

# Directed Reading Continuing Education Quiz

#12801-04  
Expiration Date:  
Feb. 28, 2014\*  
Approved for  
2 Cat. A+ credits

## Computed Tomography Angiography

To receive Category A+ continuing education credit for this Directed Reading, read the preceding article and circle the correct response to each statement. Choose the answer that is most correct based on the text. **Transfer your responses to the answer sheet on Page 288CT** and then follow the directions for submitting the answer sheet. You also may take Directed Reading quizzes online at [www.asrt.org](http://www.asrt.org). **New and reinstated members are ineligible to take DRs from journals published prior to their most recent join date unless they have purchased access to the quiz from the ASRT. Your access to Directed Reading quizzes for continuing education credit is determined by your CE preference. For access to other quizzes, go to [www.asrt.org/store](http://www.asrt.org/store).**

**\*Your answer sheet for this Directed Reading must be received in the ASRT office on or before this date.**

1. African Americans face a first-stroke risk \_\_\_\_\_ as high as that seen among whites.
  - a. twice
  - b. equally
  - c. two-thirds
  - d. one-half
2. More than 83 million Americans currently live with:
  - a. high levels of low-density lipoprotein (LDL) cholesterol.
  - b. cardiovascular disease.
  - c. thrombosis.
  - d. angina pectoris.
3. The total direct and indirect costs of cardiovascular disease are an estimated \$\_\_\_\_\_ billion annually.
  - a. 240
  - b. 340
  - c. 440
  - d. 540
4. \_\_\_\_\_ is a progressive, life-threatening chronic inflammatory disorder of vascular walls.
  - a. Pulmonary embolism
  - b. Atherosclerosis
  - c. Thrombosis
  - d. Hyperlipidemia
5. Clinical signs of coronary artery disease include:
  1. infarction.
  2. oxygen deprivation.
  3. angina pectoris.
  - a. 1 and 2
  - b. 1 and 3
  - c. 2 and 3
  - d. 1, 2, and 3

*Continued on next page*

# Directed Reading Continuing Education Quiz

6. Pulmonary embolism is a common emergency resulting from atherosclerotic disease, and 1 in \_\_\_\_\_ patients who die of unsuspected pulmonary embolism could have survived with proper diagnosis.
- 5
  - 7
  - 10
  - 12
7. Atherosclerosis risk factors with genetic components include:
1. elevated levels of LDL.
  2. elevated levels of homocysteine.
  3. clinical depression.
- 1 and 2
  - 1 and 3
  - 2 and 3
  - 1, 2, and 3
8. \_\_\_\_\_ has been implicated as a contributing factor in 36% of first heart attacks.
- Diabetes
  - LDL oxidation
  - Tobacco smoking
  - Low dietary intake of antioxidants
9. Autopsies suggest most men and women have \_\_\_\_\_ by age 15 to 34.
- aortic fatty streaks
  - ruptured atherosclerotic lesions
  - atheromas
  - fibrous plaques
10. Symptomatic stenosis of the arterial lumen usually occurs during the \_\_\_\_\_ phase of atherosclerosis development.
- fatty streak
  - foam cell
  - atheroma
  - fibrous plaque
11. The degree of calcification is a useful indicator of plaque stage.
- true
  - false
12. The predictable range of computed tomography (CT) values for muscle is \_\_\_\_\_ HU.
- 50 to -100
  - 10 to 40
  - 300 to 500
  - 130 to 1500
13. Nonionic contrast agents have a reported overall adverse reaction rate of approximately \_\_\_\_\_%.
- 3
  - 4
  - 5
  - 6
14. Dose-dependent adverse reactions to contrast agents include:
1. nephrotoxicity.
  2. pulmonary embolism.
  3. cardiac collapse.
- 1 and 2
  - 1 and 3
  - 2 and 3
  - 1, 2, and 3

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# Directed Reading Continuing Education Quiz

