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Interesting Ambulatory ECG Result
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From the Chair

Modernising Scientific Careers

Another Curriculum Stakeholder Engagement meeting for the Modernising Scientific Careers (MSC) programme took place on the 2nd February 2010. The meeting focused on the detail for the Practitioner Training Programme (PTP). The Higher Education Funding Council for England (HEFCE) has recently allocated funding for 2000 “additional student numbers”, some of whom were allocated specifically for healthcare science (www.hefce.ac.uk/pubs/circlets/2009/cl22_09). This additional funding has increased the impetus for the PTP component. While the output from this degree programme will differ from the current model, it is felt that SCST need to engage with the process to ensure the model will produce students with the appropriate underpinning knowledge, that can be built upon within the workplace. A provisional curriculum has now been passed onto Council and Education for comment.

To-date, the response to the consultation on MSC has still not been published.

Research

The research sub-group for SCST was discussed at Council and will become a standard item on future Council agendas. We are keen to hear about research currently undertaken by cardiac physiologists. Anyone considering involvement with the research sub-group should register their interest by contacting admin@scst.org.uk. Any members who have recently completed or are nearing completion of a project should consider submission of their research to their professional journal, the JSCST.

SCST Scientific Meeting and AGM

I would like to draw your attention to our Scientific meeting and AGM, planned for 7th May 2010. It is also election time! I would like to encourage members to get involved with this aspect of their professional body. Do you think you or one of your colleagues has a contribution to make to your profession and would consider nomination? Further details are contained in this month’s Journal.

SCST Survey

SCST have contracted Executive Business Support (EBS) to perform a survey on our behalf. SCST council decided to focus on the essential information currently required i.e. workforce numbers, thereby minimising the time required to complete the questionnaire. I urge managers to support this survey by completing the questionnaire, once received, as soon as they can. The data is important because SCST believe that the workforce numbers currently used by various bodies are inaccurate and do not reflect that number of cardiac physiologists actually in service.

Brian Campbell BSc PhD FSCST
A 56 year old male presented to Accident and Emergency (A&E) following an episode of collapse. The patient described feeling sweaty and clammy preceding a fall to the floor which was not witnessed.

There was no significant past medical history other than gout and the patient did not take any regular medication.

The patient was initially assessed in A&E to have a Glasgow Coma Score of 8/15, which rose to 13/15 in that he became responsive to speech but was restless and agitated. The patient’s heart rate was 78 bpm, with a blood pressure of 96/52 mmHg and a temperature of 35.1°C. Two 12 lead ECGs showed normal sinus rhythm with normal QRS morphology and no ST/T wave changes and all routine blood investigations were normal. A troponin I level after 12 hours was <0.01ug/L. A chest X-ray was normal with no cardiac enlargement and clear lung fields.

The patient was admitted to the Emergency Assessment Unit for observation and further investigation which, in view of the impaired level of consciousness included a CT brain scan to rule out an intracranial bleed or space occupying lesion (brain tumour). The CT scan was reported as normal, with normal appearance of the cerebrum and cerebellum and no evidence of intracranial haemorrhage.

The patient was observed until the following day and discharged with an outpatient appointment for a 24-hour ambulatory ECG monitor.

The patient attended the appointment for the tape and left with the instructions to bring it back the following day complete with symptom diary.

Shortly afterwards, the patient collapsed in the hospital car park and again was assessed in A&E with normal findings. The monitor was brought round for urgent analysis (Figures 1, 2 and 3):

![Figure 1](image1)

![Figure 2](image2)
An Interesting Ambulatory ECG Result

The ambulatory ECG was reported as having episodes of sick sinus syndrome leading to pauses of > 4 seconds followed by an accelerated idioventricular rhythm, ST elevation and recurrent polymorphic VT (ventricular tachycardia).

The patient was admitted to the nearest tertiary centre where a coronary angiogram was performed together with a cardiac MRI scan. Coronary angiography revealed normal coronary arteries with normal left ventricular systolic function. The cardiac MRI scan was also normal. The patient also underwent a VT stimulation study which was normal.

