FSBPT NPTE-PT - Quiz Questions with Answers

Integumentary System

1.

Physical therapy has been ordered for a 57-year-old female patient admitted to the ICU one week ago for myocarditis. During the physical exam, the therapist notes that the patient has partial-thickness skin loss on their left hip that currently presents as a blister on the skin. How should the therapist document this finding?

Stage II pressure injury

Stage I pressure injury

Stage III pressure injury

Stage IV pressure injury

Correct answer: Stage II pressure injury

Pressure injuries are graded based on the stage of their severity. A stage II pressure injury occurs when there is partial-thickness skin loss involving the epidermis and/or dermis skin layers and presents as a blister, abrasion, or shallow crater.

A stage I pressure injury occurs when the skin is fully intact, is nonblanchable, may have a temperature change (cool or warm), and may have a sensation (itching or pain). A stage III pressure injury occurs when there is full-thickness skin loss that involves subcutaneous tissue damage or necrosis, and presents as a deep crater. A stage IV pressure injury occurs when there is full-thickness skin loss that involves tissue necrosis and damage to bone, muscle, or other supporting structures.

2.

A physical therapist is conducting an evaluation of a patient in an outpatient facility for balance training. During the subjective portion, the patient notes that they have impaired light touch sensation, experience recurrent skin infections, and experience impaired melanin production.

Based on this information, which is the **MOST** likely affected structure?

Epidermis

Dermis

Hypodermis

Subcutaneous tissues

Correct answer: Epidermis

The epidermis is a skin layer that itself contains five layers. The five layers of the epidermis from outermost to innermost are as follows:

1. *Stratum corneum: shingle-like dead cells filled with keratin*
2. *Stratum lucidum: formed from dead cells; only occurs in thick portions of the palms and soles of the feet*
3. *Stratum granulosum: contains live keratinocytes and Langerhans cells*
4. *Stratum spinosum: spiny layer which also contains keratinocytes and Langerhans cells*
5. *Stratum basale: contains epidermal cells, melanocytes, and Merkel cells*

Because the patient has reported problems with light touch sensation, skin infection, and melanin production, it is most likely that the epidermis is affected.

The dermis contains structures such as blood vessels, nerve endings, and hair follicles; these functions do not fit the patient's description as well as the epidermis. The hypodermis contains loose connective tissue and fat tissue for insulation and support. The term "subcutaneous tissue" is another name for the hypodermis.

3.

You are a physical therapist treating a patient in the hospital for wound care. During the wound assessment, you document a stage II pressure injury over the patient's lateral epicondyle. Since the wound is non-exudative, you would like to monitor it frequently.

Which of the following is the **BEST** dressing for the patient's wound?

Transparent film

Hydrocolloid

Foam

Alginate

Correct answer: Transparent film

Transparent films are adhesive dressings that are clear with semipermeable membranes. Transparent films are used for stage I and II pressure ulcers, skin donor sites, and autolytic debridement. They are permeable to moisture vapor and atmospheric oxygen, but impermeable to bacteria, water, and contaminants. An added benefit of transparent films is the ability to visualize a wound without the removal of the dressing, which is indicated in this scenario.

Hydrocolloids are adhesive wafers that form a gelatinous mass over the wound. Foams are hydrophilic or hydrophobic semipermeable membranes with varying adhesive and absorptive properties. Alginates and hydrofibers are soft, absorbent, nonwoven dressings derived from seaweed and have a fluffy cotton-like appearance.

4.

Use the following scenario to answer the question.

Which of the following forms of debridement is **MOST** appropriate for the patient's pressure injury?

Enzymatic

Mechanical

Sharp

Biological

Correct answer: Enzymatic

Pressure injuries are lesions caused by unrelieved pressure resulting in ischemic hypoxia and damage to underlying tissue. Pressure injuries are most commonly associated with prolonged pressure or shear forces and generally affect those who are immobilized. There are various methods used for debridement of wounds, including autolytic, enzymatic, mechanical, sharp, surgical, ultrasound, and biological. Enzymatic debridement is appropriate for individuals with moist necrotic wounds.

Mechanical debridement is most often used to remove foreign materials or contaminated tissue. Sharp debridement is most indicated for the excision of leathery eschar. Biological debridement is rarely used due to the psychological stress it causes for patients.

5.

While working in a hospital setting as a physical therapist, you are treating a patient with a chronic foot ulcer with poor healing. During the assessment, you observe that the wound has tunneling and large amounts of exudate which will require packing.

Of the following, which is the **BEST** dressing for the patient's wound?

Alginate

Hydrocolloid

Hydrogel

Foam

Correct answer: Alginate

Alginates are nonwoven fluffy dressings that are derived from seaweed. They have a fluffy, cotton-like appearance. They react to the wound's exudate in order to form a viscous hydrophilic gel mass that covers the vicinity of the wound. Alginates are used for wounds that require packing and absorption.

Hydrocolloids are adhesive wafers that form a gelatinous mass over the wound. Hydrogels are water- or glycerin-based gels with varying absorptive capacities; these are insoluble in water. Foams are semipermeable membranes that can be either hydrophilic or hydrophobic, with varying adhesive and absorptive properties.

6.

Use the following scenario to answer the question.

During initial rehabilitation, what will be the **MOST** appropriate treatment to provide?

Exercises to promote deep breathing and chest expansion

Management of chronic pain

Training in activities of daily living

Scar management

Correct answer: Exercises to promote deep breathing and chest expansion

Burn injuries can result from heat, chemicals, electricity, sunlight, or radiation. Burn wounds are classified according to their depth, characteristics, and healing or scarring process. Third-degree wounds are characterized by complete destruction of the epidermis, dermis, and subcutaneous tissues, possibly extending into muscle. The overall goals of burn injury rehabilitation are to limit loss of ROM, reduce edema, prevent predictable contractures, and prevent or reduce complications of immobilization. For a patient with third-degree burn injuries on their chest and abdomen, deep breathing exercises to promote chest expansion are highly appropriate during early rehabilitation.

Management of chronic pain, training in activities of daily living, and scar management are considered effective treatments during the post-acute phase of rehabilitation.

7.

Use the following scenario to answer the question.

Which of the following interventions is **MOST** appropriate to address the patient's leg ulcer?

Inelastic compression bandages worn during the day and night

Inelastic compression bandages worn during the day only

Walking 30-60 minutes, 3-5 times per week

Duplex ultrasound

Correct answer: Inelastic compression bandages worn during the day and night

Venous ulcers can occur anywhere in the lower leg and are associated with chronic venous insufficiency, valvular incompetence, and venous hypertension. Venous ulcers present with dark pigmentation, are shallow, and may be fibrotic. Treatment of venous ulcers focuses on inelastic or short-stretch compression bandages worn during the day and night, with compression pumps and limb elevation as adjunct treatments.

Inelastic compression bandages should be worn during the day and night, not only during the day. Walking 30-60 minutes, 3-5 times per week is an exercise protocol used for arterial ulcers. Duplex ultrasound may be used to examine ulcer perfusion but is not considered a treatment for venous ulcers.

8.

Wound care has been ordered for a patient in the hospital ICU who has been unable to transfer out of bed for two weeks. During the assessment, the physical therapist notes a partial-thickness wound with mild exudate on the patient's sacrum.

Which of the following is the **BEST** dressing for the patient's wound?

Hydrocolloid

Transparent film

Hydrogel

Foam

Correct answer: Hydrocolloid

Hydrocolloids are adhesive wafers that form a gelatinous mass over the wound. Hydrocolloids contain particles that are hydroactive and absorptive and interact with the fluid from the wound, which is what makes the gelatinous mass. Because this patient is unable to transfer out of bed and will likely be assisted with transfers, a dressing that minimizes friction, such as a hydrocolloid, should be used.

Transparent films are adhesive dressings that are clear with semipermeable membranes. Hydrogels are water- or glycerine-based gels that are available in solid sheets, amorphous gels, or impregnated gauze. Foams are semipermeable membranes that may be hydrophilic or hydrophobic.

9.

Use the following scenario to answer the question.

Which of the following **BEST** describes the patient's ulcer?

Venous

Arterial

Pressure

Contusion

Correct answer: Venous

Venous ulcers can occur anywhere in the lower leg and are associated with chronic venous insufficiency, valvular incompetence, and venous hypertension. Venous ulcers present with dark pigmentation, are shallow, and may be fibrotic. Pain is usually mild and comfort is often improved with leg elevation. Venous ulcers typically present with exudate and are not associated with diminished pedal pulses.

Arterial ulcers are often associated with arteriosclerosis, are usually deep, typically diminish pedal pulses, are generally painful, and generally do not present with drainage. Pressure injuries may present similarly to venous ulcers but vary in patient history. Contusions are a category of skin injury but are not classified as ulcers.

10.

Wound care has been ordered for a 57-year-old male patient recently admitted to the hospital for multiple lower extremity wounds and poor wound healing. During the assessment, the physical therapist notes a full-thickness wound on the patient's left medial leg with minimal to moderate exudate which will require packing.

Of the following, which dressing will be **MOST** appropriate for the patient's wound?

Foam

Hydrocolloid

Hydrogel

Transparent film

Correct answer: Foam

Foams are hydrophilic or hydrophobic semipermeable membranes with varying adhesive and absorptive properties. This type of dressing is used for partial and full-thickness wounds with minimal to moderate exudate. Foams are used as a secondary dressing for wounds with packing to provide additional absorption. Foams can vary in thickness and absorption capacity.

Hydrocolloids are adhesive wafers that form a gelatinous mass over the wound, which are used for protection of partial-thickness wounds with mild exudate. Hydrogels are water-based gels contained within impregnated gauze, which are used with partial and full-thickness wounds or burns. Transparent film is a clear, adhesive, semipermeable membrane dressing that is used with stage I and II pressure ulcers, autolytic debridement, and skin donor sites.

11.

A physical therapist is seeing a patient in an outpatient clinic for left shoulder pain. At the beginning of the session, the patient informs the therapist that they fell onto their left thigh earlier in the day. The physical therapist decides to assess the patient's thigh and observes a bluish discoloration of the skin.

