Australian and New Zealand Society of Respiratory Science Inc.

Mouthpiece

July 1999

President's Address

Welcome to the second edition of Mouthpiece for 1999. I would like to congratulate and thank Belinda Breust for her superb job with her first issue.

The executive have been busy with Society business but as yet there is not a lot to show for it in terms of reporting back to the membership - good things take time. We are making progress with the idea as suggested in Canberra regarding ANZSRS educational scholarships. It is hoped that this endeavour will allow those members with limited funding to continue their formal education in respiratory science. We are also intending to develop a Society register of members and laboratories.

Now we are in the middle of winter it is perhaps a good time to put your feet up in a warm place, get out the books and study for the CRFS credential or complete your documentation for Laboratory Accreditation. Both activities are strongly supported by the Society.

We hope that many of you have, or will enter the Society's Logo competition, which is still open. So all those members able to focus their imagination and of course win some money, you still have time!

Kind regards and best wishes to all.

Maureen Swanney
President

Executive Update

The Executive met at the end of April. It gave us great pleasure to admit seven new members into the Society, one as an Ordinary member and six as Associates. The new members are:
Mr Peter Briffa, Westmead Hospital, Sydney (Ordinary)
Ms Caroline Knowles, Wellington Hospital, NZ (Associate)
Ms Tali Millburn, Wellington Hospital, NZ (Associate)
Ms Fiona McClymont, Christchurch Hospital,NZ (Associate)
Ms Lauren Cardno, Christchurch Hospital, NZ (Associate)
Ms Kelly Sallaway, Christchurch Hospital, NZ (Associate)
Ms Debbie Murray, Christchurch Hospital, NZ (Associate)

We welcome these new members into the Society and look forward to their contributions in the future.

A decision was taken to have a formal tribute to the late Jeff Whitelaw (see April edition of Mouthpiece) at the Melbourne meeting. Jeff made significant contributions to the Society particularly in its formative years and a formal recognition was deemed appropriate.

The executive are working for you so please take the time to let us know of any issues you may have – positives and negatives. We are keen to hear from you. It is only by knowing your needs that we can successfully steer the Society into the future.

Kevin Gain, PhD
Secretary

FROM THE editor

Firstly I would like to take this opportunity to thank all those who sent words of encouragement following the publication of the April edition. Lets hope the initial momentum continues into the future.

My second thank you is to those who contributed to the current and previous editions of Mouthpiece. All whom I approached for contributions have been extremely co-operative and punctual with the submission of material.

This issue features a discussion about the use of barrier filters and their role in infection control within the respiratory laboratory. It will no doubt generate some discussion amongst members as it is a topic relevant to all laboratories. I urge you to send in your comments, as we all may benefit from an ongoing discussion. Comments may be sent via mail to;

Belinda Breust

Respiratory Lab A3

PAH

Ipswich Rd Woolloongabba QLD 4102

or preferably via email;

breustb@health.qld.gov.au

Contents

CRFS EXAM

One difficulty that scientists from smaller respiratory laboratories have experienced when preparing for the Certified Respiratory Function Scientist (CRFS) exam is a lack of practical experience in some techniques or tests that are assessed by the examination, eg. body plethysmography. To assist in overcoming this difficulty, the Respiratory Function Laboratory at Westmead Hospital, a Category 4 Accredited Respiratory Function Service, is willing to provide Ahands on≅ training to scientists preparing for the CRFS exam. The laboratory is also willing to review, with CRFS candidates, the content on which the exam is based.

Further information can be obtained from Stephen West;

Ph: 02 9845 6043

Email: stephenw@westgate.wh.usyd.edu.au

Jobspot

Respiratory/Sleep Scientist

Dept of Thoracic Medicine, Royal Brisbane Hospital

A suitably qualified scientist is required for a position in the Pulmonary Function and Sleep laboratories. Duties include performing a range of physiological investigations, including pulmonary function & exercise tests, daytime sleep studies, review & preliminary reporting of overnight sleep studies, CPAP education sessions, some admin/supervisory functions, etc.

Appointment at either Qld Health PO2 or PO3 level, depending on qualifications & experience of successful applicant.

Closing date: 12/7/99

Enquiries: Mike Brown (07) 3253 7633
Phone (07) 3253 8127 for application kit.

