Continuing Education Questions

FALL 2009

To receive 2.0 contact hours of basic level P.A.C.E.® credit for the **Focus: Cardiac Risk Assessment** questions, insert your answers in the appropriate spots on the answer sheet that follows; then complete and mail the form as directed.

Questions

1. The percent genetic contribution to CAD is approximately:
   a. 80%
   b. 70%
   c. 50%
   d. 30%

2. Family-based genetic studies are known as:
   a. Linkage studies
   b. Candidate gene association studies
   c. Genome-wide association studies
   d. B + C

3. A 21-bp deletion in this gene was identified as being involved in a large autosomal dominant family with CAD and MI:
   a. *ALOX5AP*
   b. *APOE*
   c. *MEF2A*
   d. *LPA*

4. Results from candidate gene association and linkage analyses are hampered by the general inability to replicate findings in follow-up studies. This could be due to:
   a. The studies are underpowered
   b. The markers identified are false positives
   c. The markers identified are specific only to the group studied
   d. All of the above

5. A small molecular FLAP-inhibitor was shown to reduce levels of this CAD biomarker in a placebo-controlled randomized trial:
   a. CRP
   b. LDL cholesterol
   c. Lp(a)
   d. Homocysteine

6. Which of the following is not true regarding genome-wide association studies?
   a. GWA studies were instrumental in identifying the 9p21 CAD risk allele.
   b. GWA studies are useful for identifying markers with <5% prevalence.
   c. Markers identified in GWA studies generally confer relative risks of 1.1 to 1.5
   d. Hundreds of thousands of genetic markers are evaluated in GWA studies.

7. The 9p21 risk allele has been found to be associated with:
   a. CAD
   b. Stroke
   c. Abdominal aortic aneurysm
   d. All of the above

8. The 9p21 risk allele is *not* associated with reduced expression of:
   a. CDKN2A
   b CDKN2B
   c PCSK9
   d ANRIL

9. Altered regulation of microRNAs has been demonstrated in which of these cardiovascular conditions:
   a. Cardiac hypertrophy
   b. Heart failure
   c. Myocardial infarction
   d. All of the above

e. None of the above

10. Which of the following statements is true regarding the clinical applicability of genetic markers in CAD?
    a. Because most genes involved in complex disease individually contribute to only a small percentage of the phenotype, multiple genetic risk alleles may be necessary to optimally assess CAD risk.
    b. The 9p21 risk allele has been demonstrated to be a useful marker for stratifying risk for CAD in multiple low-risk populations.
    c. Combining SNPs to produce a genotype score does not have any added value over single SNP risk prediction.
    d. A study involving computer simulation predicted that 50-100 risk alleles were necessary to provide a reasonable assessment of CAD risk.

11. Which is *not* a sign commonly associated with heart failure?
    a. shortness of breath
    b. peripheral edema
    c. pulmonary congestion
    d. transient ischemia of the right ventricle
    e. fatigue

12. Which is false?
    a. heart failure can result in left ventricular structural or functional changes
    b. hypertension and acute coronary syndrome can be precursors to heart failure
    c. heart failure is a progressive condition
    d. the one-year mortality for heart failure approaches 80%.

13. Which is true?
    a. The NYHA class system categorizes patients based upon the level of activity that will elicit symptoms at the time of evaluation.
    b. The ACC/AHA staging system is largely based on cholesterol levels.
    c. A patient designated as Stage C in the ACC/AHA system may resolve and be reclassified as a Stage B as symptoms improve.
    d. The ACC/AHA staging system does not consider comorbidities which predispose for heart failure

14. Which is true?
    a. Heart failure is routinely diagnosed with BNP alone.
    b. ECG and radiography procedures are not commonly used in the diagnosis of heart failure due to the availability of BNP.
    c. Cardiac catheterization is a procedure used to assess heart failure.
    d. Biomarkers for heart failure are no longer routinely used.

15. Which is true of BNP?
    a. it has diuretic effects
    b. it is a vasoconstrictor
    c. it is primarily released from the brain in heart failure patients
    d. BNP was first discovered in tubule cells of the mouse nephron
    e. all of the above are true

16. BNP
    a. is released in response to mechanical pressure in the heart
    b. is secreted by atrial myocytes in the healthy heart
    c. is increased to a much greater extent than ANP in heart failure patients
    d. causes increased excretion of sodium, chloride, and potassium
    e. all of the above

17. Which is false?
    a. BNP contains a 26 amino acid signal sequence required for secretion
    b. proBNP is cleaved to NT-proBNP and BNP

c. During HF, the large increase in circulating BNP primarily represents secretion from the cardiac atria.
d. NT-proBNP is inactive but often measured in laboratories

