SECTION 8

Geriatrics

Directions: Choose the best answer

1620. A 76-year-old woman has deviation of her tongue to the left after a recent stroke. Which of the following is the most likely cause for these findings?
A. Right hypoglossal nerve paralysis
B. Left hypoglossal nerve paralysis
C. Left vagus nerve paralysis
D. Right glossopharyngeal nerve paralysis
E. Left glossopharyngeal nerve paralysis

1621. An elderly man presents with the chief complaint of leg pain, associated with headache and deficiency with walking. On physical examination, the patient has bowing of the lower extremities and the right lower extremity is longer than the left lower extremity. The physical examination is normal, except for hearing loss and war legs. Laboratory data reveal an isolated elevated serum alkaline phosphatase level. The following is the most likely diagnosis in this patient.
A. Vitamin D deficiency
B. Paget’s disease
C. Cerebral vascular accident
D. Parkinson’s disease
E. Metastatic bone disease

1622. An elderly woman presents with back pain for several months. She denies recent trauma. She has no weight loss or loss of appetite. She has no fever, chills, or night sweats. Physical examination reveals a dowager hump and mild kyphotic bowing of the spine. Serum calcium, phosphorus, alkaline phosphatase, and parathyroid hormone levels are normal. The following is the most appropriate next step in diagnosis of this patient:
A. Lumbar spine radiographs
B. MRI of the spine
C. CT densitometry of the lumbar spine
D. Dual-energy x-ray absorptiometry
E. Bone scan

1623. A 71-year-old woman presents with aphasia and severe right-sided hemiparesis greater in the arm than the leg. Her eyes deviate to the left. Choose appropriate diagnosis:
A. Basilar artery stroke
B. Middle cerebral stroke
C. Anterior cerebral stroke
D. Transient ischemic attack
E. Posterior cerebral stroke

1624. In patients undergoing a rehabilitation program after a hip fracture, benefit from weight-bearing exercises can
A. Improve walking velocity
B. Decrease incidence of hip dislocation
C. Decrease risk of prosthetic failure
D. Improve pain control
E. Improve sleeping pattern

1625. The initial starting dose for a geriatric patient requiring nortriptyline is:
A. 10 mg
B. 25 mg
C. 50 mg
D. 100 mg
E. 200 mg

1626. A 73-year-old man presents complaining of right lateral hip pain worsens when he lies on his right side or when he is standing. He has other complaints. Physical examination is normal. He has a negative Faber test. Which of the following is the most likely diagnosis?
A. Ischial bursitis
B. Osteoarthritis of the hip
C. Avascular necrosis of the hip
D. Trochanteric bursitis
E. Fracture of the proximal femur
1627. A 74-year-old female has had several episodes of transient ischemic attacks (TIAs). She cannot tolerate aspirin. Which of the following should be considered as an alternative therapy?
A. Streptokinase  
B. Dipyridamole  
C. Acetaminophen  
D. Ticlopidine  
E. Aminocaproic acid

1628. In 2030, what percentage of the US population will be over the age of 65 years?
A. 13%  
B. 20%  
C. 30%  
D. 35%  
E. 40%

1629. Postherpetic neuralgia most often
A. Is associated with a decline in humoral immunity  
B. Affects males more often than females  
C. Involves the lumbar dermatomes  
D. Responds to antiviral agents  
E. Improves with time

1630. A 67-year-old musician presents with a long history of low back pain. Pain is worsened with prolonged standing and with exercise. For the last several months, the patient has noticed that the back pain comes on with walking less than one block and radiates to the buttocks, The pain is relieved by sitting for several minutes. On physical examination, there are no neurologic deficits and bilateral straight-leg raising maneuvers are normal. Peripheral pulses are strong and bilaterally equal. Which of the following is the most likely diagnosis?
A. Lumbar spinal stenosis  
B. Peripheral vascular disease  
C. Lumbosacral sprain  
D. Disk herniation  
E. Diffuse idiopathic skeletal hyperostosis

1631. An 81-year-old woman has recurrent back pain in her lumbar area. The pain radiates to her buttocks but is worse on the right side than the left. Both sitting and walking aggravate the pain. She denies bladder dysfunction. On physical examination, the patient has diminished sensation and decreased reflexes of the right lower limb. Straight-leg raising and cross-leg raising tests are positive for reproduction of right lower limb symptoms. The patient has no spinal deformities. Which of the following is the most likely diagnosis?
A. Sciatica  
B. Osteomyelitis  
C. Cauda equina syndrome  
D. Kyphosis  
E. Epidural abscess

1632. An elderly woman presents with paresthesias of the feet and an unsteady gait for several months. Other than a previous history of anemia, the patient has no past medical history. She takes no medications and does not smoke cigarettes or drink alcohol. On physical examination, the patient is alert and oriented but cannot recall three objects after 5 min. Her gait is unsteady and broad-based, and she has increased muscle tone in the lower extremities. Muscle strength is normal, but the patient has diminished sensation to vibration from the midcalf areas to the feet. Patellar and ankle reflexes are absent bilaterally. The patient has bilateral extensor Babinski reflexes and a positive Romberg test. Laboratory data reveal a macrocytic anemia. Which of the following is the most likely diagnosis?
A. Vitamin B12 deficiency  
B. Tabes dorsalis  
C. Lead poisoning  
D. Vitamin B6 deficiency  
E. Vitamin E deficiency

1633. The physiologic change of aging with the most clinically significant effect on drug pharmacokinetics is which of the following?
A. Increased fat tissue  
B. Reduced renal clearance  
C. Decreased cardiac output  
D. Reduced liver blood flow  
E. Loss of muscle mass

1634. An elderly woman being treated for spinal stenosis, presents with a new problem with the sudden onset of severe left-sided chest pain that radiates in a bandlike fashion to her left side and back. Pain is excruciating and area is hyperesateric. Heart and lung examinations are normal. No rash is visible. Electrocardiogram is normal. The most likely diagnosis is:
A. Gastroesophageal reflux disease  
B. Myocardial infarction  
C. Herpes zoster  
D. Costochondritis  
E. Dissecting aortic aneurysm

1635. The leading cause of death in the elderly population is
A. Heart disease  
B. Malignancies  
C. Cerebrovascular disease  
D. Pulmonary disease  
E. Trauma

