FSBPT NPTE-PTA - Quiz Questions with Answers

Integumentary System

1.

Which type of wound debridement is indicated for a patient with a complicated stage IV pressure ulcer?

- **Surgical**
- Enzymatic
- Autolytic
- Mechanical

Correct answer: Surgical

Surgical debridement is indicated for patients with deep or complicated pressure ulcers (stage III or IV). It is performed by a surgeon using sterile instruments and, in some cases, anesthesia.

Enzymatic debridement is a form of selective chemical debridement. Autolytic debridement is a natural intervention that uses dressings to solubilize necrotic tissue. Mechanical debridement is a nonselective method using physical forces to remove contaminated tissue or foreign material.

2.

While treating a patient with a wound that exhibits a large amount of exudate, the PTA applies a soft, nonwoven dressing derived from seaweed. What type of dressing is this?

Alginate

Hydrogel

Foam

Hydrocolloid

Correct answer: Alginate

Alginates are soft, absorbent, nonwoven dressings derived from seaweed and often used for wounds with moderate to large amounts of exudate. Alginates react with wound exudate to form a viscous hydrophilic gel mass over the wound area. They are able to absorb up to 20 times their weight in drainage.

Hydrogels are water- or glycerine-based gels insoluble in water. They are used for partial- and full-thickness wounds and those with necrosis and slough. Foams are semipermeable membranes that are either hydrophilic or hydrophobic. They vary in thickness, absorptive capacity, and adhesive properties, and they are indicated for partial- and full-thickness wounds with minimal or moderate exudate. Hydrocolloids are adhesive wafers that contain absorptive particles that interact with wound fluid to form a gelatinous mass over the wound bed. They are indicated for protection of partial-thickness wounds and wounds with mild exudate, maintaining a moist wound environment.

3.

Which of the following is a characteristic of **SEROUS** wound exudate?

- **Watery serum**
- Containing blood
- Containing pus
- Containing eschar

Correct answer: Watery serum

When assessing wounds, therapists should pay close attention to the type of wound exudate (drainage). Serous drainage is a watery serum.

Sanguineous drainage contains blood. Purulent drainage contains pus. Eschar is dried necrotic tissue.

4.

A physical therapist assistant is working with a patient who received and began wearing a new AFO (ankle foot orthosis) two weeks ago. The therapist inspects the skin at the ankle and notices an area of redness with a slight blister formation over an area of friction with the new orthotic.

What type of pressure injury is this?

- **Stage II**
- Stage I
- Stage III
- Unstageable

Correct answer: Stage II

Therapists should be aware of the types of pressure injuries (also known as decubitus ulcers) that patients may acquire throughout treatment. Stage II pressure injuries present as abrasions or blisters.

Stage I pressure injuries exhibit non-blanchable redness of intact skin. Stage III pressure injuries involve a crater that extends through the epidermis and dermis. Stage IV pressure injuries have full thickness skin loss with extensive destruction and damage. This injury is not unstageable.

5.

While treating a patient with a partial-thickness wound, the PTA applies adhesive wafers containing absorptive particles. What type of dressing is the therapist using?

Hydrocolloids

Foams

Hydrogels

Alginates

Correct answer: Hydrocolloids

Hydrocolloids are adhesive wafers that contain absorptive particles which interact with wound fluid to form a gelatinous mass over the wound bed. They can be occlusive or semi-occlusive. They are indicated for protection of partial-thickness wounds and wounds with mild exudate, maintaining a moist wound environment.

Hydrogels are water- or glycerine-based gels insoluble in water. They are available as solid sheets, amorphous gels, or impregnated gauze. They are used for partial- and full-thickness wounds and those with necrosis and slough. Alginates are soft, absorbent, nonwoven dressings derived from seaweed and often used for wounds with moderate to large amounts of exudate. Foams are semipermeable membranes that are either hydrophilic or hydrophobic. They vary in thickness, absorptive capacity, and adhesive properties. They are indicated for partial- and full-thickness wounds with minimal or moderate exudate.

6.

A physical therapist assistant is treating a patient with a stage III pressure ulcer. This lesion:

Does not extend through the underlying fascia

Presents as a shallow crater

Is likely to be necrotic

Is not reversible

Correct answer: Does not extend through the underlying fascia

Stage III pressure ulcers do not extend through the underlying fascia.

Stage II pressure ulcers present as shallow craters. Stage IV pressure ulcers are likely to be necrotic. Deep tissue injuries are not reversible and will likely progress to full-thickness injuries.

7.

What is a typical characteristic of a diabetic ulcer?

No pain

Commonly located over the small toes or shin

Cool

Cyanosis

Correct answer: No pain

Diabetic ulcers are typically painless.

Arterial ulcers—not diabetic ulcers—can occur anywhere in the lower leg, and are most common on the small toes and shins. They are often severely and intermittently painful. They may be pale, cyanotic, or pale on elevation with dusky rubor on dependency. They are cool to the touch.

8.

According to a patient's medical history, he recently suffered a full thickness, third-degree burn to his right lower leg in a work-related injury. Which of the following might the therapist expect based on this description?

White, gray, or black appearance, dry surface, edema, eschar, and little pain

Blisters, inflammation, and pain

Red or white appearance, edema, and broken blisters

Blisters, edema, and moderate pain

Correct answer: White, gray, or black appearance, dry surface, edema, eschar and little pain

A full thickness (third-degree) burn affects the epidermis, dermis, and subcutaneous tissue. It is characterized by a white, gray, or black appearance, dry surface, edema, eschar, and little pain due to destroyed nerve endings. Healing requires removal of eschar and grafting. The various types of burns are classified as follows, based on the depth and severity of the injury:

- *An epidermal (first-degree) burn is a burn that only damages the epidermal skin layer, leaving a pink/red appearance but no blistering.*
- *A superficial partial-thickness (second-degree) burn is a burn that damages the epidermis and the upper layers of the dermis skin layer. These injuries are painful and appear bright pink or red with weeping blisters on a moist surface.*
- *A deep partial-thickness (second-degree) burn is a burn that severely damages the epidermis and dermis, and causes damage to the sweat glands, hair follicles, and nerve endings. These burns present with a mixed red or waxy white appearance, broken blisters, and marked edema. They are sensitive to pressure but insensitive to light touch.*
- *A full-thickness (third-degree) burn is a burn that completely destroys the epidermis, dermis, subcutaneous tissues, and sometimes muscle. Full-thickness burns present as white, charred, tan, or black. These injuries are characterized by a dry, parchment-like surface and little pain due to destroyed nerve endings.*
- *A subdermal (fourth-degree) burn is a burn that completely destroys the epidermis and dermis skin layer and damages subcutaneous tissues and muscle. These burns have a charred appearance, and may lead to necrosis.*

There is not a type of burn that is white in appearance with blisters, edema, and moderate pain.

9.

A patient has sustained a subdermal burn. What skin and/or tissue layers are affected?

Epidermis, dermis, subcutaneous tissue, and muscle

Epidermis, dermis, subcutaneous tissue

Epidermis, dermis, nerve endings, hair follicles, sweat glands

Epidermis and upper layers of the dermis

Correct answer: Epidermis, dermis, subcutaneous tissue, muscle, and bone

In a fourth-degree, subdermal burn wound, the layers affected include the epidermis, dermis, subcutaneous tissue, muscle, and bone. This type of burn requires extensive surgery and sometimes amputation. The various types of burns are classified as follows, based on the depth and severity of the injury:

- *An epidermal (first-degree) burn is a burn that only damages the epidermal skin layer, leaving a pink/red appearance but no blistering.*
- *A superficial partial-thickness (second-degree) burn is a burn that damages the epidermis and the upper layers of the dermis skin layer.*
- *A deep partial-thickness (second-degree) burn is a burn that severely damages the epidermis and dermis, and causes damage to the sweat glands, hair follicles, and nerve endings.*
- *A full-thickness (third-degree) burn is a burn that completely destroys the epidermis, dermis, subcutaneous tissues, and sometimes muscle.*
- *A subdermal (fourth-degree) burn is a burn that completely destroys the epidermis and dermis skin layer and damages subcutaneous tissues and muscle.*

10.

The PTA is treating a patient with moderate burn wounds. Of the following options, which patient falls into this category?

A 35-year-old patient with mixed partial/full-thickness burns covering 20% of the body, located on the abdomen and anterior torso

A 27-year-old patient with a partial-thickness burn covering 25% of the body, located on the lower extremity and foot

A six-year-old patient with a full-thickness burn covering 1% of the body, located on the shoulder

A 75-year-old patient with a partial-thickness burn covering 20% of the body, located on the back

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Correct answer: A 35-year-old patient with mixed partial/full-thickness burns covering 20% of the body, located on the abdomen and anterior torso

A 35-year-old patient with mixed partial/full-thickness burn covering 20% of the body, located on the abdomen and anterior torso, is classified as having a moderate burn. The severity of burn injuries is classified as follows:

- ***Minor**:*
  - *Children or older adults with full-thickness burns covering < 2% of the body or partial-thickness burns covering < 10% of the body*
  - *Adults with partial-thickness burns covering < 15% of the body*
  - *Burns cannot involve face, hands, feet, genitalia, perineum, or major joints*
- ***Moderate**:*
  - *Children or older adults with full-thickness burns covering < 10% of the body or partial-thickness burns covering 10%-20% of the body*
  - *Adults with mixed partial/full-thickness burns covering < 15%-25% of the body*
  - *Burns cannot involve face, hands, feet, genitalia, perineum, or major joints*
- ***Critical**:*
  - *Children or older adults with full-thickness burns covering > 10% of the body or partial-thickness burns covering 20% or more of the body*
  - *Any patient with burns covering > 25% of the body; any patient with burns to the face, hands, feet, genitalia, perineum, or major joints*
  - *Patients with impairments*
  - *Patients with respiratory complications*

A 27-year-old patient with a partial-thickness burn covering 25% of the body, located on the lower extremity and foot, and a 75-year-old patient with a partial-thickness burn covering 20% of the body, located on the back have critical burn injuries. A six-year-old patient with a full-thickness burn covering 1% of the body, located on the shoulder has moderate burn injuries.