In conclusion, the patient did not have any coronary disease or any structural abnormalities of the heart. It was concluded that the ischaemic changes on the ECG were a result of either coronary spasm or of a generalised myocardial ischaemia following prolonged ventricular tachycardia.

Discussion
Coronary spasm is caused by focal coronary artery vasospasm, and a generalized abnormality of coronary artery spasm almost always occurs on a background of atherosclerosis (which may be subclinical, hence many patients will have a “normal” coronary angiography), and the focal spasm typically occurs in proximity to an area of atheroma.

The pathophysiology of this syndrome is most likely related to an abnormality of normal vasodilator function within the coronary arteries and/or a hypersensitivity of the coronary arteries to normal mediators of vasoconstriction. The underlying cause of these abnormalities of vasomotor function is unknown (Selywn and Orford 2009).

The patient received an ICD (implantable cardioverter – defibrillator) implant and is being followed by the tertiary centre, where he remains well.

Cara Mercer
Cardiac Physiologist, Department of Medical Physics, Grantham & District Hospital

References

Finding a Needle in a Haystack: answering clinical questions quickly using PubMed

This article highlights tips and database features that Cardiac Physiologists might find useful in locating relevant, high quality information in a short space of time. The aim of the article is to stimulate thought and to support the development of skills needed for evidence-based practice.

It may be useful to work through the example using PubMed while reading the article. Please note that the results will vary since thousands of new abstracts are added to the PubMed database daily.

Introduction - Why should I be interested in developing my literature searching skills?

Cardiac Physiology is a rapidly evolving profession. Increased responsibility and role expansion may improve the service we offer patients and bring greater professional satisfaction, but demand a more evidence-based approach to clinical practice. The Cardiac Physiologist (CP) must keep up-to-date with advances in physiological understanding, diagnostic techniques, therapeutics and clinical management of the patient. We continually reflect on practice and formulate clinical questions to improve patient care and service efficiency. We must take individual responsibility for this life-long process.

Whether you are a service manager seeking to develop a new CP-led clinic, a practitioner investigating an unusual case or a student writing a dissertation, the ability to formulate a clinical question, find relevant data and critically appraise this in the light of current practice is invaluable. The greatest barrier to performing a comprehensive review may be perceived lack of time [1]. There is an overwhelming amount of published data in Cardiology and staying up-to-date is difficult given the increasing pressures of clinical work.

Example: This worked example is referred to throughout the article. You participate in a pacemaker implant where the patient has hypertrophic cardiomyopathy (HCM).

- A dual chamber pacemaker is implanted to control symptoms of chest pain refractory to medication.
- This practice used to be common but you thought it had fallen out of favour following long-term studies suggesting no significant long-term benefits.

Your concern is whether your knowledge is up-to-date and a natural first step would be to ask other CPs and the Cardiologist whether new evidence exists in this field. Ultimately you may need to investigate the evidence-base for yourself, or your manager may ask you to investigate and share your findings with the rest of the department.

The question in your mind may be “Is pacing a suitable treatment for patients with HCM?”

Step 1: Formulate a focussed clinical question

This is one of the most important parts of searching literature but commonly overlooked. Doing it well tells you what types of study to look for, what search terms to type in and how you might limit the extensive information likely to be returned. (continued page 7)
The ECG shows sinus rhythm (or sinus arrhythmia) with one atrial premature beat (APB). What is unusual is the length of the post-APB pause. APBs are normally followed by a non-compensatory compensatory pause, meaning that the total length of the pause and the PP interval that precedes it is normally less than 2 normal PP intervals. An APB followed by a non-compensatory pause is illustrated in figure 1.

However, it can be seen that in the ECG in question (fig 2) the 2 PP intervals enclosing the APBs are considerably longer than 2 sinus PP intervals. I have provided the PP intervals in milliseconds.