1636. The major factor causing poor compliance with medical advice by the elderly is
A. Drug costs  
B. Race issues  
C. Number of drugs  
D. Communication  
E. Insurance
1637. An elderly female has swelling and pain in several of the interphalangeal (IP) joints of her hand. X-ray examination reveals arthritic changes. Which agent should not be prescribed?
A. Indomethacin
B. Acetaminophen
C. Tolmetin
D. Naproxen
E. Piroxicam

1638. A 67-year-old man presents with an episode of right face, arm, and leg weakness that resolved on arrival to the emergency room. Choose appropriate diagnosis:
A. Basilar artery stroke
B. Middle cerebral stroke
C. Anterior cerebral stroke
D. Transient ischemic attack
E. Posterior cerebral stroke

1639. The exercise program beneficial for patients with rheumatoid arthritis is:
A. High intensity progressive resistance exercises
B. Low-load, high-reception resistance exercise
C. Walking 3 to 4 times per week.
D. A program incorporating any of the above
E. None of the above programs

1640. A 66-year-old man has the chief complaint of pain and numbness over the lateral aspect of the right thigh. He has no back pain or difficulty ambulating. The symptoms are relieved by sitting. Physical examination is normal except for impaired cutaneous sensation over the affected lateral aspect of the right thigh. There is a negative straight-leg raise maneuver; motor strength and deep tendon reflexes are normal. Romberg test is negative. Which of the following is the most likely diagnosis?
A. Peroneal nerve palsy
B. Meralgia paresthetica
C. Vitamin B12 deficiency
D. Sciatic nerve palsy
E. Femoral neuropathy

1641. Proportion of institutionalized elderly persons is estimated to suffer from chronic pain is:
A. 20%
B. 50%
C. 80%
D. Less than 5%
E. 90%

1642. Which of the following medications is most appropriate for an 80-year-old man with spinal stenosis and major depression with history of glaucoma, orthostatic hypotension, and urinary hesitation?
A. Imipramine
B. Amitriptyline
C. Trimipramine
D. Doxepin
E. Nortriptyline

1643. What is the most common cause of dementia in the elderly?
A. Parkinson’s disease
B. Neoplasm
C. Stroke
D. Depression
E. Alzheimer’s disease

1644. Post-hepatic neuralgia is:
A. More common in women
B. Most often involves lumbar dermatomes
C. Incidence increases with age
D. Gradually worsens with time
E. Pain that persists for 12 month

1645. Polymyalgia rheumatica is:
A. Twice as common in males as females
B. Responds only to high dose steroids
C. Affects distal muscle groups
D. More common in people of southern European decent
E. Almost exclusively found in Caucasians

1646. The most commonly prescribed analgesic in the elderly chronic pain population is:
A. Tramadol
B. Acetaminophen
C. Non-steroidal anti-inflammatory drugs
D. Opioids
E. Anti-epileptic drugs

1647. In managing pain in the elderly patients, it is best to use drugs in the following manner:
A. Start low and go slow for all medications.
B. Use high-dose, short-acting narcotics initially to get the pain under control.
C. Avoid use of acetaminophen, due to liver toxicity.
D. Start with aspirin, which is safe and effective.
E. Start with transdermal fentanyl

1648. During evaluation of an elderly woman with severe arthritic pain, it is noted that she has a poor appetite, insomnia, and anxiety. A likely secondary consequence of her pain in this setting that should also be treated includes:
A. Acute delirium
B. Clinical depression
C. Dementia
D. Failure to thrive
E. Generalized anxiety diseases
1650. Compared with young adult patients undergoing stroke rehabilitation, geriatric patients require
A. More medication to prevent recurrent stroke.
B. Longer rehabilitation hospitalization.
C. More nasogastric tube feedings.
D. Bladder catheterizations more frequently.
E. Lesser rehabilitation hospitalization.

1651. Which of the following agents would be best tolerated in a medically debilitated patient for post-herpetic neuralgia?
A. Amitriptyline
B. Desipramine
C. Maprotiline
D. Doxepin
E. Trazodone

1652. Which of the following is true regarding hepatic changes in the elderly:
A. Conjugation changes little with age.
B. Demethylation increases with age.
C. Liver mass decrease starting at age 40.
D. Serum albumin levels remain the same.
E. Serum blood levels of drugs with high first pass metabolism remain the same.

1653. Independent of bone mineral density, in elderly women, the factor contributing to an increased risk of fracture secondary to a fall includes:
A. Obesity
B. Daily wine consumption
C. Poor visual acuity
D. Use of coumadin
E. Height

1654. In the elderly, scopolamine-induced delirium is
A. Absent with doses less than 0.4 mg
B. Decreased by phystostigmine
C. Reversible with diazepam
D. Reversible with pyridostigmine
E. Similar to that produced by glycopyrrolate

1655. An elderly old woman presents with a new onset, severe right-sided headache for 1 day. She states that the vision in her right eye has diminished, and she complains of claudication of her jaw when she is chewing food. On physical examination, her right temple is tender to palpation. The most likely diagnosis is:
A. Acute frontal sinusitis
B. Giant cell arteritis
C. Migraine headache
D. Cluster headache
E. Trigeminal neuralgia

1656. Age changes in the renal system include a reduction in
1. Creatinine clearance
2. Renal blood flow
3. Glomerular filtration
4. Free water clearance

1657. Age changes in the hepatic system include a reduction in
1. First pass metabolism
2. Microsomal oxidation
3. Demethylation
4. Glucuronidation

1658. Cholinergic neurons in the brain include
1. Basal forebrain
2. Medial raphe
3. Basal ganglia
4. Locus ceruleus

1659. Dementias are characterized by
1. Generalized limitation of cognitive function
2. Cholinergic dysfunction
3. Progressive decline in function
4. Depression of consciousness

1660. Which of the following are generally considered to be true regarding pain tolerance in elderly patients?
1. Mechanical pressure threshold decreased
2. Cold pressor test tolerance decreased
3. Cutaneous electrical current decreased
4. Thermal pain tolerance increased

