THE SOCIETY FOR VASCULAR TECHNOLOGY OF GREAT BRITAIN AND IRELAND

NEWSLETTER Issue 96 Spring 2017

In this issue

Welcome to the Spring 2017 edition of the SVT Newsletter

Welcome to the new Spring SVT Newsletter. I would like to extend my thanks to those who have contributed to this issue and especially Helen Dixon for her guidance and continued support in publishing this Newsletter.

The newsletter now has hyperlinks, if you wish to look into any events on the diary, you can follow the link to the webpage for more information.

If you wish to contribute to the newsletter, get in touch via newsletter@svtgbi.org.uk

Please email any case studies, reviews, your experiences or any comments that you think would be of interest to members of the society. Contributions may also be eligible for CPD points. We would also welcome any comments on articles published in this edition.

As always a £25 prize is offered to the individual chosen for sending in the article or letter of the month.

The next Newsletter will be the Summer Issue, and the closing date for receiving articles will be 4th July.

Gurdeep Jandu
Newsletter Editor

DATES FOR THE DIARY 2017

Venous Forum Annual Meeting, Royal Society of Medicine, London
10th July
Link

Vascular Societies ASM, Manchester
22nd-24th November
Link

BMUS Ultrasound 2017, Cheltenham Racecourse
6th-8th December
Link

Charing Cross Symposium

On Tuesday 25th April, Grand Olympia in London hosted the annual Charing Cross Symposium (CX). CX is the longest running vascular and endovascular symposium in Europe (started in 1978 at Charing Cross Hospital London) and has grown over the years to become one of the largest in the world.

In 2016, nearly 80 countries participated in CX, making it a global event catering for all vascular specialisms. CX addresses vascular and endovascular controversies so world class faculties can challenge evidence to reach a consensus after discussion with an expert audience (this is part of a 3 year cycle).

Presentations run throughout the day and are followed by Q&A sessions with live voting on the endovascular controversies which have been raised.

Charing Cross Exhibition Hall at Olympia Grand, London, 2017

Charing Cross Conference Centre at Olympia Grand, London, 2017

The symposium also hosts venous workshops as well as presentations from numerous endovascular surgeons and companies with live demonstrations of their products in the main auditorium.

If you are interested learning more about vascular disorders and up and coming imaging, technology and research innovations, keep your eye on this symposium for next year April 24-27th 2018, it may surprise you. For more information please visit:

https://www.cxsymposium.com

bubbles

Cambridge University Hospitals Vascular Studies Unit.
Edmund Ramage, Charlotte Taylor and Laura Scott.

Intraoperative Duplex Ultrasound Criteria for Performing Interposition Bypass in the Treatment of Popliteal Artery Entrapment Syndrome
White, J.M, et al. (2015). Annals of Vascular Surgery, 29, 124.e7–124.e12.

Popliteal entrapment in the absence of anatomic abnormalities of the popliteal fossa, often referred to as functional popliteal entrapment. It is often attributed to gastrocnemius muscle hypertrophy and treated by muscle resection. Previous literature has described the use of intraoperative duplex during gastrocnemius muscle resection as a guide to target specific sites of compression in order to avoid excessive muscle damage.

In addition to the acute intermittent symptoms caused by the transient ischemia of popliteal entrapment, the repetitive trauma to the vessel may also cause arterial damage necessitating bypass surgery in addition to decompression. This case series from a US military medical centre describes the use of duplex in theatre during decompression surgery for functional popliteal entrapment to aid in the decision to proceed to bypass.

The authors used their local vascular lab protocol for peripheral arterial duplex – peak systolic velocity (PSV) greater than 200cm/sec, velocity ratio of 2 or greater – to identify significant lesions. Duplex was performed intraoperatively, following decompression surgery, with a vascular technician and an additional vascular surgeon present "for radiographic interpretation". If the above criteria were met, an interposition bypass was performed.

The first case describes a 30-year-old man with claudication and paraesthesia on running 1 mile. ABPIs were normal at rest with a significant drop after exercise. Popliteal entrapment was diagnosed by angiography with plantarflexion manoeuvres and the decision made to proceed to surgery. Duplex was performed intraoperatively with one limb demonstrating a >2-fold velocity increase, peak systolic velocity of 295cm/sec, and an interposition bypass was performed following decompression. The second limb demonstrated PSV of 212cm/sec with a velocity ratio of <2 and decompression was performed with no bypass. Both operations had a good functional outcome.

The second case involves a 44-year-old man with a 5 year history of calf pain limiting his running distance to ¼ mile. ABPIs were normal at rest with a significant drop on exercise and popliteal entrapment demonstrated by angiogram with plantarflexion. The first limb demonstrated an intraoperative PSV of 300cm/sec, velocity ratio of >2, and bypass was performed after decompression. A good functional outcome was reported in this limb although recovery was complicated by wound infection. Patient was awaiting surgery for the contralateral limb at time of publishing.

