



THE JOURNAL *of the* AMERICAN OSTEOPATHIC ASSOCIATION

The purpose of this quiz is to provide a convenient means for osteopathic physicians to assess their understanding of the scientific content in the November 2014 issue of *The Journal of the American Osteopathic Association (JAOA)*.

To apply for 2 Category 1-B continuing medical education (CME) credits, AOA members may take this quiz online at <https://www.osteopathic.org/docmeonline>, where this and other JAOA quizzes can be accessed. Quizzes that are completed online will be graded and credited to members' CME activity reports.

Alternatively, osteopathic physicians can complete the quiz below and mail it to the following address by May 31, 2016:

American Osteopathic Association
Division of CME
142 E Ontario St
Chicago, IL 60611-2864
Fax: (312) 202-8202

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For each of the questions below, place a checkmark in the box provided next to your answer so that you can easily verify your answers against the correct answers, which will be published in the December 2014 issue of the JAOA.

Relationship Between Hypothermia and Blood Loss in Adult Patients Undergoing Open Lumbar Spine Surgery

Nicholas S. Tedesco, DO; Frederick P. Korpi, DO; Vanessa K. Pazdernik, MS; and Jeffrey M. Cochran, DO

1. You are counseling a 65-year-old patient with unstable spondylolisthesis scheduled to undergo an open lumbar instrumented fusion surgery. The patient has several questions regarding intraoperative blood loss and allogeneic transfusion risk. Which of the following is the most appropriate response to the patient:
- (a) To minimize your risk for excessive blood loss or need for a transfusion, your body temperature must be strictly maintained above 36.5°C during the procedure.

- (b) Blood loss during open lumbar spinal surgery is unpredictable, and there is no way to determine ahead of time who is at risk for excessive blood loss or need for a transfusion.
- (c) As long as your surgery is less than 1 hour, there is no risk for excessive blood loss or need for a transfusion.
- (d) Your diagnosis of spondylolisthesis and your scheduled surgery of an instrumented fusion both independently put you at risk for excessive blood loss and need for a transfusion.
- (e) Because there are no major blood vessels surrounding the spine, blood loss or transfusion is not a concern.

2. All of the following are risk factors for increased intraoperative blood loss in adult patients undergoing open lumbar spine surgery *except*:

- (a) a primary diagnosis of spondylolisthesis
- (b) preoperative use of nonsteroidal anti-inflammatory drugs
- (c) preoperative use of warfarin
- (d) increased body mass index
- (e) longer operative time

Management of Ionizing Radiation Injuries and Illnesses, Part 5: Local Radiation Injury

Carol J. Iddins, MD; Doran M.

Christensen, DO; Steven J. Parrillo, DO;

Erik S. Glassman, EMT-P, MS; and

Ronald E. Goans, PhD, MD, MPH

3. What is the dose threshold to the skin for the development of moist desquamation in local radiation injury?
- (a) >25 Gy
- (b) 1-3 Gy
- (c) 3-10 Gy
- (d) 15-25 Gy

4. What is the primary difference between the management of local radiation injury and thermal burn injury?

- (a) There is no difference in the management of these injuries.
- (b) Local radiation injuries have a tendency to reactivate after long periods, necessitating indefinite protection of the wound site.
- (c) Thermal burn injuries have a tendency to reactivate after long periods, necessitating indefinite protection of the wound site.
- (d) Thermal burn injuries should not be grafted after the first 48 hours secondary to dramatically increased rates of sequestration.

Professionalism Score and Academic Performance in Osteopathic Medical Students

Karen T. Snider, DO, and

Jane C. Johnson, MA

5. Studies have found that unprofessional behaviors during predoctoral education are associated with which of the following:
- (a) future state board disciplinary action
 - (b) high academic achievement during clinical clerkship training
 - (c) high academic achievement during the first and second years of predoctoral medical education
 - (d) high scores on specialty board examinations
6. The current study found that the professionalism score was statistically correlated with which of the following:
- (a) academic achievement in the majority of basic science courses
 - (b) academic achievement in the majority of first- and second-year courses
 - (c) academic achievement on practical examinations in the osteopathic manipulative medicine courses
 - (d) behavioral incident reports during the first and second years of predoctoral medical education

Use of Beat-to-Beat Cardiovascular Variability Data to Determine the Validity of Sham Therapy as the Placebo Control in Osteopathic Manipulative Medicine Research

Charles E. Henley, DO, MPH, and Thad E. Wilson, PhD

7. In a study of osteopathic manipulative treatment with a treatment group and a control group, the investigators are unsure if the sham therapy that they used as a control caused an effect on the participants by itself. How would investigators know if the sham therapy was a true placebo control?

- (a) if the sham therapy was hands on, indistinguishable from the treatment, did not create its own effect, and was not an intervention
- (b) if the sham therapy was identical to the treatment
- (c) if the sham therapy was an artificial procedure and only a distraction and not a treatment
- (d) if the sham therapy mimicked the treatment in every way so that it was true to the protocol and was able to influence outcomes along with the treatment
- (e) if the sham therapy and the control were completely different from each other

Intermittent Left Bundle Branch Block: An Overlooked Cause of Electrocardiographic Changes That Mimic High-Grade Stenosis of the Left Anterior Descending Coronary Artery

Melissa A. Kershaw, DO, and

Felix J. Rogers, DO

8. Which of the following can cause T-wave changes that may indicate ischemia:
- (a) left ventricular hypertrophy
 - (b) intermittent left bundle branch block
 - (c) electrolyte abnormalities
 - (d) all of the above
9. What is Wellen's warning indicative of?
- (a) acute infarct
 - (b) critical right coronary artery stenosis
 - (c) critical left anterior descending coronary artery stenosis
 - (d) severe multivessel disease