This is typical of sinus node disease and, indeed, the whole of the 24 hour recording from which the strip was taken showed a mixture of atrial tachyarrhythmias, sinus rhythm, sinus bradycardia and sinus arrest. The treatment for the condition, obviously, is a pacemaker. A routine 12-lead ECG from someone with sinus node disease will often be completely normal. If, however, a routine ECG from someone being investigated for dizziness or blackouts shows an atrial premature beat with a prolonged post-APB pause, this should raise the suspicion of sinus node disease.

I wish to thank Claire Pinkney, Cardiac Physiologist at the University Hospital of North Tees for supplying me with this ECG.

Dave Richley
The North of England Cardiovascular Network

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**Dates for 2010 SCST Examinations**

<table>
<thead>
<tr>
<th>Dates for BSc Clinical Physiology students</th>
<th>Dates for Certificate in ECG</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>24 April 2010</strong>&lt;br&gt;Venue: Aston Uni., B’ham</td>
<td><strong>13 March 2010</strong>&lt;br&gt;Venue: Scotland</td>
</tr>
<tr>
<td><strong>19 June 2010</strong>&lt;br&gt;Venue: Aston Uni., B’ham</td>
<td><strong>Certificate in ECG</strong>&lt;br&gt;Closing Date 29.1.10</td>
</tr>
<tr>
<td><strong>4 September 2010</strong>&lt;br&gt;Venue: Aston Uni., B’ham</td>
<td><strong>Certificate in ECG</strong>&lt;br&gt;Closing Date 30.6.10</td>
</tr>
<tr>
<td><strong>4 September 2010</strong>&lt;br&gt;Venue: Aston Uni., B’ham</td>
<td><strong>Undergraduate Assessment</strong>&lt;br&gt;<strong>Part Two (ASCST PI)</strong>&lt;br&gt;<em>Note: Resit / deferrals only</em></td>
</tr>
</tbody>
</table>
Keep it simple, clear, focused and answerable. Think about whether your problem concerns aetiology, therapy, exposure to a disease, diagnosis or prognosis. The most successful searches tend to have only two or three key concepts. Practitioners of evidence-based medicine (EBM) often use a simple framework called PICO to formulate the question [2]. The PICO/PECO framework in Table 1 helps to identify key components of the search.

The framework indicates a need to find studies where the sample population had HCM and were randomised to receive a pacemaker or an alternative/no therapy. The reported outcome measures should include symptomatic benefit. To be confident that results can be extrapolated widely, studies with large sample populations or review articles that analyse multiple smaller studies are preferred.

Using the framework the focussed question becomes “In subjects with hypertrophic cardiomyopathy (P), does the insertion of a pacemaker (I) result in long-term symptomatic benefit (O) when compared with no pacemaker (C)?”

Note that the search begins using general terms such as ‘symptoms’, not chest pain. If this returned too many abstracts more specific terms would be used. If the search returned irrelevant information alternative terms should be considered.

In my experience it is only necessary to consider alternative terms for the P, I and O categories and it helps to derive these now to save time when performing the search later. Table 2 lists the original and most common alternative terms.

Think about American and British spelling, acronyms and synonyms, hyphenated/non-hyphenated terms, and older (now outdated) terms. Place terms in order from general to more specific since this is the order you should use them.

This is by no means an exhaustive list but hopefully it gets the point across that there is a need to be more comprehensive about the words you will use.

**Step 2: Look for systematic reviews**

A common approach is to search by typing concepts into a search engine such as Google [3]. Typing hypertrophic cardiomyopathy and pacing into Google on 11th January 2010 returned ~78,800 hits. Although useful, it is time-consuming to find the best articles.