Disappointingly, at no point in this paper is it made clear why intraoperative, as opposed to pre-operative, duplex was considered necessary. It would seem that the question of whether significant arterial damage is present is one which could be answered pre-operatively without the inconvenience and infection risk of scanning in theatre.

Compression versus no compression after endovenous ablation of the great saphenous vein: A randomised controlled trial.
Ayo, D., et al. (2017). Annals of Vascular Surgery, 38, p.72-77

Background
Venous insufficiency is thought to affect 5 - 8% of the world population. Incompetence of the great saphenous vein (GSV) is the most common cause. This results in venous hypertension which can ultimately result in leg ulceration. Endovenous ablation has been shown to be effective and is now often performed instead of surgical stripping. Compression hosiery is often part of the post procedure protocol after endovenous ablation of the GSV as it is thought to aid venous closure and help reduce oedema and pain; however, the evidence to support this is limited and patient compliance is variable.

Methods
The aim of this prospective, randomised control trial was to compare the use of thigh – high 30-40mm/hg compression stockings for seven days versus no compression following radiofrequency (RFA) or laser ablation of the GSV.

Inclusion criteria included patients with a normal ABPI (>0.9), who had reflux identified on duplex and disease classified CEAP 1 - 5. Patients with active ulceration (CEAP class 6), or previous DVT or vein treatment were excluded. The primary outcome was to determine patient reported overall improvement in quality of life at days 1, 7, 14, 30 and 90 days post procedure. QOL was measures on 2 scales, the Venous Clinical Severity Score (VCSS), and Chronic Venous Insufficiency Questionnaire (CIVIQ-2). The secondary outcomes were pain and bruising scores post procedure. Pain was categorised as mild (1) to severe (10). Bruising was categorised as no bruising (0) to severe bruising (5). To determine the success of treatment, a duplex scan was performed to ensure the GSV was occluded.

Results
70 patients and 85 limbs were treated with endovenous ablation. 91% of cases were treated with RFA and 9% were treated with laser ablation. 46 patients were randomised to compression and 39 to no compression after treatment. There was no significant difference in

age, gender and distribution of CEAP classification between the two groups.

There was no significant difference in VCSS scores 7 days post procedure in the compression therapy and no compression therapy group (3.12 vs. 4.35, p=0.491). The CIVIQ-2 scores at 7 days (36.9 vs. 35.1, p=0.594); and 90 days (29.1 vs. 22.5, p=0.367) were also not significantly different between the compression and no compression therapy groups respectively.

There was no significant difference in pain (mean 2.11 vs. 2.81 p=0.147), or bruising scores (1.2 vs. 1.4 p=0.561) in both compression and no compression therapy groups 7 days after treatment.

There was 100% rate of GSV closure in both groups.

Conclusion and discussion
This study concludes that in accordance with the limited previous research, compression following GSV ablation in patients with venous insufficiency does not significantly affect patient reported and clinical outcomes; however, the study does have limitations.

The main limitation is that the end points were not clearly defined. Although patient reported outcomes are assessed at length, this study lacks power and detail on clinical outcomes which are not clearly reported.
In addition, compliance to compression therapy was not assessed which would increase the reliability of the results. Finally this study grouped patients who had undergone laser ablation with those who underwent RFA. It would be interesting to see whether there is a significant difference in outcomes in each group.

To conclude, further larger studies are still required to assess the efficacy of compression following endovenous ablation of varicose veins.

Endovascular stent placement for chronic post-thrombotic symptomatic ilio-femoral venous obstructive lesions: a single-center study of safety, efficacy and quality-of-life improvement.
Falcoz, M.T. et al. (2016). Quant Imaging Med Surg 6 (4): p342-352.

Post-thrombotic syndrome (PTS) is a chronic complication of lower limb deep vein thrombosis (DVT) and affects approximately half of patients within two years of the acute event. Despite the potential impact on quality of life and significant economic burden, there remains a paucity of data on PTS treatments. DVT involving the iliac veins are associated with a higher risk of PTS and have recently been targeted for percutaneous endovascular venous recanalization in patients with PTS.

Falcoz et al., (2016) performed a prospective single-centre observational study to determine the impact of stenting chronic iliac vein thrombus on PTS outcome. Over a period of 4 years, 21 patients with PTS were included in the study. PTS was diagnosed and assessed pre- and post-treatment based on clinical examination (Villalta score), patient quality of life (CIVIQ-20 score) and imaging (duplex ultrasound and computed tomography). Of the 21 subjects, 2 (9.5%) were classified as having mild, 8 (38.1%) as moderate and 11 (52.4%) as having severe PTS. Median time from the acute thrombotic event to endovascular treatment was 24 months ranging from 15-102 months.
During the procedure, the ilio-femoral thrombosis was crossed with a guidewire and angioplasty performed before placement of Nitinol stents. An end of procedure venogram was performed to confirm stent positioning and patency. Patients received anti-vitamin K and anti-platelet treatment for three months. The majority of cases (63%) involved stenting of the vena cava, iliac and common femoral veins, and all procedures were deemed successful with no immediate complications.