15. Contraindications for iodinated contrast agent injections include patient use of:
- nonaminoglycoside antibiotics.
  - gemcitabine chemotherapy.
  - loop diuretics.
  - corticosteroids.
16. Approximately \_\_\_\_\_ % of patients may not be able to reduce their heart rate to below 65 beats per minute, even with beta-blocker administration.
- 15
  - 20
  - 25
  - 30
17. The \_\_\_\_\_ images use data from multiple primary planar images to reconstruct images in new view-angle planes.
- 2-D multiplanar
  - maximum intensity pixel (MIP)
  - primary axial
  - curved planar reformations
18. \_\_\_\_\_ can be constructed to visualize complex 3-D vasculature, representing tortuous vascular pathways on a single 2-D image and allowing accurate assessment of vessel occlusions and calcifications.
- Multiplanar reformations
  - MIPs
  - Primary axial images
  - Curved planar reformations
19. Grayscale settings should not be maximized to white for the \_\_\_\_\_ because doing so can yield inaccurate visualizations of lumen diameter.
- stents
  - blood vessels
  - fat
  - smooth muscle
20. Precontrast scans are rarely used with multidetector CT (MDCT) *except* in cases of suspected:
- pulmonary embolism.
  - ischemic stroke.
  - arterial hemorrhage.
  - coronary stenosis.
21. The risk of respiratory motion artifacts is higher for \_\_\_\_\_ than for other CT examinations.
- chest and abdominal computed tomography angiography (CTA)
  - CT neuroangiography
  - neck CTA
  - abdomen-only CTA
22. Administration of beta-blockers prior to CTA examinations is contraindicated for which of the following medical conditions?
- severe bronchial asthma
  - high blood pressure
  - heart failure
- 1 and 2
  - 1 and 3
  - 2 and 3
  - 1, 2, and 3

*Continued on next page*

# Directed Reading Continuing Education Quiz

23. \_\_\_\_\_ is key to vascular enhancement, whereas \_\_\_\_\_ would be key to enhancement of other organs.
- A 30-second breath hold; shallow breathing
  - Shallow breathing; a 30-second breath hold
  - Contrast injection flow rate; total iodine dose
  - Total iodine dose; contrast injection flow rate
24. \_\_\_\_\_ refers to the time required for contrast to travel from the injection site to a region of interest.
- Contrast medium transit time ( $t_{CMT}$ )
  - $t_{CMT}$  plus 8 seconds
  - Scan delay
  - First pass effect
25. CTA contrast enhancement is proportionate to injection rate and total injection:
- dose.
  - fraction.
  - duration.
  - phase.
26. The magnitude of arterial enhancement varies up to \_\_\_\_\_-fold between patients, in part because of variation in cardiac output and body mass.
- 2
  - 3
  - 4
  - 5
27. Coronary artery disease is an atherosclerotic narrowing of \_\_\_\_\_ % or more of a major coronary artery or branch.
- 20
  - 30
  - 40
  - 50
28. Patient radiation doses below \_\_\_\_\_ mSv have been reported for ECG tube current-modulated retrospective ECG-gated MDCT coronary CTA.
- 7
  - 8
  - 9
  - 10
29. Most calcium scoring is employed using \_\_\_\_\_, which has largely replaced \_\_\_\_\_ calcium scoring.
- MDCT; electron-beam CT
  - MDCT; magnetic resonance
  - magnetic resonance; MDCT
  - electron-beam CT; MDCT
30. According to the Directed Reading, the most common indication for diagnostic imaging of pulmonary vasculature is pulmonary:
- sarcoidosis.
  - fibrosis.
  - embolism.
  - emphysema.



## Directed Reading Evaluation Computed Tomography Angiography

1 2 8 0 1 - 0 4

3 3 7 8 5 9

Thank you for taking the time to complete this survey. Your opinion helps us serve you better. Your comments will remain confidential and will not affect the scoring of your Directed Reading (DR) test. **Choose only ONE response for each question.** Use a blue or black ink pen. Do not use felt tip markers. Completely fill in the circles.