10. Which of the following terms best describes the ST- and T-wave changes seen after intermittent ventricular pacing and intermittent left bundle branch block:

- (a) repolarization changes
- (b) cardiac memory
- (c) transient intermittent ischemia
- (d) pseudoprimary electrocardiogram changes

Osteopathic Manipulative Treatment for Postural Orthostatic Tachycardia Syndrome

Michael B. Goodkin, MD, and

Lawrence J. Bellew, DO

11. In adults, postural orthostatic tachycardia syndrome (POTS) is defined as having orthostatic intolerance on standing for 10 minutes or on a tilt test with:
- (a) an increase in heart rate of at least 30 beats/min or a heart rate of at least 120 beats/min
 - (b) an increase in heart rate of at least 40 beats/min or a heart rate of at least 120 beats/min
 - (c) a fall in blood pressure of 30 mm Hg or an increase in heart rate to 120 beats/min
 - (d) an increase in heart rate of at least 20 beats/min or a heart rate of at least 140 beats/min

12. Treatment of POTS includes all of the following *except*:

- (a) vasoconstrictors
- (b) vasodilators
- (c) compression garments
- (d) volume expanders

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Answers to October 2014 JAOA CME Quiz

Discussion answers to JAOA continuing medical education quizzes appear only when authors have included discussions with the quiz questions and answers they must provide to meet the requirement for submission to and publication in the JAOA.

Changes in Rat Spinal Cord Gene Expression After Inflammatory Hyperalgesia of the Joint and Manual Therapy

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Singh, PhD; Vanessa K. Pazdernik, MS;

Lex C. Towns, PhD; Eric J. Snider, DO;

Neil J. Sargentini, PhD; and

Brian F. Degenhardt, DO

1. (b) Sample A RNA is labeled with cyanine 3 (Cy3) dye, and sample B RNA is labeled with cyanine 5 (Cy5) dye. The samples are combined and hybridized to the probe on a microarray slide. The relative target gene expression of the samples can then be determined by measuring the intensities of the Cy3 and Cy5 signal.
2. (b) Microarray experiments can be used to assess the relative levels of gene expression between 2 different conditions. In a hypothetical gene expression experiment, the mRNA from condition 1 is labeled with Cy3 and the mRNA from condition 2 is labeled with Cy5, and after microarray hybridization, the color intensities produced by the hybridized gene sequences are determined using an appropriate scanner. In this hypothetical experiment, genes with higher Cy5 intensities indicate that these genes are up-regulated under condition 2.

Deformations Experienced in the Human Skin, Adipose Tissue, and Fascia in Osteopathic Manipulative Medicine

Hans Chaudhry, PhD; Bruce Bukiet, PhD;

Zhiming Ji, PhD; Antonio Stecco, MD;

and Thomas W. Findley, MD, PhD

3. (d) The forces on the surface of the skin during manual medicine techniques are transmitted entirely through all layers—skin, adipose tissue, and fascia.

4. (c) When a specified force is applied to the skin, the magnitude of the deformation produced in the adipose layer is about 50% greater than that in the skin.
5. (a) The correct order of softness of tissue layers (softest to stiffest) is adipose, skin, and fascia.
6. (c) Under a specified force on the skin, the deformation produced on the skin relative to fascia is about 50% greater than that in the fascia.

Acceptance of Lesbian, Gay, Bisexual, and Transgender Patients, Attitudes About Their Treatment, and Related Medical Knowledge Among Osteopathic Medical Students

Jessica Lapinski, OMS III; Patricia Sexton, MS, DHEd; and Lauren Baker, BA

7. (d) Lesbian, gay, bisexual, and transgender (LGBT) patients are more likely than heterosexual patients to have a variety of mental health issues, including psychiatric disorders, substance abuse, and suicidal ideation. This increased risk may be a result of social stigma, discrimination, and denial of civil and human rights.
8. (a) Unlike their heterosexual counterparts, LGBT patients receive substandard care or are denied care because of their sexual orientation. Fear of receiving discriminatory treatment is the primary reason LGBT patients may be hesitant to disclose their sexual orientation to health care professionals.
9. (b) The results of the study suggest that osteopathic medical students had primarily positive personal and treatment attitudes toward LGBT patients, but some disparities were still present.

A Call to Include Medical Humanities in the Curriculum of Colleges of Osteopathic Medicine and in Applicant Selection

Gary Hoff, DO; Norma J. Hirsch, MD;

J. Jeffrey Means, MDiv, PhD; and

Lisa Streyffeler, PhD

10. (e) Humanities may assist medical professionals to empathize with patient suffering, to reflect critically on medical knowledge, to create new representations of the medical experience, and to confront moral, psychological and ethical dilemmas.
11. (a) Widening of the osteopathic medical college admission process, making it a holistic review rather than a limited evaluation of academic achievement alone (grade point average, medical college admission test scores, etc), might include investigating ethics, humanities, and the potential for professional development.

Secondary Pseudoainhum in a Patient With Turner Syndrome

Brady S. Davis, OMS IV; Scott Harris, DO; and Mitchell D. Forman, DO

12. (a) A 35-year-old patient with Turner syndrome (45,X) presents with deep transverse constricting bands between the interphalangeal joints of the fourth and fifth toes bilaterally. She states that they are asymptomatic and have been present for 1 year. There is no evidence of ulceration, plaque, or numbness. Antinuclear antibody test result is negative. She receives a diagnosis of secondary pseudoainhum. A histological feature of this disease is vegetative granulomas.