



THE AUSTRALASIAN
COLLEGE OF
PHLEBOLOGY

TRAINING HANDBOOK 2010

TRAINING HANDBOOK 2010

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Disclaimer

This training handbook, its content, fees quoted and other information contained herein are intended as a guide and are valid for the training year indicated. Any changes to any aspect of the training for any future training years are at the discretion of the Board of Censors and ultimately the Board of Directors of the ACP. The College does not take any responsibility for misinterpretation of the contents of this Handbook and further clarification if required can be sought from the College office.

Introduction to The Australasian College of Phlebology

Phlebology has evolved as a distinct medical specialty in the past two decades. Most European countries have a strong tradition of excellence in the management of venous disease and phlebology is a well-established medical specialty in continental Europe. The Australasian College of Phlebology (ACP) was formed in 1999 having evolved from the Sclerotherapy Society of Australia (SSA) which was established in 1993. The College was established to further reinforce and expand phlebology education in Australia and New Zealand with plans to achieve recognised accreditation for practitioners in phlebology. The College has been inclusive of all practitioners with recognised skills in this field. Fellowship criteria have been solid and transparent.

The ACP is now a multidisciplinary independent body with members sub-specialising in medical, surgical or interventional aspects of phlebology. The College is committed to providing the Australasian public with the highest quality care in phlebology. The College is also committed to continuing education in phlebology and quality assurance programs. The College is dedicated to improve and increase awareness of phlebology as a distinct specialty in Australia and New Zealand and plays an active role in both the local and international scene. In recognition of its efforts, the College was formally admitted as a member of International Union of Phlebology in 2005.

The ACP has been developing one of the most advanced training programs in phlebology worldwide. The College can train and certify practitioners in performing a wide range of procedures such as endovenous laser therapy, ultrasound guided sclerotherapy and direct vision sclerotherapy. The College has been very active in the field of training. The Preceptorship program was established in mid-1994 and has proven to be very popular, now with five different programs to choose from. Formal training and certification in sclerotherapy was first established in 2002. Yearly examinations have been held since then. The College is re-defining the boundaries of phlebology as a medical specialty and aims to serve the community by improving the standards of care for patients with venous disease.

Overview of Phlebology Training

Phlebology training in Australia and New Zealand has undergone a gradual evolution. The Australasian College of Phlebology is committed to maintaining the highest standards of education and training in phlebology. Fellowship of the Australasian College of Phlebology is achieved following a period of supervised training and the successful completion of several examinations, both written and clinical, in all aspects of the principles and practice of Phlebology. Fundamental to this is the constant review of selection, curriculum and assessment strategies of the training program. As a result of this process of review, several major changes have been made to the structure of the program. The Phlebology training program is now divided into Basic and Advanced Training Programs. Minimum duration of Basic Phlebology Training is one year and Advanced Training period is three years full time (or up to six years part time). Advanced Trainees can sit the Fellowship Examination in the final year of training. This four-year program is discussed in detail in this handbook. The handbook presents a detailed curriculum and general regulations relating to training and examinations. Training requirements and examinations are determined by the Board of Censors. The following table summarises the new training program.

OVERVIEW OF PHLEBOLOGY TRAINING PROGRAM

	Basic Phlebology Training	Advanced Phlebology Training
Training Period	1 year	3 years
Examinations	Part I Written Part I Clinical	Part II Written Part II Clinical
Leads to	Sclerotherapy Certification	College Fellowship
Title awarded	Certified Sclerotherapist	F.A.C.P. Phlebologist

Structure of the Training Program

The training program requires a minimum of four years training. Trainees pass through two defined stages during the course of their training program. These stages are designed to facilitate the progressive and cumulative acquisition of knowledge and skills. Each stage must be completed satisfactorily before the trainee can move on to the next. Consistent with public hospital trainee allocations, the Training Year starts on the third week of January each year. Applicants are invited to an interview and upon meeting all the minimum criteria (see relevant sections on Basic and Advanced Training) and payment of all fees, are offered placements for their period of training.

1 BASIC TRAINING (YEAR 1)

Successful applicants are required to undergo 20 days of supervised training at an Accredited Training Centre (ATC) during this training year. The allocation to particular ATCs can be facilitated by the College office. Logbook requirements and at least a single attendance at the Basic Phlebology Training Course are the other requirements of Basic Training. Applicants are required to pass the Part I Phlebology Written Examination to be invited to sit for the Clinical Examination in that year. At the successful completion of the Basic Training and having met all other requirements, the candidate is awarded the title 'Certified Sclerotherapist'. At this stage, the practitioner can start work in private practice as a 'Certified Sclerotherapist'. This introductory year is designed to give the trainee a sound base from which to further develop their skills and possibly progress on to Advanced Training. To be eligible to proceed to Advanced Phlebology Training, trainees must have successfully completed the Basic Training Program.

2 ADVANCED TRAINING (YEARS 2, 3, 4)

The purpose of Advanced Training is to build on existing skills so that trainees acquire a broad knowledge of the theory and practice of phlebology and the basic sciences underpinning them. During Advanced Training, trainees acquire skills in the treatment of more complex phlebological conditions such as venous thromboembolism and learn to perform more advanced procedures such as ultrasound guided sclerotherapy and endovenous ablation. Trainees are eligible to apply to sit the Fellowship Examinations in the final year of training. Those who pass both the written and clinical Fellowship Examinations and satisfy all other requirements of the training program will be awarded Fellowship of the Australasian College of Phlebology and entitled to use the title 'Phlebologist'.

The Training Program and Membership of the ACP

Prerequisites

A number of prerequisites must be satisfied in order to be eligible to apply for a training program with the Australasian College of Phlebology.

Applicants must:

- possess a medical degree registrable in Australia or New Zealand
- have resident status in Australia or New Zealand
- have registration as a medical practitioner in Australia or New Zealand
- have completed a minimum of 2 years of postgraduate training (PGY1 + PGY2) in a teaching hospital or equivalent recognised by College by the time of commencing the training program. Certified evidence that the two years have been completed must be provided on commencement of training.

A person who has satisfied the above prerequisites is eligible to apply for admission to the College as an Associate Member. Application forms are available from the College website www.phlebology.com.au . Completed forms can be submitted electronically, by fax or by mail. Supporting documentation must be forwarded by mail. If accepted as an Associate Member, a Code of Conduct applies (Appendix 1). Associate Members who successfully complete the Basic Training program can apply for Ordinary Membership of ACP. Ordinary Members who successfully complete the Advanced Training Program of ACP can apply for election to Fellowship of the Australasian College of Phlebology.

How to Use This Book

This book is divided into 6 sections:

Section A deals with Basic Phlebology Training, the examination process and certification.

Section B deals with Advanced Phlebology Training, the examination process, certification and fellowship requirements of the Australasian College of Phlebology.

Section C includes training documentation and assessment of competence forms.

Section D includes Training Logbooks.

Section E includes Appendices.

Section F includes sample examination questions and past papers.

This book is intended to be used as a guide. The training program is subject to modification at the discretion of the Board of Censors. Any further modifications will be reflected in future editions.

Courses mentioned in this book run by other institutions than ACP are subject to modifications and change. ACP can only make recommendations and does not accept any responsibility regarding the contents, quality of delivery, or expenses involved.

Applicants should submit the completed forms and logbooks to sit the relevant examinations by the required date as announced by the College. Application forms for Part I and Part II examinations are available from the College office.



Section A

BASIC PHLEBOLOGY TRAINING

- **TRAINING PROGRAM**
- **EXAMINATION AND SCLEROTHERAPY CERTIFICATION**

BASIC PHLEBOLOGY TRAINING PROGRAM

A. GENERAL INFORMATION

Basic Phlebology Training Program will prepare the practitioner to perform direct vision sclerotherapy and will provide a basic understanding of phlebology. The Basic Phlebology Training Program will prepare the candidates for Part I Phlebology Examinations. Completion of the Basic Phlebology Training program certifies the practitioner by the Australasian College of Phlebology in performing direct vision sclerotherapy as a 'Certified Sclerotherapist'.

Please note that the Sclerotherapy Certificate does not provide certification in ultrasound guided sclerotherapy. This is covered under the advanced curriculum. Basic Phlebology Training Program does not provide training in advanced procedures but will provide a strong foundation for those who wish to further their education in phlebology. Candidates who successfully complete the Basic Phlebology Training Program and wish to continue their studies in phlebology and gain Fellowship of the ACP need to meet the Advanced Phlebology Training requirements.

Fellows of the College sub-specialise in Medical, Surgical or Interventional aspects of phlebology. Interventional Phlebologists specialise in ultrasound guided procedures such as ultrasound guided sclerotherapy, endovenous laser therapy and radiofrequency ablation. For further information about Fellowship of the college and Advanced Phlebology Training, please refer to Section B of this manual. The title 'Phlebologist' is reserved only for the Fellows of the College and should not be used until Fellowship is achieved.

To be admitted to the Basic Phlebology Training Program, the candidate must be a resident of Australia or New Zealand, possess a medical degree and current registration as a medical practitioner in Australia or New Zealand and at least two years acceptable training in a teaching hospital (post-graduate years 1 and 2) or equivalent as recognised by the ACP.

B. OVERVIEW OF BASIC PHLEBOLOGY TRAINING

Duration of the Basic Phlebology Training Program is one year. Consistent with public hospital trainee allocations, the Training Year starts on the third week of January of each year. A Pass in the Written Examination is a prerequisite for the Clinical Examination. The Clinical Examination can be sat in the same year or in the subsequent years. A Pass in the Written Examination is valid for 3 years. During the training year, adequate experience needs to be accumulated to prepare the candidate for the Part I Clinical Examination. Logbook requirements are to be met. Trainees are required to attend the Basic Phlebology Certificate course. This course is usually held in conjunction with College's Annual Scientific Meeting. Trainees are required to complete 20 days of supervised work during their training year. The supervision must be provided by a College Fellow. The College office will assist in arranging this attachment to an Accredited Training Centre.

ALL BASIC PHLEBOLOGY REQUIREMENTS ARE TO BE MET BEFORE THE CERTIFICATE OF SCLEROTHERAPY CAN BE AWARDED. Candidates who do not meet all training requirements by the end of the Training Year will not graduate in the following year's ceremony. Those requiring extension to meet all training requirements need to contact the College office by 31st December of the Training Year. Extension will be granted at the discretion of the Board of Censors and **FULL TRAINING FEES FOR ANY ADDITIONAL YEAR OF TRAINING APPLY.**

In summary, the requirements for successful completion of the Basic Phlebology Training are:

1. Basic Phlebology Certificate Course: at least one attendance
2. 20 days of supervised clinical training
3. Meeting the Logbook requirements
4. A Pass in the Part I Phlebology Written Examination
5. A Pass in the Part I Phlebology Clinical Examination.

C. BASIC PHLEBOLOGY TRAINING REQUIREMENTS

The following are the minimum requirements of the Basic Training Program and Certification in Sclerotherapy will NOT be awarded without evidence of successful completion of ALL the following requirements.

1. Basic Phlebology Certificate Course

This course is held on an annual basis, usually in conjunction with the College's annual conference. It covers a wide range of topics including patient assessment, epidemiology of varicose veins, anatomy, epidemiology, chronic venous insufficiency pathophysiology, telangiectatic conditions, thrombophilia, sclerosing agents, techniques and complications of sclerotherapy, vascular laser therapy, treatment overview, and medicolegal issues.

The course aims to prepare candidates for the Phlebology Part I Examination. The lectures are given by experts in the field and course material is provided. Course material should be used as a guide only and is not examinable. Controversial issues, personal preferences and opinions and anecdotal experience expressed are not examinable.

At least one attendance at this course is required. The Course will prepare the candidates for both theoretical and practical aspects of the Part I Examination. Attendance at this course for all current Basic trainees of the College is included in the Basic Training fee.

2. 20 days of Supervised Clinical Training

Each trainee must complete 20 days of supervised clinical training under the supervision of an ACP Fellow. This training is done at an allocated ATC and the College office will facilitate this process. It is important to note that due to limited positions available it is not always possible to arrange the dates to suit the trainee and the suitable training dates are determined by the relevant ATCs. The 20 days of supervised training may be completed in a block or spread over a number of weeks depending on what is feasible for the relevant ATC.

The trainee will be paid minimum wages based on the relevant State's Registrar Awards rates or higher as offered by the ATC. The duties of the trainee will be to assist the supervisor in managing patients, taking history, doing a physical examination, performing a Doppler examination, assisting with and performing direct vision sclerotherapy and other duties allocated by the supervisor.

For this attachment, it is the responsibility of the trainee to make sure the following documentations are available to be presented to the ATC and a copy to be provided to the College office:

1. Registration at the relevant State where the ATC is located.
2. Provider number for the relevant ATC for billing purposes.
3. Medical indemnity to work at the ATC.

The trainee is responsible for all the fees required to obtain these documentations.

3. Logbook Requirements

(a) 40 cases of CW-Doppler examination

- Logbooks to be completed.
- 30 venous incompetence and 10 ABI measurements.
- Supervisor's signature required.

(b) 100 direct vision sclerotherapy procedures

- Logbooks to be completed.
- At least 20 cases to be done under direct supervision and at least 80 cases unsupervised.
- Supervisor's signature required.

4. A Pass in the Part I Written Examination

A Pass in the Written Examination is required before the candidate is invited to sit the Clinical Examination. A pass in the Written Examination is valid for 3 years following which the candidate will have to re-sit and pass the Written Examination.

5. A Pass in the Part 1 Clinical Examination

D. BASIC PHLEBOLOGY TRAINING DOCUMENTATION OF TRAINING

The following should be submitted with the application to sit the Part I Clinical Examination. Attendance Records and Assessment of Competence Form are found in Section D of this handbook. Logbooks are found in Section E of this handbook.

1. Record of Educational Activities

- a. Basic Phlebology Certificate Course
- b. 20 days of supervised clinical training

2. Assessment of Competence Form

All sections must be signed by appropriate supervisors.

3. Logbooks

Candidates are required to keep log books documenting:

1. 40 cases of CW-Doppler examinations
2. 100 cases of direct vision sclerotherapy performed in the training year;
20 cases to be done under direct supervision.

PHLEBOLOGY PART I EXAMINATIONS

A. GENERAL INFORMATION

Phlebology Part I Examination consists of a Written and a Clinical Examination. A pass in the Written Examination is required before the candidate is invited to sit the Clinical Examination.

B. PHLEBOLOGY PART I EXAMINATIONS

WRITTEN EXAMINATION

The Written Examination tests the theoretical knowledge of the candidate in basic phlebology with an emphasis on sclerotherapy. The Written Examination is an MCQ paper. This paper consists of 100 multiple choice questions (5 parts to each question - total of 500 questions) over a 2-hour period in true/false format. There are no negative markings in the multiple choice question paper. This examination will cover a range of topics including venous anatomy, physiology and pathology, Doppler principles, CW-Doppler, duplex examination, telangiectatic conditions, principles of sclerotherapy, sclerosing agents and their mechanism of action, complications of sclerotherapy, basic thrombophilia screening, physical principles of compression and compression therapy.

CLINICAL EXAMINATIONS

The Clinical Examinations are conducted approximately 4-6 weeks after the Written Examination. Only candidates who have successfully passed the Written Examination are invited to sit for the Clinical Examinations. The Clinical Examinations consist of two parts:

Objective Structured Clinical Examinations (OSCEs)

This includes examinations in diagnostic procedures and sclerotherapy techniques. These examinations follow the OSCE format and are supervised by the Chief Censor together with members of the Board of Censors and invited examiners from the particular State in which the examination is being held. Each station is manned by an examiner. A photograph, a model or a device with a written question is presented. The examiner will read the question

to the candidate and the candidate is expected to answer the question. As this is an OSCE, no further elaboration or explanation regarding the question will be provided by the examiner. There are usually 12 stations of 5 minutes duration each. The bell will ring and the candidate will move to the next station. There are no patients in this examination.

Short Cases

This part encompasses a number of cases which will be run along modified OSCE lines. Two examiners will be present per station. The examination is conducted on real patients. Candidates are expected to do a general examination, perform a CW-Doppler examination, interpret any duplex findings and blood tests, be able to formulate the patient's problem, suggest further investigations and a plan of management. The candidate must demonstrate competence in performing a CW-Doppler examination. There are usually 2 or 3 short cases.

C. SPECIAL CONSIDERATIONS

In exceptional circumstances, the Board of Censors may modify the form of the examination or the provisions of eligibility. Candidates requesting modifications must lodge an application with the Honorary Secretary at least **six months** before the time fixed for the examination.

D. PASSING THE EXAMINATIONS

It should be noted that to achieve an overall pass in this examination, the candidate should satisfactorily complete both the Written and the Clinical Examinations. A pass in the Written Examination is required for the candidates to be invited to sit for the Clinical Examination. A pass in the Written Examination is valid for three years, during which time the candidate can sit for the Clinical Examination without having to repeat the Written Examination.