Websites of Interest

SOCIETIES AND ORGANISATIONS

- Thoracic Society of Australia and New Zealand (TSANZ)

  http://www.thoracic.org.au/

  Includes free access to articles in Adobe Acrobat Reader format including:

  - Respiratory Function Tests and their Application
    R J Pierce, D Hillman, et al
  - Evaluation of Impairment Disability and Handicap caused by Respiratory Disease
    TSANZ Position Statement by MJ Abramson, JGW Burdon, et al
  - Adult Domiciliary Oxygen Therapy
    TSANZ Position Statement by IH Young, AJ Crockett, et al
  - Specific Allergen Immunotherapy for asthma
    TSANZ and Aust Soc Clin Immunol & Allergy Position Statement

- American Thoracic Society

  http://www.atsqol.org/

- American College of Chest Physicians

  http://www.chestnet.org/

- Australian Lung Foundation

  http://www.lungnet.org.au/

- American Association for Respiratory Care

  http://www.aarc.org/

- Canadian Thoracic Society

  http://www.lung.ca/

Many thanks to Bruce Graham for reviewing these websites

LOGO ***Competition***

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

Pulmonary Function Testing and Barrier Filters.

Do we really need them?

There is a great deal of confusion about the role that barrier filters should play in the pulmonary function laboratory. It is probable that most laboratories are seriously considering the implementation of filters. But are we implementing these devices for the right reasons?

As respiratory scientists we have a duty of care to our patients in minimising any adverse effects from pulmonary function tests. Logic argues that if an infected patient were to blow into a mouthpiece, we would not want to inhale from that same mouthpiece unless it was first cleaned, or a filter had been used. However, "logic" is yet to be backed-up with strong scientific evidence proving that a) there is a risk and b) filters or, for that matter, TSANZ guidelines reduce the risk of cross-infection. Perhaps the most pertinent argument in today's litigious society is whether we can put forward a strong defense in the event that cross–infection does occur.

Sean Homan (Queen Elizabeth Hospital, SA) and Mike Brown (Royal Brisbane Hospital, QLD) have documented some of their opinions regarding the use of barrier filters. What follows is by no means a comprehensive argument for either side, but is meant as a stimulus to promote thought and discussion on the topic.

To Use…

We can believe some brands of filters are effective in preventing transmission of micro-organisms, and provide little resistance to measurements at high flow rates. Presumably, if they cost nothing then every laboratory would use them on all patients. It seems then, the cost of these filters is the final impediment to their use.

The research by Side et al[1] showed a cost advantage using filters. The analysis was based on the time taken to implement Universal Precautions (without drying) as recommended by the Thoracic Society of Australia and New Zealand (TSANZ)[1]. The time allocated for the cleaning of equipment by strict adherence to TSANZ guidelines, was shown to take 41.5 minutes to re-process items between patients when performing simple spirometry. This equated to a staffing cost of between $15.56 and $17.58. The laboratory time and staffing costs involved with reprocessing equipment in this manner would be quite unmanageable in a busy laboratory. If equipment were to be replicated to avoid reprocessing after each patient, a substantial cost would be incurred and significant time would still be required to calibrate and prepare equipment for use.

The limitation of time on ability to clean equipment does support the argument that filters are necessary. However this raises the question, just how strictly do laboratories adhere to TSANZ guidelines regarding infection control? The throughput of patients at busy times almost

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certainly precludes the implementation of TSANZ guidelines and presuming this to be the case, respiratory function tests appear *thus far,* to have been without adverse consequences.

Furthermore, how appropriate are the TSANZ classification guidelines for components of breathing circuits? For example, should a pneumotach be classed as a semi-critical item when it does not come into direct contact with mucous membranes?

I question why those laboratories not using filters often go to considerable lengths to follow up all patients tested subsequent to a patient who was later found to have active tuberculosis. Do they really believe in the adequacy of their infection control procedures?

Our Unit policy is to use filters for all tests that require the patient to inspire from the equipment. We are not always informed of a patient's status in regards to infection or immunosuppression. As such, we believe our policy provides consistency in that all patients are treated with similar precautions, and there is no discrimination when it comes to patients with infectious disease, recognised or not. In addition, staff working conditions are improved by reducing the handling and cleaning of equipment.

The most compelling argument for filter use relates to our reliance on biological controls in the form of staff members, who we test daily. Why daily? Well that's another story, suffice to say that no staff member in my laboratory has any qualms about performing pulmonary function tests on any of the equipment, provided a filter has been used.

Sean Homan
Respiratory Medicine Unit
Queen Elizabeth Hospital
South Australia

1 Side E, Harrington G, Thien F et al. A cost analysis of two approaches to infection control in a lung function laboratory. Aust NZ J Med 1999; 29, 9-14.
2 Crockett A, Grimmond T. Guidelines for infection control in a respiratory function laboratory. Thoracic Society News 1993; p 6-7.

Or not to use…

A decision to use filters should be based on either a demonstrated significant benefit to the patient (ie. increased safety), a significant cost saving for the laboratory (with no reduction in patient safety), or a combination of the two. Can either a benefit or cost saving be demonstrated? In endeavouring to answer that question, it is worthwhile to list some of the "knowns" and "unknowns" relating to the subject.