<table>
<thead>
<tr>
<th>P (population)</th>
<th>Subjects with HCM</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (intervention) or E (exposure)</td>
<td>Insertion of a pacemaker (dual-chamber)</td>
</tr>
<tr>
<td>C (control/comparison)</td>
<td>Subjects with HCM and no pacemaker</td>
</tr>
<tr>
<td>O (outcome)</td>
<td>Long term symptomatic benefit</td>
</tr>
</tbody>
</table>

Table 1. PICO framework with worked example

<table>
<thead>
<tr>
<th></th>
<th>P (population)</th>
<th>I (intervention) or E (exposure)</th>
<th>O (outcome)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hypertrophic cardiomyopathy</td>
<td>Pacing</td>
<td>Long term benefit</td>
</tr>
<tr>
<td></td>
<td>Hypertrophic obstructive cardiomyopathy</td>
<td>OR</td>
<td>Symptom</td>
</tr>
<tr>
<td></td>
<td>Obstructive hypertrophic cardiomyopathy</td>
<td>OR</td>
<td>Dyshspoea</td>
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<tr>
<td></td>
<td>HCM</td>
<td>OR</td>
<td>Dyspnea</td>
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<tr>
<td></td>
<td>HOCM</td>
<td>OR</td>
<td>Chest pain</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OR</td>
<td>Angina</td>
</tr>
</tbody>
</table>

Table 2. PICO framework and alternative search terms
Google Scholar limits the retrieved information to published articles, citations and books; this returned ~12,400 hits [4]. There is no harm in broadening knowledge in this manner but it is imperative to check whether each relevant article is from a reputable source and of high quality. Information published on the internet is not necessarily accurate.

Consider the following:

- When was the article published? Could the information be out-of-date?
- Who is the author and what is their reputation in the field?
- What journal does the publication appear in?
- Are articles peer-reviewed by experts before publication?
- Are there any letters to the editor disputing the findings?
- Have erratum been published subsequently?
- Critically appraise the study methodology. Details of critical appraisal are beyond the scope of this article and interested readers can find useful information on the appraisal tools page of Public Health Research Unit Website [5]

Reviewing a fraction of articles in the search for relevant, high quality information would take a significant amount of time that is better spent elsewhere. Thankfully there are numerous databases and database features that can significantly narrow the search.

PubMed is a service of the American National Library of Medicine (NLM). A publicly available database, it provides access to over 16 million citations from Medline (another database that includes a vast array of medical journals) and other life science journals. Data is available from the 1950s to the present [6]. While comprehensive systematic reviews have a clear rigorous search strategy, encompassing more than one database and a search of the ‘grey’ or unpublished literature, these may take a team of researchers up to 18 months to perform. This rigour is not practical or necessary for CPs seeking answers to clinical questions but the general principles are useful when writing for publication (or for a dissertation). The Cochrane Collaboration publishes guidelines on systematic reviews for those who are interested [7].

In my experience PubMed returns the most relevant, comprehensive, high quality information for clinical questions and makes a good starting point. The PubMed home page can be found at http://www.ncbi.nlm.nih.gov/sites/entrez/. Clinical questions can be answered with ease using the ‘clinical queries’ function under PubMed tools (circled in Figure 1).
Begin by checking for recent systematic reviews since these should include all primary research addressing the question. Locate ‘Find Systematic Reviews’ on the clinical queries page (circled in Figure 2), enter the key concepts hypertrophic cardiomyopathy and pacing in the search bar before selecting Go. This search returned 11 review papers on 11\textsuperscript{th} January 2010, most were relevant to the question, but the latest systematic review was dated 2008 and new primary research data may have been published since. Compare the number of returned abstracts with the same text typed into Google.

The PubMed Systematic Review search may answer the clinical question. This is likely to be the case if a review exists, is recent and there are no advances in the interim. If so you can stop here!

If a review does not exist, is out-of-date or you want to check for new primary data move on to step 3 (recommended).

Step 3: Look for the highest quality primary literature

Well conducted large Randomised Controlled Trials (RCTs) are considered to provide some of the best primary evidence to answer therapeutic questions and PubMed has another useful feature in the Clinical Queries section to retrieve such literature. At the top of the clinical queries page is the section “Search by Clinical Study Category”, highlighted by the square in Figure 2. Type hypertrophic cardiomyopathy and pacing into the search box and select ‘the appropriate option for different question types). Select Go to run the search.