1661. Changes in cardiac output in the elderly are correctly characterized by which of the following statements?
1. Cardiac output declines more with age in women than in men
2. Increases in cardiac output that occur with stress decline with aging
3. Coronary blood flow needs are decreased in the elderly for a given cardiac output
4. Persons who maintain physical aerobic fitness may have unchanged cardiac output from the third to the sixth decade
1662. True statements about the hepatobiliary system in the geriatric age group include
1. Hepatic blood flow decreases as a result of decreased cardiac output
2. A decrease in activity of hepatic microsomal enzymes occurs
3. Production of albumin is decreased
4. Hepatic vein blood flow decreases

1663. Drugs used in the treatment of dementias include which of the following?
1. Nonsteroidal antiinflammatory drugs
2. Anticholinesterase drugs
3. Antioxidant agents
4. Muscarinic antagonists

1664. Pharmacokinetic changes in the elderly include
1. Increased volume of distribution
2. Prolonged elimination
3. Increased lipid content
4. Decreased lean body mass

1665. Which of the following are true regarding Polymyalgia Rheumatica?
1. More common over the age 55 yrs
2. Elevated erythrocyte sedimentation rate
3. Associated with temporal arteritis
4. Elevated creatine kinase

1666. Changes in the central nervous system (CNS) that occur in the geriatric population include
1. A progressive decline in CNS function with a loss of cerebral cortex neurons
2. Decreased cerebral metabolic rate and decreased cerebral blood flow
3. A decrease in the synthesis of neurotransmitters and receptor sites for them
4. A need for increased doses of local anesthetics when epidural anesthesia is performed

1667. Grapefruit juice increases serum levels of all of the following medications
1. Warfarin.
2. Thoephylline.
3. Cyclosporine.
4. Nonsteroidal anti-inflammatory drugs

1668. Appropriate strategies to manage polypharmacy in elderly persons include the following:
1. Person-to-person patient and family education
2. Use of clinical decision support systems and protocols
3. Assessment of potential drug interactions when starting a new medication
4. Maintenance of chronic medication regimens despite an acute medical change

1669. Changes in cardiac physiology that occur in the elderly include
1. A decrease in beta receptor responsiveness but no change in receptor density
2. Increased responsiveness of the geriatric heart to indirect-acting beta mimetics such as ephedrine
3. Degenerative changes of the SA node, AV node, and cardiac conduction system
4. Higher resting heart rates

1670. Which physiologic changes related to aging is included among factors that necessitate decreased loading doses for water soluble medications?
1. Increased fat mass
2. Decreased muscle mass
3. Decreased total body water
4. Decreased cardiac output

1671. Ventilatory function is impaired in the elderly for which of the following reasons?
1. Decreased intercostal and diaphragmatic muscle mass and function
2. Loss of alveolar spaces and septa, which resembles emphysematous changes
3. Decreased pulmonary parenchymal and chest wall elasticity
4. Diminished hypoxic drive

1672. Considerations in elderly patients include that
1. Body fat decreases, as does the half-life of fat-soluble drugs
2. Impaired hypothalamic function, which mediates heat control, is the primary reason the elderly become hypothermic more easily than do the young
3. Right bundle branch blocks are common in healthy, asymptomatic elderly patients and in most cases should be considered a normal finding
4. They have widened pulse pressure

1673. In the elderly population
1. Cold pressor response is decreased
2. Nociceptors demonstrate increased sensitivity
3. Cutaneous electrical current threshold decreases
4. Mechanical pressure threshold decreases

1674. An 85-year-old, 300-pound man underwent right upper lobectomy. Which of the following would be acceptable techniques to provide adequate postoperative pain relief?
1. Cryoneurolysis of the right intercostal nerves at multiple levels
2. Continuous segmental epidural analgesia with local anesthetic
3. Intercostal blocks with long-acting local anesthetic on the right at multiple levels
4. Intercostal blocks with long-acting local anesthetic bilaterally at multiple levels

1675. Elderly patients generally show increased sensitivity to which of the following drugs?
1. Phenylephrine
2. Diazepam
3. Oxycodone
4. Morphine
1676. True statements regarding falls in the geriatric population include the following:
1. Most falls are considered accidental, rather than related to underlying diseases or functional impairments.
2. The timed "Get up & Go" test is an appropriate way to assess someone who presents with frequent falls.
3. Dynamic balance training activities such as Tai Chi have no effect on fall risk or fear of falling.
4. Fall risk assessment should evaluate both intrinsic and extrinsic risk factors.

1677. The objective/s of physical therapy and rehabilitation is/are:
1. Stabilize the primary disorder
2. Prevent secondary disabilities
3. Decrease pain perception
4. Treat functional deficits

1678. Hepatic changes associated with aging include:
1. Decrease in conjugation
2. Decrease in demethylation
3. Increase in oxidation
4. Decrease in liver mass

1679. True statement/s regarding temporal arteritis include/s:
1. More common in men
2. Vision changes is the leading symptom
3. Sedimentation rate is normal
4. Requires a biopsy to prove diagnosis

1680. Which of the following CNS changes are associated with aging?
1. Absent or decreased ankle jerk reflexes
2. High frequency hearing loss
3. Reduced information retrieval
4. Decreased muscle tone

1681. GI changes associated with the elderly include:
1. Decreased gastric acid production
2. Increased lower esophageal sphincter tone
3. Decreased esophageal transit time
4. Increased intestinal blood flow

1682. Pharmacodynamic change/s associated with aging is/are:
1. Increased sensitivity to opioids
2. Decreased sensitivity to adrenergic specific drugs
3. Decreased sensitivity to cholinergic specific drugs
4. Decreased sensitivity to benzodiazepines

1683. Characteristics of Alzheimer’s disease include:
1. Increase in acetyltransferase
2. Affects aging populations equally
3. A rapidly progressive disorder
4. Mostly affects the Nucleus basalis of Meynert

1684. Regarding foot care, compared with the general population, diabetic patients
1. Are 15 to 17 times more likely to require an amputation.
2. Have a 10-year survival rate of 25% to 50% after an amputation.
3. Are less likely to be noncompliant with foot checks.
4. Have a 13% rate of amputation if a chronic ulcer is present.

