THE AUSTRALIAN AND NEW ZEALAND SOCIETY OF RESPIRATORY SCIENCE INC.

December 1999

# Mouthpiece

## President's Address

Welcome to the fourth edition of Mouthpiece for 1999 (since April!) This will be the last edition before the new millennium. I am sure you will all applaud Belinda Breust for her continued enthusiasm and dedication in the role as Editor of Mouthpiece. I also wish to encourage the membership to please remember to (or continue to) submit material and ideas to Belinda as they arise. We must ensure the continued quality of Mouthpiece and keep it both informative and interesting. We are all responsible for the content of our publication

Thank you to all those who rose to the challenge of the ANZSRS Logo Competition. We ended up with a more respectable number and variety of entries after extending the closing date to November. The executive will judge the competition and an update on this will be announced in the near future. The prizes for 1st 2nd and 3rd will be awarded at the Society dinner in Melbourne. The finalist entries will be displayed in the poster display area for the duration of the ASM. The decision regarding the adoption of a new logo will be by a majority vote at the AGM. I notice there are six entries from three members working in the Christchurch Respiratory Laboratory, it gives me a warm glow to think of their wish to contribute to the Society (rather than wonder if we are paying them enough i.e. the prize money incentive).

We have also had a better response to the request for information to construct the ANZSRS register. For those of you who have still not sent your form to Kevin Gain, it only takes a few minutes. We see the register as being an asset to all ANZSRS members and the concept has been talked about for years so lets make it happen.

By now you should have received your registration pack for the 2000 ASM so I imagine your abstracts are already flying off the word processors and being submitted. There is a very comprehensive program for next years meeting. The meeting planning is going well and I wish to extend my thanks to John Martin and the Victorian organising committee. The Sunday program has shaped up well and I am sure there will be something in it for everyone.

It is time to start considering nominations for the next Executive. The next term will commence at the ASM, 2001, which will be in Queensland. This is an opportunity to guide the functioning and contribute to the future of our Society. The next Executive will be voted in at the AGM Saturday 8 April 2000 in Melbourne. The first call for nominations is in this issue.

I would like to extend my very best wishes to all the members of ANZSRS for lots of fun, celebration,

Inside this issue:

# From The editor

*Thankyou to all those who have contributed to Mouthpiece over the past year. As you can appreciate, it is a constant challenge to collect appropriate material for publication. Some members have submitted material for publication voluntarily and this helps enormously in identifying some of the current issues being discussed and what might be relevant to follow up in Mouthpiece. I would like to, however, involve a wider range of people in the contribution of articles, therefore it would be helpful to know the sorts of projects members are working on and issues affecting your laboratory. I urge all of our members to forward articles to me as they see fit to aid in this particular task. I am sure there are many other members who would benefit from the opportunity to contribute their thoughts, ideas and knowledge to Mouthpiece.*

*The next edition is scheduled for just prior to the ASM in Melbourne, so if there are any details you wish to be published before that time please forward these to me over the next couple of months.*

*I have enjoyed my role as editor and look forward to next year's task ...I think!*

*Before signing out for this year, I would just like to wish all members a Merry Christmas and I hope the millennium celebrations live up to all expectations.*

*Belinda Breust*
*Editor*

*Congratulations to **Alan Crockett** who recently achieved the status of **Asscoiate Professor** and **Reader** in Respiratory Medicine.*

# Executive Update

Publication time seems to roll around more quickly every issue and it is sobering to think that almost a year has gone by that we have been endeavouring to steer the ship. It is already time to be thinking about the next term and we urge you all to give serious thought as to who you need to lead this Society. You should be considering nominations now, as they have to be submitted prior to the AGM in Melbourne.

There has been an improved response to the Survey questionnaire with about 30 members having taken the trouble to respond. This is still not a majority of the membership. It is worth responding even if your details haven't changed, as we then know we have the most up to date information possible in our records.

The extension to the Logo competition yielded a number of additional entries and we finished up with 9 entries. These will be given an initial consideration at the Executive meeting to be held early in December. Details of the progress from there will be given next issue. There have been a number of excellent creations submitted. Thanks to all who entered.

There has been considerable progress on the new Society WebPages with an agreement having been reached with a designer to produce the page. We are on target to have it up and running before the end of the year.