18. Which is the correct order of BNP production?
a. NT-proBNP, preproBNP, BNP
b. preproBNP, proBNP, BNP and NT-proBNP
c. proBNP, preproBNP, NT-proBNP, BNP
d. ProBNP, NT-proBNP, ANP and BNP

19. BNP is currently…
a. recommended to help differentiate dyspnea in heart failure from dyspnea of other causes
b. recommended to help rule out or confirm the diagnosis of heart failure in patients presenting with vague signs in an acute setting [9]
c. assessed directly or by measuring NT-proBNP
d. all of the above

20. Which is true?
a. BNP levels are usually higher in men than in women of the same age
b. reference ranges for BNP are not age-related
c. a BNP value of 70 pg/ml is a strong indication of heart failure
d. Assays for the BNPs measure multiple forms of the peptide that may include proteolytic cleavage products, full length peptides and glycosylated products.

21. $1,25(OH_2)D$ is…
a. a form of D_2 not D_3.
b. made in the liver.
c. made in the kidneys.
d. only available from dietary sources.

22. Which is true regarding oral supplements of Vitamin D_2 and D_3?
a. they are biologically inactive until metabolized by the liver
b. D_2 is twice as active as D3
c. D_2 is produced by a light-dependant reaction, D_3 is not
d. D_2 and D_3 are synonymous with 25(OH)D and $1,25(OH_2)D$ respectively

23. Toxicity resulting from vitamin D overdose…
a. is rare.
b. is associated with hypercalcemia.
c. occurs only when serum concentrations exceed normal ranges by several fold.
d. all of the above.

24. Which of the following pathologies has not yet been associated with deficiency of vitamin D?
a. various cancers
b. autoimmune diseases
c. depression
d. increased hemorrhage risk

25. Vitamin D deficiency has been shown to correlate with increased risk for…
a. myocardial infarct and adverse cardiovascular events.
b. all cause mortality.
c. cardiovascular mortality.
d. all of the above.

26. Which is true?
a. Inflammatory markers (such as CRP) should always be expected to be decreased in hypovitaminosis D patients.
b. Studies now show that vitamin D supplementation will reduce risk of cardiac death.
c. Vitamin-D receptors are expressed by some leukocytes.
d. Recent findings suggest that serum 25(OH)D levels of 20,000ng/ml may be most effective for reducing cardiovascular risk.

27. The analysis of Vitamin D
a. can benefit from the availability of a standardized reference material.
b. is currently only performed with chromategraphy-based methods.
c. can be performed on serum but not plasma.
d. all of the above are true.

Continuing Education Registration Form

To earn continuing education (PACE) credit, (1) complete the form below, (2) record your answers, and (3) mail a photocopy with a check or money order ($18 for ASCLS members, $28 for non-members) to:

American Society for Clinical Laboratory Science
P.O. Box 79154, Baltimore MD 21279-0154

A certificate of completion will be awarded to participants who achieve a passing grade of 70% or better. Participants should allow eight weeks for notification of scores and receipt of certificates.

Alternately the Focus exam can be completed online. To register as a participant and receive a username and password to access the online quiz, go to the ASCLS Online Store at http://www.ascls.org/publications/edconn.asp; follow the links to the member or non-member store. Once in the store, click on the Online Quizzes category, and select the title of the FOCUS series to receive access to the correct quiz. Allow 1-2 business days to receive username, password and instructions.

Focus: Cardiovascular Risk Assessment carries **2.0** hours of **intermediate** level P.A.C.E.® credit. This form can be submitted for credit for up to one year from the date of issue.

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Check all that apply

- ❑ Send my certificate of completion via email
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Answers
Circle correct answer.

1.	a	b	c	d	12.	a	b	c	d
2.	a	b	c	d	13.	a	b	c	d
3.	a	b	c	d	14.	a	b	c	d
4.	a	b	c	d	15.	a	b	c	d
5.	a	b	c	d	16.	a	b	c	d
6.	a	b	c	d	17.	a	b	c	d
7.	a	b	c	d	18.	a	b	c	d
8.	a	b	c	d	19.	a	b	c	d
9.	a	b	c	d	20.	a	b	c	d
10.	a	b	c	d	21.	a	b	c	d
11.	a	b	c	d	22.	a	b	c	d

Participant Information
Please circle the most appropriate answers.

1. Is this program used to meet your CE requirements for:
(a) state license (b) NCA (c) employment (d) other

2. Did these articles achieve their stated objectives?
(a) yes (b) no

3. How long did it take you to complete both the reading and the quiz? _____minutes

4. What subjects would you like to see addressed in future Focus articles?

23.	a	b	c	d
24.	a	b	c	d
25.	a	b	c	d
26.	a	b	c	d
27.	a	b	c	d

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