1685. Endocrinologic changes that occur in the elderly include:
1. A greater incidence of primary hyperparathyroidism
2. Increased incidence of diabetes mellitus
3. Increased incidence of Graves’ disease
4. Increased incidence of hypothyroidism

1686. An elderly woman is being discharged from the acute rehabilitation unit after a stroke that resulted in right hemiparesis. When ordered by a physician and medically justified. Which service is covered under Medicare?
1. Transportation for medical appointments
2. Spasticity medications
3. Dressing assistance in the morning.
4. Front-wheeled walker

1687. Which of the following changes in renal function will occur in the geriatric population?
1. An increase in renal cortical blood flow versus renal medullary blood flow occurs
2. Decreased muscle mass in the elderly leads to decreased creatinine levels
3. There are no changes in urine concentrating ability
4. Decreased renal blood flow occurs because of decreased cardiac output and a decrease in size of the renal vascular bed

1688. Activities associated with a reduced risk of dementia include:
1. Playing musical instruments
2. Dancing
3. Playing board games
4. Bowling

1689. Your suspect that your elderly patient is being abused by a family caregiver. To assess this risk, the element evaluated include:
1. Stress
2. Alcoholism
3. Violence
4. Driving

1690. Regarding interdisciplinary assessment, the following benefits apply to the geriatric population:
1. It allows the development of specific, targeted interventions.
2. It allows reliable testing of persons over time.
3. It allows better reimbursement and insurance coverage for outpatient and home-based interventions.
4. It allows care providers to develop independent treatment plans.
1691. Parkinson’s Disease is noted to include which of the following clinical findings?
1. Painful dystonias
2. On/Off phenomena (freezing)
3. Cognitive dysfunction
4. Tremors

1692. True statements regarding pain in the elderly persons are as follows:
1. Elderly persons feel pain as much as younger people.
2. Pain can commonly be localized to a single site.
3. Approximately one third of elderly individuals have chronic joint pain and arthritis.
4. Pain results in less functional impairment in the elderly compared with the younger population.

1693. Which physiologic factor in the elderly exacerbates orthostasis?
1. Decreased creatinine clearance
2. Decreased peripheral resistance
3. Decrease in arterial stiffness
4. Decreased baroreceptor response

1694. In the general geriatric population, the factor(s) associated with an increased risk of driving accidents are as follows:
1. Hemodialysis
2. Chronic Pain
3. Myopia
4. Stroke

1695. The benefits of hiring older workers (compared with younger colleagues) in medical industry include
1. Fewer workers compensation claims.
2. Less use of health care benefits.
3. Decreased rate of burns.
4. Lower absentee rates.

1696. In elderly patients, conditions contraindicating to starting an exercise program are:
1. End-stage congestive heart failure
2. Recent ophthalmologic surgery
3. severe neurogenic claudication
4. Stable 3-cm abdominal aortic aneurysm

1697. Which statement concerning osteoarthritis (OA) is true?
1. Exercise in patients with OA contributes to pain reduction.
2. Group exercise programs are much more effective than individual programs in reducing disability
3. High-intensity progressive resistance exercises in patients with OA causes the disease to progress.
4. Exercise in patients with OA contributes to pain reduction.

1698. A 75-year-old sedentary man with a history of hypertension, type II diabetes mellitus, and mild sensory neuropathy who is currently a nonsmoker wishes to begin an exercise program. The safest initial modality of exercise includes the following:
1. Treadmill walking at 1.5 mph on level surface
2. Stair stepper for 15 minutes without resistance
3. Machine-based quadriceps extensions at 80% maximum weight
4. Lifting 1- to 3-pound weights overhead while seated

1699. In the elderly, drug effects are influenced by:
1. Decreased renal function
2. Increased volume of distribution
3. Reduced hepatic function
4. Decreased relative body fat

1700. Risk factor(s) for erectile dysfunction in elderly men include the following:
1. Recurrent inguinal hernia.
2. Pharmacologic side effects.
3. Hypothyroidism
4. Low testosterone levels

1701. Important pharmacologic considerations in the elderly include:
1. The dose of thiopental in elderly patients should be decreased primarily because of altered pharmacokinetics
2. The elimination half-life of diazepam in hours approximates the patient’s age in years
3. The dose of atracurium need not be adjusted for age
4. The MAC for isoflurane in a 40-year-old is 1.15 and in an 80-year-old is 0.97

1702. True statements concerning the elderly include:
1. There is a direct correlation between biologic age and chronologic age
2. The five most frequently performed surgical procedures are cataract extraction, transurethral prostatectomy, herniorrhaphy, cholecystectomy, and reduction of a hip fracture
3. Geriatric patients are arbitrarily defined as those older than 75 years of age
4. Generalized osteoporosis may be an important factor in the increased incidence of hip fractures in the elderly

1703. Major anatomic changes seen in the cardiovascular system in the elderly include:
1. An increase in left ventricular wall thickness
2. Myocardial fibrosis
3. Valvular fibrocalcifications
4. Loss of elasticity of the peripheral circulation

1704. The factor(s) improving bowel transit time in persons with chronic constipation include:
1. Bedrest
2. Bulking agents
3. Fluid restriction
4. High fiber diet
1620. **Answer: B**

Explanation:
(Seidel, 5/e, pp 787-788.) The tongue will deviate to the left with a left hypoglossal nerve palsy. The nerve is purely motor.

1621. **Answer: B**

Explanation:
(Tierney, 42/e, pp 1119-1120.) Paget’s disease of bone (osteitis deformans) is a disorder in which normal bone is replaced by disorganized trabecular bone. Patients may be asymptomatic but may present with increased hat size (skull enlargement), hearing loss (involvement of the ossicles of the inner ear), facial pain, headache, backache, leg pain, growth of the lower extremities (one leg may be longer than the other), tibial bowing, and increased blood flow to the involved areas of bone growth. Alkaline phosphatase may be elevated, and a bone scan will detect the lytic lesions. A complication of Paget’s disease is osteosarcoma (<1%).

1622. **Answer: D**

Explanation:
(Tierney, 42/e, pp 1114-1115.) Risk factors for osteoporosis include white, Asian-Pacific Islander, and Native American race; Northwestern European descent; blonde or red hair; freckles; thin body frame; nulliparity; early menopause; family history of osteoporosis; postmenopause; constant dieting; calcium intake < 500 mg/day; scoliosis; rheumatoid arthritis; poor teeth; previous fractures; cigarette smoking; heavy alcohol use; medications (heparin, steroids, thyroxine); and metabolic disorders (diabetes, hyperthyroidism, hypercortisolism). CT densitometry of vertebrae is highly accurate and reproducible. Dual-energy x-ray absorptiometry (DEXA) can determine the density of any bone and is accurate without significant radiation. It is a good screening test and allows assessment of response to therapy.

