accessible Medical Diagnostic Laboratory Service in the OECD countries by a significant margin, and does so using internationally accepted technologies, to internationally accredited performance standards. It is surely of global interest to health funders and purchasers to determine why tests carried out using identical instruments and reagent kits should cost consumers in North America 6-8 times as much as in New Zealand.

Goodman and others wish to attribute growth in demand for diagnostic testing in the primary sector to the laboratories supplying such services. Some of the strategies to contain such demand include ludicrous levels of risk transfer to the laboratories, or impossible demands for clinical audit and justification of tests by the laboratories (this is the latest move by the American Healthcare Financing Agency). Such strategies ignore or deny that easy and cheap access by primary caregivers to diagnostic services is the most economic way to keep patients away from expensive secondary care services. In this context it is extraordinary that Goodman should claim that New Zealand hospital laboratories are funded in any way similarly to those in the USA, or are "experiencing new clinical and financial demands in a DRG era". In this country the capital/debt and other fixed costs of CHE operations are impossible to define, and the true costs of their services are not known; until they are, or until CHE funding is transparent or acquired in the open market there can be no meaningful cost-benefit assessment of CHE services.

There are, of course, deficiencies and inequities in distribution of laboratory diagnostic services in this country. Regional variations in utilisation rates of the Diagnostic Services Benefit are so great that investigation and intervention would be appropriate. Adequate information is available through claim and invoice data to pursue this issue, but nobody seems inclined to do so. To try to apply dogma developed in one of the least efficient health-providing nations in the world to our problems is inept and futile. We are surely competent to develop our own system of health service delivery while retaining the most efficient and productive aspects of it.

I am frankly astonished that your Editorial Board saw fit to publish this paper as if it were a scientific article. The concluding paragraph of the paper reveals a simplistic repetition of an ideologically-driven RHA policy document and the authors' own prejudices.

*Charles Cameron*
*Nelson Diagnostic Laboratory*
*1 Harley Street*
*Nelson*

Dear Sir

Over the years this Journal, I believe, rightly has provided its membership with well thought, disciplined, scientifically based and logically concluded articles.

What a great pity then that there is now an exception to that principle. The "paper" entitled "Options for Funding Private Laboratory Services etc" by Mr G T Goodman, March 1995, Page 22, has reversed that process. This so-called critical examination of the problem is riddled with inconsistencies and quantum jumps of logic, based in the main on an American publication, and uses these statistics as though there is always a clear and direct relativity to New Zealand.

Worse still, for a paper appearing in a respected scientific journal, the conclusions appear to have been not only emotive and dare one suggest possibly self-interested, but written prior to the main arguments.

Sadly for the author the Midland RHA, soon after his publication, has progressed forward in its thinking and has changed the method in which it is now investigating the funding of community laboratory services.

*I H Symonds*
*General Manager*
*Medical Laboratory*
*8a Courteney Place*
*Wellington*

### The author replies

Dear Sir

As Cameron states in his letter the problems addressed in my paper[1] are current and have not been subject to critical review.

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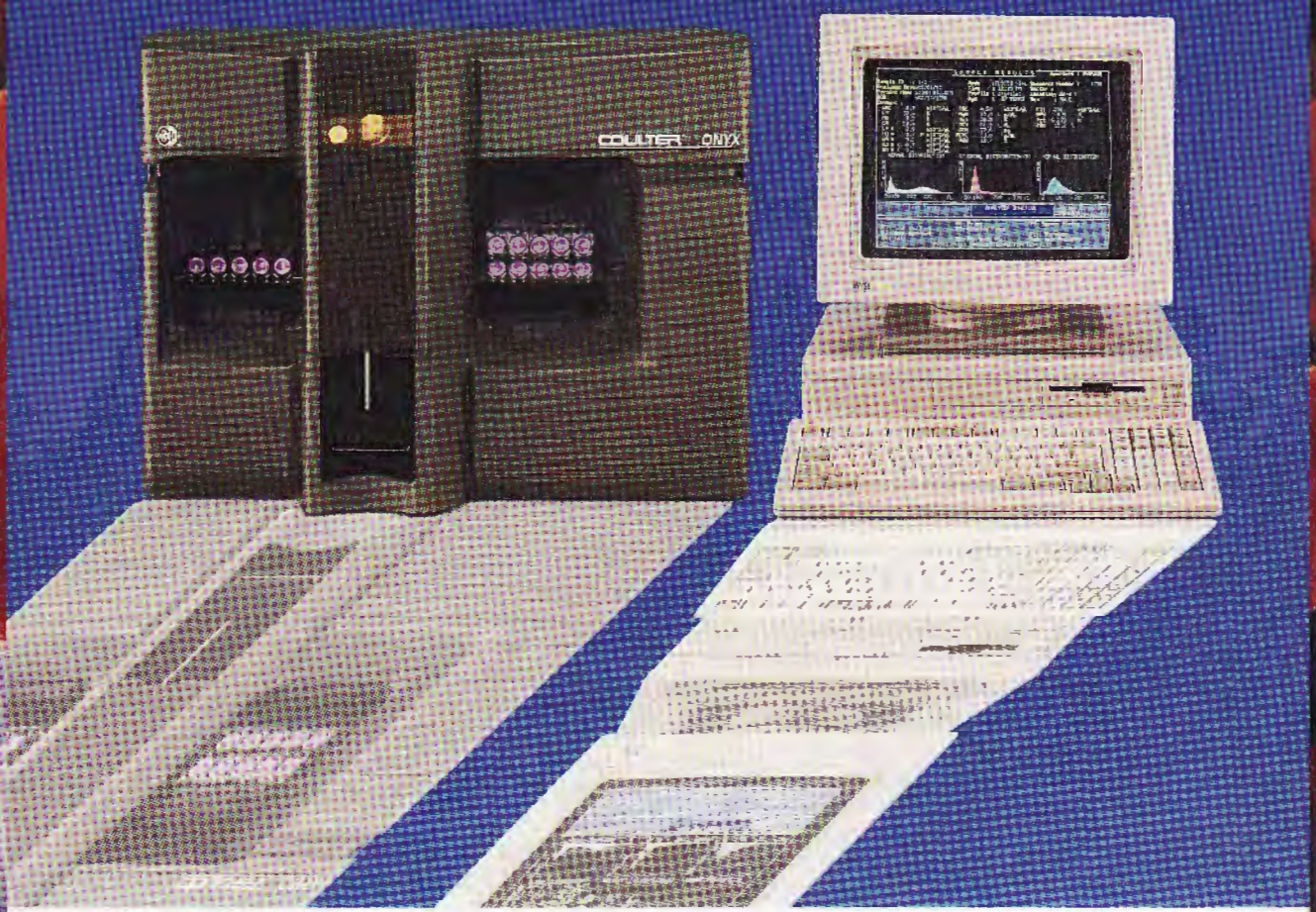


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The fact that only a limited range of publications is used is due to the paucity of literature available on this subject especially in a New Zealand (NZ) context. I am not aware of any other papers written by primary healthcare practitioners which relate to the funding of laboratory services.

While some reference has been made to the American situation in my paper the concerns raised have also been recognised by the New Zealand authors quoted in my paper. While the American situation may be as posited by Cameron (unreferenced evidence) the economic concerns raised relate to the mechanisms of payment which are the same regardless of national boundaries.

While there may be a database available for the acquisition of "cost benefit and management information" this database is not available for public or academic scrutiny[2]. However, as this data is collected by Health Benefits Payment Ltd, which is owned by the four RHAs, one can surmise that moves afoot to change the funding mechanisms arise from analysis of this information gathered by the RHAs.

I agree with Cameron that it would be interesting to know why test costs are so disparate between North America and NZ (but no reference has been given to allow this information to be accessed) as analysis of this information could ensure that NZ does not progress down that expensive path.

Cameron states in his letter that "easy and cheap access by primary caregivers to diagnostic services is the most economic way to keep patients away from expensive secondary care services " but offers no references or data to back up his claim. While this is true in some cases it may not be true in all situations.

I disagree that capital/debt and other fixed costs of CHE operations are impossible to define. In the last few years CHEs have had to work on gathering this information and in my own organisation a lot of effort has gone into identifying and allocating costs.

Community laboratories are demand driven in the same way as hospital laboratories – the growth may not be attributable to the laboratories inducing demand but to the lack of incentives inherent in a fee for service system to actively curb the demand. Cameron concedes that there are deficiencies and inequities in distribution of laboratory diagnostic services in NZ and that in some cases investigation and intervention would be appropriate. Yet a proposal that recognises the problem and tries to address it is labelled ideologically driven.

In writing this paper all the NZ based information available to me was utilised and the conclusions are not based on North American dogma. I stand by the paper as published.

Symonds' claim that my paper [1] is based mainly on an American publication is misleading. All New Zealand (NZ) sources that were available to me were used. Eight of the twelve references are from New Zealand sources. While statistics are not always applicable between countries, general economic principles are universal, and it is accepted academic practice to use overseas sources when NZ sources are not available. I can assure Symonds that my conclusion was written in view of the findings in the paper and not before them.

Secondly, while Midland Health has moved away from its original discussion document, the Central Regional Health Authority in their discussion document[3] signal a strategy that will make referrers responsible and accountable using budget based contracts for their utilisation of laboratory services. This is a move away from the existing fee for service arrangement and is designed to manage demand (a demand side solution) and reduce the risk to the Regional Health Authority of uncontrolled growth in laboratory testing expenditure.

1. Goodman GT. Options for funding private laboratory services: An attempt to curb cost escalation in the provision of private laboratory services. *NZJ Med Lab Science* 1995; 49 (1):22-6.
2. Hill S. Personal communication. Health Benefits Christchurch, 1995.
3. Central Regional Health Authority. Purchasing of laboratory services in the central RHA region: Discussion paper. Central Regional Health Authority, Wellington, New Zealand 1995.

*GT Goodman*
*Charge Technologist*
*Haematology Laboratory*
*Taranaki Base Hospital*
*Private Bag 2012*
*New Plymouth*

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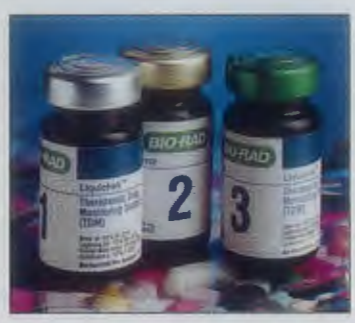

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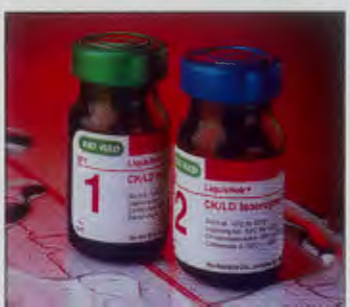

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# Transfusion Science

## 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**

Welcome to Suzanne Williams from Dunedin, who has joined our little bunch on the Transfusion Science Special Interest Group. Suzanne is Otago's QA Officer. We are sure she will have a great deal to offer and we are pleased she is joining the team. If anyone is interested in joining the TSSIG, just let one of the members know – we are always on the lookout for new heads, brains and hands.