There are two options on the right hand side of the page; “narrow, specific search” or “broad, sensitive search”. The narrow search minimises false-positive results, good if you are short of time but it can result in relevant abstracts being missed. The broad search returns almost all possible abstracts reducing the likelihood of missing something important but generating a higher number of papers to evaluate. Begin with the broad which might return a manageable number of abstracts switching to the narrow search only if an unmanageable number of abstracts are retrieved. The combination of search terms returned 176 abstracts with the broad search and 11 abstracts with the narrow search - some useful papers were missed in the latter.
An unsuccessful broad search suggests inappropriate search terms and alternatives from the PICO analysis should be used. Medical Subject Headings (MeSH) is a vocabulary used to reference abstracts on Medline. Every paper indexed has been reviewed by a ‘nosologist’, who has expertise in classification of diseases. The paper is described using several MeSH terms in order that it can be retrieved from a number of expressions. A search may be unsuccessful because search terms do not match the MeSH terms. This can be checked using the following link www.ncbi.nlm.nih.gov/mesh.

If sufficient, high quality information is retrieved to answer the question you can stop here! If the search did not return enough or the wrong type of information or the wrong type of information then continue to step 4.

**Step 4: Advanced PubMed search**

Advanced search is accessed from the home page (Figure 1, highlighted by square). Scroll the advance search page until you see “Index of fields and field values”. Enter search terms directly from the PICO framework to derive a comprehensive search. It is recommended that you search each column individually before combining concepts. Each search is recorded in the Search History at the top of the page which speeds up the process of combining searches to return the most relevant information.

Using our example start with the P column and enter hypertrophic cardiomyopathy in the “field values box”. Leave the initial column as “ALL FIELDS”. You do not need to use inverted commas around the search term. Click ‘add to search box’ using OR because we will combine our alternative terms for cardiomyopathy to be sure our search is comprehensive. Type hypertrophic obstructive cardiomyopathy in the fields values box and add to the search using OR. Note that terms are entered in the main search box at the top of the page. Repeat for the remaining alternative terms, adding each using OR. When all terms in the ‘P’ column have been entered, scroll to the top and select search.

This returns 13,195 articles for all aspects of HCM (not just pacing therapy). Before you attempt to review which articles are relevant it is necessary to perform the search on the other columns and then combine them.

Return to advanced search (top of the page) and note that the previous search has been added to the search history. Click Clear to remove the search terms from the top search box and scroll back to Index field and field values. Add search terms from the ‘I’ column, remembering to use OR to add to the search box. When you are done, scroll back up and select search. PubMed adds the search to the history and returns 51,557 articles relating to pacing (remember we have yet to combine our columns). Return to Advanced Search, clear your last search terms and enter the search terms from the ‘O’ column. PubMed adds the search to the history and returns 187,262 articles.

In the search history section (advanced search page) there are now 3 separate searches, one for each column. PubMed will number these #1, #2, #3 (or #3, #4 #5 if steps 2 and 3 are still in the search history). Combining the columns is straightforward. Clear the search box and click on #1 to obtain an options box that allows you to add directly to the search box. Remember we want to use AND to combine the columns so select this. Repeat this process for #2 and #3. Select search to combine the concepts. 221 abstracts were retrieved using this strategy on 14th January 2010. A quick review of abstract titles confirms that the majority are relevant for the question.

If the number of returned abstracts remains unmanageable consider limiting results. Scroll the advance search page to the ‘Limit by topics, languages and journals’ section. By selecting limits you define inclusion/exclusion criteria for your data and will therefore potentially lose valuable information. It is important to justify WHY you have selected each limit to demonstrate that relevant information has not been excluded.