E. CERTIFICATION

Successful candidates in both Phlebology Part I Written and Clinical Examinations who have met the other Basic Phlebology Minimum Training Requirements will be awarded Sclerotherapy Certification and will be able to apply for Ordinary Membership of the Australasian College of Phlebology. A 'Certified Sclerotherapist' is certified by the ACP to perform direct vision sclerotherapy. It does not qualify the candidate in performing

ultrasound guided sclerotherapy or other advanced venous procedures. For accreditation in performing advanced procedures, further training as prescribed by ACP and a pass in Part II Examination is required. The Sclerotherapy Certificate is awarded to the successful candidates in a special ceremony as part of the Annual Scientific Meeting (ASM) of the College.

F. PHLEBOLOGY PART I SYLLABUS

- Anatomy and physiology of the venous system
- Venous hypertension and its complications
- Pathophysiology of varicose veins and telangiectasias
- Diagnostic techniques
- CW-Doppler competency
- Principles of duplex ultrasound
- Thrombophilia and hypercoagulable states
- Diseases with telangiectatic manifestations
- Indications and contra-indications of sclerotherapy
- Sclerosing agents and their mechanism of action
- Pharmacokinetics and pharmacodynamics of sclerosing agents
- Adverse effects and complications of sclerotherapy
- Techniques of sclerotherapy
- Indications, contraindications, techniques of ultrasound guided sclerotherapy
- Indications, contraindications, techniques of endovenous laser ablation
- Indications, contraindications, techniques of venous surgery
- Principles of compression therapy
- Medicolegal and ethical aspects of sclerotherapy
- Infection control

G. READING LIST

a) Texts

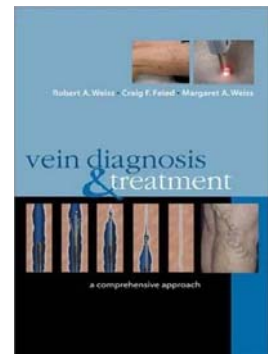
For all books listed, the latest edition is recommended. Any textbook which becomes available after 31 December of the year preceding the examination will not be used for questions. Outdated, erroneous or controversial information in recommended textbooks will be excluded and not examined.

Vein Diagnosis and Treatment: A Comprehensive Approach

Weiss R, Feied C, Weiss M.

Mc Graw-Hill

ISBN 0-07-069201-7

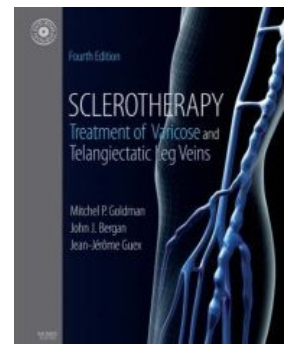


Sclerotherapy: Treatment of Varicose and Telangiectatic Veins

Goldman MP, Bergan JJ, Guex JJ.

Mosby Elsevier

ISBN 0-323-04258-9

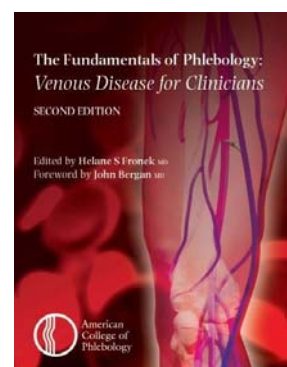


The Fundamentals of Phlebology: Venous Disease for Clinicians

Fronek, Helene

American College of Phlebology

ISBN 13 978-1-85315-774-5



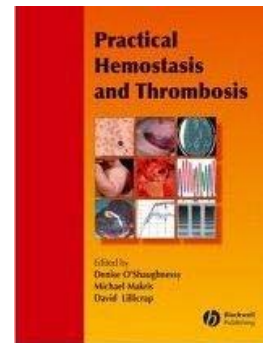
Practical Hemostasis and Thrombosis

O'Shaughnessy D, Makris M, Lillicrap D.

Blackwell Publishing.

ISBN 13: 978-1-4051-3030-1 (alk. Paper)

ISBN 10: 1-4051-3030-X (alk. Paper)



b) Journals

Relevant articles for the two years up to 31 December of the year prior to the examination should be known in detail.

- *Australian & New Zealand Journal of Phlebology*, Australasian College of Phlebology
- *Phlebology*, Royal Society of Medicine.

c) Other

Product information sheets for the most commonly used sclerosants.

H. FEES

All fees are governed by Regulations of the College Board and are not refundable. Notice of intention to hold the examinations will be advertised, as the Board deems appropriate. A pass in the Written Exam is valid for 3 years and full fee applies if any part of this examination needs to be repeated.

2010 BASIC TRAINING FEES	
Training Fee	\$6,600.00
Part I Written Examination Fee	\$650.00
Part I Clinical Examination Fee	\$1000.00
Note: All Fees are inclusive of GST.	

I. EXAMINATION DATES

A pass in the Written Examination is valid for three years, during which time the candidate can sit for the Clinical Examination without having to repeat the Written Examination. The date of the examination is announced by the Board of Censors and is available on the College website www.phlebology.com.au. Deadline for applications to sit this examination is 3 months prior to the date of examination. Application forms are available from the College website.



Section B

ADVANCED PHLEBOLOGY TRAINING

- **ACP FELLOWSHIP REQUIREMENTS**
- **ADVANCED PHLEBOLOGY TRAINING**
- **EXAMINATION AND CERTIFICATION**

AUSTRALASIAN COLLEGE OF PHLEBOLOGY FELLOWSHIP REQUIREMENTS

Before being considered for Fellowship of the ACP, trainees must have satisfied all of the prescribed requirements of the College's training program and passed all the College's assessments as outlined in the Training Program Handbook. Fellowship of the College certifies professional competence in phlebology according to the College's prescribed standards. The Fellowship requirements are:

- a) Possession of a medical degree and registration as a medical practitioner in Australia or New Zealand.
- b) At least two years acceptable training in a teaching hospital (post-graduate year 1 and 2) or equivalent.
- c) Successful completion of the Basic Phlebology Training program.
- d) Successful completion of the Advanced Phlebology Training program.
- e) Election to College.
- f) Payment of annual subscription fee.

In exceptional circumstances, some of the above requirements may be deleted at the discretion of the Board of Censors. The title 'Phlebologist' is reserved only for the Fellows of the College and should not be used by the trainees or holders of Sclerotherapy Certificate until Fellowship is achieved. Those successful candidates who wish to continue their studies in phlebology and gain Fellowship of the ACP need to meet the Advanced Phlebology Training requirements. Fellows of the College sub-specialise in Medical, Surgical or Interventional aspects of phlebology. Interventional Phlebologists specialise in ultrasound guided procedures such as ultrasound guided sclerotherapy and endovenous laser ablation therapy.

Venous surgery in Australia and New Zealand is performed primarily by surgeons, Fellows of the Royal Australasian College of Surgeons (FRACS) or equivalent as recognised by the Australian Medical Council. Advanced Training in Phlebology does not qualify the practitioner to perform venous or vascular surgery.

ADVANCED PHLEBOLOGY TRAINING PROGRAM

A. GENERAL OVERVIEW

Advanced Phlebology Training involves satisfactory completion of at least 3 years of approved vocational training in phlebology which includes formal ultrasound training. This program is comprised of supervised attachments at ACP Accredited Training Centres (ATC) where supervision is provided by ACP fellows. In keeping with the guidelines set by the Australian Medical Council, the trainees are required to receive supervised training in all aspects of phlebology. The number of training posts is limited and competition for these positions is considerable. Practical learning at these ATCs is complimented by structured educational activities such as Vein Schools, Journal Clubs and Clinical Meetings organised by relevant State Faculties as well as the Advanced Training Course held in conjunction with the College's ASM. If the candidate's primary ATC is unable to provide the trainee with the range of training requirements in terms of disease variety or exposure to procedures, then the Chief supervisor will arrange rotations to other centres. For instance, not all centres may be running leg ulcer clinics or perform advanced interventional procedures. Under these circumstances, a rotation will be arranged to centres where these training requirements can be met. This ensures adequate exposure to all aspects of phlebology and minimises the risk of missing out on clinical variety. Additional services such as Ultrasound Medicine, Interventional Phlebology & Radiology and Lymphology supplement the core training and are encouraged.

Trainees usually apply to ATCs in their relevant States however in case of remote locations or trainees from cities where there are no ATCs, the trainees can apply to ATCs in other States (see Remote Training below).

An ACP Mentor, who is an approved fellow of the ACP, must also be nominated by the trainee and maintained for the duration of the program. An orientation program is provided for all successful candidates early in the year.

Unsupervised work during the Advanced Training period must be dedicated to phlebology and the Chief Supervisor will have to verify this by providing a roster.

B. SELECTION PROCESS of ADVANCED TRAINEES

The trainee selection process has been adopted from successful models used by peer medical colleges and provides the ACP and its trainees with a degree of choice whilst maintaining the resource constraints of the ACP. The selection process involves an application and an interview. Prospective trainees are required to complete the ACP advanced training application form and must agree to the program fees. A Curriculum Vitae including details of previous experience, research, publications, presentations and referees will carry the greatest weight during the selection process. A structured interview completes the process. The interview dates may be found on the website. The selection process is transparent and involves the following steps:

Step 1- Apply to a Recognised ATC for a Training Position

There are only limited numbers of training positions available in Australia and New Zealand. Applicants must have successfully completed the Basic Phlebology Training Program. Applicants are required to directly apply for Advanced Training positions available at recognised ATCs, a list of which is available from the College office. Given the private practice nature of ATCs, the College office can only assist with this process but it is at the discretion of the individual ATC to accept the applicant as a prospective trainee.

Step 2- Send in the Application Form and CV

Applicants who have secured a position are required to complete the ACP advanced training application form and must agree to the program fees. They are also requested to send in a Curriculum Vitae. A CV including details of previous experience, research, publications, presentations and referees will carry the greatest weight during the selection process.

Step 3- ATC to apply for an individualised Accredited Training Program for the Applicant

The relevant ATC will then need to submit an individualised Training Program for that applicant to the Board of Censors. This Training Program must be approved by the Board of Censors of the College and any deficiencies will be communicated to the relevant ATC (see below- Accreditation of an Advanced Training Program).

Step 4- Interviews

Upon approval of the proposed individualised Training Program, the applicants are invited to a structured interview to be conducted by the Selection Committee. The interview dates may be found on the website.

Step 5- Payment of Fees and Code of Conduct

On appointment to an Advanced Training Program and payment of the trainee levy and other fees, the successful candidate becomes an advanced trainee of ACP and a Code of Conduct then applies (Appendix 1). The selection process is transparent to meet the standards set by the relevant Medical Councils of Australia and New Zealand.

C. ACCREDITATION OF AN ADVANCED TRAINING PROGRAM

An individual Training Program is established for each individual trainee by the relevant ATCs and is submitted to the Board of Censors for approval. Training Programs that do not meet the minimum training requirements are declined accreditation. The definitions of 'supervision', supervised training hours and number of clinics attended by the trainee is outlined below and their interpretation is at the discretion of the Board of Censors. When adequate hours of supervised training is not provided by the ATC, that Program may be approved only as *Part Time* training provided other training requirements have been met. FULL FEES APPLY FOR ANY EXTRA YEAR OF TRAINING AND FOR PART TIME TRAINING. All training must be prospectively approved by the Board of Censors on an annual basis. The Board of Censors can withdraw the accreditation of a training program at any stage if the minimum training requirements are not met. The ATCs can lose this accreditation if they do not comply with the requirements set by the Board of Censors.

ADVANCED PHLEBOLOGY TRAINING

A. FORMAL TRAINING in VENOUS ULTRASOUND

Ultrasound training is a compulsory part of Advanced Phlebology Training. Formal ultrasound training is achieved by successful completion of a formal course of instruction, such as Certificate/Diploma of Ultrasound in Phlebology course offered by the University of Sydney.

Certification of Ultrasound in Phlebology - Graduate Certificate of Health Sciences (Medical Sonography)

The ACP in conjunction with the School of Medical Radiation Sciences (MRS), University of Sydney, has developed a structured course for training phlebologists in ultrasound. The course duration is 1 year, off-campus with intensive on-campus blocks. The course will cover Ultrasound Physics, Vascular Sonography (including arterial disease), Clinical Practice, and Ultrasound in Phlebology. Medical practitioners can apply for exemptions for a number of subjects as determined by the University of Sydney.

Advanced trainees of the College are required to complete this course, or equivalent, during their period of Advanced Training. This course started for the first time in 2005 and is a compulsory component of Advanced Phlebology Training.

Further information can be obtained from:

Vascular Co-ordinator
Discipline of Medical Radiation Sciences
Faculty of Health Sciences
The University of Sydney,
P O Box 170 Lidcombe NSW 1825
AUSTRALIA

Tel: +612 9351 9516

Fax: +612 9351 9146

Email: jill.clarke@usyd.edu.au

B. ADVANCED PHLEBOLOGY TRAINING COURSE

This two-day course is held in conjunction with the College's Annual Scientific Meeting. It covers a wide range of topics including Pharmacology of Phlebology, Advanced Anatomy for Phlebology, Basics of Ultrasound Physics, Basics of Laser Physics, Manifestations of Venous Insufficiency, Haemostasis and Coagulation, Venous Thromboembolism, Vascular Anomalies, Lymphoedema, Ultrasound Guided Sclerotherapy, Endovenous Laser Ablation and principles of venous surgery.

The course aims to prepare candidates for the Phlebology Part II Examination. The lectures are given by experts in the field and course material is provided. Course material should be used as a guide only and is not examinable. Controversial issues, personal preferences and opinions and anecdotal experience is not examinable.

At least one attendance at this course is required before the candidate is invited to sit the Part II Clinical Examination. The Course will prepare the candidates for both theoretical and practical aspects of the Part II Examination. Attendance for current advanced trainees of the College is included in the training fee.

C. CLINICAL TRAINING REQUIREMENTS

Advanced Phlebology training period is 3 years but can be conducted part-time across up to six years. The Training Year is 12 months and starts in the third week of January each year. Phlebologists who are College Fellows provide teaching, supervision and ongoing guidance and feedback on the clinical and professional performance of each trainee. Specialists in related fields may provide teaching on various topics such as interventional procedures, diagnostic ultrasound, ulcer management, wound care, thrombosis and haemostasis.

Supervised Clinical Training

Each trainee must complete the minimum requirements of supervised clinical training detailed below under the supervision of a Chief Supervisor who must be an ACP Fellow.

The supervised training days and the trainee's working roster are determined by the ATC. The trainee will be paid minimum wages based on the relevant State's Registrar Awards rates or higher as offered by the relevant ATC. The duties of the trainee will be to assist the supervisor in all aspects of patient management including taking history, doing a physical examination, performing a Doppler examination, performing duplex examinations, assisting with and performing direct vision sclerotherapy, ultrasound guided sclerotherapy, endovenous procedures, and other duties allocated by the supervisor.

Trainees must spend a minimum of 36 months in an accredited Advanced Training Program. A minimum period of 44 weeks of actual training per year is essential. Any leave taken during the training period will need to be made up at the completion of training in an accredited program. If a period of leave in excess of three months is taken before the deadline for application to sit the Fellowship Examination then the Fellowship Examination cannot be sat in the fourth year of training. FULL TRAINING FEES APPLY FOR ANY EXTRA YEAR OF TRAINEE REMAINING IN THE TRAINING PROGRAM.

Unsupervised work must also be dedicated to phlebology and the Chief Supervisor will have to verify this by providing a roster.

Advanced Training Minimum Supervised Clinical Requirements

Trainees must complete the following minimum requirements of supervised clinical training under the supervision of a Chief Supervisor who must be an ACP Fellow.

- 1. 4 supervised phlebology clinics per week**
 - a. Clinics to be supervised by a College fellow.
 - b. The candidate is directly responsible for patient care.

- 2. 1 supervised diagnostic ultrasound clinic per week**
 - a. Scanning to be supervised by a vascular sonographers or a College fellow with accreditation in diagnostic imaging or a formal qualification in vascular ultrasound.
 - b. The trainee to personally perform the scanning and is responsible for the generation of the worksheets and reports. Reports need to be checked for accuracy by the supervisor.

- 3. 1 supervised interventional phlebology session per week**
 - a. The trainee to personally perform ultrasound guided sclerotherapy, endovenous laser therapy and other interventional procedures under supervision.

Definition of a Clinic

A 'clinic' is defined as a session of a minimum 2 and maximum 5 hours where the trainee and the supervisor work together to manage the same group of patients. The supervisor must be physically present at the supervised clinic.

Mixed Clinics

Some practitioners do not separate their procedures and assessments from their consultations and all of this is done in the same session. For example the patients in that session may present for consultations, follow-up, scans and procedures. Such mixed sessions will count as ONE supervised clinic. For example if the mixed sessions run from 8 am till 1 pm (5 hours) and then 2 pm till 6pm (4 hours), this will count as 2 clinics only. Mixed clinics only count as **General Phlebology** clinics and DO NOT substitute for dedicated interventional or ultrasound clinics.