Even if you don't want to be involved personally in TSSIG, if you have any ideas or suggestions, please let one of us know. In particular we will be planning a workshop to be held in conjunction with the 1996 annual scientific meeting. If you have any ideas or suggestions for topics you would like to have covered in a workshop, just drop us a line.

### Transfusion Medicine Audio Updates

Have you been getting yours? The NZIMLS have kindly agreed to fund a one-years subscription for all blood banks in New Zealand. Sue Baird has been arranging the copying and mailing, so if you have any problems, contact Sue. We hope you are finding these educational updates useful.

### Have You Got A Long Memory?

The TSSIG are putting together a display for the NZIMLS 50th anniversary. Do you remember the days before anti-D immunoglobulin? The days of blood in bottles? Homemade ABO antisera? Making Coombs' reagent from goats? March plasma? If you do, or have any stories, photos, old equipment, texts etc that you are willing to share, please contact Roger Austin in New Plymouth (phone 06 753 6139, fax 753 2956).

### Plane Crash Response

By Sheryl Khull, Mid Central Health Blood Service, Palmerston North

On Friday June 9 1995, at approximately 0915 hr, a Dash-8 commercial aircraft carrying 21 passengers crashed 15km east of Palmerston North airport. Three people were killed and the remaining 18 passengers were conveyed by helicopter to Palmerston North Hospital.

The Transfusion Medicine Department received about ninety minutes notice of the event and the expected arrival of an uncertain number of injured passengers. As it turned out, we received blood samples for pretransfusion testing from 16 passengers over a period of 2 hours. A total of 71 units of red cells were crossmatched for 8 of these patients, although only 36 units were transfused in the following 24 hours. There were minimal requirements for fresh frozen plasma or platelet components. Approximately 30 units of 4% albumin were transfused to these patients during the initial reaction period.

If we had to have a disaster, this was a good disaster to have. It was a normal working day with a normal complement of staff in the Transfusion Medicine Department; the time involved in locating the wreck and transporting patients to hospital gave us plenty of lead time to prepare; our stocks of red cells and other blood products were at normal levels; only a small number of passengers had injuries that required transfusion and in no case was blood required more quickly than we could provide it fully crossmatched. Perhaps the most startling aspect from a blood banker's point of view was that the first three blood samples we received were groups O Rh Negative, B Rh Negative and O Rh Negative respectively. Fortunately only one other passenger was Rh Negative, restoring our faith in statistics.

What lessons came out of the experience for ourselves or other transfusion services?

- Disaster response instructions are best in the form of a brief checklist, kept somewhere handy.
- Normal work will go on. Allow for this without disrupting the preparations you have in hand for the disaster victims.
- We found setting up racks of prelabelled tubes for rapid group, Group and Screen and 6-unit crossmatches streamlined the processing of providing blood for multiple recipients.
- When you get a spare moment, filling up your supplies of consumables (text tubes, antibody screening cells, etc) helps the work go smoothly.
- A separate person away from the technical duties handling administrative tasks was useful (contacting other transfusion services, etc).
- It was helpful when other transfusion services faxed back their spare stocks and possible delivery information rather than

tying up the telephone.
- Organise food for the workers; they may not have time to go get any. (We were extremely fortunate that a lunch meeting scheduled in our building was cancelled, so we appropriated the lunches!)
- Get out a press release asking for donors to come next week, not today.
- Under other circumstances, we might not have had operable telephone lines. We have since begun to make a collection of cellphone numbers of transfusion services for use in emergencies. If you want to be included in the list and receive other numbers, just fax the number to Sheryl at 06 351 6656.

## Technical Communication

By Bronwyn Kendrick, MidCentral Health Blood Service, Palmerston North and Rochelle Roxburgh, Blood Bank, Tauranga Hospital

## The use of Erythropoietin in Autologous Donation

### Introduction

Autologous transfusion describes the transfusion of any blood component that was donated by the intended recipient. This provides the safest possible transfusion because the risks of transfusion transmitted infections and alloimmunisations are eliminated.

There are four categories:

1. Preop – before planned surgery.
2. Intraoperative haemodilution – blood is collected at the start of surgery and stored for reinfusion post bypass.
3. Intraoperative salvage for use during and after surgery.
4. Post operative salvage where blood is collected post operatively by the salvage of shed mediastinal blood.

Preoperative autologous donations are underused. They require 2-5 weeks to complete.

Not all blood donors are able to store enough blood by the time of their surgery.

AABB recommends a minimum haematocrit (HTC) of 0.34 at 7 day intervals. This can delay a surgical procedure up to 5 weeks.

The amount of blood is limited by the normal 4°C storage period and the erythropoietic regeneration capability of the donor.

The effectiveness of an autologous donation strategy depends largely on the degree to which bone marrow production of red cells is increased to replace those removed by phlebotomy.

### Accelerated endogenous erythropoiesis

This is not a new idea, but until Recombinant Human Erythropoietin became available in large quantities, it was not possible.

Erythopoietin is the primary humoral regulator of erythropoiesis. It has a plasma half life of 6-9 hours and distributes in the plasma volume. Normally 90% of the hormone is produced in the kidney and 10% in the liver and elsewhere. There are no preferred stores.The stimulus to the production of EPO is the oxygen tension in the kidney tissues.

When anaemia occurs or haemoglobin for some reason is unable to give up oxygen normally or damage occurs to the renal circulation, EPO production increases and stimulates erythropoiesis by increasing the number of progenitor cells committed to erythropoiesis. Late BFU-E and CFU-E which have erythropoietin receptors are stimulated to proliferate and differentiate.

### Clinical Indications for EPO therapy

Recombinant EPO may be given IV or more effectively subcutaneously. The dosage is usually 50-300 units/kg three times weekly.

Under trial at present are pre-autologous blood transfusions.

In 1988 a study was done using baboons. They were divided into two groups.

The first group had a unit of blood removed whenever the HCT was >0.3 and received 750 units/kg of Recombinant Human Erythropoietin (rHuEPO) and iron dextran.

The second group received a placebo. By the end of the 5 week period, group 1 had donated 3.5 units more – an increase of 35%.

In 1983 a study on 50 women took place. They were divided into 3 groups.

1. given a placebo and iron (oral)
2. given 300 mg/kg rHuEPO and iron (oral)
3. given 600 mg/kg rHuEPO and iron (iron saccharate) = IV

The study took place over a 3 week period and there were 6 visits for possible donation.

Every 3-4 days all groups received their appropriate therapy.

When the HCT reached >0.34, 350 mls of blood was taken. Group 3 donated 4.5 units versus 2.8 units.

rHuEPO was effective in stimulating erythropoiesis by the occurrence of reticulocytes about 7 days after the first injection. High reticulocyte counts were maintained with EPO administration, but patients receiving only oral iron did not maintain the retic response. This shows that rHuEPO treatment rapidly exhausts iron stores which cannot be replaced quickly with oral iron.

The decrease in iron values began after the second injection of rHuEPO.

Intravenous iron therapy yields the highest sustained reticulocyte response, and the greatest volume of preoperatively donated autologous blood with the least exposure to allogeneic blood. NO adverse reactions or side effects of rHuEPO administration were encountered and hypertension normally seen in renal failure patients were given rHuEPO therapy, was not seen.

### Use of EPO to enhance Autologous Donation in Patients with Multiple Red Cell Antibodies and anaemia of Chronic Disorders

Up until 1991, rHuEPO was used in elective orthopaedic surgery preoperative autologous donors. There had been no reports of the above patients having rHuEPO therapy.

A patient with alcohol induced cirrhosis, defective hip prosthesis and multiple red cell alloantibodies was treated with rHuEPO prior to a hip revision. His blood was unable to be crossmatched.

Following initiation of the therapy, he had a prompt and persistent increase in his reticulocyte count from 1.6% to 8.6%. His HCT was maintained at 0.32 and 0.38 despite having 7 units withdrawn over the 45 day treatment period.

This facilitated the harvest of autologous blood for elective surgery in a patient of chronic anaemia.

### Use of rHuEPO in the Correction of Phlebotomy Induced Anaemia

500 u/kg of subcutaneous rHuEPO administered twice a week 3 weeks prior to surgery was studied in 40 patients each who had donated 2 units of blood for their own use. This was to show the efficiency of the recovery of the preop HB concentrations. 20 were given rHuEPO and 20 were not treated.

In the treated group, the initial Hb was completely recovered before surgery while a drop of 138 to 122 was seen in the control group.

Serum ferritin concentration fell to 42mg/l in the EPO treated group and to 54 mg/l in the control group.

This study demonstrated that subcutaneous rHuEPO is safe and effective for the complete correction of the loss of 2 units of blood within a 3 week period.

**Conclusion**

Homologous blood transfusions are particularly hazardous in patients undergoing surgical procedures.

Great interest has arisen for the use of autologous blood. With the availability of large amounts of rHuEPO, acceleration or erythropoiesis as an additional source of autologous blood become possible.

rHuEPO has been proven to be safe and compensates for anaemia caused by the loss of 2 units of blood within a 3 week period. Therefore rHuEPO enhances erythropoietin in patients preoperatively donating blood for autologous use during elective surgery, significantly increases the amount of autologous blood that can be collected and decreases the number of allogenic blood units transfused to these patients.

**The Role of Erythropoietin In the Newborn**

Since the isolation of the human EPO gene in 1985 there has been interest in the possible use of rHuEPO as an alternative treatment to blood transfusion in premature infants.

As yet there is no conclusive evidence to support the routine use, despite several studies.

There are two main groups of preterm infants:

1. Those requiring early transfusion during the first few weeks post birth.
2. Those who develop anaemia around 6 weeks post birth.

Group 1 receive a mean of 4 transfusions in the first 28 days – the main cause being the need for multiple blood tests for intensive care management.

Group 2 often require transfusion as all infants undergo a falling Hb during the first months of life, but in prem babies are exaggerated.

**Risks of Blood Transfusions**

1. Viral – Hepatitis B, Hepatitis C, HIV. CMV – Small, but significant

Before CMV testing 25-30% infection rate with a mortality of 25% of those infected.

**Evidence for a Biological Response to rHuEPO**

Several studies (in vitro) using cell culture techniques have shown that prem babies with anaemia at 27-33 weeks gestation have inadequate numbers of erythroid progenitors.

The progenitors from both peripheral blood and bone marrow are responsive to rHuEPO in vitro.