### 1. What is your primary area of practice?

- |   |  |  |   |
|---|--|--|---|
| <input type="radio"/> Administration/Management     | <input type="radio"/> Education          | <input type="radio"/> Quality Management | <input type="radio"/> RIS/HIS/Information Systems |
| <input type="radio"/> Bone Densitometry             | <input type="radio"/> Magnetic Resonance | <input type="radio"/> Radiation Therapy  | <input type="radio"/> RN                          |
| <input type="radio"/> Cardiovascular-Interventional | <input type="radio"/> Mammography        | <input type="radio"/> Radiography        | <input type="radio"/> Sonography                  |
| <input type="radio"/> Computed Tomography           | <input type="radio"/> Nuclear Medicine   | <input type="radio"/> Research           | <input type="radio"/> Other                       |

### 2. Which of the following best describes the highest educational level you have attained?

- |   |   |  |
|---|---|--|
| <input type="radio"/> Student who has not yet taken Registry exam | <input type="radio"/> Associate degree  | <input type="radio"/> Master's degree                        |
| <input type="radio"/> Certificate                                 | <input type="radio"/> Bachelor's degree | <input type="radio"/> Doctoral degree (e.g., Ph.D. or Ed.D.) |

### 3. Why did you choose to complete this DR?

- |   |  |                             |
|---|--|-----------------------------|
| <input type="radio"/> Interested in the topic               | <input type="radio"/> Topic pertained to my area of practice | <input type="radio"/> Other |
| <input type="radio"/> DR had the right number of CE credits | <input type="radio"/> Needed CE credits immediately          |                             |

### 4. How relevant is this DR to your practice?

- |  |                                     |                                |   |                                    |
|--|-------------------------------------|--------------------------------|---|------------------------------------|
| <input type="radio"/> Extremely relevant | <input type="radio"/> Very relevant | <input type="radio"/> Relevant | <input type="radio"/> Somewhat relevant | <input type="radio"/> Not relevant |
|--|-------------------------------------|--------------------------------|---|------------------------------------|

### 5. How beneficial is this DR to your professional or personal development?

- |  |                                       |                                  |   |                                      |
|--|---------------------------------------|----------------------------------|---|--------------------------------------|
| <input type="radio"/> Extremely beneficial | <input type="radio"/> Very beneficial | <input type="radio"/> Beneficial | <input type="radio"/> Somewhat beneficial | <input type="radio"/> Not beneficial |
|--|---------------------------------------|----------------------------------|---|--------------------------------------|

### 6. How would you rate the level of difficulty of this DR?

- |                                     |  |  |                                     |                                |
|-------------------------------------|--|--|-------------------------------------|--------------------------------|
| <input type="radio"/> Too difficult | <input type="radio"/> Somewhat difficult | <input type="radio"/> Just the right level | <input type="radio"/> Somewhat easy | <input type="radio"/> Too easy |
|-------------------------------------|--|--|-------------------------------------|--------------------------------|

### 7. How would you rate the length of this DR?

- |                                |                                     |   |                                      |                                 |
|--------------------------------|-------------------------------------|---|--------------------------------------|---------------------------------|
| <input type="radio"/> Too long | <input type="radio"/> Somewhat long | <input type="radio"/> Just the right length | <input type="radio"/> Somewhat short | <input type="radio"/> Too short |
|--------------------------------|-------------------------------------|---|--------------------------------------|---------------------------------|

### 8. Did this DR meet your expectations?

- |                           |                          |                                 |
|---------------------------|--------------------------|---------------------------------|
| <input type="radio"/> Yes | <input type="radio"/> No | <input type="radio"/> Partially |
|---------------------------|--------------------------|---------------------------------|

### 9. Would you recommend this DR to a colleague?

- |                           |                          |
|---------------------------|--------------------------|
| <input type="radio"/> Yes | <input type="radio"/> No |
|---------------------------|--------------------------|

### 10. Overall, how valuable are the Directed Readings to you?

- |                                     |   |                                |   |   |
|-------------------------------------|---|--------------------------------|---|---|
| <input type="radio"/> Very valuable | <input type="radio"/> Considerably valuable | <input type="radio"/> Valuable | <input type="radio"/> Slightly valuable | <input type="radio"/> Not very valuable |
|-------------------------------------|---|--------------------------------|---|---|

If you have comments about this Directed Reading, please write them below or send them separately to Ellen Lipman, Director of Professional Development, ASRT, 15000 Central Ave SE, Albuquerque, NM 87123-3909 or [elipman@asrt.org](mailto:elipman@asrt.org).