1623. **Answer: B**

Explanation:
(Tierney, 42/e, pp 962-963.) Basilar artery stroke causes quadriplegia, sensory loss, and cranial nerve involvement; patients may present with coma or locked-in syndrome. Wallenberg syndrome or lateral medullary syndrome causes an ipsilateral weakness of the palate and vocal cords, ipsilateral ataxia, ipsilateral Horner syndrome, and ipsilateral loss of facial pain and temperature but contralateral loss of body pain and temperature sensation. There is no limb weakness in Wallenberg syndrome. Anterior cerebral stroke causes unilateral leg weakness and sensory loss. Posterior cerebral artery stroke causes an occipital stroke and a homonymous hemianopsia. Middle cerebral artery stroke causes hemiplegia or hemiparesis greater in the arm than the leg, aphasia, unilateral sensory loss, and eyes that deviate to the side of the hemispheric lesion. Patients with lacunar infarcts may present with different syndromes, such as dysarthria and mild hemiparesis (clumsy-hand dystartria). Lacunar infarcts represent small artery occlusions; hypertension and diabetes are risk factors for these infarcts. Patients in a vegetative state from diffuse cortical damage have spontaneous eye opening and movement without evidence of awareness.

1624. **Answer: A**

Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1625. **Answer: A**

Source: Jackson KC. Board Review 2003

1626. **Answer: D**

Explanation:
(Goldman, 21/e, p 1559.) Trochanteric bursitis is a common cause of hip pain in the elderly but may be seen in bicyclists and runners. Pain is exacerbated by standing and by external rotation. Lying on the affected side compresses the inflamed bursa. Ischial bursitis (weaver’s bottom, so named because weavers had to sit for long periods of time, which led to ischial bursitis) causes pain in the buttock made worse with sitting and with hip flexion. Today, it is usually a problem for workers who operate heavy equipment on rough roads. Avascular necrosis (AVN) of the hip may be due to trauma or to medications such as corticosteroids. Patients are usually between the ages of 30 and 60 years and often complain of groin pain made worse with weight bearing. Fracture of the proximal femur usually follows trauma. On inspection, the affected lower extremity lies in external rotation and is shorter than the norm side. Hip osteoarthritis presents with groin pain exacerbated by the Faber maneuver (also called the Patrick test), which is a mnemonic for Flexion, ABduction, and External Rotation.
1627. **Answer: D**

   **Explanation:**
   Reference: Hardman, p 1354. Katzung, pp 574-575. Ticlopidine decreases platelet aggregation by inhibiting the uptake of adenosine 5'-diphosphate (ADP) release during degranulation by circulating platelets. Ticlopidine has no effect on prostaglandin synthesis. Source: Stern - 2004

1628. **Answer: B**

   **Explanation:**

1629. **Answer: E**

1630. **Answer: A**

   **Explanation:**
   (Tierney, 42/e, p 796.) The patient is describing pseudoclaudication, which is characteristic of lumbar spinal stenosis. This arises from compression of the exiting nerve roots by a disk, osteophyte, or narrow canal. The leg pain is most pronounced when walking downhill or descending stairs and takes several minutes of sitting or flexing forward before resolution. Often patients who continue to walk with pain will stoop over to relieve the symptoms (stoop sign). Claudication is seen in peripheral vascular disease, but the pain that occurs with walking resolves immediately upon stopping or standing without sitting. Peripheral pulses may be compromised. Diffuse idiopathic skeletal hyperostosis (DISH) causes calcification of the longitudinal ligaments of the spine and is usually found in patients with diabetes mellitus.

1631. **Answer: A**

   **Explanation:**
   (Seidel, 5/e, p 736.) The sciatic nerve is located between the ischial tuberosity and the greater trochanter; tenderness over the nerve indicates irritation of the nerve roots forming the nerve. The most common cause of sciatica is a herniated disk, usually occurring at the L4-L5 or L5-S1 levels. The straight-leg raising test is usually positive in sciatic nerve irritation (pain is produced with elevation of <70 and worsened with dorsiflexion of foot or Lasegue’s sign). A pulling or tight sensation in the hamstring is not a positive straight-leg raising test. The Cross-leg raising test (elevation of unaffected leg causes pain in affected leg) may also be positive. Osteomyelitis and epidural abscesses are usually accompanied by systemic symptoms (i.e., fever) and are found in patients who are immunocompromised. The typical presentation for cauda equina syndrome is progressive weakness and numbness of the lower extremities bilaterally with urinary retention. There is perineal and perianal sensory loss (saddle anesthesia) and a lax anal sphincter. The cauda equina syndrome is a true surgical emergency. Kyphosis (hunchback) is a smooth and rounded backward convexity of the thoracic region.

1632. **Answer: A**

   **Explanation:**
   (Tierney, 42/e, pp 474-475.) The patient most likely has vitamin B12 deficiency due to pernicious anemia (lack of intrinsic factor). Patients show loss of posterior column sensation (vibration and position sense), positive Romberg test, mild spasticity, and bilateral extensor plantar reflexes (upper motor neuron). Patients may also present with mild dementia or psychiatric symptoms. The polyneuropathy associated with B6 (pyridoxine) deficiency is associated with isoniazid use. Lead poisoning causes a motor neuropathy (i.e., wristdrop, footdrop) and requires chronic exposure to lead as an adult. Tabes dorsalis due to tertiary syphilis causes progressive sensory loss, ataxia, and a positive Romberg test, but patients complain of severe lancinating leg pain. Patients are not spastic and do not have a positive Babinski sign. Vitamin E deficiency is seen in liver disease, cystic fibrosis, and other malabsorption syndromes; patients present with ataxia and peripheral neuropathy.

1633. **Answer: B**

   **Explanation:**
   Although numerous physiologic changes occur with aging, the most significant in terms of changes in drug pharmacokinetics is reduced renal clearance.

1634. **Answer: C**

   **Explanation:**
   (Tierney, 42/e, pp 105-106.) Herpes zoster is due to reactivation of latent varicella virus; patients typically present with a history of pain, tingling, or itching of the affected area followed by an eruption of vesicles overlying an erythematous base. Although the disease can disseminate and produce diffuse eruptions, it typically presents with involvement of a single dermatome. The disease is not limited to adults or immunocompromised patients and may be seen in children.