Doses of rHuEPO ranging from 70u/kg/week to 120u/kg/week have been trialled.

Some of these studies have been preventative, with rHuEPO treatment beginning on 2nd, 3rd or 8th day after birth without any additional RCR.

**Reticulocyte Count as a Measure of Response to rHuEPO**

In a double blind study of 10 infants given 200u/kg week rHuEPO IV from 3 weeks of age, there was no difference. BUT in a controlled study using 75-600 u/kg/week from 4 weeks of age, there was a 2 fold increase or greater seen in all but 1/18 infants.

A further study using 100-300 u/kg/week given subcutaneously from 8 days of age showed a sustained and elevated reticulocyte count of 110x10 9L compared with 55x10 9/L in the placebo group.

Other studies have shown a significant reticulocyte response x 2 suggesting rHuEPO will stimulate a retic response whether given early or late and it is dose dependant.

Additional evidence for active erythropoiesis in infants treated with rHuEPO has been shown in several studies by a rapid fall in the ferritin levels.

Adequate iron supplies are essential for an optimal response to rHuEPO in adults with chronic renal failure.

A debate remains about the amount of Fe Supplement required to prevent deficiency developing as a result of the rHuEPO treatment in prem infants.

Reported studies have ranged from 2-8 mg/kg/day orally while one study administered 20 mg/kg/week intravenously.

**Reduction in Transfusions**

Few studies have addressed this issue.

One double blind study using 200 u/kg/week IV from 3 weeks of age showed no difference in reduction.

The second double blind study using the same dose, but given at 8 days old showed a 41% reduction in transfusion, but did not reach statistical significance; but 1200 u/kg/week given from 2 days of age reduced the transfusion rate.

Other studies have been small or have not included control groups to enable comparisons.

No conclusion can be drawn as to the optimal dose of rHuEPO, the age for the first dose, frequency of administration, route of administration, length of the treatment stage and the amount of Fe supplement needed.

**Other Aspects of rHuEPO Treatment**

Several studies have reported the development of neutropenia in the treated group.

Other studies showed an inverse relationship between the neutrophil and retic count.

A decreased neutrophil storage pool on tibial bone marrow aspirates taken between 7-10 days after the onset of rHuEPO treatment has been observed.

Transient small rises in platelets have been seen and a positive relationship between the retic count and platelet count have been reported. The significance is yet to be clarified.

No consistent adverse events have been identified although two infants died of SID syndrome 4 weeks after receiving treatment.

No deaths occurred in studies giving greater doses of rHuEPO.

**Conclusion**

rHuEPO stimulates the retic response in a probable dose dependant fashion.

It appears that rHuEPO given in an adequate dose for long enough, plus Fe supplementation offers promise of transfusion reductions for premature anaemia.

There is no data as yet to suggest that rHuEPO will provide an alternative form of treatment for premature anaemia, but it may reduce the numbers of transfusions.

There is a need for some large studies to be undertaken to determine efficiency and safety of rHuEPO.

# Haematology

## Special Interest Group

Convenor: Ross Anderson
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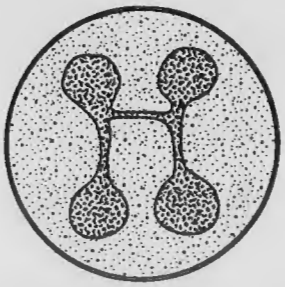
Symonds Street,
AUCKLAND.



## Blood Cell Morphology.

The booklet "Standardised Nomenclature and Reporting in the Haematology Laboratory" and a colour transparency set "Blood Cell Morphology" to accompany the booklet, both formerly available through the Haematology Charge Technologists Group, Auckland are now available from HSIG under the auspices of NZIMLT.

The film set and booklet covers the following:

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|---|---|---|
| **RED BLOOD CELLS** | | |
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| 1 | - | Normal adult blood |
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| Abnormal Morphology - variation in size | | |
| 4. | 3.1.1 | Macrocytes - oval |
| 5 | 3.1.1 | Macrocytes - round |
| 6. | 3.1.2 | Microcytes |
| Staining variations | | |
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| 8. | 3.2.2 | Polychromatic cells |
| Shape variation | | |
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| 10. | 3.3.2 | Blister cells |
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| 12. | 3.3.4 | Echinocyte |
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| 18. | 3.3.10 | Stomatocytes |
| 19. | 3.3.11 | Target cells |
| 20. | 3.3.12 | Tear drop cells |
| Inclusions | | |
| 21. | 4.1 | Howell Jolly bodies |
| 22. | 4.2 | Pappenheimer bodies |
| 23. | 4.3 | Stippled cells (heavy) |
| Distribution | | |
| 24. | 5.1 | Agglutination |
| 25. | 5.2 | Dimorphic population |
| 26. | 5.3 | Rouleaux |
| Other Stains | | |
| 27. | 7.1 | Reticulocytes |
| 28. | 7.2 | Heinz bodies |
| 29. | 7.3 | Hemoglobin H bodies |
| 30. | 7.4 | Iron granules |

| WHITE BLOOD CELLS | | |
|---|---|---|
| 40. | 8.1 | Myeloblast |
| 41. | 8.2 | Promyelocyte |
| 42. | 8.3 | Myelocyte |
| 43. | 8.4 | Metamyelocyte |
| 44. | 8.5 | Band Neutrophil |
| 45. | 8.6 | Segmented Neutrophil |
| 46. | 8.7 | Basophil |
| 47. | 8.8 | Eosinophil |
| 48. | 8.9 | Monocyte |
| 49. | 9.1 | Toxic granulation |
| 50. | 9.2 | Vacuoles |
| 51. | 9.3 | Dohle bodies |
| 52. | 9.4 | Degranulation |
| 53. | 10.1 | Auer rod |
| 54. | 10.2 | Hypersegmentation |
| 55. | 10.3 | May Hegglin Inclusions |
| 56. | 10.4 | Pelger Huet |
| 57. | 11.1 | Lymphoblast |
| 58. | 11.2 | Prolymphocyte |
| 59. | 11.3 | Lymphocyte - small |
| 60. | 11.3 | Lymphocyte - large |
| 61. | 11.4 | Variant lymphocyte |
| 62. | 11.4 | Variant lymphocyte |
| 63. | 11.4 | Variant lymphocyte |
| 64. | 11.4 | Variant lymphocyte |
| 65. | 11.5 | Plasma cell |
| 66. | 12.1 | Hairy cell |
| 67. | 12.3 | Lymphocyte inclusions |
| 68. | 12.3 | Lymphocyte inclusions |
| 69. | 13.1 | Pyknotic cell |
| 70. | 13.2 | Smear cell |
| 71. | 15.1 | Normal platelets |
| 72. | 16.1 | Giant platelets |
| 73. | 16.2 | Bizarre platelets |
| 74. | 16.3 | Platelet satellitism |
| 75. | 16.4 | Platelet clumping |

More detailed information re the red blood cells and white cells are provided in Appendix 1 and Appendix 2 which accompany the film set.

The total cost of the film set and booklet is $125.00.
The film set 75 x 35mm slides – $115.00. Booklet $10.00.

Contact:
Cindy Lincoln, Northland HSIG Representative, c/o Haematology Department, Main Building, Auckland Hospital.

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## Pacific Paramedical Training Centre


### New Home

Plans are well advanced for the purchase of a small building from the Wellington Clinical School which will provide a home base for PPTC administration and for conducting future courses. The present facilities which have been rented from Wellington Hospital by courtesy of New Zealand Red Cross, are now required for other purposes. Further details about this exciting new step forward in the life of the PPTC will be available for the next NZIMLS Journal issue.

### Papua New Guinea

The PPTC is participating with the PNG Government in a 5 year National Health Plan retraining and teaching rural laboratory assistants in basic laboratory techniques. Later this year (hopefully August), Gilbert Rose will be taking two x 5 week training courses in PNG. The first in a series of similar courses to be run over the 5 year period.

### WHO Fellow, Tonga.

Fele'unga Vaka'uta has just returned to Tonga after spending three months in the Haematology Department at Middlemore Hospital (March-May, 1995). Fele'unga concentrated on blood film morphology during her stay as this was an area she had identified as one she needed to learn more about. She proved to be an excellent student and during her stay gained confidence in her blood film reporting. In addition she attended the local department lectures, was introduced to modern technology (Coulter, STKS, Coulter MAXM, MLA1600, Ves-a-matic ESR etc) and her knowledge of safety procedures and organisational management techniques was reinforced and expanded. Fele'unga would like to return to New Zealand to work during her holidays. Currently she has three months of holidays due to her!!

Other WHO Fellows placed in New Zealand Laboratories this year have been:

| Name | Laboratory | Subject |
|---|---|---|
| Manilla Nose (Niue) | Auckland Central | Microbiology |
| Gunna Kamonai (PNG) | Blenheim Hospital | Micro/Haem |
| Stanely Hiko (Tonga) | Wellington Hospital | Histology |
| Paula Matyed (Yap) | Wellington Hospital | Cytology |
| Benjamin Nena (Kosane) | Masterton Hospital | Management |
| Baibuke Tauro (Kiribati) | Blenheim/Hawera Hospitals | Biochemistry |
| Aviata Matachana (W. Samoa) | Tauranga Hospital | Microbiology |
| Rosemary Tekitanga (Kiribati) | Nelson Hospital | Haematology |

### Vietnam

In September Dr. Ron McKenzie will be assisting with the planning of the Qhi Non Laboratory project in a joint venture organised by laboratory staff at Christchurch Hospital.

### Cambodia

Mike Lynch, PPTC Tutor Co-ordinator recently returned from a three week WHO assignment teaching laboratory staff the technique of AIDS HIV antibody testing and carrying out a provincial survey of commercial sex workers – (sounds more like fun than work Mike!!)

### Tonga

A Quality Control Course is to be held in Tonga within the next few months. Dates to be finalised. This course will be similar to the one run by PPTC in Fiji three years ago.

### New WHO Book

Warren Johns, a New Zealand technologist who has worked in many developing countries on emergency and disaster relief projects was invited by WHO to contribute to the following book. His expert knowledge and sound advice on laboratory kits and equipment is evident throughout this book. **It is an excellent guide for use by all laboratory workers in developing countries**. From Warren's own experience and that of others working in the field it is apparent that the UNICEF kits provided in many emergency and disaster relief situations are woefully lacking in necessary items. The lists were made up 20 years ago, are incomplete and still issued. He hopes the kits and modules as recommended in this book will be adopted by UNICEF and other international aid organisations.

Acknowledgement is given also in the front of the book to the contribution by another New Zealand Medical Laboratory Technologist, Ian Reid.

The book "Health Laboratory Facilities in Emergency and Disaster Situations" is reviewed by Gilbert Rose, a New Zealand Technologist who has been working in developing countries for the past 10 years as a PPTC Tutor, VSA worker and as a WHO Consultant.

"Health Laboratory Facilities in Emergency and Disaster Situations".
Editors: El-Nageh MM, and Heuck CC.
Contributors: Corcoran P, **Johns W**, Lacroix, C, Reich, A, Sanborn J, Shears P.

WHO Regional Publications. Eastern Mediterranean Series 6, 170 pages. Alexandria, Egypt 1994 ISBN No. 92-9021-182-2 Price US$9.00

This book is an excellent resource for those responsible for drawing up national multisectoral contingency plans for an emergency or disaster. Emergency health services are an essential part of an overall plan as basic medical care is needed to limit morbidity and mortality of both infectious diseases and other medical conditions particularly trauma.

Chapters I and 2 deal with disease and medical conditions that may occur in either natural or manmade emergency and disaster situations. There is discussion on evaluating the overall health situation and the existing laboratory services followed by planning and assessing the current needs. Lastly in Chapter 2 there are suggested criteria that could be used for selecting appropriate staff to work in the emergency laboratory.

Chapter 3 looks at existing laboratory facilities then considers the need for stationary facilities or the use of mobile and/or portable laboratories. Liaison with reference laboratories is also recommended.

Then follow three chapters on the selection of appropriate diagnostic tests, testing water supplies, laboratory safety, disinfection and waste disposal. To carry out the recommendations in these chapters it is

important to employ the most suitable staff available; they may be local or expatriate, have international or national qualifications and have good general experience and if possible local knowledge. This reinforces the need for good staff selection criteria mentioned in the second chapter.

Laboratory kits and Modules is the title of Chapter 7. A laboratory kit will consist of selected modules containing everything required to do a particular range of laboratory investigations. A module contains all the separate components and there are 22 modules described.

Listed they are:

| | |
|---|---|
| basic | energy |
| tuberculosis | bacteriology |
| blood parasite | haematology |
| refrigerator | water purification |
| serodiagnostic test | fluorescence microscopy |
| stool specimen transport | specimen transport |
| water testing | microscope |
| urinalysis | faecal parasite |
| centrifuge | portable incubators |
| Gram stain | electrolyte analyser |

blood transfusion

cleaning, disinfection, sterilisation and waste disposal.

In a specific emergency a kit can be assembled from these modules to deal with a simple disease or a group of related diseases. The last section of this chapter gives in sequence the details of ALL requirements to make up the individual modules.

Chapter 8 and 9 cover energy supplies and laboratory equipment. Chapter 10 discusses the supply of blood for transfusion in emergencies and chapter 11 looks at collection, storage and transport of specimens.

The final chapter in the book deals with field laboratory record keeping and reports. In an emergency or particularly in a disaster situation laboratory data is an essential part of the surveillance of disease outbreaks and epidemics.

Finally there are 17 annexes which overall contain a wealth of information about health agencies, reference laboratories, manufacturers of all types of equipment and also suppliers of reagents and diagnostic kits.

Recommended literature and reference close the book.

This WHO publication is to be recommended to administrators and all health professionals with a responsibility or an interest in providing emergency and disaster relief.

The guidelines and other information are directed towards those involved with emergency laboratory services. However, many workers in laboratory services in developing countries where there are constraints on facilities, finance, reagents and equipment, will find much of help and interest to them in both administrative and technical aspects.

*Fele'unga studying blood films.*

*Fele'unga, Associate Professor Sandy Ford, Co-chairman PPTC and Marilyn Eales, Managing Technologist, Haematology Department, Middlemore Hospital.*

**WORLD HEALTH ORGANIZATION**
Regional Office for the Eastern Mediterranean

# ANNOUNCES THE PUBLICATION OF

## Health Laboratory Facilities in Emergency and Disaster Situations

### Why has this book been written?

Many countries are vulnerable to disasters and emergency situations. A number of countries in the Eastern Mediterranean Region have suffered from such situations in recent years. WHO/EMRO has identified the need for guidelines on health laboratory services and problems associated with disasters and emergency situations, and initiated the publication of this valuable manual to assist international agencies, national authorities and other bodies in drawing up contingency plans for the provision of emergency laboratory services.

### Who is the target audience?

All health professionals, including physicians, nurses, laboratory technicians and other paramedical staff, international agencies, national authorities and other bodies involved in emergency and disaster relief.

### Description

A valuable work with information on how to provide basic laboratory services in emergency and disaster situations; the book totals 168 pages and contains 12 chapters and 17 annexes.
**Available in English only.**

### Price

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### Editor
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**Membership Report – July, 1995**

| Membership | 19.07.95 | 20.02.95 | 14.09.94 | 12.08.94 |
|---|---|---|---|---|
| | 1084 | 1177 | 1159 | 1138 |
| Less resignations | 6 | 11 | 4 | 22 |
| Less G.N.A. | 6 | 7 | – | 48 |
| Less deletions | – | – | – | – |
| Less deceased | – | – | – | – |
| Less duplications | – | – | – | – |
| | 1072 | 1159 | 1155 | 1067 |
| Plus applications | 3 | 15 | 22 | 88 |
| Plus reinstatements | 2 | – | – | 4 |
| **Total** | **1077** | **1174** | **1177** | **1159** |

## NEW ZEALAND INSTITUTE OF MEDICAL LABORATORY SCIENCE 1995 CALENDAR

| | |
|---|---|
| 10 October | Council Meeting – Australia |
| 9-13 October | South Pacific Congress – Australia |
| 1 November | QTA examinations |
| 15/16 November | Specialist Certificate examinations |

**Composition**

| | | | | |
|---|---|---|---|---|
| Life Member (Fellow) | 12 | 12 | 12 | 12 |
| Life Member (Member) | 9 | 9 | 9 | 9 |
| Fellow | 21 | 21 | 20 | 20 |
| Member | 643 | 684 | 684 | 671 |
| Associate | 311 | 367 | 368 | 365 |
| Non Practising | 54 | 54 | 57 | 56 |
| Honorary | 27 | 27 | 27 | 26 |
| Total | 1077 | 1172 | 1177 | 1159 |

### New Members
P WILSON, Greenlane/National Women's, J McKENZIE, Balclutha, I WAI-POI, Auckland

# A Draft Discussion Paper on the Future of the Specialist Examination and Fellowship of the NZIMLS

You will all be aware of the recent educational developments in our profession: in 1994, we saw the first graduates of the Bachelor of Medical Laboratory Science degree courses offered by Otago and Massey Universities. The Diploma of Medical Laboratory Science offered extramurally by Massey University for Technologists currently employed in the workforce is now into its second year and proposals for Masterate and PhD programmes have been submitted. Where does the Institute's Specialist Level Examination and Fellowship qualification fit into the education programmes of Medical Laboratory Scientists of the future? It is the view of Council that the continuation of some form of higher qualification that is controlled by the profession is essential and this should be Fellowship.

This Discussion Paper summarises the history of the Fellowship and Specialist Examinations, their current status and, finally, Council's proposals for the future.

## History of Fellowship

Fellowship of the Institute was first proposed in the early 1960s but it was not until 1967 that Council appointed a subcommittee to investigate and draw up regulations for conducting examinations. The following quotation from the Council meeting minutes gives an indication of their thoughts and intentions:

> "Council envisages that the examination will be a truly specialist one and that candidates will probably be expected to submit a thesis or dissertation on some specialist facet of medical laboratory work."

At the July 1968 Council meeting, Mr Brian Main presented a report on the conditions to be imposed for the admission of Fellows to the Institute. The report was adopted and immediately implemented. Our current regulations for Fellowship are still largely based on the original ones adopted in 1968.

Applicants must have been members of the Institute for three years. It can be gained in three different ways:

(a) By examination consisting of three written papers, the first of two hours duration, a choice of one question out of four, of a philosophical nature. The second paper of three hours with a choice of two out of five questions, purely theoretical or more academic aspects of the discipline and a third paper, also of three hours, with three questions out of a total of six of a more practical or vocational basis. Total marks 80 and an aggregate of 60% required to pass.

A treatise of three to five thousand words with a mark allocation of 20% completes the requirements by examination.

(b) Thesis. The submission of original work not exceeding twenty thousand words.

(c) Exemption. Granted in exceptional circumstances at the discretion of the NZIMLS Council in recognition of an approved higher degree from a recognized university. Other suitable qualifications and experience, publications or outstanding achievement.

There are currently 21 Fellows of the Institute. Some are Founder Fellows who were eligible under the original regulations drawn up in 1968, while the remainder have submitted a thesis or completed the examination and treatise. No Fellowships have been awarded since 1990.

## Specialist Examination

Prior to 1988, the Specialist Examination was conducted by the Medical Laboratory Technologists Board (MLTB) and was part of the Board's Diploma of Medical Laboratory Technology. However, in 1988 the MLTB announced a change in the registration requirements from either two Certificate Levels in different disciplines or one Certificate level and Specialist Level in the same discipline to just one Certificate Level.

At the NZIMLS AGM in 1988, Council was requested by the membership to take over the Specialist Examination from the Medical Laboratory Technologists Board. The NZIMLS has conducted the examinations which consists of two 3-hour theory papers. Since 1990 the number of candidates sitting the examination peaked in 1992 with 45 then dropped to 29 candidates in 1993 and 22 in 1994.

The examination has been seen by many in the profession as a prerequisite for employment in larger, more specialized laboratories, or for those Medical Laboratory Scientists aspiring to charge positions. It is also recognized as having value by employers, who frequently state in their advertisements for prospective employees that having a Specialist Level is a requirement for the position.

The examination has always been a difficult one to prepare for because of the depth and breadth of knowledge required. Because of increasing knowledge, recently revised syllabi have again increased in content, thus making the examination virtually impossible to prepare for and pass in one year.

## Council's Proposal

Council is of the opinion that the Institute should offer one postgraduate qualification only and that it should be Fellowship.

We propose that Fellowship can be gained in two ways. These are:

1. by examination and submission of a treatise;
2. by submission of a thesis.

Route one would be divided into 2 parts:

Part I would comprise written examinations similar in depth and knowledge to the current Specialist Level examination. The minimum time after registration candidates could sit Part I would be 2 years.

Part II. A treatise of approximately 3000-5000 words would be required on a subject related to the discipline selected for examination. It could be submitted one to five years after completing Part I.

Route 2:

There would be no change from the current regulations that require the submission of original work not exceeding twenty thousand words.

Fellowship of the Institute is bestowed upon members who have excelled in their chosen discipline. Their efforts should be recognized by presenting the award personally to the recipient at the NZIMLS Annual Conference. The treatise or thesis should be published in the NZIMLS journal and the candidate should be invited to present a paper to conference based upon their submitted treatise or thesis. In other words, members of the Institute who achieve Fellowship should be recognized appropriately for their efforts.

