2009 SAE-P: Rehabilitation of Stroke and Neurodegenerative Disorders Answer Key and Commentary on Preferred Choice

Question: 1. Answer: (b)
Commentary: Patients who qualify for the option of recombinant tissue plasminogen activator (TPA) must present within 3 hours of symptom onset. The patient must have no history of head trauma, myocardial infarction, or stroke within the past 3 months. Having a systolic blood pressure greater than 185 mmHg is not a contraindication. The pressure can be managed with hydralazine, labetalol, or enalapril to reduce the risk of hemorrhage during TPA administration. Patients with a National Institutes of Health Stroke Scale (NIHSS) score greater than 20 have a higher risk of hemorrhage following administration of TPA.

Question: 2. Answer: (d)
Commentary: The volume of hemorrhage is a strong predictor of outcome in hemorrhagic stroke patients. Patients with more than 5 cm of hemorrhage in the basal ganglia had certain mortality by 30 days after stroke. Studies demonstrate that persons who score greater than 9 on the Glasgow Coma Scale and who require intracranial pressure (ICP) monitoring and experience persistent elevation of ICP are more likely to have herniation and poorer outcomes. Aggressive antihypertensive management in the setting of intracerebral hemorrhage (ICH) remains controversial; consensus guidelines recommend systolic blood pressure greater than 200 mmHg be treated with intravenous antihypertensives initially in order not further extend the hemorrhage. Cerebral perfusion pressure (CPP) should be maintained between 60 and 80 mmHg when systolic blood pressure is greater than 180 mmHg and intracranial pressure (ICP) is within normal range (8-18 mmHg).

Question: 3. Answer: (d)
Commentary: The nucleus ambiguous, which affects cranial nerves 10 (vagus) and 9 (glossopharyngeal), is responsible for symptoms of voice hoarseness and dysphagia. The spinal trigeminal nucleus would account for ipsilateral loss of pain and temperature sensation from the face. The central tegmental tract would be involved with palatal myoclonus.

Question: 4. Answer: (b)
Commentary: Comparisons of outcomes of stroke patients admitted to acute inpatient rehabilitation versus those admitted to skilled nursing facilities (SNF) where they participated in rehabilitation programs have been studied. One study showed that the patients admitted to acute inpatient rehabilitation units were more likely to be younger, have a caregiver after discharge, and had a significantly better premorbid level of function before their injury compared with individuals admitted to SNF. At 6 months, after adjusting for baseline differences, the patients who had a stroke and were admitted to acute rehabilitation facilities had better functional status and were more likely to have returned to the community.

Question: 5. Answer: (d)
Commentary: The North American Symptomatic Carotid Endarterectomy Trial (NASCET) found a significant reduction in ipsilateral stroke in patients with severe grade stenosis of 70% or more who had undergone endarterectomy. This reduction extended at least 5 years postoperatively. The results for patients with moderate stenosis (50%-60%) were not as robust. The patient does not have a cardioembolic source for his stroke, so anticoagulation is not indicated. Two trials, the ESPS-2 and the European/Australasian Stroke Prevention in Reversible Ischaemia Trial (ESPRIT), both showed that dipyridamole was more effective in combination with aspirin than aspirin alone. The Seventh American College of Chest Physicians (ACCP) Conference on Antithrombotic and Thrombolytic Therapy suggested that the combination of extended-release dipyridamole and aspirin was more efficacious than clopidogrel, based on indirect comparisons. Although aspirin, clopidogrel, and the combination of aspirin plus extended-release dipyridamole are all acceptable options, aspirin plus extended release dipyridamole is now considered first-line initial therapy by most experts for preventing recurrent noncardioembolic ischemic stroke.

Question: 6. Answer: (d)
Commentary: The National Hospital Discharge Study examined more than 14 million patients admitted to acute care hospitals. Those with hemorrhagic stroke are almost twice as likely to experience deep vein thrombosis (DVT), pulmonary embolism (PE) or both. DVTs were reported to occur in 11% of stroke patients in rehabilitation settings. In the acute care setting, less than 2% of patients with stroke had DVT or PE.
**Question:** 7. **Answer:** (a)
**Commentary:** Poststroke urinary incontinence is associated with worse medical status, more visual field deficits, greater fatality rates, more motor weakness and greater rate of institutionalization.

**Question:** 8. **Answer:** (d)
**Commentary:** Antiuretic hormone levels have been noted to be increased in patients with strokes, often causing hyponatremia. The hyponatremia usually occurs slowly and should be treated by restricting free water.

**Question:** 9. **Answer:** (a)
**Commentary:** The FOOD trial found no significant benefit or harm with the use of oral supplements in 4000 stroke patients in 15 countries. At baseline, 8% of patients were found to be undernourished.