1635. **Answer: A**

   **Explanation:**
   Heart disease remains the most common cause of death, although the rates have gone down. Source: Mark V. Boswell, MD, DABIPP, FIPP

1636. **Answer: C**

   **Explanation:**
   Although drug cost and lack of clear instructions play important roles, the sheer number of drugs is the main factor that results in poor compliance with medical advice in the elderly. Source: Mark V. Boswell, MD, DABIPP, FIPP

1637. **Answer: B**

   **Explanation:**
   Reference: Hardman, pp 631-633. All of the drugs listed, except acetaminophen, are usually considered NSAIDs, a large group of structurally

ASIPP
dissimilar compounds. These drugs share the pharmacologic properties of the prototype compound, aspirin, in that all have analgesic, antipyretic, and anti-inflammatory effects. The mechanism of action that is responsible for the effect of NSAIDs is reduction in the formation of eicosanoids (e.g., prostaglandins, thromboxanes) by inhibiting the enzyme cyclooxygenase. Acetaminophen differs from the other drugs in that it is a very weak anti-inflammatory agent; however, it is an effective analgesic and antipyretic.

Source: Stern - 2004

1638. Answer: D
Explanation: (Tierney, 42/e, pp 962-963.) Basilar artery stroke causes quadriplegia, sensory loss, and cranial nerve involvement; patients may present with coma or locked-in syndrome. Wallenberg syndrome or lateral medullary syndrome causes an ipsilateral weakness of the palate and vocal cords, ipsilateral ataxia, ipsilateral Horner syndrome, and ipsilateral loss of facial pain and temperature but contralateral loss of body pain and temperature sensation. There is no limb weakness in Wallenberg syndrome. Anterior cerebral stroke causes unilateral leg weakness and sensory loss. Posterior cerebral artery stroke causes an occipital stroke and a homonymous hemianopsia. Middle cerebral artery stroke causes hemiplegia or hemiparesis greater in the arm than the leg, aphasia, unilateral sensory loss, and eyes that deviate to the side of the hemispheric lesion. Patients with lacunar infarcts may present with different syndromes, such as dysarthria and mild hemiparesis (clumsy-hand dystharia). Lacunar infarcts represent small artery occlusions; hypertension and diabetes are risk factors for these infarcts. Patients in a vegetative state from diffuse cortical damage have spontaneous eye opening and movement without evidence of awareness.

Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1639. Answer: D
Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1640. Answer: B
Explanation: (Tierney, 42/e, p 997.) The patient describes symptoms due to compression of the lateral femoral cutaneous nerve arising from the L2 and L3 roots (meralgia paresthetica). Entrapment of the nerve at any point from hyperextension of the hip may cause symptoms. Symptoms are usually mild, but patients may require hydrocortisone injections medial to the iliac spine. Patients with femoral neuropathy present with weakness and wasting of the quadriceps muscle, sensory impairment, and an absent patellar reflex. The Romberg test is performed by having the patient stand with feet together, head erect, and eyes open. The patient is then examined for steadiness and then asked to close his or her eyes. A positive test occurs when the patient displays increased unsteadiness with the eyes closed but not with the eyes open. A positive Romberg test may be seen in diseases that affect the dorsal columns, such as tabes dorsalis and vitamin B12 deficiency.

1641. Answer: C
Explanation: Chronic pain is estimated to affect 80% of institutionalized elderly people. Causes include skeletal pain related to osteoporosis, rheumatoid arthritis, cervical and lumbar spondylosis, osteoporosis, and fractures with resultant deformities. Neuropathic pain related to peripheral neuropathy from diabetes mellitus, previous stroke, and postherpetic neuralgia also occurs. Pain with peripheral vascular and cardiovascular diseases, skin ulcers, and cancer also occur with greater frequencies in this population.

Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1642. Answer: E
Explanation: (A, B, C, & D) Anticholinergic effects include dry mouth, constipation, blurred vision, and urinary retention. Narrow-angle glaucoma can also be aggravated by anticholinergic drugs, and the precipitation of glaucoma requires emergency treatment with a miotic agent. Severe anticholinergic effects can lead to a CNS anticholinergic syndrome with confusion and delirium, especially if tricyclic and tetracyclic drugs are administered with antipsychotics or anticholinergic drugs. The most common autonomic effect of tricyclic antidepressant medications, partly because of alpha1-adrenergic blockade, is orthostatic hypotension, which can result in falls and injuries in affected patients. Nortriptyline may be the drug least likely to cause the problem, and some patients respond to fludrocortisone (Florinef), 0.05 mg twice a day. Other possible autonomic effects are profuse sweating, palpitations, and increased blood pressure. Amitriptyline, imipramine, trimipramine, and doxepin have the most anticholinergic side effects of the tricyclic antidepressants.

(E) Amoxapine, nortriptyline, and maprotiline are less anticholinergic; and desipramine may be the least anticholinergic.

Source: Laxmaiah Manchikanti, MD

1643. Answer: E
Source: Day MR, Board Review 2005

1644. Answer: C
Source: Day MR, Board Review 2005

1645. Answer: E
Source: Day MR, Board Review 2005

1646. Answer: C
Source: Day MR, Board Review 2005
1647. Answer: A  
Explanation:  
Physiologic changes with aging, including slowed absorption, metabolism, and elimination of medications, may lead to excess sedation, confusion, constipation, and urinary retention in geriatric patients. Thus, low initial doses are indicated, with slow upward titration. Acetaminophen is safe and effective for moderate pain. Aspirin in higher doses is associated with bleeding complications.  
Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1648. Answer: B  
Explanation:  
Clinical depression is a common consequence of untreated or undertreated pain. Signs and symptoms may include insomnia, anxiety, agitation, aggression, loss of appetite, and refusal of care.  
Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1650. Answer: B  
Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1651. Answer: B  
Source: Jackson KC. Board Review 2003