This draft discussion paper has been published to stimulate discussion and to obtain feedback. Please write with your comments or suggestions to the Executive Officer of the Institute:
Fran van Til, Executive Officer, NZIMLS, P.O. Box 3270, Christchurch.

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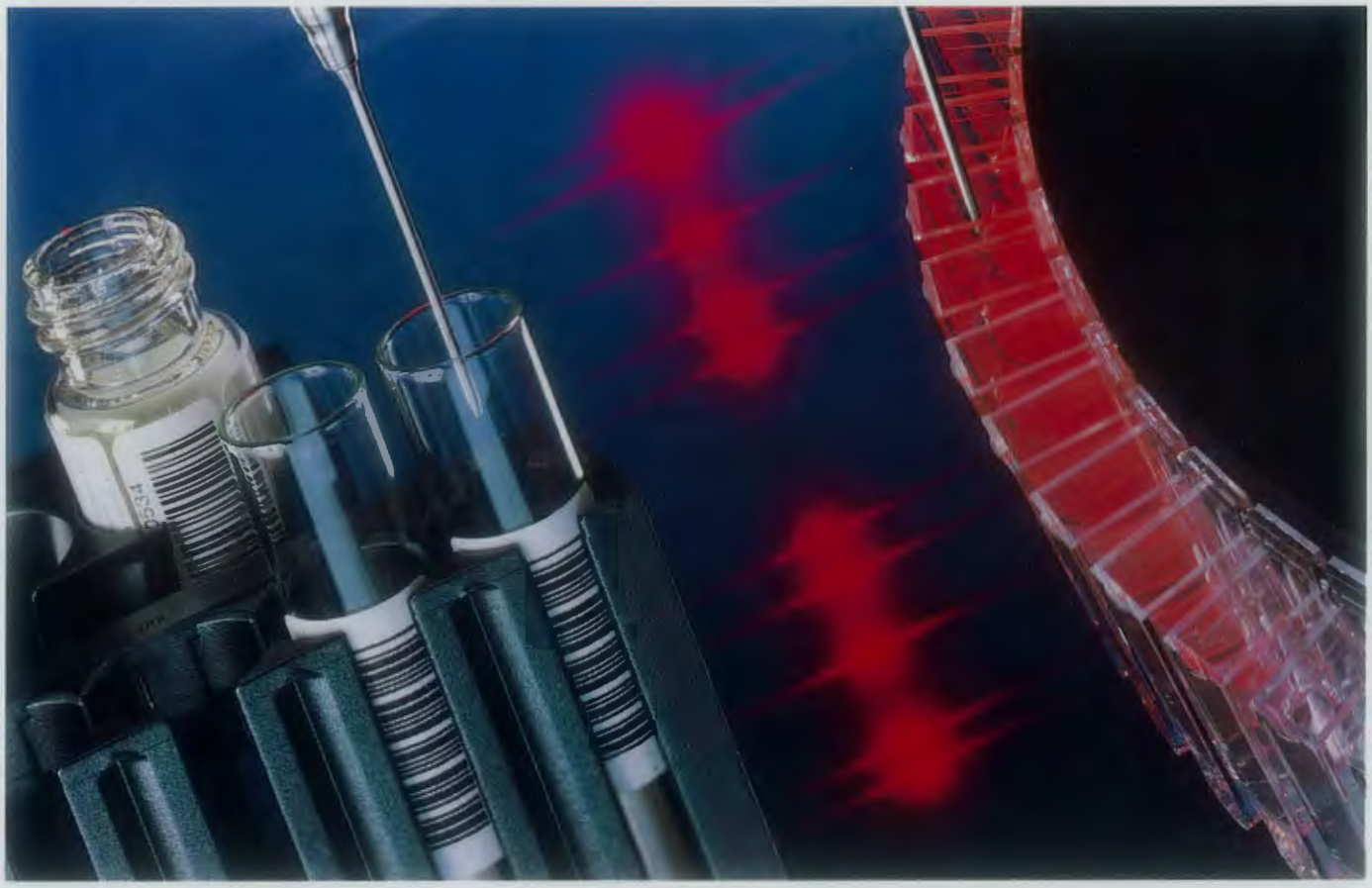

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VD 172

# Report on the XVI European Congress of Allergology and Clinical Immunology (ACACI), Madrid, Spain; and the 3rd International Workshop on Indoor Allergens and Asthma, Cuenca, Spain

In July of this year I had the privilege of attending the ACACI meeting in Madrid and was invited to participate in the 3rd International Workshop on Indoor Allergens and Asthma in Cuenca.

Allergology is big business in Europe and naturally the focus of the meeting was predominantly on allergens causing immune responses. The conference programme was devoted to 8 main themes of which some of the submitted presentations are described briefly below.

1. **Regulation of allergic immune responses**

In this session T cells and cytokines, mast cell biology, eosinophils, cell adhesion molecules and neuropeptides. were critically discussed. Cellular and humoral aspects of immune response are regulated by subsets of CD4 and T helper cells, namely the type 1 and type 2 cells. These cells respond to antigenic stimulation with a burst of cytokines. Type 1 cells secrete IL-2, TNF=ß and IFN-*y* while type 2 cells produce IL-4, IL-13, IL-3, IL-10 and IL-5. Type 1 cells also stimulate antibody production which activates complement and opsonises antigens for phagocytosis. Type 2 cells are involved in IgE-mediated allergic reactions. Thus these 2 types of T cells represent polarised modalities of the specific response against exogenous allergens. Thus strategies of immunotherapy for allergic diseases capable of shifting the type 2 cell response to the less pathogenic type 1 cell response may be possible in the near future.

Other papers presented data that indicate that $CD8^+$ and T cells regulate IgE production at a critical stage of the immune response and that an IL-4 mutant protein may be of therapeutic potential in blocking enhanced IgE production in atopic individuals.

Mast Cell Biology

Mast cells play an important role in allergy. They have a variety of cell surface receptors and secrete a number of cytokines. Through this they have numerous interactions with endothelial cells, eosinophils, neutrophils, T & B cells, and nerve cells. In the past mast cells were regarded primarily as a source of histamine, PGD 2 and LTC 4 which are mediators of the symptoms of acute allergic responses. Latest research indicates the presence of various cell surface receptors involved in antibody production to exogenous allergens.

Eosinophils

Eosinophils participate in immunologic and inflammatory reactions in allergic diseases. Various papers presented described that they have the capacity to release several cytokines and cytotoxic proteins such as eosinophil cationic protein (ECP).

Genetics and Allergy

Environmental factors such as house dust mite sensitivity play an important role in the pathogenesis of atopic asthma. Increased IgE production is the common denominator of atopic diseases and therefore it is logical to target genetic research into genes regulating total IgE and specific IgE antibodies. A major international collaborative study is under way to characterise the genetics of house dust mite sensitive patients with asthma and rhinitis. Micro satellite testing and HLA II typing will be performed on at least 300 nuclear familaties with the proband and at least one sibling having house dust mite allergy. Atopic allergies are complex involving the input of different and often overlapping sets of genes and multiple environmental factors. Recent small studies of genetics of asthma have shown that false results are possible, therefore this international large scale study will hopefully provide reliable data regarding the genetics of house dust mite sensitive asthma and rhinitis.

Environment

Both indoor and outside environmental factors have been demonstrated to be major factors in allergic diseases, including asthma. Indoor environmental factors of most importance are the house dust mite, cat, dog and cockroach allergens, while outside environmental factors depend to some degree on geographical location and include the major allergens of pollens and moulds.

House dust mite induced asthma is the commonest form of allergic asthma, with 70-80% of the asthmatic individual showing positive skin prick tests to the major house dust mite allergens. Many atopic asthmatics demonatrate allergy to more than one allergen, the two other commonest allergens are those from the cat and the cockroach.

Various papers presented at the conference dealt with the incidence of these three main allergens in different parts of the world (including New Zealand which seem to have the highest amount of house dust mite allergen levels in the world), allergen exposure and bronchial hyperactivity, immunology of allergens, standardisation of allergen extracts, provocation tests and epidemiology. As these topics where also dealt with at the International Workshop on Indoor Allergens, more detail on these aspects follow later on in the report.

Other sessions at the conference dealt with specific allergens in certain parts of the world, such as olive tree allergy and trends in immuno-therapy of allergic diseases.

Overall I gained valuable information from attending various sessions at this conference, mainly relating to indoor allergens and asthma. This was a valuable lead up to attending the 3rd International Workshop on Indoor Allergens immediately following the conference.

## 3rd International Workshop on Indoor Allergens and Asthma

Following the closing session of the ACACI Conference the invited participants (approximately 60 delegates) were bused to Cuenca, about 2 hours east of Madrid. Cuenca is a historic village in Spain, the old part of the town being built round a castle and cathedral with a monastery on the other part of a ravine, the latter has been turned into a hotel and conference centre where the workshop was held.

The workshop started with a welcome reception and viewing of submitted posters (30) on the Friday night. Over the next 2 days the commonest indoor allergens, namely from the house dust mite, the cat and the cockroach and their role in asthma were intensively discussed under the following headings.

Biology of Indoor Allergens a) Water balance, population a distribution and dynamics of dust mites, b) factors affecting growth,

reproduction and distribution of cockroaches, c) source, biology and production of animal dander allergens.

House dust mites are eight-legged arachnids living in close association with humans, their main food source bring shed skin epithelial cells. Specific mite produce allergens that have been characterised in mite faecal particles and are a major cause of atopic asthma in the world. They require a moderate temperature and relative humidity of greater than 50% and are virtually impossible to totally eliminate from the home environment. Effective allergen control regimes requires knowledge of the biology and ecology of house dust mites. Recent advances in this area have been in population dynamics, water relations and global distribution. Data was presented showing that the main factors that control both the distribution and abundance of house dust mites are temperature, humidity and the availability of food. Although humidity is an important factor, mite responses to humidity are temperature dependent which is of importance when comparing mite population growth in temperature versus tropical regions.

A data base of global distribution of the different species of house dust mite is well under way so that researchers in this area can see which species have been recorded in their own country, and details how frequently they occur and how abundant they are.

Cockroach allergy is emerging as a major factor in atopic asthma around the world, especially in the lower socio-economic classes. Major allergens of the common cockroaches have been characterised and many studies are planned or under way.

The main source of cat allergens were thought to come from the salivary glands, however recent research has demonstrated Fel d 1, the main cat allergen, from cat anal glands and that Fel d 1 production is under hormonal control. Future research options in this area are effective of castration on Fel d 1 production, seasonal variation and cat age and the clinical relevance of other cat allergens.

Immunochemistry and Molecular Biology

In this section the issues of allergen identifications and nomenclature, standardisation, molecular biology, cloning and immuno reactivity were discussed. Various new allergens from the house dust mite have recently been discovered. In this session their characteristics were discussed and attempts were made to fit them into appropriate categories. In regard to standardisation of the major house dust mite allergen, it appears that the value assigned to the primary standard may not be correct. This is to be further investigated before major recommendations regarding changes to its concentration are to be made internationally. There was also anecdotal evidence that results from different research labs around the world may differ substantially. A plea was made for continuous external quality control programmes and a pilot project of quality control of Der p 1 (a major allergen of one of the house dust mites) is to be initiated by the Wellington Asthma Research Group.

Epidemiology and Risk Factors

Out of this session came a set of recommendations for future studies. These include dose response studies of cat, dog and cockroach allergens similar to what has been described for sensitisation and provocation levels of house dust mite allergens. Epidemiological studies are required to measure associations between exposure, sensitization and objective clinical outcome measurements. Various environmental factors which may upregulate, potentiate, or are precursors to the effects of allergen exposure, dietary factors, bacterial and viral infections, tobacco smoke exposure and various air pollutants.

Allergen Avoidance

Previous workshops had provided comprehensive recommendations for controlling house dust mites and their allergens, such as encasing bedding, heating and humidity control, and chemical treatment of carpets.

Recent studies support the importance of other indoor allergens particularly those from pets, cockroaches and fungi. Exposure to indoor allergens may be potentiated by other non-allergenic factors such as tobacco smoke and gaseous combustion products. Further work also needs to be done to quantify risk factors for sensitisation.

Controlling the indoor environmental exposure to allergens can be done by a variety of methods, such as increased ventilation, humidity and heat control, chemical neutralisation with acarides, vacuum and steam cleaning. A multiple approach, both short and long-term is required to reduce concentrations of allergens in settled dust. A 90% reduction of allergen levels was proposed, however, this may not be enough in some geographical areas with extremely high levels of house dust mite allergen, such as Wellington and Sydney.

The reduction in allergen levels are best quantitated by measurement of the settled dust allergen levels by immuno assays. Further development is needed in devising simple screening methods that do not require laboratory facilities and expertise.

How houses are designed may give clues on how allergen levels may be controlled given that many public buildings have allergen levels much lower than domestic homes. Differences in heating and ventilation systems, carpets, construction of the building, availability of food sources, etc may interact in a complex way in regulating house dust mite populations.

After the presentation of the factors involved in indoor allergens, which were predominantly presented by the various experts in their particular research field but with considerable input from others present at the meeting, sub-committees were set up to specifically address the various topics and report back to the main meeting the following day with recommendations and proposals.

I was part of the standardisation committee and was able to express concerns regarding the lack of external quality control programmes for measurement of the main indoor allergens. The idea was enthusiastically received and as having raised the matter, we were asked to set up a worldwide pilot project.

For most of the final day the various sub-committees reported back their recommendations and proposals to all the participants where they were intensively discussed by all. Ultimately from this workshop and these discussions, a final document will be written and published in the Journal of Allergy and Clinical Immunology.

I found this workshop to be extremely useful in what I have learned and the many valuable contacts made. Furthermore it has given us ideas on new areas of study in our research group.

## Acknowledgements

I am grateful to SCIANZ Corporation for sponsoring the SCIANZ Immuno Assay Award and to the selection committee for recommending me as the recipient of this award in 1995. Additional support came from Astra Pharmaceuticals New Zealand Limited and the Wellington School of Medicine for which I am grateful.

*Rob Siebers*
*Wellington Asthma Research Group*
*Wellington School of Medicine*


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# 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

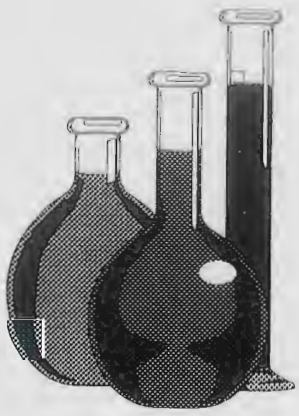
"The 1st 25 years of Auckland Hospital Board
School of Medical Laboratory Technology" by Jeanette Grey

**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



# *NZIMLS HISTORY*

As we mature, the **'older days'** takes on more meaning. Sometimes the passage of time softens into nostalgia for the past - other times memories stay fresh, sharp and vivid.

Whatever it is now or will be in 10, 20, 30 or 40 years **nothing** will ***compliment the memories as much as an***

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P O Box 3270
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or

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Co-ordinator
P O Box 1038
Rotorua

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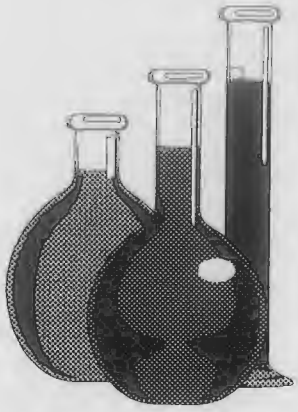
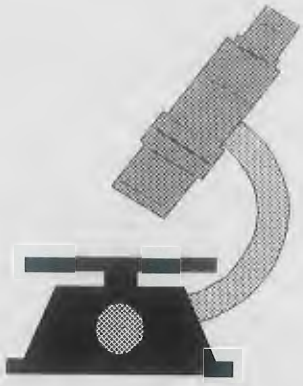
**So we can compile the best display possible**





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# NZIMLS DOCUMENTS

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| Executive Officer | or | Anne Paterson |
| NZIMLS | | Co-ordinator |
| P O Box 3270 | | P O Box 1038 |
| Christchurch | | Rotorua |

**JOURNALS**

- any intact copies of Journals 1946 to 1957
- value 44 no 1 March 1990 (or was this issue never published?)

**NEWSLETTERS**

- any intact copies of Newsletters 1969 - 1974 and specifically
  - volume 2 no 4 July 1969
  - volume 3 no 3 May 1971
  - volume 4 no 3 May 1972
  - volume 4 no 5 September 1972
  - volume 8 no 3 May 1976
  - volume 9 no 3 May 1977
  - volume 9 no 5 September 1977
  - volume 10 no 3 May 1978
  - volume 13 no 1 January 1981

  Were there Newsletters between 1982 and 1989 when the Institute News started (note Institute News finished July 1994).

**HOSPITAL EMPLOYMENT REGISTERS (Salary and Condition)**

- These were reproduced in the Newsletters 1969 but we would like to have originals (for display at least).

**RULES OF THE INSTITUTE**

- These will have been issued under the titles:
  - New Zealand Association of Bacteriologists
  - New Zealand Institute of Medical Laboratory Technology (Inc)
  - New Zealand Institute of Medical Laboratory Science (Inc)

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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 Philson Library of the Auckland Medical School. 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: 2.

Fletcher A. A personal perspective on blood transfusion. 1969-1994. p. 50-6.
Johnston AE. Acute mixed lineage leukaemia. p. 57-66.
Ford DS. Quality control of the antiglobulin test. p. 67-75.
Hawkesford T, Goldsmith LM. Cryptosporidiosis in Tasmania. p. 76-8.

## British Journal of Biomedical Science. 1994. Volume: 51. No: 4.

Leaves NI, Anderson EC, Toy SJ. Outer membrane protein profiling to distinguish between *Haemophilus aegyptius* and non-capsulate *Haemophilus influenzae* biotype III p. 307-11.
Wong KC, Ho BSW, Egglestone SI, Lewis WHP. Diagnosis of urogenital gonorrhoea: evaluation of an enzyme immunoassay and use of urine as a non-invasive specimen. p. 312-5.
Ationu A, Carter ND. Molecular forms of brain and atrial natriuretic peptides in transplanted human heart. p. 316-20.
Craig S, Stevenson KJ, Taberner DA. Activated partial thromboplastin time for automated techniques. a comparison of two commonly used reagents. p 321-7.
Baker P, Joshi M, Luddington R. Monocyte procoagulant activity: development of a microtitre plate chromogenic assay. p. 328-31.
Daffalah AA, Eskandarani H, Rehaimi A, et al. Fructosamine in HbS and G6PD-deficient Saudi Arabs in the Eastern Province of Saudi Arabia. p. 332-5.
Yap SF, Wong PW, Kenneth-Raj. Hybridisation analysis for serum hepatitis B virus DNA. p. 336-40.
Bailey MH, Howel DR, Barbara JAJ. Anti-HBc assays: evaluation of end-point sensitivity and performance. p. 341-4
Fleming AF. Agriculture-related anaemias. p. 345-57.
Eaton-Evans J Osteoporosis and the role of diet p 358-70.
Nguyen DT, Moskowitz FB, Diamond LW. Potential diagnostic pitfalls caused by blood film artifacts in prolymphocytic leukaemia. Observations in two cases. p 371-4.

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

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| **Title** | **Med Bio Journal Award.** |
| **Donor** | Med Bio Enterprises Ltd.<br>P.O. Box 33135 Barrington<br>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.<br>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:<br>(a) Appropriateness of content of paper.<br>(b) Layout and presentation.<br>(c) Evidence of original work or ideas.<br>(d) Previous publication experience of the author(s). Quality papers by first time authors are encouraged.<br>(e) The paper which makes the most valuable contribution to a branch of medial laboratory science. |

Winner of the Med-Bio Journal Award for the May 1995 issue was Brian Millar from the Diagnostic Laboratory, Auckland for his article "Haematological parameters in pregnant and non-pregnant Auckland females with low ferritin levels". *NZ J Med Lab Science* 1995;49 (2):76-9.

# SOUTH PACIFIC CONGRESS SCIENTIFIC PROGRAMME

The scientific programme promises to be of interest to a wide spectrum of medical scientists. In tune with trends and our theme "moving together" we have a most impressive programme of distinguished speakers and session topics. The proferred papers and poster sessions will complete the programme.

## Wednesday, 11th October

**Opening Session**
Assoc Professor D Ellis, Adelaide Children's Hospital
*"Saal Foley Memorial Lecture"*

**Plenary Session Clinical Management Issues**
Professor E McGoogan, University of Edinburgh
*"Medico Legal implications of cervical cancer screening"*
Assoc Professor A Nanji, Harvard Medical School
*"The implications of Near Patient Testing to conventional pathology services"*
Mr E Wilson, St Vincent's Hospital, Melbourne
*"Casemix Funding Allocation for Pathology now and in the Future"*

**Impact of Law on Medical Laboratory Science**
Mr P MacFarlane, Queensland University of Technology
Ms C Blick, Health Rights Tribunal
Mr B Bartley, Medico Legal Society
*(Speakers will examine the legal issues where medical scientist practice is involved – Cases of precedence – Pap smear case; Alternatives to the legal system and future directions)*

**Near Patient Testing**
Dr D Hailey, Monash University, Melbourne
*"Latest trends in Near Patient Testing in Australia"*
Assoc Professor Amin Nanji, Harvard Medical School
*"Latest trends in Near Patient Testing internationally"*
Dr P Lavercombe, Mater Adult Hospital, Brisbane
*"Near Patient Testing requirements of the intensive care specialist"*

**Casemix Funding/ TQM Best Practice**
Ms S Lloyd, Queensland Health
*"Basic Resource Allocation and Casemix Funding in Queensland Hospitals"*
Dr D Nicol, Royal Perth Hospital
*"Moving Together – Laboratory change from the old to new – A Best Practice Exercise"*

**Plenary Session Accreditation MLS Courses South Pacific**
Professor A J Webber, Queensland University of Technology
Mr B Day, University of Tasmania
*(Speakers will lead Plenary session discussion to set the scene – current strengths and weaknesses; Future directions of the courses)*

## Thursday, 12th October

**Plenary Session At the Cutting Edge of Clinical Medicine**
Professor I Roitt, London Medical School
*"Autoimmunity and latest developments in immunoassays"*
Professor I Frazer, University of Queensland
*"Therapeutic and Prophylactic Vaccines for cervical cancer: Laboratory and Clinical studies"*
Professor G Doern, University of Massachusetts Medical Centre
*"The clinical value of rapid antimicrobial susceptibility testing"*

**New Technologies**
Mr P J Isaacs, Beckman Instruments (Aust) Pty) Ltd
*"The new technologies in molecular biology"*
Mr C Bailey, USA, Australian Diagnostics Corporation
*"Laboratory automation – revolution or evolution"*

**Vaccines**
Professor D Moss, Queensland Institute of Medical Research
*"EBV Vaccines"*
Professor K Ellem, Queensland Institute of Medical Research
*"Melanoma Vaccine"*
Professor A Saul, Queensland Institute of Medical Research
*"Malaria Vaccines"*

**Molecular Genetics**
Professor J MacMillan, Clinical Genetic Services, QIMR
*(Topic to be confirmed)*

**Immunohaematology**
Mr T Forster, Queensland University of Technology
*"Lead a discussion panel – Education and Training in Immunohaematology"*

**Apoptosis**
Dr B Harmon, Queensland University of Technology
*"History of Apoptosis"*
Dr D Allen, Queensland University of Technology
*"Apoptosis in Diabetes"*
Dr G Middleton, University of Queensland
*"Apoptosis in the Thymus in sudden and delayed deaths"*

**Histopathology**
Dr A Tannenherg, Mater Hospital, Brisbane
*"Neurological Disorders"*
Dr S Weinstein, Gold Coast Hospital
*"Histopathology in Tropical Kenya"*

**Toxic Metals**
Dr D Kanowski, Queensland Medical Laboratory
*"Lead"*
Dr B Campbell, Drs Sullivan, Nicolaides & Partners
*"Mercury, Arsenic and Cadmium"*

**Microbiology I**
Professor G Doern, University of Massachusetts Medical Centre
*"A rational approach to routine in vitro antimicrobial susceptibility testing"*
Assoc Professor D Ellis, Adelaide Children's Hospital

*"Current trends in anti fungal sensitivity testing"*

**Microbiology II**
Mr L Hiley, Centre for Public Health Science, Qld
*"The horse morbilli virus – Vic Rail story from the horses mouth"*

**Haematology**
Mr R Brown, Royal Prince Alfred Hospital, Sydney
*"John Whiteley Address – topic to be advised*
Dr Harry Smith, Royal Brisbane Hospital
*"Childhood Leukaemia Mimics"*
Professor A Bunyaratvej, Mahidol University Bangkok
*"Novel applications of automated haematology analysers in relation to reticulocyte assessment, diagnosis of Thalassaemias and malaria"*

**Cytogenetics**
Dr P Marlton, Princess Alexandra Hospital, Brisbane
*"FISH in the diagnosis of haematological malignancies"*

**Haemolytic Disease of Newborn**
Dr F Carmody, Wesley Medical Centre, Brisbane
*"Current and future impressions of trends in the diagnosis and treatment of Haemolytic Disease of Newborn"*

**Autoimmune**
Dr A Klestov, Royal Brisbane Hospital
*"The laboratory diagnosis of autoimmune disease – The clinicians perspective"*
Dr R Thomas, University of Queensland
*"The model for antigen presentation in autoimmune disease especially rheumatoid arthritis"*
Mr R Wilson, Royal Brisbane Hospital
*"Anti tissue transglutaminase antibody in autoimmune disease"*

**Cytology – Preparatory Techniques Body Fluid Specimens**
Mr V Williams, QE II Medical Centre, WA
*"Transport media, Fixation, Preparation methods, Smear technique"*
Ms K Dowling, Flinders Medical Centre, SA
*"Methods blood removal, Routine stains, Cross contamination, Cell adhesives"*
Ms J Halford, Royal Brisbane Hospital
*"Specimen storage, Cell blocks, Freezing techniques"*
Dr P Shield, Royal Brisbane Hospital
*"Histochemistry, Immunocytochemistry"*
Mr J Gannon, Prince Charles Hospital, Brisbane
*"Electron microscopy"*

**Hypertension**
Professor R Gordon, University of Queensland
*"Hypertension Clinical Perspective"*
Mr T Tunny, University of Queensland
*"Hypertension Laboratory Perspective"*

**Proferred Papers/ Poster Sessions**

# Friday, 13th October

**Plenary Session Tropical Health**
Professor R Cooke, University of Queensland
*"Tropical tumours"*
Professor P Prociv, University of Queensland
*Parasitology (Topic title to be advised)*
Mr A Kingsley, Redcliffe Hospital, Brisbane
*"Public Health Monitoring in North Queensland"*

**Bone Marrow Transplantation and New Therapies**
Assoc Professor D Ma, Royal North Shore Hospital of Sydney
*"Anti-sense Therapy"*
Ms A Trickett, St George Hospital, Sydney
*"Current Research in Bone Marrow Transplantation"*
Dr Christian Starke, Miltenyl Biotec GmbH, Germany
*"MACS system and its applications"*

**Hepatitis**
Professor E Gowans, Royal Children's Hospital, Brisbane
*"Hepatitis latest developments in research"*
Professor WGE Cooksley, Royal Brisbane Hospital Foundation
*"Aspects of the epidemiology and clinical presentation of hepatitis"*
Dr M Harrison, Drs Sullivan, Nicolaides and Partners, Brisbane
*"Hepatitis Laboratory Investigation"*

**Haematology**
Dr Barbara Bain, St Mary's Hospital Medical School, London
*"Diagnosis and Classification of Leukaemias"*
Professor Eberhard Mammen, Wayne State University, Detroit USA
*"Future changes in routine platelet function analysis in the clinical laboratory"*

**Concurrent Proferred Session/Papers**

# International Association of Medical Laboratory Technologists, IAMLT

## IAMLT Scholarship 1996

**Purpose:** To further the education/training of qualified technologists who are active members of IAMLT.

**Eligibility:** The applicant must have evidence of active membership in a constituent member society of IAMLT.

**Application:** The candidate should submit their application in English and enclose a Curriculum Vitae, references and a recommendation from the constituent society of IAMLT of which he/she is a member. The application should explain the need for the scholarship.

4 copies of the manuscript must be sent to
IAMLT Executive Office
Adolf Fredriks Kyrkogata 11
S-111 37 Stockholm
Sweden.

**Deadline:** Deadline for receipt of applications by the Executive Office is 1st of December 1995.

**Prize:** The prize consists of SFR 2,500 and may be divided.

The IAMLT Award Committee will be responsible for choosing the recipient.

Applications and supporting documents will not be returned to applicants.

The prize will be presented at the IAMLT World Congress in Oslo, Norway, June 1996 by the Chairperson of the Award Committee and the IAMLT President.

All manuscripts submitted for the contest will be considered for possible publication in the Med Tec International and authors are required to assign first publication rights to IAMLT.

The recipient of the Scholarship should submit an article to IAMLT for publication in Med Tec International after receipt of the Scholarship.

## Nordic Award 1996

**Purpose:** To enable an official representative from a constituent society of IAMLT with economical difficulties to attend the General Assembly of Delegates.

**Eligibility:** The applicant must be officially appointed by his/her society to be the chief delegate at the General Assembly of Delegates.

**Application:** The constituent society of IAMLT must send a letter in English explaining the need for the award.

4 copies of the letter must be sent to

IAMLT
Margareta Haag, Executive Director
Adolf Fredriks Kyrkogata 11
S-111 37 Stockholm
Sweden

**Deadline:** Deadline for receipt of applications by the Executive Office is 1st of December 1995.

The prize consists of 15,000 Swedish crowns and may be divided.

The IAMLT Awards Committee will be responsible for choosing the recipient.

The IAMLT society, holding the secretariat for the Nordic Group of Medical Laboratory Technologists (NML), will present the prize at the IAMLT Congress in Oslo, June 1996 in presence of the IAMLT Awards Committee.

# Biomérieux 1996 IAMLT Award

**Purpose:** To stimulate and encourage work in research and experimentation in all areas of clinical diagnosis: Microbiology, Immunology, Clinical Chemistry, Coagulation, Radioimmunology

To develop the communication of new methods and the presentation of articles covering these different areas of study.

**Eligibility:** The applicant must have evidence of active membership of a constituent member society of IAMLT.

**Application:** The candidates should submit their paper in English (with a summary in French if possible) and enclose a Curriculum Vitae and a recommendation from the constituent society of IAMLT of which he/she is a member.

The work reported should have been performed within the three years prior to the closing date.

Every manuscript submitted must demonstrate personal knowledge of the chosen subject and encompass laboratory work actually performed by the applicant.

Manuscripts are not eligible for this contest if the paper, or significant portions of the paper, have been published internationally.

5 copies of the manuscript must be sent to
IAMLT Executive Office
Adolf Fredriks Kyrkogata 11
S-111 37 Stockholm
Sweden.

Applications and supporting documents will not be returned to the applicants.

**Deadline:** Deadline for receipt of applications by the Executive Office is the 1st of December 1995.

**Prize:** The prize consists of 8,000 F.F.

The prize will be presented at the IAMLT World Congress in Oslo, Norway in June 1996, by a representative of bioMérieux in the presence of the IAMLT Awards Committee.

**Special Condition:** The award will not be granted for any study involving the use of competitors' reagents or systems.

All manuscripts submitted for the contest will be considered for possible publication in the Med Tec International and authors are required to assign first publications rights to IAMLT.

The recipient(s) of the Award should submit an article to IAMLT for publication in Med Tec International after receipt of the Award.

# Publications by NZIMLS Members

**From the Department of Pathology, Wellington School of Medicine:**

Bethwaite PB, Delahunt B, Holloway LJ, Thornton A. Comparison of silver-staining nucleolar organizer region (AgNOR) counts and proliferating cell nuclear antigen (PCNA) expression in reactive mesothelial hyperplasia and malignant mesothelioma. *Pathology* 1995;27: 1-4.

Delahunt B, Cartwright PR, Thornton A, Dady PJ. Proliferation kinetics of streptozotocin-induced renal tumours in mice. *Virchows Archiv* 1995;425:577-82.

Delahunt B, Bethwaite PB, Thornton A, Ribas JL. Proliferation of renal cell carcinoma assessed by fixation-resistant polyclonal Ki-67 antibody. *Cancer* 1995;75:2714-9.

**From the Department of Medicine, Wellington School of Medicine:**
Siebers R, Maling T. Mean platelet volume in human essential hypertension. *J Hum Hypertens* 1995;9:207.

# New Products and Services

## New Distributor for Labsystems Finnpipette.

Labsystems of Finland have appointed **Medica Pacifica Ltd** exclusive distributors of their Liquid Handling, Bio Technology & Research Systems Divisions.

The **Liquid Handling Division** concentrates on the **Finnpipette & Finntip** brand products for micro-volume handling. The BioTechnology Division manufactures diagnostic kits, including Torch, Chlamydia, HIV & Hepatitis plus NeoNatal Screening-pKU, TSH & T4. The Research Division is a major innovator in photometer, fluorometry & luminomatry microplate readers.

For further information on the above product groups please contact our office; Medica Pacifica Ltd PO Box 24-421 Royal Oak Auckland Ph 09-6255261 Fax 09-6254396, Mobile 025-974913.

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Abbott Diagnostics (NZ) Ltd. is pleased to announce the launch of B12, Folate and RBC Folate on the IMx immunoassay analyser. The Folate assay uses "Ion Capture Technology" and results indicate that it is the most sensitive and accurate method currently available. For more information please contact your Abbott Diagnostics Representative on 0800 656 233.

Abbott Diagnostics will be launching its automated Ligase Chain Reaction system at the beginning of June. The system consists of a Heater Block, Thermal Cycler and LCx analyser and allows a routing laboratory to perform DNA amplification and detection on an expanding range of infectious diseases. LCR Chlamydia is available now and allows the assay of urine in Males AND Females using only 1ml of specimen. Significant improvements in both sensitivity and specificity over currently available methods make LCR the new "Gold Standard" in Chlamydia Trachomatis detection. For more information please contact David Akeroyd at Abbott Diagnostics.

## Introducing the ABL5 from Radiometer

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

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

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

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

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

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

## New Data Management System for Blood Gas Analysers from Radiometer

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

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

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

## ABL600 Multi-Profile System from Radiometer

Continuing "firsts in blood gas", Radiometer's newest Blood Gas Analysers, the ABL600 series, offer an integrated random access system with on-board data management. The analysers provide the flexibility to select the parameters: choosing from pH, blood gas, oximetry, and electrolytes or any combination, making the analysers the most economical cost per test analyser on the market.
The on-board data management stores and trends patient, QC and calibration data. For a multi analyser site, Clinifile3, Radiometer's PC data management system is available, allowing the monitoring and locking of remote analysers.

## B15 Compact Incubator

HERAEUS introduce the new all-purpose B15 Compact Incubator, a must for all laboratories. The incubator is ideal for a wide range of incubating, tempering, thermal storage and drying applications.

- It operates at temperatures between 20°C and 50°C and is freely adjustable with the temperature display registering increments of 0.2°C. The B15 ensures outstanding heat distribution by a sophisticated air circulation system.
- The B15 is designed to handle loads of up to 5 kg, with a removable insertion plate and a grip recess, ensuring easy loading and unloading of the unit.
- The B15 incubator can be set up directly on any counter top or work bench. The very narrow design and the swing up cover is developed to take up minimum space when opened, optimising the space on your laboratory bench.
- The B15 is equipped with a resettable over temperature protection system designed in compliance with IEC 1010, Class 1.

## Function Line Drying Ovens & Incubators

**HERAEUS FUNCTION LINE DRYING OVENS & INCUBATORS** concentrate on only the most essential functions. This ensures high effectiveness. FUNCTION LINE equipment can be used for a wide range of applications, are easy to operate and very reasonably priced.

The units are designed for unattended continuous operation and are noise suppressed.

**FUNCTION LINE INCUBATORS** handle a wide range of application in biological and microbiological laboratories, in the pharmaceutical and cosmetics industries, in hospitals and clinics for research in veterinary medicine and for quality control tasks.

They are extremely easy to clean and decontaminate. The inner casing and perforated shelves for holding samples are made of corrosive-resistant stainless steel.

Incubators run at operating temperatures of up to 70°C. Precision temperature control is ensured by a microprocessor controller with a large easy-to-read display. A timer and pre-programmed heating up/cooling down profiles are also provided.

**FUNCTION LINE OVENS** T6, T12 and T20 are ideal for heat processing applications such as thermal storage, heat treatment, thermal testing and simple drying processes at temperatures of up to 250°C. Air-circulation drying ovens equipped with hot air fans are designed for applications which require more sophisticated air circulation, fresh air supply and precision heat control systems. The ovens come in three sizes with working chamber volumes of 60, 120 and 200 litres. Due to their narrow design, these ovens offer the greatest possible volume in the least possible space. The air-circulation drying ovens are especially easy to clean thanks to their special design which ensures optimal heat distribution and short heating up times without any obstructive spoilers.

Heating and drying ovens are equipped with a controller which offers permanently-stored heating programs. Time functions, simple temperature and cooling profiles can be used alone or in combination.

For further information please contact:
Radiometer Pacific Pty Ltd
Unit A, 10-20 Sylvia Park Road
Auckland
Phone: (09) 573-1110
Fax: (09) 573-1106

## Assay Kits to Measure Connective-Tissue Proteins

Quick, inexpensive and simple-to-use assays suitable for measuring extracellular proteins in tissues affected by arthritis, arterial disease, tumour invasion, bone and teeth disorders, wound-healing and pregnancy, have been devised by Dr Roy Elliott, a lecturer in biochemistry at Queen's University in Belfast.

The *Bicolor* assay kits, from Bicolor Ltd, are primarily for use in research laboratories and pharmaceutical R & D (research and development) companies. The kits have been researched and developed in Belfast where they are currently being manufactured.

The assays are easy to perform using commonly available laboratory equipment so that the microgramme amounts of substances which are present can be measured accurately.

The company was established after Dr Elliott won one of the 1992 SMART awards presented by Britain's Department of Economic Development's industrial Research and Technology Unit. Six new kits are currently under development for use in the investigation of connective-tissue diseases.

Bicolor Ltd, 10 Malone Road, Belfast, Northern Ireland, United Kingdom BT9 5BN. Company contact: Dr Roy Elliott. Telephone: +44 1232 233699; Fax: +44 1232 663015

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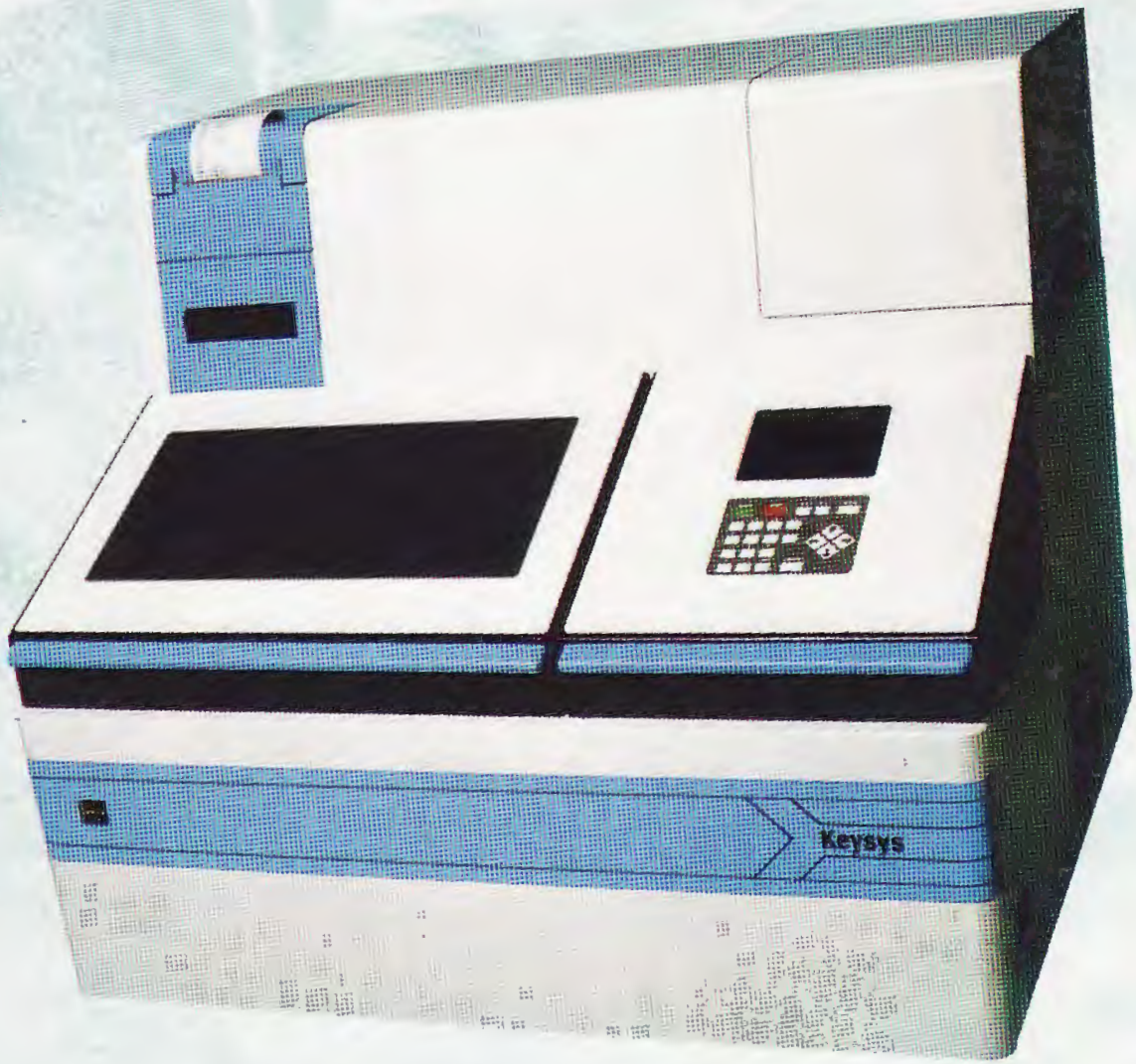


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