



THE AUSTRALASIAN
COLLEGE OF
PHLEBOLOGY

TRAINING HANDBOOK



Endorsed by

**Union Internationale
de Phlébologie (UIP)**



**PRESIDENT
D'HONNEUR
FONDATEUR
Raymond TOURNAY**

**PRESIDENT
Eberhard RABE**

**PAST PRESIDENT
Claudio ALLEGRA**

**VICE-PRESIDENTS
John Bergan
Byung Boong Lee
Mark Malouf
Angelo Scuderi
Jaroslav Strejcek**

**GENERAL
SECRETARY
Ivan STAELENS**

**ASSISTANT
GENERAL
SECRETARY
André Cornu Thenard**

**TRESURER
Jean Jérôme GUEX**

**COMITTEE OF
HONOUR
P. CONRAD
A. DAVY
S. HOSHINO
G. JANET
J-P. KUIPER
H. PARTSCH
M. PERRIN
P. RAYMOND-
MARTINBEAU
A. A. RAMELET
N. ROSLI
J. VAN DER
STRICT
A. UMANSKY
P. WALLOIS**

September 7th 2010

Auspices of the UIP for the phlebological training programme of the Australasian College of Phlebology

The Australasian College of Phlebology (ACP), a member society of the International Union of Phlebology, is performing a training program for those who want to specialise in Phlebology. This training program is based on the UIP-Curriculum of Phlebology.

The ACP-training program is one of the most sophisticated training programs in Phlebology worldwide. It is well recognized by the UIP and takes place under the auspices of the Union Internationale de Phlébologie.

Prof. Dr. med. Eberhard Rabe

LE PRESIDENT

Prof. Dr. Eberhard RABE, Clinic of Dermatology – University of Bonn
Sigmund-Freud Str. 25, 53105 Bonn, Tel : 0049-228-2871-6630, Fax : 0049-228-2871-4333
Email : eberhard.rabe@ukb.uni-bonn.de

IMPORTANT NOTE: PLEASE READ

This training handbook, its content, fees quoted, and other information contained herein are intended as a guide.

The Training Handbook is reviewed annually to ensure information regarding Policies, Procedures, Regulations and all aspects of the training program are current. Any changes to the current version of the Training Handbook may occur from time to time. While Trainees will be notified of changes, it is their responsibility to ensure they remain up-to-date with any such changes. Please refer to the online Training Handbook for the latest version that can be downloaded from the College website.

Every effort has been made to be explicit about training matters. However, omissions can occur and the Board of Training reserve the right to clarify any matter not explicitly stipulated.

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 Executive Board of the ACP.

It is the responsibility of all trainees to read this document and be familiar with the syllabus, the training requirements, the examination requirements and examination structure outlined in this handbook.

Applications to sit the written and clinical examinations is 3 months prior to the date of the examination. Application forms and payment must be received by the College office 3 months prior to the examinations or by the date as specified by the Board of Censors. If an application form or payment is received after the specified deadline, it is at the discretion of the Chief Censor to accept or reject any such application and where accepted a 20% late fee will apply to such applications.

It is also the trainees' responsibility to have all assessment of competence forms and logbooks signed off by their supervisor(s) and **received by the College office by the 31 December** of the final year of training in order to have met all the training requirements to be eligible to receive their respective qualification.

Any issues regarding the Training Program or Examinations need to be directed to the College office and not to individual members of the College executive board.

Trainees who have successfully completed their training will be conferred their formal certificate during the Conferring Ceremony which is usually held annually during the Annual Scientific Meeting. All trainees will receive a letter of acknowledgement of completing the training program. Trainees are to be present at the conferring ceremony to receive their formal certificate. Certificates will not be mailed or received until after the Conferring Ceremony.

TABLE OF CONTENTS

Introduction to the Australasian College of Phlebology	5
Overview of Phlebology Training	6
Structure of the Training Program.....	7
Training Program Pre-requisites	9
Part-time Training.....	10
How to Use This Book.....	11
SECTION 1: CHAPTER A.....	12
<i>BASIC TRAINING PROGRAM</i>	13
<i>BASIC TRAINING REQUIREMENTS</i>	15
<i>BASIC EXAMINATIONS</i>	18
<i>FEES, DATES AND CERTIFICATION</i>	20
<i>READING LIST</i>	21
SECTION 1: CHAPTER B.....	22
<i>ADVANCED TRAINING PROGRAM</i>	23
<i>ADVANCED TRAINING REQUIREMENTS</i>	25
<i>ADVANCED TRAINING EXAMINATIONS</i>	29
<i>FEES, DATES AND CERTIFICATION</i>	31
<i>READING LIST</i>	32
SECTION 1: CHAPTER C.....	35
<i>PHLEBOLOGY FELLOWSHIP PROGRAM</i>	36
<i>PHLEBOLOGY FELLOWSHIP TRAINING REQUIREMENTS</i>	38
<i>PHLEBOLOGY FELLOWSHIP EXAMINATIONS</i>	43
<i>FEES, DATES AND CERTIFICATION</i>	46
READING LIST	47
LOGBOOKS	50
PHLEBOLOGY SYLLABUS	73
REFERENCES	106
CODE OF CONDUCT	112
SAMPLE EXAMINATION QUESTIONS	114

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 comprehensive training programs in phlebology worldwide. The College can train and certify practitioners in performing a range of procedures such as endovenous ablation, 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, with four 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.

Please note the ACP is not a higher education provider and courses offered are intended to only provide medical education and training in the related field.

Overview of Phlebology Training

Phlebology training in Australia and New Zealand has undergone a gradual evolution. The ACP is committed to maintaining the highest standards of education and training in phlebology. Fellowship of the ACP 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. The following table summarises the training program.

OVERVIEW OF PHLEBOLOGY TRAINING PROGRAM

	Module Completion	Basic	Advanced	Fellowship
Prerequisite	N/A	Current registration as a medical practitioner in Australia or New Zealand	Basic Training in Phlebology Course	Advanced Training in Phlebology Course
Training period	1 year	1 year	2 years	1 year
Leads to	Module Completion	Certificate of Basic Training in Phlebology	Certificate of Advanced Training in Phlebology	College Fellowship
Application Fee	N/A	\$220.00	\$220.00	\$220.00
Annual Training Fee	\$1,100.00	\$7,700.00	\$7,700.00	\$7,700.00
Trainee Membership	\$815.00	\$815.00	\$905.00	\$905.00
Exams Application Fee	N/A	\$110.00	\$110.00	\$110.00
Written Exam Fee	N/A	\$770.00	\$770.00	\$770.00
Clinical Exam Fee	N/A	\$1,100.00	\$1,100.00	\$1,100.00

All fees are non-refundable and inclusive of GST.

Structure of the Training Program

Trainees pass through defined stages that culminate in the ACP Fellowship. These stages are structured 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 first Monday of February each year. Applicants are invited to an interview and upon meeting all the minimum criteria (see relevant sections on Basic, Advanced and Fellowship Training) and payment of all fees, are offered placements for their period of training.

BASIC TRAINING (1 YEAR)

The Basic Training Program will prepare the practitioner to perform direct vision sclerotherapy and will provide a basic understanding of phlebology. To be admitted to the Basic 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, have at least two years acceptable training in a teaching hospital (post-graduate years 1 and 2) or equivalent as recognised by the ACP, and at least 3 years post-graduate experience in clinical medicine.

ADVANCED TRAINING (2 YEARS)

Through the advanced training program trainees acquire skills and a broad knowledge of the theory and practice of phlebology and the basic sciences underpinning them to perform more advanced procedures such as ultrasound guided sclerotherapy and endovenous ablation. Successful completion of the basic training program is a pre-requisite. Through the advanced training program, trainees acquire skills to perform more advanced procedures such as ultrasound guided sclerotherapy and endovenous ablation.

FELLOWSHIP TRAINING (1 YEAR)

The purpose of Fellowship 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 Fellowship Training, trainees acquire skills in the treatment of more complex phlebological conditions such as venous thromboembolism and vascular malformations. 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 are entitled to use the title 'Phlebologist'.

MODULE COMPLETION CERTIFICATE

For practitioners who wish to complete **ONLY** the theory component of the online Basic Training modules to supplement their clinical experience, the Module Completion Certificate offers an opportunity to gain valuable knowledge. There are no requirements for clinical supervision or end of year examinations.

This training does not imply in any way that the college endorses or accredits the clinical skills or practice of the candidate. Please note the ACP is not a higher education provider and courses offered are intended to only provide medical education and training in the related field.

	Basic Training	Advanced Training	Fellowship
Training Period	1 year	2 years	1 year
Prerequisites	Possess medical registration in Australia or New Zealand. At least 3 years post-graduate experience in clinical medicine.	Certificate of Basic Training in Phlebology	Certificate of Advanced Training in Phlebology
Supervised Training	Attend at least 10 days of clinical attachment at an accredited training centre	Attend 40 days of supervised clinical training over the 2 years.	Attend at least 44 weeks of supervised training per year. 16 Hours per week supervised phlebology including <ul style="list-style-type: none"> • 2 hours diagnostic ultrasound • 2 hours interventional phlebology 16 hours per week unsupervised phlebology
Doppler and Duplex Ultrasound	40 Duplex Ultrasound Scans 30 Venous incompetence scans 10 bilateral ABI measurements	100 Duplex Ultrasound Examinations including 30 DVT scans	
		ACP Certificate of Ultrasound in Phlebology (CUP) 1-year online course	ACP Advanced Certificate of Ultrasound in Phlebology (ACUP) 1-year course
Procedural Logbooks	50 Direct vision sclerotherapy procedures 20 under direct supervision	100 Ultrasound guided sclerotherapy procedures 20 under direct supervision	20 Vascular laser therapy procedures 10 under direct supervision
		20 Endovenous Ablation Procedures (laser or radiofrequency) 10 under direct supervision.	20 Chronic Venous Disease cases Under direct supervision
			5 Venous Surgery procedures Observation or assistance
Publications and Presentations		1 Presentation in ASM	1 of the following: Publish an original article. <ul style="list-style-type: none"> • Do a second presentation or poster presentation, specifically being a literature review • Complete a postgraduate subject in Clinical Epidemiology, Biostatistics, Research Methods, or Evidence based medicine. • Complete a novel research project or post-graduate university course.
Courses and Workshops	Attend 1 Annual Scientific Meeting or Workshop	Pass in Advanced Cardiac Life Support (ACLS)	Attend 1 Annual Scientific Meeting or Workshop
		Laser Safety Course	
		Attend 1 Annual Scientific Meeting or Workshop	
Assessments and Examinations	1 SITA assessment per year	1 SITA assessment per year	1 SITA assessment per year
	Written Examinations (Online) <ol style="list-style-type: none"> 1. Sclerotherapy MCQ 2. OSCE 	Written Examinations (Online) <ol style="list-style-type: none"> 1. Procedural Phlebology MCQ 2. Pharmacology and Therapeutics MCQ 3. OSCE 	Written Examinations (Online) <ol style="list-style-type: none"> 1. General Phlebology MCQ 2. Phlebological Medicine Short Essays 3. OSCE
	Clinical Examinations <ol style="list-style-type: none"> 1. Short Cases 	Clinical Examinations <ol style="list-style-type: none"> 1. Duplex Ultrasound Cases 2. Short Cases 	Clinical Examinations <ol style="list-style-type: none"> 4. Duplex Ultrasound Cases 5. Long Cases

Training Program Pre-requisites

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

Applicants must:

- have resident status in Australia or New Zealand
- have current registration as a medical practitioner in Australia or New Zealand
- have a recognised medical post graduate qualification (eg FRACGP) or more than 3 years post graduate experience in clinical medicine

A person who has satisfied the above prerequisites is eligible to apply for admission to the College Training Program.

Legal Liability:

Onus is on the clinic and is not on the College to take action regarding trainees' employment conditions in clinics. Employment conditions and obtaining medicare provider numbers are a matter of the individual trainee and the clinic to negotiate/arbitrate.

Part-time Training

The ACP allows Trainees to participate in part-time training provided the following criteria, as approved by the BOT and BOC, are met.

- All requests for such training will be carefully considered but cannot always be accommodated. When a request for a part time position is considered the following is taken into consideration:
- A part-time Trainee has to perform at least 50% of the full-time workload.
- A part-time Trainee is expected to attend at least 50% of tutorials, clinical meetings and other educational meetings held at their training centre or organized by their State Faculty.
- A part-time Trainee is expected to work continuously during their part time position (with the usual provisions for leave).
- A suitable timetable for the part-time position is to be developed by the Supervisor of Training. This should occur as soon as practicable after selection and position allocation is completed. The proposed timetable is to be approved by the Board of Training.
- The overall duration of training must not exceed:
 - 2 years for basic training
 - 4 years for advanced training
 - 2 years for fellowship training
- It is appreciated that unforeseen circumstances may arise that lead to a request by a Trainee to undertake part-time training outside the time frame referred to above. All requests should be submitted in writing to the DOT. All requests will be carefully considered but approval of the request cannot be guaranteed.
- Applications must be made in writing to the DOT. Such applications must be made by **1 July** in the year prior to the proposed shared/part-time training.

How to Use This Book

Training Handbook

Section 1

Chapter A Basic Training, the examination process and certification and requirements, as well as the Module Completion Basic

Chapter B Advanced Training, the examination process, certification and requirements.

Chapter C Fellowship Training, the examination process, certification and Fellowship requirements.

Chapter D Phlebology Syllabus

Section 2 Training documentation and assessment of competence forms

Part A Basic Training Logbooks

Part B Advanced Training Logbooks

Part C Fellowship Training Logbooks

Section 3 Code of Conduct

Section 4 Sample examination questions

The Trainee Declaration and Code of Conduct forms are to be signed and returned to the college office prior to commencing training.

Examination Application forms for the Basic, Advanced and Fellowship examinations will become available each July and will be sent to all trainees.



SECTION 1: CHAPTER A

BASIC TRAINING

BASIC TRAINING PROGRAM

A. GENERAL INFORMATION

The Basic Training Program will prepare the practitioner to perform direct vision sclerotherapy and will provide a basic understanding of phlebology.

To be admitted to the Basic 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, have at least two years acceptable training in a teaching hospital (post-graduate years 1 and 2) or equivalent as recognised by the ACP, and at least 3 years post-graduate experience in clinical medicine.

Please note that the Basic training does not provide certification in ultrasound guided sclerotherapy or endovenous ablation techniques.

These procedures are covered under the Advanced curriculum. Although the Basic Training Program does not provide training in advanced procedures, it will provide a strong foundation for those who wish to further their education in phlebology. Candidates who successfully complete the Basic Training Program can continue their studies in phlebology through the Advanced or Fellowship training courses.

Fellows of the College sub-specialise in Medical, Surgical or Interventional aspects of phlebology. Advanced training graduates specialise in ultrasound guided procedures such as ultrasound guided sclerotherapy, endovenous laser therapy and radiofrequency ablation.

The title 'Phlebologist' is reserved only for the Fellows of the College and should not be used until Fellowship is achieved.

For further information about Advanced and Fellowship Training, please refer to Chapter C of this manual.

B. OVERVIEW OF THE BASIC TRAINING

The duration of the Basic Training Program is one year. Consistent with public hospital trainee allocations, the Training Year starts on the first Monday in February of each year.

The majority of theoretical knowledge will be acquired by completion of the online sclerotherapy modules accessed through the ACP website. The modules provide a broad coverage of important areas of knowledge for the beginning sclerotherapist. However, **they are not totally comprehensive, and should be supplemented by individual study in areas of particular interest or difficulty for candidates.** There is a brief assessment at the conclusion of each online module and the grades from these assessments will contribute to the final assessment grade.

The written examination component is made up as follows: 40% online module assessments, 60% end of year written examination, including an online objective structured clinical examination (OSCE). A Pass in the written examination component 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 component is valid for 3 years. During the training year, adequate experience needs to be accumulated to prepare the candidate for the clinical examination. Logbook requirements are to be met. Trainees are required to attend an ACP workshop or the College's Annual Scientific Meeting.

Trainees are required to complete 10 days of clinical attachment during their training year. The attachment must be provided by a College Fellow. The College office will assist in arranging this attachment to an Accredited Training Centre.

All sclerotherapy requirements are to be met before the Certificate of Basic Training can be awarded. Log-books, assessment of competence forms and educational activity forms should be presented to the ACP before the end of the training year. Candidates will not receive their final assessment result until all requirements are met. 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 1st December of the Training Year. Extension will be granted at the discretion of the Board of Censors.

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

1. One ACP workshop or Annual Scientific Meeting attendance
2. 10 days of clinical attachment
3. Online training modules successfully completed
4. Logbook requirements completed
5. Pass in the written examination
6. Pass in the clinical examination.

BASIC TRAINING REQUIREMENTS

The following are the minimum requirements of the Basic Training Program and Certificates will not be awarded without evidence of successful completion of all the following requirements.

A. WORKSHOP OR ANNUAL SCIENTIFIC MEETING

The workshop or Annual Scientific Meeting covers a wide range of topics including patient assessment, epidemiology of varicose veins, anatomy, chronic venous insufficiency pathophysiology, telangiectatic conditions, thrombophilia, sclerosing agents, techniques and complications of sclerotherapy, vascular laser therapy, treatment overview, and medicolegal issues.

At least one attendance at the workshop or annual scientific meeting is required.

B. 10 DAYS OF CLINICAL ATTACHMENT

Each trainee must complete 10 days of supervised clinical training under the supervision of an ACP Fellow/s. This training is done at an ATC and the College office will facilitate this process. Trainees are encouraged to visit more than one practise during the training period. 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 10 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

At the completion of the 10 days of clinical attachment, if the trainee has not, in the opinion of the supervisor, achieved reasonable competence in performing direct vision sclerotherapy, then additional attachment days should be added to the training. This process should be continued until the trainee is deemed to be competent in performing this procedure.

The duties of the trainee will be to assist the supervisor in managing patients, taking history, doing a physical examination, performing a basic screening Duplex Ultrasound 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 documentation is available to be presented to the ATC and a copy to be provided to the College office:

1. Australian or New Zealand Medical Registration in the relevant country where the ATC is located.
2. Provider number for the relevant ATC for billing purposes.
3. Medical indemnity to work at the ATC.
4. Provide a copy of Workers compensation Basic of currency to work at the ATC

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

C. A PASS IN THE ONLINE MODULE TRAINING

Successful completion and a pass in the modular assessments is required. If an online module has been unsuccessfully completed the module must be redone until the module has been successfully completed.

D. LOGBOOK REQUIREMENTS

(a) 40 cases of ultrasound examination

- Logbooks to be completed.
- 30 screening venous incompetence scans using Duplex Ultrasound
- 10 ABI measurements using CW Doppler.
- Supervisor's signature required.

(b) 50 direct vision sclerotherapy procedures

- Logbooks to be completed.
- At least 20 cases to be done under direct supervision
- At least 30 cases unsupervised.
- Supervisor's signature required.

E. A PASS IN THE SCLEROTHERAPY WRITTEN EXAMINATION

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

F. A PASS IN THE SCLEROTHERAPY CLINICAL EXAMINATION

DOCUMENTATION OF TRAINING

The following should be submitted by the end of the training year

1. Record of Educational Activities

- a. Workshop or Conference attendance Basic
- b. Number of days of supervised clinical training

2. Summative In-training Assessment (SITA) Forms

To be completed by supervisor.

3. Assessment of Competence Form

All sections must be signed. Attendance Records and Assessment of Competence Forms found in Section D of this handbook.

4. Logbooks

Candidates are required to keep log books documenting requirements. Logbooks found in Section E of this handbook.

NOTE

The Board of Censors accepts that there are significant practical difficulties involved in having supervisors observe trainees performing 20 sclerotherapy cases. This is especially the case when the trainee is required to travel either interstate or long distances within their state to undergo their clinical attachment, therefore making it very difficult to supply their own patients. The Chief Censor is satisfied that for the 20 mandatory logbook cases of "observed sclerotherapy" in the sclerotherapy certificate course, that those cases be made up of either the supervisor observing the trainee perform direct vision sclerotherapy or the trainee observing the supervisor perform direct vision sclerotherapy, or a combination of the two. The supervisor will still be required at the end of the training period to be satisfied that the trainee is reasonably competent to perform direct vision sclerotherapy.

SUMMATIVE-IN-TRAINING ASSESSMENT (SITA)

SITA Clinical Supervisor Form

1. The SITA form is to be completed twice per year in June and October, by the clinical supervisor(s) (CS) who have direct supervision of the trainee.
2. The CS will be notified that they need to complete the SITA for the trainee.
3. The SITA form will be sent to the supervisor for completion.
4. The CS is to complete the SITA form and return it to the College office.
5. The SITA forms pertaining to each trainee are collated into the SITA summary form.

SITA Summary

1. The SOT and trainee discuss the trainee's progress
2. The SOT determines whether the assessment is Satisfactory or Unsatisfactory

Satisfactory:

When deemed satisfactory the completed SITA summary form is signed by the SOT and forwarded to the College office to be filed in the trainee's file

Unsatisfactory:

When the trainee has received "Below expected standard" or "Unsatisfactory" from the supervisor(s), the trainee and SOT both complete a Performance Improvement Form (PIF).

The SOT and Trainee are both responsible for ensuring that the Director of Training (DOT) is informed of the unsatisfactory result and the signed SITA form is forwarded to the College office.

Performance Improvement Form (PIF)

1. The SOT and trainee have a meeting within 2 weeks of the SITA meeting to review strategies that the trainee can use to improve his or her performance.
2. The trainee will be on probation until they receive a SATISFACTORY SITA review. Then both the SOT and the Trainee sign another completed SITA Form and forward to the Education Officer.

Definitions

CS	Clinical Supervisor	Direct supervision of Trainees
SOT	Supervisor of Training	Oversees all Clinical Supervisors
DOT	Director of Training	Oversees all Clinical Supervisors, Supervisors of training, Trainees and ACP Training program
SITA	Summative-In-Training Assessment	

BASIC EXAMINATIONS

A. GENERAL INFORMATION

Basic examination consists of Modular Online Training, a Written, and a Clinical examination. A pass in the Written Component (Online Modular plus Written Exam) is required before a candidate is invited to sit the Clinical Examination.

B. BASIC EXAMINATIONS

ONLINE MODULAR ASSESSMENTS

Online modular training enables on-line learning with the required information supplied module by module. Grades from these set tasks will constitute 40% of your overall written assessment with written examination and online OSCE making up the other 60%. There will be a lecturer allocated to each module. The lecturer will generally have developed the module, collated the reference material and will be available for Q&A via online for the duration of the module.

If an online module has been unsuccessfully completed the module must be redone until the module has been successfully completed.

WRITTEN EXAMINATION

The Written Examination tests the theoretical knowledge of the candidate in 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 MCQ 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.

ONLINE FORMAT OBJECTIVE STRUCTURED CLINICAL EXAMINATIONS (OSCES)

This includes examinations in diagnostic procedures and sclerotherapy techniques. These examinations replace the previous face to face OSCE, and will consist of a series of clinical photographs, clinical presentations, test results, or clinical scenarios. Each subject will be accompanied by a series of questions.

CLINICAL EXAMINATION-SHORT CASES

Only candidates who have successfully passed the Written Component (Module assessments and written exam including online OSCE) are invited to sit for the Clinical Examination.

The clinical examinations are designed to test your ability to safely and effectively assess, investigate and manage cases of venous disease.

You will be expected to:

- take an appropriate history
- examine legs for signs of venous disease
- conduct a brief basic duplex venous examination, identifying major superficial veins and testing for reflux using colour doppler
- suggest appropriate management options
- answer questions about venous disease and its management using the knowledge that you have gained over the year

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 Chief Censor 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 the Modular, Written and the Clinical Examinations. A pass in the Written Component is required for the candidates to be invited to sit for the Clinical Examination. The pass mark for the Written Examination is 75%. A pass in the Written Component is valid for three years, during which time the candidate can sit for the Clinical Examination without having to repeat the Written Examination.

FEES, DATES AND CERTIFICATION

A. FEES

BASIC EXAM FEES	
Training Application Fee	\$220.00
Training Fee	\$7700.00
Exam Application Fee	\$110.00
Written Examination Fee	\$770.00
Clinical Examination Fee	\$1100.00
TOTAL	\$9900.00

All fees include GST.

All fees are governed by Regulations of the College Board. 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 the full exam fee applies if any part of this examination needs to be repeated.

The Training and Examination fees will be refunded only upon application and consideration of the Board of Censors if training is cancelled within two months of commencing. A \$220.00 cancellation fee will apply to any cancellation of training.

B. EXAMINATION DATES

A pass in the online training modules and assessments is valid for three years, during which time the candidate can sit for the Clinical Examination without having to repeat the modular assessments. The date of the Clinical examination is announced by the Board of Censors and is available on the College website.

Application forms and payment must be received by the College office 3 months prior to the examinations or by the date as specified by the Board of Censors. If an application form or payment is received after the specified deadline, it is at the discretion of the Chief Censor to accept or reject any such application and where accepted a 20% late fee will apply to such applications.

C. CERTIFICATION

Successful candidates who have met the minimum training requirements will be awarded Certificate of Basic Training in Phlebology and will become an Ordinary Member of the Australasian College of Phlebology. Trainees are expected to attend the Conferring Ceremony to receive their Certificate.

Completing this training course does not qualify the candidate to perform ultrasound guided sclerotherapy or other advanced venous procedures.

READING LIST

A) TEXTBOOKS AND REFERENCE BOOKS

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.

TEXTBOOK (examinable)

Sclerotherapy 5th Ed

Goldman, Guex, Weiss

Elsevier

ISBN: 978-0-323-07367-7

The Fundamentals of Phlebology: Venous Disease for Clinicians

Fronek, Helane

American College of Phlebology

ISBN 13 978-1-85315-774-5

REFERENCE (relevant chapters only)

Foam Sclerotherapy

Bergan J, Le Cheng V (Editors)

Royal Society of Medicine Press

ISBN: 978-1-85315-771-4

Phlebology

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

Elsevier

ISBN-10: 2842991478

ISBN-13: 9782842991470

Vein Diagnosis and Treatment: A Comprehensive Approach

Weiss R, Feied C, Weiss M.

McGraw-Hill

ISBN: 0-07-069201-7

B) JOURNALS

Relevant articles for the two years up to 31 December of the year prior to the examination published in *Phlebology*, *The Journal of Venous Disease (RSM)*, should be known in detail.

C) OTHER

Product information sheets for the most commonly used sclerosants.



SECTION 1: CHAPTER B

ADVANCED TRAINING

ADVANCED TRAINING PROGRAM

A GENERAL INFORMATION

The Advanced Training involves satisfactory completion of at least 2 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 procedural aspects of phlebology. The number of training posts is limited. Practical learning at these ATCs may be complimented by structured educational activities such as Vein Schools, Journal Clubs, Clinical Meetings and e-learning organised by relevant State Faculties as well as the Advanced Training Course held in conjunction with the College's ASM. 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.

Advanced graduates specialise in ultrasound guided procedures such as ultrasound guided sclerotherapy and endovenous laser ablation therapy.

Those successful candidates who wish to continue their studies in phlebology and gain Fellowship of the ACP need to continue training and meet the Fellowship Training requirements.

The Advanced Training in Phlebology does not qualify the practitioner to perform venous or vascular surgery.

B PREREQUISITES

Before being considered for the Advanced training program, trainees must have satisfied all of the prescribed requirements of the College's Basic training program and passed all the College's assessments as outlined in the Training Program Handbook.

Applicants for the Advanced training are required to have completed the ACP Basic Training course.

C 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 within the resource constraints of the ACP. The selection process involves an application and an interview. Prospective trainees are required to complete the ACP application form on the ACP College Website and must agree to the program fees. 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 Training Program. Applicants are required to directly apply for 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 training application form and must agree to the program fees. They are also requested to send in their Curriculum Vitae.

Step 3- 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 4- ATC to apply for an individual Accredited Training Program for the Applicant

The relevant ATC will then need to submit an individual 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 a Training Program).

Step 5- Payment of Fees and Code of Conduct

On appointment to the 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.

D. ACCREDITATION OF AN ADVANCED TRAINING PROGRAM

An individual Training Program is established for each trainee by their relevant ATC 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. 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.

Full fees apply for any extra year of training and for part-time training.

ADVANCED TRAINING REQUIREMENTS

A. CERTIFICATE OF ULTRASOUND IN PHLEBOLOGY (C.U.P)

Ultrasound training is a compulsory part of the Advanced Training requirements. Formal ultrasound training is achieved by successful completion of the web-based ACP ultrasound course, Practical ultrasound skills and techniques are formally examined as part of the clinical examination process at the completion of the second year of Advanced studies.

LECTURER

Martin Necas, Mmed Sonography, AMS, MRT (Ultrasound Imaging), RDMS, RVT

COURSE DELIVERY

1. On-line **one-year** course
2. Participants are issued access codes and passwords to webpage containing educational materials
3. Participants are given materials to discuss, debate, images to critique and otherwise engage with each other and the course lecturer in an on-line discussion forum.
4. Participants sit an exam at the end of the course. This can be organized in their place of work under nominated supervisor.

B. CLINICAL TRAINING REQUIREMENTS

Advanced training is 2 years in duration or can be conducted part-time up to four years. Each Training Year is 12 months and starts on the first Monday of February each year. Advanced Training involves 20 days supervised training per year in an Accredited Training Centre (ATC), online training and modular assessments, plus written and clinical examinations. Unsupervised work must also be dedicated to phlebology and the Chief Supervisor will have to verify this by providing a roster.

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 Clinical Supervisor who must be an ACP Fellow.

The supervised training days and the trainee's working roster are determined by the 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 duplex examinations, assisting with and performing direct vision sclerotherapy, ultrasound guided sclerotherapy, endovenous procedures, and other duties allocated by the supervisor. The supervisor must be physically present at the supervised clinic and see the same group of patients. A "day" is defined as a session of a minimum of 5 hours and maximum 8 hours where the trainee and the supervisor work together to manage the same group of patients.

Leave

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 Advanced Examination, then the Advanced Examination cannot be sat in the final 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 Clinical Supervisor with a primary attachment at an ATC. Each individual Training Program must comply with the general requirements and be approved by the Board of Censors. Unsupervised work must be in the field of phlebology and the Chief Supervisor will have to verify this by providing a roster

Medical Registration, Indemnity and Billing

It is the responsibility of the trainee to make sure the following documentation is 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.
4. Basic of Currency – Workers compensation

The trainee is responsible to obtain and for all the fees required to obtain this documentation.

C. 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 Advanced of the Australasian College of Phlebology will not be accepted without evidence of compliance with ALL of the following requirements.** The minimum requirements for normal training programs in Australia and New Zealand are in summary:

1. **100 cases of duplex ultrasound examination**
 - a. Including 30 DVT Scans
 - 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 a phlebologist, Fellow Australasian College of Phlebology)
2. **100 ultrasound guided sclerotherapy procedures**
 - a. Liquid and/or foam sclerosant (either assisted or non-assisted).
 - b. 20 cases to be done under direct supervision.
 - c. Supervisor's signature required (must be a phlebologist, Fellow Australasian College of Phlebology).
3. **20 endovenous ablation procedures (laser or radiofrequency)**
 - a. 10 cases to be done under direct supervision
 - b. Supervisor's signature required (must be a phlebologist, Fellow Australasian College of Phlebology).
4. **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 Training.

5. **Laser Safety Course**
 - a. At least one attendance required.
 - b. Must be done during the period of Training.

6. **Pass in Advanced Cardiac Life Support (ACLS) Course**
 - a. Copy of Certification to be submitted.
 - b. Must be done during the period of Training.

7. **Annual Scientific Meetings and Workshops**
 - a. Attend one ACP Annual Scientific Meeting or workshop during the period of training.
 - b. Trainees are expected to attend all scientific sessions of the meeting or workshop.

E. DOCUMENTATION OF TRAINING

The following should be submitted with the application to sit the Advanced examination. Relevant forms are found in Section 2 of this handbook. Logbooks are found in Section 2 of this handbook. **Application for admission to the Advanced examination will not be accepted without presentation of the following documents.**

1. Summative In-training Assessment Forms (SITA)

To be completed twice per year.

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 Ultrasound examination including 30 cases of Venous Ultrasound using Duplex and 10 cases of ABI measurement using CW Doppler.
2. 100 cases of Duplex Ultrasound Venous Examination
3. 100 cases of Ultrasound Guided Sclerotherapy
4. 20 cases of Endovenous Laser Ablation

And to also provide:

1. Record of presentations
2. Copy of certification in Phlebology Emergency Crisis Medicine or Advanced Cardiac Life Support
3. Copy of attendance at a recognised Laser Safety Course during the period of training is to be attached.

SUMMATIVE-IN-TRAINING ASSESSMENT (SITA)

SITA Form

1. The SITA form is to be completed twice per year in June and October, by the clinical supervisor(s) (CS) who have direct supervision of the trainee.
2. The CS will be notified that they need to complete the SITA for the trainee.
3. The CS is to complete the SITA form, print a copy, sign and forward to the College office.

Satisfactory:

When deemed satisfactory the completed SITA form is signed by the SOT and forwarded to the College office to be filed in the trainee's file

Unsatisfactory:

When the trainee has received "Below expected standard" or "Unsatisfactory" from the supervisor(s), the trainee and SOT both complete a Performance Improvement Form (PIF).

The SOT and Trainee are both responsible for ensuring that the Director of Training (DOT) is informed of the unsatisfactory result and the signed SITA form is forwarded to the College office.

Performance Improvement Form (PIF)

3. The SOT and trainee have a meeting within 2 weeks of the SITA meeting to review strategies that the trainee can use to improve his or her performance.
4. The trainee will be on probation until they receive a SATISFACTORY SITA review. Then both the SOT and the Trainee sign another completed SITA Form and forward to the Education Officer.

Definitions

CS	Clinical Supervisor	Direct supervisor of trainees
SOT	Supervisor of Training	Oversees all Clinical Supervisors
DOT	Director of Training	Oversees all Clinical Supervisors, Supervisors of training, Trainees and ACP Training program
SITA	Summative-In-Training Assessment	

ADVANCED TRAINING 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 in a clinical setting.

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 performing CW-Doppler, and duplex ultrasound examinations. 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. Additionally, the candidate should be able to competently examine the lower limb deep venous system using ultrasound, and be able to recognise and report on deep venous anomalies, particularly Deep Vein Thrombosis and its sequelae. The candidate should have adequate knowledge in the diagnosis of VTE and be familiar with broad management principles.

The written and clinical 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. 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.

Candidates must satisfy ALL minimum training requirements in order to sit for the Advanced Examination. Candidates who are successful in completing the Advanced training may apply for a Fellowship training position with the Australasian College of Phlebology.

B. ONLINE MODULAR ASSESSMENTS

Online modular training enables on-line learning with the required information supplied module by module. Grades from these set tasks will constitute 40% of your overall written assessment with written examination and online OSCE making up the other 60%. There will be a lecturer allocated to each module. The lecturer will generally have developed the module, collated the reference material and will be available for Q&A via online for the duration of the module. If an online module has been unsuccessfully completed the module must be redone until the module has been successfully completed.

The Advanced examinations in will be based upon the curriculum as stated in the training handbook. This curriculum is wider ranging than the online modules and contains material which is not available in the online modules, which only cover a core of main topics.

Registrars need to cover the remaining curriculum through self-directed learning using journal and/or the texts outlined in the reading list. If only the modules are studied, candidates will encounter questions in the examinations which are not covered in the modules.

C. WRITTEN EXAMINATIONS

1 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, vascular laser therapy and other interventional procedures covered by the curriculum.

2 Pharmacology and Therapeutics (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.

3 Online Format Objective Structured Clinical Examinations (OSCES)

These examinations replace the previous face to face OSCE, and will consist of a series of clinical photographs, clinical presentations, test results, or clinical scenarios. Each subject will be accompanied by a series of questions.

D. 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 Duplex Ultrasound Examinations

There will be 3 stations of 30 minutes duration each. Cases may include DVT studies, venous incompetence studies and upper limb studies. The candidate must demonstrate competence in performing these duplex examinations. The examinations are observed by an examining college fellow and a sonographer, who is able to make adjustments to the ultrasound unit settings as required by the candidate. However, the candidate must complete the ultrasound examination them self, and demonstrate familiarity, expertise, and a cohesive approach in these examinations.

2. Clinical Cases

This examination encompasses a number of clinical cases which will be run along modified OSCE lines with individual stations manned by an examining college fellow. Candidates are expected to take a clinical history, perform an appropriate physical examination, interpret any duplex findings, interpret any other investigatory findings, and, be able to formulate the patient's problem, suggest further investigations and a plan of management.

E. 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.

FEES, DATES AND CERTIFICATION

A. ADVANCED TRAINING FEES

ADVANCED BASIC FEES	
Training Application Fee	\$220.00
Training Fee Per Year	\$7700.00
Exam Application Fee	\$110.00
Written Examination Fee	\$770.00
Clinical Examination Fee	\$1100.00
TOTAL	\$17,600.00

All fees for training and examinations include a \$220 non-refundable application fee.

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.

The Training and Examination fees will be refunded only upon application and consideration of the Board of Censors if training is cancelled within two months of commencing. A \$220.00 cancellation administration fee will apply to any cancellation of training.

B. 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 dates of the examinations are announced by the Board of Censors and will be available on the College website.

Applications to sit the written and clinical examinations must be submitted at least 3 months prior to the date of the examination. Application forms and payment must be received by the College office at least 3 months prior to the examinations or by the date as specified by the Board of Censors. If an application form or payment is received after the specified deadline, it is at the discretion of the Chief Censor to accept or reject any such application and where accepted a 20% late fee will apply to such applications.

C. CERTIFICATION

After having satisfied all requirements of the Advanced Training as described above and a pass in the Advanced examinations, the candidate will have achieved the Certificate of Advanced Training in Phlebology of the Australasian College of Phlebology.

To graduate all requirements of the Advanced training are to be met by the 31st of December of the final training year. The Certificate of Advanced Training is awarded in the Conferring Ceremony which is held during the Annual Scientific Meeting (ASM) of the College. Trainees are expected to attend the Conferring Ceremony to receive their certificate.

READING LIST

A) TEXTBOOKS

The following list is limited to English language publications.

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 2nd Ed

Bergin, J and Bunke-Paquette, N
Oxford University Press
ISBN-13: 978-0195399639
ISBN-10: 0195399633

Handbook of Venous Disorders

Gloviczki, P.
A Hodder Arnold Publication
ISBN-10: 034076130X
ISBN-13: 978-0340761304

Treatment of Leg Veins

Alam M, Nguyen TH and Dover JS
Elsevier
ISBN-10: 1 4160 31596
ISBN-13: 9781416031598

2. Sclerotherapy

Sclerotherapy 5th Ed

Goldman, Guex, Weiss
Elsevier
ISBN: 978-0-323-07367-7

Vein Diagnosis and Treatment: A Comprehensive Approach

Weiss R, Feied C, Weiss M.
McGraw-Hill
ISBN: 0-07-069201-7

3. Ultrasound

Making sense of Vascular Ultrasound: A Hands-on-Guide

Myers K, Clough A.
ISBN: 0340810092

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)

5. Vascular Medicine

Rare Vascular Disorders: A Practical Guide for the Vascular Specialist

Parvin S.
tfm Publishing Limited.
ISBN: 1-903378-32-X
Reference only

6. Vascular Anomalies and Inherited Disorders

Genodermatoses: A Clinical Guide to Genetic Skin Disorders

Spitz J.
Lippincott Williams & Wilkins.
ISBN: 0-68307904-2
Recommended text

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

7. Reference only

Foam Sclerotherapy

Bergan J, Le Cheng V (Editors)
Royal Society of Medicine Press
ISBN: 978-1-85315-771-4

Phlebology

Ramelet AA, Perrin M, Kern P, Bounameaux H.
Elsevier
ISBN-10: 2842991478
ISBN-13: 9782842991470

B) JOURNALS

The following Journals should supplement the trainee's local phlebology journal, and can be accessed via the RSM website, as part of the training program.

1. General Phlebology and Vascular Surgery

Phlebology: The Journal of Venous Disease

Royal Society of Medicine Press

ISSN: 0268-3555

European Journal of Vascular and Endovascular Surgery

Elsevier

ISSN: 1078-5884

Journal of Vascular Surgery

Elsevier

ISSN: 1097-6809

2. Thrombosis and Haemostasis

Journal of Thrombosis and Haemostasis

Wiley

ISSN: 1538-7933

Thrombosis and Haemostasis

Schattauer GmbH

ISSN: 0340-6245

Thrombosis Research

Elsevier

ISSN: 0049-3848

3. Vascular Medicine

International Angiology

Minerva Medica

ISSN: 0392-9590

International Journal of Angiology

Springer New York

ISSN: 1061-1711 (Print)

ISSN: 1615-5939 (Online)

VASA

Hans Huber

ISSN: 0301-1526 (Print)

ISSN: 1664-2872 (Online)

C) OTHER

Product information sheets for the most commonly used sclerosants.



SECTION 1: CHAPTER C

PHLEBOLOGY FELLOWSHIP

PHLEBOLOGY FELLOWSHIP PROGRAM

A. GENERAL OVERVIEW

Fellowship Phlebology Training involves satisfactory completion of at least 1 year 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, Clinical Meetings and e-learning organised by relevant State Faculties as well as training courses and workshops held by the College. 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 needs to 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 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 Fellowship Training period must be within the field of phlebology and the trainee and supervisor will be required to verify this by providing a roster of days worked.

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 title 'Phlebologist' is reserved only for the Fellows of the College and should not be used by the trainees or holders of the Basic or Advanced training certificates 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 Phlebology Fellowship 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. Fellowship Training in Phlebology does not qualify the practitioner to perform venous or vascular surgery other than ambulatory phlebectomy.

B. SELECTION PROCESS OF FELLOWSHIP TRAINEES

The selection process involves an application and an interview. Prospective trainees are required to complete the ACP training application form and must agree to the program fees. 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 of Sclerotherapy Training Program. Applicants are required to directly apply for Fellowship 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 Fellowship 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 a Fellowship 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 a Fellowship Training Program and payment of the trainee levy and other fees, the successful candidate becomes a 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 A FELLOWSHIP 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 total number of hours 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. 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.

Full fees apply for any extra year of training and for part time training.

PHLEBOLOGY FELLOWSHIP TRAINING REQUIREMENTS

A. ADVANCED CERTIFICATE OF ULTRASOUND IN PHELEBOLOGY (A.C.U.P.)

Ultrasound training is a compulsory part of Fellowship Training. Formal ultrasound training is achieved by successful completion of the web based ACP ultrasound course. Practical ultrasound skills and techniques are formally examined as part of the clinical examination process at the completion of the third year of fellowship studies.

LECTURER

Martin Necas, Mmed Sonography, AMS, MRT(Ultrasound Imaging), RDMS, RVT

COURSE DELIVERY

1. On-line **two-year** course
2. Participants register on yearly basis and are issued access codes and passwords to webpage containing educational materials
3. Participants are given materials to discuss, debate, images to critique and otherwise engage with each other and the course lecturer in an on-line discussion forum
4. Participants meet up once per semester for a day of lectures and practical exercises using ultrasound.
5. Participants sit an exam at the end of the course. This can be organized in their place of work under nominated supervisor.

B. ANNUAL SCIENTIFIC MEETING OR WORKSHOP

At least one attendance at an ACP Annual Scientific Meeting or workshop during the training year.

C. CLINICAL TRAINING REQUIREMENTS

The Training Year starts in the first week of February each year. Fellowship Training involves full-time training in an Accredited Training Centre (ATC). Unsupervised work must also be in the field of phlebology and the trainee and chief supervisor will be required to verify this by providing a roster.

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 Clinical 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 wages based on the relevant Country/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.

Leave

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 final year of training. Full training fees apply for any extra year of training.


Fellowship Training Minimum 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.

A minimum of 16 hours of supervised phlebology clinics per week.

- a. Clinics to be supervised by a College fellow.
- b. The candidate is directly responsible for patient care.
- c. Supervisors are required to be present and available for consultation but are not required to review every patient.

Supervised phlebology clinics per week must include;

- a. A minimum of 2 hours of diagnostic imaging
 - i. The trainee to personally perform the scanning and is responsible for the generation of the worksheets and reports.
- b. A minimum of 2 hours of interventional phlebology
 - i. The trainee to personally perform ultrasound guided sclerotherapy, endovenous laser therapy and other interventional procedures. 

A further 16 hours of supervised or unsupervised phlebology clinics per week.

The total number of supervised clinic hours required for the duration of Fellowship 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

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 Clinical 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 Training

Unsupervised work must be in the field of phlebology and the trainee and supervisor will be required to verify this by providing a roster. Work in other areas of medicine is not acceptable as unsupervised training in phlebology. The weekly roster of all Fellowship 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 this documentation.

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 2: PART C). 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. 20 management cases of chronic venous disease**
 - a. Management of patients with CEAP stages C4-C6 is accepted.
 - b. 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).
- 2. 20 vascular laser therapy procedures**
 - a. 10 cases to be done under direct supervision.
 - b. Supervisor's signature required (can be a phlebologist, dermatologist, or another specialist with formal training in vascular laser therapy).
- 3. Observation or assistance in 5 cases of venous surgery**
 - a. Superficial veins or deep veins.
 - b. Ambulatory phlebectomy is accepted.
 - c. Supervisor's signature required (can be a surgical phlebologist, venous or vascular surgeon).
- 4. 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 Fellowship Training.

5. **One of the following;**
 - a. Publish an original article in the field of phlebology in a peer-reviewed journal
 - b. Do a second presentation or poster presentation, specifically being a literature review in the field of phlebology at the ASM
 - c. Complete a postgraduate subject at an Australian or New Zealand University on one of the following topics; Clinical Epidemiology, Biostatistics, Research Methods, Evidence based medicine.
 - d. Complete a novel research project or post-graduate university course, which would need to be accepted by the Board of Censors prior to commencement. Evidence would be required as to the appropriateness of this to the field of phlebology.
6. **Laser Safety Course**
 - a. At least one attendance required.
 - b. Copy of Basic of Attendance to be submitted.
 - c. Must be done during the period of Fellowship Training.
7. **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 Fellowship Training.
8. **Annual Scientific Meetings**
 - a. Trainees 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 Fellowship 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 Fellowship examination will not be accepted without presentation of the following documents.

1. Record of Supervised Clinics and Educational Activities

The trainee must provide a record of Supervised Clinics attended. Record of publications and presentations is to be entered in the appropriate form (See section D). 2 publications in the prescribed journal(s) 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. Summative In-training Assessment Forms (SITA)

To be completed twice per year.

3. Assessment of Competence Form

All sections to be signed by appropriate supervisor(s).

4. Log Books

Candidates are required to keep log books documenting procedures as outlined in section D above.

SUMMATIVE-IN-TRAINING ASSESSMENT (SITA)

SITA Clinical Supervisor Form

1. The SITA form is to be completed twice per year in June and October, by the clinical supervisor(s) (CS) who have direct supervision of the trainee.
2. The CS will be notified that they need to complete the SITA for the trainee.
3. The SITA form can be completed online via the link
<http://www.surveymonkey.com/s/SITACLINICALSUPERVISOR>
4. The CS is to complete the SITA form, print a copy, sign and forward to the College office.
5. The SITA forms pertaining to each trainee are collated into the SITA summary form.

Remote by Manpower

When the Trainee is classified as Remote by Manpower the clinical supervisor is only required to complete the SITA Summary form for the Trainee.

SITA Summary

3. The SOT and trainee discuss the trainee's progress
4. The SOT determines whether the assessment is Satisfactory or Unsatisfactory

Satisfactory:

When deemed satisfactory the completed SITA summary form is signed by the SOT and forwarded to the College office to be filed in the trainee's file

Unsatisfactory:

When the trainee has received "Below expected standard" or "Unsatisfactory" from the supervisor(s), the trainee and SOT both complete a Performance Improvement Form (PIF).

The SOT and Trainee are both responsible for ensuring that the Director of Training (DOT) is informed of the unsatisfactory result and the signed SITA form is forwarded to the College office.

Performance Improvement Form (PIF)

5. The SOT and trainee have a meeting within 2 weeks of the SITA meeting to review strategies that the trainee can use to improve his or her performance.
6. The trainee will be on probation until they receive a SATISFACTORY SITA review. Then both the SOT and the Trainee sign another completed SITA Form and forward to the Education Officer.

Definitions

CS	Clinical Supervisor	Direct supervision of Trainees
SOT	Supervisor of Training	Oversees all Clinical Supervisors
DOT	Director of Training	Oversees all Clinical Supervisors, Supervisors of training, Trainees and ACP Training program
SITA	Summative-In-Training Assessment	

PHLEBOLOGY FELLOWSHIP 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 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 (ultrasound) 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 clinical 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 or observed 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 Fellowship Examination. Candidates who are successful in the Fellowship Examination may apply for Fellowship of the Australasian College of Phlebology.

B. ONLINE MODULAR ASSESSMENTS

There are no modules specific to the year of fellowship training, and during this year candidates are expected to undertake self-directed learning in areas of the curriculum which are not covered by the online modules, as well as take time to complete the other requirements for fellowship, in particular the peer reviewed publication and Annual Scientific Meeting presentation

The Fellowship examinations will be based upon the curriculum as stated in the training handbook. This curriculum is more wide ranging than the online modules, and contains material which is not available in the online modules, which only cover a core of main topics.

Registrars need to cover the remaining curriculum through self-directed learning using journal access through RSM, and/or the texts outlined in the reading list. If only the modules are studied, candidates will encounter questions in the examinations which are not covered in the modules.

C. WRITTEN EXAMINATIONS

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.

Phlebological Medicine (Short Essays)

This paper encompasses 6 questions on general phlebology and general medicine pertaining to phlebology. Questions provide clinical scenarios which may require a plan of management. The allocated time is 2 hours.

D. 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.

Duplex Ultrasound Examinations

There will be 2-3 stations of 30 minutes duration each. Cases may include DVT studies, venous incompetence studies and upper limb studies. The candidate must demonstrate competence in performing these duplex examinations. The examinations are observed by an examining college fellow and a sonographer, who is able to make adjustments to the ultrasound unit settings as required by the candidate. However the candidate must complete the ultrasound examination them self, and demonstrate familiarity, expertise, and a cohesive approach in the performance of ultrasound examination.

Clinical Cases

This examination encompasses a number of clinical cases with each case examined by 2 examining college fellows. Candidates are expected to take a clinical history, perform an appropriate physical examination, interpret any duplex findings, interpret any other investigatory findings, and, be able to formulate the patient's problem, suggest further investigations and a plan of management.

E. 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.

F. 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.

FEES, DATES AND CERTIFICATION

A. FELLOWSHIP 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.

Please note: The Training and Examination fees will be refunded only upon application and consideration of the Board of Censors if training is cancelled within two months of commencing, a \$220.00 cancellation administration fee will apply to any cancellation of training.

FELLOWSHIP FEES	
Training Application Fee	\$220.00
Training Fee	\$7700.00
Exam Application Fee	\$220.00
Written Examination Fee	\$770.00
Clinical Examination Fee	\$1100.00
TOTAL	\$10,010.00

All fees for training and examinations include a \$220 non-refundable application fee.

B. EXAMINATION DATES

A pass in the online training modules and assessments 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.

Applications to sit the written and clinical examinations must be submitted at least 3 months prior to the date of the examination. Application forms and payment must be received by the College office at least 3 months prior to the examinations or by the date as specified by the Board of Censors. If an application form or payment is received after the specified deadline, it is at the discretion of the Chief Censor to accept or reject any such application and where accepted a 20% late fee will apply to such applications.

E. CERTIFICATION

Having satisfied ALL the requirements of Fellowship as described above, a pass in the fellowship examination will lead to the candidate being awarded 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. Trainees are expected to attend the Conferring Ceremony to receive their Fellowship. Fellows of the College are awarded the title *Phlebologist*.

READING LIST

A) TEXTBOOKS

The following list is limited to English language publications.

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 2nd Ed

Bergin, J and Bunke-Paquette, N
Oxford University Press
ISBN-13: 978-0195399639
ISBN-10: 0195399633

Handbook of Venous Disorders

Gloviczki, P.
A Hodder Arnold Publication
ISBN-10: 034076130X
ISBN-13: 978-0340761304

Treatment of Leg Veins

Alam M, Nguyen TH and Dover JS
Elsevier
ISBN-10: 1 4160 31596
ISBN-13: 9781416031598

2. Sclerotherapy

Sclerotherapy 5th Ed

Goldman, Guex, Weiss
Elsevier
ISBN: 978-0-323-07367-7

Vein Diagnosis and Treatment: A Comprehensive Approach

Weiss R, Feied C, Weiss M.
McGraw-Hill
ISBN: 0-07-069201-7

3. Ultrasound

Making sense of Vascular Ultrasound: A Hands-on-Guide

Myers K, Clough A.
ISBN: 0340810092

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)

5. Vascular Medicine

Rare Vascular Disorders: A Practical Guide for the Vascular Specialist

Parvin S.
tfm Publishing Limited.
ISBN: 1-903378-32- X
Reference only

6. Vascular Anomalies and Inherited Disorders

Genodermatoses: A Clinical Guide to Genetic Skin Disorders

Spitz J.
Lippincott Williams & Wilkins.
ISBN: 0-68307904-2

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

7. Reference only

Foam Sclerotherapy

Bergan J, Le Cheng V (Editors)
Royal Society of Medicine Press
ISBN: 978-1-85315-771-4

Phlebology

Ramelet AA, Perrin M, Kern P, Bounameaux H.
Elsevier
ISBN-10: 2842991478
ISBN-13: 9782842991470

B) JOURNALS

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

1. General Phlebology and Vascular Surgery

Phlebology: The Journal of Venous Disease

Royal Society of Medicine Press

ISSN: 0268-3555

European Journal of Vascular and Endovascular Surgery

Elsevier

ISSN: 1078-5884

Journal of Vascular Surgery

Elsevier

ISSN: 1097-6809

2. Thrombosis and Haemostasis

Journal of Thrombosis and Haemostasis

Wiley

ISSN: 1538-7933

Thrombosis and Haemostasis

Schattauer GmbH

ISSN: 0340-6245

Thrombosis Research

Elsevier

ISSN: 0049-3848

3. Vascular Medicine

International Angiology

Minerva Medica

ISSN: 0392-9590

International Journal of Angiology

Springer New York

ISSN: 1061-1711 (Print)

ISSN: 1615-5939 (Online)

VASA

Hans Huber

ISSN: 0301-1526 (Print)

ISSN: 1664-2872 (Online)

C) OTHER

Product information sheets for the most commonly used sclerosants.



SECTION 2

DOCUMENTATION OF TRAINING



SECTION 2: CHAPTER A

BASIC TRAINING LOGBOOKS

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.

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 END OF THE TRAINING YEAR.

BASIC TRAINING: ASSESSMENT OF COMPETENCE FORM

Trainee 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.

	Name of Supervisor	Signature of Supervisor
CW Doppler and ABI Measurements		
Basic Duplex Ultrasound Examination		
Direct Vision Sclerotherapy		

BASIC TRAINING: RECORD OF EDUCATIONAL ACTIVITIES

Trainee Name:

Clinical Attachment

Candidates must, during the course of their Sclerotherapy Basic Training, have completed **10 days of clinical attachment**.

Location(s):	Total Number of Clinics:	Supervisor's Signature

ASM or Workshop Attendance

Trainees are required to attend one Annual Scientific Meetings or equivalent during their training.

ACP Conference Location:

Note for the following forms:

Copy the required number of sheets for the following logbooks or if preferred save data in an excel spreadsheet. Make sure you use the same headings if using excel.



SECTION 2: CHAPTER B

ADVANCED TRAINING LOGBOOKS

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.

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.

ADVANCED TRAINING: ASSESSMENT OF COMPETENCE FORM

Trainee 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	Supervisor Name	Supervisor Signature
Duplex Ultrasound Incompetence Studies			
Ultrasound Guided Sclerotherapy			
Endovenous Ablation			

Supervised Training

Candidates must, during the course of their Advanced Training, have completed **20 days of supervised training per year to a total minimum of 40 days over two years.**

Location(s):	Total Number of Clinics:	Supervisor's Signature

ADVANCED TRAINING: RECORD OF EDUCATIONAL ACTIVITIES

Trainee Name:

Presentation
Title:
ACP Conference Location:
Date of Presentation:

Laser Safety Course
Candidates must, during the course of their <u>Advanced Training</u> , have attended a recognised Laser Safety Course. Basic of Attendance should be attached.
Institute:
Date attended:

Advanced Cardiac Life Support
Candidates must, during the course of their <u>Advanced Training</u> , have attended and be certified in ACLS. Copy of Certification should be attached.
Institute:
Date obtained:

ASM or Workshop Attendance	
Trainees are required to attend one Annual Scientific Meeting or equivalent during their training.	
ACP Conference Location:	Year

Note for the following forms:
Copy the required number of sheets for the following logbooks or if preferred save data in an excel spreadsheet. Make sure you use the same headings if using excel.



SECTION 2: CHAPTER C

FELLOWSHIP LOGBOOKS

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.

FELLOWSHIP TRAINING: ASSESSMENT OF COMPETENCE FORM

Trainee 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	Supervisor Name	Supervisor Signature
Vascular Laser Therapy			
Venous Surgery			
Management of Chronic Venous Disease			

FELLOWSHIP TRAINING: RECORD OF EDUCATIONAL ACTIVITIES

Supervised Phlebology Clinics		
16 hours supervised phlebology clinics per week- Minimum 704 hours per year, includes supervised diagnostic and interventional hours.		
Location(s):	Total Hours:	Supervisor's Signature

Diagnostic Ultrasound		
Minimum 2 hours supervised diagnostic ultrasound sessions per week- minimum 88 hours per year		
Location(s):	Total Hours:	Supervisor's Signature

Interventional Phlebology		
Minimum 2 hours supervised interventional phlebology session per week- minimum 88 hours per year		
Location(s):	Total Hours:	Supervisor's Signature

Publication or Presentation
Title:
Date of publication:

ASM Attendance
Trainees are required to attend at least two Annual Scientific Meetings or equivalent in their first three years of training.
ACP Conference Location:

Note for the following forms:
Copy the required number of sheets for the following logbooks or if preferred save data in an excel spreadsheet. Make sure you use the same headings if using excel.

FELLOWSHIP TRAINING LOGBOOK

Management of Chronic Venous Disease							
Minimum 20 cases							
Trainee Name:							
No	De-identified Patient Details	Date	Diagnosis	Site	Treatment	Follow-up	Supervisor
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

FELLOWSHIP TRAINING LOGBOOK

Vascular Laser Therapy Minimum 20 cases Name:								
No	De-identified Patient Details	Date	Vascular Lesion Treated	Laser Type Eg. KTP	Wavelength nm	Energy	Pulse width	Supervisor
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								



THE AUSTRALASIAN
COLLEGE OF
PHLEBOLOGY

SECTION 3

PHLEBOLOGY SYLLABUS

PHLEBOLOGY SYLLABUS

Introduction

In order to guide trainees in preparation for examinations, in particular the Fellowship examinations, the Board of Censors have classified subjects within the curriculum broadly into three categories.

- (3) Subject matter which is considered core and may be examined in detail
- (2) Subjects which are less critical, but of which candidates are still expected to have a broad understanding.
- (1) Areas of the curriculum which are peripheral, and of which some familiarity is required but not detailed knowledge.

The category classification for each subject will be marked in parenthesis to the right of the subject heading

SECTION 1: CORE SCIENCES

CHAPTER 1: ANATOMY

Trainees should be familiar with:

1. The new venous nomenclature¹⁻⁴
2. Normal and abnormal flow patterns in the venous system
3. Average size and normal diameters of important veins

A. Core Venous Anatomy

1. Lower limb venous anatomy

(3)

a) Superficial system³

- Great saphenous system
 - Saphenofemoral junction (SFJ)
 - Great saphenous vein (GSV)
 - Superficial inguinal veins
 1. The confluence (Crosse)
 2. Superficial circumflex iliac vein
 3. Superficial epigastric vein
 4. External pudendal veins
 - Accessory great saphenous veins: anterior, posterior and superficial
 - Thigh circumflex veins: anterior and posterior
 - Accessory great saphenous veins of the calf: anterior and posterior
 - Perforating veins
- Small saphenous system
 - Saphenopopliteal junction (SPJ)
 - Small saphenous vein (SSV)
 - Cranial extension of the SSV (femoropopliteal vein)
 - The vein of Giacomini and the posterior thigh circumflex vein
 - Superficial accessory small saphenous vein
 - Perforating veins

- The lateral superficial venous system
 - Normal and abnormal flow
 - Lateral thigh and lateral calf veins
 - Lateral knee perforators
 - Anterior thigh communications with the great saphenous system
 - Lateral calf communications with the small saphenous system
 - Lateral thigh and lateral calf perforators
- Inter-saphenous and communicating veins

b) Deep system

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

2. Veins of the foot

(2)

a) Superficial system

- Superficial digital veins: dorsal and plantar
- Superficial metatarsal veins: dorsal and plantar
- Venous networks: dorsal and subcutaneous plantar
- Medial and lateral marginal veins

b) Deep system

- Deep digital veins (plantar and dorsal)
- Deep metatarsal veins (plantar and dorsal)
- Deep plantar venous arch
- Medial and lateral plantar veins

3. Upper limb venous anatomy

(2)

a) Superficial system

- Cephalic vein
- Basilic vein
- Median cubital vein
- Median vein of the forearm

b) Deep system

- Ulnar vein
- Radial vein
- Brachial vein
- Axillary vein

4. Veins of the hand

(2)

a) Superficial system

- Superficial digital veins
- Superficial metacarpal veins
- Venous networks

b) Deep system

- Deep digital veins

- Deep metacarpal veins
- Venous arches

5. Cranial, neck and thoracic venous anatomy (2)

- Intra-cranial, extra-cranial and cranial perforating veins
- Jugular veins
- Vertebral veins
- Azygos vein
- Subclavian veins
- Superior vena cava

6. Facial veins (3)

- Supra-trochlear and supra-orbital veins
- Ophthalmic and infra-orbital veins
- Angular and facial veins
- Transverse facial vein
- Superficial temporal and retromandibular veins

7. Abdominal venous anatomy (2)

- Superficial abdominal venous system
- External and internal iliac veins
- Common iliac vein
- Inferior vena cava
- Portal vein
- Hepatic vein
- Coeliac and mesenteric veins
- Renal veins
- Splenic veins

8. Pelvic venous anatomy (2)

- Superficial pelvic venous system
- Ovarian plexus
- Veins of the Broad ligament
- Uterine plexus
- Gonadal veins

9. Veins of the genitalia and the perineum (3)

- Internal and external pudendal veins
- Superficial dorsal veins of clitoris/penis
- Anterior labial/scrotal veins
- Perineal veins
- Gluteal veins

B. Broader Topics

1. Classic systems of anatomy and common pathologies (3)

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

2. Regional anatomy (3)

- Saphenous hiatus
- Femoral triangle
- Adductor canal
- Foot and ankle

CHAPTER 2: BASIC SCIENCES

A. Physics (2)

- Ultrasound physics- see SECTION 2 CHAPTER 2.B
- Laser physics
- Physics of compression
 - Measurements of interface pressure and stiffness.⁵
- Physics of foams⁶
 - Buoyancy
 - Coarsening^{7, 8}
 - Wet vs. dry foams
 - Wetting half-life
 - Foam stability^{9, 6}
- Basic radiation physics as it relates to venography, computerized tomography (CT) and magnetic resonance imaging (MRI)

B. Biochemistry (2)

The trainee should have a basic understanding of the following:

- Sclerosants
 - Detergents, surfactants and sclerosants
 - Classification of detergents
 - Phospholipids and biological membranes
 - Critical micelle concentration
 - Kraft point
 - Cloud point
 - Aggregation number
 - Interaction of detergents with lipid membranes¹⁰
- Folate pathway
- Factor X, thrombin and antithrombin
- Fibrinogen, Factor XIII, cross-linked and non-cross-linked fibrin
- D-dimer

C. Rheology and Fluid Dynamics (1)

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

D. Venous Physiology, Function and Haemodynamics (2)

- Venous physiology and haemodynamics
 - Normal and abnormal patterns of venous flow
 - Principles of venous haemodynamics¹¹
- Calf muscle pump function
- Venous physiology measurements
 - Ambulatory venous pressure measurements

- Plethysmography and volumetry
- Light reflection rheography
- Laser Doppler and transcutaneous oxygen
- Digital infra-red thermography
- Duplex ultrasound measurements

E. Genetics (2)

The trainee should be familiar with the genetics of the following conditions:

- Chronic venous insufficiency (CVI)
- Venous Thromboembolism (VTE)^{12, 13}
- Vascular anomalies and related syndromes¹⁴
- Lymphoedema
- Vascular genodermatoses

F. Embryology (2)

- 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.

G. Vascular Histology and Histopathology (2)

Normal vascular histology and histopathology of the following conditions and their differential diagnoses

- Vessel wall
- 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 vs. venous thrombosis
- Thrombosis vs. sclerosis and endovascular fibrosis
- Vasculitis (small vessel, medium size vessel and large vessel)
- Nodular vasculitis
- Livedo vasculopathy
- Vascular tumours
- Vascular malformations
- Paediatric vascular anomalies¹⁵
- Lymphangitis and other lymphatic conditions

H. Vascular Biology (2)

- 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 the vessel wall in CVI
- Interactions of the vascular system with the thrombo-haemostatic system
- Vasculogenesis, angiogenesis and lymphangiogenesis

- Angiogenic cytokines

- I. Lymphatic Biology** (2)
- 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
 - Genetic defects
- J. Molecular Basis of Venous Disorders** (2)
- Matrix metalloproteases
 - 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
- K. Coagulation System** (3)
- Classic and cell models of coagulation
 - Clotting factors
 - Clotting tests
 - Platelet structure and function
 - Platelet derived microparticles (PMP)
 - Factor XIII and fibrin stabilization^{16, 17}
 - Fibrinogen
 - Structure of fibrin
- L. Antithrombotic Mechanisms** (3)
- Plasma coagulation inhibitors
 - Protein C anticoagulant pathway
 - Endothelial protein C receptor
 - Protein S
 - Thrombomodulin
 - Antithrombin
 - Heparin and vascular proteoglycans
- M. Fibrinolytic Mechanisms** (2)
- 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

N. Inflammation (3)

- 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

O. Clinical diagnosis and morphology (3)

- Telangiectasia vs. venulectasia vs. telangiectatic matting
- Telangiectatic matting vs. mat telangiectasias
- Spider naevus vs. 'spider veins'
- Localized varix
- Blanchable vs. non-blanchable
- Erythema vs. purpura
- Purpura
 - palpable vs. non-palpable
 - Non-palpable purpura: petechiae vs. ecchymosis
- Petechiae vs. pigmented purpuric dermatoses (PPD)
- Reticulate patterns¹⁸
 - Livedo reticularis vs. livedo racemosa
 - Reticulate purpura vs. reticulate pigmentation
 - Stellate pattern vs. venous rings
 - Atrophie blanche

CHAPTER 3: PHARMACOLOGY

A. General Pharmacological Principles (3)

The trainee must have a thorough understanding of the pharmacological principles described below as it relates to drugs listed in this curriculum:

- Pharmacokinetics and pharmacodynamics
- Half-life
- Drug absorption and the effect of foods
- Drug metabolism
- Drug excretion
- Drugs requiring dose reduction in renal and hepatic disease
- Drug hypersensitivity syndromes and drug toxicity
- Cross-reactivity
- Drugs crossing the placenta
- Drugs present in the breast milk
- Pregnancy categories
- Drug monitoring

B. Vascular Pharmacology (2)

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

C. Specific Drugs and Agents

- 1. Sclerosing agents (3)**
 - Detergents
 - Osmotic agents
 - Chemical irritants

- 2. Embolic agents (2)**
 - Ethanol
 - Embolic particles
 - Onyx
 - Coils

- 3. Platelet inhibitors (2)**
 - Aspirin
 - Clopidogrel
 - GPIIb/IIIa inhibitors
 - Other anti-platelet agents

- 4. Anticoagulants (3)**
 - Vitamin K
 - Unfractionated (UFH) and low molecular weight (LMWH) heparins
 - Pentasaccharides
 - Vitamin K antagonists (VKA) including Warfarin
 - Warfarin reversal¹⁹
 - Hirudin and hirudin analogs
 - New anticoagulants²⁰
 - Factor Xa inhibitors
 - Direct thrombin inhibitors
 - New paediatric anticoagulants²¹

- 5. Thrombolytic and Fibrinolytic agents (2)**
 - t-PA
 - Urokinase
 - Streptokinase
 - Tranexamic acid
 - Stanozolol

- 6. Veno-active drugs and supplements (2)**
 - To alleviate venous symptoms and oedema^{22, 23}
 - Gamma-benzopyrones (flavonoids): diosmin, micronised purified flavonoid fraction²⁴, rutosides
 - Saponins: escin, ruscus extract
 - Other plant extracts: anthocyanins, proanthocyanidines oligomers, ginkgo biloba
 - Synthetic products: calcium dobesilate, naftazone
 - In treatment of leg ulcers
 - micronised purified flavonoid fraction
 - Prostacycline,
 - Prostaglandin E-1²⁵
 - Pentoxifylline²⁶

7. Topical agents (2)

- Topical steroids in the management of venous eczema and contact dermatitis
- Topical antibiotics and antifungals
- Topical vasodilators and vasoconstrictors
- Topical anaesthetic agents
- Contact sensitization and the management of leg ulcers

8. Other drugs (2)

- Female hormones
 - Oral contraceptive pill (OCP)
 - Hormone replacement therapy (HRT)
- Non-steroidal anti-inflammatory drugs (NSAIDS)
- Drugs affecting folate metabolism including methotrexate
- Anaesthetic agents- topical, injectable, tumescent
- Mild sedation agents
- Vitamins and supplements affecting the vascular system

CHAPTER 4: CLINICAL SCIENCES

A. Clinical Phlebology

1. Venous incompetence and insufficiency (3)

- Clinical Evaluation of chronic venous insufficiency (CVI)
- Manifestations of CVI²⁷
- Epidemiology²⁸⁻³¹
- Risk factors
- Pathophysiology of varicose veins and telangiectasias
- Venous hypertension and its complications
- Venous oedema and phlebolympoedema
- Swollen limb
- Measuring outcomes and classifications^{32, 33}
 - CEAP classification³⁴⁻³⁶
 - Venous severity scores³⁷
- Diagnostic evaluation and duplex examination of venous incompetence³⁸⁻⁴⁰- see SECTION 2 CHAPTER 2.B
- Management of venous incompetence- see SECTION 2 CHAPTER 3.B

2. Venous thromboembolism (VTE) (3)

- Natural history and consequences of VTE
- Epidemiology and natural history^{41, 42}
- Risk factors⁴³
- Diagnosis
- Specific topics
 - Recurrent VTE⁴⁴⁻⁴⁸
 - Cancer and VTE^{49, 50}
 - Obesity and VTE⁵¹
 - Hormone related VTE⁵²
 - Pregnancy and VTE⁵³
 - Travel related VTE⁵⁴⁻⁵⁶
 - VTE in the elderly⁵⁷
 - Paradoxical embolism and patent foramen ovale
 - Iliac vein obstruction and May-Thurner Syndrome

- Venous outflow obstruction⁵⁸
- Venous gangrene, phlegmasia alba dolens, phlegmasia coerulea dolens
- Venous thrombosis in unusual sites
 - Portal vein thrombosis
 - Mesenteric venous thrombosis
 - Ovarian vein thrombosis
 - Cerebral vein thrombosis⁵⁹
 - Axillo-subclavian venous thrombosis and Paget-Schroetter syndrome
- Superficial venous thrombosis
 - Superficial venous thrombosis vs. thrombophlebitis
 - Superficial migratory thrombophlebitis and associated malignancies
 - Infective thrombophlebitis and vascular infections
 - Granulomatous phlebitis
 - Management of thrombophlebitis
- Investigations-
 - Duplex ultrasound
 - Role of venography see SECTION 2 CHAPTER 2.C
 - Role of CT and MR see SECTION 2 CHAPTER 2.E
 - Laboratory markers see SECTION 2 CHAPTER 2.F
- Management- see SECTION 2 CHAPTER 3.C

3. Post-thrombotic syndrome (PTS) (3)

- Manifestations
- Definitions and clinical scores
- Pathophysiology (macro- and microcirculation)
- Risk factors¹²
- Residual venous obstruction
- Deep and superficial venous reflux
- Management options

4. Lower limb ulceration (3)

- Mechanisms underlying leg ulceration and the fundamental principles of wound healing.
- Differential diagnosis to include: venous, arterial and mixed, neuropathic, pyoderma gangrenosum and other dermatological ulcers, vasculitic ulcers, ulcers due to infections, malignant lesions presenting as ulcers, traumatic ulcers and pressure sores and haematological and other ulcers.
- Management- see SECTION 2 CHAPTER 3.D

5. Antiphospholipid syndrome (APS) (2)

- Classification^{60, 61}
- Dermatological manifestations^{62, 18}
- Diagnostic markers⁶³
- Thrombotic risk assessment⁶⁴
- Catastrophic APS⁶⁵
- Anticoagulation and Management issues⁶⁶

6. Venous compression syndromes (3)

- Paget-Schroetter syndrome
- Superior vena cava syndrome
- May-Thurner syndrome
- Nutcracker syndrome