Hours Required for Supervised Training

Altogether 6 supervised clinics need to be attended by the trainee per week. This can be achieved in a minimum of 2 full supervised working days (minimum 16 hours) per week. The rest of the working week needs to be dedicated to phlebology but can be un-supervised.

Total Number of Supervised Clinics Required

The Advanced Training Program can be completed in a minimum of 36 months in an accredited Advanced Training Program. A training year is defined as 44 weeks of training to include 4 weeks of Annual leave and 4 weeks of Study and Conference leave. Hence to achieve the minimum supervised training requirements, the trainees must achieve the following:

- **General Phlebology Clinics:** 4 clinics per week, ie 176 clinics per training year and a total of **528 clinics** for the total duration of Advanced Training Program.
- **Diagnostic Ultrasound:** 1 clinic per week, ie 44 clinics per year, or a total of **132 clinics** for the total duration of Advanced Training program
- **Interventional Phlebology:** 1 clinic per week, ie 44 clinics per year, or a total of **132 clinics** for the total duration of Advanced Training program

The total number of supervised clinics required for the duration of Advanced Training must be achieved otherwise the trainee will need to complete more years of training to make up the total number required. Full Training Fees apply for any extra year of training.

Leave

Any leave taken during the training period will need to be made up at the completion of training in an accredited program. Full Training Fees apply for any extra year of training.

Remote Training

Trainees from States where there is no accredited training program can apply to other States. Successful candidates will be under the supervision of a Chief Supervisor with a primary attachment at an ATC. The total number of supervised clinics attended by these trainees will have to be as prescribed above. Each individual Training Program must comply with the general requirements and be approved by the Board of Censors. Unsupervised work must be dedicated to phlebology and the Chief Supervisor will have to verify this by providing a roster.

Unsupervised Training

Unsupervised working days during the period of Advanced Training will have to be dedicated to Phlebology. Work in other areas of medicine is not acceptable. The weekly roster of all Advanced trainees is to be submitted to the Board of Censors on an annual basis.

Medical Registration, Indemnity and Billing

It is the responsibility of the trainee to make sure the following documentations are available to be presented to the ATC and a copy to be provided to the College office:

1. Registration at the relevant State where the ATC is located.
2. Provider number for the relevant ATC for billing purposes.
3. Medical indemnity to work at the ATC.

The trainee is responsible for all the fees required to obtain these documentations.

D. MINIMUM LOGBOOK REQUIREMENTS

The following are the minimum logbook requirements that need to be met during this period. Assessment of Competence Form in all these areas is to be signed by the appropriate supervisor (see section D). **Application for admission to the Fellowship of the Australasian College of Phlebology will not be accepted without evidence of compliance with ALL the following requirements.** The minimum requirements for normal training programs in Australia and New Zealand are in summary:

- 1. 40 cases of CW-Doppler examination**
 - a. Logbooks to be completed.
 - b. 30 venous incompetence and 10 ABI measurements
 - c. Supervisor's signature required (can be an ACP phlebologist, vascular surgeon, or other specialist).
- 2. 100 cases of duplex ultrasound examination**
 - a. Logbooks to be completed.
 - b. Both superficial and deep venous systems.
 - c. Include both upper and lower limbs.
 - d. Include both incompetence and thrombotic studies.
 - e. Supervisor's signature required (can be a vascular sonographer, or Phlebologist with formal training in venous ultrasound).
- 3. 100 ultrasound guided sclerotherapy procedures**
 - a. Logbooks to be completed.
 - b. Liquid and/or foam sclerosant (either assisted or non-assisted).
 - c. 20 cases to be done under direct supervision.
 - d. Supervisor's signature required (must be a phlebologist, Fellow Australasian College of Phlebology, accredited in UGS).
- 4. 20 endovenous laser ablation procedures**
 - a. Logbooks to be completed.
 - b. 10 cases to be done under direct supervision
 - c. Supervisor's signature required (must be a phlebologist, Fellow Australasian College of Phlebology, accredited in EVLA).

5. **20 management cases of chronic venous disease**
 - a. Logbooks to be completed.
 - b. Management of patients with CEAP stages C4-C6 is accepted.
 - c. Supervisor's signature required (The supervisor can be a phlebologist, or another specialist in a relevant specialty with an active interest in management of leg ulcers).
6. **20 vascular laser therapy procedures**
 - a. Logbooks to be completed.
 - b. 10 cases to be done under direct supervision.
 - c. Supervisor's signature required (can be a phlebologist, dermatologist, or another specialist with formal training in vascular laser therapy).
7. **Observation or assistance in 5 cases of venous surgery**
 - a. Logbooks to be completed.
 - b. Superficial veins or deep veins.
 - c. Ambulatory phlebectomy is accepted.
 - d. Supervisor's signature required (can be a surgical phlebologist, venous or vascular surgeon).
8. **At least one presentation at the Annual Scientific Meeting of ACP**
 - a. The subject of this presentation can overlap with that of the publication requirement.
 - b. A poster presentation is acceptable.
 - c. Must be done during the period of Advanced Phlebology Training.
9. **Two publications in the ANZ Journal of Phlebology/Phlebology (UK)**
 - a. These may include research articles or case presentations.
 - b. As all articles are peer reviewed, it is recommended that 6 months should be allowed for acceptance of publication.
 - c. Those candidates who do not have their publications (or at least a letter of acceptance from the editor) by the closing date of applications for the Part II examination will not be eligible to sit for the Part II examination.
 - d. It is a requirement for papers to be accepted as valid that the candidate to be the primary author.
 - e. Application for admission to the Part II examination will not be accepted without evidence of compliance with publication requirements.

10. Laser Safety Course

- a. At least one attendance required.
- b. Copy of Certificate of Attendance to be submitted.
- c. Must be done during the period of Advanced Phlebology Training.

11. Advanced Phlebology Course

At least one attendance during the period of Advanced Phlebology Training.

12. Pass in Level 5 (or higher) Advanced Cardiac Life Support (ACLS)

- a. Copy of Certification to be submitted.
- b. Must be done during the period of Advanced Phlebology Training.

13. Annual Scientific Meetings

- a. Trainees who commence from 2009 onwards are required to attend at least two Annual Scientific Meetings or equivalent in their first three years of training.
- b. Trainees are expected to attend all scientific sessions of the Annual Scientific Meeting of the College each year whenever possible.

E. DOCUMENTATION OF TRAINING

The following should be submitted with the application to sit the Part II examination. Relevant forms are found in Section D of this handbook. Logbooks are found in Section E of this handbook. **Application for admission to the Part II examination will not be accepted without presentation of the following documents.**

1. Record of Supervised Clinics and Educational Activities

Record of publications and presentations is to be entered in the appropriate form (See section D). 2 publications in ANZ Journal of Phlebology and at least 1 presentation in an Annual Scientific Conference of the Australasian College of Phlebology is required. Copy of certification in Advanced Cardiac Life Support (level 5 or higher) is to be attached. Copy of attendance at a recognised Laser Safety Course during the period of training is to be attached.

2. Assessment of Competence Form

All sections to be signed by appropriate supervisors.

3. Log Books

Candidates are required to keep log books documenting procedures in

1. 40 cases of CW-Doppler examinations
2. Duplex Ultrasound Venous Examination- 100 examinations
3. Ultrasound Guided Sclerotherapy- 100 procedures
4. Endovenous Laser Ablation- 20 procedures
5. Vascular Laser Therapy- 20 procedures
6. Management of Leg Ulcers or CVI (C4-C6)- 20 cases
7. Venous surgery (observational or assistance)- 5 procedures
8. Advanced Procedures- recommended only but not compulsory

PHLEBOLOGY

PART II EXAMINATIONS

A. GENERAL INFORMATION

Candidates are expected to be competent in the diagnosis and management of the full range of venous conditions which may present to a phlebologist both in outpatient and inpatient settings, including venous disease arising as a complication of other medical conditions or treatments.

The diagnosis and management of venous insufficiency, including venous incompetence is an integral part of the practice of phlebology. The candidates should be competent in accurate assessment and management of venous incompetence. The candidate should become competent in the performing CW-Doppler, and duplex ultrasound examinations. The candidate should have a detailed working knowledge of various methods of plethysmography, be able to competently interpret venograms and be familiar with lymphoscintigraphy and lymphangiography.

The candidate should be able to perform a venous incompetence study, draw an incompetence map based on duplex findings, and be proficient in reporting venous studies to meet the minimum training requirements. Investigation and management of venous thrombosis is an integral part of phlebology. The candidate should be able to identify thrombosis (deep vein thrombosis and superficial thrombophlebitis) clinically and confirm the clinical diagnosis by duplex studies. The candidate should be able to perform and report a venous thrombosis duplex study to meet the minimum training requirements.

The candidate should have adequate knowledge in management of VTE and be familiar with various management protocols. The candidate should be able to accurately and appropriately interpret pathology results including relevant blood and genetic tests related to hypercoagulable states, anticoagulant therapy, and thrombophilia.

The written and oral examinations cover the practice of diagnostic ultrasound, ultrasound physics, and ultrasound technology. It also covers Doppler (continuous wave and pulsed), B-Mode and duplex ultrasound of peripheral circulation and new areas such as pelvic venous studies. Substantial knowledge of vascular anatomy, physiology and pathology is required. Diagnostic ultrasound recognition of vascular structures, soft tissue structures and their echogenic properties is required. Understanding of other forms of non-invasive

vascular investigation is expected, including the various types of plethysmography and peripheral applications of CW and pulsed Doppler. Candidates must demonstrate an ability to select the appropriate diagnostic test based on clinical presentation and knowledge of the options for treatment of venous disease.

Candidates should have a broad theoretical and practical knowledge in all aspects of interventional phlebology. Candidates should have extensive experience in performing ultrasound guided sclerotherapy to meet the minimum training requirements.

Detailed knowledge of advanced procedures, that the candidates may not perform personally, is still essential. Advanced procedures should be performed in the setting of supervised clinics. These include interventional techniques including insertion of caval filters, coil embolisation and alcohol sclerotherapy.

As lymphatic disease has a close relationship with venous disease, an understanding of lymphatic anatomy, physiology, pathology and some practical experience of the methods used for imaging of lymphatic system is required. The candidate should have adequate experience in managing lymphoedema.

Candidates must satisfy ALL minimum training requirements in order to sit for the Part II Examination. Candidates who are successful in Part II Examination may apply for Fellowship of the Australasian College of Phlebology.

B. PHLEBOLOGY PART II EXAMINATIONS

a. WRITTEN EXAMINATIONS

1 General Phlebology (MCQ True/False)

This paper consists of 100 multiple choice questions each consisting of 5 parts, over a 2-hour period in true/ false format. There are no negative markings in this multiple choice question paper. This exam covers general phlebology.

2 Phlebological Medicine (Short Essays)

This examination consists of two papers each containing 6 questions. The allocated time per paper is 2 hours. Each paper encompasses 6 questions on general phlebology and general medicine pertaining to phlebology. Questions provide clinical scenarios which may require a plan of management.

3 Procedural Phlebology (MCQ True/False)

This paper consists of 100 multiple choice questions each consisting of 5 parts, over a 2-hour period in true/ false format. There are no negative markings in this multiple choice question paper. This exam covers basic laser physics, laser safety and regulations, ultrasound guided sclerotherapy, endovenous laser therapy, ambulatory phlebectomy, venous surgery, vascular laser therapy and other interventional procedures covered by the curriculum.

4 Pharmacology in Phlebology (MCQ True/False)

This paper consists of 100 multiple choice questions each consisting of 5 parts, over a 2-hour period in true/false format. There are no negative markings in this multiple choice question paper.

b. CLINICAL EXAMINATIONS

The clinical examinations are conducted 4-8 weeks following the Written Examinations. Only candidates who have successfully passed the Written Examinations are invited to sit for the Clinical Examinations.

1 OSCEs

These examinations follow the OSCE (Objective Structured Clinical Examination) format and are supervised by the Chief Censor together with members of the Board of Censors and qualified phlebologists from the particular State in which the examination is being held. A photograph, a model or a device with a written question is presented. As this is an OSCE, no further elaboration or explanation regarding the question will be provided by the examiner. The bell will ring and the candidate will move to the next station.

2 Duplex Ultrasound Examinations

There will be 3 stations of 30 minutes duration each. A DVT study, a venous incompetence study, upper limb studies, vascular malformation studies and other venous studies form this examination. The candidate must demonstrate competence in performing these duplex examinations.

3 Long Cases

This part encompasses a number of long cases which will be run along modified OSCE lines with individual stations manned by members of the Board of Censors and qualified phlebologists from the particular State in which the examination is being held. Candidates are expected to do a general examination, perform a CW-Doppler examination, interpret any duplex findings, be able to formulate the patient's problem, suggest further investigations and a plan of management.

C. SPECIAL CONSIDERATIONS

In exceptional circumstances, the College Board following consultation with the Board of Censors, may modify the form of the examination or the provisions of eligibility. Candidates requesting modifications must lodge an application with the Honorary Secretary at least **six months** before the time fixed for the examination.

D. PASSING THE EXAMINATION

It should be noted that to achieve an overall pass in this examination, the candidate should satisfactorily complete both the Written and the Clinical Examinations. A pass in the Written Examination is required for the candidates to be invited to sit for the Clinical Examination. A pass in the Written Examination is valid for three years, during which time the candidate can sit for the Clinical Examination without having to repeat the Written Examination. Candidates who are sitting the Clinical Examination alone will be required to pay the full examination fee.

E. CERTIFICATION

Having satisfied ALL requirements of Fellowship as described above, a pass in Part II Examination will lead to Fellowship of the Australasian College of Phlebology. FELLOWSHIP OF THE ACP WILL NOT BE AWARDED UNLESS ALL REQUIREMENTS OF TRAINING ARE FULFILLED. To graduate in the following year, all requirements of Fellowship are to be met by the 31st of December of the final training year. The Fellowship is awarded in the Conferring Ceremony which is held yearly during the Annual Scientific Meeting (ASM) of the College.

Fellows of the College are awarded the title *Phlebologist*.

F. PHLEBOLOGY PART II SYLABUS

1) ANATOMY

Introduction

Detailed knowledge of the Core Topics and a basic understanding of the Broader Topics is recommended. Trainees should be familiar with the new venous nomenclature. ⁴⁻⁶

A. Core Venous Anatomy

1. Lower limb venous anatomy

Lower leg anatomy requires special attention because of the predominance of venous insufficiency in these sites. The core topics include:

a) Superficial system

- Saphenofemoral junction
- GSV, AASV, PASV, anterolateral vein of the thigh, other tributaries and perforators
- SSV, thigh extension of the SSV and the vein of Giacomini, other tributaries and perforators
- The lateral superficial venous system, tributaries and perforators
- Non-Saphenous veins: vulval/scrotal veins, pudendal/perineal veins, gluteal veins
- Perforator of the popliteal fossa

b) Deep system

- Common femoral vein
- Femoral vein
- Profunda femoris
- Popliteal vein
- Posterior and anterior tibial veins
- Peroneal veins
- Gastrocnemius veins
- Soleal veins

2. Upper limb and neck venous anatomy

a) Superficial system

- Cephalic vein
- Basilic vein

b) Deep system

- Superior vena cava
- Subclavian veins
- Jugular veins
- Axillary vein
- Brachial vein
- Ulnar and radial veins

3. Abdominal and pelvic venous anatomy

a) Abdominal system

- External and internal iliac veins
- Common iliac vein
- Inferior vena cava
- Portal vein
- Hepatic vein
- Celiac and mesenteric veins
- Renal veins
- Splenic veins

b) Pelvic system

- Internal and external pudendal veins
- Ovarian plexus
- Veins of the Broad ligament
- Uterine plexus
- Gonadal veins

B. Broader Topics

1. Classic systems of anatomy and common pathologies

- Superficial and deep lymphatic systems- see SECTION 5.F
- Sciatic nerve, femoral nerve, sural nerve, saphenous nerve, common peroneal nerve
- Muscles of lower limbs
- Arterial system of lower limbs

2. Regional anatomy

- Facial veins and their drainage
- Femoral triangle
- Adductor canal
- Foot and ankle

2) BASIC SCIENCES

A. Physics

- Ultrasound physics
- Laser physics
- Physics of compression
- Physics of foams
- Basic radiation physics as it relates to venography, CT and MRI

B. Rheology and Fluid Dynamics

- Newtonian vs. non-Newtonian fluids
- Shear rates in the vascular systems
- Reynolds number
- Rheology of thrombosis
- Rheology of detergents

C. Venous Physiology and Function

- Venous haemodynamics
- Venous physiology measurements
 - Ambulatory venous pressure measurements
 - Plethysmography
 - Light reflection rheography
 - Laser Doppler principles
 - Digital infra-red thermography

D. Genetics

- Genetics of CVI
- Genetics of VTE and thrombophilias
- Genetics of vascular anomalies and related syndromes
- Genetics of lymphoedema
- Vascular genodermatoses

E. Embryology

- Normal venous, arterial and lymphatic embryology
- Vasculogenesis, angiogenesis and lymphangiogenesis

- Embryology as it relates to venous anomalies including double IVC, dominant iliolumbar veins, gonadal/ renal/ureteric vein anomalies and retro-aortic left renal vein.