**Consider**

- What subject age are you interested in, paediatrics, adults or elderly?
- Think about the language of the article, do you only want to be shown things written in English (avoid where possible since this may introduce bias)?
- What about the study design? Do you want to see every case study and observational study, or are you only interested in large randomised controlled trials.
The following limits were selected for the example before hitting ‘search’. The number of abstracts was reduced to 162:

- Practice Guideline
- Randomized Controlled Trial
- Review
- Guideline
- Journal Article
- Overall
- English

This was considered a manageable number of abstracts, and attempts to limit the data further resulted in key papers being removed. The search strategy was terminated at this point since it was considered that sufficient high quality information had been obtained to answer the clinical question.

Conclusion

Figure 3 (prev column) is a summary of the search process for clinical queries

While this process may proceed in a continuous manner between steps one and four, some clinical questions may be answered fully by steps two or three. The entire process takes only a few minutes – efficiency improves with practice.

Obtaining high quality, up-to-date published data is the beginning. This must be critically appraised in the light of current practice/resources to determine whether an up-to-date, evidence based service is being provided.

A review paper by Page and Mohiddin (2009) discussing whether pacing is a current evidence-based intervention for HCM is included in the reference list [8]. This article was retrieved using the search strategy above.

Emma Rees, BSc. (Hons.), MSCST
Cardiology Programme Manager,
Swansea University
Research Fellow, Wales Heart Research Institute

Emma Rees, BSc. (Hons.), MSCST
Cardiology Programme Manager,
Swansea University
Research Fellow, Wales Heart Research Institute
MEDICAL DIRECTORATE  
Cardiac Physiologist  
Band 7 £29,789 - £39,273 – Full-time

George Eliot Hospital is a medium sized District General Hospital in the heart of the Midlands, ideally placed for Birmingham and Leicester. It is accessible to the motorway and train network and all major airports.

‘Good things come in small packages’ is how this department can be described. Though small, we still offer a broad range of non invasive cardiac investigations in a friendly environment where everyone pulls together regardless, in order to deliver efficient and effective services to our users. We also implant and follow up pacemakers and are in the process of training for ICD follow up prior to commencing this service in the very near future.

Due to a member of staff moving on to pastures new, we are looking for a Cardiac Physiologist who is experienced in the highly specialised disciplines of implantable devices and echocardiography. You will be the lead in implantable devices, therefore some experience in ICD follow-up will be an advantage. The post also requires proficiency in adult echocardiography.

If you have the necessary qualifications and all the personal attributes expected at this level and want to work in a real team, please apply.

For further details or to arrange an informal visit, please contact Jan Griffiths, Manager, Cardio-Respiratory Unit on 02476 865128.

A full job description and personal specification can be obtained from Effie Wright or Josie Tirre on 02476 865150.

Please apply online at www.jobs.nhs.uk

Closing date: 31st March 2010.

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You should hold a BSc in Clinical Physiology or other relevant scientific discipline, although a HNC/HND or equivalent qualification along with suitable knowledge, training and experience may be acceptable. We are looking for full-time candidates with significant experience in clinical echocardiography (e.g. British Society of Echocardiography accreditation), although candidates with less experience or those looking for part-time employment will be considered.

Inverness is a thriving city at the heart of the Scottish Highlands. It offers excellent local facilities, good transport links and a high standard of living in one of the most beautiful parts of the UK.

Informal enquires are welcomed by Dr Colin Farman on 01463 706696.

Application forms and job descriptions can be downloaded via our website www.nhshighland.scot.nhs.uk alternatively, they are available from the Employment Services Section, Raigmore Hospital, Inverness IV2 3LJ, call 01463 705159 (24 hour answeringphone) or email: recruitment@raigmore.scot.nhs.uk

Closing date for receipt of applications: 13 April 2010.

SHF provides district general hospital services throughout central Nottinghamshire from four hospital sites. We have a current turnover of approximately £175m, and our workforce of approximately 4,000 provides services to a population of around 350,000.