- Popliteal vein entrapment syndrome
- 7. Venous aneurysms (3)**
- Popliteal vein aneurysm
 - Jugular vein aneurysm
 - Traumatic venous aneurysms
- 8. Venous trauma (2)**
- Diagnostic methods
 - Venous injuries of lower extremities
 - Preservation of popliteal venous outflow
 - Role of distal arterio-venous fistulas
 - Consequences of femoral venous ligation
 - Vein grafts
 - Other repair techniques
- 9. Coagulopathies (2)**
- Localised intravascular coagulopathy (LIC)
 - Disseminated intravascular coagulopathy (DIC)
 - Kasabach-Meritt syndrome
 - Warfarin necrosis and its differential diagnosis
- 10. Phlebectasias (3)**
- Corona phlebectatica paraplantis
 - Venous lakes and mucoid cysts
 - Telangiectatic conditions
 - Generalised Essential Telangiectasias (GET)
 - Hereditary benign telangiectasias
 - Unilateral naevoid telangiectasias
 - Ataxia telangiectasias (AT)
 - Hereditary Hemorrhagic Telangiectasia (HHT; Osler-Weber-Rendu disease)
 - Mat telangiectasias of scleroderma
 - Telangiectasias Macularis Eruptive Perstans (TMEP)
 - Spider naevus (angioma)
 - Angioma serpiginosum
 - Poikiloderma of Civatte
 - Post-radiation telangiectasias
- 11. Vascular tumours (2)**
- Congenital vascular tumours- see SECTION 1 CHAPTER 4.B.4
 - Pyogenic granuloma
 - Kaposi's sarcoma
 - Bacillary angiomatosis
 - Haemangioendotheliomas
 - Leiomyomas and leiomyosarcomas
 - Angiosarcoma
 - Angiolymphoid Hyperplasia with Eosinophilia (ALHE)
 - Tumor/thrombus complexes such as those involving renal cell carcinoma
 - Other vascular tumours

B. Paediatric Phlebology

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

- 1. Venous incompetence and insufficiency in children (2)**
 - Definitions⁶⁷
 - Epidemiology
 - Prognosis
 - Investigations and Treatment
 - Puberty and venous insufficiency

- 2. Thromboembolism in neonates and children (2)**
 - Purpura fulminans
 - Neonatal cerebral sinus venous thrombosis
 - Neonatal renal vein thrombosis
 - Neonatal portal vein thrombosis
 - Paediatric venous thromboembolism
 - APS in children
 - Post-thrombotic syndrome in children
 - Paediatric coagulopathies

- 3. Paediatric vascular malformations (2)**
 - See SECTION 1 CHAPTER 4.C

- 4. Paediatric vascular tumours (2)**
 - Haemangioma of Infancy (HOI)
 - Congenital haemangiomas
 - Rapidly involuting congenital haemangiomas (RICH)
 - Non-involuting congenital haemangiomas (NICH)
 - Kaposiform haemangioendothelioma (KHE)
 - Tufted angioma
 - Haemangiopericytomas
 - Diffuse congenital haemangiomatosis
 - DIC and Kasabach-Meritt syndrome
 - PHACES syndrome- posterior fossa brain malformation, haemangioma, arterial anomalies, cardiac and aortic anomalies, eye anomalies, sternal defects

- 5. Paediatric vascular and mixed syndromes (2)**
 - Cutis marmorata
 - Cutis marmorata congenita telangiectasias (CMCT)
 - Sturge-Weber syndrome
 - Cobb syndrome
 - Proteus syndrome
 - Beckwith-Wiedman syndrome
 - von Hippel-Lindau syndrome
 - Fabry's disease
 - Homocysteinuria
 - Klinefelter syndrome

C. Vascular Malformations

1. Capillary malformations (CM) (2)

- Classification
- Combined malformations and syndromes that include a CM
 - CM-arteriovenous malformation (CM-AVM)
 - Sturge-Weber syndrome
 - Macrocephaly- CM syndrome (M-CM)
 - Cobb syndrome
 - Cerebral capillary malformations
 - Cutis marmorata congenital telangiectasias (CMCT)
 - Other syndromes
- Laser therapy for CM

2. Venous malformations (VM) (3)

- Classification, syndromes and sub-types⁶⁸
 - Truncular vs. non-truncular
- Truncular VM
 - IVC anomalies
 - Persistent embryonic veins
 - Klippel-Trenaunay syndrome (KTS)
 - Primary venous aneurysms
- IVC anomalies
 - Diagnosis and management
 - Aplasia and hypoplasia
 - Duplication
 - Deep vein thrombosis (DVT) in patients with IVC anomalies
- Persistent embryonic veins
 - Sciatic vein
 - Lateral embryonic marginal vein
- Non-truncular VM
 - Localised and generalized sporadic VM
 - Glomovenous malformations
 - Blue Rubber Bleb syndrome
 - Generalized phlebectasias
 - Sinus peri-cranii
 - Cerebral VM ('cavernous malformation')
- Complications
 - Localised intra-vascular coagulopathy
 - Recurrent thrombophlebitis
 - Venous thrombosis and pulmonary embolism (PE) in patients with VM
 - Soft tissue and bony hypertrophy in patients with VM
 - Chronic venous hypertensive changes
 - Psychological and developmental aspects
- Investigations
 - Ultrasonic features and Doppler findings
 - Venography and MRI
 - Laboratory investigations of associated coagulopathies
- Management options
 - Conservative management
 - Interventions- see SECTION 3 CHAPTER 4.A

3. Lymphatic malformations (LM)⁶⁹

(1)

- Classification
 - Truncular LM presenting as primary lymphoedema^{70, 71}
 - Non-truncular LM
 - Microcystic vs. macrocystic
 - Angiokeratomas and capillary-lymphatic malformations
- Cutaneous manifestations and complications
 - Lymphoedema
 - Papillomatosis
 - Infection, cellulitis
 - Bleeding and intra-lesional thrombosis
 - Psychological and developmental aspects
- Syndromes that include a LM
- Investigations
 - Ultrasonic features
 - MRI
 - Radionuclide lymphoscintigraphy for lymphoedema of truncular LM
 - Lymphangiography, microlymphangiography and indirect lymphography
 - Patent blue and Indocyanin test
- Management options⁷²
 - Conservative management
 - Interventions- see SECTION 3 CHAPTER 4.A

4. Arteriovenous malformations (AVM)

(2)

- Diagnosis, clinical and radiological classifications^{73, 74}
- Cutaneous manifestations including acroangiodermatitis
- Syndromes that may include AVMs
 - Parks-Weber syndrome (PWS)
 - Sturge-Weber syndrome
 - HHT
 - SOLAMEN syndrome-SOLAMEN: segmental overgrowth, lipomatosis, arteriovenous malformation, epidermal nevus.
 - CM-AVM
- Complications
 - Soft tissue and bony hypertrophy in patients with AVM
 - Chronic venous hypertensive changes
 - Cardiac function in patients with AVMs
 - Psychological and developmental aspects
- Investigations
 - Ultrasonic features and Doppler findings
 - Differentiation from fast flow tumours
 - Role of angiography
 - Role of MRI
 - Role of nuclear-medicine investigations to determine shunt volumes
- Management options⁷⁵
 - Conservative management
 - Interventions- see SECTION 3 CHAPTER 4.A

5. Complex malformations and syndromes (1)

- KTS
- Parks-Weber Syndrome (PWS)
- Proteus syndrome
- Maffucci's syndrome
- Phacomatosis pigmentovascularis
- Hyperkeratotic cutaneous capillary venous malformation (HCCVM)
- 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

D. Venous pathology in Other Systems

1. Phlebology in Dermatology (2)

- Dermatological manifestations of CVI²⁷
- Panniculitis and lipodermatosclerosis
- Pigmented purpuric dermatoses
- Acroangiodermatitis (Pseudo-Kaposi's Sarcoma)
- Purpura
- Reticulate eruptions¹⁸
 - 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 4.A.11 and 4.B.4
- Warfarin necrosis and its differential diagnoses^{76, 77}
- Neuro-vascular instability
 - Raynaud's phenomenon
 - Erythromelalgia
 - Acrocyanosis
 - Pernio
 - Complex regional pain syndromes

2. Phlebology in Haematology (2)

- Hypercoagulable states
- Heritable and acquired thrombophilias
- DIC
- Microangiopathies
 - Thrombotic thrombocytopenic purpura
 - Idiopathic thrombocytopenic purpura
 - Haemolytic-uremic syndrome
- Inherited and acquired platelet disorders

- Paroxysmal nocturnal haemoglobinuria

3. Phlebology in Neurology (2)

- Chronic cerebrospinal venous insufficiency (CCSVI) and multiple sclerosis^{78, 79}
- Intra-cranial venous thrombosis and in particular cavernous sinus thrombosis
- Right-to-left shunts, paradoxical embolism and stroke
- Migraines and transient neurological complications of venous interventions
- Sinus peri-cranii
- Neuropathy
- Neuro-vascular instability- see 1 above

4. Phlebology in Obstetrics and Gynaecology (2)

- Vulval varices
- Vulvodynia
- Pelvic congestion syndrome
- Pregnancy and thrombophilia
- Thrombotic complications of pregnancy and post-partal period
 - Anticoagulation during pregnancy
 - Inherited thrombophilias and pregnancy
- Mondor's disease of the breast
- Thrombosis and OCP⁸⁰
- Thrombosis and HRT⁸¹
- Menstrual variations in venous incompetence
- Angiogenic potential of hormonal preparations

5. Phlebology in Gastroenterology (1)

- Portal venous system
 - Normal anatomy and flow characteristics
 - Hepatic venous flow
 - Portal venous hypertension: signs and symptoms, collateral flow, imaging and sonographic diagnosis, changes in portal vein flow with cardiac failure, surgical porto-systemic shunts
 - Portal vein thrombosis
- Budd Chiari syndrome⁸²
- Mesenteric inflammatory veno-occlusive disease
- Oesophageal varices
- Gastric antral vascular ectasia (Watermelon stomach)
- Haemorrhoidal varices

6. Phlebology in Urology (2)

- Varicoceles
- Mondor's disease of penis

7. Psycho-social aspects (2)

The trainee should be familiar with the psychosocial aspects of conditions covered in the Curriculum and in particular the following conditions:

- Lymphoedema
- CVI
- PTS
- Leg ulcers
- Disfiguring vascular malformations
- Vulvodynia

- Reflex sympathetic dystrophy
- Patients with recurrent VTE
- Patients diagnosed with heritable thrombophilias
- Patients with chronic pain
- Body dysmorphic syndrome

E. Lymphology

1. Lymphoedema (3)

a) Clinical Aspects

- Diagnosis and differential diagnosis
 - Phlebolympoedema
 - Mid-line lymphoedema
 - Lipoedema
 - Other causes of oedema
- Staging of lymphoedema⁸³⁻⁸⁵
- Epidemiology and pathophysiology
- Clinical manifestations
- Complications
- Prognosis
- Elephantiasis
- Disability and quality of life issues

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, lymphangiostromatosis
 - Inflammatory lymphoedema: panniculitis and lipodermatosclerosis, rosacea and acne vulgaris, podoconiosis
 - Cellulitis
 - Pretibial myxoedema
 - Other causes: traumatic, malignancy related

c) Management

- Management options- see SECTION 2 CHAPTER 3.E

2. Lymphatic malformations (2)

- See SECTION 1 CHAPTER 4.C.3

3. Lipoedema (3)

- Diagnosis and management

4. Lymphophilic tumours (2)

- Kaposi's sarcoma
- Malignant eccrine poroma

SECTION 2: PATIENT MANAGEMENT

CHAPTER 1: CONSULTATION

Introduction

Phlebologists can only provide high quality care through the establishment of an effective relationship with their patients and those involved in the patient's care utilising effective communication skills. An accurate diagnosis and management relies on obtaining and recording a comprehensive medical history through effective communication and performing a thorough examination. The trainee must demonstrate the adoption and application of performance criteria listed below.

- Develop effective communication skills
- Obtain and record a history relevant to the presenting problem
- Develop skills in obtaining informed consent
- Develop effective clinical decision making and diagnostic skills

A. History (3)

The trainee should obtain a detailed history in a systematic and organized fashion which may involve the use of questionnaires. The history should include the following

1. Presenting complaint- including the patient's main concern
2. Presenting symptoms, exacerbating and relieving factors
3. Past venous, thrombotic, thrombophilic and bleeding history
4. Current medical problems and past medical and surgical history
5. Psychological history and in particular suitability for office-based procedures
6. Obstetrics and gynaecological history
 - Number of pregnancies and number of miscarriages
 - Use of oral contraceptive and other hormonal supplements
7. Family history of venous, thrombotic, thrombophilic and bleeding problems and other relevant family history
8. Social history including alcohol and tobacco consumption, exercise and travel
9. Regular medications and supplements
10. Allergies

B. Examination (3)

1. Examination for CVI
 - Examination in the standing position
 - Inspection for manifestations of CVI
 - Description of morphology
 - Interpretation and formulation of a CEAP code
 - Inspection of other regions depending on the presenting complaint
 - General medical examinations if indicated
2. Examination appropriate for other conditions described in this Curriculum

C. Documentation and Record Keeping (3)

1. The trainee should maintain a legible and appropriate record of consultations and procedures.
2. Photographs are to be taken with prior patient consent of the regions of interest.
3. Written communication with referring doctors following consultations and procedures.

CHAPTER 2: DIAGNOSTIC EVALUATION

Introduction

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

1. The trainee should investigate:
 - **Diagnosis-** To make a diagnosis and exclude differential diagnoses
 - **Extent-** To assess the extent of the presenting condition
 - **Associations-** To investigate the associated conditions, underlying causes and predisposing factors
 - **Therapy-** To work-up for therapeutic options
2. The trainee should consider the following when ordering investigations:
 - Indication, contra-indications and complications
 - Appropriateness for the presenting condition
 - Be able to interpret the results of investigations and seek expert advice if required
 - Have a recording system for following up and notification of patients of the test results
 - Ethical issues
 - Genetic testing
 - Radiation exposure especially in children
 - Cost to the patient

A. Basic Modalities

The trainees should be competent in utilising the basic modalities used in the management of venous disease.

1. CW-Doppler

(3)

CW-Doppler is helpful in teaching the Doppler principles and ankle-brachial index measurements.⁸⁹

The trainee should:

- Understand the indications and applications of CW-Doppler examination.
- Be familiar with the concept of best Doppler angle and explain the Doppler physics.
- Be able to perform ankle-brachial index measurements

2. Other Modalities

(1)

The trainee must be aware of the utility of the following modalities in the management of venous disease:

- Side trans-illumination (Episcopy)
- Light polarization
- Trans-cranial Doppler studies

B. Duplex Ultrasound

1. Core Knowledge

(3)

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. An understanding of ergonomic and occupational health and safety issues is recommended.

The trainee should be able to

- Locate the saphenofemoral junction and distinguish between the femoral vein and the GSV.
- Interrogate the popliteal fossa for sapheno-popliteal junction and be familiar with the anatomical variations in this region.
- Demonstrate reflux in the great and small saphenous veins and their major branches, using colour flow and pulsed wave doppler.
- Demonstrate reflux in reticular veins, venulectasias and perforators.
- Locate subtle reflux underlying post-sclerotherapy pigmentation and matting.

2. B-Mode

(3)

The trainee needs to obtain a detailed knowledge of the following:

- Image optimization techniques
- Transducer types, selection and orientation
- Gain, time gain compensation, depth and frequency
- Tissue harmonics
- Compounding
- Dynamic range
- Mechanical and thermal indices
- B-mode artefacts

3. Colour Doppler and Spectral Analysis

(3)

The trainee needs to understand the utility and the clinical significance of Doppler measurements and be competent in:

- Measurements: velocity ratios, acceleration rates, volume flow.
- Normal arterial and venous flow
- Flow features associated with spectral display
- Effects of sample volume
- Local effects of stenosis
- Advantages and limitations of colour and pulse-wave Doppler
- Optimisation of colour Doppler parameters
- Artefacts in colour Doppler imaging

4. Specific Ultrasound Studies

(3)

The trainee should be able to identify thrombosis and incompetence on duplex ultrasound scans. The protocols and anatomical nomenclature should conform with internationally accepted standards.

The trainee should be competent in performing the following:

- Venous incompetence studies (deep and superficial) ^{38, 39 40}
- Deep vein thrombosis studies
- Upper limb studies
- Neck vein studies
- Vascular anomalies (tumours and malformations)
- Pelvic and vulvar veins
- Compression syndromes

- Iliofemoral, IVC and renal veins
- Venous aneurysms
- Identification of
 - Normal structures such as arteries, tendons, ligaments and muscles
 - Nerves: sciatic nerve, femoral nerve, sural nerve, saphenous nerve, common peroneal nerve
 - Lymph nodes: benign and malignant
 - Baker's cyst and joint effusions
 - Lipomas and other soft tissues tumours
 - Haematomas

C. Venography (1)

Although venography has been mostly replaced by duplex ultrasound in the diagnosis of venous thrombosis and occlusive disease, it still plays a role in the 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 (2)

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

E. Other Imaging Modalities (2)

The trainee should be familiar with the role of

- Lymphoscintigraphy in the diagnosis and management of lymphoedema.
- CT, MRI and both modalities in combination with angiography⁹⁰ or venography in the diagnosis and management of:
 - Thrombosis of pelvic and abdominal veins
 - Iliac vein compression syndrome
 - Insertion of IVC filters
 - Defining the extent of vascular malformations
 - Pre-intervention road mapping

F. Laboratory Investigations

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

1. Routine measurements (2)

- Routine blood, urine, microbiology, imaging and other investigations
- Clotting tests, clotting factor assays and platelet function assays⁹¹

2. Laboratory markers (2)

- VTE⁹²
 - Assessment of coagulation and fibrinolysis in VTE patients⁹³
- Thrombophilia- see 3 below
- Monitoring of anticoagulant therapy
- Fibrinolytic abnormalities
- APS⁶³
- DIC and other coagulopathies⁹⁴
- D-dimer in monitoring of venous malformations¹⁴
- Vasculitis
- Connective tissue disorders
- Microangiopathies

- Malignancy

3. Thrombophilia testing (3)

- Guidelines for testing for heritable thrombophilias⁹⁵
- Laboratory markers of thrombophilia⁹⁶
- Thrombophilia testing in patients with first VTE⁹⁷
- Role of thrombophilia testing in the clinical management of patients with VTE⁹⁸
- Thrombophilia testing in recurrent VTE⁴⁵
- Psychological aspects of thrombophilia testing⁹⁹

G. Histopathology (2)

The trainee should be able to interpret and be familiar with:

- Histopathological reports as they relate to conditions covered in the Curriculum.
- Common stains used in the identification of common venous conditions.
- The histopathology of the common conditions covered in the Curriculum and in particular:
 - Acute and chronic lipodermatosclerosis
 - Panniculitis
 - Venous and arterial thrombosis
 - Endo-venous sclerosis and endovascular fibrosis
 - Pigmented purpuric dermatoses ('capillaritis')
 - Acroangioidermatitis ('pseudo-Kaposi's sarcoma')
 - Vasculitis (small vessel, medium size vessel and large vessel)
 - Nodular vasculitis and erythema induratum
 - Livedo vasculopathy
 - Warfarin necrosis and calciphylaxis
 - Vascular tumours

CHAPTER 3: MANAGEMENT

The trainee should be able to formulate a management plan in a systematic and organized fashion that would incorporate the following:

A. General Measures

- 1. Communicate the diagnosis (3)**
 - Communicate the diagnosis, in an accurate and consistent fashion, and in a language comprehensible to the lay person.
- 2. Patient education and counseling (3)**
 - Use 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.
 - Recommend educational materials, websites and patient support groups.
- 3. Identify offending drugs and exacerbating factors (3)**
 - Identify any drugs or factors that exacerbate the patient's presenting condition.
- 4. Identify and treat the underlying pathology (3)**
 - Identify and generate a management plan for conditions with an underlying pathology.
- 5. Lifestyle modifications (3)**
 - Identify lifestyle modifications essential in prevention and management of the presenting condition.

- 6. Joint management and referrals to other practitioners (3)**
The trainees should:
- know their own limitations and know when to refer a patient to other medical specialists or allied health practitioners.
 - communicate and coordinate effectively any changes in the management of the patient with the primary care physician.
 - coordinate the management plan with other healthcare professionals including the primary care physician, other medical specialists, community nurses and physiotherapists.
- 7. Family member screening and genetic counseling (3)**
- Indications and limitations of genetic testing.
 - Medical, medico-legal and psychosocial implications of screening of family members of patients with heritable thrombophilias and other genetic disorders.
- 8. Commence appropriate treatment (3)**
- Patient selection, indications, absolute and relative contra-indications.
 - Develop a hierarchy of treatment options based on the presenting condition, starting with the least invasive but the most appropriate option
 - Communicate the suggested treatment option and discuss alternative options.
 - Understand the prevention, recognition and management of complications of treatment
 - Identify at risk groups
- 9. Follow-up (3)**
- a. The trainee should understand the importance of taking full responsibility for patients under their immediate care which includes appropriate follow-up.
 - b. The trainee should be able to formulate a sensible short term and long term patient follow-up plan.

B. Management of CVI

- 1. Guidelines and consensus documents (3)**
The trainee should be familiar with international and national guidelines and consensus documents.¹⁰⁰
- 2. Prevention (3)**
- Pharmacological methods- see venoactive drugs SECTION 1 CHAPTER 3.C.6
 - Compression garments
- 3. General Measures (3)**
- General measures- see A above
 - Life-style modifications and in particular the role of
 - Standing occupations and CVI
 - Obesity
 - Factors influencing the calf muscle function¹⁰¹
 - Hormonal supplementations
- 4. Management of associated problems and co-morbidities (3)**
- Oedema
 - Venous eczema
 - Pigmentary changes

- Lipodermatosclerosis
 - Atrophie blanche
 - Leg ulcerations- see D below
 - Rare manifestations including PPD and nodular vasculitis
 - Joint dystrophy
- 5. Conservative management (3)**
- Compression therapy¹⁰² see SECTION 3 CHAPTER 1
- 6. Non-surgical intervention (3)**
- See SECTION 3 CHAPTER 2
- 7. Surgical intervention (2)**
- See SECTION 3 CHAPTER 3
- C. Management of VTE**
- 1. Guidelines and consensus documents (3)**
- The trainee should be familiar with international and national guidelines and consensus documents.^{103, 104}
- 2. Prevention and thromboprophylaxis (3)**
- Pharmacological methods¹⁰⁵
 - Compression garments
 - Compression devices including intermittent pneumatic compression
 - Strategies to improve prophylaxis delivery¹⁰⁶
- 3. General measures (3)**
- General measures- see A above
 - Identification and exclusion of provoking factors
 - Exclusion of underlying pathology and in particular malignancies
 - Identification and exclusion of ongoing risk factors
- 4. Conservative management (3)**
- Compression therapy¹⁰²
- 5. Anticoagulation for acute DVT and PE (3)**
- LMWH and UFH¹⁰⁷
 - Anti Xa monitoring¹⁰⁸
 - Heparin induced thrombocytopenia (HIT): diagnosis, laboratory investigations and management^{109, 110}
 - Anticoagulation in children¹¹¹⁻¹¹⁴
 - Anticoagulation in the elderly¹¹⁵
 - Vitamin K antagonists and Warfarin
 - New anticoagulants^{116, 117, 20}
 - Monitoring of anticoagulant therapy^{111, 118, 119}
 - Duration of anticoagulant therapy^{120, 121}
 - Ultrasound monitoring
 - Management of VTE in cancer patients⁴⁹
- 6. Treatment of SVT and STP (3)**
- Role of NSAIDS

- Role of LMWH
- Role of new anticoagulants¹²²

7. Recurrent VTE (3)

- Risk factors^{44, 46, 123}
- Long term anticoagulation
- Role of vena caval filters
- Role of anti-platelet agents and aspirin

8. Surgical and interventional techniques (2)

- Thrombolysis-see SECTION 3 CHAPTER 4.C
- Vena caval filters- see SECTION 3 CHAPTER 4.D
- Surgical venous thrombectomy
- Surgical procedures to treat venous outflow obstruction including
 - Autogenous or prosthetic bypass
 - Venous dilation and stenting.¹²⁴⁻¹²⁶

D. Management of leg ulcers

1. Guidelines and consensus documents (3)

Trainees should be familiar with international and national guidelines and consensus documents.

2. Prevention (3)

- Management of underlying conditions such as CVI, diabetes mellitus, peripheral vascular disease and neuropathy
- Compression garments for venous ulcers
- Life-style modifications and in particular the role of weight reduction

3. General measures (3)

- General measures- see A above
- Adjunctive treatment such as physiotherapy for calf muscle pump function and ankle mobility.

4. Management of associated problems and co-morbidities (3)

- Cutaneous problems
 - Venous eczema
 - Contact sensitization to topical agents and dressings and in particular sensitizing agents such as neomycin and adhesives.
 - Tissue calcification and ossification
- Infections
 - Prevention of clinical infections
 - Prevention of antibiotic resistance
 - Differentiation between a clinical infection and growth of common pathogens in wound swabs
 - Indications for appropriate antibiotic and antifungal therapy
- Psychosocial issues

5. Wound management (3)

- Role of biopsy in excluding malignant change and differential diagnoses.
- Treatment of wound hypergranulation.
- Indications, contraindications, and complications associated with the use of different types of dressings and topical medications.

- 6. Compression therapy (3)**
- The fundamental role of adequate compression therapy in treatment of venous ulcers.¹²⁷⁻¹³¹
- 7. Oral treatment (3)**
- Role of veno-active drugs^{23, 24, 132}
- 8. Interventions (3)**
- Role of non-invasive interventions such as sclerotherapy¹³³
 - Role of commonly used surgical interventions in the management of chronic wounds including skin flaps, substitutes, matrix grafts, growth factors and surgical debridement.

E. Management of Lymphoedema

- 1. Guidelines and consensus documents (3)**
The trainee should be familiar with international and national guidelines and consensus documents.⁸⁴
- 2. Prevention (3)**
- Compression garments
 - Life-style modifications and in particular the role of weight reduction
- 3. General measures (3)**
- General measures- see A above
 - Adjunctive treatment such as physiotherapy
 - Basic skin care
- 4. Management of associated problems and co-morbidities (3)**
- Infections
 - Prevention of recurrent infections
 - Management of concurrent bacterial or fungal infections
 - Cutaneous problems
 - Hyperkeratosis
 - Lymphostatic verrucosis
 - Role of oral retinoids
 - Pain management
 - Congestive heart disease
 - Hypertension
 - Cerebrovascular disease and in particular stroke
 - Psycho-social issues
- 5. Conservative treatments (3)**
- Decongestive lymphatic therapy (DLT)
 - Manual lymphatic drainage (MLD)
 - Compression bandaging
 - Intermittent pneumatic compression
 - Electrostimulation devices
- 6. Surgical/operative therapy (2)**
- Reconstructive surgery
 - Lympho-venous anastomoses
 - Debulking/ablative (excisional) surgery
 - Liposuction

SECTION 3: TREATMENT MODALITIES

CHAPTER 1: COMPRESSION THERAPY

The trainee should understand the role of compression therapy in the management of venous and lymphatic disorders.

A. Core knowledge (3)

- To understand the principles of compression therapy, compression bandaging and the science of compression¹⁰²
- Indications and contra-indications of compression therapy¹⁰²
- Complications of compression therapy
- Classification of compression bandages¹³⁴
- Pneumatic compression pumps
- Compression devices¹³⁵

B. Practical knowledge (3)

- The trainees should be competent in applying compression bandaging

CHAPTER 2: CORE PROCEDURES

The trainee is expected to be competent in performing the following Core Procedures.

C. Sclerotherapy (3)

- The trainee should be able to competently perform the following procedures:
 - Direct vision sclerotherapy
 - Ultrasound guided sclerotherapy (UGS)
 - Catheter directed sclerotherapy (CDS)¹³⁶
- Sclerosing agents
 - Classification
 - Mechanism of action
 - Pharmacokinetics and pharmacodynamics
 - Interaction of detergent sclerosants with the coagulation system¹³⁷, antithrombotic mechanisms¹³⁸, fibrinolysis^{139, 140} and blood cells¹⁴¹
- Techniques of sclerotherapy
 - Indications and contraindications
 - Liquid and foam¹⁴²⁻¹⁴⁷
 - Alternative procedures
- Complications of Sclerotherapy¹⁴⁸⁻¹⁵⁰
 - Thrombotic complications
 - Post-sclerotherapy deep vein occlusion¹⁵¹
 - Gas embolism following foam sclerotherapy¹⁵²⁻¹⁵⁴
 - Right-to-left shunts and cerebrovascular events
 - Intra-arterial injections
 - Cutaneous necrosis
 - Telangiectatic matting and pigmentation
 - Other complications
- The trainees should have a thorough understanding of
 - Occupational health and safety (OH&S) issues and in particular the prevention and management of needle stick injury- see SECTION 4.C.

D. Endovascular ablation (3)

- The trainee should be able to competently perform the following procedures:
 - Endovenous Laser Ablation (EVLA)
 - Radiofrequency Ablation (RFA)
- The trainee should have a thorough understanding of:
 - Catheters, guidewires, glidewires, sheaths, torque devices and other equipment used in endovascular procedures
 - Range of laser wavelengths and systems used for endovenous ablation
 - Indications, contraindications, and risks of endovascular techniques used to treat varicose veins
 - Complications of endovenous ablative procedures
 - Alternative procedures
 - New methods of endovascular ablation (steam, cryotherapy, etc)
 - Laser safety guidelines- see SECTION 4.A

E. Ambulatory phlebectomy (AP) (2)

- The trainee should be competent in performing this procedure.
- The trainee should have a thorough understanding of:
 - Patient selection
 - Indications, contraindications and complications of AP
 - Selection of appropriate veins
 - Techniques of AP
 - Types of hooks
 - Incisions
 - Alternative procedures

F. Vascular laser and light therapy (2)

- The trainee should be competent in performing these procedures in the treatment of telangiectasias and capillary malformations:
 - Vascular laser therapy
 - Intense pulse light (IPL)
- The trainee should have a thorough understanding of:
 - Range of laser wavelengths and systems used for vascular laser therapy.
 - Indications, contraindications and complications of vascular laser therapy and IPL
 - Alternative procedures
 - Laser safety guidelines- see SECTION 4.A

CHAPTER 3: SURGICAL PROCEDURES

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

A. Varicose vein surgery (2)

- Saphenofemoral and sapheno-popliteal ligation or crosssectionomy
- Stripping and other methods to remove the saphenous trunk, partial or complete
- Surgical methods to remove saphenous tributaries and clusters of varicose veins
- Surgical techniques to ligate or disconnect incompetent varicose veins

- Removal of non-saphenous varicosities elsewhere on the leg
- Role of external stenting of the saphenofemoral junction
- Alternative procedures
- Recurrent varices after surgery (REVAS)¹⁵⁵⁻¹⁵⁷
 - 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.
- A basic understanding of CHIVA and other restorative surgical procedures.
- Complications including but not limited to pain, phlebitis, haematoma, infection, allergic reactions and VTE¹⁵⁸.

B. Surgery for other venous conditions (1)

- Surgery for deep venous reflux
 - Reconstructive surgery including valvuloplasty, vein and valve transplantation and vein segment transposition¹⁵⁹⁻¹⁶¹
 - Role of external stenting
- Surgical treatments for pelvic venous insufficiency.
- Surgical venous thrombectomy
- Knowledge of procedures designed to treat venous outflow obstruction including autogenous or prosthetic bypass and venous dilation and stenting.¹²⁴⁻¹²⁶
- Thoracic outlet decompression for Paget-Schroetter Syndrome
- Repair of popliteal vein aneurysm

CHAPTER 4: INTERVENTIONAL PROCEDURES

The trainee should have a broad knowledge of patient selection, indications, contraindications, and complications associated with procedures listed below. The trainee is NOT expected to perform these procedures unless the trainee has completed an appropriate post-graduate interventional training program or Fellowship.

A. Vascular malformations (2)

- Capillary malformations- see SECTION 3 CHAPTER 2.D
- Venous malformations
 - Sclerotherapy with detergent sclerosants or ethanol
 - Role of endovascular ablative techniques such as EVLA and RFA
 - Image guidance with ultrasound and/or fluoroscopy
 - Compression therapy
 - Management of associated bony and soft tissue abnormalities.
- Lymphatic malformations
 - Sclerotherapy with detergent sclerosants, doxycycline, OK-432 and other agents.
 - Management of lymphoedema- see SECTION 2 CHAPTER 3.E
- AVMs
 - Embolisation with ethanol, onyx, particles or coils.
 - Image guidance and catheterisation
 - Antegrade vs. retrograde approach
 - Management of associated bony and soft tissue abnormalities.

B. Pelvic congestion syndrome (2)

- Conservative therapy
- Coil embolisation of ovarian veins
- Sclerotherapy for ovarian and pelvic veins
- Surgical treatments for ovarian veins

C. Thrombolysis and thrombectomy (2)

- Mechanical vs. chemical
- Device types
- Catheter directed thrombolysis (CDT)^{162, 163}
- Surgical and endovenous thrombectomy¹⁶⁴

D. Vena caval filters (1)

- Permanent vs. retrievable filters
- Filter types

E. Endovenous catheter dilatation and stenting (1)

- Applications in the management of CCSVI

SECTION 4: ADJUNCTIVE EDUCATION

A. Laser Safety and Regulations

Local laser safety regulations and education should be completed by all trainees. A refresher course may be required on a regular basis depending on the local regulations.

B. Basic and Advanced Cardiac Life Support and Emergency Medicine (3)

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.

C. Occupational Health and Safety (OH&S) (3)

The trainee should be familiar with:

- OH&S related protocols at their working institution.
- Safe practices to minimize the risk of needle stick injuries and safe management of sharps.
- Institutional guidelines for exposure to blood or body fluids and post-exposure prophylaxis measures.
- Ergonomic problems of sonography.
- Laser safety regulations- see A above

D. Research Design and Analysis (2)

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.

E. Venous Outcomes Assessment (2)

The trainee should be familiar with the Venous Clinical Severity Score^{165-167, 37} 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.

F. Infection Control (3)

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.

G. Medico-legal Issues, Registration, Certification and Medical Ethics (2)

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. The trainee 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

REFERENCES

1. Caggiati A, Bergan JJ, Gloviczki P, Jantet G, Wendell-Smith CP, Partsch H. Nomenclature of the Veins of the Lower Limbs: An International Interdisciplinary Consensus Statement. *J Vasc Surg.* 2002;36:416-22.
2. Eklof B, Perrin M, Delis K, Rutherford R, Gloviczki P. Updated Terminology of Chronic Venous Disorders: The VEIN-TERM Transatlantic Interdisciplinary Consensus Document. *J Vasc Surg.* 2009;49:498-501.
3. Kachlik D, Pechacek V, Baca V, Musil V. The Superficial Venous System of the Lower Extremity: New Nomenclature. *Phlebology* 2010;25:113-23.
4. Mozes G, Gloviczki P. New Discoveries in Anatomy and New Terminology of Leg Veins: Clinical Implications. *Vasc Endovascular Surg.* 2004;38:367-74.
5. Partsch H, Clark M, Bassez S, Benigni JP, Becker F, Blazek V, Caprini J, Cornu-Thénard A, Hafner J, Flour M, Jünger M, Moffatt C, Neumann M. Measurement of Lower Leg Compression *in vivo*: Recommendations for the Performance of Measurements of Interface Pressure and Stiffness: Consensus Statement. *Dermatol Surg.* 2006;32:224-32.
6. Wollmann JC. Sclerosant Foams: Stabilities, Physical Properties and Rheological Behavior. *Phlebologie.* 2010;39:208-17.
7. Gañán-Calvo AM, Fernández JM, Marquez Oliver A, Marquez M. Coarsening of Monodisperse Wet Microfoams. *Appl Phys Lett.* 2004;84:4989-91.
8. Sun QC, Tan LH, Wang GQ. Liquid Foam Drainage: An Overview. *Int J Mod Phys B* 2008;22:2333-54.
9. Rao J, Goldman MP. Stability of Foam in Sclerotherapy: Differences between Sodium Tetradecyl Sulfate and Polidocanol and the Type of Connector Used in the Double-Syringe System Technique. *Dermatol Surg.* 2005;31:19-22.
10. le Maire M, Champeil P, Moller JV. Interaction of Membrane Proteins and Lipids with Solubilizing Detergents. *Biochim Biophys Acta.* 2000;23:86-111.
11. Lurie F. Venous Haemodynamics: What We Know and Don't Know. *Phlebology* 2009;24:3-7.
12. Arellano AR, Bezemer ID, Tong CH, Catanese JJ, Devlin JJ, Reitsma PH, Bare LA, Rosendaal FR. Gene Variants Associated with Venous Thrombosis: Confirmation in the MEGA Study. *J Thromb Haemost.* 2010;8:1132-4.
13. Bezemer ID, Bare LA, Doggen CJ, Arellano AR, Tong CH, Rowland CM, Catanese JJ, Young BA, Reitsma PH, Devlin JJ, Rosendaal FR. Gene Variants Associated with Deep Vein Thrombosis. *JAMA.* 2008;299:1306-14.
14. Domp Martin A, Vikkula M, Boon LM. Venous Malformation: Update on Aetiopathogenesis, Diagnosis and Management. *Phlebology* 2010;25:224-35.
15. Al-Adnani M, Williams S, Rampling D, Ashworth M, Malone M, Sebire NJ. Histopathological Reporting of Paediatric Cutaneous Vascular Anomalies in Relation to Proposed Multidisciplinary Classification System. *J Clin Pathol* 2006;59:1278-82.
16. Ariëns RA. FXIII and Fibrin Clot Structure. 53rd Annual GTH Meeting (Gesellschaft für Thrombose und Hämostaseforschung) Society of Thrombosis and Haemostasis Research; Vienna, Austria; 2009. p. 49.
17. Ariëns RA, Lai TS, Weisel JW, Greenberg CS, Grant PJ. Role of Factor XIII in Fibrin Clot Formation and Effects of Genetic Polymorphisms. *Blood* 2002;100:743-54.
18. Parsi K. Dermatological Manifestations of Venous Disease. Part II: Reticulate Eruptions. *Aust NZ J Phleb.* 2008;11:11-46.
19. Makris M, van Veen JJ, Maclean R. Warfarin Anticoagulation Reversal: Management of the Asymptomatic and Bleeding Patient. *J Thromb Thrombolysis* 2010 29:171-81.
20. Squizzato A, Dentali F, Ageno W. Treatment Options for Deep Vein Thrombosis. *Expert Opin Pharmacother* 2010;11:1069-75.
21. Chan V, Monagle P, Massicotte P, Chan A. Novel Paediatric Anticoagulants: A Review of the Current Literature. *Blood Coagul Fibrinolysis.* 2010;21:144-51.
22. Martinez MJ, Bonfill X, Moreno RM, Vargas E, Capellà D. Phlebotonics for Venous Insufficiency. *Cochrane Database Syst Rev.* 2005;3:CD003229.
23. Ramelet AA, Boisseau MR, Allegra C, Nicolaidis A, Jaeger K, Carpentier P, Cappelli R, Forconi S. Veno-Active Drugs in the Management of Chronic Venous Disease. An International Consensus Statement: Current Medical Position, Prospective Views and Final Resolution. *Clin Hemorheol Microcirc.* 2005;33:309-19.
24. Coleridge-Smith P, Lok C, Ramelet AA. Venous Leg Ulcer: A Meta-Analysis of Adjunctive Therapy with Micronized Purified Flavonoid Fraction. *Eur J Vasc Endovasc Surg.* 2005;30:198-208.
25. Milio G, Mina C, Cospite V, Almasio PL, Novo S. Efficacy of the Treatment with Prostaglandin E-1 in Venous Ulcers of the Lower Limbs. *J Vasc Surg* 2005;42:304-8.
26. Jull AB, Waters J, Arroll B. Pentoxifylline for Treating Venous Leg Ulcers. *Cochrane Database Syst Rev* 2007;18:CD001733.
27. Parsi K. Dermatological Manifestations of Venous Disease. Part I. *Aust NZ J Phleb.* 2007;10:11-9.

28. Beebe-Dimmer JL, Pfeifer J, Engle JS, Schottenfeld D. The Epidemiology of Chronic Venous Insufficiency and Varicose Veins. *AEP*. 2005;15:175-84.
29. Carpentier PH, Maricq HR, Biro C, Poncot-Makinen CO, Franco A. Prevalence, Risk Factors and Clinical Patterns of Chronic Venous Disorders of Lower Limbs: A Population-Based Study in France. *J Vasc Surg*. 2004;40:650-59.
30. Jawien A, Grzela T, Ochwat A. Prevalence of Chronic Venous Insufficiency in Men and Women in Poland : Multicenter Cross-Sectional Study in 40095 Patients. *Phlebology*. 2003;18:110-21.
31. Rabe E, Pannier-Fischer F, Bromen K, Schulz K, Poncar C, Wittenhorst M, Bock E, Weber S, Jöckel KH. Bonner Venenstudie der Deutschen Gesellschaft für Phlebologie - Epidemiologische Untersuchung zur Frage der Häufigkeit und Ausprägung von chronischen Venenkrankheiten in der städtischen und ländlichen Wohnbevölkerung. *Phlebologie*. 2003;32:1-14.
32. Beebe HG, Bergan JJ, Bergqvist D, Eklof B, Eriksson I, Goldman MP, Greenfield LJ, Hobson RW, Juhan C, Kistner RL, Labropoulos N, Malouf GM, Menzoian JO, Moneta GL, Myers KA, Neglen P, Nicolaides AN, Partsch H, Perrin M, Porter JM, Raju S, Rich NM, Richardson G, Schanzer H, Coleridge-Smith P, Strandness DE, Sumner DS. Classification and Grading of Chronic Venous Disease in the Lower Limbs: A Consensus Statement. *Eur J Vasc Endovasc Surg*. 1996;12:487-92.
33. Porter JM, Moneta GL. International Consensus Committee on Chronic Venous Disease. Reporting Standards in Venous Disease: An Update. *J Vasc Surg*. 1995;21:635-45.
34. Allegra C, Antignani PL, Bergan JJ, Carpentier PH, Coleridge-Smith P, Cornu-Thénard A, Eklof B, Partsch H, Rabe E, Uhl JF, Widmer MT. The "C" of CEAP: Suggested Definitions and Refinements: An International Union of Phlebology Conference of Experts. *J Vasc Surg*. 2003;37:129-31.
35. Eklof B, Rutherford RB, Bergan JJ, Carpentier PH, Gloviczki P, Kistner RL, Meissner MH, Moneta GL, Myers K, Padberg FT, Perrin M, Vaughan-Ruckley C, Coleridge-Smith P, Wakefield TW. Revision of the CEAP Classification for Chronic Venous Disorders: Consensus Statement. *J Vasc Surg*. 2004;40:1248-52.
36. Uhl JF, Cornu-Thénard A, Carpentier PH, Schadek M, Parpex P, Chleir F. Reproducibility of the "C" Classes of the CEAP Classification. *Phlebology*. 2001;1:39-48.
37. Rutherford RB, Padberg FT, Comerota AJ, Kistner RL, Meissner MH, Moneta GL. Venous Severity Scoring: An Adjunct to Venous Outcome Assessment. *J Vasc Surg*. 2000;31:1307-12.
38. Cavezzi A, Labropoulos N, Partsch H, Ricci S, Caggiati A, Myers K, Nicolaides A, Coleridge-Smith P. Duplex Ultrasound Investigation of the Veins in Chronic Venous Disease of the Lower Limbs-UIP Consensus Document. Part II. Anatomy. *Eur J Vasc Endovasc Surg*. 2006;31:288-99.
39. Coleridge-Smith P, Labropoulos N, Partsch H, Myers K, Nicolaides A, Cavezzi A. Duplex Ultrasound Investigation of the Veins in Chronic Venous Disease of the Lower Limbs-UIP Consensus Document. Part I. Basic Principles. *Eur J Vasc Endovasc Surg*. 2006;31:83-92.
40. Labropoulos N, Leon LR. Duplex Evaluation of Venous Insufficiency. *Semin Vasc Surg*. 2005;18:5-9.
41. Fowkes FJ, Price JF, Fowkes FG. Incidence of Diagnosed Deep Vein Thrombosis in the General Population: Systematic Review. *Eur J Vasc Endovasc Surg*. 2003;25:1-5.
42. Montagnana M, Favaloro EJ, Franchini M, Guidi GC, Lippi G. The Role of Ethnicity, Age and Gender in Venous Thromboembolism. *J Thromb Thrombolysis*. 2010;29:489-96.
43. Lippi G, Franchini M, Favaloro EJ. Unsuspected Triggers of Venous Thromboembolism-Trivial or not so Trivial? *Semin Thromb Hemost*. 2009;35:597-604.
44. Baglin T, Luddington R, Brown K, Baglin C. Incidence of Recurrent Venous Thromboembolism in Relation to Clinical and Thrombophilic Risk Factors: Prospective Cohort Study. *Lancet*. 2003;362:523-6.
45. Cohn D, Vansenne F, de Borgie C, Middeldorp S. Thrombophilia Testing for Prevention of Recurrent Venous Thromboembolism. *Cochrane Database Syst Rev*. 2009;21:CD007069.
46. Coppens M, Reijnders JH, Middeldorp S, Doggen CJ, Rosendaal FR. Testing for Inherited Thrombophilia Does not Reduce the Recurrence of Venous Thrombosis. *J Thromb Haemost*. 2008;6:1474-7.
47. Labropoulos N, Spentzouris G, Gasparis AP, Meissner M. Impact and Clinical Significance of Recurrent Venous Thromboembolism. *Br J Surg*. 2010;97:989-99.
48. Lijfering WM, Veeger NJ, Middeldorp S, Hamulyák K, Prins MH, Büller HR, van der Meer J. A Lower Risk of Recurrent Venous Thrombosis in Women Compared with Men is Explained by Sex-Specific Risk Factors at Time of First Venous Thrombosis in Thrombophilic Families. *Blood Coagul Fibrinolysis*. 2009;114:2031-6.
49. Djulbegovic B. Management of Venous Thromboembolism in Cancer: A Brief Review of Risk-Benefit Approaches and Guidelines' Recommendations. *J Support Oncol*. 2010;8:84-91.
50. Franchini M, Montagnana M, Favaloro EJ, Lippi G. The Bidirectional Relationship of Cancer and Hemostasis and the Potential Role of Anticoagulant Therapy in Moderating Thrombosis and Cancer Spread. *Semin Thromb Hemost*. 2009;35:644-53.
51. Pomp ER, le Cessie S, Rosendaal FR, Doggen CJ. Risk of Venous Thrombosis: Obesity and its Joint Effect with Oral Contraceptive Use and Prothrombotic Mutations. *Br J Haematol*. 2007;139:289-96.
52. Middeldorp S. Epidemiology of Hormone-Related Venous Thromboembolism. *Thromb Res*. 2009;123:65-9.
53. Pomp ER, Lenselink AM, Rosendaal FR, Doggen CJ. Pregnancy, the Postpartum Period and Prothrombotic Defects: Risk of Venous Thrombosis in the MEGA Study. *J Thromb Haemost*. 2008;6:632-7.
54. Kuipers S, Schreijer AJ, Cannegieter SC, Büller HR, Rosendaal FR, Middeldorp S. Travel and Venous Thrombosis: A Systematic Review. *J Intern Med* 2007;262:615-34.
55. Schobersberger W, Schobersberger B, Partsch H. Travel-Related Thromboembolism: Mechanisms and Avoidance. *Expert Rev Cardiovasc Ther*. 2009;7:1559-67.

56. Schreijer AJ, Hoylaerts MF, Meijers JC, Lijnen HR, Middeldorp S, Büller HR, Reitsma PH, Rosendaal FR, Cannegieter SC. Explanations for Coagulation Activation after Air Travel. *J Thromb Haemost.* 2010;8:971-8.
57. Rosendaal FR, van Hylckama Vlieg A, Doggen CJ. Venous Thrombosis in the Elderly. *J Thromb Haemost.* 2007;5:310-7.
58. Neglén P, Thrasher TL, Raju S. Venous Outflow Obstruction: An Underestimated Contributor to Chronic Venous Disease. *J Vasc Surg* 2003 38:879-85.
59. Dentali F, Ageno W. Cerebral Vein Thrombosis. *Intern Emerg Med.* 2010;5:27-32.
60. Miyakis S, Lockshin M, Atsumi T, Branch D, Brey R, Cervera R, Derksen R, De Groot P, Koike T, Meroni P, Reber G, Shoenfeld Y, Tincani A, Vlachoyiannopoulos P, Kriolis S. International Consensus Statement on an Update of the Classification Criteria for Definite Antiphospholipid Syndrome (APS). *J Thromb Haemost.* 2006;4:296-06.
61. Ruiz-Irastorza G, Crowther M, Branch W, Khamashta M. Antiphospholipid Syndrome. *Lancet* 2010;376:1498-509.
62. Frances C. Dermatological Manifestations of Hughes' Antiphospholipid Antibody Syndrome. *Lupus.* 2010;19:1071-7.
63. Favaloro EJ, Wong RC. Current Clinical and Laboratory Practice for the Investigation of the Antiphospholipid Syndrome: Findings from the 2008 Australasian Antiphospholipid Antibody Survey. *Pathology.* 2009;41:666-75.
64. Devreese K, Peerlinck K, Hoylaerts MF. Thrombotic Risk Assessment in the Antiphospholipid Syndrome Requires more than the Quantification of Lupus Anticoagulants. *Blood.* 2010;115:870-8.
65. Cervera R. Catastrophic Antiphospholipid Syndrome (CAPS): Update from the 'CAPS Registry'. *Lupus* 2010;19:412-8.
66. Pierangeli S, Erkan D. Antiphospholipid Syndrome Treatment beyond Anticoagulation: Are we there yet? *Lupus.* 2010;19:475-85.
67. Schadek M. The Venous Valve and Primary Chronic Venous Disease. *Medicographia.* 2008;30:106-11.
68. Lee BB, Bergan JJ, Gloviczki P, Laredo J, Loose DA, Mattassi R, Parsi K, Villavicencio JL, Zamboni P. Diagnosis and Treatment of Venous Malformations: Consensus Document of the International Union of Phlebology (IUP)-2009. *Int Angiol.* 2009;28:434-51.
69. Lee BB, Kim YW, Seo JM, Hwang JH, Do YS, Kim DI, Byun HS, Lee SK, Huh SH, Hyun WS. Current Concepts in Lymphatic Malformation (LM). *J Vasc Endovasc Surg.* 2005;39:67-81.
70. Lee BB. Chapter 4. Lymphatic Malformation. In: Tredbar, Morgan, Lee, Simonian, Blondeau, editors. *Lymphedema-Diagnosis and Treatment: Springer-Verlag London Limited* 2008. p. 31-42.
71. Lee BB, Villavicencio J. Primary Lymphedema and Lymphatic Malformation: Are They the Two Sides of the Same Coin? *Eur J Vasc Endovasc Surg* 2010;39:646-53.
72. Lee BB, Laredo J, Seo JM, Neville R. Chapter 29, Treatment of Lymphatic Malformations. In: Mattassi, Loose, Vaghi, editors. *Hemangiomas and Vascular Malformations.* Milan, Italy: Springer-Verlag Italia; 2009. p.231-50.
73. Lee BB, Lardeo J, Neville R. Arterio-Venous Malformation: How much do we Know? . *Phlebology.* 2009;24:193-200.
74. Lee BB, Villavicencio L. General Considerations. Congenital Vascular Malformations. Section 9. Arteriovenous Anomalies In: Cronenwett J, Johnston K, editors. *Rutherford's Vascular Surgery.* 7th ed. Philadelphia, PA, USA: Saunders Elsevier; 2010. p.1046-64.
75. Lee BB, Laredo J, Deaton DH, Neville RF. Arteriovenous Malformations: Evaluation and Treatment. In Gloviczki editors. *Handbook of Venous Disorders: Guidelines of the American Venous Forum, 3rd Edition.* Hodder Arnold Limited; 2009. p.583-93.
76. Antignani PL, Schachter I, Allegra C. Skin Necrosis during Oral Anticoagulant Long-Term Treatment: An Atypical Side. *Int Angiol.* 2009;28:82-3.
77. Parsi K, Younger I, Gallo J. Warfarin-Induced Skin Necrosis Associated with Acquired Protein C Deficiency. *Australas J Dermatol.* 2003;44:57-61.
78. Lee BB, Laredo J, Neville R. Embryological Background of Truncular Venous Malformation in the Extracranial Venous Pathways as the Cause of Chronic Cerebrospinal Venous Insufficiency. *Int Angiol.* 2010 29:95-108.
79. Zamboni P, Galeotti R, Menegatti E, Malagoni AM, Tacconi G, Dall'Ara S, Bartolomei I, Salvi F. Chronic Cerebrospinal Venous Insufficiency in Patients with Multiple Sclerosis. *J Neurol Neurosurg Psychiatry.* 2009;80:392-9.
80. Blanco-Molina A, Monreal M. Venous Thromboembolism in Women Taking Hormonal Contraceptives. *Expert Rev Cardiovasc Ther.* 2010;8:211-5.
81. Canonico M, Scarabin PY. Hormone Therapy and Risk of Venous Thromboembolism Among Postmenopausal Women. *Climacteric.* 2009;12:76-80.
82. Aydinli M, Bayraktar Y. Budd-Chiari Syndrome: Etiology, Pathogenesis and Diagnosis. *World J Gastroenterol.* 2007;13:2693-6.
83. Lee BB. Chapter 6. Surgical Management of Lymphedema. In: Tredbar, Morgan, Lee, Simonian, Blondeau, editors. *Lymphedema-Diagnosis and Treatment: Springer-Verlag London Limited* 2008. p.55-63.
84. Lee BB, Andrade M, Bergan JJ, Boccardo F, Campisi C, Damstra R, Flour M, Gloviczki P, Laredo J, Piller N, Michelini S, Mortimer P, Villavicencio JL. Diagnosis and Treatment of Primary Lymphedema - Consensus Document of the International Union of Phlebology (IUP)-2009. *Int Angiol.* 2010;29:454-70.

85. Lee BB, Morgan C. Chapter 3: Classification and Staging of Lymphedema. In: Tredbar, Morgan, Lee, Simonian, Blondeau, editors. *Lymphedema-Diagnosis and Treatment*: Springer-Verlag London Limited; 2008. p.21-30.
86. McMullin GM, Coleridge-Smith P. An Evaluation of Doppler Ultrasound and Photoplethysmography in the Investigation of Venous Insufficiency. *Aust N Z J Surg*. 1992;62:270-5.
87. Abu-Own A, Coleridge-Smith P. Hand-Held Doppler as a Screening Test in Primary Varicose Veins. *Br J Surg*. 1998;85:424.
88. Kim J, Richards S, Kent P. Clinical Examination of Varicose Veins - A Validation Study. *Ann R Coll Surg Engl* 2000;82:171-5.
89. Darke S, Vetrivel S, Foy D, Smith S, Baker S. A Comparison of Duplex Scanning and Continuous Wave Doppler in the Assessment of Primary and Uncomplicated Varicose Veins. *Eur J Vasc Endovasc Surg* 1997;14:457-61.
90. Katz D, Loud AP, Bruce D, Gittleman AM, Mueller R, Klippenstein DL, Grossman ZD. Combined CT Venography and Pulmonary Angiography: A Comprehensive Review. *Radiographics*. 2002;22:20-4.
91. Favalaro EJ, Lippi G, Franchini M. Contemporary Platelet Function Testing. *Clin Chem Lab Med* 2010;48:579-98.
92. Lippi G, Cervellin G, Franchini M, Favalaro EJ. Biochemical Markers for the Diagnosis of Venous Thromboembolism: The Past, Present and Future. *J Thromb Thrombolysis* 2010;30:459-71.
93. Wichers IM, Tanck MW, Meijers JC, Lisman T, Reitsma PH, Rosendaal FR, Büller HR, Middeldorp S. Assessment of Coagulation and Fibrinolysis in Families with Unexplained Thrombophilia. *Thromb Haemost* 2009;101:465-70.
94. Favalaro EJ. Laboratory Testing in Disseminated Intravascular Coagulation. *Semin Thromb Hemost*. 2010;36:458-67.
95. Baglin T, Gray E, Greaves M, Hunt B, Keeling D, Machin S, Mackie I, Makris M, Nokes T, Perry D, Tait R, Walker I, Watson H. Clinical Guidelines for Testing for Heritable Thrombophilia. *Br J Haematol*. 2010;149:209-20.
96. Favalaro EJ, McDonald D, Lippi G. Laboratory Investigation of Thrombophilia: The Good, the Bad, and the Ugly. *Semin Thromb Hemost*. 2009;35:695-710.
97. Lijfering WM, Brouwer JL, Veeger NJ, Bank I, Coppens M, Middeldorp S, Hamulyák K, Prins MH, Büller HR, van der Meer J. Selective Testing for Thrombophilia in Patients with First Venous Thrombosis: Results from a Retrospective Family Cohort Study on Absolute Thrombotic Risk for Currently Known Thrombophilic Defects in 2479 Relatives. *Blood Coagul Fibrinolysis*. 2009;113:5314-22.
98. Middeldorp S, van Hylckama Vlieg A. Does Thrombophilia Testing Help in the Clinical Management of Patients? . *Br J Haematol*. 2008;143:321-35.
99. Cohn DM, Vansenne F, Kaptein AA, De Borgie CA, Middeldorp S. The Psychological Impact of Testing for Thrombophilia: A Systematic Review. *J Thromb Haemost* 2008;6:1099-104.
100. Nicolaides AN, Allegra C, Bergan JJ, Bradbury A, Cairois M, Carpentier P, Comerota A, Delis C, Eklof B, Fassiadis N, Georgiou N, Geroulakos G, Hoffmann U, Jantet G, Jawien A, Kakkos S, Kalodiki E, Labropoulos N, Neglen P, Pappas P, Partsch H, Perrin M, Rabe E, Ramelet AA, Vayssairat M, Ioannidou E, Taft A. Management of Chronic Venous Disorders of the Lower Limbs. Guidelines According to Scientific Evidence. *Int Angiol* 2008 27:1-59.
101. Padberg FT, Johnston MV, Sisto SA. Structured Exercise Improves Calf Muscle Pump Function in Chronic Venous Insufficiency: A Randomized Trial. *J Vasc Surg*. 2004;39:79-87.
102. Partsch H, Flour M, Coleridge-Smith P. Indications for Compression Therapy in Venous and Lymphatic Disease Consensus Based on Experimental Data and Scientific Evidence. Under the Auspices of the IUP. *Int Angiol*. 2008;27:193-219.
103. Hirsh J, Guyatt G, Albers GW, Harrington R, Schünemann HJ. Antithrombotic and Thrombolytic Therapy: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition). *Chest*. 2008;133:110-2.
104. Segal JB, Streiff MB, Hofmann LV, Thornton K, Bass EB. Management of Venous Thromboembolism: A Systematic Review for a Practice Guideline. *Ann Intern Med*. 2007;146:211-22.
105. Thomas M, Hunt B. Pharmacological Methods of Thromboprophylaxis. *Phlebology*. 2006;21:11-8.
106. Toohar R, Middleton P, Pham C, Frittridge R, Rowe S, Babidge W, Maddern G. A Systematic Review of Strategies to Improve Prophylaxis for Venous Thromboembolism in Hospitals. *Ann Surg*. 2005;241:397-415.
107. Erkens PM, Prins MH. Fixed Dose Subcutaneous Low Molecular Weight Heparins versus Adjusted Dose Unfractionated Heparin for Venous Thromboembolism. *Cochrane Database Syst Rev*. 2010;8:CD001100.
108. Barrett YC, Wang Z, Frost C, Shenker A. Clinical Laboratory Measurement of Direct Factor Xa Inhibitors: Anti-Xa Assay is Preferable to Prothrombin Time Assay. *Thromb Haemost*. 2010 [in press].
109. Greinacher A. Heparin-Induced Thrombocytopenia. *J Thromb Haemost* 2009;7:9-12.
110. Greinacher A, Althaus K, Krauel K, Selleng S. Heparin-Induced Thrombocytopenia. *Hamostaseologie* 2010;30:17-8, 20-8.
111. Bauman ME, Belletrutti MJ, Bajzar L, Black KL, Kuhle S, Bauman ML, Patricia Massicotte M. Evaluation of Enoxaparin Dosing Requirements in Infants and Children. Better Dosing to Achieve Therapeutic Levels *Thromb Haemost*. 2009;101:86-92.
112. Ignjatovic V, Najid S, Newall F, Summerhayes R, Monagle P. Dosing and Monitoring of Enoxaparin (Low Molecular Weight Heparin) Therapy in Children. *Br J Haematol*. 2010;149:734-8.

113. Monagle P, Chalmers E, Chan A, DeVeber G, Kirkham F, Massicotte P, Michelson A. Antithrombotic Therapy in Neonates and Children: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition). *Chest*. 2008;133:887-968.
114. Payne JH. Aspects of Anticoagulation in Children. *Br J Haematol*. 2010;150:259-77.
115. Gouin-Thibault I, Siguret V, Pautas E. A Need for Evidence-Based Clinical Practice Guidelines for the Use of Heparins in the Elderly. *Clin Interv Aging*. 2010 26:119-21.
116. Kanagasabapathy P, Chowdary P, Gatt A. Alternatives to Warfarin-The Next Generation of Anticoagulants *Cardiovasc Ther*. 2010 [in press].
117. Salazar C, Malaga G, Malasquez G. Direct Thrombin Inhibitors versus Vitamin K Antagonists or Low Molecular Weight Heparins for Prevention of Venous Thromboembolism Following Total Hip or Knee Replacement. *Cochrane Database Syst Rev*. 2010;14:CD005981.
118. Samama MM, Martinoli JL, LeFlem L, Guinet C, Plu-Bureau G, Depasse F, Perzborn E. Assessment of Laboratory Assays to Measure Rivaroxaban-An Oral, Direct Factor Xa Inhibitor. *Thromb Haemost*. 2010;103:815-25.
119. Uprichard J, Manning RA, Laffan MA. Monitoring Heparin Anticoagulation in the Acute Phase Response. *Br J Haematol* 2010;149:613-9.
120. Cosmi B, Palareti G. Update on the Predictive Value of D-Dimer in Patients with Idiopathic Venous Thromboembolism. *Thromb Res*. 2010;125:62-5.
121. East AT, Wakefield TW. What is the Optimal Duration of Treatment for DVT? An Update on Evidence-Based Medicine of Treatment for DVT. *Semin Vasc Surg*. 2010;23:182-91.
122. Decousus H, Prandoni P, Mismetti P, Bauersachs RM, Boda Z, Brenner B, Laporte S, Matyas L, Middeldorp S, Sokurenko G, Leizorovicz A. Fondaparinux for the Treatment of Superficial-Vein Thrombosis in the Legs. *N Engl J Med*. 2010;363:1222-32.
123. Prandoni P, Lensing AW, Prins MH, Bernardi E, Marchiori A, Bagatella P, Frulla M, Mosena L, Tormene D, Piccioli A, Simioni P, Girolami A. Residual Venous Thrombosis as a Predictive Factor of Recurrent Venous Thromboembolism. *Ann Intern Med*. 2002;137:955-60.
124. Neglén P, Raju S. Balloon Dilation and Stenting of Chronic Iliac Vein Obstruction: Technical Aspects and Early Clinical Outcome. *J Endovasc Ther* 2000 7:79-91.
125. Raju S, McAllister S, Neglén P. Recanalization of Totally Occluded Iliac and Adjacent Venous Segments. *J Vasc Surg*. 2002;36:903-11.
126. Raju S, Owen S, Neglén P. The Clinical Impact of Iliac Venous Stents in the Management of Chronic Venous Insufficiency. *J Vasc Surg*. 2002;35:8-15.
127. Barwell JR, Davies CE, Deacon J, Harvey K, Minor J, Sassano A, Taylor M, Usher J, Wakely C, Earnshaw JJ, Heather BP, Mitchell DC, Whyman MR, Poskitt KR. Comparison of Surgery and Compression with Compression alone in Chronic Venous Ulceration (ESCHAR Study): Randomised Controlled Trial. *Lancet*. 2004;363:1854-9.
128. Cullum N, Nelson EA, Fletcher AW, Sheldon TA. Compression for Venous Leg Ulcers. *Cochrane Database Syst Rev*. (2001) doi:10.1002/14651858.CD000265.pub2.
129. Nelson EA, Bell-Syer SE, Cullum NA. Compression for Preventing Recurrence of Venous Ulcers. *Cochrane Database Syst Rev*. 2000;1:CD002303.
130. Nelson EA, Iglesias CP, Cullum N, Torgerson DJ. Randomized Clinical Trial of Four-Layer and Short-Stretch Compression Bandages for Venous Leg Ulcers (VenUS I). *Br J Surg*. 2004;91:1292-9.
131. O'Donnell TF. Venous Ulcers: What Really Works and What Does not, Based on Level I Evidence. *Vascular*. 2005;13:513-16.
132. Jull AB, Waters J, Arroll B. Pentoxifylline for Treating Venous Leg Ulcers. *Cochrane Database Syst Rev* 2002;18:CD001733.
133. Cabrera J, Redondo P, Becerra A, Garrido C, Cabrera J, Garcia-Olmedo MA, Sierra A, Lloret P, Martinez-Gonzalez MA. Ultrasound-Guided Injection of Polidocanol Microforamin the Management of Venous Leg Ulcers. *Arch Dermatol*. 2004;140:667-73.
134. Partsch H, Clark M, Mosti G, Steinlechner E, Schuren J, Abel M, Benigni JP, Coleridge-Smith P, Cornu-Thénard A, Flour M, Hutchinson J, Gamble J, Issberner K, Juenger M, Moffatt C, Neumann HA, Rabe E, Uhl JF, Zimmet S. Classification of Compression Bandages: Practical Aspects. *Dermatol Surg*. 2008;34:600-9.
135. Rabe E, Partsch H, Jünger M, Abel M, Achhammer I, Becker F, Cornu-Thénard A, Flour M, Hutchinson J, Issberner K, Moffatt C, Pannier F. Guidelines for Clinical Studies with Compression Devices in Patients with Venous Disorders of the Lower Limb. *Eur J Vasc Endovasc Surg*. 2008;35:494-500.
136. Parsi K. Catheter-Directed Sclerotherapy. *Phlebology*. 2009;24:98-107.
137. Parsi K, Exner T, Connor DE, Ma DDF, Joseph JE. *In vitro* Effects of Detergent Sclerosants on Coagulation, Platelets and Microparticles. *Eur J Vasc Endovasc Surg*. 2007;34:731-40.
138. Parsi K, Exner T, Low J, Ma DDF, Joseph JE. *In vitro* Effects of Detergent Sclerosants on Antithrombotic Mechanisms. *Eur J Vasc Endovasc Surg*. 2008;38:220-8.
139. Parsi K, Exner T, Low J, Ma DDF, Joseph JE. *In vitro* Effects of Detergent Sclerosants on Clot formation and Fibrinolysis. *Eur J Vasc Endovasc Surg*. (2010) doi:10.1016/j.jejvs.2010.10.004.
140. Parsi K, Exner T, Ma DDF, Joseph JE. *In vitro* Effects of Detergent Sclerosants on Fibrinolytic Enzymes and Inhibitors. *Thromb Res*. 2010;126:328-36.

141. Parsi K, Exner T, Connor DE, Herbert A, Ma DD, Joseph JE. The Lytic Effects of Detergent Sclerosants on Erythrocytes, Platelets, Endothelial Cells and Microparticles are Attenuated by Albumin and other Plasma Components *in vitro*. *Eur J Vasc Endovasc Surg*. 2008;36:216-23.
142. Cavezzi A, Tessari L. Foam Sclerotherapy Techniques: Different Gases and Methods of Preparation, Catheter versus Direct Injection. *Phlebology*. 2009;24:247-51.
143. Coleridge-Smith P. Chronic Venous Disease Treated by Ultrasound Guided Foam Sclerotherapy. *Eur J Vasc Endovasc Surg*. 2006;32:577-83.
144. Coleridge-Smith P. Sclerotherapy and Foam Sclerotherapy for Varicose Veins. *Phlebology*. 2009;24:260-9.
145. Hamel-Desnos C, Desnos P, Wollmann JC, Ouvry P, Mako S, Allaert FA. Evaluation of the Efficacy of Polidocanol in the Form of Foam Compared with Liquid Form in Sclerotherapy of the Greater Saphenous Vein: Initial Results. *Dermatol Surg*. 2003;29:1170-5.
146. Morrison N, Neuhardt DL, Rogers CR, McEown J, Morrison T, Johnson E, Salles-Cunha SX. Comparisons of Side Effects Using Air and Carbon Dioxide Foam for Endovenous Chemical Ablation. *J Vasc Surg*. 2008;47:830-6.
147. Stücker M, Kobus S, Altmeyer P, Reich-Schupke S. Review of Published Information on Foam Sclerotherapy. *Dermatol Surg*. 2010;36:983-92.
148. Gillet JL, Guedes JM, Guex JJ, Hamel-Desnos C, Schadeck M, Lauseker M, Allaert FA. Side-Effects and Complications of Foam Sclerotherapy of the Great and Small Saphenous Veins: A Controlled Multicentre Prospective Study Including 1025 Patients. *Phlebology*. 2009;24:131-8.
149. Guex JJ. Complications and Side-Effects of Foam Sclerotherapy. *Phlebology*. 2009;24:270-4.
150. Guex JJ, Allaert FA, Gillet JL, Chleir F. Immediate and Midterm Complications of Sclerotherapy: Report of a Prospective Multicenter Registry of 12,173 Sclerotherapy Sessions. *Dermatol Surg*. 2005;31:123-8.
151. Myers KA, Jolley D. Factors Affecting the Risk of Deep Venous Occlusion after Ultrasound-Guided Sclerotherapy for Varicose Veins. *Eur J Vasc Endovasc Surg*. 2008;36:602-5.
152. Morrison N. Studies on Safety of Foam Sclerotherapy. In *Foam Sclerotherapy: A Textbook*. London: Bergan, JJ and Cheng, V editors. Royal Society of Medicine Press. 2008. p.182-92.
153. Parsi K. Venous Gas Embolism during Foam Sclerotherapy of Saphenous Veins despite Recommended Treatment Modifications. *Phlebology*. 2010 [in press].
154. Raymond-Martimbeau P. Transient Adverse Events Positively Associated with Patent Foramen Ovale after Ultrasound-Guided Foam Sclerotherapy. *Phlebology*. 2009;24:114-9.
155. Fischer R, Chandler JG, De Maeseneer MG, Frings N, Lefebvre-Vilarbedo M, Earnshaw JJ, Bergan JJ, Duff C, Linde N. Collective Review: The Unresolved Problem of Recurrent Saphenofemoral Reflux. *J Amer Coll Surg*. 2002;195:80-94.
156. Fischer R, Linde N, Duff C, Jeanneret C, Chandler JG, Seeber P. Late Recurrent Saphenofemoral Junction Reflux after Ligation and Stripping of the Greater Saphenous Vein. *J Vasc Surg*. 2001;34:236-40.
157. Perrin MR, Guex JJ, Ruckley CV, DePalma RG, Royle JP, Eklof B. Recurrent Varices After Surgery (REVAS): A Consensus Document. *Cardiovasc Surg*. 2000;8:233-45.
158. van Rij AM, Chai J, Hill GB, Christie RA. Incidence of Deep Vein Thrombosis after Varicose Vein Surgery. *Br J Surg* 2004;91:1582-5.
159. Maleti O. Venous Valvular Reconstruction in Post-Thrombotic Syndrome. A New Technique. *J Mal Vasc*. 2002;27:218-21.
160. Perrin M. Reconstructive Surgery for Deep Venous Reflux: A Report on 144 Cases. *Cardiovasc Surg*. 2000;8:246-55.
161. Teebken OE, Puschman C, Aper T, Haverich A, Mertsching H. Tissue-Engineered Bioprosthetic Venous Valve: A Long-Term Study in Sheep. *Eur J Vasc Endovasc Surg* 2003;25:305-12.
162. Comerota AJ, Kagan SA. Catheter-Directed Thrombolysis for the Treatment of Acute Iliofemoral Deep Venous Thrombosis. *Phlebology*. 2001;15:149-55.
163. Comerota AJ, Thromb RC, Mathias S, Haughton S, Mewissen M. Catheter-Directed Thrombolysis for Iliofemoral Deep Venous Thrombosis Improves Health-Related Quality of Life *J Vasc Surg*. 2000;32:130-7.
164. Eklöf B, Kasirajan K. Treating Proximal Deep Vein Thrombosis. *Endovasc Today*. 2003;4:17-23.
165. Kakkos SK, Rivera MA, Matsagas MI, Lazarides MK, Robless P, Belcaro G. Validation of the New Venous Severity Scoring System in Varicose Vein Surgery. *J Vasc Surg*. 2003;38:224-8.
166. Meissner MH, Natiello C, Nicholls SC. Performance Characteristics of the Venous Clinical Severity Score. *J Vasc Surg*. 2002;36:89-95.
167. Perrin M, Dedieu F, Jessent V, Blanc MP. Evaluation of the New Severity Scoring in Chronic Venous Disease of the Lower Limbs: An Observational Survey Conducted by French Angiologists. *Phlebologie*. 2003;56:127-36.



SECTION 3

CODE OF CONDUCT

CODE OF CONDUCT

Trainees, Members and Fellows of ACP

- 1 This Code of Conduct applies to all individuals participating in training programs of the Australasian College of Phlebology (College, ACP), and all categories of membership of the ACP.
- 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.



SECTION 4

SAMPLE EXAMINATION QUESTIONS

SCLEROTHERAPY 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)

ADVANCED/FELLOWSHIP 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 perinatal 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

FELLOWSHIP EXAMINATION

Phlebological Medicine

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= 3.4x 10⁹/L, platelet count = 165x 10⁹/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?

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, a_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?

Contact the Australasian College of Phlebology

For educational assistance please contact the Executive Manager Zivka Nicholls by phone only on Mondays or via email during the week.

Office

Level 5, 7 Help Street
Chatswood NSW 2067

Post

PO Box 705
Chatswood NSW 2057

Telephone

+612 9386 1811

Email

acp@phlebology.com.au
www.phlebology.com.au

ABN

48 390 641 608