Intensive duplex ultrasound surveillance was performed for a median time of 18 months post-intervention, to assess the patency of the ilio-femoral veins. 95% of stents were patent at 1 month, with one case of in-stent thrombosis, and 86% were patent at two months. Furthermore, Villalta and CIVIQ-2 scores showed severity of PTS significantly decreased at 3 months post-procedure with no reports of severe PTS.

Comment:
This small prospective study demonstrates the efficacy of endovascular ilio-femoral venous stenting in the treatment of PTS; although, the number of patients included in the study is small, this technique is not currently widely used and limited by the availability of experienced vascular teams. It is interesting that patient symptoms and quality of life pre- and post-treatment were quantified in this study, however, controls for conservative PTS treatment (compression stockings and/or anti-coagulation) would have been a valuable addition to the analysis.

Pharmacological treatment is the gold standard treatment for acute DVT at present. Other interventions such as thrombectomy or thrombolysis are being employed for early thrombus removal from iliac and femoral veins in an attempt to prevent PTS; but, randomised control trials to date have documented the risk of major bleeding complications. This study has shown that PTS symptoms can be improved regardless of a delay in the time to treat from the acute thrombotic event. Prior to a large-scale study, the findings of Falcoz et al., (2016) demonstrate the potential for ilio-femoral venous stenting as a more aggressive treatment for PTS with low complication rates. Presumably, studies such as this will prompt an increase in the number of requests for duplex ultrasound assessment of ilio-femoral veins.

Coventry Exam Preparation Day Review

This year the exam preparation courses were held at University Hospital Coventry & Warwickshire, Clifford Bridge Rd, Coventry. Below are two excellent reviews from two trainees, Amy Reed and Lilly Bishop who attended the exam preparation days.

Review 1
The exam preparation days for the upcoming summer exams were held at Coventry Hospital. The hospital itself is spacious and modern, quite different from my current workplace!

The sessions were held in the Clinical Sciences building, where we were split up into 5 small groups and allocated a room. Then we worked through the question booklet. There was a variety of questions- ranging from easy to tricky. Each tutor then visited the groups in each room to discuss the questions. In addition to discussing the questions, we also talked about the applications of scanning technology that we are likely to encounter on a daily basis. All the tutors were so pleasant and knowledgeable; it made the day feel like a breeze!

The revision sessions are really useful and helped me to think logically through the questions and take care when answering the exam paper. The SVT organised a lunch voucher for the students too. The hospital canteen food is very varied which made for a good half-way point in the day.

I left the study day feeling much better informed about the types of exam questions and knowing which direction my studying will take. I also met some really interesting people so the day is very sociable too.

It turns out that the 'mythical' Megabus ticket for £1.00 does exist. It did take me almost 5 hours to get back to Watford though, which adds up to an awesome 0.009p per mile. Day well spent I say!

Amy Reed
Watford General Hospital

Review 2
On Wednesday 29th March, the Physics and Haemodynamics Theory Exam Preparation Day was held at Coventry Hospital. I attended along with my STP course friends, colleagues and various other new faces, because we all had at least one thing in common; the impending SVT physics exam. Although this is a daunting prospect for some, the revision day certainly helped calm our nerves. We were split into three groups to have focussed sessions on the basic principles of ultrasound, maths and equations and the principles of ultrasound imaging. The basic principles of ultrasound session was held by Matt Bartlett, who, as always, made the content entertaining by using interesting anecdotes and playing youtube videos to demonstrate the physical principles he was describing in more relatable terms. For example, we learnt that the damping material in an ultrasound transducer improves axial resolution by creating shorter spatial pulse lengths; equivalent to holding a wine glass after tapping it to make it ring.

The maths and equations session was hosted by Davinder Virdee. This was really useful to see how the ultrasound equations are used in real life examples and settings by plugging in the appropriate numbers. This is because I had been taught these equations in my STP lectures, but not had any practice using some of them in calculations until now. Re-arranging mathematical equations and thinking about the importance of converting between units was also very good practice. This session was intense so I will likely go back through some questions to consolidate some calculation methods, but it was extremely useful and productive nonetheless!

Carl Tiivas taught us the principles of ultrasound imaging. We went through some multiple choice questions and considered the various option answers. This was interesting because the more we discussed, the more it became clear that there are many grey areas to certain statements and this emphasised the importance of carefully reading the question. "Aliasing occurs at lower velocities when compared to Pulse wave Doppler" is a good example of this ambiguity when deciding whether it is true or false and would need to be properly considered in line with the other statements. For me, this made me aware of the areas I need to spend more time on during my revision in order to decipher between such statements.

The groups then combined to be tutored in quality assurance and safety by Matt Bartlett. This highlighted the often overlooked importance of ultrasound safety in clinical practice. In the majority of cases, ultrasound scans are indeed harmless if performed correctly. However, it was brought to our attention that with the rate that technology is advancing, the safety implications of ultrasound could one day be a much bigger concern.

The day was a brilliantly organised and enjoyable experience; good to see everyone whilst getting a true feeling for what the exam will entail in a few month's time.

Lily Bishop

SVT Fundamentals, Physics & Technology Days Review

Here is a review of the feedback we had received after each of our SVT learning hub events.
Responses were rated from 1 to 5: 1 = poor 2 = fair 3 = good 4 = very good 5 = excellent

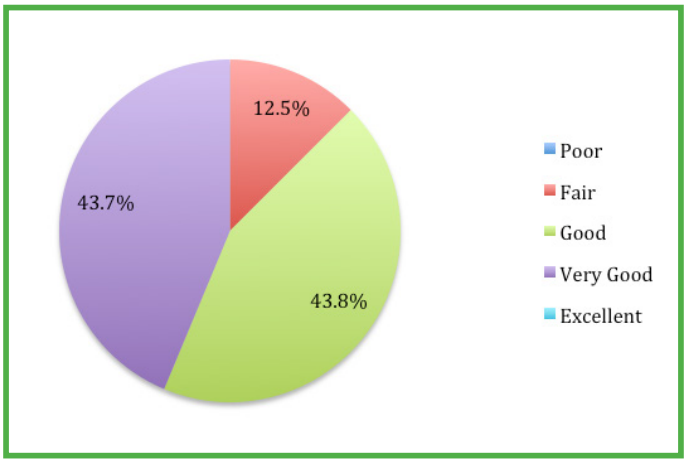
FUNDAMENTALS DAYS

- 27 attendees and 10 gave feedback; unfortunately feedback was given as an overall rather than for the Physics or Technology day individually.
- 100% of responders found the quality of lecturers to be very good or excellent.
- Content was rated good to excellent.
- 70% thought the time allocated to the practical sessions was adequate, 20% finding they would have preferred less time and 10% requiring more.
- Comments were very positive with high praise for the Physics and the surgeon's presentation relating to the importance of vascular imaging in aiding treatment plans.

SVT PHYSICS EXAM REVISION DAY 2017 FEEDBACK FORM SUMMARY

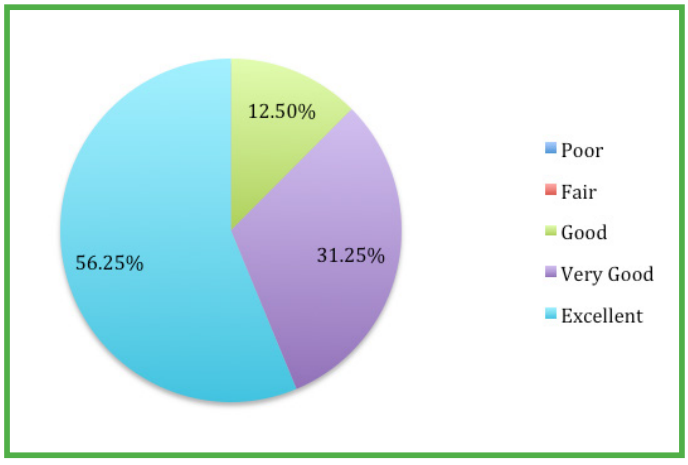
- 27 attendees and 16 (59%) gave feedback.
- 44% individuals had started their revision, 57% still had not.
- 50% individuals thought the revision day was at the right time, 44% thought it was too early and 6% did not have an opinion on the timing.

The sessions were rated as follows:



Maths and Equations

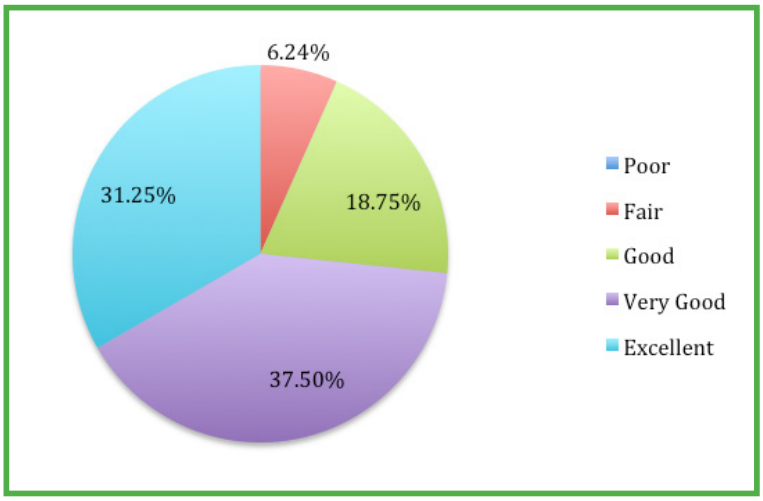
Not enough time to work through questions with some students feeling rushed. Explanations a bit quick.



Basic Principles of Ultrasound

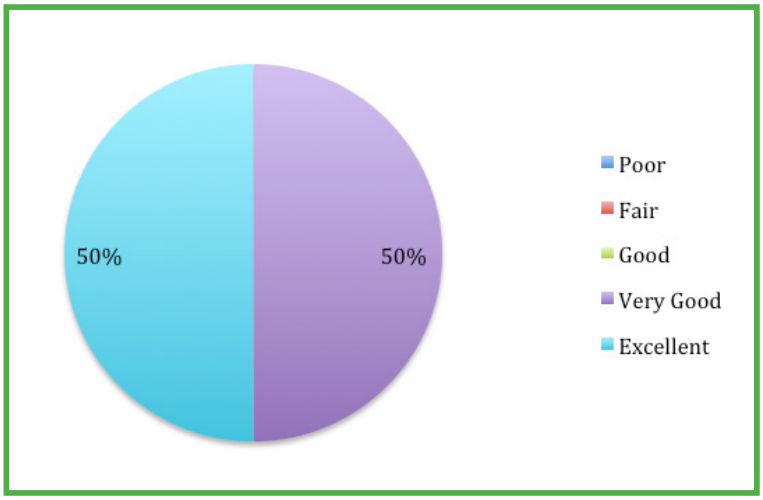
Students felt there was a good range of questions, some commented on unfair/ grey area questions, but generally on scoring most students thought this session was very good to excellent.

Principles of imaging



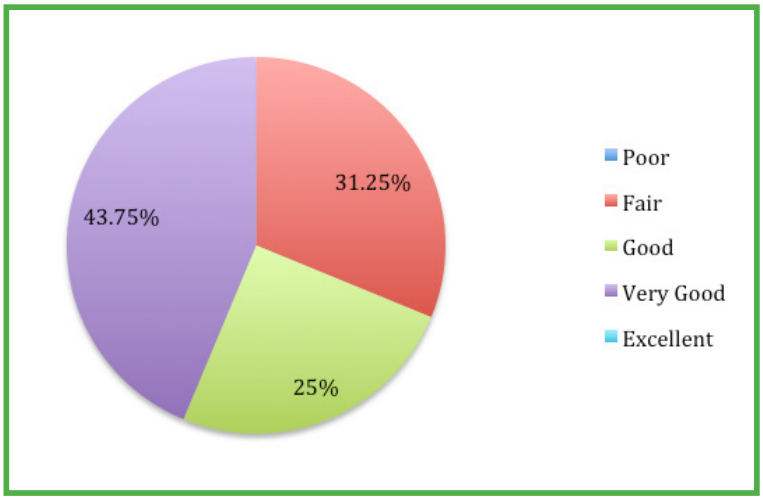
Explanations were good, with a good number of students rating this session very good to excellent.

Quality Assurance



The tutor did a good job in making the subject interesting with a good range of slides.

Haemodynamics

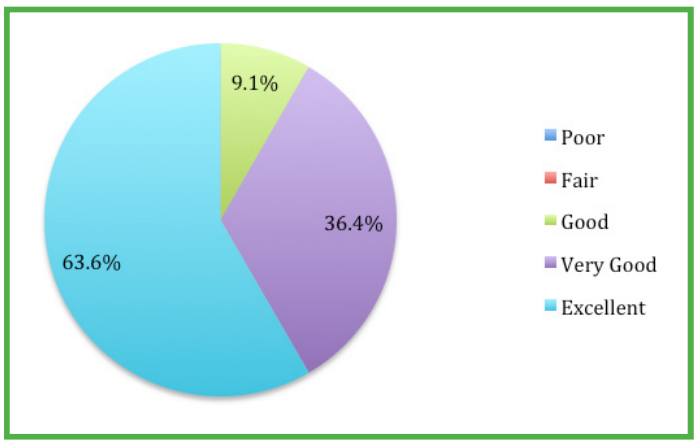


Some felt answers were subjective.

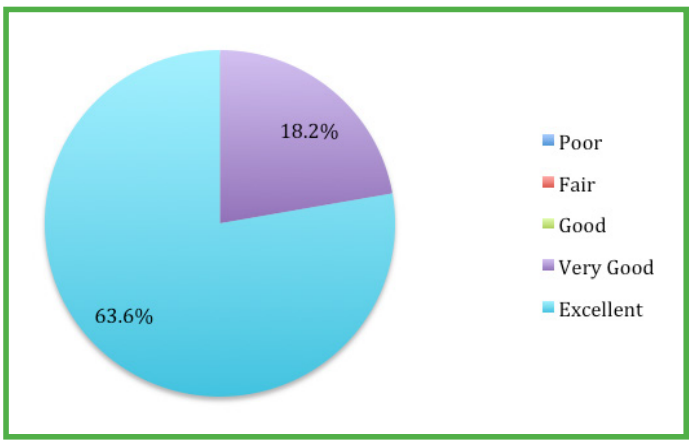
SVT TECHNOLOGY EXAM REVISION DAY 2017 FEEDBACK FORM SUMMARY

- 18 attendees and 11 gave feedback.
- 3 individuals had started their revision, 6 still had not and 3 did not respond.
- (91%) individuals thought the revision day was at the right time and one did not have an opinion on the timing.

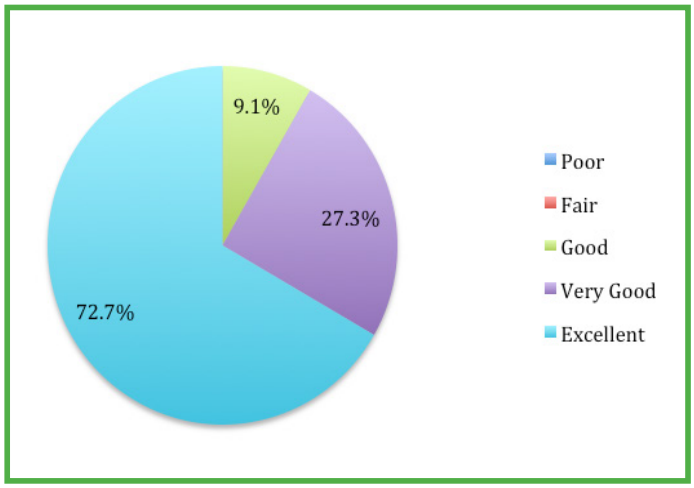
Anatomy



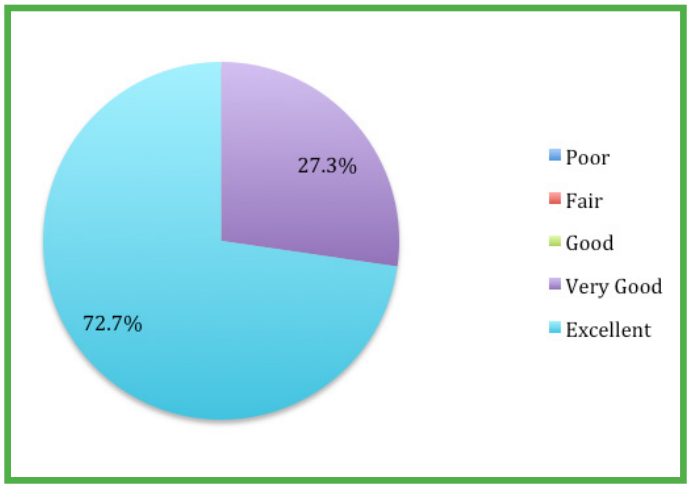
Lower limb arterial disease



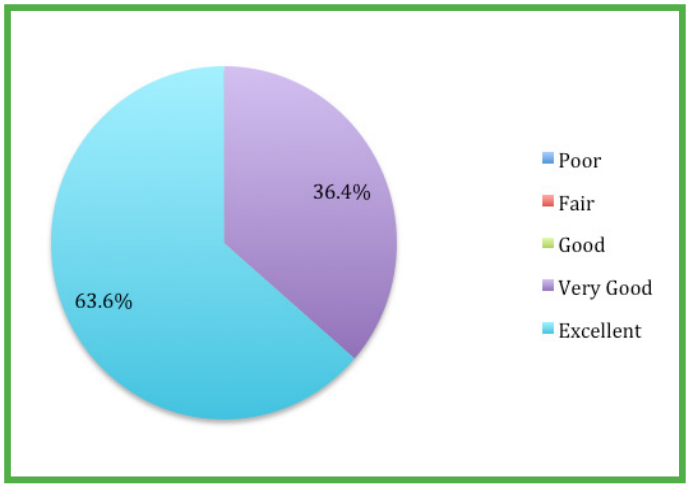
Upper limb, abdominal and global disease



Cerebral artery disease



Venous disease



Overall students were generally very happy with the study day.

Registration for the 2017 SVT theory exams is now Closed!

This year the theory exams will be run electronically through a number of Pearson Vue test centres in London, Belfast, Crawley, Edinburgh, Glasgow, Reading, Salford, Sutton Coldfield, Watford and Dublin (New Horizons test centre).

Important dates:
Register through Pearson Vue portal – 12th May – 3rd July
Exam window (both exams) – 1st June – 10th July
Exam results – mid August

All candidates who have registered and paid through the SVT will be sent detailed information on registration and sitting the exams within the next week.
If you have any queries please contact:
theoryexam@svtgbi.org.uk

For more information please see:

https://www.svtgbi.org.uk/theory-exam/svtgbi-theory-exam-2017

Abstracts and Research proposals for the 2017: Call for abstracts.
Abstract submission website will go live on 10 May.

Closing date is 12th July.

SVT Trainee Competition

1. What is Quality Assurance of ultrasound systems and why is it important?
2. There are several performance measures that can be tested on ultrasound transducers, explain the set-up and assessment for testing image uniformity and sensitivity.
3. Tissue mimicking test objects are designed to assess ultrasound system's performance. Briefly describe how you would assess for uniformity, spatial resolution, slice thickness and depth of penetration on a tissue mimicking test object.

Please send answers to Ming Yeung, member of the Education Committee, at Ming.Yeung@porthosp.nhs.uk The winner will receive a £25 book token and have their answers printed in the next newsletter. **Closing date: 4TH July 2017**

Online CPD

The CPD questions which usually feature in the newsletter will now be available for members on the SVT website.

When members first visit the site they will need to complete the registration form *Please note this is separate from your SVT website login so everyone will need to complete this registration step*

Results for the assessments are available immediately and CPD certificates are emailed straight to the address provided on registration.

Answers: Winter Newsletter 2017

Questions 1 – 6 are taken from the paper:

'Pitfall of vertebral artery insonation: Bidirectional flow without subclavian artery pathology'.

Susanne Johnsen, Stephan J Schreiber et al. Perspectives in Medicine (2012) 1, 449 – 451.

Questions 7 – 12 are taken from the paper:

'Analysis of Doppler blood flow waveforms of cerebral arteries and common abnormal findings'.

Shu-Yi Chen, Hung-Ti Hsu. Journal of Medical Ultrasound (2014) 22, 3 – 6.

1.
- Grade 1 – reduced systolic flow (systolic deceleration)
- Grade 2 – alternating flow
- Grade 3 – retrograde flow.

2. Right – 2.7mm Left – 3.3mm.
3. Small diameter of the right intracranial V4-VA segment close to the basilar confluence.
4.
- Bilateral incomplete fetal-type posterior cerebral artery
- A posterior inferior cerebellar (PICA) ending vertebral artery
- Hypoplasia of the ipsilateral vertebral artery.

5 Flow pattern/waveform of the brachial artery and diameter of the vertebral artery.

6
- Posterior communicating artery
- Middle cerebral artery
- Anterior cerebral artery
- Anterior communicating artery

7
- Tortuous/looping arteries
- Collateral arteries for occluded or stenotic artery
- Normal curvature of an artery

8 The period between the upstroke inflection point and peak systole.

9 Subtract EDV from PSV and divide by mean velocity = (PSV-EDV)/mean velocity

10 Greater than 0.7

11 Anemia or hyperthyroidism

12 Prolongation of the time to reach the highest blood flow velocity owing to a decreased flow acceleration rate (FAR).

Special Mention

Huge congratulations to Mike Davis of Coventry University Hospital who ran the London Marathon in aid of the Circulation Foundation which works to fund and promote research into the causes, treatment, and prevention of vascular disease. Whilst not his first marathon this was his first time running the London and he did it in an impressive 3 hours and 40 minutes and was the first of 8 runners to finish for the Circulation Foundation!

If you'd like to retrospectively sponsor Mike you can still do so at:
www.virginmoneygiving.com/mikes-running-london

Naavalah Ngwa-Ndifor
Education Committee Chair

Mike with his supporters; his mum, wife and sister.

CPD News: Questions

With the new digital theory exams rolling out this June we have had a massive overhaul of our question bank for both the Physics and Technology exams. Understandably this has created gaps in our question database. As you are probably all aware you can obtain CPD points for writing exam questions should they be deemed suitable; however, in the future we would like to make this process more focused. Please see below for a list of subject areas from the syllabus that we require questions in and use this as your guidance for submitting questions for CPD points. This list will be updated as requirements change

Physics:
- Elementary Principles of Ultrasound
- General Physics Principles
- Spectral Doppler Imaging
- Colour Doppler Imaging
- Venous Haemodynamics
- Tissue Mechanics/Pressure Transmission
- Plethysmography
- Output display standards and BMUS safety guidelines (2009) for peripheral vascular scanning

Vascular Technology:
- Gross Anatomy and Physiology: specifically intracranial circulation (circle of Willis) and upper and lower deep venous system
- Test Validation
- Central Arterial Disease
- Venous Disease
- Other Conditions
- Current NICE guidelines

Naavalah Ngwa-Ndifor
Education Committee Chair

Help those working towards accreditation

The debate as to whether we should reduce the number of scans required for different modalities occurs every year and it has been decided that we should uphold the rigorous criteria in place; however, we would like to help our trainees out wherever possible. We are aware that some trainees struggle to get their scan numbers in order to sit the practical exam. We would like to build a database of vascular labs that would be able to support those looking to increase their scan numbers.
At Barts Health Vascular Lab, over the years we have had several trainees come to us on honorary contracts with the aim of increasing their venous duplex scan numbers and to improve their skills. They usually attend with the basic knowledge and reasonable number of scans under their belt and the experience tends to be mutually beneficial.