# Computed Tomography Angiography



1	2	8	0	1	-	0	4
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Expires: February 28, 2014  
Approved for 2.0 Category A+ CE Credits

- A passing score is 75% or better.
- Take the quiz online at [www.asrt.org/DRquiz](http://www.asrt.org/DRquiz) for immediate results and your CE certificate.
- If you don't have Internet access, mail your answer sheet to ASRT, PO Box 51870, Albuquerque, NM 87181-1870.
- ASRT must receive the **original** answer sheet before the quiz expires and before the end of the CE biennium for which you want credit.
- New or rejoining members cannot take DR quizzes from journals published before their most recent join date unless they purchase access to the DR quiz.

## Identification Section

We need your **Social Security number** to track your CE credits. Please fill in your SSN in the boxes on top, then fill in the circle corresponding to each number under the box. The circles must be filled in accurately.

0	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Member Information Section

To ensure proper credit please **PRINT** the following information.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ ZIP \_\_\_\_\_

Work Phone \_\_\_\_\_

Home Phone \_\_\_\_\_

## CE Answers Section

3	3	7	8	5	9
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USE A BLUE OR BLACK INK PEN. Completely fill in the circles.

Get immediate Directed Reading quiz results and CE credit when you take your test online at [www.asrt.org/DRQuiz](http://www.asrt.org/DRQuiz).

Note: For true/false questions, A=true, B=false.

- |  |  |  |
|--|--|--|
| 1 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D  | 11 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 21 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 2 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D  | 12 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 22 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 3 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D  | 13 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 23 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 4 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D  | 14 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 24 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 5 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D  | 15 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 25 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 6 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D  | 16 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 26 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 7 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D  | 17 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 27 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 8 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D  | 18 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 28 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 9 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D  | 19 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 29 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 10 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 20 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 30 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |

# Directed Reading Continuing Education Quiz

#12803-04

Expiration Date:

June 30, 2014\*

Approved for 2.0

Cat. A+ CE credits

## Stroke and CT Perfusion

To receive Category A+ continuing education credit for this Directed Reading, read the preceding article and circle the correct response to each statement. Choose the answer that is most correct based on the text. **Transfer your responses to the answer sheet on Page 492CT** and then follow the directions for submitting the answer sheet. You also may take Directed Reading quizzes online at [www.asrt.org](http://www.asrt.org). **New and reinstated members are ineligible to take DRs from journals published prior to their most recent join date unless they have purchased access to the quiz from the ASRT. Your access to Directed Reading quizzes for continuing education credit is determined by your CE preference. For access to other quizzes, go to [www.asrt.org/store](http://www.asrt.org/store).**

**\*Your answer sheet for this Directed Reading must be received in the ASRT office on or before this date.**

- Approximately \_\_\_\_\_ Americans older than 20 years of age have a new or recurrent stroke each year.
  - 795 000
  - 820 000
  - 875 000
  - 900 000
- The 18% increase in hospital admissions for intracerebral hemorrhage in the past 10 years is largely because of:
  - reliable screening procedures.
  - an increase in the number of elderly people who lack adequate blood pressure control.
  - increased numbers of obese patients.
  - an increase in the number of patients with diabetes.
- The risk of recurrence is greatest immediately following a stroke.
  - true
  - false
- Most of the cost associated with caring for stroke patients during the first 90 days of their care comes from:
  - rehabilitation.
  - physician costs.
  - medications.
  - initial hospitalization.
- \_\_\_\_\_ is a type of ischemic stroke.
  - Intracerebral
  - Thrombotic
  - Subarachnoid
  - Hypotensive
- An episode of cerebrovascular insufficiency usually associated with partial occlusion of the cerebral artery by an atherosclerotic plaque or an embolus is known as:
  - transient ischemic attack (TIA).
  - subarachnoid hemorrhage.
  - arteriovenous malformation (AVM).
  - hypotensive episode.