**Question:** 10. **Answer:** (c)
**Commentary:** Although amantadine and various other stimulant and antidepressant medications are commonly used following strokes, there is no randomized controlled trial examining these medications in this population. Lesion location as a predictive factor for depression after stroke has been inconsistent in the literature. Previous history of mood disorder is an independent predictor of poststroke depression. In critically ill patients following stroke, 36% displayed thyroid dysfunction.

**Question:** 11. **Answer:** (c)
**Commentary:** The usual recovery is voluntary control preceded by nonfunctional synergistic muscle contraction pattern, initial hypotonia followed by hypertonia, recovery of motor function in a proximal to distal fashion, and most of the motor recovery takes place within the first 6 months.

**Question:** 12. **Answer:** (d)
**Commentary:** Unfavorable outcome after stroke is found with poor upper-extremity motor function, older age, bowel and bladder incontinence, lack of motor recovery after 1 month, and greater severity of stroke.

**Question:** 13. **Answer:** (a)
**Commentary:** Stroke in the brainstem would result in cranial nerve involvement. With a midbrain stroke there would be additional findings such as decreased coordination, cranial nerve involvement, and sensory deficits. With motor cortex involvement the patient would have extensive weakness in the arm or leg depending on the location of the stroke. Also with a cortical stroke there would be some cognitive and speech involvement.

**Question:** 14. **Answer:** (b)
**Commentary:** Please see Table 4 in the article.

**Question:** 15. **Answer:** (a)
**Commentary:** Plastic ankle foot orthoses (AFOs) permit a custom fit, weigh less, and can be easily adjusted and moved from shoe to shoe, but they provide less control at the ankle compared with metal orthoses.

**Question:** 16. **Answer:** (c)
**Commentary:** The clinical scenario describes characteristic findings of complex regional pain syndrome (CRPS or reflex sympathetic dystrophy). This condition, reported in 12-28% of stroke patients, results in severe pain in the affected shoulder and hand, and is associated with hyperesthesia, vasomotor findings (changes in temperature, sweating, and coloration), sudomotor (skin, nail) changes, and edema. Stellate ganglion blockade is considered the most effective treatment. Oral corticosteroid use is supported by systematic review as another treatment option.

**Question:** 17. **Answer:** (d)
**Commentary:** The administration of baclofen (GABA B agonist), tizanidine (alpha-2 agonist), and diazepam (GABA A agonist) can result in central nervous system depression. Targeted injection of intramuscular botulinum toxin type A in patients with stroke-related spasticity more effectively reduced spasticity of the wrist and finger flexors than did placebo. This effect was sustained during a 12-week follow-up. Intrathecal baclofen is associated with less central nervous system depression and fewer systemic side effects because of its direct delivery past the blood–brain barrier, although it is generally more effective for lower limb spasticity. Use of intrathecal baclofen for stroke patients with spastic hypertonia resulted in improved quality of life as measured by the Sickness Impact Profile, Ashworth Scale, FIM scores, and safety. Dantrolene is the only peripherally acting oral antispasticity medication that functions by blocking calcium release from the sarcolemmal reticulum.

**Question:** 18. **Answer:** (a)
**Commentary:** Aphasias, independent of the side of hemiplegia, has been identified as a poor prognostic indicator for re-employment. Factors correlated with successful return to work after stroke include age 55 or younger, previous professional/managerial position, higher education, household annual income greater than $30,000, greater Barthel Index scores at discharge, and shorter rehabilitation lengths of stay. Anatomic location of the stroke was not predictive of reemployment potential, but shorter of stroke as demonstrated by specific functional deficits had greater predictive ability.
**Question:** 19. **Answer:** (b)

**Commentary:** On-road driving evaluation offers more relevant, comprehensive, and objective assessment of fitness to drive than other methods. For this reason, it is considered a criterion standard by many evaluation programs in the assessment of resumption of safe driving in individuals with severe disability. Cost and availability of such programs can be prohibitive, and alternate tests that predict successful performance on road evaluations may be more practical. Such tests include cognitive evaluation that assesses multiple cognitive domains, such as use of Trail Making A and B, Rey-Osterreith Complex Figure design, and evaluation of road knowledge and reaction time. Multidisciplinary team evaluation is the most reliably predictive model for assessing driving ability in the context of significant disability. Patients with aphasia should receive reasonable accommodations for participating in written driving exams.

**Question:** 20. **Answer:** (d)

**Commentary:** Physiologic parameters associated with sexual activity correlate with 4.5 METS of oxygen consumption. An estimated 75% of stroke survivors report erectile dysfunction (ED) after their stroke, but ED is not associated with the degree of motor dysfunction reported. Use of phosphodiesterase inhibitors with organic nitrates is contraindicated, since both possess vasodilatory effects.