Since this will be the last issue this century we would like to wish you all the very best for the new millennium and trust you all have a well earned break over Christmas and New Year.

*Kevin Gain*

# "Diagnostic" Pulmonary Function Tests

*The following article was discovered during a recent journal review and it seemed worthy of reprinting for the interest (and amusement) of our readers. I am sure we can all relate to the "joys" of performing pulmonary function tests. Although I don't know that many of us have been quite so successful in our diagnostic ability…*

To The Editor

I offer the following addendum to the article by Kelly et al (February 1999).

A 49-year-old male smoker developed cough and dyspnoea. Physical examination disclosed clubbing and a prominent localised wheeze over the right anterior chest and trachea. Chest roentograms and CT showed a large right upper lobe mass with encroachment in the right upper lobe bronchus and trachea. The patient was sent for pulmonary function tests (PFTs) to assess the pulmonary reserve prior to bronchoscopy and possible lung resection.

During the initial spirogram, encouraged by the usual exhortations and encouragement to "blow it all out!," the patient expectorated a huge (9cm), cylindrical, slimy wedge of gray and tan tissue, which flopped onto the floor amid 10 to 15 mL of bright red blood and copious mucus. The size of the specimen was such that the pulmonary function technician initially feared the patient had somehow severed his tongue. The tissue was gingerly placed in a plastic bag and transported to the pathology department. The "gross" specimen was found to comprise fragments of squamous cell carcinoma with large areas of necrosis and fibrous tissue. The patient remained singularly unperturbed by the incident and was spared further diagnostic procedures.

Although I do no recommend this method for diagnosing lung cancer on account of its rarity and lack of aesthetic value, it does illustrate unexpected and definitive diagnostic utility for PFTs.

*Mitchell L. Margolis, MD, FCCP*
*Philadelphia VA Medical Center*
*Philadelphia, PA*

*This article was reprinted with the permission of the original author, Mitchell Margolis and Chest (Chest 1999: 116 (2);587.)*

## Thoracic Society of Queensland

Annual Scientific Meeting 1999, Hyatt Regency Sanctuary Cove

This year's Thoracic Society of Queensland meeting followed the successful format of recent years, starting with a welcome BBQ on the Friday night, research presentations Saturday morning, conference dinner Saturday night, and a symposium on the Sunday morning ( entitled The Renal/Pulmonary Interface) with a parallel session for ANZSRS and ASTA (Qld branches) workshop.

The theme for the ANZSRS workshop was "Exercising the Mind". Members were privileged to have Jeff Pretto from the Austin & Repatriation Medical Centre in Melbourne as our Guest Speaker. Jeff gave 2 presentations, one on normal values and the other on selection of workload increments for exercise testing - both were very interesting talks and well received by the audience. Other presentations during the session included flow-volume loops during exercise, exercise induced asthma, simulated high-altitude exercise testing, exercise as part of a home-based pulmonary rehabilitation program, and the effect of walking aids on exercise performance in COPD patients. All in all, quite a useful couple of hours.

Of course, the social events were well attended and enjoyed by all - some more so than others! One, who shall remain nameless (in print, at least) apparently has a head start for when the anticipated 'sofa surfing' craze takes off!!

If you want a tax-deductible QLD holiday, put TSQ 2000 on your list of must-do events!

*Mike Brown*
*Senior Scientist*
*Royal Brisbane Hospital*
*Brisbane QLD*

# AUSTRALIAN & NEW ZEALAND SOCIETY OF RESPIRATORY SCIENCE Inc.

## 2000 ANNUAL SCIENTIFIC MEETING
## PROGRAMME

## Friday 7th April 2000

| | |
|---|---|
| 2.30pm – 5.30pm | **Board Meeting**<br>Function Centre, St Vincent's Hospital 11th Floor |
| 7.00om – 9.00pm | **Welcome Reception**<br>Observation Deck, Level 55 Rialto Tower 525 Collins St, Melbourne<br>Sponsored by Air Liquide Healthcare<br>Guest Speaker Dr Michael Pain Royal Melbourne Hospital<br>" Foundations of modern lung function testing; 1846 - ?" |