Firstly, we know that:

- Instrumentation can be contaminated by potentially pathogenic organisms.
- The most recent barrier filters have efficiencies of 99.7% at flows encountered during lung function testing.
- The TSANZ guidelines for infection control in the respiratory laboratory (currently viewed as the 'gold standard') are impractical to implement fully.

The things we don't know, but need to know to

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answer the question, include:

- Are the TSANZ guidelines appropriate or even effective?
- Is it possible for re-aerosolisation or inhalation of infected debris to occur from contaminated equipment during routine pulmonary function testing?
- Should such re-aerosolisation occur at all, is it to an extent that will result in infection?
- If the previous answer is yes, is 99.7% efficiency enough?

It is clear that more research is needed to clarify the "unknowns", however at this stage we cannot definitively demonstrate any benefit to the patient by implementing filters. We don't know that there is any danger from infected equipment (the few published reports on potential cross infection are based on weak circumstantial evidence[12]), therefore we can't show any reduction in risk from the implementation of barrier filters. We should acknowledge, though, that incidents in which cross-infection is implicated are more likely to be suppressed than published voluntarily.

Similarly, cost savings have not been clearly demonstrated. Side et al[1] have based their analysis on a comparison with full implementation of the TSANZ guidelines, even though most labs do not practice this. They also assumed an either/or scenario, ie. that labs would clean equipment or use filters, but not a combination of the two. Since filters are not 100% effective, there remains a possibility, albeit very minor, of contamination of equipment even with their use. If no cleaning of equipment occurs at all, there is the potential for a worsening of the infection control status, particularly in the situation where use of filters on all patients (rather than just some) cannot be guaranteed. Hence protocols for the use of filters should include a concurrent cleaning regime that should be factored in to any cost analysis.

It appears that the current use of filters is based as much on the perceived need to protect our laboratories and staff in the event of litigation (brought by someone who has had pulmonary function testing and subsequently developed an infection) as on hard scientific data attesting to their benefit. My understanding is that the most effective defence in such a case would be showing that 'best practice' procedures were being used, and most likely the TSANZ guidelines would be held to be best practice, being recognised as the Australian and New Zealand authority in this area.

In summary, while it is clear that our knowledge is still lacking in this area, there remains a lack of hard evidence to support the implementation of filters on the basis of either enhancement of patient safety or cost savings. There is an obvious need for more basic scientific investigation in the whole area of infection control in the pulmonary function laboratory.

Mike Brown, Senior Scientist
Dept. Thoracic Medicine
RBH

1 Houston K, Parry P, Smith A. Have you looked into your spirometer lately? Breath 1981; 12:10-11.
2 Rutala Dirty, Rutala W, Weber Dirty etal. Infection risks asscociated with spirometry. Infect Control Hosp Epidemiol 1991; 12 89-92.
3 Side E, Harrington G, Thien F et al. A cost analysis of two approaches to infection control in a lung function laboratory. Aust NZ J Med 1999; 29, 9-14.

Pulmonary Function Testing and Barrier Filters.

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An "Infection Control" standpoint…

The Guidelines for Infection Control in a Respiratory Function Laboratory[1], was revised to accommodate recent scientific studies and procedures recommended under a Universal Precautions approach. In 1996, the National Health and Medical Research Council (NH&MRC) and the Australian National Council on AIDS recommended the adoption of the terms 'Standard Precautions', to be used on all patients, and 'Additional Precautions', to be used on those patients known or suspected of infection with highly transmissible pathogens[2].

The NH&MRC Guidelines state 'the efficacy of filters has not been clearly demonstrated, particularly for forced respiratory manoeuvres used with respiratory function equipment. It would therefore appear the benefits of using filters are marginal however, extra costs associated with cleaning/disinfection and filters should be balanced against the risk of cross infection. Health care workers must not lose sight of basic principles such as hand-washing and use of protective barriers (eg. gloves) to prevent cross transmission of pathogenic micro-organisms.

Jenny Stackelroth,
Infection Control
Princess Alexandra Hospital

1.Crockett AJ, Grimmond T. Guidelines for Infection Control in a Respiratory Function Laboratory. Thoracic Society News 1993; 6-7.
2.National Health and Medical Research Council. Infection control in the health care setting. Guidelines for the prevention of transmission of infectious diseases. 1996. Canberra: Australian Government Publishing Service.

Current Guidelines

TSANZ guidelines regarding cleaning for pulmonary function equipment is based on

1) Universal precautions that suggest all patients should be considered potentially infective.
2) Centre for Disease Control (CDC) categories for levels of sterilisation and disinfection of patient care equipment.
   - Critical items - those that enter sterile tissues or cavities or blood vessels require sterilisation.
   - Semi- critical items- those that come in contact with mucous membranes require intermediate level disinfection eg. re-usable mouthpieces, one-way breathing valves, pneumotachograph screens, mouth shutters, oesophageal balloons
   - Non-critical items - those that only have contact with intact skin or do not come into direct contact with patients require cleaning with detergent. eg. tubing distal to breathing valve

NHMRC states that;

1) Semi critical items be disinfected after each patient use
2) Non-critical items to be cleaned regularly

If using filters, the filter must be discarded after each patient use and the circuit between patient and filter be discarded or cleaned and sterilised after each patient use. The remainder of the breathing circuit should be disinfected after each procedure list.