In addition, we are undertaking a £320m modernisation of acute services including the redevelopment of the King’s Mill Hospital and Mansfield Community Hospital. We are an Investor in People employer and offer a strong commitment to your well-being and development and a range of staff benefits, including flexible working, access to a Staff Support and Benefits Co- Ordinator, an on-site nursery at the King’s Mill Hospital and the opportunity to participate in a range of salary sacrifice schemes, including Workplace Nursery and Childcare Vouchers.

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The department provides a comprehensive range of investigative procedures including echocardiography (TTE, TOE, 3D, Stress), Direct Access Echo and Rhythm Monitoring services to GPs, vascular scanning, permanent pacing, exercise stress testing, ambulatory ECG and BP monitoring, tilt-table testing, on-site angiography facilities for diagnostics and PCI, full lung function testing, CBGA, respiratory muscle testing, sleep studies, initiate CPAP and NIV treatment and follow up clinics. Clinical Physiologists are part of the multi-disciplinary teams in Cardiology, Respiratory and Vascular services and work closely with the Consultants.

You will be expected to join the team and make a real impression on the services of Sherwood Forest Hospitals NHS Foundation Trust and plan for the future improvements and developments of our department and Trust.

The current projects include ICD implants, paediatric sleep studies, Newark Sleep Studies and use of Body Box. Experience in invasive cardiology, especially ICD implants and follow-up would be an advantage.

The department is committed to providing patients with an excellent quality service and has an equal emphasis on the commitment to staff to provide a learning environment that encourages personal development.

Attendance at national and international conferences is positively encouraged.

You must state whether you are applying for full-time (37.5 hours) or part-time posts (specify hours).

For further information please contact Lynne Knowles, Cardiorespiratory and Vascular Manager or Judith Pelt, Deputy Manager on 01623 622515 ext 3844.

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Reference number: 214-EMC0-02-23

Closing date: 21st March 2010

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If you would like this information in an alternative format or in a different language please contact Human Resources on 01623 622515 ext 3271.
The Society for Cardiological Science and Technology

Annual General and Scientific Meeting

Friday 7th May 2010, Novotel, Birmingham

Provisional Agenda

13:00 Registration

14:00 Chairman’s Welcome  
Brian Campbell

14:10 The role of the Consultant Cardiac Physiologist  
Fay Ahmed

14:50 Case studies

16:00 SCST AGM  
Report from Chair  
Report from Treasurer  
Report from Education Committee

16:50 Are we reaching the end of the treadmill?  
Dave Richley / Chris Eggett

17:30 Modernising Scientific Careers  
Brian Campbell

17:55 Round-up

Further details in April edition.

Return of the Ads!!

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They’re back!
The Society for Cardiological Science and Technology
Northern Ireland branch Annual General and Scientific Meeting
Friday 7th May 2010, Hilton Hotel, Templepatrick

14:30 Registration
15:00 Chairman’s Welcome
   Barbara McDonald SCSTNI
15:10 Cardiac MRI
   Dr Paul Horan
15:50 Insight into TAVI Procedures
   Christine Maguire
16:20 Biotronik
   To be confirmed
17:00 Case Studies
17:30 Break
17:40 Evening Registration
18:00 Chairman’s Welcome
   Barbara McDonald SCSTNI
18:10 Cardiac CT
   Dr Paddy Donnelly
18:50 Modernising Scientific Careers
   Wilson McNair
19:20 To be confirmed
   Dr Antionette Kenny
20:00 AGM for SCST-NI
Report from Council: Catherine Ross
Report from Education Committee: Wilson McNair
Report from UUJ: Jackie Crawford
President’s Closing Remarks: Dr Tom Trouton, President SCSTNI
20:45 Dinner

Registration

I would like to register for the AGM and Scientific meeting:

Name ....................................................................................................................................................
Hospital ...................................................................................................................................................

I would like to attend dinner ................................................................. please circle
Yes ........................................ No ...........................................

I will be attending for the ................................................................. please circle
Full ................................................ Afternoon ...................................... Evening ..........................................

Fees include Dinner (cheques payable to SCSTNI) Please include menu selection with registration form and cheque (see website).