## Saturday 8th April 2000

| | |
|---|---|
| 8.30am - 4.00pm | Oral Presentations<br>Poster Presentation<br>Guest Speaker Assoc Prof Robert Jensen (Statistics for the Respiratory Scientist) |
| 4.00pm – 5.00pm | ANZSRS 2000 Annual General Meeting |
| 7.00pm | ANZSRS Dinner<br>Mayfair Room, Grand Hyatt Melbourne<br>123 Collins St, Melbourne<br>Sponsored by Anaesthetic Supplies |

## Sunday 9th April 2000
## Quality Assurance in the Respiratory Laboratory Symposium

### *Session Title: Opening & Plenary Session*

| | |
|---|---|
| 9.00am – 12.15pm | Sources of errors in Lung Function Testing |

### *Session Title: Challenge Testing & Aerosol Performance*

| | |
|---|---|
| 1.15pm – 2.30pm | Presentations |
| 2.30pm – 2.35pm | Announcement of 2001 Annual Scientific Meeting<br>(Brisbane 17th to 19th March 2001) |
| 2.35pm – 3.00pm | Meeting Close<br>Maureen Swanney, President ANZSRS |

# Determining a Clinically Significant Change in Serial Lung Function Tests

Routine lung function tests, as with any physiological measurement, are subject to inherent variability. But what is considered a normal variability and at what point do we start to question the reliability of our results?

Variability observed in serial pulmonary function tests (PFT) is due to possible disease related factors and/or other biological and technical factors, otherwise referred to as measurement error (ME). Distinguishing between these two sources of variability is essential in determining a clinically significant change in lung function.

For the clinician, the variability of interest (the signal) is obviously that resulting from disease progression or treatment. All other sources of variability contribute to the "noise" of the measurement and should ideally be minimised.

"Distinguishing between these two sources of variability is essential in determining a clinically significant change in lung function."

To answer the initial question of, "what is a clinically significant change", we first need to identify the extent to which ME contributes to the variability. ME is monitored within laboratories by routine procedures such as calibration and the use of biological controls. These techniques allow us to regularly assess the performance of our instrumentation and technical skill. The most reliable way of determining a significant contribution from ME is to calculate the coefficient of variation (COV) for each control subject. In these situations, tests are completed by experienced subjects under the supervision of experienced staff, representing ideal conditions, or as close to as possible. The acceptable variability for quality assurance (QA) sessions is defined by the confidence limits set under these "ideal " conditions, which then provides for the control of the "noise" component.

These limits are empirically defined and we have little to convince us that they are acceptable with the exception of interlaboratory comparison of QA data that helps define, with some confidence, whether our ME is within acceptable limits?

Published literature has demonstrated a large interlaboratory variability in routine pulmonary function parameters despite the introduction of test standards, suggesting that technical factors do in fact have a considerable contribution to measurement error. Previously published data quotes a 3% variability in vital capacity related to ME ie. instrumentation, technical skill, procedures, computer software, observer/subject interaction)[1]. This statistic seems quite conservative when to related to other pulmonary function parameters. Data by Guy et al 1997[2], using trained normal subjects, demonstrated a large range of interlaboratory COV ranging from 4.8% FRC to 14% RV. These statistics highlight the large contribution that instrumentation and other technical factors (such as technician skill, method of performance, selection of results) have on the variability seen in PFT.

Once having quantitated within laboratory ME, the clinician then has the task of identifying a clinically significant change relating to disease. Introducing a patient into the equation complicates the picture further by adding other factors that contribute to the variability. We now have additional factors such as motivation, subject/ technician interaction, physical discomfort etc. For all these reasons, we cannot expect to achieve the reproducibility observed in QA subjects, but instead follow the guidelines recommended in the literature for what is a normal variability and at what point is the change in lung function clinically significant.

In order to define an upper limit for a normal variability, the ATS statement on spirometry recommends an absolute change of 15% over a period of 1 year (slightly less over a period of

# Determining a Clinically Significant Change in Serial Lung Function (cont…)

weeks)[3]. The implication is that anything above this percentage change relates to a significant change in disease process. This percent change seems quite generous in view of other studies on longitudinal change in lung function that quote a coefficient of variation (COV) as low as 3.5%[4]. The Lung Health Study of 1991 calculated a COV for FEV1 and FVC in subjects with mild to moderate airflow limitation as 5.8%[5], and Cooper's study demonstrated a COV for a normal group of subjects to be 5% for FEV1 and 4% for FVC[6]. (NB. A normal range is then considered twice the COV).

The ATS statement on acceptable reproducibility measurements for DLCO recommends a COV of 5% for both intersession and intrasession variability for DLCO[7]. Again the published literature on variability for this measurement ranges considerably from 4.2% to 9% COV [8,9]. During a review of QA data at PAH, we identified a COV for biological controls as 7.7%. Suprisingly the COV for DLCO is actually more than that recommended by the ATS for a normal population. Also the unpublished data referred to earlier reinforces that a 5% COV for DLCO is perhaps inappropriate.

Data on normal variability in static lung volume (SLV) measurements is also scarce. The ATS has no statements or recommendations regarding SLV, however, the European Respiratory Society recommends a 5% COV for the measurements of FRC[10], and data from Cooper's study[6] in 1990 demonstrated that TLC is the least variable of the SLV measurements with a COV 5%, FRC 9% and RV at 27%.

We would expect that data obtained from the "ideal" situation as in a QA program would have a lower variability than that observed during patient testing. Interestingly, a review of biological control data from the PAH is, based on the literature recommendations, in contradiction to this theory. These inconsistencies may be the results of very little published data

on intersession variability in pulmonary function tests. In view of that, it may be a useful exercise to collate QA data from various hospitals throughout Australia and New Zealand to compare the degree of variability observed in instrumentation throughout laboratories.

Identifying a significant clinical change in lung function will depend on the degree to which measurement error contributes to routine pulmonary function tests, and this is based on your own laboratory's QA program, the reproducibility of data and the correct calibration of instrumentation. If the data is different, but in fact reproducible and the instrument calibration is valid, then it is up to the clinician to assess the significance of this change in terms of disease progression or clinical treatment.

*Belinda Breust M.Sc. CRFS*
*Respiratory Scientist*
*Princess Alexandra Hospital*
*Brisbane QLD*

1. Becklake MR. Concepts of normality applied to the measurements of lung function. Am J Med, 1986; 80: 1158-63.
2. Guy P, Pretto J, Rochford D. Interlaboratory variability in the measurement of lung function. Proceedings of ANZSRS ASM, 1997.
3. American Thoracic Society. Lung function testing: selection of reference values and interpretive strategies. Am Rev Respir Dis, 1991; 144: 1202-18.
4. Nganda LW, Ernst P, MS Jakkola et al. Spirometric lung function: distribution and determinants of test failure in a young adult population. Am Rev Respir Dis, 1992; 145: 48-52.
5. Enright PL, Johnson LR, Connett JE et al. Spirometry in the lung health study. Am Rev Respir Dis, 1991; 143: 1215-1223.
6. Cooper PJ, Robertson CF. Hudsen IL et al. Variability in pulmonary function tests in cystic fibrosis. Ped Pulmonol, 1990; 8: 16-22.
7. American Thoracic Society. Single-breath carbon monoxide diffusion capacity (transfer factor). Recommendations for a standard technique – 1995 update. Am J Respir Crit Care Med, 1995; 152: 2185-98.
8. Crapo RO, Morris AH. Standardised single breath normal values for carbon monoxide diffusion capacities. Am Rev Respir Dis, 1981; 123: 185-9.
9. Hathaway EH, Tashkin DP, Simmons MS. Intraindividual variabil-

Good luck to Ms Souvanny Khov and her husband, Bak, who are expecting their first baby in early January.

# Quality Assurance and CUSUMS

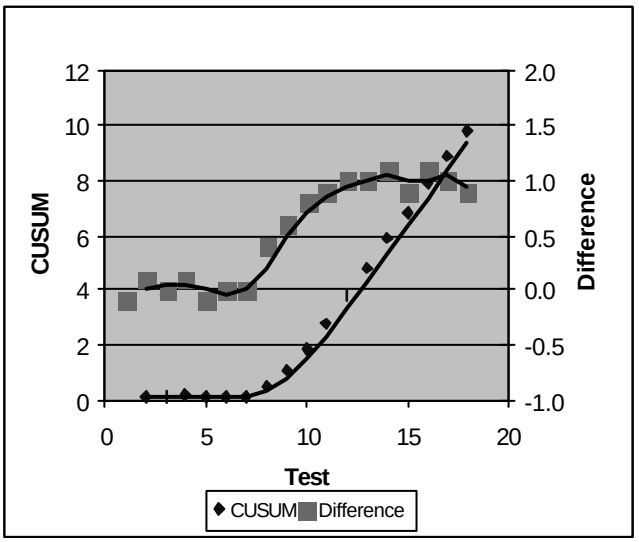
The plotting of CUSUMS is one of the techniques designed to highlight trends in a particular measurement over time and provides a useful tool in quality assurance (QA) programs in assessing measurement error in biological controls. CUSUM is simply the cumulated sum of differences between a current measurement and a standard value. The standard value could be an *absolute* measurement, for example FVC, or a *difference*, for example between a subject's "standard" FVC and their current FVC.

