



# Mouthpiece

April 1999

## President's Address

Welcome to the first newsletter for 1999. The New Zealand based Executive started its two-year term at the end of February. Kevin Gain of Wellington (Secretary), John Martin of Melbourne (Treasurer) and myself from Christchurch form the new Executive. John Martin has generously agreed to stay on as Treasurer so for the next 2 years he can consider himself to be an honorary "Kiwi" - I hope he appreciates this honour.

On behalf of the Society I would like to thank the past Executive and acknowledge their contribution to the Society over the last two years. Paul Guy was instrumental in the resurrection of Mouthpiece and has, by virtue of circumstance, been actively involved in the running of the last five Annual Scientific Meetings (ASM). Paul has also secured an agreement with the Australian Lung Foundation ASM Secretariat for three years, which takes a considerable amount of work off the ANZSRS for future meetings. Jeff Preto developed a Society database, which has improved efficiency in the running of ANZSRS. I know Kevin Gain was very impressed and appreciative during his hand over meeting with Jeff.

Congratulations to all those involved with this year's ASM. I am sure all those who attended would agree that the standard of presentations was outstanding and as usual the social events were most enjoyable, allowing us to catch up with friends and relax. Professor Jack Clausen from San Diego was, for the second time, the Society's invited speaker. His contribution was well received and appreciated. Dr David Martin was a very entertaining and informative speaker and chaired the Exercise Symposium. I hope those who took the opportunity to tour the Australian Institute of Sport enjoyed the experience. Unfortunately I had to miss out due to time constraints in travelling back to Christchurch.

On behalf of the Society I wish to thank Eleonora (Nory) Side and congratulate her for her dedication and success with Mouthpiece over the last two years. The Executive has appointed Belinda Breust from Queensland, as the new Editor of Mouthpiece. We

are grateful to Belinda for volunteering for this role and we intend to give her all the support we can. I think it is important to keep in mind that Mouthpiece belongs to all of us and the continued success and growth of Mouthpiece will only be enhanced by contributions from the membership. I have no doubt that Belinda possesses the assertiveness to encourage contributions. Good luck Belinda.

We hope that many of you will enter the Society's Logo competition. Many members feel it is time to renew our Logo so it will be interesting to see what we can come up with.

It is difficult to commit, at this early stage of our term, as to New Zealand's intentions for the future direction of ANZSRS over the next two years. We do however, intend to develop guidelines for an education scholarship. We certainly wish to reinforce the benefit to members in attaining the Certified Respiratory Function Scientist credential and encourage all laboratories to aim for Laboratory Accreditation. We also hope to see further development of Mouthpiece, the official Society magazine.

Kind regards and best wishes to all.

*Maureen Swanney  
President*

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# FROM THE ~~editor~~

Welcome to our first edition of Mouthpiece for 1999. Yes, it has been a long time coming considering we are already into April. As the new editor of our newsletter, there were some teething problems to overcome, but having addressed these, MP is back in print.

For those of you who don't know, Eleanora Side has resigned as editor as of our last AGM. Nory has justifiably decided to spend more time caring for her child and less time editing our magazine. I have taken on this onerous task and can only hope to maintain the high standard that Nory established over the past two years.

This edition of MP presents some features that will hopefully become regular items in our newsletter. **Profiler** is a segment that will highlight the achievements of a different member each edition, simply to increase awareness of our society members to the expertise amongst us. **Letters to the Editor** will provide an opportunity to discuss any technical problems, administrative issues, and hopefully receive feedback, or at least generate some discussion on the matter. Everyone is asked to send their contributions to **Websites of Interest** as many of us now have access to the internet. For those who do not, we will endeavor to keep publishing the most relevant details in MP. Hopefully our own ANZSRS website will feature in the near future...

Some of the other features you are already familiar with. **Jobspot** will continue to provide an

opportunity for members to advertise vacancies and notify of appointments. Personally, I would like to see Jobspot used as a medium for organising future job exchanges similar to the one I participated in last year. Along with the **President's Address, Executive Updates** will keep you informed of the progress within the Executive Committee.