NI Branch members £10 ................................................................. non-members £30 ........................................
students £10 ..........................................................................

Please return registration form and cheque to:-

Mrs Catherine Ross, Cardiac Investigations Department, Craigavon Area Hospital, 68 Lurgan Road, Portadown, T63 5QQ

www.scstni.org.uk
Each year four members of SCST Council step down from office. This year the following two members of Council have agreed to stand again for re-election:

Eamon Murtagh
Peter Lewis

At least 2 other appropriate nominations are required to allow Council to function with full membership complement.

Nominations for membership of Council are invited from Associate Members, Ordinary Members and Fellows of the Society. Any three such members may nominate any other duly qualified person for membership of Council. Nominations should reach the Honorary Secretary by not later than 31st March 2010.

In the event of more nominations than (four) vacancies on Council, ballot papers containing the names of all persons duly nominated and eligible will be circulated to members.

NOMINATION FOR ELECTION TO COUNCIL (2010)

Date: ..............................

We hereby nominate ( Mr. Mrs. Ms ) ...................................................................... ASCST / MSCST / FSCST

Address ..........................................................................................................................
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Who, to the best of our belief, is eligible to serve on the Council of the Society for Cardiological Science & Technology

1. Full name: ( Mr. Mrs. Ms ) ........................................................................ ASCST / MSCST / FSCST

Address ..........................................................................................................................
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2. Full name: ( Mr. Mrs. Ms ) ........................................................................ ASCST / MSCST / FSCST

Address ..........................................................................................................................
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3. Full name: ( Mr. Mrs. Ms ) ........................................................................ ASCST / MSCST / FSCST

Address ..........................................................................................................................
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I am willing, if elected to serve on the Council of the Society for Cardiological Science & Technology, and agree to abide by the Rules and Regulations as set out in the Articles of Association.

Signature: .................................................................................................

On completion, return this form to arrive NO LATER THAN 31st March 2010 to:-

SCST Administrator, Executive Business Support (EBS), City Wharf, Davidson Road, Lichfield, Staffordshire WS14 9DZ

Mark envelope “Nomination”

This form may be duplicated
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**THE SOCIETY FOR**

**CARDIOLOGICAL SCIENCE & TECHNOLOGY**

**Founded 1948**

**Incorporated 1965**

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**Membership Subscription Renewal**

**Due 1st JANUARY 2010**

***Please read the notes below carefully before completing***

**THIS FORM SHOULD BE COMPLETED FULLY & RETURNED TO THE ADDRESS BELOW TOGETHER WITH A SELF ADDRESSED ENVELOPE. CHEQUES/POSTAL ORDERS (IN POUNDS STERLING) SHOULD BE MADE PAYABLE TO: - THE SOCIETY FOR CARDIOLOGICAL SCIENCE & TECHNOLOGY**

Members who pay subscriptions by **Bank Standing Order** are also required to complete this form thus indicating their wish to remain a member of The Society for Cardiological Science & Technology.

New members who were registered on/after 1 November 2009 are **NOT** required to pay the subscription in 2010.

Please return this form to: - **SCST Executive Business Support (EBS), City Wharf, Davidson Road, Lichfield, Staffordshire, WS14 9DZ**

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Members of SCST who take advantage of the joint SCST/BCS membership have free registration for the BCS conference.

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<thead>
<tr>
<th>SURNAME</th>
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<tr>
<td>Student £40.00</td>
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<tr>
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<td>FSCST □ Year ..........</td>
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**OLD ADDRESS (If changed during past year)**

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<th>SURNAME (If changed during past year)</th>
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**I currently pay my membership subscription by Bank Standing Order - Please tick if YES □**

If paying by Bank Standing Order please sign ___________________________ Ensure mandate valid at appropriate subscription rate

**Name and membership number will be published on the SCST website unless written request to remove is received at the above address**

I do NOT wish to receive circulations from the British Cardiovascular Society – tick box □

I do NOT wish to receive circulations deemed appropriate by SCST Council - tick box □

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