Of the following, what is the **MOST** likely explanation for this presentation?

Ecchymosis

Contusion

Petechiae

Laceration

Correct answer: Ecchymosis

Ecchymosis is a skin trauma described as skin that has bluish discoloration due to the extravasation of blood in the subcutaneous tissue. It is the result of trauma to the underlying vessel walls. While the superficial epithelial cells may also be damaged, this type of damage does not cause bluish discoloration. Given the information in this scenario, this is the most likely explanation.

A contusion is a skin trauma described as skin that is not broken but is discolored and swollen. Petechiae is a skin trauma described as skin that contains purple hemorrhagic spots. A laceration is an irregular tear of the skin that produces a torn, jagged wound.

12.

Use the following scenario to answer the question.

Which of the following **BEST** indicates how much water the patient should be encouraged to drink per day?

3 or more liters

1 liter

2 liters

2.5 liters

Correct answer: 3 or more liters

Pressure injuries are lesions caused by unrelieved pressure resulting in ischemic hypoxia and damage to underlying tissue. Pressure injuries are commonly associated with prolonged pressure or shear forces and are most often seen in those who are immobilized. Patients with wounds require approximately 3 or more liters of water per day to promote adequate hydration for healing.

1 liter, 2 liters, and 2.5 liters are less than the required amount of hydration to promote wound healing.

13.

A patient who has recently been admitted to the hospital for a full-thickness burn requires skin grafting for closure of the wound. Due to minimal viable donor sites on the patient's body, the overseeing hospitalist has recommended culturing of the patient's skin and temporary use of an allograft.

Of the following, which is the **MOST** likely graft to be used?

Cultured skin graft

Allograft

Split-thickness graft

Autograft

Correct answer: Cultured skin graft

A cultured skin graft is conducted using skin that is grown in a laboratory from the patient's own skin. In this scenario, an allograft may be used temporarily until an autograft or cultured graft is available.

An allograft is conducted using the skin from another human, such as cadaver skin. In this scenario, an allograft is already being used temporarily while the cultured skin graft is being prepared. An autograft is conducted using skin from the actual patient. A split-thickness graft contains the epidermis and upper layers of the dermis from the donor site. Neither an autograft nor a split-thickness graft will be used in this case since the hospitalist has decided to use a cultured skin graft.

14.

While working as a travel physical therapist, you are reviewing the medical chart for a patient who was admitted to the hospital's burn unit and evaluated by a different physical therapist. In the patient's chart, the burn wound evaluation describes a burn that has completely destroyed the affected epidermis, dermis, and subcutaneous tissues. The chart also shows that the patient has little pain and the affected area appears white.

How is this burn wound **BEST** classified?

Full-thickness burn (third-degree)

Deep partial-thickness burn (second-degree)

Superficial partial-thickness burn (second-degree)

Full-thickness burn (fourth-degree)

Correct answer: Full-thickness burn (third-degree)

A full-thickness burn (third-degree) is a burn that completely destroys the epidermis, dermis, and subcutaneous tissues. A full-thickness burn may or may not involve the muscle. This type of burn requires the removal of eschar and skin grafting, which makes scarring likely. Full-thickness burns typically involve little pain because nerve endings are destroyed. The other categories of burn wounds are:

- *An epidermal burn (first-degree) is a burn that only damages the epidermal skin layer, leaving a pink/red appearance but no blistering. This type of burn does not scar and heals within three to seven days.*
- *A superficial partial-thickness burn (second-degree) is a burn that damages the epidermis skin layer and the upper layers of the dermis skin layer.*
- *A deep partial-thickness burn (second-degree) is a burn that severely damages the epidermis and dermis skin layers and causes damage to the sweat glands, hair follicles, and nerve endings.*
- *A subdermal burn (fourth-degree) is a burn that completely destroys the epidermis and dermis skin layer and damages subcutaneous tissues and muscle.*

Note that a fourth-degree burn is subdermal, not full-thickness.

15.

Use the following scenario to answer the question.

Which of the following **BEST** describes the patient's burn wound?

Third degree

First degree

Second degree

Fourth degree

Correct answer: Third degree

Burn injuries can result from heat, chemicals, electricity, sunlight, or radiation. Burn wounds are classified according to their depth, characteristics, and healing or scarring process. Third-degree wounds are characterized by complete destruction of the epidermis, dermis, and subcutaneous tissues, possibly extending into muscle. Third-degree wounds may be white, charred, tan, or black and are often dry or leathery.

First-degree burns are characterized by damage to the epidermis only. Second-degree burns are characterized by damage to the epidermis and dermis. Fourth-degree burns are characterized by complete destruction of the epidermis and dermis with the involvement of subcutaneous tissue and muscle.

16.

A physical therapist is providing gait training to a 25-year-old patient in the hospital. During the session, the patient scrapes their arm against the wall and reports pain. Upon further examination, the therapist notes minor abrasion of the patient's arm without any sign of redness or bleeding.

What layer of skin has **MOST** likely been affected by this injury?

- **Epidermis**
- Dermis
- Hypodermis
- Corium

Correct answer: Epidermis

The epidermis is the most superficial layer of the skin and does not contain blood vessels. Because there are no signs of redness or bleeding, it is not likely that the injury has reached the dermis, which contains blood vessels.

The dermis contains blood vessels and, if damaged, would likely cause bleeding or redness in this scenario. The hypodermis is the layer of skin beneath the dermis and will likely cause more bleeding if affected during an injury. The term "corium" is an alternative name for the dermis.

17.

Use the following scenario to answer the question.

Based on this presentation, which of the following is **MOST** likely to improve comfort for the patient?

Leg elevation

Standing upright

Sitting upright

Leg dependency

Correct answer: Leg elevation

Venous ulcers can occur anywhere in the lower leg and are associated with chronic venous insufficiency, valvular incompetence, and venous hypertension. Pain is usually mild with venous ulcers, and comfort is often improved with leg elevation.

Positions promoting leg dependency, such as sitting and standing upright, are generally used to improve pain for patients with arterial ulcers.

18.

Physical therapy has been ordered for a patient in a skilled nursing facility presenting with a stage III pressure injury. Based on this information alone, which of the following patients is **LEAST** likely to be seen for this condition?

A 90-year-old woman who has a body mass index of 26 and ambulates three times per day with her caregiver

A dependent 85-year-old woman who requires extensive assistance for bed mobility and is non-ambulatory

An 82-year-old woman who has a body mass index of 16.5 and ambulates with her caregiver 3 times per day

A 91-year-old woman who has venous stasis and uses a wheelchair

---

Correct answer: A 90-year-old woman who has a body mass index of 26 and ambulates three times per day with her caregiver

This woman is slightly overweight, so she is likely to have ample soft tissue to protect her bony prominences. In addition, she ambulates. Mobilization is important for reducing pressure injury development.

Immobilization, friction, nutritional deficiency, peripheral vascular disease, and maceration are all risk factors that are associated with pressure injuries. Pressure injuries are graded by the stage of tissue damage, and they will progress to the next stage if left untreated. The 82-year-old woman with a low body mass index would have little soft tissue to protect her bony prominences, making them more susceptible to pressure injuries. The 85-year-old woman who is dependent on bed mobility is not mobile, making her at high risk for pressure injuries. In addition, she would likely experience high amounts of friction during transfers. The 91-year-old woman with vascular disease and limited mobility would have an increased likelihood of developing a pressure injury.

19.

A physical therapy evaluation has been ordered for a 45-year-old female patient who has recently undergone an appendectomy. During the evaluation, the therapist notes wound dehiscence at the surgical site. Which of the following wound care treatments would be **MOST** beneficial for wound closure?

Vacuum-Assisted Closure (VAC)

Whirlpool therapy (WP)

Wet-to-dry gauze dressings

Kilohertz ultrasound

Correct answer: Vacuum-Assisted Closure (VAC)

Negative pressure wound therapy is used as an adjunct to wound healing in order to facilitate wound closure. Vacuum-Assisted Closure (VAC) is a wound closure technique that uses an open-cell foam dressing placed into the wound. It is sealed with a drape and controlled subatmospheric pressure is applied via a specialized device. This controls edema, increases blood flow, and removes infectious material.

Whirlpool therapy (WP) is a form of hydrotherapy that is indicated for ulcers with large amounts of exudate, slough, and necrotic tissue. It increases circulation and assists in the debridement of wounds or removal of dressings. It would not be indicated in this case. Wet-to-dry gauze dressings consist of wet gauze applied to the wound bed and allowed to dry on the wound. Removal of the dry dressing debrides the wound and pulls away any necrotic tissue. It is a form of nonselective debridement and would not be appropriate in this case. Kilohertz ultrasound is a form of selective debridement. This long-wave low-frequency ultrasound removes necrotic tissue and increases angiogenesis, preparing the wound bed for grafting or flap closure.

20.

A physical therapist is preparing to see a 30-year-old male patient admitted to the hospital for loss of functional mobility and symptoms related to the progression of an autoimmune disease. Upon entering the room, the physical therapist determines they will not need to wear personal protective equipment to conduct the session.

Which of the following is the **MOST** likely comorbidity this patient has?

Psoriasis

Impetigo

Herpes 1

Tinea pedis

Correct answer: Psoriasis

Psoriasis is a chronic autoimmune disorder of the skin. It is characterized by dry, scaly, erythematous plaques which are commonly found on the ears, scalp, knees, elbows, and genitalia. It is hereditary and not spread through direct contact.

Impetigo is a bacterial infection that is associated with inflammation, small pus-filled vesicles, and itching. It is contagious through direct contact, especially in the elderly and pediatric populations. Herpes 1 is a viral infection of the skin. Its symptoms include itching and soreness, followed by a vesicular eruption of the skin on the face or mouth, called a cold sore. It is spread by contact. Tinea pedis, or athlete's foot, is a fungal infection. It causes erythema, inflammation, pruritus, itching, and pain. The condition is treated with antifungal creams and is spread via direct contact.