11.

While treating a patient with full-thickness wounds with necrosis, the PTA applies glycerine-based gels that are insoluble in water. What type of wound dressing is this?

Hydrogels

Alginates

Foams

Hydrocolloids

Correct answer: Hydrogels

Hydrogels are water- or glycerine-based gels that are insoluble in water. They are available as solid sheets, amorphous gels, or impregnated gauze. This type of dressing is used for partial- and full-thickness wounds, and those with necrosis and slough. They are soothing and cooling to the patient, and they rehydrate dry wound beds.

Alginates are soft, absorbent, nonwoven dressings derived from seaweed and often used for wounds with moderate to large amounts of exudate. Alginates react with wound exudate to form a viscous hydrophilic gel mass over the wound area. Foams are semipermeable membranes that are either hydrophilic or hydrophobic. They vary in thickness, absorptive capacity, and adhesive properties. They are indicated for partial- and full-thickness wounds with minimal or moderate exudate. Hydrocolloids are adhesive wafers that contain absorptive particles that interact with wound fluid to form a gelatinous mass over the wound bed. They are indicated for protection of partial-thickness wounds and wounds with mild exudate, maintaining a moist wound environment.

12.

A PT is evaluating a patient and notices a wound on the lateral portion of said patient's hip. In her notes, the PT documents the wound as sanguineous. What are the characteristics of sanguineous wound exudate?

Containing blood

Containing pus

Watery serum

Infected

Correct answer: Containing blood

When assessing wounds, therapists should pay close attention to the type of wound exudate (drainage). Sanguineous drainage contains blood.

Serous drainage is a watery serum. Purulent drainage contains pus. In order to determine whether the wound is infected, the PTA should perform a bacterial culture, as examining the wound exudate will not provide sufficient information.

13.

What is typical of a diabetic ulcer?

Diminished pulse

Located over medial malleolus

Marked edema

Little to no pain

Correct answer: Diminished pulse

Diabetic ulcers usually have a diminished or absent pulse.

Venous ulcers—not diabetic ulcers—typically exhibit edema (often marked edema). They typically cause no pain, or aching pain, in the dependent position. Venous ulcers can occur anywhere in the lower leg and are most common over the medial malleolus. Diabetic ulcers, on the other hand, typically appear on the plantar aspect of the foot, small toes, and shins due to the disease's effect on the body's microvasculature. They may also be painful, even though the patient may not feel the ulcer developing in the early stages.

Characteristics of a venous ulcer include:

- *Location over the medial malleolus*
- *Typically partial thickness in depth*
- *Shaggy and irregular edges*
- *A base with yellow fibrous covering with granulation*
- *Little to no pain*

An ulcer with well-demarcated lesions is typical of an arterial ulcer.

14.

A patient's medical history reveals that they have sustained a **FIRST-DEGREE BURN** to their back. What layer(s) of the skin are affected in a first-degree burn?

The epidermis

Epidermis and upper layers of dermis

Epidermis, dermis, nerve endings, hair follicles, and sweat glands

Epidermis, dermis, and subcutaneous tissue

Correct answer: The epidermis

In a first-degree, superficial burn, the layer affected is the epidermis. This type of burn usually results in blisters, inflammation, and severe pain, and takes 3-7 days to heal. The various types of burns are classified as follows, based on the depth and severity of the injury:

- *An epidermal (first-degree) burn is a burn that only damages the epidermal skin layer, leaving a pink/red appearance but no blistering.*
- *A superficial partial-thickness (second-degree) burn is a burn that damages the epidermis and the upper layers of the dermis skin layer.*
- *A deep partial-thickness (second-degree) burn is a burn that severely damages the epidermis and dermis, and causes damage to the sweat glands, hair follicles, and nerve endings.*
- *A full-thickness (third-degree) burn is a burn that completely destroys the epidermis, dermis, subcutaneous tissues, and sometimes muscle.*
- *A subdermal (fourth-degree) burn is a burn that completely destroys the epidermis and dermis skin layer and damages subcutaneous tissues and muscle.*

15.

Which of the following is a type of yeast infection?

Candidiasis

Impetigo

Cellulitis

Abscess

Correct answer: Candidiasis

Candidiasis is a yeast infection of the skin. It is common in skin folds due to excessive moisture. Immunocompromised patients are more susceptible to this condition.

Impetigo, cellulitis, and abscesses are all examples of bacterial infections.

16.

A PTA is treating a patient with a venous ulcer. For this lesion, high compression is contraindicated with an ABI (Ankle Brachial Index) below what?

0.7

0.5

0.6

1

Correct answer: 0.7

When treating a patient with a venous ulcer, the PTA should know that high compression is contraindicated with ABI < 0.7. All sustained compression is contraindicated with ABI < 0.6 or active deep vein thrombosis.

17.

The PTA is examining a patient with suspected malignant melanoma. When measuring the lesion, which of the following lengths would be of **MOST** concern?

Larger than 6 mm

Larger than 4 mm

Larger than 5 mm

Larger than 7 mm

Correct answer: Larger than 6 mm

Malignant melanoma is likely if the lesion's diameter measures larger than 6 mm. When examining a patient with suspected malignant melanoma, the PTA should employ the acronym ABCDE, which stands for Asymmetrical, Border, Color, Diameter, Evolving.

18.

What skin color change can be expected in the lower legs for an individual with chronic venous insufficiency?

Brown

Yellow

Liver spots

Skin color changes do not occur with venous insufficiency

Correct answer: Brown

When performing a physical examination, therapists should inspect skin tissue for various skin conditions, including discoloration. A brown color is due to increased pigmentation that can be associated with venous insufficiency.

A yellow color indicates jaundice, liver disease, and/or increased carotene intake. Liver spots are brownish yellow and may be due to aging, uterine and liver malignancies, as well as pregnancy.

19.

When treating burn injuries, one of the PTA's goals should be to reduce immobilization and avoid contracture by correctly positioning the patient. How should a patient with an ankle burn be positioned?

Position in neutral alignment

Position in plantar flexion

Position in extreme dorsiflexion

Splinting is contraindicated as it may impede walking and increase the risk of contracture

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Correct answer: Position in neutral alignment

The common deformity with an ankle burn is plantar flexion contracture. Therefore, dorsiflexion should be stressed, but not exaggerated. The patient should have the ankle positioned in a neutral alignment with a splint or plastic ankle foot orthosis.

20.

Which type of wound dressing is **BEST** indicated for a patient with a stage I pressure ulcer?

Transparent film

Foam

Hydrogel

Hydrocolloid

Correct answer: Transparent film

Transparent film is indicated for stage I and II pressure ulcers. It is a clear, adhesive, semipermeable membrane dressing. It is permeable to atmospheric oxygen and moisture vapor but impermeable to water, bacteria, and environmental contaminants.

Foams are meant to dress partial- and full-thickness wounds with some exudate. Hydrogels are either water- or glycerine-based and also dress partial- and full-thickness wounds. Hydrocolloids are designed to protect partial-thickness wounds and wounds with mild exudate.

21.

A PTA is working with a patient who has pruritus. Which of the following options characterizes this condition?

Itching

Smooth, red patches of skin

Inflammation

Excessive dryness of the skin

Correct answer: Itching

Pruritus is another term for itching. It is common with diabetes, drug hypersensitivity, and hyperthyroidism.

Urticaria is characterized by smooth, elevated patches of skin (hives). It indicates an allergic response or an infection. A rash is local redness and eruption on the skin, typically accompanied by itching that is seen with inflammation, skin disease, and other conditions. Xeroderma is the excessive dryness of the skin with shedding of the epithelium.

22.

For patients with burns, it is important that the therapy team work to prevent or reduce complications of immobilization (such as contracture) through positioning. Which is the **CORRECT** positioning for a patient with a shoulder burn?

Emphasize abduction, flexion, and external rotation

Emphasize adduction and internal rotation

Emphasize anatomical position

Emphasize shoulder extension

Correct answer: Emphasize abduction, flexion, and external rotation

The common contracture deformity for a patient with a shoulder burn is adduction and internal rotation. When positioning, there should be an emphasis on abduction, flexion, and external rotation. The patient is typically positioned with an axillary splint known as an airplane splint.

Emphasizing adduction, internal rotation anatomical position, or shoulder extension would not reduce the risk of contracture, and might even increase it.

23.

When treating a burn wound, a physician may choose to perform a graft in order to close the wound. Which of the following options describes a split-thickness graft?

Graft using epidermis and upper layers of dermis from donor site

Graft using epidermis and dermis from donor site

Graft using a combination of collagen and synthetics

Graft using only the epidermis from donor site

Correct answer: Graft using epidermis and upper layers of dermis from donor site

A split-thickness graft uses the epidermis and upper layers of the dermis from a donor site.

A full-thickness graft uses the epidermis and dermis from a donor site. Biosynthetic grafts use a combination of collagen and synthetics. Grafts are not typically performed with only the epidermis from a donor site.

