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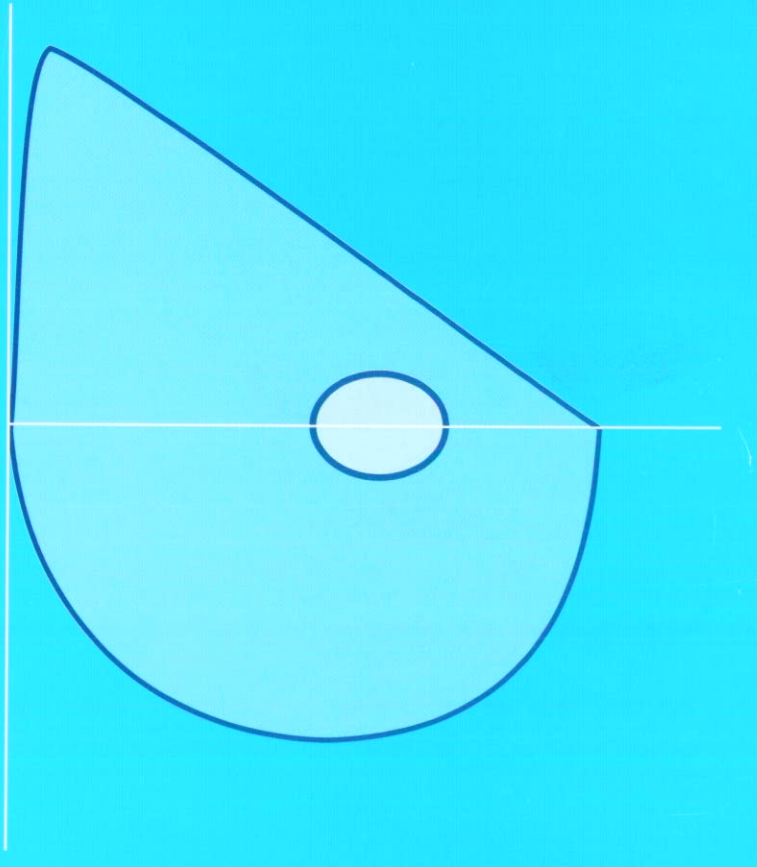
Inspire



www.artp.org.uk

The Official Journal of the Association for Respiratory Technology & Physiology

FIRST WORD

Welcome to the spring edition of Inspire. Yet again we see another bumper journal and I would like to give my many thanks to all the contributors who have submitted articles (without any bullying or harassment by me!) – Wonderful.

Firstly we seem to have a rather transatlantic flavour to this Inspire with two great articles on life across the pond in the field of Respiratory Therapy in the USA and Canada. Also, after a highly successful annual conference in January, this edition contains all the minutes of the AGM, Heads of Department and Regional Group leaders meeting so if you missed the event you can at least catch up with the main issues. This year also saw the biggest yet manufacturers exhibition and there is also a review on all the equipment on the stands with new product bulletins. Thanks again to Keith Butterfield for providing the photos of the conference – not too many embarrassing ones this year Keith – are we all holding our alcohol better these days or had some editing already taken place on downloading? Plans for next year's conference are already well underway and an early reminder to members that ARTP bursaries are now available to help with funding issues which no doubt will cause everyone some degree of difficulty as the event approaches.

Developments on National issues also continue to steam ahead and the latest update from the RCCP is on page 45 for those of you who have not seen this elsewhere.

The next Inspire will be out in the summer so please send any contributions to me: **Gill Butcher, Cardiorespiratory Unit, Queen's Hospital Burton, Belvedere Road, Burton on Trent DE13 0RB. Tel 01283 566333 Ext 5334 Email inspire@artp.org.uk**

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WEBSITE/FORUM REPORT

Keith Butterfield

Encouraged by the lack of negative reports from Forum members, who helped me during a period of testing, I have now opened the 'Members Only' section of the website and have started migrating some of the existing website pages to this section alongside some new pages.

One of the new pages is the Gallery (to which I hope people will contribute over time to build up a useful resource for pictures/clip art/presentations etc). If you have any material that you would like to contribute to the Gallery, for the benefit of all members, please send it through to me webmaster@artp.org.uk (at last I have broadband access so I don't mind if they are large files – within reason!).

Within the Gallery you will also find a link ('ARTP Gallery - Presentations') which will take you to PDF's of the slides from the National Heads of Department meeting and AGM in Stratford.

With the increasing size of the website it is becoming difficult for me to maintain it by myself so if you notice anything that doesn't look right, or is obviously out of date, please drop me an email to let me know. The website is becoming an integral source of reference for the work that the ARTP does and the feedback that I am getting is that it is valued and well used. Likewise the Forum continues to be a useful tool for all members and currently there are 258 members.

Remember - if you are having trouble getting access to the members only section of the website it may be because of the security level set in your internet browser. PLEASE check the on-screen help about allowing 'cookies'. The current password to sign in to the members site is 'alveolus'. In order to encourage you to renew you membership quickly this year the password will be changed shortly after your subscriptions are due in May and the new one will be distributed along with your membership card. Address of Rod Lane, Paediatric Services Officer is respaeds@artp.org.uk.

CHARITY NEWS

RED BALLOON APPEAL

IN AID OF
THE BRITISH LUNG FOUNDATION

GARY NEWBON CHARITY GOLF DAY

TUESDAY 24th JUNE

10.00 am Henley Golf and Country Club

Entry fee £160 per team
For further details contact John Latham, BLF, 0121 627 2260

Inspire

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BURSARY INFORMATION

Bursaries are available to ARTP members, which can be used to support attendance at National ARTP, BTS or STS meetings. Other relevant respiratory meetings or approved training courses will also be considered. Bursaries are available to student, associate and full ARTP members of any grade. They can be used for partial or total funding of registration, travel and accommodation costs for the whole or part of the meeting/course. All bursaries are considered by the ARTP Executive Committee on the reason for the request and the commitment to an article for *Inspire*.
For further details or an application form please contact: **Gill Butcher (Bursary Secretary), Cardiorespiratory Unit, Queen's Hospital Burton, Belvedere Road, Burton on Trent, DE13 0RB. Tel: 01283 566333 Ext 5334 or via e-mail: bursary@artp.org.uk**

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Monthly (last Friday in the month) £650 Urgent (within 5 days) £800

Flyers and mailshots will also be distributed via the ARTP e-mail forum

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ARTP HANDBOOKS

New handbooks will be available shortly
Price £65 to ARTP members, £80 to non members
Contact Jackie Hutchinson ARTP Administrator to order
admin@artp.org.uk or telephone 0121 241 1611

LOOK OUT FOR FLYERS SOON

WEB SITE ADDRESS: www.artp.org.uk

E-MAIL FORUM: forum@artp.org.uk

CORRESPONDENCE: admin@artp.org.uk

ARTP ASSOCIATION NEWS

OUR MAN IN THE E.R.S.

European Respiratory Society Assembly 9
Adrian Kendrick Chair Group 9.1

Dear All
The European Respiratory Society brings together about 10,000 delegates from across the world every year. This year the meeting is in Vienna and Assembly 9, Clinical Physiologists/Scientists (9.1), Physiotherapists and Respiratory Nurses have put together a two day package of postgraduate courses, symposia etc. Further details will be announced shortly, as will be costs (which are reduced for Assembly 9).

Also, to those of you submitting abstracts to the meeting, please consider submitting to Assembly 9 as the more abstracts we get the bigger role we can play in the ERS system.

Finally, we are now planning for the conference in 2004, which will be in sunny Glasgow. Part of the conference will be postgraduate courses dealing with specific topics. Although the deadline has now passed I would be grateful of any ideas and thoughts as to what you would like included in future. This is your only chance to influence this part of the conference.

Please contact me via my e-mail: adrian.Kendrick@ubht.swest.nhs.uk

ARTP ANNUAL CONFERENCE 2004

Preliminary announcement that next year's annual ARTP Conference will be held at **The International Centre, Telford on January 29th to 31st 2004.** Application forms and further information will be available shortly. Keep an eye on the website for news.

ARTP COURSES

ADVANCED SLEEP COURSE
BRISTOL 9th to 11th JULY

LUNG FUNCTION INTERPRETATION COURSE
QUEEN ELIZABETH HOSPITAL, BIRMINGHAM 19th to 20th JUNE
Aimed at Consultants, Specialist Registrars and Senior Clinical Physiologists

FOR FULL DETAILS OF ARTP COURSES/APPLICATION FORMS PLEASE CHECK OUT THE WEBSITE AND CONTACT: JACKIE HUTCHINSON, ARTP ADMINISTRATOR Tel: 0121 241 1611 OR EMAIL AT admin@artp.org.uk

A CAREER IN RESPIRATORY THERAPY

The American perspective

This article was kindly written for *Inspire* by Marshall Pixley who is a Certified Respiratory Therapy Technician based at the Rome Memorial Hospital, New York, USA.

Training for, and working as, a respiratory therapist in the United States can be a most challenging and rewarding experience. A number of avenues are open to therapists here including hospital work, home health, sales, education and research. All begin however with the same step - training.

Until 1950 little, if any, emphasis was placed on respiratory therapy as a specialty. In 1950 the New York Academy of Medicine issued a report stating a need for trained RTs, then known as Inhalation Therapists. In 1954 the American Association of Inhalation Therapists was formed and in 1957 a program for the development of formal schooling was developed with a three-year test period. The program was a success and final approval was then given. In 1967 the program was revised making the training an 18-month process and subsequent revisions were made in 1971 and 1972 to keep up with technological advances and create a shorter curriculum for Inhalation Technicians. In 1977 Inhalation Therapy officially became Respiratory Therapy.

Currently there are two levels of RTs. Registered Respiratory Therapists complete at least a two-year program (an Associate's of Science degree). In addition to in-depth training in respiratory subjects, a great deal of instruction is given in microbiology, anatomy, physiology, and associated courses. Certified Respiratory Therapy Technicians have to complete a one-year certificate program, which takes a more hands-on approach to training. In any event, you would receive instruction in mechanical ventilation, medication delivery, arterial blood gas sampling, disease states, pharmacology, oxygen devices and delivery, and a host of other topics. After completing whichever program, you are eligible to sit an examination held by the National Board of Respiratory Care. Those seeking CRTT level have to take one written test. Those going for their RRT have two exams, one of which tests your ability to analyze and properly treat a patient in several different scenarios. After passing the exam you are then eligible to apply for a license to practice in whatever state you live in. Different states have different requirements to obtain a license but usually if you hold a license in one state you are able to get one in another with little difficulty. After achieving a basic certification you can go on to train in more specialized areas such as pulmonary function testing or neonatal intensive care. Advanced Cardiac Life Support, Neonatal Advanced Life Support and Advanced Trauma Life Support, whilst not always required in a facility, are usually recommended and encouraged.

Today, the two-year programs are rapidly becoming the minimum required standard for entry into the field, which educationally produces a better therapist. However, in many hospitals and home care businesses, the work of an RT and CRTT is interchangeable. Whether the field will become an all RT one is still open for debate. Quite a number of facilities now use the term Respiratory Care Practitioner (RCP) for all respiratory therapists/technicians.

Depending on the size of the hospital you work in the duties performed can vary greatly. In smaller hospitals you may be assigned to the emergency department one day, ICU the next, medical-surgical floors always, and labor / delivery / nursery thrown in for good measure. In larger hospitals you may be assigned to one particular area and stay there for your entire employment at that facility. RTs work closely with physicians, the nursing staff and laboratory and radiology technicians. Equipment can vary from the old workhorses of the 1980s to the newest, just-on-the-market, ventilator. Hospital policy may vary on what an RT is allowed to do for example, some may allow an RT to intubate a patient, others not. Forward-looking hospitals are coming out with therapist-driven protocols, allowing an RT to perform certain functions on his/her own without physician approval. Another duty sometimes available, either through the hospital or not, is air and ground ambulance transport. There are also a number of agencies that provide temporary supplemental staffing to hospitals with the opportunity to travel all over the country. Regardless of what floor you are working on, patient care and education are your primary focus.

Employment may also be available at a home care company. These private businesses provide home oxygen, medication nebulizers, and a variety of other medical equipment to patients in their homes. Again, depending on the size of the business, you might take care of just respiratory equipment, or you might have to be familiar with such things as home infusion systems, tube feeding systems, hospital beds, and wheelchairs.

Drug and equipment manufacturers may use RTs in their sales departments, which can have high financial rewards. Instructing at one of the many colleges that offer respiratory training is another possibility, although these positions are usually limited to people with at least a four-year (bachelor's) degree.

There are a number of professional organizations that RTs are eligible to join. Most notably is the American Association of Respiratory Care, a national group. In addition several states have state associations and these organizations act to set standards of care, address legislative and employment issues and provide a liaison with other professional organizations.

The salary range in the United States is very wide. Differences in the cost of living in any one area, the level of certification held, and the type of facility all contribute to what you can expect to earn. Looking at advertisements in the various newspapers and trade publications you can find salaries from $10.00 per hour up to $25 to $30, for the same level of expertise. Usually a respiratory position will enable you to make a decent living, but if you are looking to get rich you had better look elsewhere! Benefits may include health insurance, dental and/or vision insurance, vacation, sick time, life insurance, discounts at the hospital pharmacy, and

many others. Salaries have been on the increase in the last few years, as the number of people entering respiratory programs has dropped. Currently there are somewhere in the neighborhood of 7000 to 8000 openings nationwide.

As I said in the beginning respiratory care here in the US, as I'm sure it is in the UK, can be most challenging and rewarding. Dealing with the same non-compliant COPD patients or your third drug overdose patient that day can be frustrating. Receiving a heartfelt "thank you" from a mother whose baby you just helped pull through makes up for it.

"ON THE BLOWER"

By Nigel Clayton, Alan Moore and Brendan Cooper

ARTP Watchdog

Since the last edition of Inspire, Alan, Brendan and myself have received several complaints regarding service and maintenance of lung function equipment. These were bought to our attention via the new service offered to all our members at watchdog@artp.org.uk. The main gist of the complaints is failing to follow up action promised resulting in excessive equipment downtime. We have followed these complaints up with the manufacturers and hopefully we will all experience an improved quality of service in the future.

NC

Viasys meeting report

On 23 January, Alan and myself met with Stephen Connelly, European Business Director for Viasys. We had a very constructive meeting in which we discussed some of the problems raised on the forum watchdog. Mr Connolly stated that improvements to service have been made recently since the acquisition of EME.

Viasys now have eleven service engineers to covering the UK. They now claim to offer a next working day on-site service response for critical care equipment (invasive ventilators, etc.) and a 2 working day on-site service response for diagnostic care equipment (lung function equipment, etc.)

Mr Connolly then went on to describe a new customer support database which was installed last December. This has been designed to log all service calls and to allow progress of the call to be monitored; something that the manufacturers liaison committee has been promoting for the past couple of years. The progress of the log will be assessed at the end of each week to ensure customers are receiving calls within the specified times.

Sounds great in theory and Viasys have made a substantial commitment not only in purchasing the system but also in staff training. Let's hope it lives up to expectations in practice. Please let us know via the watchdog if you find it is not. Remember when placing a service call to note the name of the person you have been dealing with. It also helps if you keep a brief log of all communications with the company as this makes it much easier for us to follow up matters on your behalf.

NC, AM

Sloppy Service

Following a complaint from a very frustrated member, I had cause to berate Morgan Medical for the length of time taken to resolve a hard disk failure.

At the heart of this problem was poor communication and the fact that Morgan were using an unreliable courier to ship the replacement.

Thanks go to Kevin Budd who was out of the country when this occurred and who resolved the matter within a very short time once he was made aware of it.

Poor service, despite considerable service contract fees, is not acceptable.

Don't worry Morgan, you're not the only ones in the firing line.

Poor service support is an ongoing problem for many companies and not only those involved in respiratory physiology.

Deva Medical take the prize for the longest delay in performing a software upgrade on Breas 403 ventilators. These have required an upgrade for well over a year. The Deva engineer turned up to upgrade one of mine last week. When I asked him about the other two, he had no record of them. Now I know Deva will blame Breas and Breas will blame Deva. Frankly, I don't care. "Must do better" will be the end of term report. So, if you have Breas 403's which haven't had the software upgrade, harangue Deva. Incidentally, Breas have now been taken over by Vital Signs. (Someone else to blame?)

Tyco are no better either. One of our 840 Critical Care Ventilators recently failed whilst on a patient. A call to the service centre in Bicester revealed that there was no one in the office who could answer my call as they were either out of the country or off sick. These ventilators have a fault logging system and the person in the office could not trace the error code I gave him.

Now, Tyco have a manufacturing plant in Galway, not a million miles away. I asked the guy if he could ring the Galway plant and ask them to identify what the error code meant and to tell us what needed to be fixed. The response was that he could not do this. When I asked why, he said he didn't know the telephone number. When I suggested he rang international directory enquiries as surely they must have heard of the second largest employer in Galway, the response I got was an inane laugh.

So, as usual, I had to go higher up within the organisation and Mike Boustred, the UK boss, had the matter sorted within the hour.

The point is though that we shouldn't have to do this. A simple call to the service centre should be all that is required. All manufacturers, please take note.

AM, BC

Vitalograph

Following on from the last issue of *Inspire*, Vitalograph have acknowledged that the new bellows used in the volumetric spirometers are less compliant than the old bellows. It is important that when checking the calibration you do not ram the volume of air from the syringe into the spirometer such that the piston bangs at the end of its travel. Due to the inertia of the bellows and measuring arm, calibration checks performed this way can lead to overshoot by as much as 20–30 mls.

The new bellows are also classed as disposable, which, according to Vitalograph, means that they should be changed during the routine annual service (we all have these contracts don't we?), or if pathogenic contamination has occurred, or is suspected. Best of luck if you have to replace the bellows before a service visit is due – achieving linearity may cause a bit of a headache !

NC, AM

PARI have recently introduced the TurboBOY 'N' nebuliser system (the next best thing our respiratory patients are likely to get to a TOY BOY). These come with a three year guarantee, require servicing every three years and come complete with the autoclavable PARI LC PLUS nebuliser chamber. These were on offer to the NHS at a discounted price of £49.95 (RRP £115.00) until 31 January 2003. Whilst this date has come and gone since the last edition of *Inspire*, I would always recommend haggling on price for any product purchased. - **NC**

The RRP has always been set by PARI to reflect prices elsewhere in Europe (they are a German company and the rest of Europe seems prepared to fork out over £100 for a nebulizer). The deal in the UK has always been B.O.G.O.F (Buy One, Get One Free). For purchases of 10 or more though, £49.95 should be about the going rate and Derek Bainbridge, the UK boss, is very amenable to having his arm twisted.

AM

Profile Medical now supply the non-invasive CoughAssist™ Mechanical In-Exsufflator manufactured by **J. H. Emerson Co.** It is designed to clear broncho-pulmonary secretions by gradually applying a positive pressure to the airway, then rapidly shifting to a negative pressure, producing a high expiratory flow from the lungs (similar to a cough). It has been proven to work in those patients with insufficient ability to cough.

NC

Ferraris Medical has recently launched the PiKo 1, "the worlds smallest FEV_1/ PEF meter". This has just won an award in the US Medical Design Excellence Awards 2003 for the best over the counter and self care product. This has just been launched in the UK and retails for around £14.00. Capable of storing up to 96 measurements which may be downloaded using optional software (approx. £14.00), this device has been independently tested and conforms to ATS monitoring and diagnostic device recommendations for accuracy in PEF and FEV_1. At this price the device looks set to replace peak flow meters when it comes to home monitoring.

NC

Breas Medical now supply the Percussionaire which provides High Frequency Intrapulmonary Percussive Ventilation or HFPV. It is also known as IPV - Intrapulmonary Percussive Ventilation.

It is a therapeutic form of chest physiotherapy conceived by Dr Forrest Bird that consists of a pneumatic device originally used for the treatment of patients with COPD. Today, applications have become much wider; IPV is also used to treat diffuse, patchy atelectasis, enhance the mobilisation and clearance of retained secretions and deliver nebulised medications.

IPV can be used on acute or chronic patients with obstructive or restrictive lung disease. The treatment delivers a continuous pulsatile flow rate, superimposed over the patient's breathing pattern. The percussions are sub-tidal volumes of gas, delivered to the patient with low pressure, high flow and an adjustable rate, through an open breathing circuit, the Phasitron®

The treatment can be given non-invasively via mask or mouthpiece, or it can be used invasively.

AM

Ethical Sales Practices – Fact or Fiction ?

Under UK law, medical devices can be sold to anyone who wishes to purchase them irrespective of whether their doctor has given his/her blessing. In the United States, for example, medical devices can only be sold by order of a physician and this is rigorously enforced by the Food and Drug Administration.

Now, many may think that the Medical Devices Agency, (or Manufacturers Defence Agency as I affectionately refer to it), has the power to restrict the sale of medical equipment. No such luck, it does not have the legal power.

So, what if a company decides that it is going to sell CPAP machines to any member of the public who wishes to purchase one? Is there any legal obligation on the company to ascertain at what pressure the device should be set and to ensure that the device is set up properly with a correctly fitting mask? The answer is NO.

The episode outlined below relates to a patient diagnosed in my department with severe obstructive sleep apnoea. We currently have a waiting list for CPAP treatment of some 90 patients – we simply have run out of money to treat new patients though we can sustain our existing treatment caseload.