The usual Levy-Jennings type plots would have the FVC, or difference, plotted on a time axis with limits set at the appropriate Standard Deviations from the standard value. The data points should lie within those limits – if not then a measurement problem exists. This is an old technique and still forms a good basis for a QA program. The difficulty is in clearly identifying trends in the data before the measurements are out of control, that is, before the confidence limits are breached. This is where CUSUMS is advantageous in QA programs.

The concept of CUSUMS is that the differences are summed in a cumulative fashion. This means that provided that variation is random, the CUSUM will approximate zero – half the data will be positive and half will be negative. If there is a drift in one direction, the CUSUM will be increasingly positive or negative. This trend will be picked up well before the confidence limits are breached. CUSUMS provide an early warning device that something is amiss.

There may come a time when it is necessary to reset a CUSUM plot. Take, for example, the case of a QA subject who has taken up swimming. The VC rises steadily as the swimming progresses. This results in the CUSUM rising rapidly. This is appropriate as, in fact, the baseline is changing. The VC has increased as a result of training. The CUSUM will continue to increase in a curvilinear fashion until the baseline again becomes stable. At this point there is effectively an offset and the CUSUM plot should become linear once more. This will show up more clearly if the difference data from which the CUSUM is computed are examined. Once the baseline stabilises again, the new "standard" FVC should be entered into the calculation and the CUSUM is effectively reset. The data in figure 1 is generated from a standard VC of 5 litres with a drift to 6 Litres.

**Figure1**. CUSUM plot showing the increasing trends in VC from 5 to 6 litres.




Another situation where a CUSUMS plot may need to be reset is the case of a change in lab staff and equip-

# Quality Assurance and CUSUMS (cont…)

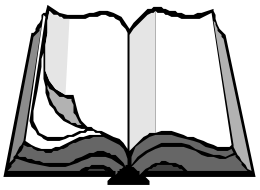
ment. Again the crucial question is "how stable are my reference values?" If differences between current and reference values are being used, rather than absolute measures, then changing staff should not affect things. This is the advantage of using differences rather than absolute values. If absolute values are in use then clearly each individual must be compared against their own reference value. If the equipment change results in altered QA values then you must ask, "why has the result changed"? This suggests that either something different is being measured or one instrument or the other is wrong. Clearly this needs to be resolved prior to starting clinical testing. If new equipment is in use then I would recommend starting new QA plots but they really should be directly comparable to the old ones – assuming the same things are being measured.

In summary the CUSUM plot is a useful diagnostic aid for identifying trends before the measurement goes out of control. It is crucial that when trends appear, you look beyond the data to determine whether the equipment, the "standard" or the method has altered. Cusum plots simply provide a technique for picking trends and accordingly, once a baseline shift has been stabilised then they can and should be reset by the incorporation of new reference values into the calculation. Unlike a classic Levy-Jennings plot, they do not provide a direct measure of how far out a measurement is.