24.

A physical therapist assistant is examining a patient with a skin ulcer. The lesion is brown and black and is located over the sacrum. What type of skin ulcer is this **MOST** likely to be?

Decubitus

Venous

Arterial

Diabetic

Correct answer: Decubitus

Decubitus ulcers (pressure ulcers) tend to form over bony prominences (such as the sacrum) after long periods of immobility and inactivity. They appear red, brown/black, or yellow.

Venous, arterial, and diabetic ulcers are most likely to form in the lower extremities, not over the sacrum.

25.

Which phase of burn healing is characterized by scar tissue formation by fibroblasts and wound contraction?

Proliferation phase

Inflammatory phase

Maturation phase

Regenerative phase

Correct answer: Proliferation phase

There are four overlapping phases of burn healing: homeostasis, the inflammatory phase, the proliferation phase (also called the granulation or fibroblastic phase), and the maturation phase. In the proliferative phase, the fibroblasts form scar tissue, and there is wound contraction. If there are still viable cells, re-epithelialization may occur at the wound surface.

The inflammatory phase is characterized by redness, edema, warmth, pain, and decreased range of motion. The maturation phase is characterized by scar tissue remodeling and lasts up to two years. The regenerative phase is not a phase of burn healing.

26.

The maturation and matrix formation phase of burn healing begins 2-4 weeks after injury and may last for years. During normal scar formation, how long does the scar remain bright pink?

6-12 weeks

6-8 weeks

8-16 weeks

At least 8 weeks

Correct answer: 6-12 weeks

The maturation and matrix formation phase of burn healing begins 2-4 weeks after injury and may last for years. During normal scar formation, the scar remains bright pink for 6-12 weeks. Assuming there are no other complicating factors, it then becomes lavender to a soft pink, and finally becomes white and flat.

27.

Which of the following patients is **LEAST** likely to sustain a pressure ulcer?

A patient with multiple sclerosis who is modified independent with most daily tasks

A patient who is bedridden due to paraplegia, but exhibits no other pathology

A patient with Alzheimer's

A patient with type 2 diabetes

Correct answer: A patient with multiple sclerosis who is modified independent with most daily tasks

Of the available options, a patient with multiple sclerosis is the least likely to sustain a pressure ulcer.

Pressure ulcers are common among immobilized patients (like those with paraplegia), patients with diabetes, and those with cognitive impairment (such as a patient with Alzheimer's). Elderly and/or debilitated patients are also at risk, as are those with hypertension, atherosclerosis, or decreased sensation.

28.

Which of the following conditions is typical for a patient with poor oxygenation due to chronic advanced lung disease or congenital heart disease?

Cyanosis

Pallor (long-term)

Yellow discoloration

Temporary pallor

Correct answer: Cyanosis

Cyanosis is a slightly bluish, grayish discoloration. It is indicative of a lack of oxygen and can indicate congestive heart failure, advanced lung disease, congenital heart disease, and/or venous obstruction. This is commonly seen in cyanosis of the lips, oral mucosa, tongue or nails, hands, and feet.

Pallor is a lack of color or paleness that can indicate anemia, internal hemorrhage, or lack of exposure to sunlight. Temporary pallor is seen with arterial insufficiency and syncope, chills, shock, vasomotor instability, or nervousness. A yellow color indicates jaundice or liver disease that can also be associated with increased carotene intake.

29.

For patients with burns, it is important that the therapy team works to prevent or reduce complications of immobilization through positioning and splinting to prevent contractures. Which is the **CORRECT** position to place a patient with an anterior neck burn?

Emphasize hyperextension and position with plastic cervical orthosis

Emphasize flexion and position with chin to chest

Emphasize neutral spine with plastic cervical orthosis

Positioning does not matter in this burn injury

Correct answer: Emphasize hyperextension and position with plastic cervical orthosis

In an anterior neck burn, the common deformity is neck flexion contracture due to shortening of scar tissue in the anterior neck. For this reason, the patient should be positioned in a way to emphasize neck hyperextension. Positioning with a firm cervical orthosis made of plastic is indicated.

Positioning in neck flexion or neutral spine is not appropriate as both could promote soft tissue shortening. Positioning is indeed important in order to prevent contracture development.

30.

When performing soft tissue mobilization on a patient's back, the therapist notices a dark, raised area with an irregular border and asymmetrical presentation, which she is concerned may need further evaluation by a dermatologist.

Which form of malignant tumor is characterized by asymmetry, irregular borders, variations in color, a diameter larger than 6 mm, and elevation?

Malignant melanoma

Basal cell carcinoma

Squamous cell carcinoma

Kaposi's sarcoma

Correct answer: Malignant melanoma

Malignant melanoma is a tumor that arises from melanocytes. It is characterized by uneven edges, irregular borders, variations in color, a diameter larger than 6 mm, and typically elevated presentation.

Kaposi's sarcoma is a lesion of endothelial cell origin with red or dark purple macules that progress to nodules or ulcers. Squamous cell carcinomas have a poorly defined margin and are present in sun-exposed areas as a flat red area, ulcer, or nodule. Basal cell carcinoma is a low-growing epithelia basal cell tumor characterized by a raised ivory-colored patch with a rolled border and indented center.

31.

When working with a client, the PTA notices a raised irregularity on her patient's face, which she is concerned may need further evaluation by a dermatologist. Which form of malignant tumor is characterized by a raised patch with an ivory appearance and a rolled border with an indented center?

Basal cell carcinoma

Squamous cell carcinoma

Malignant melanoma

Kaposi's sarcoma

Correct answer: Basal cell carcinoma

Bbasal cell carcinoma is a slow-growing epithelial basal cell tumor. It is characterized by a raised ivory-colored patch with a rolled border and an indented center. It rarely metastasizes and is common in fair-skinned people, especially on the face. It is associated with prolonged sun exposure.

Squamous cell carcinoma has a poorly defined margin and presents as a flat red area, ulcer, or nodule. Malignant melanoma is characterized by uneven edges, irregular borders, variations in color, a diameter larger than 6 mm, and typically elevated presentation. Kaposi's sarcoma is a lesion of vascular endothelial cell origin with red or dark purple/blue macules that progress to nodules or ulcers, is associated with itching and pain, and is common in the lower extremities.

32.

A physical therapist is treating a patient who suffered a burn wound. What is one of the three zones of a burn wound?

Coagulation

Anterior trunk

Partial-thickness

Critical

Correct answer: Coagulation

Burns can occur following exposure to chemical, thermal, electrical, or radioactive agents. The three zones of a burn wound are as follows:

- *Zone of coagulation, in which cells are irreversibly injured and cell death occurs*
- *Zone of stasis, in which cells are injured and may die within 24-48 hours without specialized treatment*
- *Zone of hyperemia, which is characterized by minimal cell injury and in which cells should recover*

The anterior trunk is an area of the body that may sustain burn wounds. A partial-thickness burn, or second-degree burn, refers to the severity of the injury. A patient with critical burns has full-thickness burns over > 10% of their body, partial-thickness burns over 20% or more of their body, burns over > 25% of their body, or burns in certain areas (such as the face, hands, or eyes).

33.

A patient's medical history reveals that they have sustained a second-degree deep partial thickness burn. Which anatomical layers are affected in this type of injury?

Epidermis, dermis, nerve endings, hair follicles, and sweat glands

Epidermis and upper layers of the dermis

Epidermis, dermis, and subcutaneous tissue

Epidermis, dermis, subcutaneous tissue, and muscle

Correct answer: Epidermis, dermis, nerve endings, hair follicles, and sweat glands

In a second-degree deep partial thickness burn, the layers affected include the epidermis, dermis, nerve endings, hair follicles, and sweat glands. Healing often results in scar formation and reepithelialization. The various types of burns are classified as follows, based on the depth and severity of the injury:

- *An epidermal (first-degree) burn is a burn that only damages the epidermal skin layer, leaving a pink/red appearance but no blistering.*
- *A superficial partial-thickness (second-degree) burn is a burn that damages the epidermis and the upper layers of the dermis skin layer.*
- *A deep partial-thickness (second-degree) burn is a burn that severely damages the epidermis and dermis, and causes damage to the sweat glands, hair follicles, and nerve endings.*
- *A full-thickness (third-degree) burn is a burn that completely destroys the epidermis, dermis, subcutaneous tissues, and sometimes muscle.*
- *A subdermal (fourth-degree) burn is a burn that completely destroys the epidermis and dermis skin layer and damages subcutaneous tissues and muscle.*

34.

What are the characteristics of purulent wound exudate?

Containing pus

Watery serum

Containing blood

Cyanotic

Correct answer: Containing pus

When assessing wounds, therapists should pay close attention to the type of wound exudate (drainage). Purulent drainage contains pus.

The remaining answer options are incorrect. Serous drainage is a watery serum. Sanguineous drainage contains blood. Cyanosis describes skin coloration, not wound exudation, and may indicate arterial insufficiency.

35.

The PTA is treating a patient who recently suffered a superficial partial-thickness burn. What can the physical therapist assistant expect to see in this patient?

Blisters, inflammation, and severe pain

Red or white appearance, edema, and broken blisters

White, gray, or black appearance, dry surface, edema, eschar, little pain

Pink or red appearance with no blisters

Correct answer: Blisters, inflammation, and severe pain

A superficial partial-thickness burn is a second-degree burn. The skin layers affected include the epidermis and upper layers of the dermis. It is characterized by blisters, inflammation, and severe pain. Healing typically occurs in 7-21 days. The various types of burns are classified as follows, based on the depth and severity of the injury:

- *An epidermal (first-degree) burn is a burn that only damages the epidermal skin layer, leaving a pink/red appearance but no blistering.*
- *A superficial partial-thickness (second-degree) burn is a burn that damages the epidermis and the upper layers of the dermis skin layer. These injuries are painful and appear bright pink or red with weeping blisters on a moist surface.*
- *A deep partial-thickness (second-degree) burn is a burn that severely damages the epidermis and dermis and causes damage to the sweat glands, hair follicles, and nerve endings. These burns present with a mixed red or waxy white appearance, broken blisters, and marked edema. They are sensitive to pressure but insensitive to light touch.*
- *A full-thickness (third-degree) burn is a burn that completely destroys the epidermis, dermis, subcutaneous tissues, and sometimes muscle. Full-thickness burns present as white, charred, tan, or black. These injuries are characterized by a dry, parchment-like surface and little pain due to destroyed nerve endings.*
- *A subdermal (fourth-degree) burn is a burn that completely destroys the epidermis and dermis skin layer and damages subcutaneous tissues and muscle. These burns have a charred appearance and may lead to necrosis.*

36.

A physical therapist assistant is treating a patient in the post-acute phase of healing from third-degree burns to the upper extremity. What is an appropriate intervention?

Progressive strengthening

Deep breathing exercises

Edema control

Taking all joints through full passive ROM, avoiding active ROM

Correct answer: Progressive strengthening

Progressive strengthening is an appropriate intervention for post-acute rehabilitation from a burn.

During the acute phase of healing—not the post-acute phase—it is appropriate for the therapist to have the patient perform deep breathing exercise and focus on edema control. In both the acute and post-acute phases, the therapist should take all joints through full passive ROM (range of motion). However, during the post-acute phase, the therapist should also increase the patient's active ROM.

37.

When performing soft tissue mobilization on a patient's neck, the therapist notices a flat red area on the patient's skin. Which form of malignant tumor is characterized by a flat, red area with poorly defined margins commonly occurring in sun-exposed areas?

Squamous cell carcinoma

Basal cell carcinoma

Malignant melanoma

Kaposi's sarcoma

Correct answer: Squamous cell carcinoma

Squamous cell carcinoma has a poorly defined margin and typically presents as a flat red area, ulcer, or nodule. Squamous cell carcinoma grows more quickly and is common on sun-exposed areas including the face, neck, and back of the hands and can quickly metastasize.

Basal cell carcinoma is a low-growing epithelia basal cell tumor characterized by a raised ivory-colored patch with a rolled border and indented center. Malignant melanoma is characterized by uneven edges, irregular borders, variations in color, a diameter larger than 6 mm, and typically elevated presentation. Kaposi's sarcoma is a lesion of endothelial cell origin with red or dark purple macules that progress to nodules or ulcers, is associated with itching and pain, and is common in the lower extremities.

38.

A physical therapist assistant is examining a patient with a skin ulcer. The lesion is painful, irregular with smooth edges, and has little to no granulation. What type of ulcer is this **MOST LIKELY** to be?

Arterial

Venous

Diabetic

Epidermal

Correct answer: Arterial

It is important for a PTA to be able to distinguish between the different kinds of skin ulcers. It can be especially difficult to differentiate between venous and arterial ulcers. Arterial ulcers are painful, irregular with smooth edges, and have little to no granulation.

Venous ulcers are irregular with dark pigmentation, and sometimes fibrotic. They have good granulation and little pain. Diabetic ulcers are rarely painful and often develop on areas of significant friction and pressure, such as the bottom of the foot. All skin ulcers involve the epidermis, and therefore it is not useful to classify a specific skin ulcer as epidermal.

39.

A patient presents with thick, scaly plaques on his skin that have a silvery appearance. The patient reports that the plaques increase when he is stressed. What is the **LIKELY** skin disorder?

Psoriasis

Eczema

Scleroderma

Shingles

Correct answer: Psoriasis

Psoriasis is an immune skin disorder caused by rapid skin cell production. It presents with scaly and silvery skin plaques that are often itchy and dry. While there is no cure for psoriasis, systemic drugs and topical ointments may help give the patient some relief.

Eczema is an inflammation of the skin causing itching, redness, and lesions. Scleroderma is a chronic disease of connective tissues that causes fibrosis of the skin and other connective tissues. Shingles (herpes zoster) is characterized by pain and tingling with red papules progressing to vesicles, affecting a spinal or cranial nerve dermatome.

40.

When examining the integumentary system of a patient, it is important to understand risk factors for cancerous cell activity. Clinical examination of malignant melanoma can use the acronym ABCDE.

What does this acronym stand for?

Asymmetrical, Border, Color, Diameter, Evolving

Asymmetrical, Border, Callous, Discoloration, Elevation

Asymmetrical, Basal, Color, Diameter, Evolving

Asymmetrical, Border, Callous, Dark, Evolving

Correct answer: Asymmetry, Border, Color, Diameter, Evolving

Because of the potential seriousness of skin cancer, therapists should be aware of any areas on a patient's skin that appear suspicious. Therapists can use the acronym ABCDE to determine whether a patient should be referred to a dermatologist for further examination. ABCDE stands for the following:

- ***Asymmetrical**: Look for uneven edges, lopsided appearance*
- ***Border**: Look for an irregular border, poorly defined edges*
- ***Color**: Look for variations in color, especially mixtures of black, blue, and red*
- ***Diameter**: Larger than 6 mm*
- ***Evolving**: Changes over time; usually elevated but may be flat as well*

Cardiovascular & Pulmonary Systems

41.

In which position should a patient be placed for postural drainage of the apical segments of the upper lobe?

Leaning back on a pillow at a 30-degree angle against the therapist

In the supine position with a pillow under the knees

Leaning over a folded pillow at a 30-degree angle

In the prone position in a head-down position with a pillow under the hips

Correct answer: Leaning back on a pillow at a 30-degree angle against the therapist

To clear the apical segments of the upper lobes, the patient should lean back on a pillow at a 30-degree angle against the therapist.

To promote postural drainage in the anterior segments of the upper lobes, the patient should be in the supine position with a pillow under the knees. To promote postural drainage of the posterior segments of the upper lobes, the patient should lean over a folded pillow at a 30-degree angle. To promote postural drainage of the posterior basal segments of the lower lobes, the patient should be in the prone position in a head-down position with a pillow under the hips.

42.

A therapist measures a nine-year-old patient's respiratory rate as 18 breaths per minute. How should this finding be classified?

Abnormal

Normal

Tachypnea

Bradypnea

Correct answer: Abnormal

The normal respiratory rate (RR) for a child (in this case, a nine-year-old) is 20-30 breaths per minute, and so a respiratory rate of 18 breaths per minute is abnormal. The normal respiratory rates for patients of various ages are as follows:

- *Adult: 12-20 breaths per minute*
- *Newborn: 30-40 breaths per minute*
- *Child: 20-30 breaths per minute*

Tachypnea is an increase in RR to 22 or more breaths per minute. Bradypnea is a decrease in RR to 10 or fewer breaths per minute.

43.

Use the following scenario to answer this question.

After a while, the patient is feeling slightly better and is able to go for a walk. Which of the following changes in her lab values would indicate effective compensation?

PH: normal, PaCO2: low, HCO3-: low

PH: low, PaCO2: high, HCO3-: normal

PH: low, PaCO2: high, HCO3-: low

PH: high, PaCO2: low, HCO3-: high

Correct answer: PH: normal, PaCO2: low, HCO3-: low

Compensation in this context refers to a correction of a PH imbalance. Since the PH was high to start, or more basic, then lowering HCO3- lower than baseline could compensate for and correct the issue, at least temporarily.

44.

A patient is exercising on a treadmill for about 15 minutes, walking at a progressively faster pace. Immediately after she finishes, the PTA takes her heart rate and determines that it is 130 beats per minute. Her seated, resting heart rate before starting exercise was 60 beats per minute.

Which of the following is **TRUE** in this scenario, given only the information provided?

This seems like a reasonable increase in heart rate during treadmill exercise

This is an abnormally high heart rate during exercise

This is an abnormally low heart rate at rest

This is an abnormally low heart rate during exercise

Correct answer: This seems like a reasonable increase in heart rate during treadmill exercise

During exercise, heart rate is expected to increase proportionally to the intensity of the exercise. For most patients, this resting and exercise heart rate would constitute a normal change.

45.

Which of the following measurements refers to the percentage of blood emptied from the ventricle during systole?

Ejection fraction

Stroke volume

Afterload

Cardiac output

Correct answer: Ejection fraction

There are several terms pertaining to hemodynamics that PTs and PTAs should know as they assess and monitor their patients. Ejection fraction is the percentage of blood emptied from the ventricle during systole.

The remaining answer options are incorrect. Stroke volume is the amount of blood ejected with each myocardial contraction, which is approximately 70 mL. Afterload is the force the left ventricle must generate during systole to overcome aortic pressure to open the aortic valve. Cardiac output is the volume of blood discharged from the left to right ventricle per minute, which is approximately 4-6 L per minute in a typical adult.

46.

To accomplish postural drainage, a therapist positions a patient on their left side with their legs together and a pillow under their knees. The therapist raises the foot of the bed 20 inches.

Which lobes of the lungs are being drained?

Anterior basal segments of the right lower lobe

Anterior basal segments of the left lower lobe

Lateral basal segments of the lower lobe

Lingular segments of the left upper lobe

Correct answer: Anterior basal segments of the right lower lobe

To drain the anterior basal segments of the lower lobe, the patient should lie on their side with their head down and a pillow between their knees. The foot of the table should be raised 20 inches. The therapist then claps over the lower ribs.

To drain the anterior basal segments of the left lower lobe, the patient would be in the same position, but lying on the right side instead of the left. To drain the lateral basal segments of the lower lobe, the patient should lie on their abdomen with their head down, and then rotate one quarter turn upward, with their upper leg flexed over a pillow for support. To drain the lingular segments of the left upper lobe, the patient should lie on their right side with their head down, and then rotate one quarter turn backward with their knees flexed and a pillow placed between their shoulder and hip from behind.

47.

A PTA is working with a patient who has deep vein thrombophlebitis. Which of the following statements is **TRUE** of this condition?

It is characterized by clot formation.

It is often associated with metabolic syndrome.

In late stages, patients may exhibit hair loss, and skin and nail changes.

It is a chronic condition.

Correct answer: It is characterized by clot formation.

Deep vein thrombophlebitis is characterized by clot formation and acute inflammation in a deep vein. It usually occurs in the lower extremity and is associated with immobilization.

The remaining options describe occlusive peripheral artery disease, not deep vein thrombophlebitis. Occlusive peripheral artery disease is the chronic, occlusive disease of medium- and large-sized vessels as the result of peripheral atherosclerosis. Unlike deep vein thrombophlebitis, it is often associated with cerebrovascular disease, diabetes, metabolic syndrome, and a history of smoking. In late stages, patients exhibit rest pain, muscle atrophy, and trophic changes such as hair loss, skin changes, and nail changes. It primarily affects the lower extremities.

48.

A PT is taking a blood pressure on a patient at rest. The patient's blood pressure reads 190/120. The patient is calm and does not look to be in distress. Which of the following is the **MOST** appropriate action by the PT?

Allow the patient to rest for a minute, then retake the blood pressure, activating the emergency response if it remains so high

Initiate the treatment session, then retake the blood pressure periodically to check for changes

Send the patient home and encourage them to rest

Offer the patient a drink and allow them to rest for a few minutes before starting the therapy session

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Correct answer: Allow the patient to rest for a minute, then retake the blood pressure, activating the emergency response if it remains so high

A BP reading of over 180 systolic and 120 diastolic is considered a hypertensive crisis. This requires serious consideration, and the PT should be certain that he had an accurate measurement, then contact emergency services immediately.

49.

A patient demonstrates bilateral pitting edema in the feet. Which of the following diagnoses is **MOST** likely?

Congestive heart failure

Peripheral vascular disease

Thrombophlebitis

Traumatic injury to one foot

Correct answer: Congestive heart failure

Bilateral edema is often associated with congestive heart failure.

Local issues, such as peripheral vascular disease and thrombophlebitis, can cause unilateral edema, as can a traumatic injury to one foot.

50.

Use the following scenario to answer this question.

Which of the following would likely be the **MOST** appropriate cardiovascular starting point, based on this patient's current level of fitness?

Interval training with a passive rest interval

Low intensity-long duration steady state training

HIIT training

Circuit training

Correct answer: Interval training with a passive rest interval

Based on this patient's low level of fitness, it would be very unlikely that she would be able to maintain exercise for a long duration, complete high-intensity interval training, or circuit training combining multiple modes of exercise in order to stress both the cardiovascular and musculoskeletal system.

Interval training with short work intervals and passive rest intervals would give this patient appropriate periods of recovery before the next bout of exercise.

51.

Where is the auscultation landmark for the pulmonic valve located?

Over the second left intercostal space at the sternal border

Over the fourth left intercostal space at the sternal border

Over the fifth left intercostal space at the midclavicular line

Over the second right intercostal space at the sternal border

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Correct answer: Over the second left intercostal space at the sternal border

Both PTs and PTAs should be familiar with appropriate ways to measure vital signs, such as heart rate and pulse. The auscultation landmark for the pulmonic valve is at the second left intercostal space at the sternal border.

The auscultation landmark for the mitral valve is at the fifth left intercostal space at the midclavicular line. The auscultation landmark for the tricuspid valve is at the fourth left intercostal space at the sternal border. The auscultation landmark for the aortic valve is at the second right intercostal space at the sternal border.

52.

Use the following scenario to answer this question.

You note a yellowish tint to the patient's fingernails. Which of the following is the **LEAST** likely cause of this finding?

Cyanosis

Tobacco stain

Fungal infection

Tetracycline medication

Correct answer: Cyanosis

Tobacco, fungal infections, and tetracycline medications (along with some other medications) can cause yellowing of the fingernails.

Cyanosis refers to a blue tint seen in the fingers.

53.

A patient brings in her recent EKG results. The PT notes that the reading shows wide QRS waves and a short QT interval. Which of the following might cause this reading on an EKG?

Hypercalcemia

Hypocalcemia

Hyperkalemia

Hypokalemia

Correct answer: Hypercalcemia

High calcium levels can lead to a wide QRS and a short QT interval.

Low calcium levels can lead to a long QT interval. High potassium levels can lead to a wide QRS, flat and/or peaked P wave. Low potassium levels can cause a flat t wave, which may be inverted.

54.

When conducting an ankle-brachial index reading on a patient, the therapist determines that the value is 1.2. Which of the following is **TRUE** about this finding?

Normal reading

Borderline PAD

Severe PAD

Non-compliant arteries

Correct answer: Normal reading

Ankle-brachial index is one test used for peripheral arterial disease (PAD). This test determines the ratio of blood pressure in the lower extremity to that of the upper extremity. When calculated, if the value is above 1.4, the patient may have non-compliant arteries. If it is between 1.0 and 1.4, this is considered normal. If the reading is between .91 and .99, this is considered borderline. If it is below .9, this is indicative of PAD. If it is below .5, this is indicative of severe arterial disease.

55.

A male patient's blood pressure is 140/70 mmHg. Which of the following is **TRUE**?

This patient is hypertensive because of the systolic reading

This patient is not considered hypertensive because males have higher cutoffs

This patient is normotensive because his low diastolic pressure balances out his higher systolic pressure

This patient is hypotensive

Correct answer: This patient is hypertensive because of the systolic reading

If a person has a high systolic, diastolic, or both blood pressures, they are considered hypertensive. Males and females have the same blood pressure cutoffs. The cutoffs are as follows:

- *< 120 systolic and < 80 diastolic = normal*
- *120-129 systolic and < 80 diastolic = elevated*
- *130-139 systolic and or 80-89 diastolic = stage I hypertension*
- *> 139 and or > 89 = stage II hypertension*

56.

A patient is referred for physical therapy to treat low back pain due to disc herniation. Upon reviewing the patient's medications, the therapist sees he is taking an ACE inhibitor. Because he is taking an ACE inhibitor, which of the following medical conditions would you **MOST** expect this patient to have?

Hypertension

Diabetes

Atrial fibrillation

Congestive heart failure

Correct answer: Hypertension

ACE inhibitors work to decrease blood pressure (hypertension). Some of the most common ACE inhibitors are enalapril, ramipril, catapril, and lisinopril.

Medications to reduce blood sugar, such as insulin, would be prescribed for diabetes. Diuretics are common medications for congestive heart failure. Antiarrhythmics are used to control heart conductivity for atrial fibrillation.

57.

A patient who recently suffered a CVA presents with symptoms on both the right and left sides of the body. She has diplopia, dysphagia, and vertigo. She also has ataxia, balance impairment, and nystagmus.

Given these symptoms, which CVA syndrome is she **MOST LIKELY** to have?

Vertebrobasilar artery syndrome

Anterior cerebral artery syndrome

Posterior cerebral artery syndrome

Middle cerebral artery syndrome

Correct answer: Vertebrobasilar artery syndrome

The vertebrobasilar artery supplies the medulla, pons, and cerebellum. Patients with vertebrobasilar artery syndrome have a wide variety of symptoms that can be on the same side or opposite side of the infarct. There is cranial nerve involvement (diplopia, dysphagia, dysarthria, deafness, and vertigo) as well as ataxia. They may have Wallenberg's syndrome (deficits in visual disturbances, balance, and gait deficits) or locked-in syndrome (the patient is awake and aware but unable to speak or control any muscles beyond the eyes).

The anterior cerebral artery supplies the medial part of the frontal and parietal lobe, basal ganglia, and corpus callosum. Patients with anterior cerebral artery syndrome have contralateral sensory and motor loss with legs more affected than the upper extremities. They have mental impairment, urinary incontinence, apraxia, slow delayed movement, and behavioral changes.

The middle cerebral artery supplies the lateral cerebral hemispheres, including the frontal, temporal, and parietal lobes. Patients with middle cerebral artery syndrome have contralateral sensory motor loss with the face and upper extremities affected more than the lower extremities. Additionally, they can have perceptual deficits, homonymous hemianopsia, Broca's and Wernicke's aphasia, and global aphasia.

The posterior cerebral artery supplies the occipital lobe, medial and inferior temporal lobe, thalamus, and midbrain. With posterior cerebral artery syndrome, the patient can experience contralateral sensory and motor loss, homonymous hemianopsia, visual agnosia, oculomotor nerve palsy, involuntary movement, Pusher syndrome, and thalamic pain syndrome.

58.

Which pulmonary condition is characterized by alveolar collapse in an infant resulting from lung immaturity and low levels of pulmonary surfactant?

Respiratory distress syndrome

Bronchopulmonary dysplasia

Bronchiectasis

Cystic fibrosis

Correct answer: Respiratory distress syndrome

Respiratory distress syndrome is a condition of alveolar collapse in a premature infant. It is a result of lung immaturity and inadequate levels of pulmonary surfactant. Physical findings generally occur within a few hours of birth.

Bronchopulmonary dysplasia is an obstructive pulmonary disease and is often a sequela of premature infants with respiratory distress syndrome who were given high pressures of mechanical ventilation or infection. Bronchiectasis is a chronic congenital or acquired disease characterized by abnormal dilation of the bronchi and excessive sputum production. Cystic fibrosis is a genetically inherited disease that affects the mucus-producing glands of the lungs, sweat glands, digestive tract, and genitourinary system.

59.

Which of the following statements is **TRUE** of viral pneumonia?

It is an interstitial or intra-alveolar inflammatory process.

It is a form of bacterial pneumonia.

It is also called streptococcal pneumonia.

It is the most common type of pneumonia.

Correct answer: It is an interstitial or intra-alveolar inflammatory process.

Viral pneumonia may be an interstitial or intra-alveolar inflammatory process caused by viral agents. It is most common for viral pneumonia to be caused by respiratory syncytial virus (RSV).

Pneumococcal pneumonia, on the other hand, is a form of bacterial pneumonia. As such, it is an intra-alveolar infection and not an interstitial infection. It may also be called streptococcal pneumonia, and it is the most common type of this disease.

60.

A patient has been diagnosed with acute coronary artery syndrome. Which of the following presentations of this condition is **MOST** likely to cause edema?

Heart failure

Angina pectoris

Myocardial infarction

Cerebrovascular accident

Correct answer: Heart failure

Acute coronary artery syndrome has three main presentations: heart failure, where the heart is unable to keep up with circulation of the body as needed, thus leading to edema; angina pectoris, or chest pain; and myocardial infarction (heart attack).

A cerebrovascular accident is not included with acute coronary artery syndrome.

61.

Use the following scenario to answer this question.

Based on the patient’s partial thromboplastin time (PTT) test, which of the following should the PT conclude?

The patient has a normal clotting ability

The patient may have a factor VIII deficiency

The patient may have a factor IX deficiency

The patient may have a factor X deficiency

Correct answer: The patient has a normal clotting ability

The partial thromboplastin time (PTT) test is used to determine clotting ability. If the patient's blood takes 25 to 40 seconds to clot, the test is considered normal.

Higher times indicate a potential deficiency in factor X, IX, or VIII.

62.

Where should the therapist position their hands when instructing a patient to perform diaphragmatic breathing?

Over the subcostal angle of the thorax

Over the lateral chest wall bilaterally

Over the sternum

Over the posterior aspect of the thoracic ribs

Correct answer: Over the subcostal angle of the thorax

Diaphragmatic breathing is used to increase ventilation and improve gas exchange, as well as to promote relaxation and decrease the work of breathing. The patient may be semi-reclined, supine, or sitting while the therapist's hands are placed over the subcostal angle of the thorax. The therapist applies gentle pressure through exhalation, increasing to firm pressure at the end of exhalation, and releasing pressure during inhalation.

The therapist's hands over the lateral chest wall bilaterally, over the sternum, or over the posterior aspect of the thoracic ribs do not facilitate diaphragmatic breathing.

63.

Which of the following is the volume of gas that remains in the lungs after expiratory reserve volume has been exhaled?

Residual volume

Inspiratory reserve volume

Vital capacity

Functional residual capacity

Correct answer: Residual volume

Residual volume is the volume of gas that remains in the lungs after expiratory reserve volume has been exhaled. Residual volume is a useful way of measuring how well the lungs are functioning overall.

Inspiratory reserve volume is the volume of gas that can be inhaled beyond a normal resting tidal exhalation. Vital capacity is the amount of air under volitional control (inspiratory reserve volume + tidal volume + expiratory reserve volume). Functional residual capacity is the amount of air that resides in the lungs after a normal resting tidal exhalation (expiratory reserve volume + residual volume).

64.

When a patient has compensated heart failure, the heart returns to functional status with reduced cardiac output and exercise tolerance. Control is achieved through many mechanisms.

What is one of those mechanisms?

Cardiac dilation

Arterial vasodilation

Aerobic metabolism

LA hypertrophy

Correct answer: Cardiac dilation

When a patient has compensated heart failure, the heart returns to functional status with reduced cardiac output and exercise tolerance. Control is achieved through many mechanisms, including cardiac dilation.

Other mechanisms of achieving control include:

- *Arterial vasoconstriction*
- *Anaerobic metabolism*
- *LV hypertrophy*
- *SNS stimulation*
- *Medical therapy*

65.

A patient has been recently diagnosed with early-stage arteriosclerosis. Which of the following might the patient exhibit during exercise sessions?

Intermittent claudication

Ischemia

Pain at rest

Trophic changes

Correct answer: Intermittent claudication

Early on, patients with arteriosclerosis may demonstrate intermittent claudication as a key symptom. Later on in the disease process, they may present with ischemia, pain at rest, and trophic changes.

66.

A PT is auscultating a patient's heart and lungs. Which of the following is **NOT** a common landmark for auscultation of the heart?

Circumflex artery

Pulmonic valve

Tricuspid valve

Aortic valve

Correct answer: Circumflex artery

The coronary arteries and cardiac veins are difficult to auscultate and are not common landmarks for auscultation by PTs. However, the valves of the heart are common sites for auscultation.

67.

A PTA wants to determine a client's maximum heart rate in order to design an effective cardiorespiratory program for him. If the patient is 65, what would the client's age-adjusted max heart rate be estimated to be?

155 bpm

140 bpm

130 bpm

175 bpm

Correct answer: 155 bpm

To quickly estimate max heart rate, the clinician can simply subtract the patient's age in years from 220. This will give a rough estimate of the patient's heart rate, which is considered a nonmodifiable factor based on age.

68.

A patient is being considered for a cardiac rehab program. Which of the following is a contraindication for this patient's participation in the program?

Resting BP of 180/115 mmHg

Stable angina

Cardiomyopathy

End-stage kidney disease

Correct answer: Resting BP of 180/115 mmHg

A resting BP with a systolic measurement > 200 mmHg and/or a diastolic measurement > 110 mmHg is a contraindication for a patient to participate in cardiac rehab.

Stable angina, cardiomyopathy, and end-stage kidney disease are all indications.

69.

Use the following scenario to answer this question.

Which of the following is **TRUE** of the patient’s C-reactive protein value?

This indicates normal levels of this protein

This indicates inflammation

This indicates infection

This is a higher than average value

Correct answer: This indicates normal levels of this protein

C-reactive protein, to be at normal levels, should be less than 10 mg/L. Since this patient's level was 8mg/L, this is considered normal. Higher levels are associated with inflammation and/or infection.

70.

Where is the auscultation landmark for the mitral valve located?

Over the fifth left intercostal space at the midclavicular line

Over the second right intercostal space at the sternal border

Over the second left intercostal space at the sternal border

Over the fourth left intercostal space at the sternal border

Correct answer: Over the fifth left intercostal space at the midclavicular line

Both PTs and PTAs should be familiar with appropriate ways to measure vital signs, such as heart rate and pulse. The auscultation landmark for the mitral valve is at the fifth left intercostal space at the midclavicular line.

The auscultation landmark for the tricuspid valve is at the fourth left intercostal space at the sternal border. The auscultation landmark for the pulmonic valve is at the second left intercostal space at the sternal border. The auscultation landmark for the aortic valve is at the second right intercostal space at the sternal border.

71.

A PTA is educating a patient about his recent cardiovascular assessments. Which of the following is **TRUE** of cardiac output?

This is the amount of blood pumped out of the ventricles each minute

This is usually about 10 liters per minute in adults

This is measured in beats per minute

This is usually presented as a percentage value

Correct answer: This is the amount of blood pumped out of the ventricles each minute

Cardiac output, CO, is usually measured in liters, and most adults will generally have a CO of 4-6 liters per minute.

Heart rate is measured in beats per minute. Ejection fraction is usually presented as a percentage value.

72.

What is an example of a restrictive pulmonary disorder?

Interstitial lung disease

Viral pneumonia

Asthma

Bronchopulmonary dysplasia

Correct answer: Interstitial lung disease

Interstitial lung disease is a restrictive pulmonary disorder. One example of interstitial lung disease is idiopathic pulmonary fibrosis, which is chronic, progressive, fibrotic pneumonia that causes irreversible scarring in the lung tissue.

Pneumonia (viral, bacterial, or aspiration), asthma, and bronchopulmonary dysplasia are all examples of obstructive, not restrictive, pulmonary disorders.

73.

Following a CVA, a patient presents with left-sided sensory motor loss, with the face and upper extremity affected more than the lower extremity. He has perceptual deficits, expressive and receptive aphasia, and homonymous hemianopsia.

Which CVA syndrome does he **MOST LIKELY** have?

Middle cerebral artery syndrome

Anterior cerebral artery syndrome

Posterior cerebral artery syndrome

Vertebrobasilar artery syndrome

Correct answer: Middle cerebral artery syndrome

Middle cerebral artery syndrome is characterized by contralateral sensory motor loss with the face and upper extremity affected more than the lower extremity. Post-CVA, these patients may have perceptual deficits, homonymous hemianopsia, Broca's aphasia, Wernicke's aphasia, and/or global aphasia. The middle cerebral artery supplies the lateral cerebral hemispheres, including the frontal, temporal, and parietal lobes.

The anterior cerebral artery supplies the medial part of the frontal and parietal lobe, basal ganglia, and corpus callosum. Patients with anterior cerebral artery syndrome have contralateral sensory and motor loss with legs more affected than the upper extremities. They have mental impairment, urinary incontinence, apraxia, slow delayed movement, and behavioral changes.

The posterior cerebral artery supplies the occipital lobe, medial and inferior temporal lobe, thalamus, and midbrain. With posterior cerebral artery syndrome, the patient can experience contralateral sensory and motor loss, homonymous hemianopsia, visual agnosia, oculomotor nerve palsy, involuntary movement, Pusher syndrome, and thalamic pain syndrome.

Patients with vertebrobasilar artery syndrome have a wide variety of symptoms that can be on the same side or opposite side of the infarct. There is cranial nerve involvement (diplopia, dysphagia, dysarthria, deafness, and vertigo) as well as ataxia. They may have Wallenberg's syndrome (deficits in visual disturbances, balance, and gait deficits) or locked-in syndrome (the patient is awake and aware but unable to speak or control any muscles beyond the eyes).

74.

Which of the following is a precaution that a PTA should consider prior to performing postural drainage of any kind in order to manually drain a patient's lungs?

Pulmonary edema

Aneurysm

Platelet count below 50,000

Medications that interfere with coagulation

Correct answer: Pulmonary edema

Pulmonary edema is a precaution the PTA should consider before performing postural drainage of any kind. The PTA should proceed with caution before performing any postural drainage techniques on a patient with pulmonary edema.

Aneurysm, a platelet count below 50,000, and the use of medications that interfere with coagulation are all precautions for the PTA to consider prior to performing percussive or shaking techniques. However, other postural drainage techniques may be used if these issues are present.

75.

A patient who recently suffered a CVA presents with right-sided motor and sensory loss, homonymous hemianopsia, visual agnosia, involuntary movement, oculomotor nerve palsy, thalamic pain syndrome, and Pusher syndrome (pushing toward the involved side).

Which CVA syndrome is this patient **MOST LIKELY** to have?

Posterior cerebral artery syndrome

Anterior cerebral artery syndrome

Middle cerebral artery syndrome

Vertebrobasilar artery syndrome

Correct answer: Posterior cerebral artery syndrome

The posterior cerebral artery supplies the occipital lobe, medial and inferior temporal lobe, thalamus, and midbrain. With posterior cerebral artery syndrome, a post-CVA patient may experience contralateral sensory and motor loss, homonymous hemianopsia, visual agnosia, oculomotor nerve palsy, involuntary movement, Pusher syndrome, and thalamic pain syndrome.

The anterior cerebral artery supplies the medial part of the frontal and parietal lobe, basal ganglia and corpus callosum. Patients with anterior cerebral artery syndrome have contralateral sensory and motor loss with legs more affected than the upper extremities. They have mental impairment, urinary incontinence, apraxia, slow delayed movement, and behavioral changes.

The middle cerebral artery supplies the lateral cerebral hemispheres, including the frontal, temporal and parietal lobes. Patients with middle cerebral artery syndrome have contralateral sensory motor loss with the face and upper extremities affected more than the lower extremities. Additionally, they can have perceptual deficits, homonymous hemianopsia, Broca's and Wernicke's aphasia, and global aphasia.

Patients with vertebrobasilar artery syndrome have a wide variety of symptoms that can be on the same side or opposite side of the infarct. There is cranial nerve involvement (diplopia, dysphagia, dysarthria, deafness, and vertigo) as well as ataxia. They may have Wallenberg's syndrome (deficits in visual disturbances, balance, and gait deficits) or locked-in syndrome (the patient is awake and aware but unable to speak or control any muscles beyond the eyes).

76.

Which of the following is a sign of left-sided heart failure?

Dyspnea

Edema

Jugular vein distension

Cyanosis

Correct answer: Dyspnea

Signs associated with left-sided heart failure include dyspnea, orthopnea, and wheezing. Left-sided heart failure (forward heart failure) is a condition in which blood is not adequately pumped into systemic circulation. It is caused by the inability of the left ventricle to pump and increases in ventricular end-diastolic pressure and left atrial pressures.

Right-sided heart failure is associated with dependent edema, jugular vein distension, and cyanosis. Right-sided heart failure (backward heart failure) is a condition in which the blood is not adequately returned from the systemic circulation to the heart. It is caused by the failure of the right ventricle and increased pulmonary artery pressure.

77.

A PTA is providing an educational seminar on the risks of peripheral vascular disease. Which of the following would help to push a clinician toward a diagnosis of chronic venous insufficiency, as opposed to chronic arterial insufficiency?

Edema present and ulceration at the medial malleolus

Pale, shiny skin

Gangrenous ulceration on toes

Calf pain

Correct answer: Edema present and ulceration at the medial malleolus

Chronic venous insufficiency (CVI) may lead to edema and ulceration at the medial malleolus, whereas chronic arterial insufficiency (CAI) may cause dependent rubor.

CVI may cause dark, thick skin, whereas CAI may cause pale, shiny skin. CAI can lead to gangrene, while CVI does not. Calf pain is more indicative of arterial insufficiency as opposed to venous.

78.

A physical therapist assistant is working with a patient who has peripheral vascular disease. What is a sign or symptom that is **MOST** indicative of chronic arterial insufficiency?

Nail changes

Dark, cyanotic thickened skin

Stasis dermatitis

Minimal to moderate steady aching pain in the lower leg

Correct answer: Nail changes

Nail changes are a sign of chronic arterial insufficiency. Other signs of chronic arterial insufficiency include pale, shiny, dry skin; hair loss; decreased or absent pulses; and pain of the lower leg or dorsum of the foot.

Signs of chronic venous insufficiency include (but are not limited to) dark, cyanotic thickened skin; stasis dermatitis; and minimal to moderate steady aching pain in the lower leg. The therapist should be able to differentiate between signs of venous and arterial insufficiency.

79.

A PTA is reviewing some basic home discharge instructions with a patient. Which of the following is **NOT** a common post-surgery discharge instruction?

Walking/standing should be avoided for at least 2 weeks post-op

Don't soak affected area until incision is healed completely

Wear stockings for 2 weeks post-op

No driving motorized vehicles for 8 weeks post-op

Correct answer: Walking/standing should be avoided for at least 2 weeks post-op

In many cases, walking and standing should be initiated as quickly as possible. This will help to promote healing, circulation, and strengthening. There are some surgeons who may have specific protocols which delay standing and ambulation, but this is rarely for as long as 2 weeks and is used most often to protect specific grafts.

80.

When performing percussive techniques to assist with pulmonary drainage, the PT percusses the area of the thorax that corresponds to the involved lung segment. The duration of this technique depends on the patient's needs and tolerance.

In general, assuming the patient can tolerate it, what is an appropriate length of time to spend performing this technique?

Three to five minutes

Two to three minutes

One minute

No more than three minutes

Correct answer: Three to five minutes

When performing percussive techniques, the PT or PTA must pay close attention to the patient's tolerance. Assuming the patient is able to safely receive percussion, it is appropriate to perform this technique for three to five minutes at a time.

81.

A patient arrives for cardiac rehab after suffering a cardiovascular event. His medication list indicates that he is taking a beta-blocker. For which of the following must the PTA monitor during treatment?

Intensity via RPE scale

Fluid and electrolyte imbalances

Headaches

Dizziness

Correct answer: Intensity via RPE scale

Because beta-blockers control the patient's heart rate, PTAs cannot monitor intensity via HR increase. Therefore, an alternative intensity measurement is needed, such as an RPE scale.

Fluid and electrolyte imbalances are common with diuretics. Headaches are common with diuretics and nitrates. Dizziness is common with ACE inhibitors and nitrates.

82.

The physical therapist assistant assesses her patient's blood pressure prior to intervention and finds it to be 130/85 mmHg. How should this reading be interpreted?

Stage 1 hypertension

Normal

Stage 2 hypertension

Elevated

Correct answer: Stage 1 hypertension

Blood pressure should be assessed prior to, during, and after intervention. It is important to note that the majority of patients with hypertension are without symptoms, which is why monitoring is so important. Blood pressure may be classified in one of five ways:

- *Normal adult blood pressure: < 120 systolic, < 80 diastolic*
- *Elevated adult blood pressure: 120-129 systolic and < 80 diastolic*
- *Stage 1 hypertension: 130-139 systolic and/or 80-89 diastolic*
- *Stage 2 hypertension: at least 140 systolic and/or at least 90 diastolic*
- *Hypertensive crisis: > 180 systolic and/or > 120 diastolic*

It is not within the scope of a PTA's practice to diagnose a patient as prehypertensive or hypertensive, but the physician should be informed of the patient's blood pressure.

83.

In the hospital, a patient reports that he is experiencing chest pain. He describes it as the worst pain he has ever experienced. Where would this report rank on the anginal scale?

4+

2+

5+

1+

Correct answer: 4+

Angina, or chest pain, is often ranked on a scale running from 1+ to 4+. 4+ represents the worst pain ever experienced, while 1+ is barely painful. 2+ is moderate pain.

5+ is not on this scale.

84.

A male patient is severely dehydrated. Which of the following hematocrit values would likely be found?

60%

45%

40%

30%

Correct answer: 60%

Hematocrit refers to the percentage of red blood cells as compared to the rest of the blood. When one is dehydrated, there is more concentration of cells as compared to the rest of the blood. For men, a normal value is 45% to 52%. Therefore, a value of 60% is indicative of dehydration.