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# Directed Reading Continuing Education Quiz

7. Without treatment, one-third of patients who have had a TIA experience a stroke within:
- 1 month.
  - 5 months.
  - 1 year.
  - 5 years.
8. Stroke symptoms in the retina or cerebral hemisphere are an indication of:
- subarachnoid hemorrhage.
  - hypotensive stroke.
  - TIA in the carotid arteries.
  - AVM.
9. \_\_\_\_\_ is the most powerful modifiable risk factor for stroke.
- Cigarette smoking
  - Obesity
  - High cholesterol
  - High alcohol consumption
10. Abnormally high levels of homocysteine can occur with deficiencies of:
- niacin.
  - vitamins B<sub>6</sub> and B<sub>12</sub>.
  - vitamins D<sub>3</sub> and D<sub>12</sub>.
  - biotin.
11. Which of the following states are included in the "stroke buckle"?
- Utah, Nevada, and Wyoming
  - Illinois, Indiana, and Wisconsin
  - North Carolina, South Carolina, and Georgia
  - California, Oregon, and Washington
12. \_\_\_\_\_ refers to areas of damaged brain cells arranged in a patchwork pattern around areas of dead brain cells following a stroke.
- Ischemic penumbra
  - Infarct
  - Perfusion
  - Parenchyma
13. What percentage of acute stroke patients actually receive tissue plasminogen activator (tPA) for stroke treatment?
- 4%
  - 8%
  - 21%
  - 33%
14. The FDA-approved window of time for administering tPA to stroke patients is \_\_\_\_\_ hour(s).
- 1
  - 3
  - 6
  - 8
15. Magnetic resonance (MR) diffusion/perfusion imaging has proven to be more effective than CT in imaging:
- small ischemic strokes.
  - salvageable penumbra.
  - subarachnoid hemorrhage.
  - acute rapid triage.
16. Which of the following lists correctly identifies the order of the "4 P's" that must be evaluated in stroke patients?
- perfusion, penumbra, parenchyma, and pipes
  - pipes, perfusion, parenchyma, and penumbra
  - penumbra, pipes, perfusion, and parenchyma
  - parenchyma, pipes, perfusion, and penumbra

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# Directed Reading Continuing Education Quiz

17. \_\_\_\_\_ is gradually replacing digital subtraction angiography in the evaluation of intracranial arteries.
- CT perfusion
  - Noncontrast head CT
  - MR angiography
  - CT angiography (CTA)
18. Which of the following statements is **true** regarding noncontrast CT and stroke?
- Noncontrast CT can help radiologists distinguish tissue that might be irreversibly damaged from salvageable tissue.
  - The technique provides high levels of detail to help neurosurgeons before opening cerebral arterial branches to treat clots.
  - Noncontrast CT can help radiologists detect the presence of a thrombus in a major vessel.
  - It often can be relied on alone for stroke assessment.
19. Which of the following are calculated during CT perfusion brain scans?
- cerebral blood volume (CBV)
  - cerebral blood flow (CBF)
  - mean transit time (MTT)
- 1 and 2
  - 1 and 3
  - 2 and 3
  - 1, 2, and 3
20. The addition of CTA and CT perfusion to a noncontrast head CT scan typically adds \_\_\_\_\_ to the total examination time.
- 5 minutes
  - 15 minutes
  - 50 minutes
  - 1 hour
21. In addition to diagnosing acute ischemic stroke, CT perfusion is indicated for:
- migraines.
  - tumor grading.
  - headaches.
  - concussion.
22. The approximate injection rate of contrast media during a CT perfusion study is \_\_\_\_\_ mL per second.
- 1 to 2
  - 2 to 3
  - 4 to 7
  - 8 to 11
23. The CT perfusion parameter MTT measures:
- time between arterial inflow and venous outflow.
  - time for CBF to reach the penumbra.
  - time for contrast media to reach the ventricles.
  - time between CTA and CT perfusion sequencing.
24. Which of the following are recommended imaging parameters for a CT perfusion study?
- 70 kVp, 200 mA, and 1-second rotation time
  - 80 kVp, 200 mA, and 1-second rotation time
  - 90 kVp, 100 mA, and 2-second rotation time
  - 100 kVp, 150 mA, and 2-second rotation time
25. The first step in postprocessing the images with the perfusion software is to:
- determine the CBF.
  - calculate the MTT.
  - select a reference artery and reference vein.
  - produce 3-D surface shaded images.