The only alternatives that we can offer to patients at present are to either subscribe to a programme like M.O.S.T. (offered by Profile) or to buy a CPAP machine and accessories privately from an equally reputable supplier. In this situation they are also responsible for replacement consumables, servicing and repair costs; something we discuss with them at length.

The patient described in this case was informed of the options available to him and he decided initially to subscribe to the M.O.S.T. programme and was given an Auto CPAP device.

Now what occurred next was no fault of Profile's. Indeed they have been extremely helpful throughout. However, the patient found a web site via his computer, which dealt with snoring and sleep apnoea. The said web site was also an e-commerce site and, amidst a whole range of medical products, there were CPAP machines to purchase. In what I can only describe as a moment of temporary madness, the patient took down the telephone number of the company, called them and ordered a CPAP machine complete with mask and tubing.

All the company required was a letter from the patients "doctor" stating that he had been diagnosed as suffering from O.S.A..

Upon receipt of the machine he found that he couldn't use it, couldn't fit the mask correctly, etc., etc. He rang the company and asked for their help. They said that this was not their responsibility, though they did offer that they would "set the machine" if he visited their offices (about 120 miles away).

The patient then asked the company for his money back as the device was useless. No chance. They insist that a CPAP machine is "Single Patient Use" only and therefore they were unable to accept "used goods" for a refund.

How do I know all this? Well I have remonstrated with the company involved at length. They know that their practice is legal and frankly ethics and morals don't count, only money. When I questioned their offer to set the CPAP pressure for the patient, the proprietor became quite upset when I pointed out that he was in no way qualified to perform this function. Incidentally, they send their CPAP machines out set to 5 cm H_2O

So, why do I not name the company? Well, if I did, Messrs. Sue, Grabbit and Runn, Solicitors would be at us as soon as the company found out about this article, as they have done nothing illegal.

Therefore, what can we do about it? I have already informed the supplier what this company is up to and I have asked them to review their trading arrangement in this case. The suppliers had no knowledge, until I contacted them, as to what was going on. (Incidentally, the company was putting a £170 mark-up on a device they bought in for £230.)

Further, the Manufacturers Liaison Committee will be writing to each supplier of CPAP machines in the UK asking them to outline the circumstances in which they will sell CPAP machines to Non NHS establishments, companies, associations, etc. I firmly believe that no company should be selling a CPAP machine unless they have a clear prescription from a recognised centre, not a GP letter. Further, I believe that they have a moral duty as responsible suppliers not to sell unless they have clear evidence that a patient follow-up and support programme is in place in each individual case.

As for that particular outfit, I would like to see their current practice stopped. Legally they can't be touched, but I shall certainly be ensuring that my team makes sure all our patients know that it would be in their best interests to have no contact with this outfit.

My thanks must go finally to Melanie Marshall at Profile who has given me tremendous assistance in dealing with this difficult issue. To her credit, and Profile's, Melanie has thought only of trying to help the patient and his immediate family. Nice one Melanie !

AM

MANUFACTURERS REPORT FROM THE ARTP STRATFORD-UPON-AVON CONFERENCE

By Nigel Clayton

With the hotel bursting at the seams, Stratford was evaluated as the most successful ARTP conference yet. Even the food scored highly compared to last year! The manufacturers turned out in record numbers, with 32 exhibitors in total. If you missed the conference or were unable to visit all of the exhibition stands, here is a review of what the manufacturers have to offer us for 2003.

Following the Head of Departments meeting on Thursday afternoon, the manufacturers exhibition opened at 3.00pm. At the same time delegates were also invited to attend one of three workshops. **Breas Medical** presented "Percussion therapy – a new treatment", **Schill Medical** presented the "Infracontrol Nebuliser" and Pulmolink presented "The body plethysmograph - science not an art". All three were well attended, with 25 delegates in each workshop. I attended the **Pulmolink** session, which was introduced by the managing director, Derek Pike, closely followed by Kevin Hogben discussing the history and theory of the plethysmograph and Richard Hawksworth concluded the presentation with a practical demonstration, showing us how to make the measurement.

Following the Thursday evening keynote speech the manufacturers hosted the evening reception with plenty of food and wine on offer. This set the scene for the evening with many delegates keeping the trade exhibitors busy until 10.30 pm in the exhibition rooms and even busier in the bar later. The first speaker for the following morning (no names mentioned) was still in the bar at 3.00 am drinking his favourite malt whisky!

Beaver Medical announced at the meeting that the company is to become a public limited company or plc as you and I know it. Restructuring and re-branding of the company is taking place with the sad demise of the beaver logo (how will we visualise Beaver without the animal in the logo?). The restructuring has also lead to an increase in the sales and service teams as they are now acting as the European service centre for Med Graphics. Beaver are now marketing the Philips A1 and A3 patient monitors and the Q-Tel rehabilitation outcome system used for cardiac rehabilitation.

New to the conference this year, **Schill Medical** demonstrated the Multisonic Top and Profi Nebulisers. These small hand-held devices operate from the mains, a rechargeable battery and car cigarette lighter. A particle size between 3.5 – 5.0 microns is produced, ensuring a high deposition of aerosol in the airways.

Also new to the conference, **Hilex**, who supply clinical department healthcare computer systems to provide clinical and administrative information for hospital trusts and GP practices. The Prism system is being developed to allow direct interfacing with lung function investigation equipment, enabling the data to be available to the clinician once an investigation has been completed. The system can also be used for ordering tests, appointment scheduling and monitoring patient attendance and waiting lists.

Clement Clarke demonstrated their latest "One Flow" range of hand held spirometers. The basic version is capable of measuring PEF and FEV_1, whilst the top of the range model is capable of measuring PEF, FEV_1, FVC, FEV_1/FVC% and has the capacity to store up to 100 measurements. As the spirometers themselves do not provide a graphical display, there is a software option available for downloading all measurements together with flow volume and volume time curves on to a PC. All this is available for less than £400.

BOC is the only company in the UK to hold a product licence that enables them to supply certified lung function test gases. BOC are in the process of improving their service by ensuring these lung function test gases are available for immediate delivery in a variety of sizes and stocked locally at sites across the UK. I know of one supplier who takes 6-8 weeks to supply specialist gases, so this service is certainly a step in the right direction.

A first appearance at the conference for **S-Med**, although Selwyn Sher needed no introductions. In addition to the Spirocard range of equipment, S-Med now offer the SOMNOmedics range of monitoring equipment. This includes several different devices capable of monitoring activity, movement, wireless heart rate and body position. Also on display was the very impressive SOMNOscreen palm size ambulatory polysomnographic sleep system. This is capable of recording up to 26 channels including flow, effort, SpO2, pulse rate, position, and several channels of EEG. Data storage is via a 512 MB high speed flash card with up to 22 hours of recording time. S-Med also supply filters to suit all makes of lung function equipment. Using the Tech 200 filter medium, these are competitively priced, with further discounts for bulk purchases.

Nothing new on display from **Radiometer** this year, although they now sponsor a blood gas web site with plenty of useful up to date information. The site provides practical information to help healthcare professionals and deals with the daily issues surrounding blood gas and critical care testing. Give it a try at www.bloodgas.org .

DeVilbiss demonstrated the latest Pulsox-2 from Minolta. An integrated display and finger probe make this unit ideal for spot-checking SpO2 and heart rate. As these small units are easily misplaced, it comes complete with a neck strap for the ueser.

To complement their range of CPAP equipment DeVilbiss now offer a new shallow gel mask and four different cushions for the Serenity mask.

In conjunction with the Autoset Spirit, **Resmed** were demonstrating ResLink. This has the capability to store up to thirty nights of oximetry, pulse, snoring, minute ventilation and flattening index (if only this would apply to our CPAP patients!). All data is stored on a 32 MB flash card for downloading and analysis.

Also on display was the latest S7 CPAP. Similar to the S6, it is extremely quiet and features an integrated humidifier.

Ferraris Cardio Respiratory demonstrated the all-new Keystone Pulmonary Laboratory (KPL). A "traditional" lung function system, employing a dry rolling-seal spirometer, helium dilution and bag type gas transfer measurement. Windows based software offers a comprehensive range of quality assurance tests including spirometer and gas analyser linearity checks and system leak tests. This is the first system to employ all these quality checks, which is something we should all, applaud, especially as laboratory accreditation is just around the corner.

The KoKo DigiDoser Dosimeter was also on display. This features a Rosenthal-French dosimeter incorporated within the KoKo spirometer. This enables full broncho provocation testing to be completed on a hand-held device. Software allows the physiologist to track dosing intervals, automatic calculation of delivered aerosol volume and automatic construction of dose response curves.

Also from Koko is the Piko 1. At approximately £16.00, this must be the cheapest PEF/FEV_1 monitor on the market. Ideal for monitoring patients at home, it is capable of storing up to 96 measurements.

BREAS released the IMP2 intrapulmonary percussive ventilator at the meeting. This was introduced to the ARTP during the Friday NIPPV lunchtime workshop. Designed for acute or long-term ventilation, this device also allows the

ventilation to be delivered in a vibrating form (75-400 cycles per minute), which is designed to facilitate the mobilisation of sticky secretions.

Air Safety now produces a catalogue with details of their filter range, including filters for CPAP, NIPPV and lung function equipment. They even supply Dyson vacuum cleaner filters should you need one! Give them a call for a catalogue and buy all your filters with one order.

If you thought **BTS** could only refer to the British Thoracic Society, think again. BTS is a group of bioengineers from the Politecnico di Milano who have developed a new technology called optoelectronic plethysmography. With this system a large number of reflective markers are placed over the surface of the chest wall. Each is tracked continuously in 3D by four video cameras placed on tripods around the patient. A parallel processing computer reconstructs the movement of the chest wall and any individual compartment one wishes to analyse. Using the system it's possible to measure all the parameters of ventilation, including changes in absolute lung volume, on a breath-by-breath basis, without the need for a mouthpiece or nose clip. BTS state that it can be used during phonation, wind instrument playing, while sleeping, as a monitoring device in the ICU, for infants at risk of SIDS and so forth.

This system will become available commercially later in the year, although the price has yet to be confirmed.

We have all encountered patients who run their CPAP machines without wearing the facemask just in order to clock the hours up, allowing them to claim CPAP compliance. Not any more. **Profile** has launched the REM Star auto CPAP with built in humidifier. The machine has a timer to calculate the time spent breathing on the machine rather than the time the machine has been running. (Can't wait to hear the new excuses for not using the equipment!)

Profile also demonstrated the palm sized Respironics Stardust sleep diagnostic system. This is capable of recording up to seven channels of sleep data including SpO2, heart rate, effort, flow, body position, CPAP pressure and event marker. Data analysis is performed using Alice 4 software.

Nuwyn / Weinman introduced the latest range of SOMNO non-invasive ventilation and CPAP products. The SOMNOsmart CPAP is a system that recognises the changing width of the upper airway by means of oscillatory pressure measurements and adapts the pressure to maintain an open airway. The latest SOMNOvent ST bi-level system for non-invasive ventilation was also on display. To compliment these systems is the SOMNOclick heated humidifier. This does not require extra hoses or electrical connections and simply plugs into the CPAP or bi-level unit.

Intermedical supply a wide range of oxygen delivery devices including one of the smallest portable oxygen concentrators on the market – the Sim Travelair S Plus. Weighing in at only twelve kilograms, it may be powered from the mains or a twelve volt DC power supply. Other devices on display included a range of Chad oxygen conserving devices, designed to prolong the life of any portable oxygen supply. Intermedical also supply the Cosmed PC based hand held spirometer. Based on a turbine transducer, it comes complete with software allowing customised printouts of spirometer data, trend analysis and database to manage all stored data.

Also new to the conference this year, **Henleys Medical** exhibited their extensive range of respiratory products. They supply a wide range of oxygen therapy devices, incentive respiratory exercisers, oximeter probes, nebulisers, compressors and humidifiers. At the conference they also launched their new pulmonary function filter which is designed to fit inside the spirometer thus limiting equipment dead-space.

Stowood Scientific Instruments also had a lot to offer us. They now produce their own download software for the Minolta 3I Pulse oximeter, which also has the ability to read data from their snorometer. This allows snoring to be correlated with fluctuations in oximetry.

SSI also supply the Embla and Embletta range of sleep analysis equipment manufactured by Flaga Medical of Iceland. Flaga have recently merged with Medcare from Amsterdam and now offer additional products, including the Rembrandt sleep systems and the N7000 polysomnographic sleep system.

Last year Morgan celebrated 40 years in the field of lung function testing. This year it is the turn of **Vitalograph** to celebrate their 40th anniversary. Over the last forty years Vitalograph have developed a wide range of hand-held, desktop and PC based spirometers. The wedge bellows still dominates as their "gold standard", using the same principle of measurement designed forty years ago. Similar to the Porsche 911, it may have undergone many improvements, but the basic shape still remains the same and is easily recognised as a "Vitalograph" throughout the world.

Cranlea were also exhibiting at the conference for the first time. For those of you not familiar with Cranlea, they sell a wide range of monitoring equipment including the Cortex MetaLyzer and MetaMax metabolic stress testing equipment (also the same as the SensorMedics Vmax ST). This has a wide range of applications, including field exercise testing using the portable telemetry system. To complement metabolic stress testing, Cranlea also offer an integrated 12 lead ECG and a range of ergometers.

Cranlea also act as agents for Hans Rudolph who supply a wide range of valves and accessories. They also supply products such as the good old fashioned Fortin barometer and the old style dry gas meter (although it does incorporate an up to date digital display).

If you require access to your pulse oximeter / capnograph data, **Pulmolink** now supply the DownLoad 2001 pulse oximeter and Capnograph software, produced by Stowood Scientific.

Compatible with all versions of Windows software, this programme was developed by Professor John Stradling and has been adapted to support many different makes of equipment. Pulmolink also exhibited the new Medisoft Spir'Air Rolling seal spirometry system for those laboratories that require a traditional helium dilution system to make their volume measurements. In addition to the range of equipment from Medisoft, Pulmolink were also displaying the MEFAR MB 3 dosimeter and the ST-95 Fukuda hand held spirometer .

New from **B&D Electromedical** this year is the NIPPV 3 positive pressure ventilator. With this model they have moved away from the familiar vanity case style ventilator to offer us a lightweight machine (3.5kg) capable of four modes of ventilation – CPAP, pressure support, pressure control and IPPV.

Air Products were demonstrating their range of homecare oxygen therapy services including the lightweight oxygen cylinder, which weighs just 3 kg and will last more than three hours at 2 litres per minute.

Micro Medical have recently upgraded many of their spirometers incorporating the new "Gold standard" turbine and released the "Spida 5" PC spirometry software. This features a user-friendly, modern multi-window, visual interface capable of measuring up to 41 spirometry parameters. Overlaying of previous curves for comparison is also now possible. Extensive search facilities and powerful comparative and trending of results are some of the additional features.

Boehringer and **Cephalon** were the two drug companies attending this years meeting. Cephalon were promoting Provigil (modafinil), a drug designed to promote wakefulness. It is to be marketed as a treatment for excessive daytime sleepiness found in sleep apnoea and narcolepsy. Boehringer are well known for Atrovent, Combivent, Duovent and Oxivent. The latest addition to their line up of respiratory drugs is Spiriva (tiotropium), a new medication for those with severe asthma and COPD. The active substance is tiotropium bromide, which is structurally related to ipratropium bromide (Atrovent). It classified as an anticholinergic medication with extended action of up to 36 hours and comes complete with the HandiHaler Inhalation Device.

Last year I was surprised to find **Fisher & Paykel** selling kitchen appliances in Selfridges. Little did I know that another division of the company existed. Maybe the healthcare division should be integrated with the kitchen appliance division to produce the world's first CPAP machine capable of brewing a cup of tea at the bedside. I'm sure a heated humidifier could be redesigned to perform this task! In addition to their familiar range of CPAP and heated humidification, Fisher and Paykel were demonstrating the Oracle oral CPAP / bi-level mask. In reality it is not a mask but a device that enables the airway pressure to be delivered via the mouth using a mouthpiece. Whilst it provides us with another choice of pressure delivery, it must be used with heated humidification to improve compliance and comfort.

Instrumentation Laboratory were demonstrating their familiar range of blood gas, electrolyte and metabolic analysers. This year IL has added Intelligent Quality Management (iQM) to the GEM Premier 3000. This is incorporated in the reagent cartridge and enables automated daily quality control to be performed. Another useful tool for us to use when laboratory accreditation is introduced.

Intersurgical offers a wide range of oxygen masks, nebulisers and ventilation circuits. Of note on display was the Aquamist humidifier nebuliser which is designed to deliver an accurate concentration of humidified oxygen which is unaffected by the flow rate of the patients own breathing pattern. The oxygen selection is also tamper resistant and will operate with a driving gas flow of 5 to 11 l/min.

Viasys Healthcare have produced an innovative mouthpiece to complement their range of equipment from Jaeger and SensorMedics. Known as FreeFlow, the mouthpiece is designed to ensure the tongue is held out of the way during testing. It is designed for multiple patient use, is latex-free and may be sterilised by steam autoclaving, high-energy ionizing radiation or ethylene oxide. On show for the first time was the latest equipment from SensorMedics – VMax Spectra with real time BTPS correction. The Jaeger side of Viasys weighed in with the latest innovation in Cardio-Pulmonary Exercise testing – Oxycon Mobile which transmits real time data from the subject via telemetry back to the recording system.

Tyco Healthcare, another newcomer to our conference were displaying the Goodnight range of CPAP machines and accessories together with their latest sleep diagnostic system – Edentrace II. The Goodnight range must comprise the smallest CPAP devices on the market.

ASSOCIATION FOR RESPIRATORY TECHNOLOGY AND PHYSIOLOGY

ANNUAL CONFERENCE 16th - 18th JANUARY 2003

CONFERENCE REVIEW

Review prepared on behalf of the ARTP Honorary Chairman and Executive Committee by Gill Butcher ARTP Executive Committee member. The report has been forwarded to the BTS in order to help raise the awareness and profile of the ARTP to the medical profession.

The ARTP Annual Conference, which is normally held around mid January, has grown significantly over the last few years, with suitable venues now becoming harder to find due to the number of delegates and size of the exhibition area required by an increasing number of participating companies. The previous two years have seen the conference on the seafront at the Blackpool Hilton but this year saw a more central location in Stratford-upon-Avon with an inevitable Shakespearian theme - "Measure for Measure" - very appropriate to the occupation of our profession.

The Stratford Moat House provided an excellent venue with comfortable accommodation, great leisure facilities, excellent food and a very high standard of service from its staff. The location also gave good access to delegates who had travelled from as far away as Inverness and the south coast.

The annual conference is organised by members of the ARTP Executive Committee and its extremely efficient administrator, Jackie Hutchinson, and her team. Draft programmes and application forms are available from the previous summer and costs are kept to a minimum to enable as many delegates as possible to attend from cash strapped NHS Trust departments. The ARTP provides a number of bursaries to its members to facilitate attendance at the annual conference, which provides the main source of CPD for the lung function workforce. Each year following the conference delegates are asked to fill in a questionnaire covering all aspects of the conference and also

asking them what subjects they would like to see covered in the future. Comments from this are acted on to try and improve the event even further.

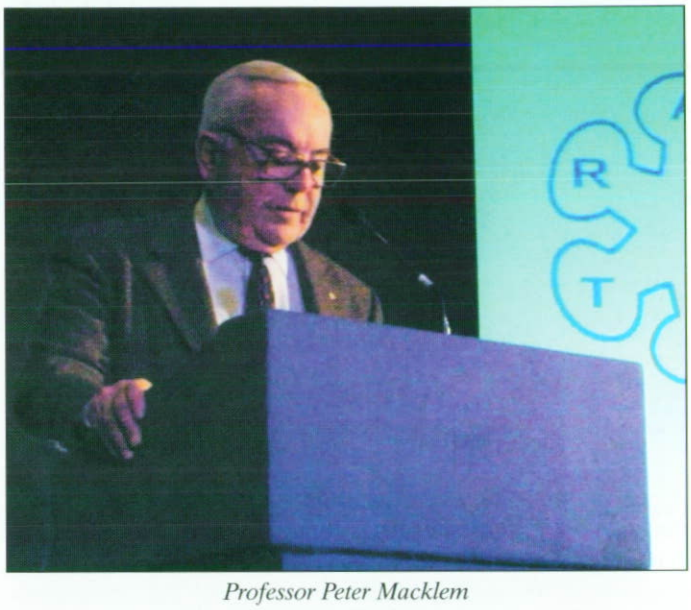
At present the majority of the delegates are Clinical Physiologists and Scientists from Lung Function and Sleep Investigation departments with a few Respiratory Nurse Specialists, Respiratory Physiotherapists and members of the medical profession. The ARTP Conference is of high calibre in both content and speakers and is a suitable educational avenue for Specialist Registrars and junior medical staff interested in the field of Respiratory Medicine.

Manufacturers and suppliers play a large part in the conference and also contribute generously in sponsorship. This year there were 33 exhibiting companies from a wide range of areas such as nasal ventilation and CPAP to body plethysmographs and exercise kit. The majority of the exhibitors supply technical equipment but a few pharmaceutical companies are also now starting to make an appearance. (see previous article).