85.

How should a patient be positioned to promote postural drainage of the superior segments of the lower lobes?

The patient lies in the prone position with two pillows under their hips

The patient lies in the supine position with a pillow under their knees

The patient sits, leaning over a folded pillow at 30 degrees

The patient lies on their side in a head-down position with a pillow under their knees

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Correct answer: The patient lies in the prone position with two pillows under their hips

To clear the superior segments of the lower lobes, the patient should lie on their abdomen (prone) with two pillows under their hips. The therapist performs percussions over the middle of the back at the tip of the scapula on either side of the spine.

The patient should lie supine with a pillow under the knees to promote postural drainage of the anterior segments of the upper lobes. The patient should sit and lean over a folded pillow at 30 degrees to promote postural drainage of the posterior segments of the upper lobes. The patient should lie on their side in a head-down position with a pillow under the knees to promote postural drainage of the anterior basal segments of the lower lobe.

86.

A therapist asseses his patient's respiratory rate (RR) as 22 breaths per minute. How should this finding be classified?

Tachypnea

A normal RR for an adult

Asthma

Bradypnea

Correct answer: Tachypnea

The normal respiratory rate (RR) for an adult is 12-20 breaths per minute. Tachypnea is an increase in RR to 22 or more breaths per minute. The normal respiratory rates for patients of various ages are as follows:

- *Adult: 12-20 breaths per minute*
- *Newborn: 30-40 breaths per minute*
- *Child: 20-30 breaths per minute*

Bradypnea is a decrease in RR to 10 or fewer breaths per minute. Asthma is a chronic pulmonary condition. While tachypnea sometimes occurs with asthma, this is not universally the case.

87.

Which condition is an **OBSTRUCTIVE** pulmonary disease that is often seen in premature infants who have been on high pressures of mechanical ventilation?

Bronchopulmonary dysplasia

Respiratory distress syndrome

Bronchiectasis

Cystic fibrosis

Correct answer: Bronchopulmonary dysplasia

Bronchopulmonary dysplasia is an obstructive pulmonary disease. It often occurs in premature infants with respiratory distress syndrome who were given high pressures of mechanical ventilation. Bronchopulmonary dysplasia can also result from infection. When viewed under imaging technology, lungs affected by this condition show areas of pulmonary immaturity and dysfunction due to hyperinflation.

Respiratory distress syndrome is a condition of alveolar collapse in a premature infant due to lung immaturity and inadequate levels of pulmonary surfactant. Bronchiectasis is a chronic congenital or acquired disease characterized by abnormal dilation of the bronchi and excessive sputum production. Cystic fibrosis is a genetically inherited disease that affects the mucus-producing glands of the lungs, sweat glands, digestive tract, and genitourinary system.

88.

Which of the following is the volume of gas inhaled and exhaled during a normal resting breath?

Tidal volume

Inspiratory capacity

Vital capacity

Residual volume

Correct answer: Tidal volume

Tidal volume is the volume of gas inhaled and exhaled during a normal resting breath. Tidal volume refers to the normal amount of breath inhaled and/or exhaled in the absence of extra effort.

Inspiratory capacity is the amount of air that can be inhaled from the resting end-expiratory position (inspiratory reserve volume + tidal volume). Vital capacity is the amount of air under volitional control. Residual volume is the volume of gas that remains in the lungs after expiratory reserve volume has been exhaled.

89.

A PT is auscultating a patient's heart and vasculature. When assessing the carotid artery, he hears a "blowing" sound. Which of the following terms applies to this noise?

Bruit

Thrill

Gallop

Lub-dub

Correct answer: Bruit

A bruit is a blowing sound which is commonly heard when auscultating the femoral and carotid arteries.

A thrill is a tremor which accompanies a cardiac murmur. A gallop rhythm is a third heart sound heard when there should only be 2. Lub-dub describes the closing of the atrioventricular and semilunar valves respectively.

90.

A patient is being tested for intermittent claudication while walking on a treadmill. During the test, the patient rates the pain as a grade III on the intermittent claudication pain scale.

Which of the following **BEST** describes this rating?

High levels of pain from which the patient cannot be distracted

Pain from which the patient can be distracted

Very slight pain

Pain so great that the patient can no longer focus or continue the test

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Correct answer: High levels of pain from which the patient cannot be distracted

During a test for intermittent claudication, a patient walks on a treadmill and the clinician asks about their symptoms. A four-level rating scale is used to determine severity:

- ***Grade I**: No or little symptoms*
- ***Grade II**: Some discomfort, but tolerable. Patient is able to be distracted from the pain.*
- ***Grade III**: Very intense pain from which the patient cannot be distracted*
- ***Grade IV**: Unbearable pain*

91.

Which of the following tests would be **MOST** appropriate to get visual data on the internal structures of the heart, such as the individual chambers?

Echocardiogram

Electrocardiogram

Chest X-ray

Holter monitor

Correct answer: Echocardiogram

An echocardiogram can be used to gain visual insight on the internal structures of the heart.

An electrocardiogram gives meaningful data on the electrical activity of the heart. A chest X-ray can give some data about large arteries and the lungs but is often used for bony tissue. A Holter monitor is used as a portable method to gain long-term insight into a patient's heart rate and rhythm.

92.

A PT performs the percussion test on a patient to determine the integrity of his venous valves. Which of the following veins is typically tested during this exam?

Saphenous vein

Posterior tibial vein

Femoral vein

Lateral plantar veins

Correct answer: Saphenous vein

The percussion test examines the great saphenous vein in order to assess the integrity of the venous valves. To perform this test, the PT palpates the vein and taps roughly 20 cm proximal. A positive test of feeling the pulse wave with the distal hand is indicative of valvular dysfunction.

93.

A patient is exercising on the arm ergometer. Which of the following is **TRUE** of this mode of exercise?

It will elicit a lower VO2 max than a lower body ergometer

It will elicit a lower heart rate than a lower body ergometer

It will elicit a higher stroke volume than a lower body ergometer

It will elicit a lower blood pressure than a lower body ergometer

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Correct answer: It will elicit a lower VO2 max than a lower body ergometer

Often, lower body ergometry is the mode of choice for most patients, simply due to convenience and ease. However, some patients may require the use of an upper body ergometer, which differs from a lower body version in several ways, such as eliciting a lower VO2 max, eliciting a higher heart rate, a higher blood pressure, and lower stroke volume.

94.

A physical therapist is measuring oxygen saturation on a patient using a pulse oximeter. Which of the following patients has a higher likelihood of inducing error on the device?

A patient who just had their nails painted

A patient with high blood pressure

A patient with tachycardia

A patient who has just finished exercising

Correct answer: A patient who just had their nails painted

Nail polish, nail deformities, and disorders affecting circulation in the digits can cause an error on a pulse oximeter.

Patients with high blood pressure, a fast heart rate, or those who have just finished exercising do not inherently have a greater risk of getting an error reading on a pulse oximeter.

95.

A PTA is working with a patient with diagnosed COPD. While the patient is riding the exercise bike, the PTA measures his oxygen saturation and finds it to be 82%. Which of the following is **TRUE**?

The exercise session should be immediately terminated

The patient should continue exercising but should be instructed to breathe more deeply

This is a normal reading for an individual with COPD during exercise

This is an abnormally high reading

Correct answer: The exercise session should be immediately terminated

When a patient has lung disease, their SAO2 should not drop below 86%. If it does, the session should be terminated, and steps should be taken to allow the patient to quickly recover.

96.

A patient's lab values indicate a PaO2 level of 80 mmHg. Which of the following is **TRUE** regarding this value?

This is an abnormally low value

This is an abnormally high value

This is a normal value

This is indicative of hyperoxygenation

Correct answer: This is an abnormally low value

Normal PaO2 levels are found between 90 and 100 mmHg. Values below 90 may be indicative of COPD, heart conditions, and certain neuromuscular diseases. Values above this level are indicative of hyperoxygenation.

97.

You are treating a patient who has Raynaud's syndrome. Which of the following modalities would be **LEAST** appropriate for this patient?

Ice massage

Spinal mobilizations

Aerobic exercise exceeding 15 minutes

Anaerobic exercise involving isotonic and isometric contractions

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Correct answer: Ice massage

Patients with Raynaud's syndrome often experience color changes, pain, and other symptoms in response to cold conditions. Therefore, it is often inappropriate to use cold modalities when treating these patients, especially on the distal portions of the extremities.

Spinal mobilizations and aerobic and anaerobic exercise are all appropriate with regard to this specific condition.

98.

A patient arrives for his outpatient physical therapy appointment in the morning with an extra large coffee in his hand. As he's getting started, he notes that he felt one small flutter in his chest. He reports that he feels perfectly fine, and after resting for 15 minutes, he has not felt any more flutters. His blood pressure and heart rate are both normal.

Which of the following is **MOST** likely in this case?

He had a heart palpitation due to excess caffeine intake

He is having a heart attack

He is having a stroke

He is experiencing symptoms of an abdominal aortic aneurysm

Correct answer: He had a heart palpitation due to excess caffeine intake

Heart palpitations can occur for a variety of reasons, many of which are very serious, and PTs should not take this issue lightly. However, in many cases, a quick, isolated heart palpitation can be due to stress, caffeine, or other, more benign, reasons.

All of the information provided, especially that of him resting and feeling better, indicates that a heart attack, stroke, or aneurysm is unlikely.