The aim will be for a more frequent publication however the frequency of publication will depend largely upon regular contributions from you, the reader. I would like to see the newsletter become a more interactive medium. With our regular segments and feature articles, it is hoped the newsletter will be an informative, educational and organisational tool that we all contribute to and benefit from. With that in mind, I would urge you to submit any relevant pieces of literature. Feel free to comment on what you would like to see in the newsletter and how best to improve the publication.

Once again I would like to thank Nory for her input and wish her luck on her new endeavour

Belinda Breust  
Editor

## **Early Reminder...**

*The 21<sup>st</sup> ASM of the ANZSRS will be held on the 7<sup>th</sup>-9<sup>th</sup> April, 2000 in Melbourne.*

# Executive Update

The Annual General Meeting of the Australian and New Zealand Society of Respiratory Science Inc. was held at the National Convention Centre Canberra on Saturday February 27. Of a total delegate attendance of 123, 52 members attended.

Key topics of discussion at the meeting were:

1. **Treasurer's report – cash reserve** Following the Treasurer's report, the membership were asked to submit ideas for returning benefits to the membership from the cash reserves of the Society. No decisions were taken but the incoming Executive will consider all ideas put forward. Proposals will be summarised and reported at next AGM.
2. **Respiratory Scientist Certification exam** There were no passes from examinations last year. A commitment was made to encourage members to sit the exam and it was restated the examination process has been set up to provide a supportive framework to help members develop their skills and receive credit for doing so. It was decided at the Board meeting to offer a candidate who failed, the opportunity to resit within a shortened timeframe – the advantage being that the material was still fresh in their mind, rather than having to wait for the next scheduled exam.
3. **Constitution Amendments** Two amendments to the constitution were carried by greater than two thirds majority. The first (clause 14.3) was a requirement of the New Zealand Inland Revenue service and was a condition of the Society holding Tax Exempt status in NZ. The second was aimed at providing a further route by which members could progress from Associate to Ordinary status *viz* allowing progression on merit. The full text of these amendments is printed aside
4. **Satellite symposia** Concern was expressed about the number of satellite symposia surrounding the TSANZ meeting. Several members were concerned that these satellite meetings clashed with our ANZSRS meeting. The Executive was asked to raise this issue with the TSANZ Central Programming Committee. Paul Guy will be doing this in conjunction with the Melbourne meeting next year.
5. **Editor** The Executive was given authority, by the Board at the Board meeting, to appoint the newsletter editor. Belinda Breust of QLD was duly appointed to the Editorship of Mouthpiece. We ask that all members support her and the Society by making contributions of news, notices, requests for information and technical comments. In particular, if asked for a contribution please do not hesitate or procrastinate.
6. **Society Webpage** There was much discussion relating to the Society Webpage and a unanimous feeling that the Webpage provided some exciting possibilities for the Society. A working party has been set up including Jeff Pretto, Brenton Eckert, Kevin Gain, Bruce Graham and Mike Brown. This group has been charged with having a new Website established by the end of this year. The success of this venture depends on the site being accessible to the membership and providing information / services of help to the membership. This success is going to be difficult to achieve by the working group in isolation. Accordingly, I would implore the membership to forward their own ideas to Jeff Pretto so they can be considered.
7. **New Executive** The meeting closed with handover to the new Executive Maureen Swanney (President), Kevin Gain (Secretary) and John Martin (Treasurer).

It was of concern to me that the attendance at the AGM was so low (42% of members). Whilst AGM's are traditionally poorly attended, they are important to the well-being of the Society. The lack of attendance indicates one of two things, complacency or lack of interest. Both these attitudes undermine the vitality of the Society. The Board members (some of whom were also absent without apology) need to raise these issues with their local members. I hope that next year's AGM enjoys a higher rate of attendance.

Congratulations to the Canberra team for a fine meeting and thanks for your efforts. It is a big undertaking. Thanks too, to the outgoing executive who did a sterling job of keeping the Society's affairs in order. The future is daunting as we have a tough act to follow. We will do our best and look forward to the support of the membership in our endeavours.

Kevin Gain  
Secretary

## Constitution Amendments

- *The following clause was added to satisfy NZ requirements for tax exempt status:*
- 14.3 *No addition to or alteration or recession of the rules shall be approved if it affects the non profit clause or dissolution clause.*
- *The clause relating to Ordinary members was modified (highlighted section) to read, and clause 5.1.1 was added:*

### 5.1 Ordinary members

*Ordinary members shall consist of those individuals who are admitted as voting members by the Board on payment of such fee and compliance with such conditions of membership as are imposed by the Board from time to time. Ordinary members shall be individuals employed in the field or respiratory technology who have an appropriate tertiary qualification plus 1 years experience in a laboratory recognized by the Board, or **alternatively those who are granted Ordinary membership status based upon merit as outlined in clause 5.1.1.** An ordinary member is entitled to vote at all meetings and to hold an appointed or an elected office in the corporation. Ordinary membership fees shall be determined by the Board.*

### 5.1.1 Ordinary membership status based upon merit.

*Associate members who have, in the reasonably held opinion of the Board, made a significant contribution to the field of respiratory science, or to the Society itself, can be upgraded to Ordinary membership status. Applications for upgrade to Ordinary membership based upon merit must be made to the Executive and must detail reasons for merit-based upgrade. Members applying for such are expected to have attained the Certified Respiratory Function Scientist credential. Such applications will be dealt with at the Annual Board Meeting and require a simple majority to be accepted.*

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# Competition Announcement

## New ANZSRS Logo

*Do you have a flair for graphic design?*

*Do you know someone who does?*

*Why not enter our competition for a new logo for our Society.*

First prize is **A\$300** with 2 runner-up prizes of **A\$100** each.

Entries should be submitted as original artwork or by email to the Secretary by **September 1, 1999** and should include a brief description of what the logo represents.

**Entries to:** Kevin Gain (Secretary ANZSRS),  
Dept. of Respiratory Medicine, Wellington Hospital,  
Private bag 7902, Wellington South, NZ  
email: [woutkeg@mash.wnhealth.co.nz](mailto:woutkeg@mash.wnhealth.co.nz)

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## Congratulations

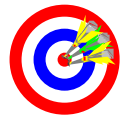
...To John and Julie Martin on the birth on their baby girl, Nicole Jane, on the 18<sup>th</sup> of March. Now with only one income and another mouth to feed we will have to watch those outgoing ANZSRS expenses very carefully!

Congratulations also to Sue and Will Brenton on the birth of their son, Kyle in October of last year.

## Good Luck

...To Alison Hansford of the Repatriation General Hospital, Concord. Alison, together with 7 of her colleagues, leave for Nepal in May to study the effects of Acute Mountain Sickness on sleep and other physiological parameters. Sounds too good to be true!

## Jobspot



To Whom It May Concern,

My name is Linh Thuy Quach and I have recently completed a B.Appl Sc. (Medical Biophysics & Scientific Instrumentation) at Swinburne University of Technology. I am interested in working as a Respiratory Technician/Scientist.

I have learned many skills and techniques associated with lung function testing. In 1998, I was employed as a Research Assistant in the Respiratory Medicine Department working on cystic fibrosis in children. In 1997 I was employed at the Royal Children's Hospital as a Medical Biophysics Trainee. Over this 12 month period I worked on a project entitled "lower respiratory tract infection; inflammation and pulmonary function in cystic fibrosis infants".

I am very interested in the respiratory field and feel my skills, qualifications and employment experiences are well suited to a position in the respiratory laboratory.

Yours Sincerely,  
Ms Linh Thuy Quach

*If you would like further details regarding Ms Quach's qualifications and experience, please contact the Editor;  
[breustb@health.qld.gov.au](mailto:breustb@health.qld.gov.au).*

# Lily Daviskas

Lily (Evangelia) Daviskas was born in Greece and came to Australia (with her husband, Dimitrios) via the UK. Soon after her arrival in the UK, while learning English, she completed her university entrance exams (O levels and A-levels). Once in Australia she came to work at the Royal Prince Alfred Hospital in the Microbiology Department. Later, in 1974, she crossed the Road (Missenden) and became a Hospital Scientist-in-training in the Department of Respiratory Medicine. She completed her Bachelor of Science at the University of Technology in Physical Biology and graduated in 1978. In 1980 she had a daughter, Eleni, and took some well-earned time off work.

Through the eighties she became very interested in research and enrolled in a Masters degree in Biomedical Engineering at the University of NSW. This is known as a very tough degree that includes course work as well as a thesis. At the time Lily was very interested in the possibility that water loss from the lower airways was the cause of exercise-induced bronchoconstriction, a common problem in persons with asthma. Lily developed a computer model of heat and water vapour transport in the human respiratory tract that reproduced data obtained experimentally. This model predicted that conditioning of inspired air, under temperate conditions, not only involves the extra thoracic airways, but also the intrathoracic airways. The number of airways involved depends on the level of ventilation. Later this model was used to demonstrate that the magnitude of water loss, was sufficient to cause enough dehydration of the airways, to cause the airway surface liquid osmolarity to rise. Lily's thesis became the basis for the evidence in support of the hypothesis that airway drying, rather than cooling, is the cause of exercise-induced bronchoconstriction.

Lily graduated as Master of Biomedical Engineering in 1988, having only been able to devote part of her time to research as she was the Senior Hospital Scientist running the Respiratory Laboratory on a daily basis. By 1992 she was stimulated to carry out further research and wished to do this full time. She left her laboratory staff position to pursue her PhD while doing full-time research into mucociliary clearance in the Department of Nuclear Medicine.

Her initial experiments in mucociliary clearance (MCC) were to obtain direct evidence to support the concept of airway drying and

EIB. She reasoned that if the airways did dry during hyperventilation with dry air, then there must be a transient reduction in MCC. This turned out to be the case and provided the first direct evidence to support the airway drying hypothesis. As one of the consequences of airway drying may be an increase in airway osmolarity, Lily went on to study the effect of hypertonic saline on MCC in asthmatics. It turned out that increasing osmolarity was a profound stimulus to increasing MCC and this had enormous clinical potential for other diseases. She received her PhD from the University of Sydney in 1997 for this work. From the wet aerosol of hypertonic saline studies, she progressed to using the dry powder preparation of mannitol as an osmotic stimulus. For her postgraduate work she started well and was the first in the world to report that inhaled mannitol could increase MCC in asthmatic and healthy subjects. Her recent studies with mannitol, demonstrating a profound increase (to normal values) in MCC in patients with bronchiectasis, have been a major breakthrough and hold great promise for new interventions to treat this disease.

Lily is now a Senior Research Officer employed on an NH & MRC grant and will continue her work in mucociliary clearance and lung disease. She has always shown a great sense of purpose in her research. Her ability to solve the insoluble and to make measurable what is difficult has been an inspiration to myself and others around her. Her quiet persistence has brought productivity to areas of clinical research previously thought as too hard to become routine. Her technique for measuring MCC is likely to become the industry standard.

I would like to think this ability reflects her excellent training in science and physiological measurement as well as her innate characteristics of persistence and attention to detail. Few of us have needed to change countries and language to fulfil our scientific aspirations, and we need to recognise and reward and welcome those who do. Lily Daviskas, a close friend, a great mentor and a good scientist.

*Sandra Anderson PhD, DSc  
Principal Hospital Scientist  
Royal Prince Alfred Hospital*



# 1999 ANZSRS Annual Scientific Meeting

National Convention Centre

Canberra



The 1999 Annual Scientific Meeting for ANZSRS was held in Canberra at the National Convention Centre on the 26-28<sup>th</sup> February. This year commemorated the 20<sup>th</sup> anniversary of the ANZSRS.

Guest speakers for the meeting included Professor Jack Clausen MD, from the University of California Medical Centre in San Diego, USA and Dr David Martin PhD, from the Australian Institute of Sport in Canberra.

The meeting was themed around exercise and ventilation. The presentations and ensuing discussions were very productive, and at times, quite entertaining.

Professor Clausen spoke at Saturday's plenary session on "The Measurement of Lung Volumes". A second presentation by Professor Clausen on Sunday entitled "Clinical Assessment of Limitations to Exercise" proved considerably more informative and highlighted the growing clinical usefulness of exercise flow volume loop measurements. Professor Clausen also chaired a very interactive poster discussion session.

Perhaps the most interesting presentations were those given by Dr David Martin and Dr Allen Hahn from the Institute of Sport on "Physiological Adaptations to Exercise" and "Physiological Effects of Altitude Training", respectively. The content of these discussions was most interesting, although I suspect not particularly applicable to most of our respiratory laboratories. It is not often that I have had the pleasure of witnessing a  $VO_2$ max of 90ml/min/kg. Never- the- less, Dr Martin's presentation was very interesting and the comparative physiology between the general population and the elite was rather extraordinary. Dr Hahn's discussion on

altitude simulation studies was again an interesting and somewhat controversial discussion, raising the issue of "natural doping" techniques. The Institute argued the validity of this type of training by proving the performance effects of altitude simulation are not nearly as dramatic as injecting illegal substances such as EPO.

Congratulations are in order for Andrew Coates who was awarded the Poster Presentation prize for his poster entitled "Standing Height Percentile effects the Change from Paediatric to Adult Spirometry Reference Values". Congratulations are also extended to Sandy Anderson and Bruce Thompson who gave very eloquent presentations and were both awarded the Oral Presentation award. These award-winning abstracts have been republished for the benefit of those who were unable to attend the conference.

The social functions provided a relaxing and enjoyable atmosphere as always. The Welcome Reception on Friday night was held in the Sculpture Gardens of the National Gallery of Australia - an excellent non-isotonic challenge! Saturday night's Conference Dinner was held at the Old Parliament House where we were treated to a delicious three-course meal and seemingly eternal bottles of wine.

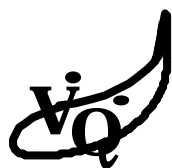
The 1999 conference provided some superb presentations and social functions. Thank you to all those who took part in the organisation of this event and we look forward to next year's meeting to be held in Melbourne, April of next year.

*Belinda Breust  
Dept. of Respiratory Medicine  
Princess Alexandra Hospital  
Brisbane 4102*

# 1999 ANZSRS Annual Scientific Meeting

National Convention Centre

Canberra



## POSTER PRESENTATION AWARD

### STANDING HEIGHT PERCENTILE EFFECTS THE TRANSITIONAL CHANGE FROM PAEDIATRIC TO ADULT SPIROMETRY REFERENCE VALUES.

Andrew Coates, Dept of Physiological Measurement, Mater Misericordiae Hospitals, Brisbane, Queensland

**Introduction:** Reference studies of lung function do not usually include both children and adults. Most studies now include older adolescents, but few extend from childhood to adulthood. A change in reference equation, for an individual at a given age, will usually result in a different reference value. This is especially a problem for laboratories that follow children through to adulthood. Growth charts are commonly used to track child growth, and lung volume growth charts are now suggested to be of value in tracking lung function development.

**Aims:** 1) To determine if the height percentile (HP) of a subject effects the transition from paediatric to adult spirometry reference values. 2) To determine which reference set for spirometry offers the least transition from child to adult values.

**Methods:** Predicted standing heights from the ages of 15 to 19 years were determined for each of the 3rd, 10th, 25th, 50th, 75th, 90th and 97th height percentiles (HPs), using published growth charts. Various sets of adult/ child reference equations were identified (See Reference sets 1-8 in the table below). At the "transitional age" when an adult equation replaces the child equation, the percentage changes in FVC were calculated, for each of the HP groups. Also, the trends across HP groups were determined.

**Results:** The following table shows transitional percentage changes in FVC, for various references sets.

Reference Set	Males			Females		
	50th HP	3rd HP	97th HP	50th HP	3rd HP	97th HP
1. Knudson '83	-0.4	-7.0	4.6	-1.1	-2.3	-0.3
2. Gore/ Hibbert	8.8	17.0	6.7	5.1	7.3	1.3
3. Morris/ Hibbert	10.4	17.5	2.1	8.2	11.5	3.6
4. ECCS	23.0	23.1	23.0	7.1	8.4	6.1
5. Gore/ Zapletal	15.7	25.6	13.9	15.3	22.7	8.5
6. Morris/ Polgar'71	26.6	33.6	19.5	18.0	25.9	10.8
7. Morris/Polgar'79	27.3	35.7	19.1	22.5	31.3	14.6
8. Morris/ Polgar 1 <sup>1</sup>	32.6	33.8	31.6	18.4	21.5	16.4

**Conclusions:** The Knudson '83 set affords the least transitional change between equations (50th HP: M, -0.4%; F, -1.1%). The transition is greater for males, in all of the other sets considered. The HP of subjects generally determines the transitional percentage change in FVC, which is constant or decreasing with increasing height. Short males face the greatest transitional change (eg. Gore/ Hibbert, 3rd HP:17%). We recommend that the transition in reference values, should be considered when a reference set is chosen. This effect would be minimised if studies included both children and adults, and researchers were aware of transitional changes, in fitting equations to their data.

<sup>1</sup>Polgar 1 reference equation is a linear approximation of the Polgar '71 reference study.

# 1999 ANZSRS Annual Scientific Meeting

National Convention Centre

Canberra



## ORAL PRESENTATION AWARD

### DRY POWDER MANNITOL INCREASES CLEARANCE OF MUCUS IN PATIENTS WITH BRONCHIECTASIS.

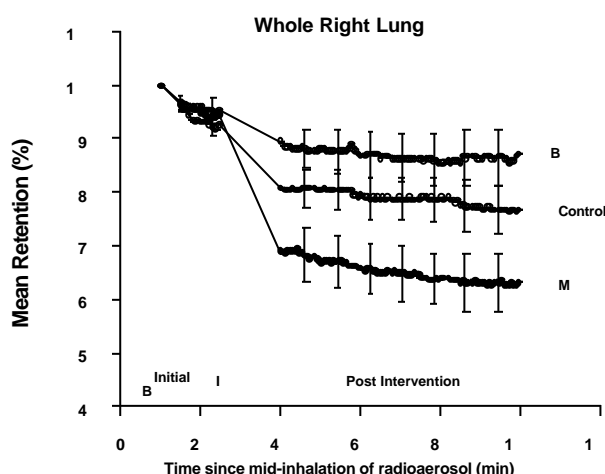
E Daviskas<sup>1</sup>, SD Anderson<sup>1</sup>, S Eberl<sup>2</sup>, H-K Chan<sup>3</sup>, G Bautovich<sup>2</sup>.

Departments of Respiratory (1) and Pet & Nuclear Medicine (2) Royal Prince Alfred Hospital, Camperdown, NSW 2050, Australia & Department of Pharmacy (3), University of Sydney NSW 2006, Australia.

Osmotic agents increase mucociliary clearance (MCC) in subjects with normal and abnormal airway secretions and clearance. Recently we reported that inhalation of dry powder mannitol markedly increases MCC in asthmatic and healthy subjects (Daviskas et al, Eur Respir J 1997; 10:2448-2454). Dry powder mannitol, an osmotic agent, can be inhaled conveniently using a simple and inexpensive device. Bronchiectasis is a disease characterised by hypersecretion and retention of mucus requiring a physical or pharmacological treatment daily. In this study we investigated the effect of mannitol on MCC in patients with bronchiectasis.

**Methods:** Eleven patients, age 40 to 62 years, inhaled a dry powder preparation of mannitol (approximately 300 mg) from a Dinkihaler (Rhône Poulenc Rorer). The mannitol was inhaled with a vital capacity manoeuvre and an inspiratory flow rate between 60-120 L min<sup>-1</sup>. MCC was measured over 90 min on 3 occasions involving: inhalation of mannitol or control or no intervention (baseline), using <sup>99m</sup>Tc-sulphur colloid aerosol (6 µm) and imaging with a single head rotating gamma camera. On the control day patients inhaled through the device loaded with an empty capsule and matched the cough induced by the mannitol.

**Results:** All patients had a baseline MCC which was either abnormal or inadequate (mean±SEM: 13.5±4.7% over 60 min). Mannitol markedly increased clearance over 75 min from the start of the intervention compared to the control and baseline in the whole right lung, central and intermediate region. In the whole right lung, mean (±SEM) clearance with mannitol was 34.0±5.0 % vs 17.4±3.8 % and 11.7±4.4 % with control and baseline respectively (p<0.0001). Mannitol was well tolerated by all patients and the mean (±SEM) number of coughs induced by mannitol was 49±11.



**Conclusion:** Inhalation of dry powder mannitol increased clearance of mucus in patients with bronchiectasis. The mechanism of this increase remains unclear. Mannitol has the potential to minimise mucus retention and thus benefit patients with bronchiectasis.

Supported by the National Health and Medical Research Council of Australia.

# 1999 ANZSRS Annual Scientific Meeting

National Convention Centre

Canberra



## ORAL PRESENTATION AWARD

### EFFECTS OF $\dot{V}/D$ INHOMOGENEITY AND LUNG MIXING INEFFICIENCY ON MEASURED $T_LCO$ IN A COMPUTERISED LUNG MODEL.

Bruce R. Thompson<sup>1</sup>, G. Kim. Prisk<sup>2</sup>, Robert. J. Pierce<sup>1</sup>, Peter. D. Rochford<sup>1</sup>.

Department of Respiratory Medicine, Austin and Repatriation Medical Centre Victoria 3081. 2. Dept of Medicine, UCSD, La Jolla, CA 92093.0931.

We have previously shown that using a simple 2 alveolar compartment mathematical model the measurement of  $T_LCO$  using the single breath (SB) and rebreathing techniques (RB) is dependant upon  $\dot{V}/D$  inhomogeneity and inhomogeneity of specific ventilation. However measurement of rebreathing cardiac output ( $\dot{Q}_{RB}$ ) (which involves similar calculations to  $T_LCO$ ) is minimally affected by mixing inefficiency due to gas equilibration of gas throughout the lung. The limitation of these studies is that the model employed was a simple 2 compartment model which may not accurately represent the true physiology of the lung.

**AIM:** The aims of this study were to examine the effects of more physiological distributions of  $\dot{V}/D$  inhomogeneity on measured  $T_LCO$  using the single breath and rebreathing techniques in a ten-alveolar compartment model, and to study the effects of mixing inefficiency on measured  $T_LCO$ .

**METHODS:** A ten alveolar compartment mathematical model which incorporated series dead space was used.

Physiological distributions of  $\dot{V}/D$  inhomogeneity were applied to the model. The distributions were categorised as Normal, Low, and High  $\dot{V}/D$  ratios. Mixing inefficiency was simulated by reducing the percentage of the inspired gas reaching the residual volume of each alveolar compartment, and was distributed linearly across the ten compartments with values of 0.1 to 0.9.

**RESULTS:** The following table shows the results for alveolar volume and  $T_LCO$  in the setting of perfect alveolar mixing, mixing inefficiency and each of the  $\dot{V}/D$  distributions. Rebreathing and single breath measurements returned nearly perfect values for  $T_LCO$  (25 ml/min/mmHg), and for  $V_A$  (6 litres) in the absence of  $V/D$  inhomogeneity and mixing inefficiency. The presence of regions with high  $V/D$  caused only a small underestimation of  $V_A$  and a modest underestimation of  $T_LCO$ . In contrast regions of low  $V/D$  caused a significant underestimation of  $T_LCO$ , especially using the single breath method. The presence of mixing inefficiency resulted in large reductions in  $T_LCO$  when measured using the single breath technique, but had almost no effect on rebreathing estimates.

$\dot{V}/D$ Distribution	Perfect alveolar mixing		Mixing inefficiency	
	$T_LCO$ mL/min/mmHg	$V_A$ (L)	$T_LCO$ mL/min/mmHg	$V_A$ (L)
Normal RB	25.0	6.0	24.5	5.7
Normal SB	25.2	6.0	12.8	5.1
Low RB	18.1	5.5	17.9	5.4
Low SB	15.6	5.1	12.3	4.9
High RB	22.8	5.9	22.6	5.7
High SB	19.6	5.8	9.2	5.0

**CONCLUSION:** These data demonstrate that  $T_LCO$  is more sensitive to Low  $\dot{V}/D$  inhomogeneity (as might be found in patients with COPD) than High  $\dot{V}/D$  inhomogeneity. Mixing inefficiency has a profound impact on the single breath measurements of  $T_LCO$  and relatively little impact on the rebreathing manoeuvre measurements.

# Vale

## Jeff Whitelaw

It is my sad duty to report that Mr Jeffrey Whitelaw, a long-standing member of the ANZSRS, passed away in the early hours of Friday, 12 March, 1999.

Jeff's involvement with the ANZSRS started about seventeen years ago when the Society was at an early stage in its development. His contributions to the Society and our profession in general, have been substantial. These reflect his almost unique positions over the years as both an agent for respiratory equipment (Sales Manager for Medos P/L and the Director of Morgan Australia P/L) and more recently as a Respiratory Scientist at Frankston Hospital. For example, even during the early growth years of the Society, Jeff was keen to provide significant financial support as an exhibitor at many Annual Scientific Meetings, and he also regularly funded scientists who could not obtain conference funding. Such generosity was the result of his commitment to the objectives of the Society and his firm and frequently expressed belief that scientists in Australia and New Zealand were underrated and poorly funded and that instrument based companies had to take some real responsibility in correcting this. He did this quietly, without applause or the wanting of it.

In 1993, Jeff took up the position of Respiratory Scientist in the Department of Thoracic Medicine, Frankston Hospital, Victoria. In this new role, he quickly proved to

be an excellent scientist and highly regarded 'resource person'. This reflected not only his mature, caring and professional attitude but also his extensive background in business, technology and public relations. Jeff also had a unique ability to establish a rapport with his patients, whom he cared for very much, and ability to so easily and freely communicate with them.

Jeff was very knowledgeable, not only in lung function testing but also in topics ranging from astrology to zebras, and almost anything in between. He had an infectious and distinctive laugh that had matured over the years by a well-developed sense of humour. Above all, Jeff was a devoted family man, who dearly loved and adored his wife and closest friend, Merlene, and cherished his children, Emma and Jessica.

On behalf of all members, I thank Jeff for his friendship, support and selfless contributions over many years and extend my deepest sympathy to Merlene, Emma and Jessica.

*Dr David Johns  
Dept. Respiratory Medicine  
The Alfred Hospital & Monash University Medical School  
Melbourne, Vic.*

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## Important Dates

- **QLD Branch Meeting** –  
Wednesday 28<sup>th</sup> April.  
“The importance of haemoglobin correction for DLCO measurements”
- **NZ Regional meeting**  
No local meetings organised as yet but it is planned that these will commence later in the year.
- **VIC Branch meeting**  
Early May  
Speakers to be confirmed
- **SA Branch Meeting**  
Tuesday 20<sup>th</sup> April  
Speakers to be confirmed

- **NSW Branch Meeting**  
Friday 28<sup>th</sup> May  
Respiratory Investigations Unit  
Gosford Hospital, Holden St Gosford  
5pm for 6pm start
  1. “Our experience in preparation for Accreditation”
  2. Discussion of Standardised Training Manual in Routine Pulmonary Function Testing.”RSVP to Gary Nolan Ph:02 4320 3529

*NB. NSW members - this serves as formal notification for your meeting.*

- **CRFS Exam**  
Friday 2<sup>nd</sup> July, 1999. Applications close June 4<sup>th</sup>  
Contact Stephen West, Clinical Measurements,  
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# Who's Who

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