F. Vascular Histology and Histopathology

- Normal vascular histology
- Histopathology of the following conditions and their differential diagnoses
 - vessel wall in venous disease
 - common skin manifestations of venous disease
 - acute lipodermatosclerosis vs. cellulitis
 - chronic lipodermatosclerosis and other forms of panniculitis
 - pigmented purpuric dermatoses ('capillaritis')
 - acroangioidermatitis ('pseudo-kaposi's sarcoma')
 - venous thrombosis
 - arterial thrombosis (white clots) vs. venous thrombosis (red clots)
 - thrombosis vs. sclerosis
 - endovascular fibrosis
 - vasculitis (small vessel, medium size vessel and large vessel)
 - nodular vasculitis
 - livedo vasculopathy
 - vascular tumours
 - vascular malformations
 - lymphangitis and other lymphatic conditions

G. Vascular Biology

- The endothelium
- Endothelial markers
- Circulating endothelial cells (CEC)
- Endothelial progenitor cells (EPC)
- Endothelial microparticles (EMP)
- Vascular basement membrane
- Vascular smooth muscle and the sub-endothelium
- Alterations of vessel wall in CVI
- Interactions of the vascular system with the thrombo-haemostatic system
- Vasculogenesis, angiogenesis and lymphangiogenesis
- Angiogenic cytokines

H. Molecular Basis of Venous Disorders

- MMPs
- Growth factors
 - platelet derived growth factor (PDGF)
 - basic fibroblast growth factor (b-FGF)
 - vascular endothelial growth factor (VEGF)
- Basement membrane collagen, laminin and integrins
- Molecular basis of venous insufficiency
- Molecular basis of wound healing

I. Coagulation System

- Cell model of coagulation
- Clotting factors
- Clotting tests
- Platelet structure and function
- Platelet derived microparticles (PMP)
- Factor XIII and fibrin stabilization
- Fibrinogen
- Structure of fibrin
- Interaction of detergent sclerosants with the coagulation system⁷

J. Antithrombotic Mechanisms

- Plasma coagulation inhibitors
- Protein C anticoagulant pathway
- Endothelial protein C receptor
- Protein S
- Thrombomodulin
- Antithrombin
- Heparin and vascular proteoglycans
- Interaction of detergent sclerosants with antithrombotic mechanisms⁸

K. Fibrinolytic Mechanisms

- Plasminogen-plasmin system
- Tissue plasminogen activator (t-PA)
- Urokinase (u-PA)
- Plasminogen activator inhibitor 1 (PAI-1)
- t-PA/PAI-1 Complexes
- Thrombin activatable fibrinolysis inhibitor (TAFI)
- Antiplasmin
- Alpha-2 macroglobulin
- Fibrin degradation products and D-dimer

L. Inflammation

- Inflammatory cytokines
- The role of the inflammatory cascade in the development of vessel wall damage
- Inflammation and wound healing
- Tissue remodeling
- Vasculitis and phlebitis
- Lipodermatosclerosis and panniculitis

M. Detergent Biochemistry

- Classification of detergents
- Biological membranes
- Critical micelle concentration
- Kraft point
- Cloud point
- Aggregation number

N. Lymphatic Biology

- Lymphangiogenesis
- Structure and function of the lymphatic system
- Anatomy of the lymphatic system
 - Superficial lymphatic system
 - Deep lymphatic system
 - Communication with the venous system
- Lymph transport
- Immune functions

3) PHARMACOLOGY

A. General Pharmacological Principles

- Pharmacokinetics and pharmacodynamics
- Drug hypersensitivity syndromes and drug toxicity

B. Vascular Pharmacology

- Autonomic innervations of blood vessels
- Neuro-humoral mediators of vascular tone
- Vascular pharmacogenomics
- Drugs affecting the vascular smooth muscle

C. Specific Drugs and Agents

- Sclerosing agents
- Embolic agents
- Thrombolytic agents
- Anti-platelet agents
 - Aspirin
 - Clopidogrel
 - Other anti-platelet agents
 - Non-steroidal anti-inflammatory drugs (NSAIDS)
- Anticoagulants
 - Vitamin K
 - Heparins including LMWH
 - Warfarin
 - Factor Xa inhibitors
 - Direct thrombin inhibitors
 - Other new anticoagulants
 - Complications of anticoagulant therapy
 - Monitoring of anticoagulant therapy
- Anti-fibrinolytic agents
 - Tranexamic acid

- Veno-active drugs
- OCP, HRT and other hormonal supplements
- Anaesthetic agents- topical, injectable, tumescent
- Mild sedation agents
- Supplements affecting the vascular system
- Topical vasodilators and vasoconstrictors

4) CLINICAL SCIENCES

A. Core Clinical Phlebology

A detailed knowledge of the aetiology, epidemiology, clinical features, investigations, differential diagnosis, prognosis and management of the following conditions is required.

1. Venous incompetence and insufficiency

- Clinical Evaluation of CVI
- Manifestations of CVI
- Epidemiology
- Risk factors
- Pathophysiology of varicose veins and telangiectasias
- Diagnostic evaluation and duplex examination of venous incompetence-see SECTION 6
- Role of venography and other modalities
- Venous hypertension and its complications
- CEAP and other classifications of CVI^{2, 9-11}
- Venous severity scores
- Venous oedema and phlebolymphoedema
- Swollen limb
- Management of venous incompetence- see SECTION 7
- Lower limb ulceration
 - Differential diagnosis
 - Arterial ulcers
 - Neuropathic ulcers
 - Pyoderma gangrenosum
 - Vasculitic ulcers
 - Malignant lesions presenting as ulcers

2. Venous thromboembolism (VTE) and obstruction

- Natural history and consequences of SVT, DVT and PE
- Diagnosis
- Epidemiology
- Investigations
- Role of D-dimer in the diagnosis of VTE
- VTE risk factors and risk assessment
- VTE prophylaxis
- Treatment of VTE- see SECTION 7.E
- New anticoagulants
- Thrombophilia
- Antiphospholipid syndrome
- Post-thrombotic syndrome
- Malignancy and haemostasis
- Women's health and VTE
- Hormonal influences on VTE
- Travel related VTE
- Venous gangrene, phlegmasia alba dolens. phlegmasia coerulea dolens
- Recurrent DVT and recurrent PE
- Diagnosis, laboratory investigations and management of HITS
- Iliac vein obstruction and May-Thurner Syndrome
- Paradoxical embolus and PFO
- Venous thrombosis in unusual sites
 - Portal vein thrombosis
 - Mesenteric venous thrombosis
 - Ovarian vein thrombosis
 - Cranial venous thrombosis
 - Axillo-subclavian venous thrombosis and Paget-Schroetter syndrome
- Thrombophlebitis
 - SVT vs STP
 - Chemical vs. Spontaneous STP
 - Superficial migratory thrombophlebitis
 - Infective thrombophlebitis and vascular infections
 - Granulomatous phlebitis
 - Management of thrombophlebitis
- Coagulopathies

- DIC, Kasabach-Meritt syndrome, Warfarin

B. Paediatric Phlebology

1. Venous incompetence and insufficiency in children¹²

- Epidemiology
- Prognosis
- Investigations and Treatment
- Puberty and venous insufficiency

2. Venous thromboembolism in neonates and children

- Pediatric venous thromboembolism and thrombophilia
- Anticoagulant therapy in children
- Antiphospholipid syndrome in children
- Paediatric thrombosis and stroke
- Post-thrombotic syndrome in children
- Neonatal renal vein thrombosis
- Neonatal portal vein thrombosis
- Neonatal cerebral sinus venous thrombosis
- Paediatric coagulopathies

3. Paediatric vascular malformations

- See SECTION 5.D

4. Paediatric vascular tumours

- Congenital haemangioma of infancy
- Rapidly involuting congenital haemangiomas (RICH)
- Non-involuting congenital haemangiomas (NICH)
- Sturge-Weber syndrome
- PHACES syndrome- *posterior fossa brain malformation, haemangioma, arterial anomalies, cardiac and aortic anomalies, eye anomalies, sternal defects*
- Kaposiform haemangioendothelioma (KHE)
- DIC and Kasabach-Meritt syndrome
- Diffuse congenital haemangiomatosis
- Tufted angioma
- Haemangiopericytomas

5. Paediatric vascular and mixed syndromes

- Cutis marmorata
- Cutis marmorata congenita telangiectasia
- Cobb syndrome
- Proteus syndrome
- Beckwith-Wiedman syndrome
- von Hippel-Lindau syndrome
- Fabry's disease
- Homocysteinuria
- Klinefelter syndrome

C. Other Venous Conditions

1. Venous compression syndromes

- Diagnosis and management of venous compression syndromes
- Iliac vein compression
- Paget-Schroetter syndrome
- Renal vein compression
- Popliteal vein entrapment syndrome

2. Venous aneurysms

- Classification
- Diagnosis
- Popliteal vein aneurysm
- Jugular vein aneurysm
- Traumatic venous aneurysms
- Management

3. Phlebectasias

- Diagnosis and management
- Venous lakes
- Telangiectatic conditions
 - Generalised Essential Telangiectasias (GET)
 - Hereditary benign telangiectasias
 - Unilateral naevoid telangiectasias
 - Ataxia telangiectasia

- Hereditary Hemorrhagic Telangiectasia (HHT; Osler-Weber-Rendu disease)
- Mat telangiectasias of scleroderma
- Telangiectasias Macularis Eruptive Perstans (TMEP)
- Spider naevus (angioma)
- Poikiloderma of Civatte
- Post-radiation telangiectasias

4. Vascular tumours

- Diagnosis and management
- Congenital vascular tumours- see SECTION 5.B.4
- Pyogenic granuloma
- Kaposi's sarcoma
- Bacillary angiomatosis
- Angiosarcoma
- Angiolymphoid Hyperplasia with Eosinophilia (ALHE)
- Central vein tumours including leiomyomas and leiomyosarcomas
- Tumor/thrombus complexes such as those involving renal cell carcinoma
- Other vascular tumours

D. Vascular Malformations

1. Capillary malformations (CM)

- Classification
- Syndromes that include a CM
 - Sturge-Weber syndrome
 - Macrocephaly- CM syndrome (M-CM)
 - Cobb syndrome
 - Other syndromes
- Laser therapy for CM

2. Venous malformations (VM)

- Classification and sub-types
 - Truncular vs. non-truncular
 - Superficial, subcutaneous, intra-muscular, and intra-articular
 - VM presenting as a primary venous aneurysms

- Phlebectatic sub-types
 - glomovenous malformations,
 - generalized phlebectasias
 - Blue Rubber Bleb syndrome
- Syndromes that include a VM
 - Klippel-Trenaunay syndrome (KTS)
 - Other syndromes
- Persistent embryonic veins
 - Sciatic vein
 - Lateral embryonic marginal vein
- IVC anomalies
 - Diagnosis and management
 - IVC aplasia and hypoplasia
 - IVC duplication
 - DVT in patients with IVC anomalies
- Investigations
 - Ultrasound features
 - Doppler findings
 - Venography and MRI
- Management options-see SECTION 7.D

3. Lymphatic malformations (LM)¹³

- Classification
 - Truncular vs. non-truncular
 - Truncular LM presenting as primary lymphoedema ¹⁴
 - Non-truncular LM
 - Microcystic vs. macrocystic
 - Angiokeratomas and capillary-lymphatic malformations
- Cutaneous manifestations and complications
 - Lymphoedema
 - Papillomatosis
 - Infection
 - Bleeding and thrombosed lesions
- Syndromes that include a LM

- Investigations
 - Ultrasonic features
 - MRI
 - Radionuclide lymphoscintigraphy for lymphoedema of truncular LM
- Management options ¹⁵ - see SECTION 7.D

4. Arteriovenous malformations (AVM)

- Diagnosis
- Clinical and radiological classifications
- Cutaneous manifestations including acroangiokeratosis
- Syndromes that include AVMs
 - Parks-Weber syndrome (PWS)
 - HHT
 - SOLAMEN syndrome-SOLAMEN: segmental overgrowth, lipomatosis, arteriovenous malformation, epidermal nevus.
- Complications
- Investigations
 - Ultrasonic features
 - Doppler findings
 - Differentiation from fast flow tumours
 - Role of angiography
 - Role of MRI
- Management options ¹⁶- see SECTION 7.D

5. Complex malformations and syndromes

- KTS
- Parks-Weber syndrome (PWS)
- Proteus syndrome
- Maffucci's syndrome
- Phacomatosis pigmentovascularis
- Macrocephaly- CM syndrome (M-CM)
- Hemi-hyperplasia- multiple lipomatosis syndrome (HHML)
- SOLAMEN syndrome
- CLAPO syndrome- CLAPO: capillary malformation, lymphatic malformation, asymmetry, partial/generalized overgrowth
- CLOVE syndrome- CLOVE: congenital lipomatous overgrowth, vascular malformations, epidermal nevi
- Other syndromes

E. Phlebology in Other Disciplines

1. Phlebology in Dermatology ^{17, 18}

- Dermatological manifestations of CVI
- Panniculitis and lipodermatosclerosis
- Pigmented purpuric dermatoses
- Acroangiodermatitis
- Purpura
- Reticulate eruptions
 - Livedo reticularis
 - Livedo racemosa
 - Reticulate purpura
 - Reticulate pigmentation
- Vasculitis
- Nodular vasculitis and erythema induratum
- Livedo vasculopathy
- Vascular and thrombotic complications of pseudoxanthoma elasticum (PXE)
- Vascular complications of Ehlers-Danlos Syndrome- especially type IV
- Vascular tumours- see SECTION 5.B.4 and 5.C.4
- Warfarin necrosis and its differential diagnoses
- Vasospastic and related conditions
 - Raynaud's phenomenon
 - Erythromelalgia
 - Acrocyanosis
 - Pernio
 - Complex regional pain syndromes

2. Phlebology in Hematology

- Hypercoagulable states, inherited and acquired thrombophilias
- Antiphospholipid syndrome
- DIC
- Microangiopathies
 - Thrombotic thrombocytopenic purpura
 - Idiopathic thrombocytopenic purpura
 - Haemolytic-uremic syndrome
- Inherited and acquired platelet disorders
- Paroxysmal nocturnal haemoglobinuria

3. Phlebology in Obstetrics and Gynaecology

- Vulval varices
- Vulvodynia
- Pelvic congestion syndrome
- Thrombotic complications of pregnancy and post-partal period
 - Anticoagulation during pregnancy
 - Inherited thrombophilias and pregnancy
- Mondor's disease of the breast
- Thrombosis and OCP
- Thrombosis and HRT
- Menstrual variations in venous incompetence
- Angiogenic potential of hormonal preparations

4. Phlebology in Gastroenterology

- Oesophageal varices
- Gastric antral vascular ectasia (Watermelon stomach)
- Portal vein thrombosis
- Mesenteric inflammatory veno-occlusive disease
- Haemorrhoidal varices

5. Phlebology in Urology

- Varicoceles
- Mondor's disease of penis

F. Lymphology

1. Lymphoedema ^{19, 20}

a) Clinical Aspects

- Diagnosis and staging of lymphatic disease
- Differential diagnosis
- Epidemiology and pathophysiology
- Clinical manifestations
- Complications
- Prognosis
- Phlebolymphoedema
- Mid-line lymphoedema
- Elephantiasis

b) Classification

- Primary lymphoedema
 - Congenital, praecox and lymphoedema tarda
 - Milroy's disease
 - Meige's syndrome
 - Lymphoedema distichiasis syndrome
 - Yellow-nail syndrome
 - Truncular lymphatic malformations
- Secondary lymphoedema
 - Infective lymphoedema
 - Lymphatic filariasis
 - Lymphogranuloma inguinale
 - Lymphangitis
 - Perilymphadenitis
 - Lymphangiothrombosis
 - Inflammatory lymphoedema
 - Panniculitis and lipodermatosclerosis
 - Rosacea and acne vulgaris
 - Podoconiosis
 - Pretibial myxoedema
 - Traumatic
 - Malignancy related

c) Management options

- Physical decongestive therapy
 - Manual lymphatic drainage
 - Compression bandaging
 - Pneumatic compression therapy
- Electrostimulation devices
- Drug therapy
- Role of retinoids
- Surgery
 - Reconstructive surgery
 - Excisional surgery
 - Liposuction

2. Lymphatic malformations

- See SECTION 5.D.3

3. Lipoedema

- Diagnosis and management

4. Lymphophilic tumours

- Kaposi's sarcoma
- Malignant eccrine poroma

5) DIAGNOSTIC EVALUATION

Introduction

Training in the performance and interpretation of diagnostic studies as related to venous disease is a critical part of phlebology training.

A. Basic Modalities

Trainees should be familiar with basic modalities used in the management of venous disease. More advanced technologies, such as duplex ultrasound, should only be taught and used once a core understanding of basic modalities such as CW-Doppler is achieved. CW-Doppler plays an important role in screening of patients with CVI and selecting candidates for duplex ultrasound. CW-Doppler is also essential in teaching the Doppler principles.

- CW-Doppler examination including ankle-brachial index measurements
- Side trans-illumination (Episcopy)
- Light polarization

B. Duplex Ultrasound

Experience and training in duplex ultrasound is an essential part of general phlebology training. Detailed knowledge of ultrasound physics, applied ultrasound technology, Doppler ultrasound principles, duplex principles and colour flow imaging is required. The trainee should be able to identify thrombosis and incompetence on duplex scans. The protocols and anatomical nomenclature should conform with internationally accepted standards.^{4, 5, 21, 22}

- Venous incompetence studies and mapping of the superficial venous system
- Deep vein thrombosis studies
- Upper limb and neck veins studies
- Ultrasound studies for vascular anomalies (tumours and malformations)
- Ultrasound studies of pelvic and vulvar veins
- Ultrasound studies of the abdominal veins
- Identification of
 - Normal structures such as arteries, tendons, ligaments and muscles
 - Nerves: sciatic nerve, femoral nerve, sural nerve, saphenous nerve, common peroneal nerve
 - Popliteal compression syndrome
 - Venous aneurysms
 - Lymph nodes: benign and malignant
 - Baker's cyst and other joint effusions
 - Lipomas and other soft tissues tumours
 - Haematomas

C. Venography

Although venography has been mostly replaced by duplex ultrasound in diagnosis of venous thrombosis and occlusive disease, it still plays a role in diagnosis of pelvic vein incompetence and venous malformations and hence the trainee should be able to interpret venographic films.

D. Venous Function and Venous Physiology Assessment

The trainee should be familiar with plethysmography and in particular air and photo plethysmography and techniques to measure ambulatory venous pressures. Other modalities to be familiar with include infra-red thermography and laser Doppler.

E. Other Imaging Modalities

The trainee should be familiar with new and emerging imaging techniques such as CT-angiography, MR-angiography and their specific applications and indications.

The candidate should be familiar with fluoroscopy and its application in diagnosis and management of vascular anomalies.

The candidate should be able to interpret lymphoscintigraphy of the lymphatic system and be familiar with lymphangiography and its application in the diagnosis and management of lymphoedema.

F. Laboratory Investigations

The trainee should demonstrate the ability to accurately and appropriately order and interpret pathology tests including:

- Clotting tests
- Clotting factors
- Laboratory markers of platelet activation and aggregation
- Plasma coagulation inhibitors and the antithrombotic system
- Laboratory markers of fibrinolysis
- Thrombophilia screening
- Monitoring of anti-coagulant therapy
- Laboratory markers of DIC
- Laboratory markers of vasculitis
- Histopathology of all conditions covered in the Curriculum

6) TREATMENT

A. Patient Education and Referrals

Patent education forms an important part of the management of venous disorders and trainees should be fully conversant and competent in the following:

1. Communicating the diagnosis

- To communicate the diagnosis, in an accurate and consistent fashion, and in a language comprehensible to the lay person.

2. Identifying offending drugs and exacerbating factors

- To be able to identify any drugs or exacerbating factors that make the patients presenting condition worse.

3. General measures and lifestyle modifications

- To understand the general measures and life style modifications required in preventing and managing venous disease in the long term.
- To be familiar with venoactive drugs, supplements and vitamins that may play a role in the management of venous disorders.

4. Patient education and counseling

- To be skillful in using resources such as diagrams, pictures, video clips and other modalities to communicate in the most efficient fashion. Written information should be provided to further support and re-enforce the verbal communication.
- To be conversant in recommending educational materials, websites and patient support groups.

5. Joint management and referrals to other practitioners

- To be able to communicate and coordinate effectively with the primary care physician any changes in the management of the patient.
- To know their limitations and know when to refer a patient to other medical specialists or allied health practitioners.
- To be able to coordinate a management plan with other healthcare professionals.

6. Family member screening and genetic counseling

- To know the indications of testing for inherited thrombophilias and other genetic disorders

- To know the medical and medico-legal implications of screening of family members of patients with inherited thrombophilias and other genetic disorders.

B. Conservative Interventions

Trainees are required to understand and be conversant in the following conservative measures which form an integral part of the management of venous disorders.

1. Compression therapy

- To understand the indications, contraindications, and complications associated with compression therapy.
- To understand the principles of compression therapy, compression bandaging, the science of compression and should be competent in applying compression bandaging.²³

2. Wound management

- To understand the indications, contraindications, and complications associated with the use of different types of dressings and topical medications.
- To understand the mechanisms underlying leg ulceration, the fundamental principles of wound healing and the associated cutaneous problems such as venous eczema, contact dermatitis, malignancies and infections that may arise in venous ulcers.
- To be familiar with commonly used surgical interventions in the management of chronic wounds including skin flaps, substitutes, growth factors and surgical debridement.
- To be able to differentiate between a clinical infection and growth of common pathogens in wound swabs and know the indications for appropriate antibiotic therapy.
- To understand the pathophysiology of contact sensitization and problems associated with the use of sensitizing agents such as neomycin in the management of leg ulcers.

3. Conservative management of oedema and lymphoedema

- To be able to discuss with patients the role of physical decongestive therapy, compression therapy, electro-stimulation devices, compression pumps and other related management strategies.
- To know the resources available locally dedicated to the management of lymphoedema

C. Non-surgical Treatments of CVI

1. General considerations for procedures

The trainee must demonstrate the adoption and application of performance criteria listed below which cover the issues that must be considered prior to performing a procedure.

- Patient selection and indications
- Identify absolute and relative contra-indications
- Identify at risk groups
- Explain the diagnosis and communicate this with the patient and appropriate others
- Obtain and document informed consent
- Have a working knowledge and perform resuscitation if required
- Understand the prevention, recognition and management of complications of treatment
- Manage after care follow-up

2. Sclerotherapy

To understand the indications, contraindications, and complications associated with sclerotherapy.

The trainee should be competent in performing these procedures and have a working knowledge of the following:

- Sclerosing agents and their mechanism of action
- Pharmacokinetics and pharmacodynamics of sclerosing agents
- Direct vision sclerotherapy using foam and liquid sclerosants
- Ultrasound guided sclerotherapy (UGS)
- Post-sclerotherapy deep vein occlusion
- Issues relating to patent foramen ovale and cerebrovascular events

3. Vascular laser and light therapy

Vascular lasers and more recently intense pulse light devices (IPL) are used by some phlebologists. Trainees should gain detailed theoretical knowledge of all aspects of laser physics and laser therapy and practical skills in the use of vascular lasers and IPL devices.

4. Endovascular techniques

To understand the indications, contraindications, and risks of endovascular techniques used to treat varicose veins. The trainee should be familiar with the range of laser wavelengths and systems used for EVLA. The trainee should be able to competently perform the following procedures:

- Catheter Directed Sclerotherapy (CDS)²⁴
- Endovenous Laser Ablation (EVLA)
- Radiofrequency Ablation (RFA)

D. Surgical Treatments of CVI

1. Ambulatory phlebectomy (AP)

To understand the indications, contraindications, and complications associated with AP. The trainee should be competent in performing this procedure.

2. Surgical techniques for varicose veins

The trainee should have a broad knowledge and understand the indications, contraindications, and complications associated with surgical procedures listed below. The trainee is NOT expected to perform any of these procedures unless the trainee has completed a surgical training program.

- Stripping, avulsion techniques and perforator surgery and their respective roles in venous therapy.
- A basic understanding of CHIVA and other surgical procedures used to treat varicose veins.
- Recurrent varices after surgery (REVAS)²⁵
 - Causes, investigation and management.
 - The trainee should be aware that there are non-surgical techniques to treat patients presenting with REVAS.
 - The trainee should be able to evaluate and determine a unique management plan for individual patients based on clinical and duplex findings.
- Diagnosis and management of peri-operative complications and events associated with performing venous procedures including but not limited to pain, phlebitis, haematoma, infection, allergic reactions and VTE.

3. Surgical treatments for other venous conditions

The trainee should have a broad knowledge and understand the indications, contraindications, and complications associated with surgical procedures listed below. The trainee is NOT expected to perform any of these procedures unless the trainee has completed a surgical training program.

- Surgical treatments for deep venous reflux including valvuloplasty, vein and valve transplantation and vein segment transposition.
- Surgical treatments for pelvic venous insufficiency.
- Operative venous thrombectomy
- Knowledge of procedures designed to treat venous outflow obstruction including autogenous or prosthetic bypass and venous dilation and stenting.
- Thoracic outlet decompression for Paget-Schroetter Syndrome
- Repair of popliteal vein aneurysm

E. Treatment of VTE

1. Guidelines and consensus documents

Trainees should be familiar with international and national guidelines and consensus documents such as the American College of Chest Physicians guidelines.²⁶

2. Conservative management

- Compression stockings
- Other measures and devices

3. Anticoagulation for acute DVT

- LMWH
 - Anti Xa monitoring
 - HITS
 - Paediatric and adult dose
- Warfarin
- New anticoagulants
- Duration of anticoagulation
- Ultrasound monitoring
- D-dimer measurements

4. Treatment of SVT and STP

- Role of NSAIDS
- Role of LMWH
- Migratory thrombophlebitis

5. Treatment of acute PE

- LMWH
- Warfarin
- Thrombolytic therapy

6. Recurrent venous thrombosis and PE

- Long term anticoagulation
- Role of vena caval filters
- Role of anti-platelet agents and aspirin

F. Other Treatments

The trainee should have a broad knowledge and understand the indications, contraindications, and complications associated with procedures listed below.

1. Treatment of vascular malformations

- Sclerotherapy of venous malformations
- Sclerotherapy of lymphatic malformations
- Embolisation and other techniques to treat AVMs
- Vascular laser therapy for capillary malformations
- Patient selection, indications and contra-indications for all procedures
- Complications associated with all procedures

2. Treatment of pelvic congestion syndrome

- Coil embolisation of ovarian veins
- Sclerotherapy for ovarian and pelvic veins
- Surgical treatments for ovarian veins
- Patient selection, indications and contra-indications for all treatment options
- Complications associated with all treatment options

3. Thrombolysis

- Mechanical vs. chemical
- Device types
- Catheter directed thrombolysis (CDT)
- Patient selection, indications and contra-indications
- Complications

4. Vena caval filters

- Permanent vs. temporary filters
- Filter types
- Patient selection, indications and contra-indications
- Complications

7) ADJUNCTIVE EDUCATION

A. Laser Safety and Regulations

Local laser safety regulations and education should be completed by trainees. A refresher course may be required every three years based on the local regulations.

B. Basic and Advanced Cardiac Life Support and Emergency Medicine

Knowledge of causes and management of vasovagal reactions, cardio-respiratory collapse, anaphylaxis, anaphylactoid reactions, scotomas, and hemiparalysis as it relates to sclerotherapy and other venous procedures is required.

C. Research Design and Analysis

The trainee should be familiar with scientific method of research and the classification of clinical trials. The trainee should have a basic knowledge of medical statistics and should be able to critically analyze scientific publications. The trainee should understand the principles of scientific writing and what the editors and reviewers look for in publications.

D. Venous Outcomes Assessment

The trainee should be familiar with the Venous Clinical Severity Score^{11, 27-29} and other scaling systems such as the Venous Disability Score, Venous Segmental Disease Score, as well as general and venous-specific quality of life scales.

E. Infection Control

The trainees should be familiar with the universal precautions, aseptic and sterile techniques, sterilisation methods especially as it applies to the use of multi-use endovenous laser fibers.

F. Medico-legal Issues, Registration, Certification and Medical Ethics

The trainees should be familiar with their local law as it applies to the practice of medicine, registration and certification requirements, and medical ethics. Individual member countries are encouraged to develop a Code of Conduct as it applies to the trainees. Trainees should be able to:

- Obtain an informed consent
- Develop strategies to deal with unforeseen complications and unfulfilled expectations
- Develop strategies to deal with litigious or psychologically disturbed patients

G. READING LIST

A. Textbooks

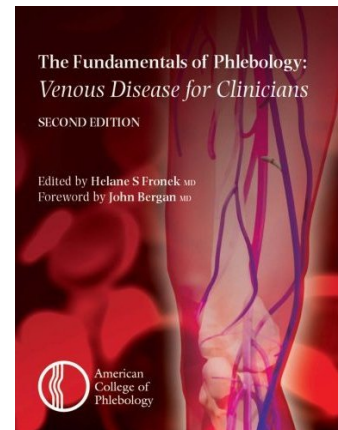
1. General Phlebology

The Fundamentals of Phlebology: Venous Disease for Clinicians

Fronek, H

American College of Phlebology

ISBN 13 978-1-85315-774-5



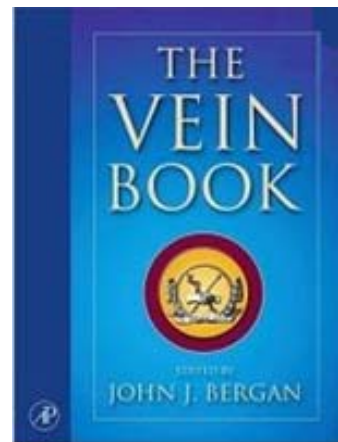
The Vein Book

Bergan, J.

Academic Press.

ISBN-13: 978-0-12-369515-4

ISBN-10: 0-12369515-5

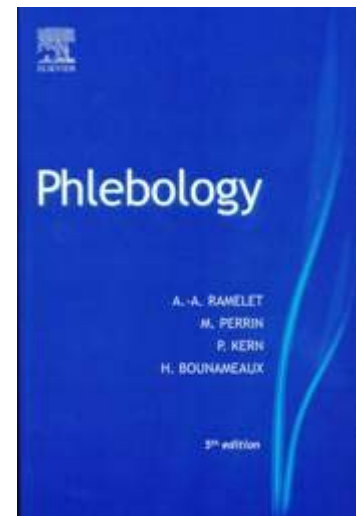


Phlebology

Ramelet AA, Perrin M, Kern P, Bounameaux H.
Elsevier

ISBN10: 2842991478

ISBN13: 9782842991470



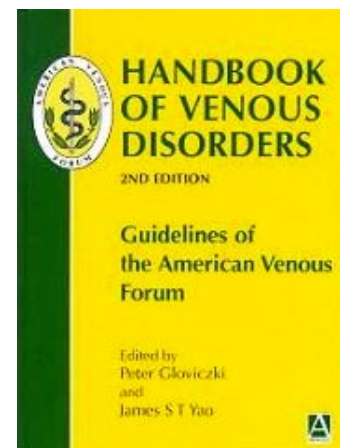
Handbook of Venous Disorders

Gloviczki, P.

A Hodder Arnold Publication

ISBN-10: 034076130X

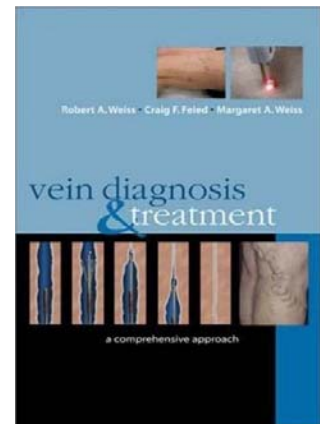
ISBN-13: 978-0340761304



2. Sclerotherapy

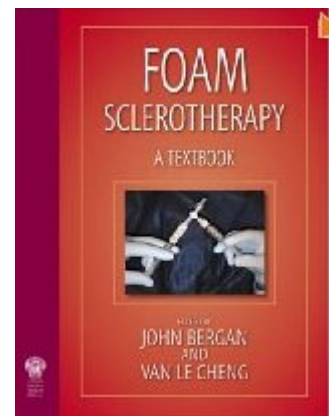
Vein Diagnosis and Treatment: A Comprehensive Approach

Weiss R, Feied C, Weiss M.
Mc Graw-Hill
ISBN 0-07-069201-7



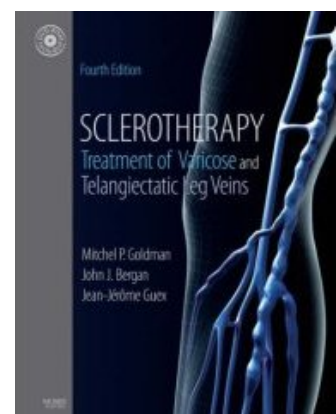
Foam Sclerotherapy

[John Bergan](#) JJ, Le Cheng V (Editors)
Royal Society of Medicine Press
ISBN 978-1-85315-771-4



Sclerotherapy: Treatment of Varicose and Telangiectatic Veins

Goldman MP, Bergan JJ, Guex JJ.
Mosby Elsevier
ISBN 0-323-04258-9



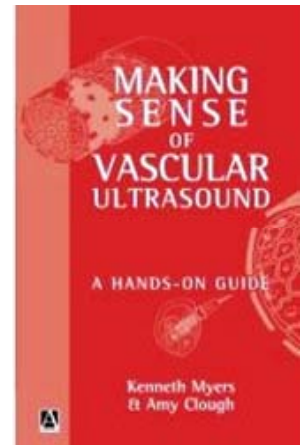
3. Ultrasound

Making Sense of Vascular Ultrasound: A Hands-on Guide

Myers K, Clough A.

ISBN: 0340810092.

Relevant VENOUS chapters only.

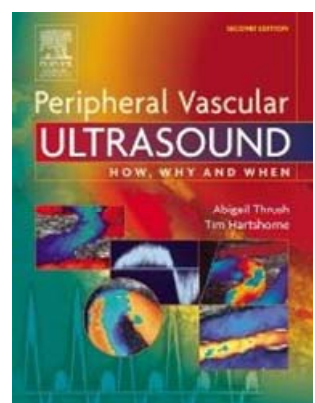


Peripheral Vascular Ultrasound

Thrush A, Hartshorne T

Churchill Livingstone

ISBN 0443060495



4. Thrombosis and Haemostasis

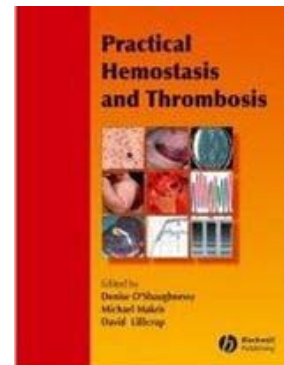
Practical Hemostasis and Thrombosis

O'Shaughnessy D, Makris M, Lillicrap D.

Blackwell Publishing.

ISBN 13: 978-1-4051-3030-1 (alk. Paper)

ISBN 10: 1-4051-3030-X (alk. Paper)



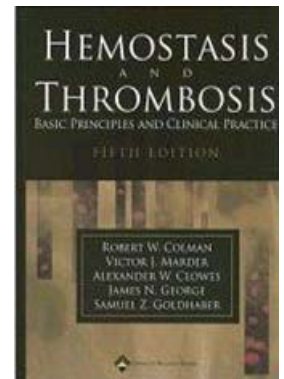
Hemostasis and Thrombosis: Basic Principles and Clinical Practice.

Colman, RW, Marder VJ, Clowes AW, George JN.

Lippincott Williams and Wilkins.

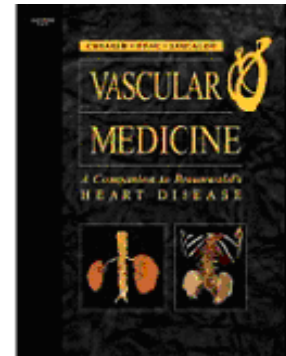
ISBN: 0-7817-1455-9

Fifth Edition.

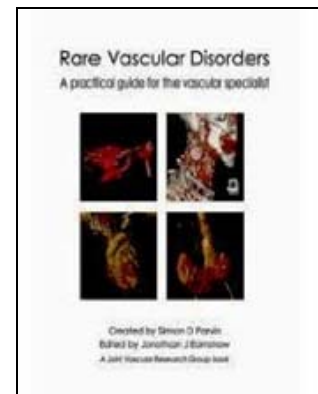


5. Vascular Medicine

Vascular Medicine:
A Companion to Braunwald's Heart Disease
Greager MA, Dzau VJ, Loscalzo J.
Saunders Elsevier.
ISBN 0-7216-0284-3



Rare Vascular Disorders:
A Practical Guide for the Vascular Specialist
Parvin S.
tfm Publishing Limited.
ISBN 1-903378-32- X



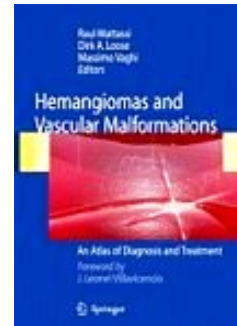
6. Vascular Anomalies and Inherited Disorders

Hemangiomas and Vascular Malformations: An Atlas of Diagnosis and Treatment

Mattassi R, Loose DA, Vaghi M (Eds.)

Springer Verlag Milan

ISBN: 978-88-470-0568-6



Genodermatoses:

A Clinical Guide to Genetic Skin Disorders

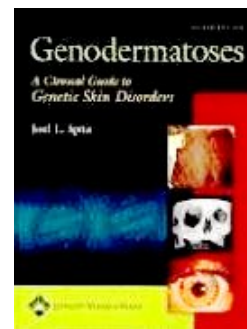
Relevant vascular chapters

Spitz Joel.

Lippincott Williams & Wilkins.

ISBN 0-68307904-2

Relevant Chapters



B. Journals

The following Journals should supplement the trainee's local phlebology journal.

1. Phlebology

**Phlebology:
The Journal of Venous Disease**
Royal Society of Medicine Press
ISSN 0268-3555



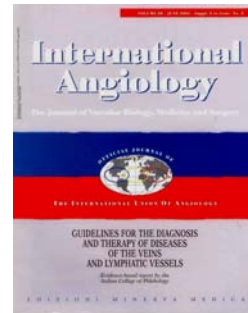
**European Journal of
Vascular and Endovascular Surgery**
Elsevier Health
ISSN 1078-5884



2. Vascular Medicine

International Angiology

Minerva Medica
ISSN 0392-9590



International Journal of Angiology

Springer New York
ISSN 1061-1711 (Print)
1615-5939 (Online)

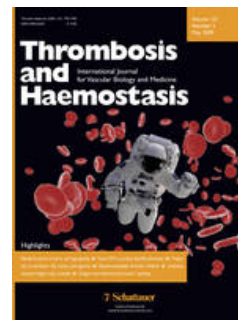


3. Thrombosis and Haemostasis

Journal of Thrombosis and Haemostasis
Blackwell
ISSN 1538-7933



Thrombosis and Haemostasis
Schattauer GmbH
ISSN 0340-6245



H. ADVANCED TRAINING FEES

All fees are governed by Regulations of the College Board and are not refundable. Notice of intention to hold the examinations will be advertised, as the Board deems appropriate, at least two calendar months prior to the date fixed for receipt of applications. A pass in the Written Exam is valid for 3 years and full fee applies if any part of this examination needs to be repeated.

2010 ADVANCED TRAINING FEES	
Training Fee	\$6,600.00
Part I Written Examination Fee	\$980.00
Part I Clinical Examination Fee	\$1,000.00
Note: All Fees are inclusive of GST.	

I. EXAMINATION DATES

A pass in the Written Examination is valid for three years, during which time the candidate can sit for the Clinical Examination without having to repeat the Written Examination. The date of the examination is announced by the Board of Censors and is available on the College website www.phlebology.com.au. Deadline for applications to sit this examination is 3 months prior to the date of examination. Application forms are available from the College website.



Section C

DOCUMENTATION OF PHLEBOLOGY TRAINING

- **ASSESSMENT OF COMPETENCE FORMS**
- **RECORD OF OTHER TRAINING REQUIREMENTS**

AUSTRALASIAN COLLEGE OF PHLEBOLOGY

Assessment of Competence Forms

Details of cases performed, should be documented in the logbook provided. Each procedure/ investigation modality listed needs to be performed by the candidate under the direct observation of an appropriate supervisor. Assessment of competence may involve direct observation of a candidate performing a particular procedure/ investigation modality on several occasions before certification of competence is documented. Assessment should not be undertaken until adequate numbers of cases, as determined by the College, have been carried out by the candidate. Assessment of competence is performed only once during a candidate's period of training hence the assessor must be absolutely certain of the competence of the candidate in the particular procedure/investigation modality. If the candidate has an unsatisfactory assessment in a particular procedure/investigation modality then reassessment should be carried out after an appropriate period of time. Once the particular procedure/investigation modality section is signed then the candidate is regarded as competent to perform this procedure unsupervised. By signing this form, the supervisor indicates that the candidate has demonstrated full competence to perform the procedure/investigation modality unsupervised.

For duplex ultrasound studies, the assessor could be a phlebologist, vascular surgeon, or other specialists with formal training in vascular ultrasound. The supervisor for ultrasound guided sclerotherapy must be a fellow of Australasian College of Phlebology accredited in performing this procedure. For leg ulcer management, the supervisor does not have to be a Fellow of the Australasian College of Phlebology and could be a recognised specialist in a relevant specialty in a teaching or local hospital. For venous surgery, observation of at least 5 cases is compulsory. Signature of supervisor indicates that a basic understanding of what is involved in the surgical procedure is achieved. Detailed knowledge of the operative procedure and its many variations is not required. The supervisor could be a vascular or venous surgeon.

In case of advanced procedures, all candidates are expected, where possible, to have observed the procedures listed in that section. Attendance should be documented by signature of the appropriate supervisor/surgeon. Candidates performing advanced procedures as listed should document these in the Advanced Surgical Procedures Logbook. However practical training and assessment in these procedures is not a specific requirement of the curriculum.

THE COMPLETED ASSESSMENT OF COMPETENCE FORM AND ALL LOGBOOKS INCORPORATED IN THE TRAINING PROGRAM RECORD BOOK NEED TO BE COMPLETED AND FORWARDED TO THE COLLEGE BY THE ANNOUNCED DATE IF THE CANDIDATE WISHES TO SIT THE EXAMINATION IN THAT YEAR.

IF THE ASSESSMENT OF COMPETENCE FORM IS NOT FULLY COMPLETED AND/OR IF THE LOGBOOKS ARE NOT ADEQUATE AND SATISFACTORY THEN THE CANDIDATE WILL NOT BE PERMITTED TO SIT FOR THE FELLOWSHIP EXAMINATION UNTIL ALL THE REQUIREMENTS OF THE CURRICULUM ARE FULLY MET.

AUSTRALASIAN COLLEGE OF PHLEBOLOGY

PHLEBOLOGY PART I

Assessment of Competence Form

Name:

All candidates are expected to have performed and be competent in the procedures listed in this section. Confirmation of competence should be documented by signature of the appropriate supervisor.

		Date of Assessment	Name of Supervisor	Signature of Supervisor
1	CW Doppler and ABI Measurements			
2	Direct Vision Sclerotherapy			

AUSTRALASIAN COLLEGE OF PHLEBOLOGY

PHLEBOLOGY PART I

Record of Educational Activities

Name:

Basic Phlebology Certificate Course	
Candidates must, during the course of their <u>Basic Training</u> , have attended the Basic Phlebology Certificate Course at least once.	
Course Location:	Date attended:
Course Location:	Date attended:

Supervised Training	
Candidates must, during the course of their <u>Basic Training</u> , have completed 20 days of supervised training .	
Institute (s):	Date(s) attended:

AUSTRALASIAN COLLEGE OF PHLEBOLOGY

PHLEBOLOGY PART II

Assessment of Competence Form

Name:

All candidates are expected to have performed and be competent in the procedures listed in this section. Confirmation of competence should be documented by signature of the appropriate supervisor.

		Date of Assessment	Name of Supervisor	Signature of Supervisor
1	CW Doppler and ABI Measurements			
2	Duplex Ultrasound Incompetence Studies			
3	Duplex Ultrasound DVT Studies			
4	Direct Vision Sclerotherapy			
5	Vascular Laser Therapy			
6	Ultrasound Guided Sclerotherapy			
7	Endovenous Laser Ablation			
8	Management of Leg Ulcers/ chronic venous insufficiency (C4-C6)			

AUSTRALASIAN COLLEGE OF PHLEBOLOGY

PHLEBOLOGY PART II

Advanced Procedures

Name: _____

All candidates are expected, where possible, to have observed the procedures listed in this section. Observation of 5 cases of venous surgery is a compulsory component of venous training. Attendance should be documented by signature of the appropriate supervisor/surgeon. Candidates performing advanced procedures as listed should document these in the Advanced Surgical Procedures Logbook. However **practical** training and assessment in these procedures is not a specific requirement of the curriculum.

		Observed <i>Please tick</i>	Performed <i>Please tick</i>	Supervisor's Name	Supervisor's Signature
COMPULSORY					
1	Venous Surgery				
NON-COMPULSORY					
1	Coil Embolization of Ovarian Veins				
2	Alcohol sclerotherapy				
3	Fluoroscopic UGS				
4	IVC Filters				
5	Surgical Ligation of Ovarian Veins				
6	Catheter Guided Thrombolysis				

Signature of the Director of Training to indicate that the Assessment of Competence Form has been properly and appropriately completed.

SIGNED: _____ DATE: _____

Signature of the Candidate to indicate that the Assessment of Competence Form has been properly and appropriately completed.

SIGNED: _____ DATE: _____

AUSTRALASIAN COLLEGE OF PHLEBOLOGY

PHLEBOLOGY PART II

Record of Educational Activities

Name:

Supervised General Phlebology Clinics

4 supervised phlebology clinics per week- Minimum 176 clinics per year

Year 1 Location(s):

Supervisor's Signature

Total Number of Clinics:

Year 2 Location(s):

Supervisor's Signature

Total Number of Clinics:

Year 3 Location(s):

Supervisor's Signature

Total Number of Clinics:

Name:

Diagnostic Ultrasound

1 supervised diagnostic ultrasound session per week- minimum 44 clinics per year

Year 1 Location:

Total Number of Clinics:

Supervisor's Signature

Year 2 Location(s):

Total Number of Clinics:

Supervisor's Signature

Year 3 Location(s):

Total Number of Clinics:

Supervisor's Signature

Name:

Interventional Phlebology

1 supervised interventional phlebology session per week- minimum 44 clinics per year

Year 1 Location(s):

Supervisor's Signature

Total Number of Clinics:

Year 2 Location(s):

Supervisor's Signature

Total Number of Clinics:

Year 3 Location(s):

Supervisor's Signature

Total Number of Clinics:

Name:

Presentation

Title:

ACP Conference Location:

Date of Presentation:

2 Publications in ANZ Journal of Phlebology

Title:

Date of publication:

Title:

Date of publication:

Name:

Laser Safety Course

Candidates must, during the course of their Advanced Training, have attended a recognised Laser Safety Course. Certificate of Attendance should be attached.

Institute:

Date attended:

Advanced Phlebology Course

Candidates must, during the course of their Advanced Training, have attended the Advanced Phlebology Course at least once.

Course Location:

Date attended:

Advanced Cardiac Life Support Level 5

Candidates must, during the course of their Advanced Training, have attended and be certified in ACLS level 5 (or higher). Copy of Certification should be attached.

Institute:

Date obtained:

ASM Attendance

Trainees who commence from 2009 onwards are required to attend at least two Annual Scientific Meetings or equivalent in their first three years of training.

ACP Conference Location:	Year
ACP Conference Location:	Year
ACP Conference Location:	Year



THE AUSTRALASIAN
COLLEGE OF
PHLEBOLOGY

Section D

LOG BOOKS

PART I LOGBOOKS

BASIC PHLEBOLOGY TRAINING

CW-Doppler Examination: Venous Incompetence

Minimum 30 cases

Name:

[illegible]

BASIC PHLEBOLOGY TRAINING

CW-Doppler Examination: Venous Incompetence

Minimum 30 cases

Name:

[illegible]

BASIC PHLEBOLOGY TRAINING

CW-Doppler Examination: Venous Incompetence

Minimum 30 cases

Name:

[illegible]

BASIC PHLEBOLOGY TRAINING

CW-Doppler Examination: ABI Measurements

Minimum 10 cases

Name:

[illegible]

BASIC PHLEBOLOGY TRAINING

Direct Vision Sclerotherapy

Minimum 100 cases

Name:

[illegible]

BASIC PHLEBOLOGY TRAINING

Direct Vision Sclerotherapy

Minimum 100 cases

Name:

[illegible]

BASIC PHLEBOLOGY TRAINING

Direct Vision Sclerotherapy

Minimum 100 cases

Name:

[illegible]

BASIC PHLEBOLOGY TRAINING

Direct Vision Sclerotherapy

Minimum 100 cases

Name:

[illegible]

BASIC PHLEBOLOGY TRAINING

Direct Vision Sclerotherapy

Minimum 100 cases

Name:

[illegible]

BASIC PHLEBOLOGY TRAINING

Direct Vision Sclerotherapy

Minimum 100 cases

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BASIC PHLEBOLOGY TRAINING

Direct Vision Sclerotherapy

Minimum 100 cases

Name:

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BASIC PHLEBOLOGY TRAINING

Direct Vision Sclerotherapy

Minimum 100 cases

Name:

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BASIC PHLEBOLOGY TRAINING

Direct Vision Sclerotherapy

Minimum 100 cases

Name:

[illegible]

BASIC PHLEBOLOGY TRAINING

Direct Vision Sclerotherapy

Minimum 100 cases

Name:

[illegible]

BASIC PHLEBOLOGY TRAINING

Direct Vision Sclerotherapy

Minimum 100 cases

Name:

[illegible]

BASIC PHLEBOLOGY TRAINING

Direct Vision Sclerotherapy

Minimum 100 cases

Name:

[illegible]

PART II LOGBOOKS

ADVANCED PHLEBOLOGY TRAINING

CW-Doppler Examination: Venous Incompetence

Minimum 30 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

CW-Doppler Examination: Venous Incompetence

Minimum 30 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

CW-Doppler Examination: Venous Incompetence

Minimum 30 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

CW-Doppler Examination: ABI

Minimum 10 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Duplex Ultrasound Examination

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Duplex Ultrasound Examination

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Duplex Ultrasound Examination

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Duplex Ultrasound Examination

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Duplex Ultrasound Examination

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Duplex Ultrasound Examination

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Duplex Ultrasound Examination

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Duplex Ultrasound Examination

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Duplex Ultrasound Examination

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Duplex Ultrasound Examination

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Echosclerotherapy

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Echosclerotherapy

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Echosclerotherapy

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Echosclerotherapy

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Echosclerotherapy

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Echosclerotherapy

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Echosclerotherapy

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Echosclerotherapy

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Echosclerotherapy

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Echosclerotherapy

Minimum 100 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Endovenous Laser Ablation

Minimum 20 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Endovenous Laser Ablation

Minimum 20 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Management of Leg Ulcers

Minimum 20 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Management of Leg Ulcers

Minimum 20 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Vascular Laser Therapy

Minimum 20 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Vascular Laser Therapy

Minimum 20 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Venous Surgery Observation

Minimum 5 cases

Name:

[illegible]

ADVANCED PHLEBOLOGY TRAINING

Advanced Venous Procedures

Includes: Alcohol sclerotherapy, coil embolisation of ovarian veins, catheter guided thrombolysis, IVC filters

NOT COMPULSORY

Name:

[illegible]



THE AUSTRALASIAN
COLLEGE OF
PHLEBOLOGY

Section E

APPENDICES

Appendix 1

THE AUSTRALASIAN COLLEGE OF PHLEBOLOGY

Code of Conduct: Trainees, Members and Fellows of ACP

- 1 This Code of Conduct applies to all individuals participating in basic or advanced training programs of the Australasian College of Phlebology (College, ACP), associate members, affiliate members, ordinary members and all fellows.
- 2 Trainees, Members and Fellows of ACP are required to comply with the following requirements:
 - (a) Not to practise or accept a titled position in the capacity of a phlebologist, vein specialist, vascular specialist, varicose vein specialist, venous surgeon, vein surgeon, or any other such classification unless recognised by College as ACP Fellows.
 - (b) Not to practise or accept a titled position in the capacity of a Certified Sclerotherapist, unless having successfully completed the Basic Phlebology Training program of ACP and having received Certification in Sclerotherapy from ACP.
 - (c) Not to bring the specialty of phlebology or the Australasian College of Phlebology into disrepute via personal misconduct, unethical behaviour or medical negligence as determined by the ACP Board of Directors with evidence provided by relevant State Medical Boards, courts or other relevant authorities.
 - (d) Not to bring the specialty of phlebology or the Australasian College of Phlebology into disrepute via derogatory verbal assertions, publications or other forms of communication delivered via public lectures, talks, magazine articles, journal articles, website publications or any other public or scientific forum.
 - (e) Not to engage in anti-competitive, unethical or false advertising.
 - (f) Trainees to seek permission from College before participation in the teaching of phlebology either by way of lectures or talks to the public groups of general practitioners or the writing of articles for publication in public magazines, newspapers, educational journals and brochures aimed at general public, other medical practitioners or media.
 - (g) Trainees not to engage in any activity deemed to cause a conflict of interest with their ATC or Chief supervisor(s).
 - (h) Trainees to take up whatever training positions they are directed to by the Director of Training of their State Faculty.

- (i) To accept these requirements by signing an agreement at the time of payment of the relevant fees.
- (j) On acceptance of these requirements the individual will have his/her name placed on the register of trainees and/or members/fellows of the College. Failure to agree to these conditions or to comply will lead to removal of the individual's name from the register and the loss of entitlement to continue training and/or membership of the College.

RIGHTS AND ENTITLEMENTS OF TRAINEES OF THE COLLEGE

The rights and entitlements of trainees of College include:

1. Notification in writing by the Honorary Secretary of all training matters relevant to trainees of College including: scientific meeting dates, examination dates and venue, etc.
2. Attending the Annual Scientific Meeting of College.
3. Receiving the Journal of *Phlebology*.
4. All those outlined in the Training Program Handbook.

CODE OF CONDUCT AND TRAINING PROGRAM HANDBOOK

I have read the Code of Conduct for Trainees, Members and Fellows of the Australasian College of Phlebology and agree to abide by it. I agree to the conditions that are set out in the Training Program Handbook of the Australasian College of Phlebology concerning the training program as well as the regulations and requirements concerning the examinations.

My acceptance of the conditions is deemed by payment of the fees.

SIGNED: _____

DATED: _____

PRINT NAME: _____



THE AUSTRALASIAN
COLLEGE OF
PHLEBOLOGY

Section F

PAST PAPERS

PART I EXAMINATION

Sample Multiple Choice Questions

1. Regarding Polidocanol (product information sheet)

- a. 89% is eliminated from blood in 12 hours. (T)
- b. Is buffered to pH 5.4 (F) 6.5-8.0
- c. Ethanol is an excipient. (T)
- d. Is an osmotic agent. F
- e. Contains iodine. F

2. Polidocanol (Thibault ANZJP 5:18) - C

- a. is approximately equivalent to sodium tetradecyl sulphate in potency (F) (it is approx 1/3 to 1/4 potency)
- b. is free of systemic reactions (F) (can cause negative inotropic reactions)
- c. causes pain on extravasation (T)
- d. causes more pain than sodium tetradecyl sulphate at the time of injection (T)
- e. is less potent than sodium tetradecyl sulphate (T)

3. Regarding CW Doppler (Weiss 68)

- a. When the object approaches the probe, the frequency will increase (T)
- b. The Doppler principle applies to all types of wave phenomena in all types of media (T)
- c. CW Doppler transducer uses different piezoelectric crystals to transmit and receive (T)
- d. Maximum Doppler shift is achieved with the probe at right angles to the vessel (F)
- e. A Doppler probe that emits frequencies of 8-10 MHz is best suited to examining vessels that are more than 2 cm deep. (F)

4. Failure to respond to sclerotherapy may indicate: (Weiss p162)

- a. inadequate duplex examination (T)
- b. persistence of proximal reflux (T)
- c. poor compliance with compression (T)
- d. inadequate concentration of sclerosant (T)
- e. inadequate volume of sclerosant (T)

PART II EXAMINATION

Sample Multiple Choice Questions

1. **Spectral Doppler can be used for (Gent)**
 - a. locating veins and mapping their course and connections. F
 - b. identifying lymph nodes. F
 - c. identifying perforators. F
 - d. distinguishing vein from arteries. T
 - e. quantifying duration of reverse flow to categorize reflux. T

2. **The following tests are routinely used to screen for lupus anticoagulant**
 - a. dilute Russell's viper venom time. F
 - b. kaolin clotting time. F
 - c. prothrombin time. F
 - d. APTT. T
 - e. Euglobin clotting assay. F

3. **Regarding neonatal thrombosis. (Goodnight 328)**
 - a. The foetus and newborn with concurrent illness are more susceptible to thrombosis when compared with infants. (T) def of thrombin inhibition and def of fibrinolysis
 - b. Thrombosis often occurs after delivery. (F) (prior to or during delivery)
 - c. Renal vein thrombosis is the most common large vein thrombosis. (T)
 - d. Newborns show a relative resistance to heparin. (T)
 - e. Maternal lupus anticoagulant or anticardiolipin antibody can result in severe peri-natal thrombosis. (T)

4. **With regards to venous thrombosis (Weiss p244)**
 - a. Mondor's disease affects a vein draining from the breast to the axilla (T)
 - b. Plethysmography can detect most cases of deep vein thrombosis. (F) – inappropriate test
 - c. Phlegmasia cerulea dolens is the classical presentation of total proximal deep vein obstruction.(T)
 - d. Phlegmasia alba dolens is due to poor arterial inflow in the presence of severe proximal obstruction.(T)
 - e. Recanalisation of a vein uncommonly occurs following superficial thrombophlebitis. (F) usual

5 MINUTES READING TIME

AUSTRALASIAN COLLEGE OF
PHLEBOLOGY

Phlebology Part II Fellowship Examination

Phlebological Medicine

PAPER 1

TIME: 2 HOURS
9 October 2009

ANSWERS TO BE WRITTEN IN BOOKS PROVIDED.

Question 1

A 27 year old woman presents to your practice to have her varicose veins treated. She has had one episode of superficial thrombophlebitis. She is Factor V Leiden positive, homozygous. She has had two children, now aged 2 and 5. Her first pregnancy resulted in a miscarriage at 10 weeks gestation. Her father had a DVT following a long haul flight last year. Her mother suffers from lupus and gives a history of having “clots in her lungs” five years previously.

How would you manage this patient?

Question 2

A 22 year old medical receptionist is referred to you by her GP employer for investigation of a swollen, painful left leg. She has no previous history (nor family history) of clotting disorders, however she does take the oral contraceptive, Yasmin. She exercises four days a week at the gym and initially thought she had a muscular injury. She has no other significant medical history. Your duplex scan shows her to have an ilio-femoral thrombosis.

Discuss your management.

Question 3

A 49 year old lady presents with her husband. She was referred by her GP for the management of three ulcers (up to 20mm in diameter) above the left medial malleolus and present for 6 months. Her varicosities arose with pregnancy; she has had two children. She has type 2 diabetes and had a stroke 2 years ago with no specific cause identified. She is on oral hypoglycaemic tablets and her neurologist has her on warfarin 7mg daily. Her husband tells you the neurologist discussed putting her on aspirin and ceasing the warfarin when he sees her in another month. On examination she is C4,5sEpAsPr. A duplex scan reveals a 14mm average diameter GSV refluxing from the SFJ to the ankle.

How would you manage this patient?

Question 4

An 80 year old lady presents with gross ankle oedema and obvious varicosities affecting both legs. Your duplex scan reveals a pulsatile wave form in the varicosities. She had an anterior myocardial infarction two years ago and has been told she is unsuitable for surgical stripping of her veins.

- A. What would you expect to find on physical examination?
- B. How would you manage this patient?

Question 5

A 41 year old female cleaner presents with persistent heaviness, weakness and aching in her right arm when polishing above her head. She has a history of an 'AVM' affecting her right elbow which has been surgically excised on two occasions, and due to the complex anatomy no further surgery can be performed. She has had numbness and tingling in her right hand and recently underwent a carpal tunnel release.

- A. What is the most likely diagnosis?
- B. How would you further assess and manage this patient?

Question 6

A 32 year old female presents for treatment of varicose veins. Her past medical history includes epistaxis and joint aches and pains. The patient denies any previous bleeding, and has had childbirth, dental procedures and tonsillectomy without bleeding. There is a history of three miscarriages and an episode of calf vein thrombosis.

On examination she has a facial rash and scattered petechiae over the lower extremities. Laboratory tests reveal: haematocrit = 38% (0.38), WBC= $3.4 \times 10^9/L$, platelet count = $165 \times 10^9/L$. PT and APTT are normal but bleeding time is 30 minutes.

- A. What is this patient's likely diagnosis?
- B. What is the underlying disease?
- C. What is the cause of the bleeding tendency?
- D. What other investigations are required?

5 MINUTES READING TIME

AUSTRALASIAN COLLEGE OF
PHLEBOLOGY

Phlebology Part II Fellowship Examination

Phlebological Medicine

PAPER 2

TIME: 2 HOURS
9 October 2009

ANSWERS TO BE WRITTEN IN BOOKS PROVIDED

Question 7

A 47-year-old woman underwent cholecystectomy for gallstones and developed superficial phlebitis at an IV site. Treatment comprised heat and anti-inflammatory medications, but the clot extended to the shoulder. She was then treated with intravenous heparin and antibiotics. Her heparin dose was sub-therapeutic, and her symptoms worsened. Her thrombosed cephalic vein was surgically removed. Test results for factor V Leiden, antithrombin, protein C, and protein S were normal. Two days after surgery, the patient developed a palpable cord at another IV site. She received warfarin in therapeutic doses, but her clot extended. She suffered a pulmonary embolism from her upper extremity clot despite an INR of 3.0. She was hospitalized, given therapeutic heparin intravenously, and discharged on therapeutic low molecular weight heparin. With the exception of obesity and her laparoscopic surgery and vein surgery scars, results of the physical examination were unremarkable, as were results of routine laboratory tests (FBC, biochemistry, urinalysis). You are asked for an opinion regarding further management.

How would you manage this patient?

Question 8

A 41 year old female presents for treatment of varicose veins. She has a history of idiopathic vasculitis for which she is on colchicine 6 tablets a day. She has no history of venous thromboembolism.

On examination, she has bilateral reticulate pigmentation mostly from distal calf down to her ankles and dorsal feet. There are obvious varicosities of lateral calf and lateral feet. On close examination, there are areas of atrophie blanche of lower limbs and extensive bilateral small purpuric lesions. She has two areas of ulceration of the right lateral foot.

- A. What is the differential diagnosis?
- B. How would you manage this patient?

Question 9

A 44 year old female presents with a 10 year history of slow healing ankle ulcers. She has a background history of Crohn's disease, sclerosing cholangitis, impaired glucose tolerance secondary to steroids, hypercholesterolemia and three seizures 10 years before. The ulcers have appeared in the medial and lateral ankle areas and would typically start as small red papules that develop into a painful ulcer. Her current medications include prednisone, ursodeoxycholic acid carbamazepine and some supplements. On examination, there is an open ulcer measuring 10 by 15 cm in the right medial ankle area with a cyanotic edge with surrounding erythema. There are two healed ulcers on the left ankle with cribriform scarring. Her great saphenous veins are bilaterally incompetent with obvious tender varicosities present.

- A. What is the most likely diagnosis?
- B. What further investigations would you do?
- C. How would you manage this patient?

Question 10

A 34 year old woman with a prior history of Ehlers-Danlos syndrome presents for treatment of varicose veins. The patient has a history of easy bruising and bled excessively after dental surgery. On examination, the patient has thin translucent, fragile skin with easily seen venous network, ecchymoses and minimal joint laxity. She has prominent varicose veins bilaterally.

- A. What is the biochemical defect in Ehlers-Danlos syndrome?
- B. Which type of Ehlers-Danlos syndrome is more prone to vascular problems?
- C. What vascular problems do these patients present with?
- D. What coagulation problems do these patients present with?
- E. Is surgery a better option for this patient's varicose veins or non-surgical interventions and why?

Question 11

A 41 year old female presents for laser therapy of facial veins. She has a background history of iron deficiency anaemia and tells you that other members of her family have been 'bleeders'. On examination, there are pinpoint red lesions on the lips and inner oral mucosa that blanch with pressure. Blood test results reveal: haematocrit 34% (0.34), MCV 79 fl, WBC $7.6 \times 10^9/L$, Platelet count $380 \times 10^9/L$, PT 13 (s), APTT 31 (s).

- A. What is the most likely diagnosis?
- B. How is the disorder transmitted?
- C. What is the underlying genetic defect?
- D. What associated lesions might be found on further examination?
- E. What is the cause of easy bleeding?

Question 12

A 23 year old man sustained 30% total body surface area burns in a gas explosion. He was admitted to ICU, intubated and supported, including skin grafting. One week later he developed fever and hypotension. Blood cultures revealed *Klebsiella* and *Staphylococcus* bacteremia. Despite antibiotic therapy, his clinical picture deteriorated and the skin donor sites became black and necrotic. Biopsy demonstrated fibrin thrombi within dermal blood vessels. Generalised clinical bleeding developed. Test results revealed: PT 19.5 (s), APTT 49 (s), platelet count $53 \times 10^9/L$.

- A. What is the most likely diagnosis?
- B. What other blood tests would confirm your diagnosis?
- C. What management advice would you give the ICU residents?

5 MINUTES READING TIME

AUSTRALASIAN COLLEGE OF
PHLEBOLOGY

**Phlebology Part II
Fellowship Examination
2008**

Phlebological Medicine

PAPER 1

TIME: 2 HOURS

ANSWERS TO BE WRITTEN IN BOOKS PROVIDED

Question 1

A 35 year-old woman presents for treatment of surface veins on each leg. She has a past history of sclerotherapy to reticular veins and spider veins 3 years previously and has developed extensive telangiectatic matting. The left leg is treated with polidocanol 0.6% (7mls) and a Class 2 graduated compression stocking is applied to the left leg. The patient complains of severe pain during one injection.

The patient calls the next day and complains of a large painful 'bruise' over the medial aspect of the thigh.

How would you manage this patient?

Question 2

A 34 year-old female teacher presents with symptomatic varicose veins in the right calf. Duplex examination reveals right sapheno-femoral junction incompetence with the greater saphenous vein dilated and incompetent to the proximal calf. After discussing options of treatment, the patient agrees to undergo ultrasound-guided sclerotherapy to the right greater saphenous vein. The thigh segment of the greater saphenous vein is subsequently treated with sodium tetradecyl sulphate (STS) 3% 4mls, injected as 4 boluses of 1ml along the affected segment of vein.

Approximately 1 minute after the 4th injection, the patient states that she is feeling unwell and has become flushed in the face. She is having difficulty breathing. Her blood pressure is taken and systolic pressure is found to be 70mmHg.

How would you manage this patient?

Question 3

A 25 year old female presents for treatment of peri-orbital veins. She is quite healthy with no medical history. Her only regular medication is the oral contraceptive pill. Her grandmother died from a 'blood clot'.

On examination, she complains of prominent veins on the temples, in the medial canthus and upper eyelid.

She has been told that 'injections' can remove veins.

1. What are the potential specific complications of sclerotherapy of peri-orbital veins?
2. How would you manage this patient?

Question 4

A 12 year old girl presents to your surgery with a history of a swollen left leg following twisting her ankle 13 months ago. There is no other relevant history except the swelling began in the foot and slowly ascended over the last year. It does not improve with elevation or rest. On careful questioning she does get some swelling of her right leg. This girl is otherwise well.

Examination

Normal CVS and CNS exam

Early pubertal changes

Left leg

No capillary malformations

Normal pulses

No obvious venous disease

Positive Stemmers sign

Non pitting swollen leg

Leg lengths normal

1. What is your differential diagnosis?
2. How would you investigate this problem?
3. What is the most likely diagnosis if pathology, venous system and CT scans were normal?
4. What is your management?
5. What is the most important condition to exclude in a 65 year old with similar signs and symptoms?

Question 5

35 year old woman with bilateral “persistent” varicose veins despite surgery involving stripping procedure and follow up sclerotherapy

Menstrual history includes dysmenorrhea, dyspareunia, vulvar and inner thigh pain with menstrual cycle

Gynaecological review including Laparoscopy could find no abnormality.

Examination showed vulvar varicose veins with bilateral varicose veins streaming down from the upper inner thigh. Pulses normal

Duplex scan showed competent and normal deep system, absent GSV bilateral and competent SSV. No source of the varicose veins was obvious

1. What is the most likely cause of her systems with a normal gynaecological assessment?
2. How would you appropriately investigate these symptoms and signs?
3. What possible treatments could be offered?
4. Why did the surgical and sclerotherapy treatments fail to treat effectively these ladies varicose veins?

Question 6

A young man in his twenties presents with a tender, red area in the line of his GSV just below the knee. He has no family history of varicose veins or thrombophilia. His past medical history includes gastritis. He is on no regular medications. Examination shows no evidence of venous disease.

1. What is the differential diagnosis?
2. Clinically you suspect a Superficial Venous Thrombosis. What investigations would be useful and why?
3. How would you manage this patient?
4. If this SVT rapidly ascended up the GSV towards the SFJ. What course of action could you undertake?
5. This condition resolves and on follow up he admits he is an IV drug user and often injects ankle veins. He has intermittent sweats and fevers and has developed a cardiac murmur Are any further tests or referrals indicated?

5 MINUTES READING TIME

AUSTRALASIAN COLLEGE OF
PHLEBOLOGY

Phlebology Part II Fellowship Examination

Phlebological Medicine

PAPER 2

TIME: 2 HOURS

ANSWERS TO BE WRITTEN IN BOOKS PROVIDED.

Question 7

A 66 year old male smoker presents with a non healing chronic left leg ulcer on the lower calf. He has varicose veins and a previous history of left DVT. The ulcer is on the medial gaiter area, shows granulation tissue and no signs of cellulitis or infection.

1. What are the possible causes of his ulcer?
2. What investigation would be useful?
3. If AB index was 1, venous Doppler showed GSV incompetence with competent deep system, what treatment would you undertake?
4. If AB index 0.6 and venous Doppler was normal, what treatment would you undertake?
5. If he has deep venous incompetence and AB index of 0.7, what treatment should be used with great care. What alternative could you suggest?

Question 8

A 27-year-old man has a history of recurrent venous thrombophlebitis and pulmonary emboli, with multiple episodes over the past 5 years. He is currently taking sodium warfarin and has had no further thromboembolic episodes. His physician refers him for evaluation for ultrasound guided sclerotherapy of varicose veins.

1. What historical questions will be helpful in defining this patient's disorder?
2. What are the possible causes of inherited thrombotic disease?
3. How could these disorders be evaluated if the patient is on anticoagulant therapy?

Question 9

A 47-year-old woman underwent cholecystectomy for gallstones and developed superficial phlebitis at an IV site. Treatment comprised heat and anti-inflammatory medications, but the clot extended to the shoulder. She was then treated with intravenous heparin and antibiotics. Her heparin dose was subtherapeutic, and her symptoms worsened. Her thrombosed cephalic vein was surgically removed. Test results for factor V Leiden, antithrombin III, protein C, and protein S were normal. Two days after surgery, the patient developed a palpable cord at another IV site. She received warfarin in therapeutic doses, but her clot extended. She suffered a pulmonary embolism from her upper extremity clot despite an INR of 3.0. She was hospitalized, given therapeutic heparin intravenously, and discharged on therapeutic low molecular weight heparin. With the exception of obesity and her laparoscopic surgery and vein surgery scars, results of the physical examination were unremarkable, as were results of routine laboratory tests (FBC, chemistry panel, urinalysis). You are asked for an opinion regarding further management.

1. What is the differential diagnoses?
2. What investigations should be done?

Question 10

A 34-year-old man is referred for evaluation of coagulopathy and thrombosis. His medical history is unremarkable, including childhood and adult surgeries without bleeding, and no significant illnesses. He is taking no medications. Two weeks previously, the patient experienced a deep vein thrombosis and was admitted for anticoagulation therapy.

Laboratory results before anticoagulation: Hematocrit = 47% (0.47), WBC = 6400/mL ($6.4 \times 10^9/L$), platelet count = $112 \times 10^3/mL$ ($112 \times 10^9/L$), PT = 13.7 sec, and APTT = 68 sec. Currently, the patient is taking sodium warfarin with a PT of 29 sec and an INR of 2.4. The APTT is 71 sec.

1. What is the most likely diagnosis?
2. What is the explanation for thrombocytopenia and prolonged APTT?
3. What other laboratory tests would be helpful?
4. What is the appropriate treatment?
5. What should be done if the patient experiences recurrent thrombosis on therapeutic anticoagulation?

Question 11

A 67-year-old man on long-term sodium warfarin therapy for recurrent thrombosis comes to the emergency department. His last DVT was over a year ago. He believes his typically therapeutic PT on his standard therapy is 16-18 sec and that his typical INR is 2.0-2.3. His PT is 25.7 seconds and INR is 2.2.

The patient is confused by these results.

1. What is the explanation for these results?
2. What are 3 major variables affecting stability of oral anticoagulation?
3. How would you treat this patient if he had bruising and an INR of 5.3?
4. What would you do if the INR were 11.2 and the patient had a nose bleed?
5. What would you do if the INR was 8.8 and the haematocrit was 31% (0.31)?

Question 12

A 38-year-old man is referred by a gastroenterologist for recurrent thrombosis. One year earlier, the patient had an episode of melena; upper gastrointestinal endoscopy revealed multiple oesophageal varices that were not able to be banded. As part of the evaluation for portal hypertension, an abdominal ultrasound was done and revealed portal and splenic vein thromboses, but no evidence for acute clot. The patient denied symptoms of abdominal pain. His family history was positive (father and sister) for venous thrombotic episodes. The relatives had been previously diagnosed with factor V Leiden, and the patient's referring physician diagnosed the same inherited disorder in the patient.

Results of physical examination included pallor and pale mucous membranes, mild tenderness to palpation over the liver, and a positive haemoccult test result. The referring physician obtained laboratory test results, which indicated no exposure to hepatitis viruses and normal results for antinuclear antibodies, α_1 – antitrypsin, and ceruloplasmin.

Bleeding oesophageal varices are diagnosed.

1. Should this patient be started on anticoagulant therapy given the history of 2 intra-abdominal thrombotic events?
2. How would you manage this patient?

5 MINUTES READING TIME

AUSTRALASIAN COLLEGE OF
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Phlebology Part II Fellowship Examination

Phlebological Medicine

PAPER 1

TIME: 2 HOURS
6 October 2007

ANSWERS TO BE WRITTEN IN BOOKS PROVIDED.

1. A 60 year-old woman presents complaining of aching around the medial aspect of the left knee, especially after prolonged standing and on going to bed at night. She had a past history of ligation and stripping of the left greater saphenous vein following her second pregnancy 30 years ago. Clinical examination did not disclose visible or palpable varicose veins. Doppler examination revealed normal venous flow in the common femoral, superficial femoral and popliteal veins. A duplex venous reflux examination however revealed a recurrent incompetent medial thigh vein measuring 4 mm in diameter extending from approximated 6 cm distal to the groin to the proximal calf, and communicating with incompetent distal thigh and proximal calf perforating veins.
 - a. Are the symptoms consistent with venous symptoms? Explain why?(1.5 marks)
 - b. Would you consider surgical re-exploration of the groin? Explain why? (1.5 marks)
 - c. Describe your approach to the management of this patient. (7 marks)

2. A 41-yr old female presents with cosmetic concerns about surface veins on her legs. The only significant past history was migraine attacks every one to three months and recurrent sinusitis but the patient was currently well. Examination revealed reticular and spider veins in a typical distribution on the lateral thighs and medial aspect of the knees. The right leg was treated with Laureth 9 (polidocanol) 0.5% foam 12ml (4ml of solution) to the reticular veins and 6mls of Laureth 9 0.25% foam to the telangiectasias. A Class 2 compression stocking was then applied to the right leg. On rising from the treatment table the patient immediately complained of a visual disturbance comprising of blurred vision and flashing lights in the left visual field.
 - a. Is this patient showing signs of an anaphylactoid reaction? Explain why? (1 mark)
 - b. Do these symptoms only occur after the use of sclerosant foam and not with liquid solutions? (1 mark)
 - c. Are these symptoms less likely to occur with sodium tetradecyl sulphate? (1 mark)
 - d. Are these symptoms more likely to occur with patients who have a history of migraine? (1 mark)
 - e. How would you manage this patient? (6 marks)

3. An 81 year-old man presents with recurrent bleeding from a small erosion at the centre of an area of venulectasias on the medial aspect of the left knee. The adjacent area shows a raised border with telangiectasias. The lesion has been bleeding on the day of presentation and the patient is concerned about continued bleeding. There are no obvious visible or palpable varicose veins on physical examination. There is however a small reticular vein feeding into the area of venulectasia. The lesion is not bleeding at the time of consultation. The patient is on warfarin and aspirin.

How would you manage this patient? (10 marks)

4. A 55 year-old woman presents for treatment of surface veins on each leg. She has a past history of sclerotherapy to reticular veins and spider veins 3 years previously and has developed some recurrent asymptomatic veins. The left leg is treated with sodium tetradecyl sulphate 0.3% (7mls) and 0.5% (4mls) and a Class 2 graduated compression stocking is applied to the left leg. The practitioner does not note any significant events during the treatment session and request the patient return in 2 weeks for treatment to the right leg. When the patient returns 2 weeks later, she has developed a small (2mm) cutaneous black scab on the lateral left thigh with 2 mm of circumferential erythema surrounding it. The ulcer is slightly painful.
- Can this be due to infection introduced at the time of injection? Explain why? (1 mark)
 - Can this be due to intra-dermal extravasation of solution? Explain why? (1 mark)
 - Can this be due to intra-arteriolar injection? Explain why? (1 mark)
 - Can this be due to veno-arteriolar reflex induced vasospasm? Explain why? (1 mark)
 - How would you manage this patient? (6 marks)

5. A 34 year-old female teacher presents with symptomatic varicose veins in the right calf. Duplex examination reveals right sapheno-femoral junction incompetence with the greater saphenous vein dilated and incompetent to the proximal calf. After discussing options of treatment, the patient agrees to undergo ultrasound-guided sclerotherapy to the right greater saphenous vein. The thigh segment of the greater saphenous vein is subsequently treated with sodium tetradecyl sulphate (STS) 3% 4mls, injected as 4 boluses of 1ml along the affected segment of vein. Approximately 1 minute after the 4th injection, the patient states that she is feeling unwell and has become flushed in the face. She is having difficulty breathing. Her blood pressure is taken and systolic pressure is found to be 70mmHg.

How would you manage this patient? (10 marks)

6. A 67 year old women presents with symptomatic recurrent post-surgical varicose veins affecting both legs. She had a long history of varicose veins and had bilateral ligation and stripping of the greater saphenous veins approximately twenty-five years ago. She also has a history of breast cancer and has had a recent mastectomy. On examination there are major recurrent varicose veins affecting the anterior thighs and extending to the lower aspects of the legs. There are multiple surgical scars on the medial aspects of the thighs and calves. There are no skin changes from chronic venous stasis however. Duplex examination of the lower limb veins reveals normal and patent deep veins bilaterally. There are bilateral tortuous recurrent incompetent antero-medial thigh veins measuring 7-8 mm in diameter. There are no incompetent perforating veins present and the small saphenous veins are normal. In the right leg the proximal source of reflux is derived from pelvic tributaries and in the left leg there is an incompetent recurrent sapheno-femoral junction. The patient agrees to have ultrasound-guided sclerotherapy to the recurrent varicose veins. The right leg is treated initially with sodium tetradecyl sulphate foam (STS) 6 ml to the proximal thigh recurrent veins and a class 2 graduated compression stocking is applied to the right leg. She is booked to have further treatment to more distal varicose veins in 2 weeks. However she returns 5 days later with a very painful leg and on examination, there is severe cyanosis of the affected limb. She has a low-grade fever of 37.6° C. Duplex ultrasound of the leg does not demonstrate an abnormality.

- a. What is the most likely diagnosis? (3 marks)
- b. How would you manage this patient? (7 marks)

5 MINUTES READING TIME

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PAPER 2

TIME: 2 HOURS
6 October 2007

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7. A 27-year-old man has a history of recurrent venous thrombophlebitis and pulmonary emboli, with multiple episodes over the past 5 years. He is currently taking sodium warfarin and has had no further thromboembolic episodes. His physician refers him for the management of varicose veins.

How would you manage this patient? (10 marks)

8. A 47-year-old woman underwent cholecystectomy for gallstones and developed superficial phlebitis at an IV site. Treatment comprised heat and anti-inflammatory medications, but the clot extended to the shoulder. She was then treated with intravenous heparin and antibiotics. Her heparin dose was sub-therapeutic, and her symptoms worsened. Her thrombosed cephalic vein was surgically removed. Test results for factor V Leiden, antithrombin III, protein C, and protein S were normal. Two days after surgery, the patient developed a palpable cord at another IV site. She received warfarin in therapeutic doses, but her clot extended. She suffered a pulmonary embolism from her upper extremity clot despite an INR of 3.0. She was hospitalized, given therapeutic heparin intravenously, and discharged on therapeutic low molecular weight heparin. With the exception of obesity and her laparoscopic surgery and vein surgery scars, results of the physical examination were unremarkable, as were results of routine laboratory tests (FBC, chemistry panel, urinalysis). You are asked for an opinion regarding further management.

How would you manage this patient? (10 marks)

9. A 22-year-old female is admitted for a lower extremity deep vein thrombosis (DVT) precipitated by leg trauma. At age 21, she developed a sagittal sinus thrombosis and pulmonary embolism. She has had 3 miscarriages. An inherited thrombosis evaluation at that time indicated normal assays for antithrombin III, protein C, and Protein S. She received 1 year of oral anticoagulation. The patient is uncertain about a family history of thrombosis. She received heparin therapy for her extremity DVT and was started on oral warfarin.

What further investigations are required and why? (10 marks)

10. A 60-year-old man is referred for peri-operative management of anticoagulation therapy. He is on indefinite warfarin therapy for recurrent DVT associated with the factor V Leiden mutation. He has had 3 episodes of DVT, one episode of pulmonary embolism, and has postphlebitic syndrome of his right leg. He is scheduled for elective hernia repair, and his surgeon requests assistance in management of preoperative and postoperative anticoagulation.

What will you advise? (10 marks)

11. A 38-year-old man is referred by a gastroenterologist for recurrent thrombosis. One year earlier, the patient had an episode of melena; upper gastrointestinal endoscopy revealed multiple oesophageal varices that were not able to be banded. As part of the evaluation for portal hypertension, an abdominal ultrasound was done and revealed portal and splenic vein thromboses, but no evidence for acute clot. The patient denied symptoms of abdominal pain. His family history was positive (father and sister) for venous thrombotic episodes. The relatives had been previously diagnosed with factor V Leiden, and the patient's referring physician diagnosed the same inherited disorder in the patient. Results of physical examination included pallor and pale mucous membranes, mild tenderness to palpation over the liver, and a positive haemoccult test result. The referring physician obtained laboratory test results, which indicated no exposure to hepatitis viruses and normal results for antinuclear antibodies, a_1 – antitrypsin, and ceruloplasmin. The referring physician wants to know if this patient should be anticoagulated despite the history of bleeding oesophageal varices.

How would you manage this patient? (10 marks)

12. A 9 year old boy is brought to your office by his concerned parents for generalised 'varicose veins'. On examination, the child has visible prominent veins on the chest and abdomen. (10 marks)

- a. What is the differential diagnosis?
- b. What further examination is required?

What further investigations are required?



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COLLEGE OF
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