1652. Answer: A  
Source: Day MR, Board Review 2005

1653. Answer: C  
Explanation:  
Source: American Board of Anesthesiology, In-trainnig examination

1654. Answer: B  
Source: American Board of Anesthesiology, In-trainnig examination

1655. Answer: A  
Explanation:  
(Giant cell arteritis or temporal arteritis usually appears after the age of 55 and is more common in women than men. Patients typically present with severe headache, malaise, fever, and tenderness over the involved temporal artery. Patients may have ocular symptoms due to ischemic optic neuropathy (blindness is an irreversible complication) and complain of jaw pain when chewing (jaw claudication). Polymyalgia rheumatica (limb girdle stiffness and pain, weight loss, malaise) may be seen in up to 30% of patients with temporal arteritis. Patients suspected of having temporal arteritis require immediate corticosteroids; diagnosis is confirmed by temporal artery biopsy. Trigeminal neuralgia (tic douloureux) causes severe unilateral facial pain but is not associated with vision changes or claudication. Cluster headaches occur mostly in men and are characterized by periorbital or temporal pain lasting up to 2 h and accompanied by lacrimation and ptosis. Patients complain of several attacks a day for several weeks followed by a period of remission.  
Source: Mark V. Boswell, MD, DABIPP, FIPP

1656. Answer: A (1, 2 & 3)  
Explanation:  
Renal function declines about 1% per year, based on creatinine clearance measurements. A nomogram to estimate creatinine clearance that takes into account age and body mass should be used when calculating drug doses in elderly patients that are predominately renally excreted (eg, oxycodone and gabapentin).  
Source: Mark V. Boswell, MD, DABIPP, FIPP

1657. Answer: B (1 & 3)  
Explanation:  
In the elderly population, microsomal oxidation (mixed function oxidases) and glucuronidation remain essentially normal. Morphine clearance is delayed because of decreased first pass metabolism by the liver and reduced renal clearance of the glucuronide metabolite of morphine.  
First pass metabolism is decreased because of reduced liver mass and blood flow. Glucuronidation is a microsomal enzyme, found in the cytosol, not the endoplasmic reticulum  
Source: Mark V. Boswell, MD, DABIPP, FIPP

1658. Answer: B (1 & 3)  
Explanation:  
The medial raphe neurons are generally serotonergic, whereas the Locus ceruleus is clearly adrenergic  
Source: Mark V. Boswell, MD, DABIPP, FIPP

1659. Answer: A (1, 2 & 3)  
Explanation:  
Depression of consciousness is defined as delerium  
Source: Mark V. Boswell, MD, DABIPP, FIPP

1660. Answer: A (1, 2 & 3)  
Explanation:  
It is unclear whether heat tolerance is changed in the geriatric population  
Source: Mark V. Boswell, MD, DABIPP, FIPP

1661. Answer: C (2 & 4)  
Explanation:  
Cardiac output does not necessarily decline with aging. Persons who maintain aerobic fitness may have unchanged cardiac output well into the seventh decade, at which point cardiac output will fall off. In the elderly there is a loss of an increase in cardiac output in response to stress, but this is attenuated somewhat in the elderly who are fit.  
Source: Curry S
1662. **Answer: E (All)**
Explanation:
(Miller, 4/e. pp 2145-2146.)
The reduction in hepatic blood flow is commensurate with the decrease in cardiac output that occurs in the elderly. Hepatic microsomal enzyme activity also decreases in the elderly, but the cause of this is probably the decrease in cardiac output rather than diminished enzyme activity. Hepatic vein blood flow and albumin levels are diminished in the elderly.
Source: Curry S

1663. **Answer: A (1, 2 & 3)**
Explanation:
Cholinergic antagonists, such as atropine, can worsen dementia. Treatments are aimed at increasing endogenous cholinergic tone and reducing inflammatory mediators.
Source: Mark V. Boswell, MD, DABIPP, FIPP

1664. **Answer: E (All)**
Explanation:
Increased volume of distribution, increased lipid content and decreased lean body mass (ratio of muscle to fat) result in prolonged elimination. Indeed, most drugs are cleared more slowly in elderly patients than young patients. Although pharmacokinetic changes are common, drug side effects often involve increased sensitivity to the effects of the particular drug — that is, pharmacodynamics. For example, benzodiazepines are cleared more slowly in the elderly patient, but increased sensitivity to benzodiazepines at given blood levels is also important.
Source: Mark V. Boswell, MD, DABIPP, FIPP

1665. **Answer: A (1, 2 & 3)**
Source: Mark V. Boswell, MD, DABIPP, FIPP

1666. **Answer: A (1, 2, & 3)**
Explanation:
(Miller, 4/e. pp 2147-2148.)
There is a generalized decline in the CNS with aging. MAC decreases as a result. Local anesthetic requirements decrease as well as for all nerve blocks.
Source: Curry S.

1667. **Answer: A (1, 2, & 3)**
Explanation:
Grapefruit juice inhibits hepatic enzyme metabolism and increases the serum levels of certain medications, for example, warfarin, theophylline, and cyclosporine.

1668. **Answer: A (1, 2, & 3)**
Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1669. **Answer: B (1 & 3)**
Explanation:
(Miller, 4/e, pp 2150-2151.)
There is no change in beta receptor density in the elderly, however, function is diminished, which affects inotropy and chronotropy. Also, as a result of diminished function, there is diminished responsiveness in both direct and indirect beta sympathomimetic drugs. There are degenerative fibrotic changes throughout the conduction system, which can lead to heart blocks. Resting heart rate is decreased.
Source: Curry S.

1670. **Answer: A (1, 2, & 3)**
Explanation:
Increased fat mass, decreased muscle mass, and decreased total body water affect the distribution of medications. Normal physiologic changes of aging include decreased intestinal motility, decreased cardiac output, and decreased creatinine clearance.

1671. **Answer: E (All)**
Explanation:
(Miller, 4/e. 2151-2152.)
Hypoxic and carbon dioxide drive is not lost in the elderly, but it may be diminished. Therefore, the elderly are at great risk for hypoxia and hypercarbia from anesthetic drugs that cause respiratory depression. Another factor adding to potential pulmonary failure in the elderly is complex mechanical changes that involve the chest wall, diaphragm, and pulmonary parenchyma.
Source: Curry S.