Profiler

Alan Crockett

Alan has been referred to by some of the Society's members as the "father of the Society". Presumably this has more to do with the fact that Alan was instrumental in establishing our Society, than a reference to his age.

Alan began working in respiratory laboratories in 1965 at the Repatriation General Hospital, Concord, where he established the first of the laboratories he has been associated with. During 1974 he left Sydney to take up another challenge - to establish a cardiopulmonary laboratory at The Queen Elizabeth Hospital in Adelaide. No sooner had this task been completed than Alan was head hunted in 1976, by the newly established teaching hospital attached to Flinders University, to establish his third laboratory.

Alan has traveled extensively throughout North America and Europe where he developed relations with the National Board of Respiratory Care and the Canadian Society of Cardiac and Pulmonary Technology. It must have been during these excursions in the early1970s, when Alan began formulating ideas for the establishment of a professional society for the people working in Australian respiratory laboratories. In those early years I can recall conversations with Alan about the Society's role and function. Alan believed that the Society's aims should be to ensure the highest standards were achieved and maintained, and also provide opportunities for its members to learn and develop their careers.

Alan became the founding president of the Australasian Society of Respiratory Technology in 1979. A post he held until 1983 and then again from 1989 to 91. It was in 1991 that the Society was renamed The Australian and New Zealand Society of Respiratory Science, Inc. There is no doubt Alan had a significant influence on the role the Society played in raising the professionalism of its members and the profile the Society enjoys today.

Alan's service to the Society is exemplified by the support he provided whilst also a member of the TSANZ Professional Standards Committee, (1984 to 1996). It was during this time that Respiratory Laboratory Accreditation was introduced by the TSANZ . Alan debated with good effect, the role ANZSRS had to play in the successful implementation of Accreditation. Subsequently, the Flinders Medical Centre laboratory was the first respiratory laboratory to be accredited. Because of Alan's work on this committee the TSANZ has recognised the important contribution our Society has to make in this area by appointing Stephen West to fill the vacancy created by Alan's retirement.

Alan has also been keenly interested in health resource allocation, ethics and public health, culminating in a Masters in Public Health from the University of Adelaide in 1989. Over the last decade Alan has built an international reputation in the areas of COPD, domiciliary oxygen therapy and Quality of Life. Indeed, Alan's knowledge and expertise in these areas has led to his nomination by international peers to membership of the International Respiratory Home Care Club (one of only two representatives from Australia) and is regularly invited to speak on these and related topics.

Whilst Alan has not been able to attend all of the Society's recent Annual Scientific Meetings due to overseas commitments, I know that he remains strongly committed to the Society and is very proud of its standing within the medical and scientific community, not only in Australia and New Zealand but also in the Northern hemisphere.

So, after thirty-four years in respiratory science and 20 years after the formation of the Society, Alan continues his interest in respiratory medicine and research.

Alan truly is the father of The Australian and New Zealand Society of Respiratory Science, Inc.

David Schembri
Daw Park Repatriation Hospital

Survey
ANZSRS Database

The Executive are endeavouring to update the current ANSZSRS database. We would also like to add further information regarding qualifications, areas of expertise etc. in order to make this a comprehensive source of information for exclusive use within the society.

Please fill in the details below and forward to;
Kevin Gain, Dept. of Respiratory Medicine, Private Bag 7902, Wellington South, NZ.

Please note: details are voluntary and are supplied at members' discretion.

Name: _____

Business/Postal Address

Laboratory/Dept: _____

Hospital/Institution: _____

Street No./Name: _____

Suburb/Town: _____

State, Country: _____ Postcode: _____

Phone number: _____ Fax number: _____

Email: _____

CRFS; YES/NO

Qualifications attained;

_____

_____

Do you have an area of interest or expertise? If so, please list.

_____

_____

In what subjects, if any, have you had publications?

_____

_____

Important Dates

- QLD Branch Meeting
Wednesday 30th June
"Longitudinal Lung Function Studies"
Mike Brown RBH

- NSW Branch Meeting
Wednesday 25th August
Topic TBA

- NZ Branch Meeting
Friday 30th July
Contact: Sue Filsell
Dunedin Hospital
Ph: 03 474 7642

- Y2K critical date
Thursday 9th September (9/9/99)

- CRFS Exam
Saturday 4th September
Application deadline 23rd July
Contact: Stephen West
Clinical Measurement
Westmead Hospital
NSW 2145

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