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## Directed Reading Continuing Education Quiz

26. Which of the following signifies irreversible infarction when demonstrated on a CT perfusion study?
- an increase in CBF with a stable or decreased CBV
  - an increase in MTT with a stable or increased CBF
  - a decrease in CBF with a stable or increased CBV
  - a decrease in MTT with a stable or decreased CBF
27. Color-coded maps can be used to look for large ischemic areas and rapid assessment with \_\_\_\_\_ % sensitivity.
- 60
  - 70
  - 80
  - 90
28. What is the difficulty with interpreting CT perfusion parameters?
- performing the quantitative analysis without the perfusion software
  - assigning a specific threshold value to determine reversible or irreversible ischemia
  - data support from the CT perfusion software companies
  - calculating the threshold values for each arterial and venous branch
29. \_\_\_\_\_ was determined as the main reason for more than 200 patients receiving 8 times the expected amount of radiation during CT perfusion studies conducted in 2009.
- Leakage of the x-ray tube in the CT scanner
  - Malfunction of safety device on the CT scanner
  - Incorrect settings on the CT scanner console
  - A technologist repeating the study without patients' knowledge
30. The 2010 FDA recommendations for facilities and practitioners regarding radiation exposure and CT perfusion included to:
- confirm all radiographers who operate CT scanners are ARRT CT certified.
  - ensure and document technologists' training on CT scanner and procedures.
  - verify all CT perfusion protocols have been approved by the American College of Radiology.
  - ensure that all radiographers who perform CT perfusion have a minimum of 3 years of CT experience.



## Directed Reading Evaluation Stroke and CT Perfusion

1	2	8	0	3	-	0	4
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3	4	1	7	1	5
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Thank you for taking the time to complete this survey. Your opinion helps us serve you better. Your comments will remain confidential and will not affect the scoring of your Directed Reading (DR) test. **Choose only ONE response for each question.** Use a blue or black ink pen. Do not use felt tip markers. Completely fill in the circles.

### 1. What is your primary area of practice?

- |   |  |  |   |
|---|--|--|---|
| <input type="radio"/> Administration/Management     | <input type="radio"/> Education          | <input type="radio"/> Quality Management | <input type="radio"/> RIS/HIS/Information Systems |
| <input type="radio"/> Bone Densitometry             | <input type="radio"/> Magnetic Resonance | <input type="radio"/> Radiation Therapy  | <input type="radio"/> RN                          |
| <input type="radio"/> Cardiovascular-Interventional | <input type="radio"/> Mammography        | <input type="radio"/> Radiography        | <input type="radio"/> Sonography                  |
| <input type="radio"/> Computed Tomography           | <input type="radio"/> Nuclear Medicine   | <input type="radio"/> Research           | <input type="radio"/> Other                       |

### 2. Which of the following best describes the highest educational level you have attained?

- |   |   |  |
|---|---|--|
| <input type="radio"/> Student who has not yet taken Registry exam | <input type="radio"/> Associate degree  | <input type="radio"/> Master's degree                        |
| <input type="radio"/> Certificate                                 | <input type="radio"/> Bachelor's degree | <input type="radio"/> Doctoral degree (e.g., Ph.D. or Ed.D.) |

### 3. Why did you choose to complete this DR?

- |   |  |                             |
|---|--|-----------------------------|
| <input type="radio"/> Interested in the topic               | <input type="radio"/> Topic pertained to my area of practice | <input type="radio"/> Other |
| <input type="radio"/> DR had the right number of CE credits | <input type="radio"/> Needed CE credits immediately          |                             |

### 4. How relevant is this DR to your practice?

- |  |                                     |                                |   |                                    |
|--|-------------------------------------|--------------------------------|---|------------------------------------|
| <input type="radio"/> Extremely relevant | <input type="radio"/> Very relevant | <input type="radio"/> Relevant | <input type="radio"/> Somewhat relevant | <input type="radio"/> Not relevant |
|--|-------------------------------------|--------------------------------|---|------------------------------------|

### 5. How beneficial is this DR to your professional or personal development?

- |  |                                       |                                  |   |                                      |
|--|---------------------------------------|----------------------------------|---|--------------------------------------|
| <input type="radio"/> Extremely beneficial | <input type="radio"/> Very beneficial | <input type="radio"/> Beneficial | <input type="radio"/> Somewhat beneficial | <input type="radio"/> Not beneficial |
|--|---------------------------------------|----------------------------------|---|--------------------------------------|