*Kevin Gain, PhD*
*Labroatory Manager*
*Wellington Hospital*
*Wellington NZ*

## Pulmonary Function Laboratory Management and Procedure Manual

Those laboratories aiming for accreditation in the near future, may be interested in this publication. The ATS has developed a comprehensive, practical tool to help manage the important aspects of your pulmonary function lab. The above titled procedure manual is designed to be customised to individual labs. It includes chapters on methods and procedure for all administrative aspects of your lab such as setting up a procedure manual, a glossary of terms and abbreviations, lab personnel needs, hygiene, safety, and quality control measures. It also contains procedural information on commonly performed pulmonary function tests such as spirometry, lung volumes DLCO, exercise testing, blood gas analysis, and pulse oximetry, plus a selection of useful equations and tables. There is also guidance on bronchodilator administration



For those members interested in finding out more about the manual, you can email Ruperto Johnson at rjohnson @lungusa.org or www.thoracic.org/atsnews/news0798/story12.html

# Profiler

## Kevin Gain

Kevin Gain came into this world down-under, in the sunny seaside city of Tauranga. He is kiwi born, bred, burnt (susceptible to sun) and then educated at Victoria University in Wellington. There Kevin applied himself to achieve a B.Sc. Hons majoring in chemistry and biochemistry. He then travelled further south to the Department of Clinical Biochemistry at Otago Medical School in 'Scarfie' territory where he accepted a student research position. His focus was the role of Insulin in the development of the foetus, using the rat as a model. His Ph.D. was completed in 1976 and from there, Kevin took to the international stage at the University of Southern California, working in research in the Department of Molecular Biology. During the two years spent in LA, Cupids arrow struck hard (Lata came into his life) and marriage ensued. Unfortunately, the honeymooners were interrupted by the mighty US Immigration Service as Kevin, a NZ resident in California, and Lata, a Fijian citizen with permanent residency status in Canada, (but wanting to live in America – whew!) were very nearly separated at the Canadian/ US border just a week after tying the knot!

A kiwi through and through, Kevin decided New Zealand was the place he wanted to be so travelled back to Otago University to join the Academic staff and continue his previous Ph.D. work. His research contributed to the early knowledge of growth-promoting peptides which appeared to be derived from modifications to Insulin.

Kevin then took a risk by completely changing fields – both geographically and professionally. On arriving back in Wellington, he entered the respiratory scene in 1986 as the Scientific Officer in the Department of Respiratory Medicine at Wellington Hospital. Originally Kevin's time was split between the hospital and the Wellington School of Medicine, but the Hospital eventually prevailed and had Kevin all to themselves.

Kevin's main contribution while at the Hospital has been on the development of exercise physiology as a diagnostic tool and developing the sleep-related respiratory field. This has been accompanied by a hard fight both for hospital funds and new equipment. He has also given considerable time towards education and the promotion of standards for Spirometry testing in occupational and general practice settings. Kevin has also been a great help to many regional centres in the North Island with advice and encouragement for smaller Respiratory Laboratories.

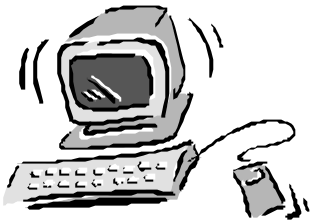
Recently Kevin was co-opted for a project with Information Services to implement a new hospital-wide patient information system. Kevin is finding this is extending his skills and benefiting his position as it evolves to more management-orientated work. He is the manager of the Respiratory Laboratory and Unit Manager of the entire Department. However he is still employed as a full time scientist as well as a Lecturer for the Clinical School.

In his spare time (!!) Kevin dabbles in model trains, visiting model shops and exhibitions whenever he travels.

Kevin is a dedicated scientist who strives for excellence in all he undertakes. He is always encouraging and supportive of others and very generous with his time to help others. Kevin is currently the secretary on the executive of ANZSRS and has been a board member representing the North Island of New Zealand for many years. He is a friend and colleague and I wish to acknowledge his support and friendship.

## What's Happening with the ANZSRS Website?

As discussed at the AGM in Canberra earlier this year, the Society website is in need of a major overhaul. The ANZSRS Website Committee have been active since then and we hope to have a completely new site up and running well before next year's Annual Scientific Meeting in April. We see this website as an important resource, not only to those outside the Society who are seeking information about us, but also as a focus for communication and information exchange within our group. At this stage the major sections planned for the new website include:



- Homepage
- About the Society – aims, history, structure, constitution
- Meetings
- Upcoming ASM details
- Brief summaries of past ASMs including papers presented, keynote speakers, themes
- Bulletin Board
- Certification details
- CRFS exam –general information, exam schedule, study guides and application forms
- Membership applications
- Membership types, fees, application forms
- Newsletters –past and current
- Contacts
- Email list
- ANZSRS position statements, standards
- Related links

The website will be created by a professional website developer and to increase its utility, it will be regularly updated and upgraded so that the information provided will always be current. We would welcome comments from all members regarding the new website when it is up and running, and suggestions for other features to be included on this site would also be appreciated.

*Jeff Pretto*
*ANZSRS Website Committee*
*email: jeff.pretto@armc.org.au*

## Call for Nominations

Members are asked to submit nominations for the next ANZSRS Executive Committee.

Nominations for the positions of President, Secretary and Treasurer should be forwarded to:

*Kevin Gain, (ANZSRS Secretary)*
*Email: Kevin.Gain@wnhealth.co.nz*

The next Executive will be voted in at the AGM Saturday, April 8, 2000 with a view to begin a two year appointment, at the 2001 AGM.

Best wishes to Pam Liakokos (Senior Sicentist, Dept. of Respiratory Medicine, The Alfred Hospital, Melbourne), and Nick who are expecting their first child.

Also to Kevin Gain , who recently celebrated his 50th Birthday!

# Survey

# ANZSRS Database

For the purpose of updating the current ANZSRS members' database, please fill in the appropriate details where required. We would appreciate if ALL members could take the time to complete the survey as this wil be the last opportunity.

Name

Laboratory

Hospital/Institution

Street Number/Name

Suburb/Town

State/Country Postcode

Phone Number

Fax Number

EMAIL

**The Australian and New Zealand Society of Respiratory Science Inc.**

**Survey forms should be sent to:**

Kevin Gain (Secretary)
Dept. Respiratory Medicine
Private Bag 7902
Wellington Hospital
Wellington South, NZ
Phone: 64 4 385 5867
Fax: 64 4 385 5550

**CRFS Qualification** (please tick) YES ☐ NO ☐

**Highest tertiary qualification attained**:

Assoc. Dip. ☐ Bachelor Degree ☐ Masters ☐ PhD ☐

Other, please explain; _____

**Do you have one, or more area(s) of interest/ expertise?** (please tick)

Instrumenation ☐ Methodology ☐ Physiology ☐ Education ☐ Computers ☐ Administration ☐

Other, please explain; _____

**On what subjects have you had publications?** _____

**The Australian and New Zealand Society of Respiratory Science Inc.**

Executive Committee

Maureen Swanney (President)
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Kevin Gain (Secretary)
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John Martin (Treasurer)
Sleep Disorder's Centre
St Vincent's Hospital
41 Victoria Pde
Fitzroy VIC 3065
Ph: 03 9288 3323
Fax: 03 9288 3322

You are invited to contribute short articles, meeting reports and calendar details etc. These should be sent to :
**Mail:** B. Breust, Respiratory Laboratory Level A3, Princess Alexandra Hospital, Ipswich Rd, Woolloongabba, QLD, 4102**.**
**Ph:** 07 3240 2046**.**
**Fax:** 07 3240 5899.
**Email**: breustb@health.qld.gov.au

# ANZSRS Branch Meetings -
## Preliminary Dates

**NSW**

Summer: Wednesday February 9
Autumn: Annual Scientific Meeting, Melbourne
Winter: Wedneday July 12
Spring: Wednesday October 11

**QLD**

Wednesday February 23
Wednesday April 26
Wednesay June 28
Wednesday August 30
Wednesday October 25

**SA**

Tuesday February 15

## CRFS Examination

The Westmead Hospital Respiratory Function Laboratory is a Category 4 Accredited Respiratory Function Service. The laboratory has experience with an extensive range of tests including flow-volume curves, TLCO, body plethysmography, airway provocation (methacholine, non-isotonic, exercise, hyperventilation), rhinomanometry and cardiopulmonary exercise. The staff of the laboratory invite all respiratory scientists and physicians to view the operation of the laboratory and discuss any aspect of respiratory science. This invitation is particularly extended to candidates preparing for the Certified Respiratory Function Scientist (CRFS) exam who may lack practical experience in some techniques or tests assessed by the examination, eg body plethysmography. The laboratory is also willing to review the CRFS exam content.

Further information can be obtained
From: Stephen West:
Ph: 02 9845 6043
Email: stephenw@wm-general.wsahs.nsw.gov.au

Reminder!

*The next CFRS exam will be held on 17 March, 2000. Applications close February 4 ,2000.*