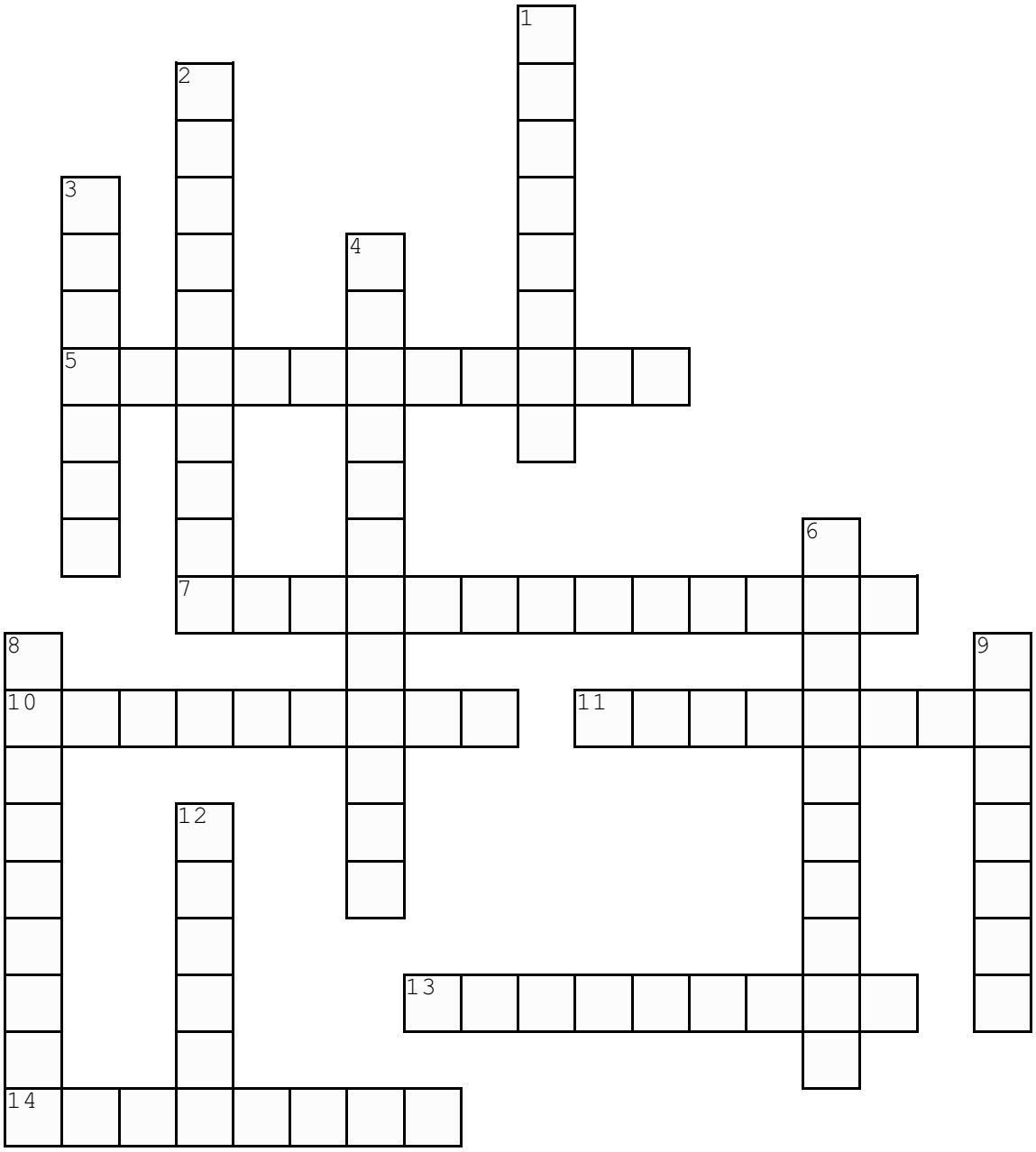
If your vascular lab is willing and able to provide this support to those working towards accreditation please contact Laura Haworth at Laura.Haworth@cmft.nhs.uk so that we can add you to our database.

Naavalah Ngwa-Ndifor
Education Committee Chair

Call for external examiners!

We are updating our list of external examiners.
If you are an Accredited vascular Scientist and interested in becoming an external examiner please contact Coleen Franco at Coleen.Franco@nuh.nhs.uk
Training will also be provided.

Arterial Crossword



Across

5. A connection between the deep plantar and lateral plantar arteries

7. This can be the cause of falsely elevated ABPI's

10. A feature of a carotid plaque that can make it at higher risk

11. Dying tissue due to inadequate blood flow.

13. A description of steady flow in blood vessels 14. An inflammatory disease of the large vessels

Down

1. A disease also known as Thromboangiitis obliterans

2. An increase in the amount of blood in an area, organ or tissue as a result of dilatation of the supplying arteries.

3. The name for a form of amputation which removes the forefoot and mid foot but preserves talus

4. Pain in the calf on exertion

6. Waveforms detected distal from a stenosis

8. The type of flow present when Re>2000

9. A word to describe enlarged vessels

12. A single layer of endothelial cells in the artery wall

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