### 6. How would you rate the level of difficulty of this DR?

- |                                     |  |  |                                     |                                |
|-------------------------------------|--|--|-------------------------------------|--------------------------------|
| <input type="radio"/> Too difficult | <input type="radio"/> Somewhat difficult | <input type="radio"/> Just the right level | <input type="radio"/> Somewhat easy | <input type="radio"/> Too easy |
|-------------------------------------|--|--|-------------------------------------|--------------------------------|

### 7. How would you rate the length of this DR?

- |                                |                                     |   |                                      |                                 |
|--------------------------------|-------------------------------------|---|--------------------------------------|---------------------------------|
| <input type="radio"/> Too long | <input type="radio"/> Somewhat long | <input type="radio"/> Just the right length | <input type="radio"/> Somewhat short | <input type="radio"/> Too short |
|--------------------------------|-------------------------------------|---|--------------------------------------|---------------------------------|

### 8. Did this DR meet your expectations?

- |                           |                          |                                 |
|---------------------------|--------------------------|---------------------------------|
| <input type="radio"/> Yes | <input type="radio"/> No | <input type="radio"/> Partially |
|---------------------------|--------------------------|---------------------------------|

### 9. Would you recommend this DR to a colleague?

- |                           |                          |
|---------------------------|--------------------------|
| <input type="radio"/> Yes | <input type="radio"/> No |
|---------------------------|--------------------------|

### 10. Overall, how valuable are the Directed Readings to you?

- |                                     |   |                                |   |   |
|-------------------------------------|---|--------------------------------|---|---|
| <input type="radio"/> Very valuable | <input type="radio"/> Considerably valuable | <input type="radio"/> Valuable | <input type="radio"/> Slightly valuable | <input type="radio"/> Not very valuable |
|-------------------------------------|---|--------------------------------|---|---|

If you have comments about this Directed Reading, please write them below or send them separately to Ellen Lipman, Director of Professional Development, ASRT, 15000 Central Ave SE, Albuquerque, NM 87123-3909 or [elipman@asrt.org](mailto:elipman@asrt.org).

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# Stroke and CT Perfusion

1	2	8	0	3	-	0	4
---	---	---	---	---	---	---	---

Expires: June 30, 2014

Approved for 2.0 Category A+ CE Credits

- A passing score is 75% or better.
- Take the quiz online at [www.asrt.org/DRquiz](http://www.asrt.org/DRquiz) for immediate results and your CE certificate.
- If you don't have Internet access, mail your answer sheet to ASRT, PO Box 51870, Albuquerque, NM 87181-1870.
- ASRT must receive **the original** answer sheet before the quiz expires and before the end of the CE biennium for which you want credit.
- New or rejoining members cannot take DR quizzes from journals published before their most recent join date unless they purchase access to the DR quiz.

## Identification Section

We need your **Social Security number** to track your CE credits. Please fill in your SSN in the boxes on top, then fill in the circle corresponding to each number under the box. The circles must be filled in accurately.

0	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Member Information Section

To ensure proper credit please **PRINT** the following information.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ ZIP \_\_\_\_\_

Work Phone \_\_\_\_\_

Home Phone \_\_\_\_\_

## CE Answers Section

3	4	1	7	1	5
---	---	---	---	---	---

USE A BLUE OR BLACK INK PEN. Completely fill in the circles.

Get immediate Directed Reading quiz results and CE credit when you take your test online at [www.asrt.org/DRQuiz](http://www.asrt.org/DRQuiz).

Note: For true/false questions, A=true, B=false.

- |  |  |  |
|--|--|--|
| 1 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D  | 11 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 21 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 2 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D  | 12 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 22 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 3 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D  | 13 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 23 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 4 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D  | 14 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 24 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 5 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D  | 15 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 25 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 6 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D  | 16 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 26 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 7 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D  | 17 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 27 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 8 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D  | 18 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 28 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 9 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D  | 19 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 29 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |
| 10 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 20 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D | 30 <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D |