For the past few years the conference has opened on the Thursday morning with a National Heads of Department meeting, which gives a good opportunity for two-way communication on various issues between the ARTP Executive and the managers of Lung Function Departments. This year highlighted the developments and progress that have been made towards State Registration for Clinical Physiologists and in establishing Regional Groups of Lung Function staff covering the whole of the UK. Heads of Departments are also kept in touch via this meeting of plans for the year ahead on professional issues such as the probable time scale in petitioning government for State Registration and how they can assist the Regional Groups carry out a Nationwide audit of lung function equipment, protocols and practice with the ultimate aim of introducing a Laboratory Accreditation Scheme. Breakout groups from the HofD meeting discussed lung function laboratory staff and space requirements and quality control issues and there was lively debate on the "ideal" versus "financially constrained/viable" options. No doubt many Consultant Respiratory Physicians would also have enjoyed debating vociferously on some of these issues.

Following the Heads of Department meeting there were three well-subscribed workshops sponsored by manufacturers: Breas Medical presented 'Percussion Therapy – A new treatment', Schill Medical presented their Multisonic Infracontrol Nebuliser and Pulmolink presented 'The Body Plethysmograph – Science not an art'. These workshops are valued both by the manufacturers, who get chance to present a new technique/piece of equipment/principle of measurement to a small, interested group and to the delegates who can acquire some specific knowledge to take back to their departments or which may help them develop a new protocol or procedure. For those unfortunate enough not to secure a workshop place the swimming pool and jacuzzi beckoned!

The main conference programme started later that day with 'Welcome and Introduction' by Dr Brendan Cooper, Honorary Chairman ARTP. The keynote speaker was Professor John Stradling from The Radcliffe, Oxford whose talk on Sleep Medicine first discussed, with many amusing slides, the history of sleep studies. He then went on to discuss the variability of blood pressure with arousal and apnoeas in obstructive sleep apnoea and followed this with some of the legal issues attached with driving and OSA. His take home message was that sleep should stay within the discipline of Respiratory Medicine and not "go it alone".



Professor Peter Macklem

On the Friday morning Professor Peter Calverley and Nigel Clayton chaired the first session – The Body Plethysmograph and beyond - which consisted of three lectures. Dr Roger Carter, Clinical Scientist from Glasgow, first gave a review of the history and theory of the body box, which was a useful brush up of the principles and equations, particularly for those of us who use helium dilution techniques routinely for lung volume measurement. Mr Derek Cramer, Head of Lung Function at the Brompton Hospital, then outlined some of the wider uses of the body box for example its use in the titration of oxygen levels for hypoxic inhalation tests (for fitness to fly), for compliance testing, for measurement of airways resistance and FRC in babies and for provocation testing where a fall in specific conductance could be used instead of the more usual drop in FEV_1. The ARTP was then delighted and honoured to welcome Professor Peter Macklem from McGill University, Quebec for the Guest Lecture on Optoelectronic Plethysmography. Professor Macklem described this newly marketed technique for measurement of lung volumes where systems of markers are placed over the chest wall, rib cage and abdomen. These markers are tracked by at least 4 video cameras over 3 dimensions, the chest wall and its movements are reconstructed and lung capacities can be measured. The advantage of this technique is that it is non-invasive and measurements can be taken with the patient supine, giving it obvious potential in very sick patients and on ITU during ventilation. It is also useful in patients who cannot use a mouthpiece and has been used in quadriplegics during diaphragmatic pacing. Professor McGill then went on to describe the research that had been carried out, using this technique, on how and why expiratory flow limits exercise and also mentioned its potential for the estimation of cardiac output. A demonstration of the technique could be seen in the exhibition area throughout the conference and there was a great deal of interest to have a look at this equipment (and the bare chested male Italian students from the Polytechnic of Milan who were demonstrating it!). Although at present the system is very expensive it should become available commercially within the next year.

Professor Adnan Custovic

The second session of the day, which was chaired by Mrs Angela Evans and Dr M Pearson, covered the subject of Challenge Testing. Dr David Fishwick firstly discussed Methods of Bronchial Challenge reviewing the indications, contraindications, types of testing agents, methods of delivery, assessment of measurements, normal ranges and the use of specific challenge testing. Professor Adnan Custovic then discussed Exercise Induced Bronchospasm in a highly entertaining talk that would have caused exercise induced asthma in a hypersensitive delegate just watching him leap about the speaker's platform! He discussed the role of hyperventilation, possible mechanisms of EIA and factors affecting its severity and finished by stressing the importance of standardisation of the test criteria. Dr Sherwood Burge finished the morning session with a talk on the Applications of Challenge Testing. He reviewed the definition of asthma and the difficulty of diagnosing it and presented many interesting examples of different types of occupational asthma. Many patients losing their jobs due to occupational asthma had, unbelievably, had no investigations carried out and Dr Burge reinforced the importance of serial peak flow measurements.

During the lunch break there were a number of practical workshops sponsored by Viasys, Breas and Profile. These covered Practical Plethysmography, Challenge Testing, Practical NIPPV and Paediatric Clinic and gave delegates a chance to meet some of the "experts" in these areas who could offer them practical advice and guidance in these areas of testing and therapy.

The afternoon session, chaired by Dr Adrian Kendrick, Clinical Scientist at Bristol and Julie Lloyd, covered the ever-popular topic of Sleeping Disorders with a message of "Arrive Alive" – very apt the next day after the Gala Dinner and a night of alcohol and very little sleep. Dr J Catterall first talked on the types and complexity of sleep investigations and the fact that even using all the parameters measurable, no method is perfect and clinical judgement is always required. He then presented some interesting case studies including narcolepsy, periodic limb movement and a patient with a mixture of nocturnal epilepsy and obstructive sleep apnoea. Professor Jim Horne then followed with a talk title 'Sleep Physiology with particular reference to the Brain'. This was fascinating stuff, addressing issues on whether sleep restores the body and the brain, how much and what type of sleep is necessary and what happens in sleep deprivation. He then went on to discuss the road traffic implications of sleepiness and the ongoing debates on driving issues. This session finished with the chairs raising debate with the audience on CPAP issues and patient compliance.

Professor Martyn Partridge

Professor Martyn Partridge concluded the second day of the conference with the Guest Lecture reviewing the published document 'The Burden of Lung Disease', this document being the first to quantify the huge health and economic burden of lung disease in the UK. Professor Partridge outlined the main statistical findings and mortality rates and reviewed the diversity of 30-40 different lung diseases in terms of illness and costs. He then went on to detail what the report did not include for example the burden of Obstructive Sleep Apnoea and questioned why there is no National Service Framework for lung disease. This talk certainly gave the delegates food for thought on all the political and workforce issues and the fact that it may take years to make significant progress.

The main social event of the conference began with a drinks reception followed by an excellent evening of entertainment at the Gala Dinner. After a sumptuous meal, accompanied by plenty of sponsored wine, Dr Brendan Cooper gave, in his best Shakespearian accent, his usual amusing after dinner speech that, true to tradition, poked light-hearted fun at many of the manufacturers, their staff and their equipment - well known to delegates who deal with them and their equipment vagaries on a daily basis. This was then followed by after dinner speaker, Dr Colm O'Mahony, Consultant Physician in Genito-Urinary Medicine, Countess of Chester Hospital. Dr O'Mahony had as his theme "Are Sex, Love, Passion and Desire, compatible with marriage", and his hilarious anecdotes, many with a clinical bent, provided a brilliant evenings entertainment.

The presentation of the ARTP awards then followed. These awards are made to Clinical Physiologists, Clinical Scientists, medical or technical staff who have made outstanding contributions to the field of Respiratory Measurement and this year were presented to Dr Sue Hill, now Chief Scientific Officer at the Department of Health, more recently Consultant Clinical Scientist at the Queen Elizabeth Hospital, Birmingham, and Professor Peter Macklem from McGill University, Quebec.

As usual a disco then played to a packed dance floor until the early hours after which many carried on socialising in the bar

determined not to let a great evening come to an end.

The preparation of oesophageal balloons for compliance test

Despite the hard night there was a good turnout of bleary-eyed delegates on the Saturday morning for the Annual General

ARTP Award Presentation to Professor Macklem

Meeting of the ARTP during which the ARTP/BTS National Assessment Awards were presented. This was then followed by four spoken poster presentations, chaired by Dr Adrian Kendrick and Geraldine Lawless. There had been a good response to the call for abstracts for the meeting and there were 23 quality presentations on display with the full abstracts published in the January edition of the ARTP journal *Inspire*.

The final session of the conference was an Update on Lung Diseases chaired by Dr Rod Lane and Dr Jim Catterall. Dr Mike Polkey spoke first on Respiratory Muscle Weakness covering the identification, diagnosis, causes and investigations and measurements related to this condition. He also discussed the procedure of phrenic nerve stimulation and the less painful development of cervical magnetic stimulation. Dr Richard Hubbard then discussed Cryptogenic Fibrosing Alveolitis covering its diagnosis and prognosis, debates on treatment and some interesting causes such as the fact that metalworking may be a contributing factor along with diet, infection, genetic and environment in addition to more well established causes such as pharmaceutical agents. The final talk by Dr Simon Johnson on the rare condition of Lymphangioleiomyomatosis, thankfully shortened to LAM, which effects 1 per million, mainly young women in their mid 30s and has a median survival of about 10 years. He described the condition, which includes blockages in the lymph system, renal tumours, and lung cysts with progressive destruction of the lung and highlighted that these patients have an uncertain prognosis with no known effective treatment and due to its rarity leaves patients feeling isolated and without support, a sombre note on which to finish.

Don't I know you from somewhere?

ARTP Award Presentation to Dr. Sue Hill

The ARTP Annual Conference which started many years ago with a few technicians gathered in the coffee room of a lung function department with one sponsoring company (if it was lucky!), continues to go from strength to strength and this year 400 delegates and 33 exhibitors attended a superb and truly 'National' event.

It would be great to see you and your medical colleagues there next year.

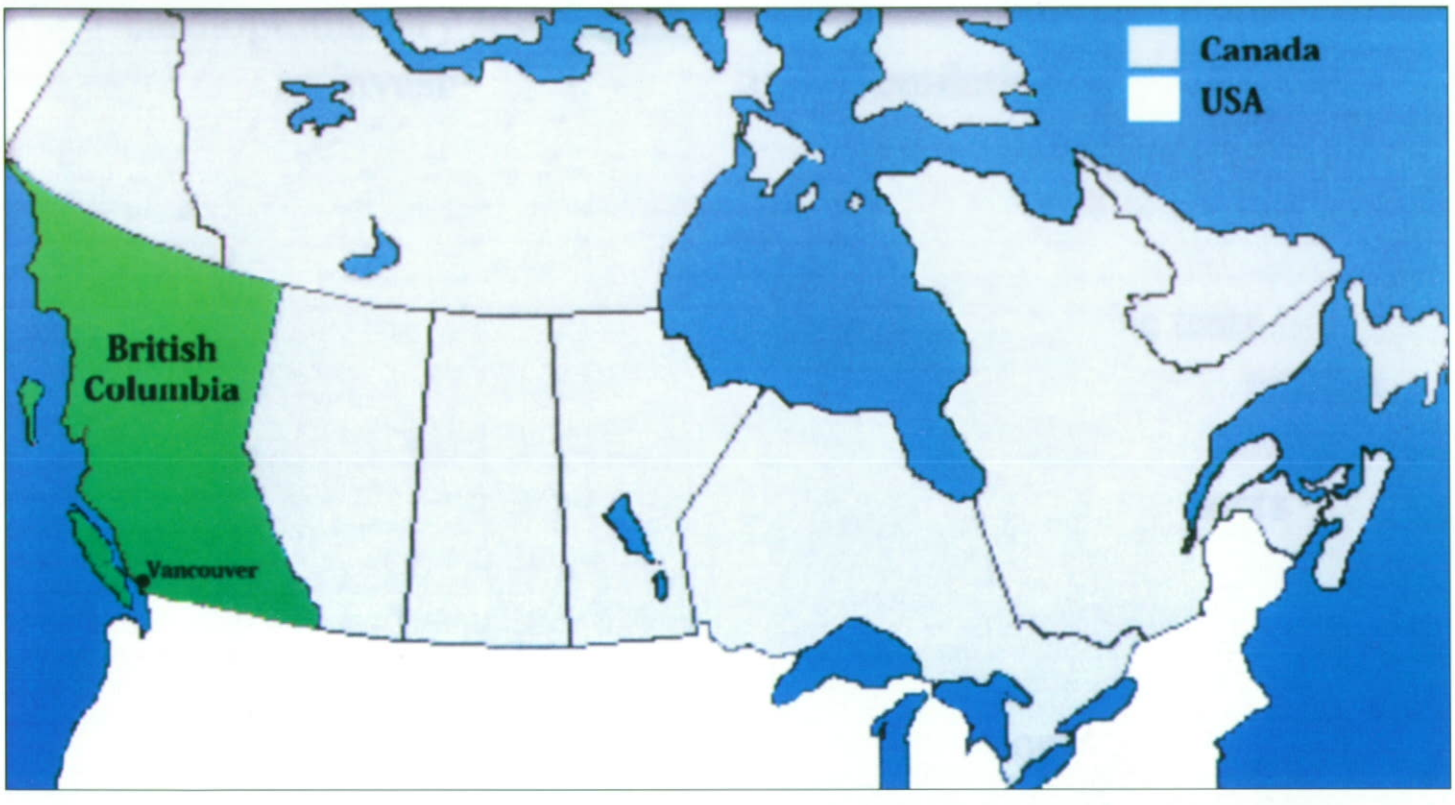
Details of ARTP Conference 2004 will appear on the website www.artp.org.uk or further information can be obtained from Jackie Hutchinson ARTP Administrator Tel: 0121 241 1611 e:mail admin@artp.org.uk

Representatives of NHS Management

RESPIRATORY THERAPY IN BRITISH COLUMBIA, CANADA

Bursary Report by Justin Adams, Cardiorespiratory Dept, Doncaster Royal Infirmary

Back in June 2002 my Senior Chief agreed (with minimal arm-twisting) to me taking 10 weeks leave for an extended trip to British Columbia (BC), Canada. During my stay in this spectacular Province of Canada, I spent several days with the Respiratory Therapists (RTs) at three hospitals in and around Vancouver.



BC is Canada's most westerly province and has an area of 95 million hectares, almost 4 times the area of Great Britain, yet has a population of only around 7% of that of the UK (approximately 4 million people), plus around 30 000 grizzly and black bears! Vancouver is situated on the West cost to the south of the Province. It has just been named as the second most liveable city in the world (just half a point behind Zurich in the number one slot) in a survey commissioned by Mercer, the worlds largest human resources company.

Unlike the USA, the Canadian healthcare system is predominantly a publicly financed but privately delivered system, known as Medicare. Everyone in Canada is entitled to the same level of healthcare irrespective of their social status. The federal government is responsible for setting and administering national standards, assisting in the financing of healthcare services within each province or territory, and for health promotion and disease prevention. Provincial or territorial governments are responsible for planning, financing and managing healthcare services. As with our own health service, funds are often scarce and resources and services have to be prioritised. One prominent example of BC's limited healthcare finances stands on the site of Vancouver General Hospital (VGH). Here in 1987, just prior to an election (I'm sure that's just a coincidence) a 25-storey tower block addition to the hospital was completed. However only the first 3 floors have ever been used due to a lack of funding for staff and equipment, with the rest of the building standing empty. The tower block is now known as the Pattison Pavilion after local billionaire Jimmy Pattison donated CA$20million to VGH towards prostate cancer research.

There are in excess of 700 registered RTs in BC. Within the profession, the role of the hospital-based RT can be broadly separated into critical care & therapy, and diagnostics. In most centres, RTs tend to specialise in one area or the other. The duties of a RT may include:

- Maintaining the airway for trauma, intensive care and surgical patients and assisting in cardiopulmonary resuscitation
- Providing invasive and non-invasive ventilation
- Assisting in high risk births
- Assisting anaesthetist
- Administration of inhaled drugs and medical gases
- Pulmonary function testing, including simple cardiac tests
- Patient education in areas such as smoking cessation and asthma
- Education of other health care professionals
- Providing in-home respiratory care to house-bound patients

- Participation in pulmonary rehabilitation programs
- Diagnosis and therapy of sleep disorders

In addition to these roles, some RTs work in the community, in education, and in sales and technical departments of medical equipment manufacturers.

The training program in BC lasts for three years and is accredited by the Canadian Society of Respiratory Therapists (CSRT). The only institution in the province to offer a course in respiratory therapy is the University College of the Cariboo (UCC) in Kamloops, 230 miles east of Vancouver. The program consists of two 8-month blocks followed by 47 weeks of clinical internship at accredited hospitals around the Province. On completion of the course the successful graduate gains a College Diploma and is then eligible to sit the National Board Examinations to attain the professional qualification of Registered Respiratory Therapist (RRT). In addition to the Diploma there is now a degree option, which takes a further year of study. In contrast to our current system, trainee RTs are not employed during their training. In a system similar to that used in the training of physiotherapists and radiographers in this country, candidates have to apply to the college to join the course. Only after successful completion can they apply for a post as a RRT. At present, the course costs CA$3600 (~£1400) per year (2 semesters), with an estimated CA$900 (~£360) for books for each of the first 2 yrs. Students are also encouraged to join the CSRT at a cost of CA$175 (~£70) for 3yrs student membership, plus CA$450 (~£180) to sit the professional body exam in the final year.

Currently most employers in BC insist that RTs are registered with both the CSRT and the British Columbia Society of Respiratory Therapists (BCSRT). The BCSRT is currently in the process of forming a college, which will act as the regulatory body in BC. The Provincial government will recognize this as the governing body and it will become mandatory for all RTs working in BC to register with the body before they can practice.

On my first visit I met Colya Kaminiarz, a clinical instructor and site co-ordinator at Vancouver Hospital & Health Science Centre. I had contacted Colya several months prior to my trip and he had agreed to oversee my visit. My first morning was spent with an RT, and student RT in the Emergency Department. The main tasks undertaken here include arterial blood gas (ABG) sampling, spirometry, reversibility testing, intubation, ventilation and airway management of patients admitted with respiratory/cardiac arrest. I think the day of my visit must have been the least busy for admissions in the history of the hospital as all I got to see was a reversibility! After lunch, I spent the afternoon on the intensive care units. Here the RT's role is to oversee patients' ventilation (both invasive and non-invasive) and monitor gas exchange and metabolism. This includes set-up of ventilators and modification of settings (e.g. tidal volume, respiratory rate, tidal waveform etc.) where necessary. The RT also plays a pivotal role in the strategic planning involved in weaning patients off artificial ventilation. On these units, blood gas status was assessed using both ABG sampling and transcutaneous monitoring. A further important role for the RT in an intensive care situation is in the assessment of the metabolic demands of unconscious patients using an average 24-hour measurement of V_{O2} and V_{CO2} so that nutritional requirements can be tailored more effectively to the patients needs.

The largely unused Pattison Pavilion at Vancouver General Hospital

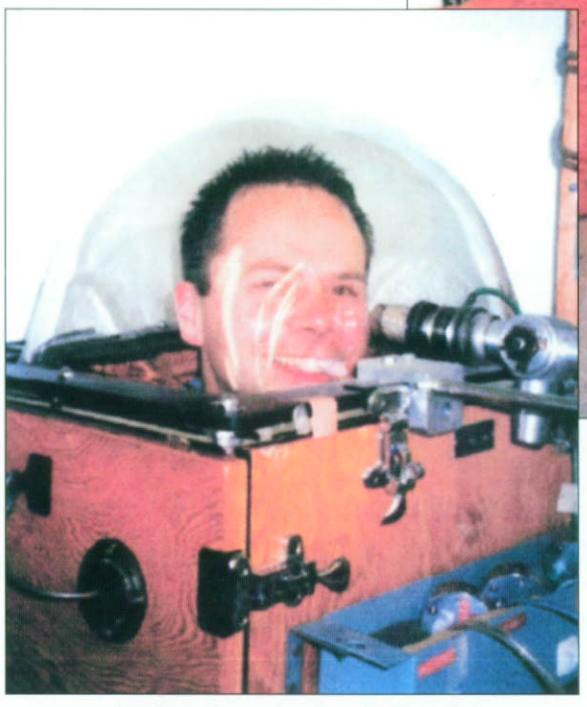
On my next visit, I spent the morning in the pulmonary function (PF) department at VGH. The range of tests performed in the department is comparable to any UK tertiary hospital. The equipment in use is a fairly even split between both Sensor Medics and Jaeger. The spirometers used are pneumotachographs and rolling seal spirometers – not a wedge bellows in sight! The department at VGH has three modern whole body plethysmographs plus a slightly older model (pictured). Blood gases are sampled arterially, usually from the radial artery, as they are at all the hospitals I visited. Interestingly, none of the RTs I met were aware of the usefulness of arterialised capillary blood gas sampling.

Vancouver is a very cosmopolitan city and has a large Chinese population. On the walls of each room of the PF lab at VGH is a phonetically spelled Mandarin glossary of a variety of useful lung function phrases, such as "choy" (blow out fast), "sum foo cup" (deep breath), and "nay you jo ho dee" (a "that was rubbish/you can do better than that!" sort of phrase).

Other tests routinely performed in the lab include cardiopulmonary exercise tests, and 24-hour ambulatory oesophageal pH monitoring. At the time of my visit the unit was involved in a study of pH monitoring in asthmatics, investigating the link between oesophageal reflux and asthma symptoms.

My next stop was at British Columbia Children's Hospital (BCCH), where I met the head of the PF lab, Kendal Brooks. The distribution of the RTs at this large children's hospital is similar to the adult hospitals, with a RT in the emergency department, in addition to RTs in neonatal and paediatric intensive care units.

At BCCH I learned about the excellent PF quality control (QC) program operating in BC. It is controlled by the Diagnostic Accreditation Program (DAP) of BC which is a body of the College of Physician's and Surgeons of BC. Each PF unit in the province is required to perform monthly biological testing as well as calibration checks. The monthly biological QC as well as several system checks are submitted bi-annually to the DAP for evaluation by an appointed RT. The DAP also performs laboratory inspections and organises and supports educational seminars on PF testing.



Cutting-edge technology in Canada!

The following morning I was back at VGH, in the bronchoscopy suite. Here, the RT has overall responsibility for running the service. Duties include preparing the equipment, reassuring and explaining the test to the patient, assisting the physician with the procedure, and sending samples to the pathology lab. The Consultant performing the bronchoscopies on the day I visited originated from London, having moved to Canada after his registrar training in the early 80's. He was one of several medical and paramedical staff I met that had either emigrated from the UK, or were taking a long break to work and travel in Canada.

My final visit was to Richmond Hospital, to the Cardiopulmonary and Neurodiagnostic Services Unit where I spent the afternoon with Dorothea Scholl. After a quick tour around the department, I observed a full lung function test on an in-patient who was originally from Scotland. I'm sure Dorothea had some regrets about introducing me, as once the lady found out I was from the UK, she spent the next 15 minutes reminiscing about 'back home'. Each time she got the mouthpiece close to her lips, she recalled yet another tale! The Richmond Hospital has a diagnostic sleep unit consisting of two rooms, one single and one double (so that partners could stay the night too). Both rooms are furnished with video monitoring and all the usual channels, except for EEG monitoring. Interestingly, the UK is not the only country to be experiencing funding problems in the area of sleep medicine, especially obstructive sleep apnoea (OSA). In BC the medical consult is paid for by Medicare, but the treatment is not. Many patients get funding via extended or private medical benefits, leaving other patients to use their own funds for CPAP machines and masks etc. After diagnosis, these patients generally are not seen in the respiratory unit again, unless they need to see the physician. Their follow-up is undertaken by RTs in the private sector. These RTs either work independently or within small companies.

One common thread throughout my visits to VGH, BCCH and The Richmond Hospital was the exceptionally high level of dedication and enthusiasm of every RT and student RT that I had the pleasure of meeting. Despite being incredibly busy at times, someone would always go out of their way to take the trouble to explain things to me. I thoroughly enjoyed my stay in Vancouver and the subsequent tour of BC (plus a little bit of neighbouring Alberta). It is a truly amazing place to visit – maybe, one day there'll be an ARTP bursary to attend the BCRST meeting (no, that's not a cue to put our subscriptions up!). My entire visit to British Columbia is one that I'll never forget.

Acknowledgements

I would like to thank all the staff in each of the respiratory therapy departments at Vancouver General Hospital, British Columbia Children's Hospital and The Richmond Hospital.

I would especially like to thank:

Colya Kaminiarz R.R.T. for his help in organising my visits and being on hand to answer my questions.

Dorothea Scholl R.R.T. for her invaluable help with this article.

Kendal Brooks R.R.T. for his hospitality despite being the only staff member to be at work due to sickness.

Links

University College of the Cariboo, Kamloops BC: www.cariboo.bc.ca

The Canadian Society of Respiratory Therapists: www.csrt.com

The British Columbia Society of Respiratory Therapists: www.bcsrt.com

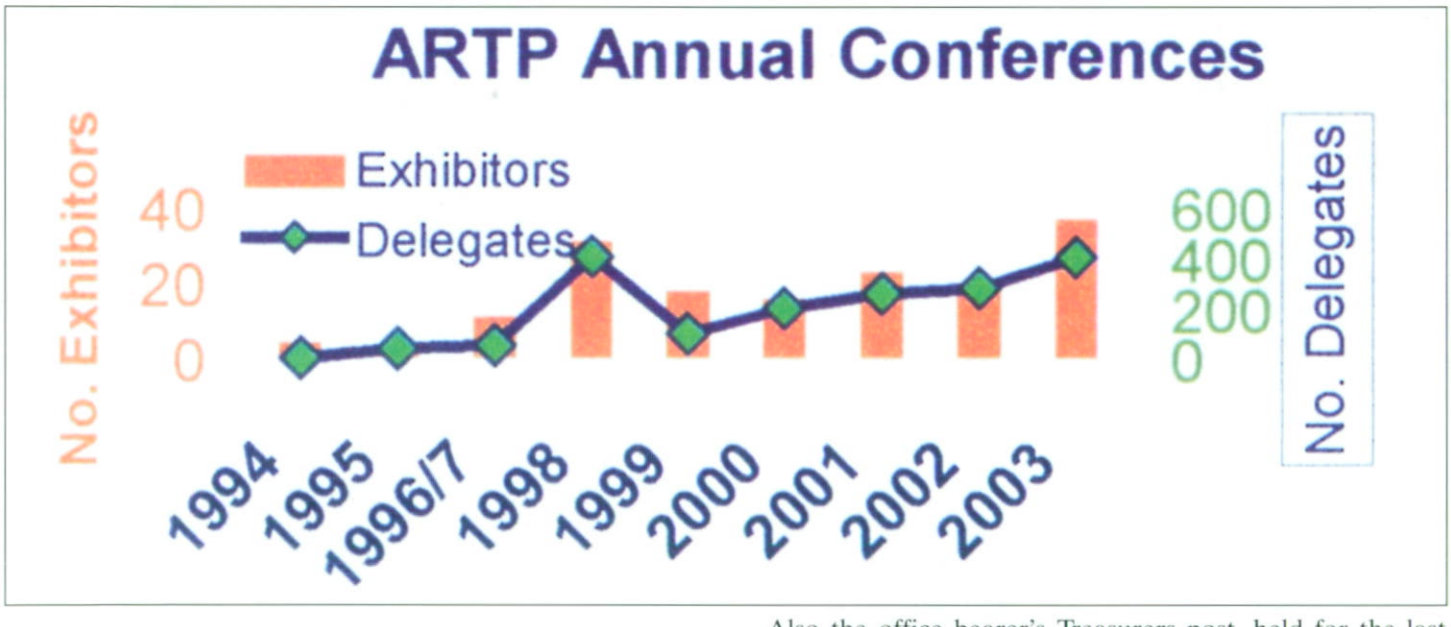
MINUTES OF THE ARTP ANNUAL GENERAL MEETING HELD AT THE HILTON HOTEL, BLACKPOOL, ON 19TH JANUARY 2003

Executive members present

Dr Brendan Cooper (BC) Honorary Chairperson
Miss Julie Lloyd (JL) Honorary Treasurer
Mrs Jane Caldwell (JC) Honorary Secretary
Mr Nigel Clayton (NC)
Mr Keith Butterfield (KB)
Mrs Pat Mitchell (PM)
Mrs Angela Evans (AE)
Dr Adrian Kendrick (AK)
Dr Clare Newall (CN)
Mr Rod Lane (RL)
Ms Gill Butcher (GB)
Mrs Jackie Hutchinson (JH) ARTP Administrator

Executive members Apologies for Absent

Mrs Jill Fallen (JF)



No apologies for absence were received from the membership

Dr Brendan Cooper opening the AGM meeting, by welcoming the audience of approximately 280 delegates, to the 30th Annual General Meeting at Stratford upon Avon and to this year's aptly named conference theme "Measure for Measure".

Brendan reported that the ARTP membership had rocketed in recent years, particularly since the 25th conference:

The conferences had also increased both in delegate numbers and conference exhibitors, such that there are more exhibitors at this conference that at the ICC, Birmingham.

He stated that the venue chosen for the conferences had to be the right size at the right cost and he assured delegates that this would continue to be a high priority for the Executive Committee set objectives.

Executive Committee Report

The Chairman thanked all the Executive Committee members for their continued support. He reported that the current team had, with a few changes, worked together for over 5 years now and were a superb team to work with. He took this opportunity to thank each executive member personally, and on behalf of the membership.

He then asked the membership to vote to renew the office bearer's Honorary Secretary's post which has been held by **Jane Caldwell (Rotherham Hospital)** for the past three years and who was standing for re-election.

Majority vote carried forward the decision.

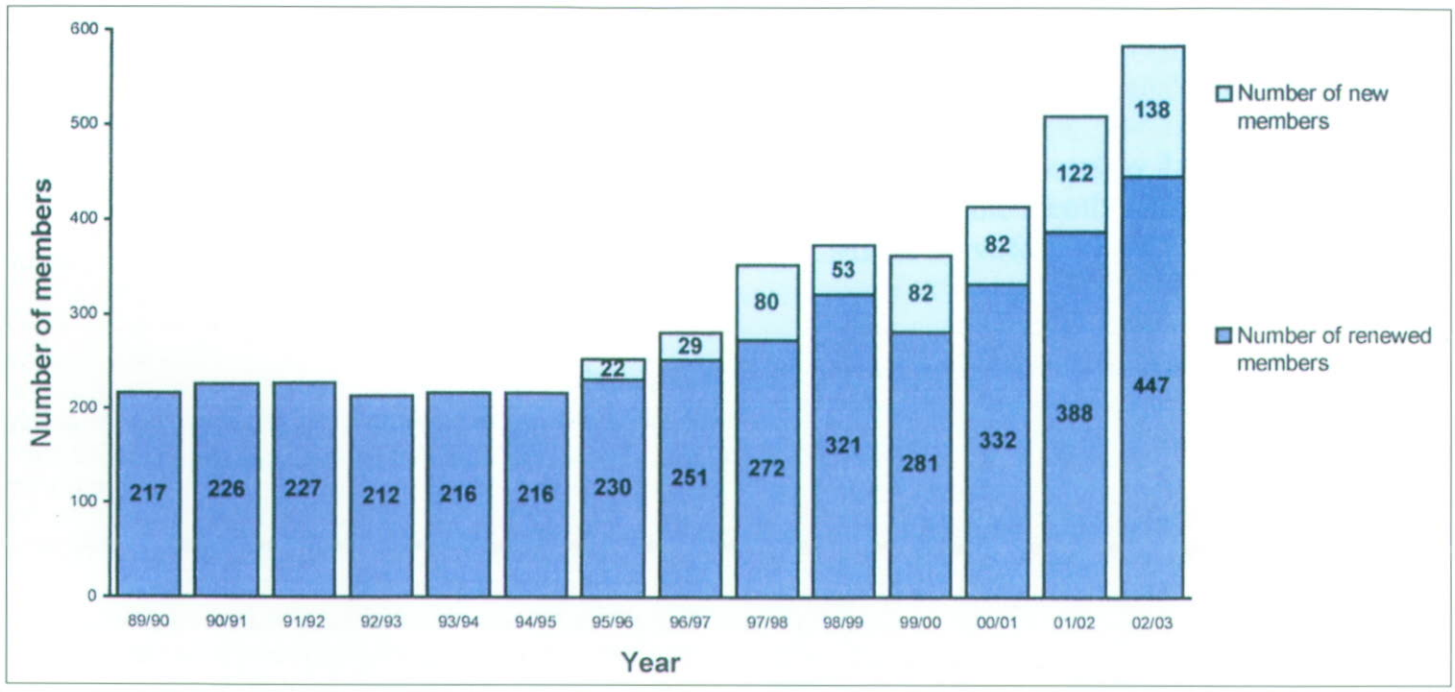
Also the office bearer's Treasurers post, held for the last three years by **Julie Lloyd (Sutton Coldfield Hospital)** was also for re-election and the membership were duly asked to vote to re-elect Julie into this position.

Majority vote carried forward this decision.

Brendan thanked the membership for their support of both Jane & Julie and took the opportunity to personally thank both Executive Committee members for their continued support and efforts over the last three years.

A further constitutional issue for membership vote, (which the membership had been given at least 8 weeks postal notice of), was to change the Executive Committee Members Declaration of Interest Forms from biannual to annual, which will help with administration and monitoring of the same.

Majority vote carried forward this proposal.



The Chairman then moved on to give the reports:

Financial report

The financial accounts were extremely healthy, thanks to the income from job adverts, membership fees, courses and handbook sales. **Julie Lloyd Treasurer & Jackie Hutchison, ARTP Administrator** were thanked specifically for their direct input into maintaining the healthy state of finances. Brendan stated that the Executive Committee would be reviewing potential long-term plans for investment of income, which the membership would be informed of in due course. He reviewed and discussed a financial breakdown of income & expenditure for the membership present. The Membership were subsequently asked to vote to accept the financial accounts which again had been forwarded to the membership by post 8 weeks previously.

Majority accepted the financial accounts for 2001-2.

Bursary Report

It was confirmed that there had been more bursaries this year, with anticipated further bursaries for the coming year:

2002-2003

2 x ERS Bursaries at up to £500 each

4 x ARTP Bursaries at £200

(6 applications; 1 withdrawn, 1 rejected)

1 x Visiting Bursary at £100

2003-2004

2 x ERS Bursary at up to £500 each

4 x ARTP Bursary at £200 each

4 x BTS Summer Meeting Bursary at £100 each

Brendan thanked **Gill Butcher (Burton on Trent)** for her roles as Bursary Secretary & as Co-Editor of *Inspire Journal.* He confirmed that applications for bursaries should be addressed to **Gill Butcher, Bursary Secretary**. (See *Inspire* for details)

Website Report

The website has grown from strength to strength and is certainly one of the best initiatives undertaken by the ARTP on behalf of the membership. He acknowledged **Keith Butterfield's** direct role in this achievement. The hits per month continue to grow every month, with the ARTP forum being a valuable source for debate, discussion and information on key issues. (At this point Brendan informed the membership that **Alan Moore** was one of the main contributors to the forum such that it was clear to see when Alan was on annual leave due to the pronounced decrease in his forum message contributions!)

Scottish Forum

The Scottish forum group had has a very good year and acknowledged **Andrew Robson, Edinburgh,** for his terrific contributions to the development and success of this group. It was confirmed that Andrew was stepping down from the role as Scottish Forum Co-ordinator and confirmed that the new Scottish Forum Co-ordinator would be **Dr Roger Carter, Glasgow.**

An Autumn Meeting in Glasgow had taken place, which was very successful despite Brendan's limited time there due to the unfortunately poor travel arrangements on that day. He confirmed that numbers permitting a Short Course designed for candidates doing the National Assessment would take place in Glasgow in March and Glasgow would be used a centre for the national assessment in June/July of this year.

Regional Groups Report

Brendan thanked **Keith Butterfield (Dudley)** for his work in developing these groups and welcomed **Rod Lane (London)** to his new role on the Executive Committee as Regional Co-ordinator as well as Paediatric Scientific Advisor.

Brendan showed the membership a map of the geographical distribution of regions across the whole of the country but confirmed that H of D could attend the group which they felt was most convenient rather than because it was in their allocated region.

Voluntary Registration Report

The respiratory numbers registered onto the voluntary registrar were very disappointing. It was confirmed that the RCCP may start petitioning the Department of Health in April of this year and therefore it was imperative that the membership applied to join ASAP. Brendan briefly recapped on what criteria was needed to apply for voluntary registration now and gave the ARTP website as a source for further reference on this issue. He stated that he was very concerned that members are not registering and hence had written to 177 members directly asking why. He confirmed that a Total of ≈ 2000 were already registered with RCCP of which only 170 were respiratory and 60 cardio-respiratory. Only 30% of the ARTP membership was registered, which was possibly only 18-24% of all respiratory practitioners! Brendan urged members to register ASAP. He confirmed that the fees would go up in May and that applicants would find it more difficult to register in the future. Registration should be a staff appraisal objective for all those not already registered and warned that if the Petition to HPC starts 1st April 2003, then only those on the registrar would be taken forward to the next stage. If the petition failed due to lack of numbers then he again warned the membership that we may find ourselves considered as ancillary staff and not amongst our fellow professionals.

At this stage Brendan warmly welcomed and handed over to **Dr Sue Hill, Chief Scientific Officer for the Department of Health.**

Dr Hill opened her presentation by thanking Brendan for his kind introduction and for the invitation to attend this meeting.

Sue stated that the new NHS plan, would overwhelmingly be a **"Patient Centred NHS".** The plan set out should be rapid, responsive, flexible, inter-professional with new ways of working and more of the NHS, which will hopefully mean greater numbers working within it.

Sue continued by explaining her new role as CSO within the Department of Health. Sue has an overall Role of Professional Head and Lead for Healthcare Scientists, (which consisted of 50+ disciplines), representing Healthcare Science interests at DH and acting as principal interface with Ministers. She also is responsible for promoting Healthcare Science and the workforce both internally and externally and supporting and promoting consolidation of the workforce (IPS, FHCS).

She continued by explaining the D of H's Vision for the future:

A Consolidated workforce that is visible and recognisable; with central role in scientifically based healthcare system; delivery of patient focused care through new and innovative ways of working; which can be integrated into the whole healthcare team.

Sue stated that the role of Professional Bodies was an important one: to respond to policy requests, project initiatives etc; provide professional information and expert professional advice/input; support consolidation of the workforce; and raise the profile of profession and Healthcare Science in general.

The role of individual Healthcare Scientists would be to embrace the programme of reform; adopt new ways of working (Clinical teams); raise awareness of role both within HCS's and with other occupational groups. Sue continued by stating that HCS should establish local networks and HCS Leads at their own Trust, Health Authorities and Workforce Development Confederation's (WDC). They should secure representation or establish channels of communication within Trusts, & WDC thus ensuring that Healthcare Scientists remain at the centre of the healthcare workforce.

Sue than gave a recap of the remit of the document ***'Making the Change'***, February 2001. She stated that this document aimed to secure the workforce, undertake workforce planning, such that numbers, future requirements, and integration into care group agendas, could be devised. Recruitment and retention was an important part, including revising careers leaflet, HCS fact sheet, and WDC guidance. Improving Working Lives (HCS and AHP toolkit) and return to Practice Guidance was also an important remit of the document. Sue stated that in 2008 it was anticipated that there would be 15,000 more HCS's than present figures and the same again in the next 10 years following.

Sue confirmed that the need to build and develop the workforce was paramount via modernised education and training programmes (developed to support service need, flexibility in commissioning arrangements); National Occupational Standards, HCS Project (including NHSU). Sue continued that there is the need for higher specialist training; CPD (determination of requirements); research capacity with research fellowships, and overall more HSC involvement in research.

Regulation of extension to unregistered professional groups and to support workers is also part of the agenda for change. The NHS plan is about valuing the workforce via:

Agenda for Change

Career pathways (with no bars)

DH Clinical Scientist Assessors

Leadership programmes

Profile raising workshops and information

Simplified pay system

Job Evaluation Scheme

Improved opportunities

Pay progression linked to Knowledge and Skills Framework

Raising Awareness and Profile of HCS

Improve understanding of role (HCS Fact Sheet, HCS Awareness Week 2003)

Involvement of HCS's in Modernisation Agenda and Policy development

Develop links, leads and local networks (DHSC, StHA, WDC, PCT, Trust)

Support of CSO to develop local structures

Sue confirmed that there was a role for everyone by local and national partnerships and professional networks. She suggested that members became actively involved in the NHS Modernisation. That they integrated into multidisciplinary team approaches and into local clinical service, sharing new ways of working with protocol driven care, via skill mixing and role redesign including expansion of practice. In addition involvement in delivery of the Clinical Governance agenda should be high on everyone's agenda.

Sue continued by discussing the changing and extending roles of high grade Nurses. 10 key roles have been highlighted for their development which include: ordering diagnostic investigations (e.g. pathology tests & X rays) making and receiving direct referrals (e.g. to a therapist); admitting and discharging patients (for specified conditions and within agreed protocols) managing patient caseloads (e.g. for diabetes or Rheumatology) running Clinics (e.g. for ophthalmology or dermatology) prescribing medicines and treatments; carrying out a wide range of resuscitation procedures (including defibrillation); performing minor surgery and outpatient procedures; triage patients using latest IT to other Health Professionals; taking the lead in way local health services are organised and run. The next stage could possibly include HCS with a comparable 10 key roles list for HCSs?

Sue concluded her presentation by taking the opportunity to thank all her friends and colleagues within the respiratory field and for the acknowledgment from the ARTP for the Special Award for contributions to Respiratory Service, which she had received the night before at the Gala dinner. Even though her role has changed within the NHS, Sue stated that she would always have respiratory medicine at the core of her thoughts. She thanked her ARTP Executive Committee colleagues for their support and special heartfelt thanks were given to her staff at Queen Elizabeth Hospital, Birmingham i.e. to Jo, Jodie, James, Teresa and Claire and specifically to what she would describe as her "right hand" woman, Anita Pye for her terrific support over the years.

Sue finally gave her details to the membership and encouraged members present to communicate with her via the CSO Web page and Bulletin or directly at:

Dr Sue Hill Chief Scientific Officer
LG 25, Wellington House, London
Tel : 0207 972 4822
PA Beverley Akwara
Email address - Sue.Hill@doh.gsi.gov.uk

Brendan thanked Sue for her very informative presentation and then gave a brief:

Education report

This year had been a particularly busy year in education. Major developments in education included:

- Writing the respiratory option in the physiology degree, and the specialist option in the diploma modules;
- NOS standards written, ready for piloting in the summer of 2003;
- ARTP college formation with an examination board overseeing documentation, format, and examination results;
- Review and evaluation of part I & writing of part II examination;
- Part II handbook has been started,
- The BSc specialist training has been written, awaiting ratification
- Several Courses including: basic & advanced sleep courses, specialist respiratory option at Coventry; Basic short courses at Birmingham & Glasgow & Spirometry Courses at many centres throughout the country.

Brendan then discussed the outcomes of the **BTS/ARTP National Assessment 2002**

60 candidates registered	
45 completed and submitted assignments.	(75%)
9 failed their assignments	
36 entered the written /practical exam phase	(60%)
24 candidates achieved a pass.	(40%)

The presentations of the Certificates for the BTS/ARTP National Assessment 2002 took place:

Clare Newall, (Birmingham) Education Secretary, read out the names of the successful candidates and both **Brendan Cooper** and **Angela Evans, (Stoke on Trent) Chair of Education**, presented the certificates to those successful candidates who were present at the conference.

Candidates who passed 2002 National Assessment

David O'Donnell	Sarah Stone
Heather Anderson	Kelly Backler
Caroline Tait	Lucy Andrews
Stephen Tod	Mark Unstead
Danielle Devonish	Jessica Wilson
Nicholas John	Laura Basterfield
James Stockley	Sally Blythe
Alison O'Brien	Julie Wivell
Emma Craig	Kate Bissell
Lucy McCabe	Shelley Kirk
Regina Igoe	Amanda Frisby
Chris Jones	Janice Hudson
Nadine Balicki	Roy Dean
Raymond Watts	Andrew Collingwood

JAMES STOCKLEY FROM THE QUEEN ELIZABETH HOSPITAL, BIRMINGHAM, WON THE SUE HAZZARD AWARD

Sincere apologies from the ARTP Executive Committee to **Julie Wivell, Diana Princess of Wales Hospital, Grimsby** who did not receive her certificate, despite being at the conference, due to an oversight with the certificate being in transit from the BTS. The ARTP Executive would like to give Julie their warmest congratulations and apologies that her achievements were not awarded at the customary time.

To conclude the AGM Brendan briefly discussed the objectives of the ARTP over the past and coming year (see later). He stated that many achievements had been made and would continue to be made on behalf of the membership. Brendan stated that he was proud to be the Chairman of the ARTP and would continue to strive to lead the Association with honour. The AGM meeting closed at approximately 10.25am.

Minutes taken by Jane Caldwell, Honorary ARTP Secretary.

Objectives for 2002

1. To continue to subscribe to the Registration Council for Clinical Physiologists and as representatives within this group to take forward State Registration **(Achieved)**
2. To continue to take forward as many ARTP members as possible to achieve voluntary state registration. **(Partially Achieved)**
3. To establish the College of Respiratory Physiology and to develop education materials and training in collaboration with the Clinical Physiology Group for both Clinical Scientists and Clinical Physiologists (MTOs) within the ARTP and to continue the Heads of Department forum as a working consultative forum. **(Achieved)**
4. To maintain a solid financial basis before the next AGM. **(Achieved)**
5. Further develop Web site on the Internet to include technical reports on equipment, etc and on line *Inspire*. **(Members only added - (Achieved)**
6. Strengthen links with manufacturers to agree roles and responsibilities and to establish a regular timetable of meetings. **(Achieved)**
7. To develop and establish the syllabus, course content, examinations and examination board structure for the National Examination in Respiratory Physiology Parts I and 2 before the next AGM 2003. **(Achieved)**
8. To promote the National Examination in Respiratory Physiology and the National Examination in Spirometry and to ensure that results are are ratified and issued as early as possible. **(Achieved)**
9. To streamline the organisation of the Executive Committee and to further expand the contribution from senior ARTP members around the UK. **(Partially Achieved)**
10. To increase the membership of the ARTP towards >75% of practitioners of lung function measurement in the UK before the next AGM 2003 **(Achieved 33% up to 60%)**
11. To develop and strengthen the partnership with the BTS, both through the BTS Executive, Council and Standards of Care Committee by developing existing guidelines of lung function and organising consultation workshops. **(Partially Achieved)**
12. To develop the groundwork for the infrastructure for Accredited Lung Function Laboratories. **(Achieved)**

Objectives for 2003

1. To continue to assist the Registration Council for Clinical Physiologists and to take forward as many ARTP members as possible to achieve state registration in 2003.
2. To develop the College of Respiratory Physiology and the education materials and training in collaboration with the umbrella organisations for both Clinical Scientists and Clinical Physiologists (MTOs) within the ARTP
3. To maintain and build upon a solid financial basis before the next AGM and to invest ARTP funds in strategies that will benefit the membership now and in the future.
5. Further develop Web site on the Internet to include technical reports on equipment, and to improve communication with members and non-members of ARTP
6. Continue to strengthen links with manufacturers to agree roles and responsibilities and to establish a regular timetable of meetings.
7. To continue to develop new course materials and resources for the National Examinations in Respiratory Physiology (Parts I and 2) before the next AGM 2004.
8. To promote the National Examination in Respiratory Physiology and the National Examination in Spirometry and to ensure that results are ratified and issued as early as possible.
9. To further develop communications with Regional Groups throughout the UK, and use them to support national initiatives such as NOS, examinations, etc.
10. To increase the membership of the ARTP towards >75% of practitioners of lung function measurement in the UK before the next AGM 2004.
11. To develop and strengthen the partnership with the BTS, both through the BTS Executive, Education Committee and Chief Executive by developing existing guidelines of lung function and organising training courses.
12. To pilot and establish Quality Assurance programmes as a pre-requisite for Accredited Lung Function Laboratories.

Minutes of the Heads of Department Meeting, on 16th January 2003 At the Moat House Hotel & Conference Centre, Stratford

Brendan Cooper, Chairman of the ARTP, welcomed approximately 125 delegates to the Stratford Heads of Department (H of D) Meeting, and confirmed that these meetings will occur on an annual basis.

He thanked the organisers for the meeting and after some brief housekeeping announcements gave a review of the aim of the H of D meeting, encouraging participation, debate and commitment from the delegates present. To open his presentation the definitions of "Profession" and "Professional" were reviewed:

Profession

A vocation or occupation requiring special, usually advanced, education, knowledge, and skill

Professional

One engaged in one of the learned professions or in an occupation requiring a high level of training and proficiency Source: (Black's Law Dictionary 6th ed)

As Heads of Departments, we should adhere to these definitions and engage to raise the standard and:

- Make sound decisions
- Function as leaders
- Put patients first
- Commit to the profession

As professionals we have a professional duty to the public to meet their expectations, which include:

- Professional credentials
- Professional code of ethics
- Standards of practice
- Maintenance of knowledge and skills
- Peer review process
- Research and publication

Patient Expectations should also be high on our agenda and include:

- Personal integrity
- Confidentiality
- Appreciation for diversity
- Strong work ethic
- Sound judgment

Professional Education will enable us to meet this criterion with lifelong learning through:

- Continued self-improvement
- Continued professional development
- Continuing education

The Conference organisers "Hutchinson's Harem" in control!

- And Research

Brendan confirmed that the role of the ARTP as a professional association would be to set the standards via:

- Professional Advocacy
- Professional Resources
- Professional Network

The programme content was discussed at this stage and again delegates were encouraged to participate in the discussions and debates, and to question at any stage, any areas of concern and contribute any comments that they might have. Brendan then introduced Keith Butterfield, ARTP Executive member, to take the stage to discuss the developments in regional groups and laboratory accreditation.

Developments in Laboratory Accreditation, Regional Groups and QA Scheme

(Mr Keith Butterfield)

Laboratory Accreditation

Keith stated that although there hadn't been much direct progress on developing the ARTP Laboratory Accreditation Scheme proposed at the last H of D meeting, good progress had been made on other projects that would pave the way for accreditation.

It was hoped that the afternoon workshops/regional meeting would also be useful in developing the objectives and standards required to meet this remit.

ARTP Regional Network

Keith reported good progress with the ARTP regional network groups project.

Keith confirmed that these groups were for all H of D's, not just for those who are ARTP members. He stated that the aim of the ARTP regional network was to create a network of regional groups to:

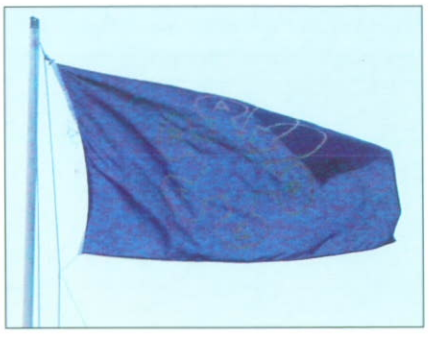
Cover all respiratory laboratories in the UK and improve communications nationally and professionally. That the groups would locally administer the QA Scheme and that an Email Group (similar to the Open Forum) had been set up to allow the regional group facilitators to communicate.

Keith then confirmed the purpose of the regional groups was to provide a direct, two-way communication between labs and the ARTP Executive. Local concerns such as education, CPD, funding, careers promotion (HCS Awareness Week being cited as an example) etc could be addressed and the members of local groups could also help in projects such as the QA scheme and Workforce Planning Surveys.

Keith confirmed that **Rod Lane, ARTP Executive Member**, had volunteered to become ARTP Network Coordinator whose role would be to provide a communication link between the groups and the Executive Committee; raising questions and concerns at Executive Committee level.

Keith continued by showing the audience the Geographical Distribution of each ARTP regional group on the UK map. (See **www.artp.org.uk - Network**). Keith reported that most

of the groups had had a meeting. He confirmed that the groups represented good national cover thus enabling shared best practice with positive feedback already from those who had attended, particularly from sole practitioner laboratories.



Keith urged H of D to support and attend one of these groups, which should be the one most convenient, but may not be necessarily the one in their own geographical region. Keith asked if the audience had any questions on the regional network groups. None were asked.

Keith moved onto his next presentation:

Update on ARTP Quality Assurance Scheme (Keith Butterfield)

The proposed QA scheme consists of a two-phase protocol:

The first phase is a questionnaire for labs to register an interest in taking part and to collect details such as Pre-attendance advice, units / terminology / protocols & reference values.

The second phase involves three subjects visiting the labs, being tested on the equipment and recording other parameters such as temp, BP, etc

The protocols have been circulated to the regional groups for consultation. Also for discussion, possibly later in the afternoon workshops/regional meeting was how often the accreditation should be done, who would do the accreditation as well as what should be assessed. Keith gave the audience an anticipated timescale of events for this proposed QA scheme with a deadline of September/October when collation of the national findings could be produced.

Keith took questions from the audience at this stage.

Nigel Clayton, Wythenshawe Hospital asked how would this scheme be funded in the future. Keith confirmed that it was not clear at this stage who would fund the scheme long-term. Initially the major costs would be incurred from mileage and time out of the laboratories for absence of the 3 subjects, however if accreditation was to become compulsory Trusts, or departments may have to become involved with costs incurred. For this initial pilot project ARTP was considering funding the travel expenses and, as part of the consultation, the regional groups had been asked to provide estimates. Brendan Cooper added that this was a government lead initiative and therefore funds should eventually have to be made available to meet and support this.

Trefor Watts, Walsall Hospital, stated that the CPA who had been running their scheme for the last 10 years had had to overcome many similar problems. He suggested that in order for this scheme to be accepted that we gain the support of the respiratory physicians & this in turn would help with funding the scheme. Brendan Cooper agreed to take this issue to the next BTS Executive Committee meeting on 20th January 2003. **Alan Moore, Birmingham Hospital**, stated that the "Midlands Thoracic Society Group" had given their support to the QA scheme completed in the Midlands and that they had undertaken to provide funds to meet any cost shortfalls encountered from the scheme.

Derek Cramer, Brompton Hospital stated that he gave his support to the scheme but had a couple of reservations: firstly he felt that the timescale was too ambitious and secondly that he was concerned about the verification of accuracy of the scheme's gold standard spirometer when compared to some department's gold standard spirometers. Keith stated that the timescale was for consultation & discussion and that feedback from the regional groups may well affect the 'deadline'. Alan Moore confirmed that the scheme's aim was to pick out glaring problems within departments rather than small variations.

Keith concluded that this scheme was a clinical governance issue, even if it was not supported by other professionals or organisations, and therefore urged H of D's to support the scheme and its aims.

Keith then moved onto his next presentation:

ARTP Survey 2003

Keith stated that a telephone survey carried out by ARTP Headquarters in 2001/2 resulted in information obtained from 206 laboratories contacted. It was felt that that the survey needs updating on a regular basis. We now know that there are at least 247 laboratories in the UK but there could be more. Also information regarding what comprehensive procedures and services are currently available within different laboratories is lacking. A further survey will be carried out which will ask for specific details about the establishment, number of consultants, and procedures and services performed. The survey has been simplified to aid the process of completion and H of D were encouraged to obtain their survey forms from the conference registration desk to complete them and return them to ARTP HQ by the 14th February 2003.

Keith reviewed and discussed an example of a completed form for those present. He confirmed that names were not necessary if people did not want to release this information, but stated that this information would not be given to any outside agencies except to aid the BTS in the compilation of their Directory of Laboratories. The staff grade and average time spent in the respiratory modality would be required especially for joint modality departments. Guidance notes are available for help with completion of the forms. Keith stressed that this survey will provide useful information for the ARTP about the services, staffing levels and workloads and therefore encouraged H of D to obtain and complete their surveys as requested.

Questions were taken from the audience at this stage: Alan Moore, Birmingham Hospital, stated that he felt there should be reference in the survey for reversibility testing as this added significant time to a department's workloads. Keith accepted this valuable point and stated that this could be incorporated into future questionnaires. No further questions were asked.

Brendan Cooper took this opportunity on behalf of the membership and from his fellow ARTP Executive Colleagues, to acknowledge the efforts and terrific achievements Keith had consistently produced for the ARTP.

Brendan then asked Angela Evans, Chair of Education Committee, to give the next presentation:

Review of Education & Training 2002 (Angela Evans)

Angela opened her presentation by stating that this year had been a particularly busy year in education. Major developments in education included:

- Writing the respiratory option in the physiology degree, and the specialist option in the diploma modules;
- NOS standards written & ready for piloting in the summer of 2003;
- ARTP college formation with an examination board overseeing documentation, format, and examination results;
- Review and evaluation of part I & writing of part II examination;
- Part II handbook has been started,
- The BSc specialist training has been written, awaiting ratification
- Several Courses including: basic & advanced Sleep courses, specialist respiratory option at Coventry, Basic short courses at Birmingham & Glasgow & Spirometry Courses at many centres throughout the country.

Angela then discussed the outcomes of the:

BTS/ARTP National Assessment 2002:

60 candidates registered

45 completed and submitted assignments (75%)

9 failed their assignments

36 entered the written /practical exam phase (60%)

24 candidates achieved a pass. (40%)

Angela stated that evaluation questionnaires had been sent out to candidates who had taken part in all 3 parts of the BTS/ARTP National Assessment 2002 to evaluate the process and obtain constructive feedback on the assessment process.

Angela stated that the main concern was why are people are not achieving, i.e. only 40% of those registered achieved. Each part of the assessment was discussed with possible reasons for non-achievement:

Assignments:	Failure to submit
	Poor content, factual errors
	Not answering the question
	Lack of time
	Unfair marking scheme
Written exam:	Not enough exam time
	Lack of revision time
	Didn't realise level needed to pass
Practical:	Poor performance on the day
	Unfamiliar with equipment
	No training received
	No preparation
	Lack of knowledge
	Equipment failure
Overall mark:	Unfair marking scheme
	Lack of study/preparation time
	Staff not what they used to be?

Angela then took the reason "Was the marking scheme fair?" and explained the marking process, which had been used for each part of the assessment process.

With respect to the **assignments** she explained that each assignment was marked using a standard set of marking criteria, with points awarded for evidence of key phases/answers. An example of an excellent assignment, an average and a poor assignment was also given to markers for reference. The pass mark was 50%. If an assignment received between 45% and 49% a different marker remarked the assignment All 3 assignments had to obtain and average of 50% for an overall pass. 10 marks were deducted if the assignment was late without any reason or prior authorised arrangements. Assignments resubmitted had to obtain a mark of 60% to achieve a pass. Angela confirmed that this year 135 assignments had been marked and all assignments have been returned to candidates on time with some feedback. Following evaluation from candidates' feedback was felt to be insufficient and the committee has agreed to address this further for next year's examinations.

Angela explained that the **Written Exam** would now be increased to 3 hours as the evaluation obtained from candidates felt that 2.5 hours wasn't long enough. The pass mark would still remain at 50%. Feedback from candidates also expressed a request for past papers to be made available and this year some model questions with answers would be made available for candidates' reference.

Practical Exam & Viva would remain in the same format as this year, but it is hoped that more centres would be made available for candidates this year. Equipment will be specified prior to the assessment and all candidates will be invited to visit the assessment Centres prior to assessment day. One assessor for each practical component will assess candidates for Spirometry, lung volumes, gas transfer, reversibility, and clinical viva to reduce bias throughout the assessment process. Angela confirmed that candidates have to gain a pass in each practical sub section (50%) but can resit if there is a clear pass in the written exam and assignments.

Angela concluded her presentation with a review of the educational objectives for the coming year which include:

- Further ARTP College development
- NOS trials to begin in summer 2003

- Part II examination to be finalised for commencement in 2004
- Increased further links with the Universities, (particularly with respect to links with ARTP Examinations part I & II of which the assignments and written exams will become part of the university syllabus by 2007. The practical/viva examinations still remaining under the auspices of the ARTP).
- Improved feedback to candidates on assignments & practical/vivas (not on written exams)
- Review of the Standards to Operate & Guidelines to Practice documentation
- Development of further ARTP run courses
- Assessors training day for National Examination assessors
- Continuation of the Spirometry certificate courses and examination

Questions were then taken form the audience: **Steven Haire, Monklands Hospital** enquired whether a candidate that passed the practical assessment, but not the written and assignments could be classed as "practically competent". Both Angela and Brendan confirmed that this could not be acceptable as it was felt that candidates needed the underpinning knowledge as well as the practical skills to practice as a competent practitioner.

Chris Dinsdale, North Middlesex Hospital enquired whether a Pulmolink lung function system would be available for candidates sitting the part I exam, that used this type of equipment on a regular basis. Brendan confirmed that the type of systems available for examinations had to be limited and it would depend upon the centres allocated for examinations, but if the demand were significant this would be considered.

C Coulthard, Medway Maritime Hospital, enquired whether dyslexic candidates would receive any additional support from the ARTP. Brendan stated that any candidate requiring specific support or assistance should contact the ARTP committee directly and any appropriate help or support would be given.

Judith Waterhouse, Sheffield Central Hospitals, stated that in defence of the candidates she felt that the assignments this year were difficult to complete in the time span allowed, if using a new patient case study. Angela stated that this had occurred because of the need for a strict marking scheme, but acknowledged her concerns and stated that this had been taken into account and the assignments this coming year had been rewritten to prevent this occurrence.

Brendan thanked Angela for her presentation and took this opportunity to thank Angela Evans, Education Chair and Jane Caldwell, Honorary ARTP Secretary for their valued contributions and efforts within education.

The next presentation followed:

Update on National issues: RCCP/NOS/IPS/FAQ's

Registration Council For Clinical Physiology (Keith Butterfield)

Keith re-capped on the RCCP evolution with a brief history of the background to the voluntary and state registration process/structure, which has to be undertaken by all professions wishing to become state registered.

He then stated that becoming state registered was important for the recognition of the profession. Though there may be some financial disadvantages in the short-term these would be more than compensated for in the long-term by improvements in pay, career structure, working conditions and recruitment & retention. Improvements in the profile of the profession are a key aim of the ARTP Executive.

The Qualifications/Service required by practitioners to register was reviewed.

The RCCP criteria were designed with reference to the expected future entry level to the profession, which would be

- 4 year degree + Professional Exams

The current actual criteria acknowledge the existing variety of entry routes

- Full range of procedures +
  - ❑ BTEC + Professional Exams (4 years)
  - ❑ Grand-parenting (6 years)

Keith continued with discussions regarding the deadlines for submission and confirmed that an official 'deadline' had not been released yet but:

An ARTP letter had encouraged application before 31/10/02 and a subsequent RCCP communication also encouraging application before 31/12/02. This was based on the fact that the Health Professions Council (HPC) would be considering petitions (form organisations wanting to convert a voluntary to a state register) from 1/4/03 and that current application processing time is 2-3 months.

Keith stated that there had been several concerns regarding who could propose an applicant for the voluntary register. Keith gave the following guidance:

The Register is updated regularly on the website. Proposers don't have to be in same modality as the applicant. If an applicant still can't find a proposer ask the RCCP representatives for advice.

Keith stated that Brendan had sent out a letter to 177 ARTP members who were not registered on the voluntary registered to try to gauge the reasons why members have not applied. These consisted of:

38 x MTO2, 82 x MTO3, 42 x MTO4, 15 x MTO5; 177 Total

Brendan continued the presentation at this stage and stated that Cardiology had similar poor responses to the voluntary scheme, but Audiology, Neuro-physiology and Gastro-enterology practitioners had had very good responses. Brendan then asked for a show of hands from the audience of those who were registered on the voluntary registration and was delighted with the response of over 80% of the audience registered. Brendan stated that as H of D we should now be encouraging our staff to apply.

(Keith resumed the presentation)

Concern had been expressed from several applicants stating that they didn't know which modality to register in if they were competent in two or several modalities. Keith confirmed that, if nothing else, the message which H of D's should take away from today's meeting, is that it is more important that an applicant is on the register rather than what modality they are registered in; as the register is a register of competence to practise in clinical physiology not a specific branch of it.

Keith reminded H of D of the code of conduct of a RCCP member:

Code Of Conduct:

'A Registrant shall not undertake responsibility as a Clinical Physiologist which he or she does not believe himself or herself competent to discharge.'

'A Registrant shall accept personal responsibility for all work done by himself or herself or under his or her supervision or direction, and ensure that persons working under his or her authority are competent to carry out the tasks assigned to them.'

Keith reported the current situation on the RCCP Register:

A little over 1900 registered with about 170 in Respiratory and about 60 in Cardio-Respiratory. Bearing in mind that there are at least 247 respiratory labs in the country that equates to <1 registrant in each laboratory!

Keith reminded the meeting that the RCCP fully intend to petition the HPC as soon as possible and that, once transferred to HPC it is expected that the entry route will be both more difficult and more expensive.

Also that, in the future, new applicants to the voluntary register will be expected to pay an extra application fee on top of the registration.

Keith confirmed that the new ARTP representatives on the RCCP are:

Georgina Martin, Leeds & Julie McWilliam, Derby

Keith stated that it is very important that we get respiratory practitioners registered ASAP and suggested that H of D's make the RCCP registration as a staff appraisal objective for all their staff.

Brendan continued the presentation by giving the audience an overview of what will happen in the future with respect to state registration. He reported that the **Institute of Physiological Sciences (IPS)**, embracing all aspects of clinical physiology would absorb and thus represent the RCCP and then along with the IPEM & IBSM groups would lobby the Department of Health via the **Federation of Health care Scientists Board** to request state registration. The IPS will also oversee education, training, and standards of practice, quality assurance, as well as advising HPC regarding registration.

Brendan took this opportunity to acknowledge and thank Dr Sue Hill for her sterling efforts to make things happen and in setting the scene for our future.

Brendan continued his presentation by giving an update on the National Occupational Standards (NOS). He stated that the NOS group had made very good progress:

- Had 4 Meetings at Padnell Grange (Facilitated by Shirley Fletcher)
- Completed the Outline functions
- Put documentation in place to commence Pilot testing, Spring 2003
- Made good progress with NOS standards being written

The next stage will be to:

- List all the functions
- Break them down into components
- List "know", "understand" and "perform"

Brendan took this opportunity to acknowledge and thank the members of the NOS group: **Trefor Watts, Jo Shakespeare, Julie Lloyd, Nigel Clayton, Georgina Martin, Vanessa Hurt, Clare Newall, Roger Carter, Adrian Kendrick. (+ Brendan Cooper)**

To conclude the morning sessions, Brendan briefly recapped on what topics had been covered and what was scheduled for the afternoon. The H of D meeting broke for lunch at this stage.

Following Lunch the H of D met and formed into 3 workshop groups:

- Workloads /Staffing
- Number of Rooms/space/facilities;
- And QC content.

Brendan stated that the aim of the groups would be to discuss, debate and provide information around the three areas of what was considered an ideal situation or outcome with respect to these important issues. The main points obtained from each group were as follows:

Group A, lead by Julie Lloyd & Jo Shakespeare

Staffing levels

- General consensus that Full lung function tests included:
  - Dynamic volumes ± Reversibility
  - Static Lung volumes
  - Transfer test
- Number of Full per WTE/day varied from 4 – 10 tests per WTE
- Time slots for Full tests varied between: 45 mins – 1 hour
- Calibration Time varied between 30 mins – 1 hour (done before work starts)
- Basic Spirometry Time varied from:
  - 10 mins (spiro only)
  - 50 mins (Combivent reversibility)
- Lung volumes/Gas Transfer test varied from 6 – 25 Mins

- Sleep/CPAP
  - Oximetry 1 – 6 per day
  - Multi-channel 1 – 5 per day
- CPAP clinics varied from daily – monthly
- Other tests everyone 5 – 30

STAFFING

All would like links to other respiratory departments for training

STAFF TYPE	AVAILABILITY
ATO's	50% have ATO's (who perform Spiro, SpO_2, BD's)
Trainees	25% have them, 25% would like them
MTO's 1 – 2	75% have them
MTO's3 – 4	100% have them
MTO5	50% have them
A & C staff	33% feel this is required, 40% have them.
Scientists	2 from group have them

Consultant to staff ratios

1/1	10%
2/1	50%
3/1	30%
>4/1	10%

Biggest 7/1!

80% - 20% Referrals from Chest

In an ideal world

- All want to improve staffing levels
- No single staffed units – minimum of 2 MTO 3's
- MTO4 to manage department
- A & C staff for appointments etc
- ? Use population for determining staffing levels. Suggest 1WTE MTO3 minimum per 100,000 head of population in catchment area.

Group B lead by Trefor Watts & Nigel Clayton

ROOMS/SPACE/FACILITIES

All group members felt that the **Location** should be:

Ground Floor

Have a Disabled Car Park

In or near Outpatients

Room Space should include:

1 room per test station (minimum size 4 x 4 M)

Separate rooms for blood gas analysis, Challenge Room

Walk in Spirometry room

Exercise Room 6 x 4 M

Storage & office space should include

Separate gas/General store

Office space: 1 for staff/records/reporting

1 for HOD

1 for medical staff, consultations etc

1 staff room and lockers

Should also have: Reception area and waiting area

Plus: Disinfecting area, Defib & crash trolley

Drugs cabinet, Piped oxygen & air

2 sinks, Windows, Ventilation

Group C lead by Rod Lane & Keith Butterfield

Quality Assurance

Equipment QA should include:

Biological controls – weekly? More frequently (depend on equipment)

Documentation should be kept of:

Servicing

Physical calibrations – documented (daily/sessional)

A QA Log Book showing:

Trends &Limits

Staffing QA should include:

Training – In house/Generic

Testing

Supervision – by registered staff

Induction

Lab Protocol Manual

H & S documentation

Manufacturers QA should include:

Reference equations selection

"Fuzzy" automated reporting

Brendan thanked all the participants for their very useful comments and he confirmed that they would be used appropriately and constructively. Feedback to H of D's would occur via the H of D Mins. He reminded H of D delegates that all the presentations would be made available on the website for their reference and to obtain a certificate of attendance we would ask that an appraisal form be completed for the H of D Meeting. He reminded those H of D staying for the conference of the Manufacturer's workshops, the Key Note Speaker and the manufacturer's exhibition, all later in the day. Final thanks were given to Jane Caldwell for taking the Minutes of the Meeting and to all who had contributed to a very successful H of D meeting. The meeting closed at approximately 3pm.

Minutes taken by Jane Caldwell, Honorary, ARTP Secretary.

Regional Group Leads Meeting Stratford 2003 – Thursday 16th @ 5pm

In attendance:-

Brendan Cooper (ARTP Chair)

Rod Lane (ARTP Network Co-Ordinator)

Keith Butterfield (West Midlands)

Laura Watson (Trent)

Geraldine O'Connell-Ramsay (South-West)

Tess Compton-Price (South)

Wanda MacDonald (Yorkshire)

Lesley Lowe (North West)

Derek Cramer (London)

Simon Ward (London)

Martyn Bucknall (South East)

Janet Sandford (Home Counties)

Arlene Jackson (East)

Katrina Oates (East)

Sandra Davies South (Wales)

Roger Carter (Scotland - West)

Barbara Oatway (Scotland - Lothians)

Apologies:-

Lynne Knowles (Trent)

Brian Buick (N. Ireland)

Clare Mallinson (Northern)

Vicky Zgardzinski (Scotland - North)

Clare Sass-Davies (North Wales)

Brendan opened the meeting by thanking all these regional group facilitators for their enthusiasm and extra work in getting this project off the ground.

Rod Lane (who has attended several of the inaugural meetings of the new groups) was introduced as taking on the role of 'Network Co-ordinator'; being the point of contact between the Regional Facilitators and the ARTP Executive Committee. (Brendan then had to leave for another meeting.)

Each Group reported briefly on progress to date…

West Midlands Have been meeting 3-4 monthly for about 3 years. 24 labs in catchment area with typical attendance being 8-15.

Trent The Trent group has been meeting for several years with 10-11 labs within its area and a typical attendance of 4-8.

South-West 15 labs in area. One meeting so far – next meeting 12th Feb 03. Because of large geographic are expect that labs local to venue are more likely to attend.

South 13 in area. 7-8 attended first meeting in early Jan. Maintaining an email link with Channel Islands as it difficult for them to attend meetings.

Northern (See later addendum)

Yorkshire Have been meeting 2-3 monthly as a group for several years. Mailing list is 18 within catchment and 3 regulars from outside area. Avaerage attendance is about 7.

North West 26 mailed and 18 attended inaugural meeting.

London 30 labs contacted, 25 replies, 20 attended first meeting in Sept and next meeting planned for 28th Jan

South East 15 in area, 7-8 attended the first meeting.

Home Counties 16 labs in the area (8 being respiratory, the others cardio resp). 6-7 at the first meeting.

East Arlene only recently volunteered to facilitate East so no inaugural meeting yet. She had attended Home Counties meeting and needed to contact the local labs (low numbers) to see whether they would prefer a separate group or to combine with Home Counties.

South Wales Have been meeting for 10-12 years. 15-16 in area majority being Cardio-Resp. 2 meetings annually but attended typically only 4.

North Wales (See later addendum)

N. Ireland (via email) No meeting as yet. Only 6 labs (3 primarily Cardiac) but 13 potential members if not limited to HoD's. Informal links with Eire. In contact with Scotland (Roger) to see if some kind of affiliation may be appropriate.

Scottish Forum has been running for some years and has an attendance of 50-60 at it's CPD meetings

Scotland - West 17 labs and regular attendance of 12-15.

Scotland - Lothians 7 labs in area – had to cancel December meeting because of workload

Scotland - North (See later addendum)

In general it seemed that about 50% attendance was about average that can be expected.

Sponsorship of refreshments at meetings by companies was suggested as an incentive to improve attendance.

All facilitators reported enthusiasm for the project from those attending the meetings especially from lone practitioners who had previously felt isolated. However time out from clinical duties was cited as a common problem for individuals being unable to attend local meetings.

'Exchange' schemes encouraging visits to local labs were suggested as a way of broadening ideas by seeing how other people tackle common problems. HoD's may also wish to visit neighbouring network groups which would help cross-fertilisation of ideas.

With respect to the point raised by Brian's email about whether attendance should be limited to HoD's. Keith re-iterated that the Regional Groups should be autonomous and could define their own 'rules'. He also reminded the meeting that the groups are supposed to be inclusive and that ARTP Membership was not a requirement.

The time for holding meetings was discussed. Most regions hold their meeting during work time.

Keith encouraged the facilitators to use the network email forum (network@artp.org.uk) to discuss ideas that were relevant to the regional groups and to encourage 'sideways' networking rather than everything being channelled up and down through Rod.

Rod will collate topics raised by the regional groups for discussion at Executive Committee and will also compile regular updates for the facilitators (and reformatted as an article for *Inspire*).

It was also agreed that facilitators should publish their local minutes on the network forum so that all group leads would have the opportunity to see what topics were being discussed in other areas that may be relevant to themselves.

There was general support for the QA Scheme in principal but the main problem identified with achieving it was the time required for the lab visits. Keith suggested that labs should be encouraged to only register equipment which is in regular use and maybe labs could be restricted in the number of machines registered in order to minimise the workload. The meeting suggested that official support for the scheme from the BTS may help participants. (Keith to raise with Brendan).

Keith concluded by stating that the challenge would now be to maintain the interest in regional groups as the idea has, apparently, been tried before though without the benefit of good communication links via email.

(End of meeting – next meeting probably after next annual HoD meeting 2004)

Addendum...

Notes on subsequent conversations with facilitators unable to attend the meeting...

Scotland - North	Very small lab numbers (?3) and large distances make local meetings improbable though still able to network via Scottish Forum
Northern	Meeting last friday every 2nd month. 10-15 attending of 20 in area (mostly lone practitioners in this area)
North Wales	Only 3 depts in North Wales, have talked with South Wales about joint meetings. Geographically close to North West which is another possibility.

In the conversation with Clare Mallinson (Northern) thought that their regional supernumerary scheme was neglecting respiratory by pushing students into other disciplines. Is this a topic for wider discussion via the Network?

Back (left to right):

Sandra Davies South (Wales), Tess Compton-Price (South), Wanda MacDonald (Yorkshire), Geraldine O'Connell-Ramsay (South-West), Lesley Lowe (North West), Barbara Oatway (Scotland - Lothians), Roger Carter (Scotland - West), Katrina Oates (East), Derek Cramer (London), Arlene Jackson (East), Tina Perkins (Home Counties), Janet Sandford (Home Counties), Laura Watson (Trent), Simon Ward (London)

Front:

Keith Butterfield (West Midlands), Martyn Bucknall (South East), Rod Lane (Co-Ordinator)

Ferraris Medical and Morgan Medical collectively held a series of road shows throughout the Country with some support and assistance from The British Lung Foundation. Attendees could see the latest equipment, benefit from special offers and take advantage of the free product training that was available. All visitors who attended these events were also invited to take part in a prize draw with the chance of winning £1,000 worth of holiday vouchers. Bob Bemister and Kevin Budd, General Manager's of FML and Morgan Medical drew the winning ticket from a large number of entries. The lucky winner was Miss Rachel Neira from Burnley General Hospital. Presentation of the prize was made by Kevin Budd at the Gala Dinner which followed the recent ARTP Annual Conference in Stratford, where Miss Neira was delighted to receive her voucher. Miss Neira plans to visit her sister in Australia whom she hasn't seen for some time now. We would like to thank everyone who supported this event throughout 2002.

Kevin Budd presents prize to Rachel Neira, whilst ageing rockstar looks on!

EXERCISE RESPONSE FOLLOWING HEART TRANSPLANTATION

Carter R, Stevenson A, Al-Rawas O A, Stevenson R D
Department of Respiratory Medicine, Glasgow Royal Infirmary

INTRODUCTION

Heart transplantation is an established treatment for end stage heart failure[1]. In addition to increased life expectancy, heart transplant recipients report a remarkable improvement in symptoms and functional capacity[2]. Exercise performance following heart transplantation, however, remains impaired even in the absence of exertional symptoms[3-7]. The maximum symptom-limited oxygen uptake and the ventilatory anaerobic threshold are in the range of 50% to 70% of predicted[8,9]. These values are comparable to those of patients with severe heart failure (left ventricular ejection fraction less than 20%) managed with tailored medical therapy[10].

The cause of exercise intolerance in heart transplant recipients is not clear, but there is increasing evidence that it is multifactorial and is related to cardiac, neurohumoral, vascular muscle and pulmonary changes[11-13]. Efficient pulmonary gas exchange is an essential part of the complex process of exercise[14-20]. Pulmonary dysfunction following heart transplantation is therefore a potential cause of exercise intolerance in heart transplant recipients[10]. Although central haemodynamic and peripheral circulatory changes have been extensively evaluated in heart transplant recipients[6], there is little information on the possible effects of lung dysfunction on exercise performance[21-23].

With the development of the transcutaneous system for the non-invasive assessment of indices of gas exchange at rest and during exercise it is possible to directly assess the impact of gas exchange abnormality on exercise capacity in heart transplant recipients.

STUDY POPULATION

Between January 1992 and June 2000, 289 patients were assessed for transplantation, of these, 142 underwent orthotopic heart transplantation at the Scottish Cardio-pulmonary Transplantation Unit. As part of the routine pre-transplant 113 of these patients performed pulmonary function tests and cardiopulmonary exercise testing.

A group of 90 patients performed repeat pulmonary function and cardio-pulmonary exercise testing at 6 months post transplantation.

RESULTS

Subject Characteristics

Subject characteristics are summarised in Table 1. All patients were either life-long non-smokers or former smokers. After transplantation, there was a significant improvement in both left ventricular ejection fraction (LVEF) and the NYHA functional status.

Figure 1 Exercise Test System

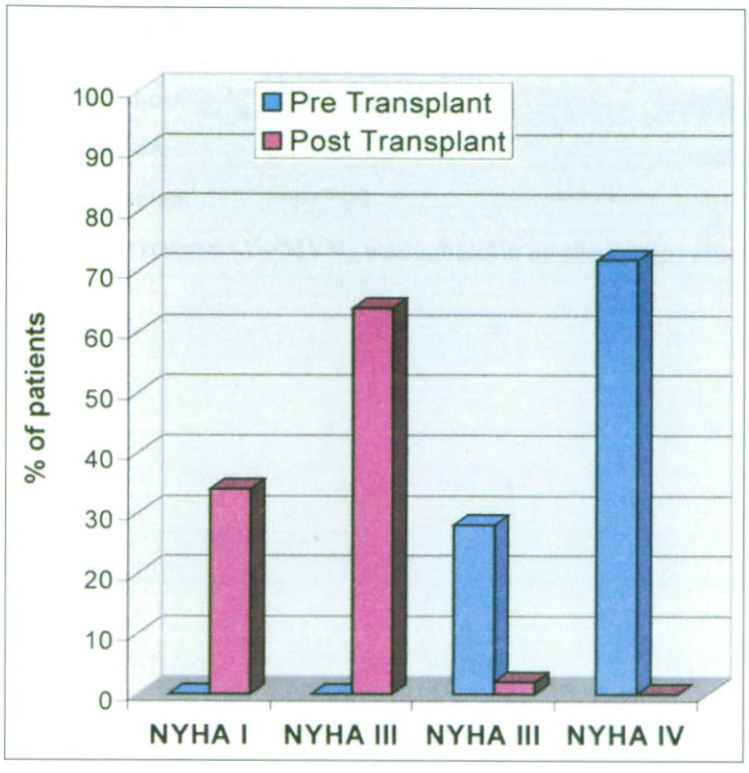
Table 1: Characteristics of the study groups.

	Recipients
Number of subjects	113
Age; mean in years (range)	49.2 (19-61)
Sex	
Male	91 (81%)
Female	22 (19%)
Smoking status	
Non-smokers	28 (24%)
Ex-smokers	85 (76%)
Current smokers	0
Diagnosis	
Ischaemic heart disease	72 (64%)
Dilated cardiomyopathy	33 (29%)
Others	8 (7%)
Pre-transplant LVEF, mean (SD)	12.5 (1.9)
Post-transplant LVEF, mean (SD)	42.3 (2.6)
Pre-transplant transpulmonary gradient Mean (SD)	9.9 (2.5)
Pre-transplant functional class	
NYHA III	33 (29%)
NYHA IV	80 (71%)
Mean (SD)	3.9 (0.6)
Post-transplant functional class	
NYHA I	36 (32%)
NYHA II	76 (67%)
NYHA III	1 (1%)
Mean (SD)	1.8 (0.4)
Haemoglobin, $g.dL^{-1}$; mean (SD)	12.6 (1.3)

Cardio-pulmonary exercise testing and pulmonary function after cardiac transplantation.

Of the 113 patients with full cardiopulmonary data prior to transplantation, there were 97 survivors at 6 months of whom 90 were able to perform full cardiopulmonary exercise and pulmonary function testing. Figure 2 shows the functional status of patients based on the NYHA classification prior to and at 6 months post transplantation. This shows substantial improvement of subjective functional capacity.

Figure 2: Functional status of transplant recipients prior to and at 6 months post transplantation.



KEY : New York Heart Association functional classification (NYHA)

Table 2 shows the maximum symptom-limited exercise responses in heart transplant recipients before and after transplantation. Exercise responses were generally improved at 6 months compared with pre-transplantation. Maximum oxygen uptake corrected for body weight and percent predicted maximal VO_2 was significantly improved compared with before the procedure. The mean maximal oxygen uptake corrected for body weight was 16.4 (SEM 0.41) mls.kg^{-1}min^{-1}. This represented a percentage-predicted maximum of 50.6 (1.7), matched for age gender and body surface area compared with 13.1 mls.kg^{-1}min^{-1}. 41.3% predicted ($p< 0.05$) prior to transplantation, however both sere substantially lower than normal controls (28.9 mls.kg-1min-1; 92.9% predicted; $p<0.001$). The ventilatory anaerobic threshold was significantly higher post transplantation compared to pre transplant values but was still reduced compared to normal controls. At 6 months post-transplant, peak heart rate, and the heart rate response (HR/VO_2) were significantly reduced compared to pre-transplant and control values. The oxygen pulse at maximal exercise was significantly elevated compared to pre-transplantation values but remained lower than normal control subjects. The ventilatory response on exertion (V_E/VCO_2) and the degree of wasted ventilation (V_D/V_T) at maximum exercise were significantly reduced post transplant but remained raised compared to normal control subjects. The ventilatory reserve (V_E/MVV) was similar in all the groups studied.

Table 2: Maximum symptom limited exercise responses in heart transplant recipients before and after transplantation compared to normal controls.

	Normal N = 30	*pre-transplant N = 113*	*6 months post transplant N=90*
VO_2 mls.kg^{-1} min^{-1}	28.9 (2.9)**	13.1 (1.5)	16.4 (1.6)*
VO2 % pred.	92.9 (2.5)**	41.3 (1.3)	50.6 (1.4)*
VO2 , AT %#	52.6 (1.9)**	31.5 (1.1)	35.6 (1.0)*
VE/MVV	47.6 (2.6)	51.0 (1.3)	44.2 (1.1)*
VE /VCO2	24.3 (1.5)**	45.6 (1.9)	34.1 (1.5)*
VD/VT	0.19 (0.02)**	0.35 (0.01)	0.31 (0.01)*
A-aO2 kPa	1.8 (0.1)	3.4 (0.3)	2.4 (0.3)*
Heart rate (HR) % pred.	86.4 (1.9)**	82.2 (2.6)	70.5 (1.7)*
Oxygen pulse, mls bt-1	16.5 (0.6)**	8.5 (0.4)	11.3 (0.5)*
HRresponse, beats.L-1	45.7 (2.0)**	72.1 (4.5)	24.2 (2.5)*

The ventilatory anaerobic threshold as a percentage of predicted maximal VO_2.

- * significant difference between pre and post transplant
- ** significant difference between controls and post transplant

Determinants of the change in exercise capacity after heart transplantation.

Table 3 shows the Pearson correlation coefficients between the change in maximal VO_2 percent predicted and a selected number of pre- and post-transplant factors that could potentially influence exercise capacity in the setting of heart transplantation. Of the listed factors, four pre-transplant variables showed a significant correlation with the change in exercise capacity after transplantation. There was an inverse relationbetween pre-transplant maximal VO_2 as a percentage of predicted and post-operative maximal VO_2 at 6 months post transplant. The other factors showing a significant relationship were the pre-operative left ventricular ejection fraction, the pre-operative V_D/V_T at maximal exercise and the pre-operative ventilatory response (V_E/VCO_2). The other variable showing a significant relationship with the change in maximal VO_2 6 months after transplantation was the post operative peak heart rate.

Table 3: The relationship between the change in maximal exercise oxygen uptake as a percentage of predicted after heart transplantation and selected pre- and post-transplant factors in 90 transplant recipients.

	Normal N = 30	*pre-transplant N = 113*	*6 months post transplant N=90*
Pre-transplant lung function (%predicted)			
FEV1	90.1 (1.0)	0.04	ns
VC	89.8 (1.2)	-0.09	ns
TLC	96.3 (1.2)	-0.07	ns
Hb-corrected TL_{CO}	79.8 (1.1)	0.17	ns
Hb-corrected K_{CO}	78.8 (1.1)	0.20	ns
Pre-transplant pulmonary pressures (mmHg)			
Mean pulmonary artery pressure	28.8 (1.2)	0.22	ns
Mean pulmonary capillary wedge pressure	19.9 (1.0)	0.21	ns
Transpulmonary gradient	8.8 (0.4)	0.08	ns
Pre-transplant cardiac status			
Duration of dyspnoea (months)	37.7 (4.2)	0.04	ns
NYHA functional class	3.7 (0.4)	0.08	ns
Left ventricular ejection fraction (LVEF)	12.5 (1.9)	-0.41	P<0.01
Post Transplant LVEF	42.3 (2.6)	0.05	ns
Cardio-pulmonary bypass time (minutes)	136.1 (4.7)	0.19	ns
Cyclosporin blood level ($mcg.L^{-1}$)			
Absolute level			
At 6 months	464.0 (23.4)	-0.05	ns
Mean of total blood levels			
At 6 months	522.2 (19.4)	0.16	ns
Number of rejection episodes			
At 6 months	1.0 (0.2)	0.23	ns
Pre-operative maximal VO_2 % predicted	41.4 (1.1)	-0.51	P<0.001
Pre operative V_D/V_T at maximal exercise	-0.04 (0.01)	0.30	P<0.05
Pre operative V_E/VCO_2	-11.5 (1.6)	0.43	P<0.01

DISCUSSION

Summary of main results

This study has shown that despite normal or near normal cardiac haemodynamics, the maximal oxygen uptake at 6 months post transplantation was significantly lower in heart transplant recipients than in normal controls. This abnormal physiological response to exercise was associated with a reduced heart rate response and reduction in peak heart rate post transplantation. This chronotropic incompetence on exertion is related to cardiac denervation.

Cardio-pulmonary responses to exercise prior to transplantation

The results of the cardio-pulmonary response to exercise in the 113 patients prior to transplantation are in agreement with previous findings which have shown that patients with chronic heart failure exhibit an excessive ventilatory response to exercise [24-30].

Cardio-pulmonary responses to exercise post transplantation

The results of this study of 90 transplant recipients demonstrate a significant improvement in maximal oxygen uptake within 6 months of the cardiac transplantation. The significant pre-operative univariate predictors of the 6 month improvement in maximal oxygen uptake included the pre-operative maximal oxygen uptake, the left ventricular ejection fraction, the level of wasted ventilation at maximal oxygen uptake (V_D/V_T), and the ventilatory response (V_E/VCO_2). The average maximal oxygen uptake 6 months after cardiac transplantation was 16.4 mls $min^{-1}kg^{-1}$. This is slightly lower than the range of values reported in previous studies [3-5,7,9,31-33]. In agreement with these previous reports, the results of this study show that despite substantial improvement of subjective functional capacity, heart transplant recipients continue to have limited exercise performance as assessed by incremental cardio-pulmonary exercise testing. In the present study although most patients had a significant increase in exercise capacity after cardiac transplantation, the average percent predicted maximal oxygen uptake at 6 months post transplant was only 51% of predicted. The reasons why peak exercise capacity does not return to normal in most patients after cardiac transplantation are not well understood. Subnormal exercise capacity after transplantation may be due to several factors which include cardiac denervation, which may interfere with the ability to reach age-predicted maximum heart rate response (chronotropic incompetence) [7], allograft rejection [32], diastolic dysfunction [5] and immunosuppressive therapy, which may result in secondary loss of muscle mass from steroid induced myopathy, deconditioning and permanent skeletal muscle changes resulting from long standing heart failure prior to cardiac transplantation [8,10-13,34].

Similar to previous studies, this study has demonstrated a resting tachycardia and attenuated maximum heart rate response to exercise in-patients after transplantation. The maximal oxygen uptake is normally correlated with maximum heart rate, and it is unclear whether the reduced peak heart rate is a consequence of or the cause of the decreased exercise capacity in these patients. The denervated heart causes a chronotropic and inotropic incompetence. The limited ability to increase the heart rate in combination with a subnormal increase of stroke volume diminishes the cardiac output response to exercise [35,36] and hence reduces the exercise capacity. In heart transplant recipients with their diastolic dysfunction, the ability to augment stoke volume is limited providing a pathophysiological reason for their reduced exercise capacity [37]. In the present study a weak but significant correlation was found between the improvement in maximal oxygen uptake at 6 months post transplantation and the peak heart rate achieved which supports the theory of a chronotropic incompetence due to a denervated heart contributing to continuing exercise limitation after

transplantation. This confirms the findings of Osada et al [3] who found a similar relationship between peak heart rate and maximal oxygen uptake at 6 months post transplant ($r = 0.32$; $p = 0.04$). The correlation between these parameters improved at 3 years post transplantation ($r = 0.47$; $p = 0.0002$). Givertz et al [7] showed a 43% increase in maximal oxygen uptake at one year post transplantation but that compared with control subjects maximal exercise capacity was subnormal in transplant recipients. This group also showed that the physiological response to exercise remained abnormal in the transplant recipients with a reduced rate of heart rate rise and reductions in peak exercise heart rate. The authors suggested that this reduced exercise capacity compared to control subjects was associated with chronotropic incompetence that is due in large part to cardiac denervation.

The ventilatory response to exercise in our patients was similar to that reported in previous studies [38,39]. Before transplantation, V_E/VCO_2 was elevated and decreased significantly following transplantation, but remained higher than normal at one-year post transplantation. The ventilatory response remained stable, but higher, than normal up to 5 years post transplant. In addition, the present study showed that despite significant improvement in V_D/V_T after transplantation, it remained higher than normal. It is not known why ventilatory and gas exchange abnormalities on exercise fail to resolve completely after heart transplantation. One possible explanation is that long standing pre-transplant heart failure leads to irreversible structural damage. Alternatively, these abnormal pulmonary responses may be functional in origin, resulting from a sub-optimal cardiac output response to exercise. Heart failure is characterised by excessive ventilatory response to exercise [40]. Patients with chronic heart failure also have increased "wasted ventilation" as assessed by V_D/V_T [40]. It has been shown in this study that the ventilatory response and V_D/V_T in heart failure are positively correlated suggesting that they may be causally linked. The observation of a raised degree of "wasted ventilation" or increased V_D/V_T is of great importance. Elevated V_D/V_T values during exercise may be due to a reduction in pulmonary blood flow via a reduced cardiac output. This suggests that pathologically high ventilation/perfusion ratio mismatching occur in patients after transplantation without significantly low ventilation/perfusion mismatching (normal $A\text{-}aO_2$ gradient post transplantation). This places the abnormality on the pulmonary circulation rather than the airway side of the gas exchange unit and suggests perfusion is reduced in well-ventilated lungs [41]. It is therefore postulated that the failure to increase cardiac output to match ventilation during exercise increases the proportion of lung units with high ventilation/perfusion ratio thereby increasing the V_D/V_T and consequently leading to an excessive ventilatory response to exercise [40]. Although cardiac output is markedly improved after heart transplantation, due to a chronotropic and inotropic incompetence associated with denervation, its response to exercise remains sub-normal [42] and this may explain the residual abnormalities of ventilatory and gas exchange responses to exercise following transplantation.

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ARTP BURSARY REPORT

SPIROMETRY IN PRIMARY AND SECONDARY CARE ESSEX RIVERS HEALTH CARE TRUST

Kim Wilkins, Respiratory Function, Colchester General Hospital

Introduction

Back in late September 2002 (not '63 – what a special time for me - Oh what a night!), I received a phone call, someone asking to speak with Angela Evans in Lung Function. I said that I knew the name but said that she didn't work at Essex Rivers. The caller turned out to be Deb Rampton, a respiratory nurse working for Essex Rivers Health Care Trust (ERHT).

After a brief chat I invited her down to the lung function laboratory for a day observing and asking any questions that I should hopefully be able to answer, as she wanted a better understanding of the tests performed.

The day of the visit was very productive for both of us as we decided to carry out an audit of spirometry equipment and practice in the two referring primary care trusts under the ERHT, with the hope of getting decent spirometry training established. This would in turn aid the developing COPD team to get patients back under the care of their GP's, reduce specialist referrals and hopefully reduce hospital admissions and lengths of stay.

I put the idea forward to my head of department and also the two chest consultants, all of whom gave their go ahead with enthusiasm. Next I devised a questionnaire which included the following questions:-

- Do you perform spirometry in your practice?
- If no, how do you feel about GP open access spirometry?
- If yes, which make and model of equipment do you use?
- Is it serviced by the manufacturers?
- If so, how often?
- Who performs the tests on patients?
- What form of training have they had prior to performing these tests on stated equipment?
- Is the equipment calibrated prior to use?
- If yes, what is used to calibrate the equipment?
- How often is it calibrated?
- Would you be happy for your equipment to be checked by an Essex Rivers respiratory technician?
- Would you be interested in training sessions held at Essex Rivers?

In hindsight it would also have been interesting to know how many spirometry tests they perform each month, also to have included a section for them to enter their practice name, as we had a few forms returned from 'who knows where'.

I then enlisted help in the form of Samantha Lee-Cooper, the audit facilitator for Colchester PCT and Jayne Hiley, the clinical governance manager for Tendring PCT. Sam designed the layout of the questionnaire, then they each distributed it with a polite covering letter written and signed by myself and Dr Nicholas Chanarin, one of the chest consultants, to all of the practices within their own PCT's.

Results

A total of 47 questionnaires were sent out and 24 (51%) replies were received. For each PCT it breaks down to 13/23 (57%) from Colchester PCT and 11/24 (46%) from Tendring PCT.

18 of the 24 perform spirometry, and there wasn't much positive feedback regarding open access.

13 of those use a Micro Medical spirometer (various handheld models), and 4 use a Vitalograph. The other one may use a plastic bag and a straw for all we know, they didn't say!

Their equipment was not serviced by the manufacturers, with the exception of the Vitalographs, which had annual services.

The majority of spirometry tests are carried out by nurses in the PCT, with just a couple of GP's taking this task on.

With regard to training, 4 nurses had attended recognised spirometry courses (e.g. ARTP), 7 had attended spirometry workshops, 3 had received an introduction session to spirometry (e.g. as part of COPD diploma) and 5 had only received demonstrations from manufacturers or pharmaceutical companies.

Only 5 practices calibrated or checked their equipment prior to use, 4 with a syringe (vitalographs) and 1 with a physiological check/self test (Micro Medical). The frequency ranged from prior to each use, weekly, when syringe is available (!), to annually!!

18 of the practices would be happy to have their equipment checked by Essex Rivers respiratory technician.

19 of the practices would be interested in participating in training sessions from ERHT.

Post Audit

Although the next stage of the original plan was to visit each practice and perform calibration and physiological checks on their equipment, time and staffing levels have not yet permitted this.

However, during the audit period Deb Rampton, respiratory nurse on the COPD team, who is at present undergoing the ARTP spirometry certification, organised two ARTP/BTS 2 day courses with Angela Evans, in association with EQUIP (Education Quality In Primary care across north Essex) and the COPD team.

13 practices nurses attended from Colchester and Tendring PCT's, representing 10 practices, all 4 of the ERHT COPD team attended.

Two more courses have been planned for the near future.

Our next step was to compare spirometry results recorded on referral letters, to results obtained in the lung function laboratory equipment (Morgan's – Collins CPL) during the year 2002. But unfortunately, the practices did not record these figures on their referral letters.

However, I am combining this audit with my HNC project, and as I need to include statistical figures, I am analysing results obtained in the laboratory, compared with results obtained by chest consultants and nurses in out-patient clinics, as a source informs me that some of the techniques observed are a little dubious.

The results of the initial audit have been distributed back to the practices via Sam Lee-Cooper and Jayne Hiley. They have also been included in 'Respiratory Matters', the COPD teams quarterly newsletter, with the hope it will emphasise not only the poor response to the questionnaire, but also the evidence of poor practice and minimal training in some practices.

We know that GP practices receive income for tests that they choose to offer/perform (approx. £30.00 for spirometry), but to take a quote from 'Respiratory Matters', Issue 2, March 2003:

"Spirometry in general practice is a valuable tool. However, inaccurate, poorly performed spirometry is worse than no spirometry facility in the practice! Unfortunately there are variable standards of spirometry being performed in primary care and it is our responsibility to undertake standardised training"

If this message were sent out to <u>all</u> who perform these tests, be it primary or secondary care facilities, and is acted on (i.e. those persons make it their own responsibility to receive training), the ARTP will have achieved one of its tasks – and the patients shall reap the benefits of this!

GUEST, PRIME MINISTER?

Brendan Cooper, 4th February 2003

Westminster was a lot quieter than when I usually see it at the Winter BTS with hundreds of people milling around shopping and sightseeing. The Houses of Parliament and "Big Ben" always look impressive at night. There was the usual rush-hour buzz in the air as I walked down Whitehall with a strange mix of feelings inside – slightly nervous in anticipation, my mind racing as to what it would look like, be like, feel like, would I speak to the PM, would I meet anyone else famous, etc.

As I approached the gates at the end of Downing St (allegedly installed to keep unwanted foreigners out by Margaret Thatcher – thing is, many of those that wanted to get at her were not foreigners!) I was aware of a queue of well-dressed people. "Tourists!" I thought, "I hope they make way for me to get into Downing St on time". This was the first mild disappointment of the night... I joined the queue!

After a few moments I noticed Sue Hill patrolling up and down checking that we were all present and correct... I felt like one of the group of 5th formers I had seen at Euston station being told to behave and get streetwise in London by their Science teacher!! After waiting 10 minutes or so (uniquely, I was early!!) we marched past the gates – our passes checked, before entering a portakabin filled with the screening paraphernalia usually associated with a transatlantic flight. You know, it's amazing the stuff the British population carry on their person! One smart looking scientist carried a huge Swiss Army knife capable of cutting a wedding cake, jacking up a car and cutting a privet hedge all at the same time!!! Anyway, I passed through unscathed (Ha! They'd missed the Swiss Army Knife on my key ring capable of peeling a grape!!)

I wandered up Downing St, passed diplomatic cars, and the press barriers (empty now) and up to that famous door. Before I went in, I went to the right and stood on the spot where Thatcher wept before leaving office - and I laughed! (That was for 4 months being unemployed as a graduate Mrs T!!!)

As I walked towards the door it opened automatically, and I was sucked into that historical place. How many leaders, dignitaries, heads of state, politicians and famous people had I seen marching up that step – and now it was me. As I tripped into the foyer, I remembered my humble origins!!

On entering the foyer, you are struck by the amount of space, adjoining rooms and size of the interior. There was a general sense of light and colour (soft yellows and browns) with glittering chandeliers, and walls laden with expensive original paintings by British artists. Many people were already here, and after leaving my coat, mobile phone and camera, I proceeded into the building, through a long corridor passing between several rooms to a staircase at the far end. Having collected my I.D. badge (doesn't Tony Blair know who I am!!!) I started up the staircase, which has the pictures (with signatures) of every Prime Minister we have ever had – but I can only recall Walpole, Earl Grey, Gladstone, MacMillan (without wife!) Atlee, Wilson, Heath, Callaghan, Thatcher, all up three flights of stairs until Major at the top. Sadly, they seem to have run out of space for Tony B..... maybe shove Thatcher in the cellar I thought – no one will miss her down there!!

At the top of the stairs I entered a large room filled with people, with high gilt cornices, a large fireplace and several oil paintings (the room, not the people!). It had the sort of hubbub and roars of laughter I associate with the reception before the ARTP Gala Dinner.

Initially I knew nobody, but soon made friends with a large glass of dry white wine – a colleague I was to stay with most of the evening in fact! It was at this point that I began to wonder "Why am I here?" "Why are they here?" After a short while I started recognising faces from the myriad of Department of Health meetings I have attended in recent years. There must have been 200 people there from every

walk of NHS Healthcare Scientists and Allied Health professions life. There were parts of the body represented there that I didn't realise had ailments – podiatrists, cytologists, prison drug rehabilitation-ists, trades unionists (they were the ones with the beer and sandwiches looking for a smoked filled room!)... oh and Trefor Watts. At last a friendly face (well as close as you could get to a friendly face!!). Collectively we mingled, expressing our sense of surrealism, shock, surprise and general well being. The canapés passed by – enough to make you realise how hungry you were without actually filling you up. Still, a bit more wine would fill me up I thought!

Gradually I became aware of people craning to look into two parts of the room. In one was Cheri Blair, and in the other – sadly I recognised his ears first - was Tony Blair. He looked relaxed, tanned and focussed on whomever he was chatting with. Cheri was about four feet behind me, shorter than I expected but she looked relaxed and fashionable ("She was wearing brown" was all I could tell Julie the next day!) targeting or being targeted by the women in the room. Funnily enough, so too was Tony, targeting the women in the room (would she tell him off later?).

Blair is definitely charismatic, charming, appears interested in people and plays the crowd very well. He tended to mill around into groups of people with a little help from his aide who was constantly at his left shoulder, passing advice or information into his ear. Eventually after about half an hour of this, the room was brought to order and the PM stood on a "soap box" and delivered a short address to us all.

He thanked every one for coming to Downing St (like we'd miss it! "Hello, can you move my intensive care bed to Whitehall I have an appointment with the PM!!"), and then thanked us all (and those whom we represented) for the work we have done for the NHS. He went on to apologise for the number of times that he and his Cabinet and aides refers to "doctors and nurses" and forget Allied Health Workers... "Oh and Healthcare Scientists" – a roar went up from us all, from which he started laughing (white teeth) and doing the "Blair grimace". A few hissed and booed – so he felt the full passion of our feelings about who we are and where we stand.

He reminded us that this was the first ever reception in Downing St for Healthcare Scientists by a British Prime Minister ever, as far as he was aware. ("Here, heres" echoed around the room...we were getting into the Parliament thing now!!)

Then the "No such thing as a free lunch" bit. He also thanked us in anticipation of the future work we will do to implement the Agenda for Change initiative. He pointed out that the challenge ahead required that patients do not just need to see the consultant and GP and that health professionals can lead certain areas of care as part of the team. The barriers between professions can come down and practitioners can do many jobs provided that they are competent to do so. The workforce needs to be more flexible but with excellent standards. He mentioned that the future of healthcare is about "prevention" before the need to cure. ("Banning tobacco" sprung into my mind as a good preventative measure I thought – I didn't butt in?)

He told us that we needed to get our skills out to the PCTs and into the community. He thanked us again for our support and amid rapturous applauds got off his "soap box". It was only then, that I realised, Cheri had slipped around to be at his side as co-host. They seemed to agree to split the room up between them and chatted to groups for about another 20 minutes. They slipped gradually to the door of the room, and, as Blair viewed the mass of people, our eyes met, we were about ten feet from each other and we gave a knowing nod of mutual appreciation to one another. His aide whisked him away in deep conversation. ("Who was the lanky one with the with the facial tick and the smirk" he was probably saying to the aide!)

Mild disappointment washed over me again, I had hoped I could talk to him, but I couldn't help feeling that no matter what I said, it didn't feel relevant to a man who was trying to calm the impetuous George Dubya on Saturday, spoke that morning about the reform of the House of Lords, and before I was back home, would be asleep in France before speaking with President Chirac in the morning. I had seen a fleeting glimpse of a world we read about and catch sound bites from. The office of Prime Minister or as the door says "First Lord of the Treasury" is a position of great romantic and historical significance, but at the back of my mind a voice was saying... "well he's still a politician!"

Chatting to others in the room, some had met him and shaken his hand, some had done it twice. Some had chatted with Cheri about how busy at work she is, how her daughter had lost her phone (sounds familiar?), how little time there is in the evening, and she seemed genuinely interested in their lives too. Others spoke of how Tony was now greatly aware that Healthcare Scientists exist, work very hard and are an important part of the NHS and need to be nurtured, developed and rewarded appropriately.

As I sat on the train (starving, because Virgin Trains couldn't be bothered to re-stock the buffet car at 9.30 at night!!) I wondered whether it had been all worth it? Yes, I decided, we have at least got through to a Prime Minister who wants to recognize our professions and help us to raise our profile in society. Not a bad deal, I thought. OK, there's plenty that many people don't like about him – but I think he has the most thankless and difficult job in the country. It's great doing the armchair politics – it's a lot harder making and implementing those decisions. But maybe I'm just being the "Scouse Git" (Sorry Cheri!!). Leadership is often about taking difficult and unpopular choices, but persuading colleagues by your personal convictions, in time, that they were the right decisions.

IMPROVING WORKING LIVES FOR HEALTHCARE SCIENTISTS

The Department of Health published the "Improving Working Lives (IWL) Standard" in October 2000 (www.doh.gov.uk/iwl). This recognised that modern health services require modern employment practices and that staff work best when they are able to strike a healthy balance between work and other aspects of their lives. The Standard accepted that there was a joint responsibility between employers and employees to develop a range of working arrangements that balance the needs of patients and services. It also stated that staff should be valued and supported, that they should be provided with opportunities for personal and professional development and that they should have access to a range of policies and practices to enable them to achieve a healthy work-life balance.

The Standard is made up of eight key areas:

1. Human Resources Strategy and Management – a Trust's HR Strategy should include improving the working lives of its employees.
2. Equality and Diversity – Trusts should value every member of staff, recognising and supporting their individuality and should have a workforce that reflects the local community in its diversity.
3. Communication and Staff Involvement – staff should be involved in decision making, they should be communicated with effectively and they should have the opportunity to feed back.
4. Flexible Working – staff should have access to a wide range of flexible working arrangements and these arrangements should be promoted and encouraged.
5. Healthy Working – there should be improvements to working conditions, including reductions in bullying, harassment, violence and sickness absence. There should also be a commitment to tackling the long hours culture and compliance with the Working Time Directive.
6. Training and Development – equal access to personal development, career progression and training opportunities.
7. Staff Benefits and Childcare – Trusts should be delivering a co-ordinated childcare provision strategy – there should also be recognition of other caring commitments. Trusts should be promoting the NHS pension scheme and flexible retirement.
8. Staff Attitude Survey – Trusts should be conducting Staff Attitude Surveys and be seen to acting upon their findings.

There was to be a three-stage implementation of the IWL Standard – the first was "Pledge" status – all NHS organisations (with the exception of a few newly formed Primary Care Trusts – PCTs) should have achieved "Pledge" status by April 2001 – i.e. committed themselves to the principles of IWL and implementation of the Standard. The next stage is "Practice" status, to be achieved by April 2003 – this means that the majority of the Standard is being applied to the majority of the staff, with an action plan in place for implementation of the remainder of the Standard for the remainder of the staff. Trusts are being assessed at the moment to determine whether or not they have achieved "Practice" status. The final stage is "Practice Plus", implementation of all of the Standard for all of the staff – the Department is currently setting a target date for full implementation.

It has quickly become apparent to the Department that Healthcare Scientists are often in the "remainder of the staff" – in other words, their working lives are not yet being improved. The two areas of greatest difficulty appear to be flexible working and career progression. There appear to be a number of reasons for this:

1. Low profile – HR professionals in Trusts and Workforce Development Confederations may overlook Healthcare Scientists when drawing up IWL implementation plans.
2. Small specialised departments – Healthcare Scientists tend to operate in small specialised teams, with few opportunities for cross-disciplinary working making flexible working arrangements more difficult to implement.
3. Size and specialisation also create difficulties in career progression, with the higher rungs of career ladders clogged up!
4. Many Healthcare Science departments open on a Monday-to-Friday, 9-5 basis, limiting opportunities for flexible working.
5. Culture and "Scientific" management – managers are often less familiar with flexible working arrangements than counterparts in other professions and may be less comfortable in a less structured and controlled environment.

In recognition of these difficulties, the Department of Health has produced "Improving Working Lives for the Allied Health Professions and Healthcare Scientists" containing sixteen examples of how individual managers are improving the working lives for their Healthcare Scientist and Allied Health Professional staff. The guidance was launched at the Recruitment and Retention conference at York Racecourse in October 2002. It includes examples of implementing flexible working arrangements, career progression for support staff and Advanced Practitioners. The guidance is available on the DoH website (www.doh.gov.uk/iwl) from: Department of Health, PO Box 777, London SE1 6XH, or by phoning 08701 555 455.

The guidance recognises the difficulties in implementing IWL for Healthcare Scientists, including the practical difficulties, problems with resentment and trying to be fair to all staff as well as pointing out the benefits – improved morale, recruitment and retention and an improved service (e.g. greater flexibility in service provision, more productive staff).

One thing is for certain – Improving Working Lives is not going to go away. Every manager is going to have to examine how they could improve the working lives of their staff (as well as themselves) – this guidance may well help them.

Anthony Walsh, Project Manager, Recruitment and Retention of Healthcare Scientists, Department of Health (anthony.walsh@doh.gsi.gov.uk)

The Registration Council for Clinical Physiologists Update - March 2003

This is my first report for the Council in my new role as Honorary Chair of RCCP. As many of you will already be aware, Dr Sue Hill, now the Chief Scientific Officer at the Department of Health, on taking up her new post, had to resign from RCCP. I am sure you will all join with me in thanking her for all of the hard work and commitment she has shown to this endeavour and to wish her well in her challenging new role.

I have been on Council since it's inception. I was previously Vice Chair of RCCP and Chair of Education for RCCP, so I do have some experience to draw upon. The Registration Council for Clinical Physiologists is coming into its third year of operation. We now have well over 2000 registrants and this number is increasing daily. Your representatives on Council are working very hard [on a voluntary basis] to achieve our aim of State Registration. Despite the very heavy workload involved, we are all still one hundred percent committed to Clinical Physiology achieving that goal.

Visit to Health Professions Council [HPC]

Members of RCCP recently met with Professor Brook the President, Marc Seale the Chief Executive and Registrar, and Cathy Savage a Director of HPC. HPC is still awaiting instruction from Privy Council before they become fully operational in April. At the meeting, we discussed in detail the draft criteria for new entrants applying to HPC. The criteria are very clear and RCCP Council members have no doubt that we as a group fully meet these criteria. HPC will be sending us full details of the new application process in March and we intend to go forward in our application with all speed on your behalf.

One issue under discussion within HPC, is the number of groups who wish to go forward for State Registration. As you may be aware the ethos of HPC is that their Council should be small and effective, consisting of both practitioners and lay members. The possibility of unregulated groups of staff in Health Care Science [HCS] coming together for registration under one banner was discussed. This format is also favoured by the Department of Health (DoH), who intends to pursue this course of action with all groups within Health Care Science. HPC reassured us that there was no reason why groups, such as RCCP, who are currently ready to be regulated, should experience any delay. Therefore, once all the documentation is complete, we plan to pursue our application for State Registration.

Part of the process of application is transparency of information and evidence of good communication. RCCP will therefore be required to update all Clinical Physiologists on the consequences of the petition and to organise an independent ballot. *This will be a matter of urgency and RCCP would be very grateful if, when you receive your ballot paper, you would please vote and return it as soon as possible.* Not responding will be detrimental to the process.

HPC were unable to tell us how long the process, once started, is likely to take as some of the procedure is out of their control. However, once they have received orders, they plan to receive applications for new groups. Crafting the legislation for new groups will be the responsibility of the Department of Health.

Some issues pertinent to Voluntary Registration were clarified with HPC. It is now clear that registration will be under the collective group name, 'Clinical Physiology' at present, and will not specify modality. They will however carry the caveat that **"it is every registrants duty, as set out in the Statement of Good Conduct, Character and Health, to practise only within their professional competence".** RCCP will issue registration certificates as before showing registration as a Clinical Physiologist. The database report, which every registrant also receives, will continue to show the principal area of work under which each registrant was assessed. There will therefore no longer be a need for dual modality registration and indeed HPC will not have a mechanism for such registrations. Whilst every effort is made to minimise the changes to RCCP guidance it would be foolhardy not to heed HPC advice. Therefore new registrants should apply under their principal area of work even though we recognise that they may work in other areas of clinical physiology. RCCP have also approached the Department of Health with a view to obtaining their views on the application.

RCCP would ask that all registrants would be proactive in encouraging other Healthcare Practitioners within their Trusts and Professional Groups to get onto this register.

It is my opinion that it is important for all practitioners within Clinical Physiology to realise that there is a clear intention from all interested parties to regulate all in Health Care Science, as they have the potential to harm patients. This definitely includes Clinical Physiologists and will happen.

Education

The BSc (Hons) in Clinical Physiology and also in Audiology began in several centres in September 2002 and there are now many students going through the system.

BSc [Hons] Clinical Physiology [Cardiology, GI Physiology, Neurophysiology and Respiratory Physiology]

The following Education Providers started the vocational Honours Degree in Clinical Physiology in September 2002:-

1. City of Westminster College, London
2. Peoples' College of Further Education, Nottingham and De Montfort University
3. University of Wales, Swansea
4. University of Sunderland

Other providers are, we know, in the process of developing the Vocational Clinical Physiology Degree and plan to offer the qualification from 2003. Most of the new education providers are allowing access onto year 3 of the degree with

a 'current' HNC in MPPM [or equiv qualifications] and a professional body qualification in the candidate's specialist area.

These vocational qualifications were developed by the professional bodies in conjunction with a group of educational providers and herald a big change, combining both the academic and professional aspects of our current qualifications [Professional Body examinations]. These changes will take time to bed down and may even cause some frustration in the initial stages. But when we discussed our educational pathway with HPC they were convinced this was the right approach. To facilitate these changes RCCP have a very active education committee consisting of Education Representatives from all the Professional Bodies. I am sure they would welcome feedback, in writing, on any aspect of the educational changes.

RCCP Professional Body Education Committee has already started the accreditation process for the Clinical Physiology Degrees; this will be extended to the Audiology degree. The following Education Providers have been successful in obtaining RCCP accreditation for the delivery of the BSc [Hons] Degree in Clinical Physiology:-

City of Westminster College, London

University of Wales, Swansea

University of Sunderland are currently going through the accreditation process.

Nottingham/De Montfort are about to apply for accreditation.

A note of caution: **A degree bearing the name of Clinical Physiology is not necessarily the true vocational degree that RCCP will accredit. It is advisable before starting trainees on a course check the status of that course. Regular updates of accredited centres will be made available to you all through your professional bodies and the RCCP website: www.rccp.co.uk.**

BSc [Hons] Audiology

Future education for practice in audiology and hearing therapy has been combined in line with a new career structure. The BSc Hons (Audiology) programme will encompass the basic aspects necessary to all practitioners in the field of audiology. This will be a four-year full time course with the third year being clinical practice. The British Association of Audiologists (BAAT), British Association of Audiological Scientists (BAAS) and British Society of Hearing Therapists (BSHT) plan to amalgamate in the near future. Negotiations are also continuing with the private sector. An accreditation board is already operating from the combined groups. Work Force Planning issues are co-ordinated by a committee chaired by a representative of the DoH.

The first two university providers for the new course commenced programmes in September 2002:

The University of Manchester

De Montfort University

A further four universities have been appointed by DoH to offer the course in 2003:

University College London

Aston University

University of Bristol

University of Southampton

Other courses in Swansea and hopefully in Scotland will be adapted to meet the requirements at the time when the BSc programme becomes the mandatory qualification for practice in Audiology. Further work has been undertaken to look at routes involving post-graduate diploma and fast track MSc. Specialist and advanced work will be facilitated by MSc level education and competencies. In order to accommodate the increased capacity needed in NHS Audiology existing training routes are being maintained to run collaterally with the degree programme.

Finance

RCCP is now entering its third year of registration. At its inauguration the participating professional bodies injected capital to allow the Registration Council to be established within a legal framework and to support the administration required during that first year as well as set fees at the lowest possible amount (£12) for the first year.

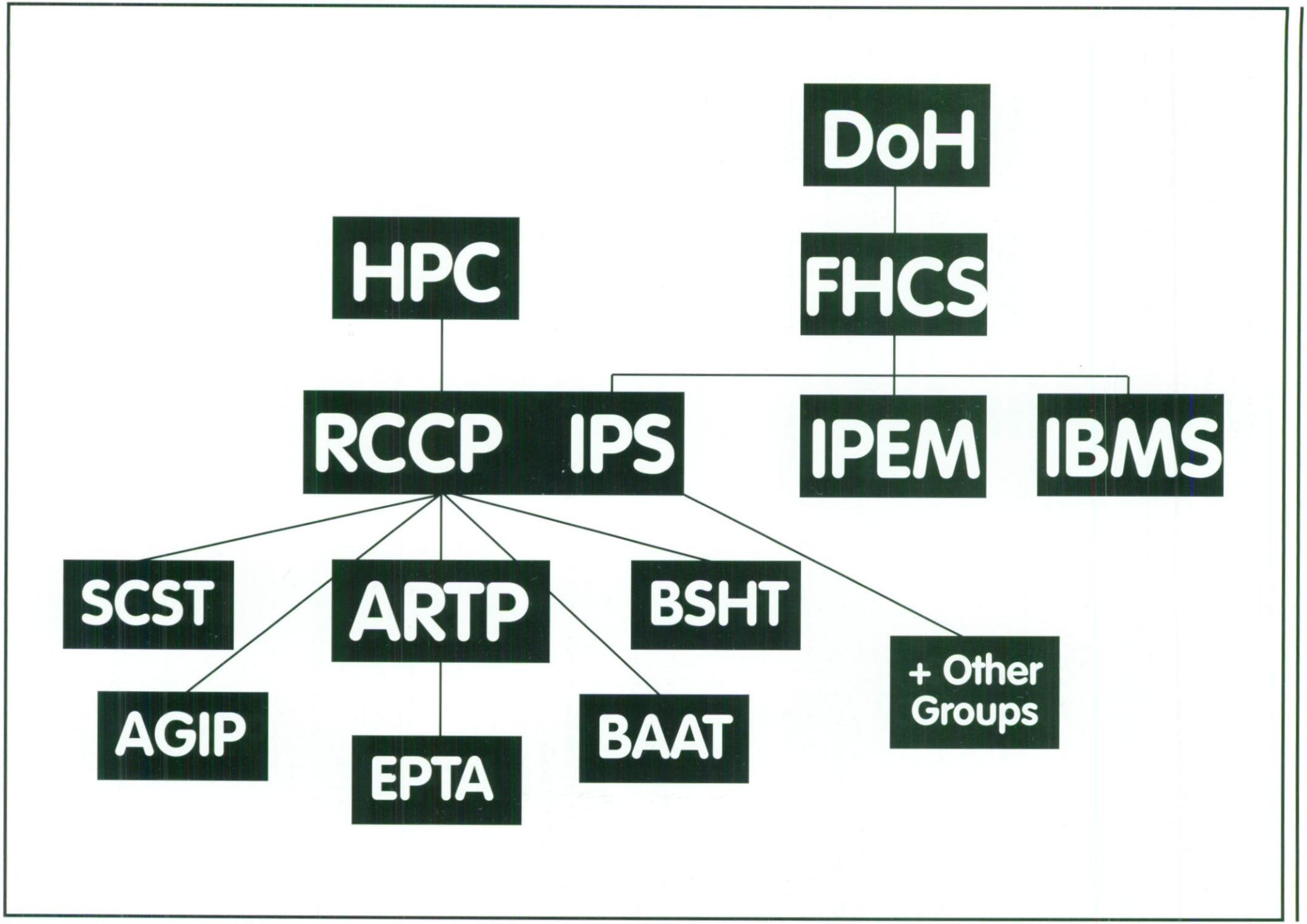
The current registration fee is £15.00 per annum and the Council has decided to retain this level for re-registration in the year commencing April 2003. However, as the administrative cost for new applications is £20, this cost has to be passed on. In addition the registration fee for new applicants will be increased to £20 to help meet the cost of petitioning HPC. Therefore the charge for new applicants will be £40 in total.

RCCP strongly advise all practitioners in the field of clinical physiology not already on the voluntary register to apply with a degree of urgency. In particular it will have financial implications for practitioners who need to enter via the grandparenting route. Once Clinical Physiologists become a state registered group all members on the voluntary register will be transferred to HPC automatically without any additional administration fee for the 'Grandfathering' process. Applicants entering via the grandparenting route after that date will be subject to a fee set by Health Professional's Council. (Currently from £110 to £290 which is in addition to the fee)

Next Steps

- RCCP to make the case for Statutory Regulation of Clinical Physiologists on receipt of the new documentation from HPC
- Ballot practitioners in Clinical Physiology
- Encourage potential registrants to apply to RCCP
- Continue to operate the voluntary register until we have successfully achieved State Registration
- Encourage the development, support and monitoring of the new accredited Clinical Physiology and Audiology BSc (Hons) degrees
- Carry out activities such as promotion of State Registration
- ALL PRACTITIONERS –need to participate in these activities as far as possible.

Anne Burge


DoH
HPC
FHCS
RCCP
IPS
IPEM
IBMS
SCST
ARTP
BSHT
+ Other Groups
AGIP
EPTA
BAAT

WHAT DO ALL THOSE LETTERS MEAN ?

There is a plethora of abbreviations floating around at the moment and try to make sense of (some of) them Keith Butterfield put together this block diagram for the National Heads Of Departments meeting at Stratford. It is reproduced here for those who weren't present and as a reference for some of the current jargon terminology.

The DoH doesn't really have the time or inclination to talk directly to 'small' groups like the ARTP and the other associated clinical physiology (CP) groups. Likewise the CPSM (now HPC) weren't willing/able to consider a petition for state registration from a single CP discipline.

Gathering together the CP disciplines and forming the RCCP created a large enough group to make a petition to HPC feasible and, as you will by now be aware, this is progressing at speed.

The publication of 'Making the Change' (www.doh.gov.uk/makingthechange) categorised Health-care Scientists into three distinct groups – Engineering and Physical Scientists, Life Sciences & Physiological Scientists. Physiological Science is larger than the CP groups which combined to form the RCCP (which is only concerned with registration and accreditation of degree courses) so the IPS was formed to encompass the other, mainly smaller, disciplines and to cover the other aspects of professional concern. This mirrors IPEM and IBS which represent the other branches of HCS. Once the RCCP attains its objective of state registration it will become a function/sub-committee of IPS.

The FHCS has representatives from all three Institutes and also the Association of Clinical Scientists (ACS). The ACS has representatives within each Institute as well. This body is deemed to represent sufficient numbers of practitioners that it is able to talk to the DoH via the Chief Scientific Officer (Dr. Sue Hill).

Each professional body has one representative and one deputy on the IPS (only one attends any meeting); for ARTP this is Honorary Chair (Brendan Cooper) and Vice-Chair (Keith Butterfield).

Three members of IPS attend the FHCS who are Brendan Cooper (ARTP), Anne Burge (EPTA) and Chair of IPS (Keith Johnson (SCST)

Glossary of abbreviations ....

NHS	National Health Service	
DoH	Department of Health	www.doh.gov.uk
CSO	Chief Scientific Officer (DoH)	
HCS	Healthcare Scientists	

Regulatory Bodies

HPC	Health Professions Council	www.hpc-uk.org
CPSM	Council for Professions Supplementary to Medicine	(see HPC)
RCCP	Registration Council for Clinical Physiology	www.rccp.co.uk

Overarching/Umbrella Bodies

IPS	Institute for Physiological Sciences	(website under development)
IPEM	Institute of Physics& Engineering in Medicine	www.ipem.org.uk
IBMS	Institute of Biomedical Sciences	www.ibms.org
FHCS	Federation for Healthcare Science	(no website)

Professional Bodies

ARTP	Association for Respiratory Technology & Physiology	www.artp.org.uk
SCST	Society for Cardiological Science and Technlogy	www.scst.org.uk
AGIP	Association of GI Physiologists	www.giphysiology.org
BSHT	British Society Of Hearing Therapists	www.hearingtherapy.org
BAAT	British Association of Audiologists	www.baat.org.uk
EPTA	Electrophysiological Technologist's Association	www.epta.50megs.com