1672. **Answer: D (4 Only)**
Explanation:
(Stoelting, Anesthesia and Co-Existing Disease, 3/e. pp 631-633.)
Body fat increases (in women more than in men) and fat-soluble drugs have a longer elimination half-life in the elderly. Hypothalamic dysfunction may be one factor that contributes to a greater degree of heat loss in elderly patients, but the primary reason for a propensity to hypothermia is impaired cutaneous vasoconstriction and reduced heat production (basal metabolic rate declines from 42 kcal/h in a 20-year-old to 32 kcal/h in an 80-year-old person). Healthy, asymptomatic elderly patients have a high incidence of supraventricular and ventricular ectopic beats. A right bundle branch block is not a normal finding and should prompt a search for organic heart disease. Systolic blood pressure increases in the elderly as the aorta and large arteries lose distensibility. Diastolic pressure normally does not change much with age.
Source: Curry S.
1673. Answer: E (All)

1674. Answer: A (1, 2, & 3)
Explanation:
(Capan, p 691.) In elderly patients with high body mass indices, bilateral intercostal nerve blocks at T5-T11 were found to change the relationship between closing capacity and functional residual capacity, leading to hypoxemia and hypercarbia. This did not occur in younger patients with normal body mass indices. Cyroneurolysis, unilateral intercostal nerve blocks, and epidural analgesia are acceptable techniques for providing postoperative analgesia and decreasing pulmonary dysfunction.
Source: Kahn and Desio

1675. Answer: C (2 & 4)
Source: Mark V. Boswell, MD, DABIPP, FIPP

1676. Answer: D (4 Only)
Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1677. Answer: E (All)
Source: Day MR, Board Review 2005

1678. Answer: C (2 & 4)
Source: Day MR, Board Review 2005

1679. Answer: D (4 only)
Source: Day MR, Board Review 2005

1680. Answer: A (1, 2 & 3)
Source: Day MR, Board Review 2005

1681. Answer: B (1 & 3)
Source: Day MR, Board Review 2005

1682. Answer: A (1, 2 & 3)
Source: Day MR, Board Review 2005

1683. Answer: C (2 & 4)
Source: Day MR, Board Review 2005

1684. Answer: B (1 & 3)
Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1685. Answer: C (2 & 4)
Explanation: (Stoelting, Anesthesia and Co-Existing Disease, 3/e. pp 633-636.) Primary hyperparathyroidism and Graves’ disease do not have an increased incidence in the elderly. Adult-onset diabetes occurs with greater frequency in the sixth and seventh decades. Circulating insulin levels are normal. It is believed that the cause of diabetes in this age group may be insulin receptor dysfunction. Thirteen percent of the elderly population have hypothyroidism; the vast majority are asymptomatic. The only abnormal measure of thyroid function may be an elevated level of thyroid stimulating hormone. The most common cause of hypothyroidism is Hashimoto’s thyroiditis.
Source: Curry S.

1686. Answer: D (4 Only)
Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1687. Answer: C (2 & 4)
Explanation: (Miller, 4/e. pp 2146-2147.) Renal blood flow decreases in the elderly because of a decrease in cardiac output and a decrease in the size of the renal vasculature, particularly the cortex. This leads to reduced renal cortical blood flow and decreased glomerular filtration rate (GFR), concentrating ability, and creatinine clearance. With the decrease in creatinine clearance, there is also a decrease in muscle mass and production of creatinine. This explains why serum creatinine levels do not decrease in the elderly. Any increase in creatinine in the elderly signifies a large decrease in an already diminished GFR.
Source: Curry S.

1688. Answer: A (1, 2, & 3)
Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1689. Answer: A (1, 2, & 3)
Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1690. Answer: A (1, 2, & 3)
Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1691. Answer: E (All)

1692. Answer: B (1 & 3)

1693. Answer: D (4 Only)
Explanation: As many as 20% of persons over the age of 65 years and 30% of those over age 75 have orthostatic hypotension. Orthostasis is often exacerbated because of an increase in arterial stiffness, increased peripheral resistance, decreased baroreceptor response, and low plasma rennin activity.
Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1694. Answer: D (4 Only)
Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1695. Answer: D (4 Only)
Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1696. Answer: A (1, 2, & 3)
Explanation: The condition that is not a contraindication to starting an exercise program in an elderly patient from the listed choices is a small or stable abdominal aortic aneurysm. All the other conditions warrant further investigation and stabilization before initiating an exercise program.
Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004
Section 8 • Geriatrics

1697. **Answer: D (4 Only)**
Explanation:
Exercises for patients with osteoarthritis (OA) is considered to be safe and to contribute to the reduction of pain. Exercise programs have not been associated with disease progression. No clear difference has been noticed in the reduction of disability when comparing group, individual, and home-based exercise programs. Aerobic exercise is effective in correcting reductions in aerobic capacity in patients with OA.
Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1698. **Answer: D (4 Only)**
Explanation:

1699. **Answer: B (1 & 3)**

1700. **Answer: C (2 & 4)**
Source: Arch Phys Med Rehabil Vol 85, Suppl 3, July 2004

1701. **Answer: E (All)**
Explanation:
(Miller, 4/e. pp 2143-2146.)
The initial volume of distribution for thiopental is decreased, which causes higher serum concentrations in older compared with younger patients. Elderly and younger patients respond to similar serum concentrations of thiopental. The clearance of diazepam is reduced in the elderly, which accounts for its longer duration of action. Cognitive impairment can continue for a very long time after administration of this drug in the elderly. Unlike all other nondepolarizing muscle relaxants, atracurium is independent of age-related changes. Decreases in MAC occur with age for isoflurane and the other potent inhalational agents.
Source: Curry S.

1702. **Answer: C (2 & 4)**
Explanation:
(Stoelting, Anesthesia and Co-Existing Disease, 2/e, pp 633 – 637.)
There is no definite correlation between biologic age and chronologic age. In patients who maintain aerobic fitness, there may be no changes in cardiac output until well into the seventh decade. Physical fitness will even decrease osteoporosis and may cause a decrease in the incidence of hip fractures. Patients who do not maintain aerobic fitness may show signs of osteoporosis and decreases in cardiac output that make them biologically older than those who do. Geriatric patients are arbitrarily defined as those over 65 years of age.
Source: Curry S.

1703. **Answer: E (All)**
Explanation:
(Miller, 4/e. pp 2150 – 2151.)
Explanation: All the listed changes are normal parts of the aging process. Atherosclerosis superimposed on these changes only exacerbates the decrease in cardiovascular function, particularly a decrease in cardiac output.
Source: Curry S.

1704. **Answer: C (2 & 4)**
Explanation: