



**THE AMERICAN BOARD OF
VENOUS & LYMPHATIC MEDICINE**

Practice Exam 2018



THE AMERICAN BOARD OF VENOUS & LYMPHATIC MEDICINE

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This practice exam content is offered as a supplement to those interested in the ABVLM certification exam. Successful completion of this exam offers no guarantee of success on the actual exam. It is intended to illustrate some exam question formats and content for those who may take the exam. The questions have been used on prior years' exam, performed well, and been "retired" to be used on this Practice Exam.

EXAM PRACTICE ITEMS

Items are segregated into the six major groups of topics as provided on the ABVLM Exam Content Outline (http://www.abvlm.org/files/pdfs/ABVLM_Outline.pdf). They are representative of some of the content that you will see on the exam, however the sample sizes are very small compared to the overall content. There are fewer than 40 practice items. There are approximately 200 actual items on the certification exam.

LINKS TO PHOTOS

Some items may have links to photos that are posted on the ABVLM website on the Internet. Therefore, when going through the Practice Exam, you should have internet-access for those items. They are marked with links.

On the actual exam, photos will be provided via "exhibits" that you will link to on the testing centers' computers.

Note: some browsers may not open some photos properly. If that is the case, please try a different browser.

REFERENCES & ANSWER KEY

References are provided for most of the items as an educational tool. References are NOT shown or provided on the actual exam.

An Answer Key is provided at the end of this document.

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GLOSSARY OF TERMS

If there are terms or abbreviations unfamiliar to you, they may be found on this Glossary. The same glossary will be available when taking the actual exam.

<http://www.abvlm.org/files/images/PracticeExam/glossary.pdf>

PRACTICE EXAM ITEMS

BASIC SCIENCE

1. The green arrow points to which group of vessels?

Link to: <http://www.abvlm.org/files/images/PracticeExam/1000366.jpg>

- A. Anterior tibial
- B. Gastrocnemious
- C. Peroneal
- D. Soleal

References:

Weiss, Feied, Weiss eds. Vein Diagnosis & Treatment 2001, pg 12.

2. The primary function of cutaneous vasculature is:

- A. blood pressure regulation.
- B. nutritive.
- C. thermoregulation.
- D. wound repair.

References:

Rowell LB. Reflux control of the cutaneous vasculature. Journal of Investigative Dermatology (1977) 69, 154–166.

VENOUS DISEASE / SYNDROMES

3. The most appropriate classification scheme to use when conducting a study on patients with recurrent varicose veins is:

- A. CEAP.
- B. Hamburg.
- C. REVAS.
- D. Widmar.

References:

(none provided – early exam item)



4. A 38-year-old female presents with edema and significant exercise-induced pain of the left leg. Duplex ultrasound reveals no evidence of DVT or reflux. Which test is most likely to yield the correct diagnosis?

- A. ABI
- B. Ascending venography
- C. IVUS
- D. 3D spiral CT

References:

Neglen P. Chronic deep venous obstruction: definition, prevalence diagnosis, management. *Phlebology* 2008;23:149-57.

A. Forauer, J. Gemmete, N. Dasika, K. Cho, D. Williams. Intravascular Ultrasound in the Diagnosis and Treatment of Iliac Vein Compression (May-Thurner) Syndrome. *Journal of Vascular and Interventional Radiology*, Volume 13, Issue 5, Pages 523-527.

5. Select the most effective treatment for pain secondary to pelvic venous insufficiency.

- A. Embolotherapy
- B. EVTA
- C. Hysterectomy with unilateral oophorectomy
- D. Hysterectomy with bilateral oophorectomy and hormone replacement

References:

Chung MH and Huh CY. Comparison of treatments for pelvic congestion syndrome. *Tohoku J Exp Med* 2003;201;131-8.

Kim HS, Malhotra AD, Rowe PC, Lee JM, Venbrux AC. Embolotherapy for pelvic congestion syndrome: long-term results. *J Vasc Interv Radiol* 2006;17:289-97.

6. The severity of PTS can be best characterized by:

- A. CEAP.
- B. VCSS.
- C. VTE Risk Assessment.
- D. Villalta.

References:

Henke and Comerota, An update on etiology, prevention, and therapy of postthrombotic syndrome, *J Vasc Surg* 2011;53:500-09.

7. Which type of ulceration is typically very painful?

- A. Mixed
- B. Neuropathetic
- C. Pyoderma gangrenosum
- D. Venous



References:

Weenig, RH, Davis, MD, Dahl, PR, et al. Skin Ulcers Misdiagnosed as Pyoderma Gangrenosum. N Engl J Med 2002; 347:1412-1418.

DIAGNOSTIC TOOLS AND SCREENING

8. A patient with leg swelling secondary to May Thurner syndrome confirmed by IVUS is best classified as:

- A. C3EcAdPo (2010-5-17, LI).
- B. C3EsAdPo (2010-5-17, LIII).
- C. C3EcAdPo (2010-5-17, LIII).
- D. C3EsAdPo (2010-5-17, LII).

References:

Revision of the CEAP classification for chronic venous disorders: consensus statement. Eklof, Bo. Rutherford, Robert B. Bergan, John J. Carpentier, Patrick H. Gloviczki, Peter. Kistner, Robert L. Meissner, Mark H. Moneta, Gregory L. Myers, Kenneth. Padberg, Frank T. Perrin, Michel. Ruckley, C Vaughan. Smith, Philip Coleridge. Wakefield, Thomas W. American Venous Forum International Ad Hoc Committee for Revision of the CEAP Classification. J Vasc Surg. 40(6):1248-52, 2004 Dec.

9. A patient with one prior episode of DVT undergoes thrombophilia work-up. Which of the following findings should cause you to consider lifelong anticoagulant therapy?

- A. Carrier of factor V Leiden and G20210A prothrombin mutation
- B. Elevated protein C and carrier of G20210A prothrombin mutation
- C. Elevated protein C and elevated protein S
- D. Heterozygous carrier of factor V Leiden and blood type O

References:

De Stefano V, et al. The risk of recurrent deep venous thrombosis among heterozygous carriers of both factor V Leiden and the G20210A prothrombin mutation. The New England Journal of Medicine 1999;341:801-806.

DUPLEX ULTRASOUND AND OTHER IMAGING

10. A 14-year-old boy is referred for treatment of a vascular malformation. Images from his diagnostic exams are shown. Based on these images, what is the best diagnosis?

Link to: <http://www.abvIm.org/files/images/PracticeExam/1000414.jpg>

- A. Extratruncular venous malformation
- B. Mixed arterial and extratruncular venous malformation
- C. Mixed arterial and truncular venous malformation
- D. Truncular venous malformation

References:

Lee BB et al. Congenital vascular malformations: general diagnostic principles. Phlebology 2007;22(6):253-7.



11. The ultrasound image suggests:

Link to: <http://www.abvlm.org/files/images/PracticeExam/1000912.jpg>

- A. chronic thrombosis of the vein.
- B. color frequency set too low.
- C. color gain set too high.
- D. venous reflux.

References:

Thrush, A, Hartshorne, Peripheral Vascular Ultrasound, Churchill Livingstone, London 2002.

12. Which ultrasound technique displays mean flow velocities?

- A. Color flow
- B. Fast Fourier transform
- C. Power Doppler
- D. Spectral Doppler

References:

Thrush and Hartshorne. Peripheral Vascular Ultrasound. 2005, Elsevier, pg. 36.

13. If the duplex image shows the SFJ, the vein noted by the arrow is the:

Link to: <http://www.abvlm.org/files/images/PracticeExam/1000358.jpg>

- A. anterior accessory saphenous.
- B. posterior thigh circumflex.
- C. profunda.
- D. superficial epigastric.

References:

(none provided)

14. Which parameter was adjusted between images?

Link to: http://www.abvlm.org/files/images/PracticeExam/1000905_1.jpg

Link to: http://www.abvlm.org/files/images/PracticeExam/1000905_2.jpg

- A. Depth
- B. Focal length
- C. Overall Gain
- D. Time Gain Control

References:

Daigle, R Techniques in Noninvasive Vascular Diagnosis, Summer Publishing, Littleton, CO, 2002.



15. The tibio-gastrocnemius angle sign in duplex scanning describes a landmark used to identify the:

- A. common peroneal nerve.
- B. gastro-popliteal junction.
- C. GSV below the knee.
- D. SSV.

References:

Cavezzi A, Labropoulos N, Partsch H, Ricci S, Caggiati A, Myers K, Nicolaidis A, Smith PC. 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 Mar;31(3):288-99.

16. The size and shape of a reflux curve from a superficial vein depends most on:

- A. blood volume of the leg.
- B. deep system hemodynamics.
- C. maximum venous outflow.
- D. perforating vein emptying.
- E. varicose capacitor.

References:

Labropoulos, N, Tiongson J, Pryor L, et al. Definition of venous reflux in lower extremity veins. J Vasc Surg 2003;38:793-798.

TREATMENT/THERAPY

17. Symptomatic improvement will be greatest after saphenous ablation in conjunction with deep venous insufficiency if the femoral and popliteal maximum velocity prior to treatment is less than:

- A. 5 cm/s.
- B. 10 cm/s.
- C. 15 cm/s.
- D. 20 cm/s.

References:

The importance of deep venous reflux velocity as a determinant of outcome in patients with combined superficial and deep venous reflux treated with endovenous saphenous ablation. Marston, WA; Brabham, VW; Mendes, R; Berndt, D; Weiner, M; Keagy, B. J Vasc Surg. 48(2):400-406, Aug 2008.

18. Which of the following branded sclerosant solutions contains more than one active component?

- A. Sclerodex
- B. Sclerovein
- C. Sotradecol
- D. Saliject



References:

Weiss et al. Sclerosing solutions, in vein diagnosis and treatment. 1st Edition:121.

19. A patient complains of lightheadedness, abdominal pain and a sense of impending doom five minutes after sclerotherapy. Which is most likely to be seen?

- A. Bradycardia
- B. Pallor
- C. Tremulousness
- D. Urticaria

References:

Fader DJ, Johnson TM. Medical issues and emergencies in the dermatology office. J Am Acad Dermatol 1997 Jan;36(1):1-16.

20. Which wavelength is least commonly used for endovenous laser ablation?

- A. 810 nm
- B. 940 nm
- C. 980 nm
- D. 1064 nm
- E. 1320 nm

References:

(none provided)

21. What is a contraindication to the use of unfractionated heparin?

- A. Clopidogrel (Plavix)
- B. Concomitant aspirin therapy
- C. Pregnancy
- D. Thrombocytopenia

References:

Deykin D. Heparin Therapy: regimens and management. Drugs. 1977 Jan;13(1):46-51.

22. Previous treatment of reticular veins with 0.5% foamed polidocanol resulted in prolonged pigmentation. A duplex exam was normal. The best choice of sclerosant for the reticular veins would be:

- A. polidocanol, 1% liquid.
- B. polidocanol, 1% foamed.
- C. STS, 0.3% liquid.
- D. STS, 0.5% foamed.

References:

Fronek HS, The Fundamentals of Phlebology: Venous Disease for Clinicians, 2nd ed. Chpt 6, Sclerotherapy of telangiectasias and reticular veins, RSM Press, London 2008.



23. A patient has a symptomatic 6 cm SVT of the mid-thigh GSV. A 45-day course of which treatment has been found to significantly reduce the risk for extension to the SFJ?

- A. Dabigatran
- B. Fondaparinux
- C. LMWH
- D. NSAIDs

References:

Decousus H, Prandoni P, Mismetti P, et al. Fondaparinux for the Treatment of Superficial-Vein Thrombosis in the Legs. *N Engl J Med* 2010; 363:1222-1232.

24. A patient with recurrent venous ulceration has swelling in his leg and an ABI of 0.6. Appropriate initial management should include:

- A. elastic compression stocking with a pressure of 15-20 mmHg.
- B. elastic compression stocking with a pressure of 30-40 mmHg.
- C. inelastic bandages with a supine pressure of 20 mmHg.
- D. inelastic bandages with a supine pressure of 40 mmHg.

References:

Mosti G, Partsch H. Is low compression pressure able to improve venous pumping function in patients with venous insufficiency? *Phlebology* 2010;25:145-50.

25. Which therapy most effectively reduces morbidity following iliofemoral DVT?

- A. Ambulation
- B. Anticoagulation
- C. Catheter-directed thrombolysis
- D. Elastic compression

References:

Grewal N, et al. Quantity of clot lysed after catheter-directed thrombolysis for iliofemoral DVT correlates with patient morbidity. *J Vasc Surg* 2010; 51:1209-14.

26. A patient with an acute DVT and hip fracture requires urgent surgery. What is an acceptable option for PE prophylaxis?

- A. LMWH
- B. Retrievable IVC filter
- C. Rivaroxaban
- D. Warfarin

References:

Kaufman JA, Kinney TB, Streiff MB, et al. Guidelines for the use of retrievable and convertible vena cava filters: report from the society of interventional radiology multidisciplinary consensus conference. *J Vasc Interv Radiol* 2006;17:449-459.



27. The most common complication following sclerotherapy is:
- A. allergic reaction.
 - B. cutaneous ulceration.
 - C. hemosiderin deposition.
 - D. telangiectatic matting.

References:

Fronek HS ed. The Fundamentals of Phlebology: Venous Disease for Clinicians, 2007, pg 39.

28. A 45-year-old patient develops stroke following foam sclerotherapy. Which of the following diagnostic studies is most likely to yield relevant pathology?
- A. Carotid artery ultrasound study
 - B. Duplex ultrasound of the lower extremities
 - C. Thrombophilia work-up
 - D. Transesophageal contrast echocardiography

References:

Forlee MV et al. Stroke after varicose vein foam injection sclerotherapy. JVS 2006;43:162-4.

Ma RW, Pilotelle A, et al. Three cases of stroke following peripheral venous interventions. Phlebology. 2011;26(7);280-4.

29. Which treatment has been demonstrated in randomized controlled trials to yield the lowest venous ulcer recurrence?
- A. Compression bandages
 - B. Gradient compression stockings
 - C. GSV stripping
 - D. Perforator interruption

References:

O'Donnell TF. The present status of surgery of the superficial venous system in the management of venous ulcer and the evidence for the role of perforator interruption. JVS 2008;48(4):1044-52.

30. A woman reports taking an unknown oral anticoagulant and has the following lab values: aPTT: 60 s (30-40 s) TT: 11 s (12-14 s) INR: 2.0
What medication was the patient likely taking?
- A. Aspirin
 - B. Clopidogrel
 - C. Dabigatran
 - D. Rivaroxaban

References:

Turpie AGG. Rivaroxaban for the prevention and treatment of venous thromboembolism. Fundamental & Clinical Pharmacology. 2012;26(1):33-8.

Samama MM, Contant G, Spiro TE, Perzborn E, Guinet C, Gourmelin Y, et al. Evaluation of the



anti-factor Xa chromogenic assay for the measurement of rivaroxaban plasma concentrations using calibrators and controls. *Thrombosis & Haemostasis*. 2012;107(2):379-87

Kreutz R. Pharmacodynamic and pharmacokinetic basics of rivaroxaban. *Fundamental & Clinical Pharmacology*. 2012;26(1):27-32.

PROFESSIONAL STANDARDS

31. According to the American College of Chest Physicians Grading Strength of Recommendations and Quality of Evidence in Clinical Guidelines, a grade one recommendation is given when:

- A. a majority of patients would make the same choice given the treatment benefits, risks and burdens.
- B. the benefits of a treatment clearly outweigh the risks and burdens, or vice versa.
- C. the treatment effect is consistent across multiple randomized controlled trials.
- D. well-designed randomized controlled trials have been conducted on the treatment.

References:

Guyatt et al. Grading Strength of Recommendations and Quality of Evidence in Clinical Guidelines* Report From an American College of Chest Physicians Task Force. *Chest* 2006;129;174-181.

32. What is the purpose of a double-blind methodology in a research study?

- A. Achieve comparability of treated and untreated subjects.
- B. Reduce the effects of sampling variation.
- C. Avoid observer and subject bias.
- D. Increase statistical significance.

References:

Windish DM, Huot SJ. Medicine Residents understanding of the Biostatistics and results in the Medical Literature. *JAMA* 2007;298(9):1010-1021.

33. What is the sensitivity of the noninvasive study if:

100 patients had a noninvasive venous study and a venogram.
Both tests showed an acute DVT in 20 patients.
No disease was found on either test in 65 patients.
10 patients had a negative non-invasive test, but a positive venogram.
5 patients had a positive noninvasive test and a negative venogram.

- A. 20/25
- B. 20/30
- C. 65/70
- D. 80/100

References:

(none provided)



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34. 150 patients had a new diagnostic test and the gold standard diagnostic test.
- 70 of the new and gold standard were positive.
55 had negative results on both tests.
10 had negative results on the new test but were positive on the gold standard.
15 had positive results on the new test but were negative on the gold standard.
- a. What is the sensitivity?
- A. 55/65
 - B. 55/70
 - C. 70/80
 - D. 70/85
 - E. 125/150
- b. What is the specificity?
- A. 55/65
 - B. 55/70
 - C. 70/80
 - D. 70/85
 - E. 125/150
- c. What is the positive predictive value?
- A. 55/65
 - B. 55/70
 - C. 70/80
 - D. 70/85
 - E. 125/150
- d. What is the negative predictive value?
- A. 55/65
 - B. 55/70
 - C. 70/80
 - D. 70/85
 - E. 125/150
- e. What is the accuracy?
- A. 55/65
 - B. 55/70
 - C. 70/80
 - D. 70/85
 - E. 125/150

References:
(none provided)



ANSWER KEY

- 1. C
- 2. C
- 3. C
- 4. C
- 5. A
- 6. D
- 7. C
- 8. C
- 9. A
- 10. B
- 11. C
- 12. A
- 13. D
- 14. C
- 15. C
- 16. E
- 17. B
- 18. A
- 19. D
- 20. D
- 21. D
- 22. C
- 23. B
- 24. C
- 25. C
- 26. B
- 27. C
- 28. D
- 29. C
- 30. D
- 31. B
- 32. C
- 33. B
- 34 a. C
- 34 b. B
- 34 c. D
- 34 d. A
- 34 e. E