21.

A physical therapist is working with a female patient in a skilled nursing facility on therapeutic exercise. The patient has a known history of diabetes and hypothyroidism. During the session, the therapist notes that the patient's skin is very dry and flaky.

Which is the following is the **MOST** likely condition the therapist is observing?

Xeroderma

Rash

Urticaria

Psoriasis

Correct answer: Xeroderma

Xeroderma is a skin condition that is best described as excessively dry skin. Xeroderma also causes epithelium shedding. Xeroderma can indicate a deficiency of thyroid function or diabetes.

A rash is characterized by local redness and eruption on the skin's surface. Urticaria is characterized by smooth, red, elevated patches of skin. Psoriasis is an auto-immune skin condition characterized by the appearance of dry, silvery, scaly patches of skin.

22.

A physical therapist is conducting an evaluation with a patient who has recently been admitted to a skilled nursing facility for loss of functional mobility and recurring falls. During the session, the therapist notes gangrenous skin on the patient's lower legs and feet, which prompts the therapist to contact the patient's physician.

Which of the following is the **MOST** likely cause of the therapist's concern?

Arterial ulcer

Pressure ulcer

Venous ulcer

Decubitus ulcer

Correct answer: Arterial ulcer

Gangrene is black skin that is a result of the death of body tissue, commonly due to lack of blood flow to the area. Arterial ulcers are caused by arterial insufficiency, which refers to a lack of adequate blood flow to a part of the body, typically occurring over the lower legs and feet. With arterial ulcers, black, gangrenous skin can develop in the skin adjacent to the ulcer.

A pressure ulcer, also called a decubitus ulcer, is caused by unrelieved pressure on an area, resulting in ischemic hypoxia and damage to the tissue. Clinical features include location over bony prominences, red, brown/black, or yellow color, and pain. The degree of pressure ulcer involvement depends on the thickness of skin loss. A venous ulcer is due to chronic venous insufficiency and is typically associated with edema. It can occur anywhere in the lower leg and is common over the medial malleolus. Gangrene is absent.

23.

A 52-year-old female patient in the hospital currently recovering from abdominal surgery is demonstrating compromised healing of their surgical site. The wound currently includes moist necrotic tissue and leathery eschar.

Of the following, what is the **BEST** debridement technique for this patient?

Sharp

Autolytic

Mechanical

Surgical

Correct answer: Sharp

Sharp debridement is a selective debridement method that uses sterile instruments to remove necrotic wound tissue only and does not require anesthesia. It is appropriate for removing moist necrotic tissue and leathery eschar.

Autolytic debridement is a selective debridement method that uses occlusive or semi-occlusive dressings to solubilize necrotic tissue. Mechanical debridement is a nonselective debridement method that uses physical forces to remove contaminated tissue. Surgical debridement is a selective debridement method performed by a physician or surgeon using sterile instruments, which removes most or all necrotic tissue.

24.

Use the following scenario to answer the question.

Based on the location of the patient's burn, which of the following is the physical therapist's **GREATEST** concern?

Restrictive lung disease

Sepsis

Increased metabolic activity

Acute kidney failure

Correct answer: Restrictive lung disease

Burn injuries can result from heat, chemicals, electricity, sunlight, or radiation. Burn wounds are classified according to their depth, characteristics, and healing or scarring process. Pulmonary complications may occur from burn injuries, including pulmonary edema due to smoke inhalation, restrictive lung disease due to burns to the trunk, and pneumonia. Because the patient has experienced injuries consistent with the description of third-degree burns to her abdomen and chest, restrictive lung disease is the most appropriate option related to burn location.

Sepsis, increased metabolic activity, and acute kidney failure are all major concerns for burn injuries. However, they are not as related to the position of the patient's burn injuries as lung restriction.

25.

A physical therapist is preparing for an evaluation with a patient in a skilled nursing facility. During the chart review, the therapist notes a condition related to the patient's sebaceous glands. During the physical exam, where will the physical therapist be **LEAST** likely to observe this condition?

The patient's palms

The patient's axilla

The patient's posterior thigh

The patient's forehead

Correct answer: The patient's palms

Sebaceous glands are exocrine glands that are found on all skin surfaces except the soles and palms. Sebaceous glands secrete sebum through hair follicles that defend the skin from fungus and bacteria.

Sebaceous glands are normally found everywhere except the soles and palms. This means that the patient's axilla, posterior thigh, and forehead are likely to have sebaceous glands.

26.

Physical therapy has been ordered for a 68-year-old female patient in a skilled nursing facility. During the evaluation, the therapist notes marked edema in the patient's leg with dark pigmentation and thick, fibrous tissue over the medial malleolus. The patient's pedal pulse is normal and they report little to no pain.

Which of the following is the **MOST** likely cause of the patient's presentation?

Valvular incompetence

Chronic arterial insufficiency

Peripheral neuropathy

Ischemic hypoxia

Correct answer: Valvular incompetence

Valvular incompetence is associated with venous ulcers. Other causes associated with venous ulcers include chronic venous insufficiency, venous hypertension, and a history of Deep Vein Thrombosis (DVT). Indicators such as dark pigmentation, fibrotic tissue, normal pedal pulse, and minimal pain can be helpful in differentiating venous ulcers from arterial ulcers in this scenario.

Chronic arterial insufficiency is a cause associated with arterial ulcers. Peripheral neuropathy is a cause associated with diabetic ulcers. Ischemic hypoxia is a cause associated with pressure ulcers.

27.

A physical therapist is performing an evaluation on a 67-year-old male patient with a known history of cardiovascular disease in a subacute facility. During the physical exam, the therapist notices that a patient's skin color has taken on a new bluish, slate-colored discoloration compared to the recent findings in his medical chart.

Of the following, what is the **MOST** likely explanation for this presentation?

Congestive heart failure

Liver disease

Internal hemorrhage

Anemia

Correct answer: Congestive heart failure

Cyanosis or bluish, slate-colored discoloration of skin could indicate that the patient has a venous obstruction. Cyanosis of the skin could also indicate that the patient has congestive heart failure, advanced lung disease, congenital heart failure, or is lacking in oxygen. Since this patient has a known history of cardiovascular disease, congestive heart failure may be more likely.

Skin that has a cherry-red appearance is indicative of liver disease. Pallor, or paleness of the skin, might indicate an internal hemorrhage, anemia, or a lack of exposure to sunlight.

28.

Use the following scenario to answer the question.

A physical therapist assesses the patient's ankle-brachial index and observes a reading of 0.5. Which of the following is **MOST** appropriate regarding compression?

All sustained compression is contraindicated

High compression is contraindicated

High compression is indicated

The lowest effective compression is indicated

Correct answer: All sustained compression is contraindicated

Venous ulcers can occur anywhere in the lower leg and are associated with chronic venous insufficiency, valvular incompetence, and venous hypertension. Venous ulcers typically present with exudate and are rarely associated with diminished pedal pulses, although this patient's ABI is low. For patients with venous ulcers, high compression is contraindicated with ABI <0.7, and all sustained compression is contraindicated with ABI <0.6. Because the patient's ABI is 0.5, all sustained compression is contraindicated.

High compression is indicated with ABI >0.7 and contraindicated with ABI <0.7. The lowest level of effective compression is preferred when possible for patients with ABI >0.6.

29.

A physical therapist is performing an evaluation on a 67-year-old male patient in a skilled nursing facility. During the physical exam, the therapist notes small, grainy skin growths on the patient's hands and fingers. The patient notes that these occur frequently and often feel better if he uses an ice pack on them.

What is the **MOST** likely condition the therapist is observing?

Warts

Tinea pedis

Cellulitis

Impetigo

Correct answer: Warts

Warts are a common, benign infection caused by Human Papillomaviruses (HPVs). Warts typically present as small bumps which often appear on an individual's hands, fingers, or feet. Transmission occurs through direct contact.

Impetigo is a superficial skin infection caused by staphylococci or streptococci. It is a bacterial infection. Cellulitis is characterized by inflammation of cellular or connective tissue of the skin and tends to be poorly defined and widespread. Cellulitis is commonly characterized by infection from streptococcal or staphylococcal bacteria. Tinea pedis, commonly known as athlete's foot, is a fungal infection of the foot. It typically appears between the toes. Athlete's foot causes erythema, inflammation, pruritus, itching, and pain.

30.

Wound care has been ordered for a 55-year-old female patient recently admitted to the hospital for multiple lower extremity wounds and poor wound healing. During the assessment, the physical therapist notes an exudative wound on the patient's right medial ankle with infection, necrosis, and tunneling.

Of the following, which dressing will be **MOST** appropriate for the patient's wound?

Gauze

Hydrogel

Foam

Transparent film

Correct answer: Gauze

Gauze dressings are non-adhesive absorptive dressings that are composed of synthetic fiber or cotton. Gauze dressings are used for exudative wounds, wounds with tunneling, and clean wounds that need protection. It is permissible to use gauze dressings in various manners, including dry, wet, moist, or impregnated with antiseptics.

Hydrogels are water-based gels contained within impregnated gauze, which are used with partial and full-thickness wounds or burns. Foams are hydrophilic or hydrophobic semipermeable membranes with varying adhesive and absorptive properties, which are used for partial and full-thickness wounds with minimal to moderate exudate. Transparent film is a clear, adhesive, semipermeable membrane dressing that is used with stage I and II pressure ulcers, autolytic debridement, and skin donor sites.

31.

When examining the foot of an elderly patient in the long-term care wing of a skilled nursing facility, you notice they have a pressure ulcer on their fully intact skin that is nonblanchable, cool to the touch, and itchy. How should you **BEST** document this finding?

Stage I pressure injury

Stage II pressure injury

Stage III pressure injury

Stage IV pressure injury

Correct answer: Stage I pressure injury

Pressure injuries are graded based on the stage of their severity. A stage I pressure injury occurs when the skin is fully intact, is nonblanchable, may have a temperature change (cool or warm), and may have a sensation (itching or pain).

A stage II pressure injury occurs when there is partial-thickness skin loss involving the epidermis and/or dermis skin layers and presents as a blister, abrasion, or shallow crater. A stage III pressure injury occurs when there is full-thickness skin loss that involves subcutaneous tissue damage or necrosis, and presents as a deep crater. A stage IV pressure injury occurs when there is full-thickness skin loss that involves tissue necrosis and damage to bone, muscle, or other supporting structures.

32.

You are providing therapeutic exercise to a 25-year-old male patient in an outpatient facility. The patient has no significant medical history and has not eaten for 4 hours prior to the appointment. During the session, you note that the patient's skin is moist to the touch.

Of the following options, what is the **MOST** likely reason for this symptom?

Exercise

Pneumonic crisis

Hot drink ingestion

Fever

Correct answer: Exercise

Moist skin (hyperhidrosis) is a normal response to exercise due to increased perspiration. Since the patient is actively exercising in this scenario, this is the most likely cause of hyperhidrosis.

Moist skin can also be caused by fever, pneumonic crisis, and ingestion of hot drinks. However, none of these causes are indicated by the information in this scenario.

33.

Physical therapy has been ordered for a patient recovering from a chronic, non-healing diabetic ulcer on the plantar aspect of their foot. While providing non-weight-bearing gait training to the patient, the therapist educates the patient's caregiver on diabetic foot ulcers.

Which of the following is the **MOST** accurate education for the patient's caregiver?

Diabetic ulcers are typically not painful because sensory loss is generally present.

Diabetic ulcers cause severe pain that may increase with limb elevation.

Diabetic ulcers are painful, but only upon palpation.

Diabetic ulcers can be painful depending upon their stage of severity.

Correct answer: Diabetic ulcers are typically not painful because sensory loss is generally present.

Diabetic ulcers are associated with peripheral neuropathy and arterial disease, and they are caused by recurring damage to insensitive skin. Diabetic ulcers are typically not painful even when undergoing palpation because sensory loss is generally present. It is also common for sepsis to be present in diabetic ulcers, and gangrene may develop. For this reason, it is important to protect against diabetic ulcers even if they are not painful.

Arterial ulcers, not diabetic ulcers, cause severe pain that can increase with limb elevation. Venous ulcers, not diabetic ulcers, cause an aching pain depending on the individual's position. Pressure ulcers, not diabetic ulcers, can be painful depending upon their stage of severity.

34.

You are performing a physical therapy evaluation on a 63-year-old female patient in a skilled nursing facility. During the integumentary assessment, you notice a thickened skin fold at the base of the patient's second finger. Of the following, what is the **MOST** likely explanation for this?

Primary lymphedema

Crohn's disease

Congestive heart failure

Allergic reaction

Correct answer: Primary lymphedema

A thickened fold of skin at the base of the second toe or second finger (also known as Stemmer's sign) can be a sign of primary lymphedema.

Clubbing nails may indicate Crohn's disease, lung pathologies, ulcerative colitis, or a benign congenital issue. Cyanosis (bluish skin pigmentation) may indicate congestive heart failure, lung disease, heart disease, or venous obstruction. Urticaria (hives) is a rash caused by an allergic reaction, usually to drugs or infection.

35.

A patient with a large, full-thickness burn has been admitted to the hospital's burn unit and is not responding to rehabilitation due to poor wound healing. As a result, the patient is recommended for grafting to close the wound because they have viable donor sites.

Which of the following grafts will **MOST** likely be used?

Full-thickness autograft

Partial thickness autograft

Allograft

Xenograft

Correct answer: Full-thickness autograft

In this example, the patient should undergo an autograft. An autograft is conducted using skin from a donor site on the patient. Because the patient's burn injury is full-thickness, a full-thickness graft will likely be used.

An allograft, or homograft, is conducted using the skin from another human, such as cadaver skin. A heterograft, or xenograft, is conducted using the skin of another species, such as a pig. These are both typically used as temporary grafts until an autograft is possible.

36.

A patient has recently been admitted to the hospital for a full-thickness burn. To achieve closure of the wound until the patient has healthy donor sites available, the hospitalist has recommended skin grafting from a cadaver.

Which of the following is the **MOST** likely graft to be used?

Allograft

Xenograft

Heterograft

Autograft

Correct answer: Allograft

An allograft is a skin graft that is conducted using the skin of another human, such as a cadaver. Most human tissue and organ transplants are allografts. Allografts are often temporary grafts for large burns until an autograft is available.

A xenograft, or heterograft, is conducted using the skin from another species, such as a pig. An autograft is conducted using skin from the actual patient.

37.

Use the following scenario to answer the question.

Which of the following stages **BEST** describes the patient's pressure injury?

Stage III

Stage I

Stage II

Stage IV

Correct answer: Stage III

Pressure injuries are lesions caused by unrelieved pressure resulting in ischemic hypoxia and damage to underlying tissue. Pressure injuries are most commonly associated with prolonged pressure or shear forces and generally affect those who are immobilized. Stage III pressure injuries are characterized by full-thickness skin loss that involves damage to or necrosis of subcutaneous tissue, potentially extending to the underlying fascia.

Stage I pressure injuries are characterized by nonblanchable erythema of intact skin. Stage II pressure injuries are characterized by partial-thickness skin loss involving the epidermis, dermis, or both. Stage IV pressure injuries are characterized by full-thickness skin loss with extensive destruction, tissue necrosis, or damage to muscle or bone.

38.

Physical therapy has been ordered for a 47-year-old female patient with a known history of autoimmune diseases who has recently been admitted to the hospital following a traumatic brain injury. During the physical exam, the physical therapist observes taut, firm, edematous skin that is difficult to mobilize.

What is the **MOST** likely condition the therapist is observing?

Scleroderma

Warts

Cellulitis

Impetigo

Correct answer: Scleroderma

Scleroderma is an autoimmune disorder. It is characterized by chronic, diffuse disease of connective tissues causing fibrosis of the skin, joints, blood vessels, and organs. It is an immune disorder and is not transmitted to another person. An early sign of scleroderma is taut, firm, edematous skin. Given the patient's history of autoimmune disease, this condition is more likely.

Warts are a benign, viral infection caused by Human Papillomaviruses (HPVs). They are transmissible through direct contact. Cellulitis is a bacterial infection characterized by the suppurative inflammation of cellular or connective tissue in or near the skin. It can be contagious. Impetigo is a superficial skin infection caused by staphylococci or streptococci. It is a bacterial infection that is highly contagious and transmitted person-to-person.

39.

Use the following scenario to answer the question.

What is the **BEST** timing of pain medication around physical therapy for this patient?

30 minutes before the session

30 minutes into the session

60 minutes before the session

60 minutes after the session

Correct answer: 30 minutes before the session

Burn injuries can result from heat, chemicals, electricity, sunlight, or radiation. Burn wounds are classified according to their depth, characteristics, and healing or scarring process. Third-degree wounds are characterized by complete destruction of the epidermis, dermis, and subcutaneous tissues, possibly extending into muscle. For patients with burn injuries receiving rehabilitation, therapy should be scheduled 30-45 minutes after pain medication for optimal pain management.

Pain medication delivered during or after a therapy session will likely not be as effective as medication delivered 30-45 minutes before. Pain medication delivered 60 minutes before a therapy session will not be as effective as medication delivered 30-45 minutes before.

40.

You are performing a physical therapy evaluation for a patient in a subacute facility who has recently sustained an ankle burn. At the end of the evaluation, you position the patient comfortably in bed until their next care appointment.

How should you **BEST** position the patient's lower leg in order to reduce the development of a contracture?

Dorsiflexion

Plantarflexion

Supination and extension

External rotation, abduction, and flexion

Correct answer: Dorsiflexion

When a patient suffers from an ankle burn, the common deformity is plantar flexion. Dorsiflexion is the position that should be stressed when a patient has an ankle burn. The patient's foot and ankle should be in a neutral position and placed in a plastic ankle-foot orthosis for proper healing.

External rotation, abduction, and flexion are the physical therapy goals that should be stressed when a patient has a shoulder burn. Supination and extension are the physical therapy goals that should be stressed when a patient has an elbow burn. Plantarflexion is incorrect because it would promote the development of a plantarflexion contracture.

41.

While assessing the wound of a 60-year-old male patient in a skilled nursing facility, you observe a thin, clear, watery drainage from his surgical wound. When documenting the patient's wound condition, what is the **BEST** way to document this finding?

Serous drainage

Purulent drainage

Sanguineous drainage

Thin drainage

Correct answer: Serous drainage

Serous drainage is a thin, clear, and watery serum.

Purulent wound drainage is a milky drainage, usually thick, that can be gray, green, or yellow. Sanguineous drainage contains blood and is prevalent among deeper wounds. The term "thin drainage" is not widely used.

42.

You are conducting a physical therapy evaluation for a patient who has recently been admitted to the hospital for a severe electrical burn. During the physical exam, you observe a burn wound that appears charred. You also observe that the epidermis, dermis, subcutaneous tissues, and muscles beneath the burn zone have been destroyed.

Of the following, how should you **BEST** document these findings?

Subdermal burn (fourth-degree)

Epidermal burn (first-degree)

Superficial partial-thickness burn (second-degree)

Deep partial-thickness burn (fourth-degree)

Correct answer: Subdermal burn (fourth-degree)

A subdermal burn (fourth-degree) is a burn that appears charred and the epidermis, dermis, subcutaneous tissues, and muscles have been destroyed. This type of burn can heal with skin grafting and scarring, but it will require extensive surgery, and amputation is sometimes required. The other categories of burn wounds are:

- *An epidermal burn (first-degree) is a burn that only damages the epidermal skin layer, leaving a pink/red appearance but no blistering. This type of burn does not scar and heals within three to seven days.*
- *A superficial partial-thickness burn (second-degree) is a burn that damages the epidermis skin layer and the upper layers of the dermis skin layer.*
- *A deep partial-thickness burn (second-degree) is a burn that severely damages the epidermis and dermis skin layers and causes damage to the sweat glands, hair follicles, and nerve endings.*
- *A full-thickness burn (third-degree) is a burn that completely destroys the epidermis, dermis, and subcutaneous tissues.*

43.

A physical therapist performs wound care for a patient with a deep wound using vacuum assisted closure. Upon examining the contents of the wound vac after treatment, the examiner detects that the wound drainage contains blood. How should the therapist document this?

Sanguineous drainage

Serous exudate

Purulent drainage

Deep-wound exudate

Correct answer: Sanguineous drainage

Sanguineous drainage contains blood and is prevalent among deeper wounds. The term "drainage" is often used when referring to wound exudate.

Purulent wound drainage is a milky drainage, usually thick, that can be gray, green, or yellow. Serous drainage is a thin, clear, and watery serum (although it would not be referred to as serous exudate in this case). While sanguineous drainage does often arise from deeper wounds, deep-wound exudate is not a commonly used term.

44.

Physical therapy has been ordered for a patient recently admitted to the hospital for multiple radiation burns. During the evaluation, the physical therapist observes partial-thickness wounds with necrosis and slough.

Which of the following is the **BEST** dressing for the patient's wound?

Hydrogel

Transparent film

Hydrocolloid

Gauze

Correct answer: Hydrogel

Hydrogels are water- or glycerine-based gels that can come as a solid sheet, amorphous gel, or impregnated gauze. Hydrogels are dressings used for radiation burns and partial- to full-thickness wounds. Given the patient's presentation, this is the most appropriate option.

Transparent films are adhesive dressings that are clear with semipermeable membranes. Hydrocolloids are adhesive wafers containing hydroactive/absorptive particles that interact with wound fluid to form a gelatinous mass over the wound bed. Gauze dressings are non-adhesive absorptive dressings that are composed of synthetic fiber or cotton.

45.

A physical therapist is working with a 38-year-old male patient with slow wound healing following an ORIF procedure. The wound currently contains moist, necrotic tissue with foreign material. The physical therapist determines that the patient will benefit from mechanical debridement and begins educating them on the procedure.

Which of the following is the **BEST** way for the therapist to describe this treatment to the patient?

A nonselective debridement method that uses physical forces to remove contaminated tissue

A selective debridement method that uses physical forces to remove contaminated tissue

A selective debridement method that uses topical collagenolytic enzyme preparations to promote the liquefaction of necrotic tissues

A selective debridement method performed by a surgeon using sterile instruments to remove most necrotic tissue

---

Correct answer: A nonselective debridement method that uses physical forces to remove contaminated tissue

Mechanical debridement is a nonselective debridement method that uses physical forces to remove contaminated tissue. Examples include wet-to-dry gauze dressing, pulsatile lavage with suction, or whirlpool. This is not a selective debridement method.

Enzymatic debridement is a selective debridement method that uses topical collagenolytic enzyme preparations to promote the liquefaction of necrotic tissues. Surgical debridement is a selective debridement method performed by a surgeon using sterile instruments to remove most necrotic tissue and may require anesthesia.

46.

You are performing an evaluation on a 63-year-old female patient in an outpatient facility. During the subjective portion, the patient indicates that she has a history of type II diabetes, autoimmune conditions, and chronic low back pain. During the exam, the therapist notes plaques with scale-like coverings over the patient's skin, which the patient reports are itchy and sometimes painful.

Which of the following is the **MOST** likely condition the patient is presenting with?

Psoriasis

Cellulitis

Warts

Impetigo

Correct answer: Psoriasis

Psoriasis is an immune disorder of the skin. It is a chronic disease of the skin that is characterized by erythematous plaques that are covered with a silvery scale. Common complaints include itching and pain from the lesions.

Cellulitis is a bacterial infection. It is characterized by suppurative inflammation of cellular or connective tissue in or near the skin. It is commonly a streptococcal or staphylococcal infection and can be contagious. Warts are a viral infection of the skin. They are benign infections caused by Human Papillomaviruses (HPVs). They are transmissible through direct contact. Impetigo is a superficial skin infection caused by staphylococci or streptococci, and it is a bacterial infection.

47.

You are performing a physical therapy evaluation for a patient in the hospital who was admitted 12 days ago due to pneumonia with exacerbation of COPD. During the physical exam, you observe full-thickness skin loss on the patient's sacrum with visible tissue necrosis and damage to underlying muscle tissue.

What is the **BEST** action for the physical therapist to take?

Document stage IV pressure injury and notify the hospitalist immediately

Document stage I pressure injury

Document stage III pressure injury and notify the patient's nurse

Document stage IV pressure injury

Correct answer: Document stage IV pressure injury and notify the hospitalist immediately

Pressure injuries are graded based on the stage of their severity. A stage IV pressure injury occurs when there is full-thickness skin loss that involves tissue necrosis and damage to bone, muscle, or other supporting structures. A stage IV pressure injury is considered very serious and can quickly become life-threatening for a patient, so notifying the hospitalist is likely the best decision in this scenario.

A stage I pressure injury occurs when the skin is fully intact, is nonblanchable, may have a temperature change (cool or warm), and may have a sensation (itching or pain). A stage II pressure injury occurs when there is partial-thickness skin loss involving the epidermis and/or dermis skin layers and presents as a blister, abrasion, or shallow crater. A stage III pressure injury occurs when there is full-thickness skin loss that involves subcutaneous tissue damage or necrosis, and presents as a deep crater.

48.

You are conducting a physical therapy evaluation for a patient recently admitted to the hospital for injuries resulting from an MVA. During the physical exam, you observe a torn, jagged skin wound on the patient's left forearm.

What is the **BEST** way to document this finding?

Laceration

Ecchymosis

Abrasion

Contusion

Correct answer: Laceration

A laceration is a type of skin trauma in which the skin is torn, causing a jagged wound. This type of wound is irregular and does not have clear, discrete edges.

Ecchymosis is a skin trauma in which the skin has bluish discoloration due to the extravasation of blood. An abrasion is a skin trauma in which the skin is scraped away due to an injury. A contusion is an injury in which skin is bruised, painful, and swollen but not broken.

49.

A patient recently admitted to the hospital for a full-thickness burn requires skin grafting. Based on the circumstances, the hospitalist has recommended a xenograft procedure.

Which of the following patients will **MOST** likely benefit from a xenograft procedure?

A 32-year-old female with no healthy donor sites or available cadaver grafts

A 43-year-old male with healthy donor sites

A 54-year-old female with no healthy donor sites and an available cadaver graft

A 35-year-old male with small donor sites that may be cultured

---

Correct answer: A 32-year-old female with no healthy donor sites or available cadaver grafts

A xenograft is a skin graft that is conducted using the skin of another species, such as a pig. This graft is typically used as a temporary option until a more preferred graft is available. Given that this patient does not have healthy donor sites for an autograft or available cadaver grafts for an allograft, a xenograft is more appropriate when compared to the other patients.

Patients with healthy donor sites, available cadaver grafts, or sites that may be cultured are less likely to benefit from a xenograft.

50.

A physical therapist is assessing the skin of her patient during an initial evaluation in the hospital. Over the patient's sacral region, the therapist notes an area of intact, non-blanchable skin redness that is warm and tender to the touch.

How should the physical therapist report this finding?

Stage I pressure injury

Stage II pressure injury

First stage pressure injury

Stage IV pressure injury

Correct answer: Stage I pressure injury

Pressure injuries are graded based on the stage of their severity. A stage I pressure injury occurs when the skin is fully intact, is nonblanchable, may have a temperature change (cool or warm), and may have a sensation (itching or pain).

A stage II pressure injury occurs when there is partial-thickness skin loss involving the epidermis and/or dermis skin layers and presents as a blister, abrasion, or shallow crater. A stage III pressure injury occurs when there is full-thickness skin loss that involves subcutaneous tissue damage or necrosis, and presents as a deep crater. A stage IV pressure injury occurs when there is full-thickness skin loss that involves tissue necrosis and damage to bone, muscle, or other supporting structures. Pressure injuries are classified as stage I, II, III, or IV. The term "first stage" is not widely used.

51.

Physical therapy has been ordered for a patient in a skilled nursing facility who has been on bed rest for several days due to multiple chronic health conditions. During the evaluation, the therapist observes full-thickness skin loss on the patient's left buttock that presents as a deep crater. The injury includes necrosis of subcutaneous tissue and no damage to the underlying fascia.

Based on this information, what is the **BEST** action for the therapist to take?

Document stage III pressure injury and notify the patient's nurse

Document stage III pressure injury

Document stage II pressure injury and notify the patient's nurse

Document stage IV pressure injury

Correct answer: Document stage III pressure injury and notify the patient's nurse

Pressure injuries are graded based on the stage of their severity. A stage III injury ulcer occurs when there is full-thickness skin loss that involves subcutaneous tissue damage or necrosis, and presents as a deep crater. Because stage III pressure injuries can quickly progress, it would be most appropriate for the therapist to notify the patient's nurse.

A stage I pressure injury occurs when the skin is fully intact, is nonblanchable, may have a temperature change (cool or warm), and may have a sensation (itching or pain). A stage II pressure injury occurs when there is partial-thickness skin loss involving the epidermis and/or dermis skin layers and presents as a blister, abrasion, or shallow crater. A stage IV pressure injury occurs when there is full-thickness skin loss that involves tissue necrosis and damage to bone, muscle, or other supporting structures.

52.

You are preparing to see a 20-year-old male patient recently admitted to the hospital following an MVA. During chart review, you note that the patient has a genetic condition affecting the eccrine glands of his skin.

Of the following, what body function should you **MOST** expect to be impaired?

Body temperature regulation

Bacterial defense

Production of sweat in response to emotional stress

Skin lubrication

Correct answer: Body temperature regulation

Eccrine glands are sweat glands that control body temperature. Eccrine glands are open on the skin and are widely distributed on the body.

Sebaceous glands are exocrine glands that secrete sebum, which defends against bacteria and fungus and lubricates the skin. Apocrine glands are sweat glands found in the axillary and genital areas, and they respond to emotional stress.

53.

Physical therapy has been ordered for a 75-year-old female patient recently admitted to the hospital for a fall resulting in multiple fractures. The patient has been on bed rest for two days and the physical therapist is assessing the patient for pressure injuries.

Of the following, which area would be the **LEAST** likely to develop a pressure injury?

Medial malleolus

Ischial tuberosity

Calcaneus

Lateral malleolus

Correct answer: Medial malleolus

A pressure ulcer is caused by unrelieved pressure on a body region, resulting in ischemic hypoxia and damage to the tissue. It typically occurs over bony prominences that are exposed to pressure and prolonged positioning. The medial malleolus is not typically exposed to prolonged pressure.

The most common areas exposed to pressure include the sacrum, coccyx, greater trochanter, ischial tuberosity, calcaneus, and lateral malleolus. When a patient is positioned side-lying, the lateral malleolus (rather than the medial malleolus) is exposed to pressure and shear forces on the bed.

54.

A physical therapist is working with a 30-year-old female patient in an outpatient clinic for left knee pain. During the session, the patient mentions recent challenges with armpit and groin area sweat which are affecting her confidence in public.

Of the following, what should the patient **MOST** likely benefit from reducing?

Emotional stress

Body temperature

Environmental humidity

Exposure to bacteria

Correct answer: Emotional stress

Apocrine glands are sweat glands that are stimulated by emotional stress. Apocrine glands are located in the axillary and genital vicinities. These glands open into the hair follicles found within these areas.

Apocrine glands are not stimulated by body temperature, environmental humidity, or the presence of bacteria and fungi.

55.

A physical therapist is preparing to see a 34-year-old male patient in the hospital for multiple deep partial-thickness burns. The patient's family has asked the therapist to explain the healing process for burns and would like to know what amount of tissue is likely to recover. What is the **MOST** likely area of tissue to recover for this patient?

Zone of hyperemia

Zone of stasis

Zone of coagulation

Zone of hypoxia

Correct answer: Zone of hyperemia

The three zones of burn wounds are as follows:

- *Zone of hyperemia: the burn exhibits minimal cell injury; cells will likely recover*
- *Zone of stasis: cells are injured and may die within 24-48 hours unless they receive specialized treatment; these injuries are sensitive to infection and trauma*
- *Zone of coagulation: cells are irreversibly injured; cell death occurs*

In this context, there is no "zone of hypoxia".

56.

Use the following scenario to answer the question.

During the dressing of the patient's pressure injury, the physical therapist observes mild-to-moderate exudate. Which of the following dressings is **MOST** appropriate?

Foam

Transparent film

Hydrocolloid

Alginate

Correct answer: Foam

Pressure injuries are lesions caused by unrelieved pressure resulting in ischemic hypoxia and damage to underlying tissue. Pressure injuries are most commonly associated with prolonged pressure or shear forces and are most often seen in those who are immobilized. Stage III pressure injuries are characterized by full-thickness skin loss that involves damage to or necrosis of subcutaneous tissue, potentially extending down to the underlying fascia.

Various dressings are used to protect and clean wounds. Foam dressings are semipermeable membranes that may be used with partial and full-thickness wounds with minimal to moderate exudate. Because the patient presents with a full-thickness with minimal-to-moderate exudate, foam is the most appropriate option provided.

Transparent films are clear, adhesive, semipermeable membrane dressings used for stages I and II pressure injuries. Hydrocolloids are adhesive wafers used to protect partial-thickness wounds. Alginates are soft, absorbent dressings for wounds with moderate to large amounts of exudate.

57.

While working in a burn unit, you examine a patient with an abdominal burn wound that has a bright pink and moist appearance, has blisters, and blanches when touched. How should this burn wound be classified?

Superficial partial-thickness burn (second-degree)

Deep partial-thickness burn (second-degree)

Partial-thickness burn (third-degree)

Full-thickness burn (third-degree)

Correct answer: Superficial partial-thickness burn (second-degree)

In this example, the patient has a superficial partial-thickness burn. A superficial partial-thickness burn (second-degree) is a burn that damages the epidermis skin layer and the upper layers of the dermis skin layer. It has a bright pink appearance, blisters, and blanches when touched. The other types of burn wounds are:

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

58.

Physical therapy has been ordered for a patient in the hospital with a known history of cardiovascular disease and blood clotting disorder. During the physical exam, the physical therapist notices that the skin on the patient's left leg contains purple hemorrhagic spots on it.

How should the therapist **BEST** document this finding?

Petechiae

Ecchymosis

Abrasion

Laceration

Correct answer: Petechiae

Petechiae is a skin trauma in which the skin contains purple hemorrhagic spots. Based on the patient's history of blood clotting disorder, this is the most likely explanation.

An abrasion is a skin trauma in which the skin is scraped away due to an injury. Ecchymosis is a skin trauma in which the skin has bluish discoloration due to the extravasation of blood (typically related to trauma). A laceration is a skin trauma in which the skin is torn, causing a jagged wound.

59.

A physical therapist performs wound care for a patient with an infected wound using vacuum-assisted closure. Upon examining the contents of the wound vac after treatment, the examiner detects that the wound drainage contains green-colored pus. How should the therapist document this?

Purulent drainage

Serous drainage

Sanguineous drainage

Purulous drainage

Correct answer: Purulent drainage

Purulent wound drainage is a milky drainage, usually thick, that can be gray, green, or yellow.

Serous drainage is a thin, clear, and watery serum. Sanguineous drainage contains blood and is more prevalent among deep wounds. "Purulous drainage" is not a commonly used term.

60.

A physical therapist is assessing the wound of a 57-year-old female patient in the hospital. The patient's wound currently contains necrotic tissue, although the patient is medically stable. The patient has a blood clotting disorder and is currently on anticoagulant therapy.

Of the following, which is the **BEST** treatment for this patient?

Autolytic debridement

Mechanical debridement

Sharp debridement

Biological debridement

Correct answer: Autolytic debridement

Autolytic debridement is a selective debridement method that uses occlusive or semi-occlusive dressings to solubilize necrotic tissue only by phagocytic cells and enzymes inherent to the tissue. It is appropriate for necrotic wounds in medically stable patients as well as individuals who cannot tolerate other forms of debridement or are currently on anticoagulant therapy.

Mechanical debridement is a nonselective debridement method that uses physical forces to remove contaminated tissue. Sharp debridement is a selective debridement method that uses sterile instruments to remove only necrotic wound tissue and does not require anesthesia. Biological debridement uses maggots to debride nonviable tissue.

61.

A physical therapist is assessing a 60-year-old male patient admitted to the hospital for a foot infection with multiple amputations over the last several weeks. The patient has not been able to leave the bed, so the physical therapist assesses for pressure injuries and finds a stage III pressure injury on the patient's sacrum. The patient is currently dealing with life-threatening sepsis and does not have known cardiac disease, pulmonary disease, or diabetes.

What debridement procedure will be **MOST** appropriate for this patient?

Surgical

Mechanical

Biological

Autolytic

Correct answer: Surgical

In order to improve the healing potential of a wound, it is sometimes necessary to perform a surgical debridement procedure. In this procedure, a surgeon uses sterile instruments to remove necrotic tissue. This treatment is indicated for deep or complicated pressure injuries, especially when an infection is threatening a patient's life.

Mechanical debridement is a nonselective debridement method that uses physical forces, such as irrigation, to remove contaminated tissue. Biological debridement (rarely used) uses biological agents, such as maggots grown in a sterile environment, to remove necrotic tissue. Autolytic debridement is a selective method that uses the body's own enzymes and moisture beneath a dressing to liquefy nonviable tissue.

62.

A physical therapist is seeing a patient for knee pain in an outpatient facility. At the start of the session, the patient notes that they fell onto their shoulder earlier in the day. The therapist examines the patient and notices that the patient's skin is red and swollen on his left shoulder, but the skin is not broken.

How should the physical therapist **BEST** document this finding?

Contusion

Petechiae

Abrasion

Ecchymosis

Correct answer: Contusion

A contusion is a skin trauma described as skin that is not broken but is discolored and swollen. Of the options provided, this is most consistent with the patient's presentation.

Petechiae is a skin trauma in which the skin contains purple hemorrhagic spots. An abrasion is a skin trauma in which the skin is scraped away due to an injury. Ecchymosis is a skin trauma in which the skin has bluish discoloration due to the extravasation of blood.

Cardiovascular & Pulmonary Systems

63.

You are working with a patient two days after a Coronary Artery Bypass Graft (CABG) in an inpatient setting. During your session, the patient begins demonstrating a cough with sputum production, adventitious breath sounds, and tachypnea. You suspect a pulmonary embolism. Which is the **MOST** appropriate test for the patient in this situation?

Ventilation-perfusion scan

PET scan

Thoracentesis

Fluoroscopy

Correct answer: Ventilation-perfusion scan

A ventilation-perfusion (V/Q) scan is a radiographic test that is used to detect the presence of pulmonary emboli. The V/Q scan has the ability to match the lung's ventilation pattern to the perfusion pattern. Given the patient's symptoms and your suspicion of a pulmonary embolism, this is the best option provided.

A PET scan uses a radioactive tracer during imaging that is often used to diagnose cancer. Thoracentesis is used to remove pleural fluid from the intrapleural space, which is used to diagnose fluid problems or remove excessive fluid. Fluoroscopy is a radiographic test used to observe diaphragmatic excursion.

64.

Use the following scenario to answer the question.

Based on the patient's presentation, which of the following is the **MOST** appropriate recommendation for the physical therapist to make?

Communication with the physician

Continued physical activity and therapy as tolerated

Immediate medical attention

Education on weight management

Correct answer: Communication with the physician

Heart failure is a clinical syndrome in which the heart cannot maintain adequate blood circulation to meet the body's metabolic needs. Types include left-sided heart failure (congestive heart failure), right-sided heart failure, and biventricular failure. Color zones associated with clinical manifestations of heart failure may inform a physical therapist's recommendations for care. The yellow zone of care for patients with heart failure involves weight gain (2-3 pounds in 24 hours), increased coughing, peripheral edema, increased shortness of breath with activity, or orthopnea. Recommendations for the yellow zone include communication with the physician regarding medication adjustments or other forms of care. Since the patient presents with increased shortness of breath with activity, this is the most appropriate recommendation.

The green zone of care for patients with heart failure applies to patients with no shortness of breath, chest pain, or decreased activity level; the recommendation for this zone is continuing physical activity and therapy as tolerated. The red zone of care for patients with heart failure applies to patients with shortness of breath at rest, unrelieved chest pain, weight gain (5 pounds in 3 days), or confusion; the recommendation for this zone is immediate medical attention. Patient education on weight management may be recommended for this patient but would not be the priority over communicating with the physician.

65.

Use the following scenario to answer the question.

Which of the following should the physical therapist be **MOST** concerned with based on the patient's lab values?

Bleeding risk

Tachycardia

Loss of consciousness

Shock

Correct answer: Bleeding risk

A complete blood cell count (CBC) is a laboratory test used to assess the status of a patient's blood, including white blood cell count, red blood cell count, erythrocyte sedimentation rate, hematocrit, hemoglobin, and platelet count. The normal range for platelet count is 150,000-400,000 cells/mm^3, and the patient's current value is 50,000 cells/mm^3. A low platelet count increases the risk of bleeding, and activity should be adjusted according to platelet count.

Tachycardia is associated with decreased hemoglobin and hematocrit. Fainting or loss of consciousness may occur with severe anemia. Shock may be a cause of increased hematocrit or hemoglobin.

66.

A physical therapist is preparing to treat a patient in an outpatient cardiac rehabilitation facility. Following the subjective portion, the therapist ends the session early because they believe treatment is contraindicated.

Which of the following did the patient **MOST** likely report to the therapist?

Unstable angina

Mild left hip pain

Resting systolic blood pressure of 150 mm Hg

Mild dehydration

Correct answer: Unstable angina

Inpatient and outpatient cardiac rehabilitation may be contraindicated in the presence of certain test results, signs, or symptoms. Some contraindications for cardiac rehabilitation include unstable angina, a resting systolic blood pressure of >200 mm Hg or a diastolic blood pressure >110 mm Hg, acute systemic illness or fever, severe orthopedic conditions that prohibit exercise, and other metabolic conditions such as hypo or hyperkalemia.

Although severe orthopedic conditions may contraindicate cardiac rehabilitation, mild left hip pain does not meet these criteria. A resting systolic blood pressure of 150 mm Hg is below the contraindicated threshold of 200 mm Hg. While mild dehydration could indicate potential electrolyte imbalance, there is not enough information provided to determine whether this is the result of hypokalemia or hyperkalemia.

67.

Use the following scenario to answer the question.

Which of the following **BEST** describes the patient's heart failure?

Right ventricular failure

Left ventricular failure

Biventricular failure

Myocardial infarction

Correct answer: Right ventricular failure

Heart failure is a clinical syndrome in which the heart cannot maintain adequate blood circulation to meet the body's metabolic needs. Types include left-sided heart failure (congestive heart failure), right-sided heart failure, and biventricular failure. Possible clinical manifestations of low cardiac output related to right ventricular failure include anorexia, nausea, bloating, cyanosis, right upper quadrant pain, jugular vein distension, right-sided S_3 sounds, and murmurs of pulmonary or tricuspid insufficiency. Given the patient's presentation including weight loss, jugular vein distension, and right-sided S_3 sounds, right ventricular failure is the most appropriate option provided.

Left ventricular failure may manifest as dyspnea, dry coughing, orthopnea, paroxysmal nocturnal dyspnea, tachycardia, fatigue, and murmurs of mitral or tricuspid regurgitation. Biventricular failure involves severe left ventricular pathology that increases pulmonary artery pressure and ultimately leads to right ventricular signs of heart failure. Myocardial infarction is a separate condition characterized by prolonged ischemia, injury, and death of the myocardium.

68.

You are assessing a patient in the hospital admitted for heart arrhythmias. To treat the arrhythmias, the patient has been put on a medication regimen to adjust their blood ion concentrations. During your assessment, you notice prolonged QT intervals on the patient's ECG. Which of these options is the **MOST** likely cause?

Hypocalcemia

Hypercalcemia

Hypokalemia

Hyperkalemia

Correct answer: Hypocalcemia

Hypocalcemia can cause depressed heart actions. This condition is characterized by a decrease in the blood's calcium ion concentration. Calcium has a direct effect on the contractile process of the cardiac muscle, so low calcium levels would decrease heart actions. On the ECG, it displays prolonged QT intervals. Given the patient's history, it is possible that their physician is adjusting for increased calcium ion concentrations, which may have caused hypocalcemia.

Hypercalcemia can cause increased heart actions. Hypokalemia, hypermagnesemia, and hypomagnesemia can cause arrhythmias. Hyperkalemia can also produce ECG changes such as widened PR intervals and QRS or, tall T waves.

69.

While assessing a patient's medical records, the examiner notices that the patient is taking diltiazem, which is a calcium channel blocker. Of the following options, which is the **MOST** likely scenario for this?

A 45-year-old patient with a resting heart rate of 120 beats per minute

A 30-year-old patient with an LDL cholesterol reading of 200 mg/dL

A 70-year-old patient with a resting heart rate of 90 beats per minute

A 45-year-old patient with a resting heart rate of 40 beats per minute

---

Correct answer: A 45-year-old patient with a resting heart rate of 120 beats per minute

Calcium channel blockers are used to:

- *Decrease heart rate*
- *Dilate coronary arteries*
- *Reduce blood pressure*
- *Inhibit the flow of calcium ions*
- *Decrease contractility*
- *Control arrhythmias*

Because the patient is demonstrating a significantly elevated heart rate at rest, a calcium channel blocker may be used to reduce heart rate.

A 70-year-old patient with a resting heart rate of 90 beats per minute would be considered normal. A patient with a resting heart rate of 40 beats per minute would be considered borderline low, and using medication to lower heart rate would not be indicated. Calcium channel blockers are not used to regulate blood lipids.

70.

While working with a 65-year-old male patient admitted for cardiac rehabilitation, the hospitalist approaches you and expresses that they are concerned about the patient's recent echocardiogram findings because they indicate a compromised ejection fraction. Which of the following test results would be the **MOST** concerning?

- **35%**
- 40%
- 50%
- 60%

Correct answer: 35%

Ejection fraction is the percentage of blood emptied from the ventricle during systole, which is a clinically useful measure of LV function. Normal ejection fraction is >55% and anything below 40% indicates heart failure.

Although 40% and 50% would also be clinically significant test results, they do not indicate the potential of heart failure as significantly as 35%. An ejection fraction of 60% would be considered normal in this case.

71.

A physical therapist is providing exercise treatment for a 60-year-old male patient in a skilled nursing facility who has limited exercise endurance. The patient has a relatively low VO_2 max, and the therapist is planning to focus on training the patient's heart rate.

Which of the following exercises will be **MOST** appropriate for the patient?

Arm ergometry

Leg ergometry

Swimming

Outdoor cycling

Correct answer: Arm ergometry

Various exercise types have different implications for the patient performing them. Dynamic arm exercise (arm ergometry) uses a smaller muscle mass and therefore results in a 60-70% lower VO_2 max compared to leg ergometry. Because this patient has a lower VO_2 max but the therapist is focusing on heart rate, this method of exercise will be the most appropriate.

Leg ergometry requires a higher VO_2 max for the same heart rate training compared to arm ergometry. Swimming would not be a practical or accessible form of exercise in this setting. Outdoor cycling would not be a practical or accessible form of exercise in this setting and would also require a higher VO_2 max.

72.

A physical therapist is preparing to see a patient in a subacute rehabilitation facility who has a history of stage I hypertension but is not at a high risk for heart attack or stroke. What is the **MOST** accurate advice to give the patient regarding managing their blood pressure through lifestyle changes?

Limit alcohol

Use antihypertensive medication

Stop exercising

Use antiarrhythmic medication

Correct answer: Limit alcohol

Individuals without high risk are advised to improve their lifestyles through weight loss, eating healthily, exercising more, limiting alcohol, and avoiding smoking.

Medications are prescribed for stage I hypertension if a patient has already had a heart attack or stroke or is at a high risk of heart attack or stroke in the presence of diabetes, chronic kidney disease, or atherosclerotic risk. Stopping exercise would not be recommended for a patient with stage I hypertension who is not at high risk for heart attack or stroke.

73.

You have been monitoring your patient's blood pressure at each treatment visit and you are concerned they may be classified as having Hypertension Stage 1, so you refer them to their physician. Of the following options, which reading would **MOST** likely give you this impression?

130/75 mmHg

125/70 mmHg

135/95 mmHg

115/120 mmHg

Correct answer: 130/75 mmHg

The American Heart Association suggests that an individual's blood pressure is categorized as Hypertension Stage 1 when the individual's systolic reading is between 130-139 OR their diastolic reading is between 80-89.

Blood Pressure Category	***Systolic BP mmHg***		***Diastolic BP mmHg***
Normal	*<120*	*AND*	*<80*
Elevated	*120-129*	*AND*	*<80*
Hypertension Stage 1	*130-139*	*OR*	*80-89*
Hypertension Stage 2	*≥140*	*OR*	*≥90*
Hypertensive Crisis	*≥180*	*AND/OR*	*≥120*

74.

Physical therapy has been ordered for a patient recently admitted to the inpatient unit for symptoms of a restrictive lung disorder. Without knowing the patient's specific symptoms, which of the following is the patient's **MOST** likely diagnosis?

Idiopathic pulmonary fibrosis

Bronchiectasis

Bronchopulmonary dysplasia

Respiratory distress syndrome

Correct answer: Idiopathic pulmonary fibrosis

Idiopathic pulmonary fibrosis is a type of interstitial lung disease and is classified as a restrictive disorder. This condition is characterized by chronic, progressive, fibrotic pneumonia that causes irreversible scarring of lung tissue.

All of the remaining options are obstructive disorders. Bronchiectasis is a chronic congenital or acquired disease, characterized by abnormal dilation of the bronchi and the excessive production of sputum. Bronchopulmonary dysplasia results from high pressures of mechanical ventilation, high fractions of inspired oxygen, and/or infection. Respiratory distress syndrome is an alveolar collapse in a premature infant resulting from lung immaturity.

75.

You are exercising with a patient admitted for congestive heart failure who is currently taking high doses of magnesium as prescribed by their physician. During your session, the patient begins to complain of heart palpitations.

Given the patient's history, what are you **MOST** concerned about in this situation?

Cardiac arrest

Coronary artery vasospasm

Decreased force of contraction

Ventricular fibrillation

Correct answer: Cardiac arrest

Hypermagnesemia can cause cardiac arrest. It can also lead to arrhythmias. This is because increased magnesium works as a calcium blocker. Because the patient is taking high amounts of magnesium, they will be more likely to experience hypermagnesemia.

Hypomagnesemia can cause coronary artery vasospasm. Hyperkalemia can cause a decreased force of contractions. Hypokalemia can cause ventricular fibrillation.

76.

You are working with a 65-year-old male patient in the hospital on increasing functional abilities and decide to perform inspiratory muscle training (IMT). Which of the following steps is **MOST** appropriate for this technique?

Choose an aperture opening that requires 30-70% intensity

Train for 5 minutes per session

Determine minimum inspiratory pressure

Instruct the patient to take deep breaths throughout the session

---

Correct answer: Choose an aperture opening that requires 30-70% intensity

Inspiratory muscle training is used to load muscles of inspiration by breathing through a series of graded aperture openings on a handheld device to increase the strength and endurance of these muscles. For training, it is recommended to choose an aperture that requires 30-70% of maximum inspiratory pressure (MIP).

Patients should perform MIP for at least 10-15 minutes per session. Prior to training, the therapist should determine maximum inspiratory pressure, not minimum inspiratory pressure. Patients should maintain their usual respiratory rate and tidal volume during the session, not focus on deep breathing.

77.

You are evaluating a patient in the intensive care unit and the medical chart states that the patient is recovering from a pneumonectomy. What was done during this procedure?

A lung was removed

A portion of the lung containing anatomical divisions was removed

A segment of a lobe was removed

A portion of the lung, which does not contain anatomical divisions, was removed

---

Correct answer: A lung was removed

A pneumonectomy is a procedure that involves the removal of a lung. If a patient has had a pneumonectomy, then they have had a lung removed.

If a patient has had a lobectomy, then they have had a lobe of the lung removed. If a patient has had a segmental resection, then they have had a segment of a lobe removed. If a patient has had a wedge resection, then they have had a portion of the lung, which does not contain anatomical divisions, removed.

78.

During an initial evaluation in the outpatient setting, the patient that you are working with mentions that they have had a mitral valve repair in the past. You decide to auscultate the patient's heart before initiating treatment. Where would be the **MOST** appropriate place to position the stethoscope?

Over the patient's fifth left intercostal space at the midclavicular area

Over the patient's second left intercostal space at the sternal border

Over the patient's fourth left intercostal space at the sternal border

Over the patient's second right intercostal space at the sternal border

---

Correct answer: Over the patient's fifth left intercostal space at the midclavicular area

The examiner is using this landmark to listen to the mitral valve, also known as the bicuspid valve. This is done by placing the stethoscope over the patient's fifth left intercostal space at the midclavicular area.

The auscultation landmark for the pulmonic valve is located at the second left intercostal space at the sternal border. The auscultation landmark for the tricuspid valve is located at the fourth left intercostal space at the sternal border. The auscultation landmark for the aortic valve is located at the second right intercostal space at the sternal border. There is no dicuspid valve in the heart.

79.

You are preparing to see a patient in the cardiovascular unit for a physical therapy evaluation. During your chart review, you read that the outermost layer of the patient's heart is damaged. Which of the following tissues is **MOST** likely affected?

The pericardium

The epicardium

The endocardium

The myocardium

Correct answer: The pericardium

The pericardium is the protective sac enclosing the heart. It is made of fibrous tissue and is the outermost layer.

The epicardium is the inner layer of the pericardium. The endocardium lines the heart's cavities. Myocardium is the heart tissue that forms the heart muscle and composes the majority of the heart.

80.

A patient has recently had a myocardial infarction and will be spending four days in the hospital. Which of the following activities is **MOST** appropriate for the patient prior to discharge?

Short exercise sessions, 2-3 times a day

Short exercise sessions, once a day

20-30 minutes of ambulation, 1-2 times per day

The use of elastic bands in a gentle exercise routine

Correct answer: Short exercise sessions, 2-3 times a day

Following an uncomplicated Myocardial Infarction (MI), the patient will spend 3-5 days in the hospital. It is appropriate for the patient to participate in short exercise sessions 2-3 times a day (not only once a day) during their hospital stay.

The patient should gradually increase ambulation time with the goal of 20-30 minutes per day, 1-2 times per week, by 4-6 weeks post-MI. This goal should not be attempted during the initial four days post-MI. The use of elastic bands during exercise routines should begin approximately five weeks post-MI.

81.

While preparing to perform an evaluation with a patient recently admitted for poor activity tolerance and chest pain, you receive new results from their recent echocardiogram. The results indicate right backflow of blood into the right ventricle during diastole. Which of the following is the **MOST** likely structure affected?

Pulmonary valve

Aortic valve

Tricuspid valve

Ventricular valve

Correct answer: Pulmonary valve

The pulmonary valve is a semilunar valve that prevents right backflow of blood into the right ventricle during diastole. Because the results of the echocardiogram indicate problems with right backflow during diastole, this is the most likely structure that could be affected.

The aortic valve is a semilunar valve that prevents left backflow of blood into the left ventricle during diastole. The tricuspid valve and the bicuspid valve are both atrioventricular valves that prevent the backflow of blood into the atria during ventricular systole. "Ventricular valve" is not a commonly used term.

82.

Use the following scenario to answer the question.

What is the **MOST** appropriate initial exercise intensity for the patient during phase 1 of cardiac rehabilitation?

2-3 METs

3-5 METs

5-7 METs

7-9 METs

Correct answer: 2-3 METs

Myocardial infarction (MI) describes prolonged ischemia, injury, and death of an area of the myocardium caused by occlusion of one or more of the coronary arteries. Following acute MI, activity can be increased once the acute MI has ended. During phase 1 of cardiac rehabilitation, low-intensity activities at 2-3 METs are appropriate for initial activities, with a limited of 5 METs or 70% of age-predicted heart rate max for 4-6 weeks following MI.

3-5, 5-7, and 7-9 METs are too intense for initial activities in phase 1 of cardiac rehabilitation. Activities may be progressed from 2-3 METs to 5 METs over time.

83.

Use the following scenario to answer the question.

Which of the following **BEST** describes the patient's symptoms of intermittent claudication?

Grade II

Grade I

Grade III

Grade IV

Correct answer: Grade II

Intermittent claudication refers to exercise-induced pain or cramping in the legs that is absent at rest. Pain is most often in the calf but may also occur in the buttock, hip, thigh, or foot. Subjective ratings of pain with intermittent claudication are as follows:

- *Grade I: Minimal discomfort or pain*
- *Grade II: Moderate discomfort or pain; patient's attention can be diverted*
- *Grade III: Intense pain; patient's attention cannot be diverted*
- *Grade IV: Excruciating and unbearable pain*

Because the patient's pain is moderate but their attention can be diverted, grade II is the most appropriate description.

84.

You are examining a 74-year-old female patient in the intensive care unit who has been diagnosed with congestive heart failure. You assess her resting respiratory rate and determine that it is ten breaths per minute.

Which of the following assessments is the **MOST** correct?

Bradypnea

Tachypnea

Hyperpnea

Orthopnea

Correct answer: Bradypnea

When a patient's respiratory rate is less than or equal to ten breaths per minute, the patient is demonstrating bradypnea.

When a patient's respiratory rate increases at a rate greater than or equal to 22 breaths per minute, the patient has tachypnea. (Note: Some sources state that with a rate greater than or equal to 20 breaths per minute, the patient has tachypnea.) Hyperpnea occurs when a patient's depth and rate of breathing increase. Orthopnea is the inability to breathe when in a reclining or supine position.

85.

You are working with an 85-year-old male patient with COPD in a skilled nursing facility for general conditioning. Which of the following guidelines is correct?

Monitoring of heart rate and blood pressure is required during exercise

Exercise should be performed for 60-90 minutes per session

Exercise sessions should occur 1-2 times per week

Resistance exercise should be the main focus

Correct answer: Monitoring of heart rate and blood pressure is required during exercise

General conditioning for pulmonary rehabilitation should follow guidelines for frequency, intensity, time, and type of exercise. During all forms of general conditioning, heart rate and blood pressure must be monitored.

Exercise duration should be performed 20-30 minutes per session. Exercise frequency should be 3-5 times per week. Aerobic exercise should be the main focus of a general conditioning program, not resistance exercise.

86.

Use the following scenario to answer the question.

What is the **MOST** appropriate duration for the patient's exercise sessions?

30–60 minutes with 5–10 minutes of warm-up and cool-down

60–90 minutes with 5–10 minutes of warm-up and cool-down

30–60 minutes with no warm-up or cool-down

60–90 minutes with no warm-up or cool-down

Correct answer: 30–60 minutes with 5–10 minutes of warm-up and cool-down

Outpatient cardiac rehabilitation is a common treatment for patients recovering from a myocardial infarction (MI). The primary goals of outpatient cardiac rehabilitation are to improve functional capacity, progress toward normal daily activities, promote risk factor modification, and encourage energy conservation techniques during recovery. The exercise duration guideline for outpatient cardiac rehabilitation is 30–60 minutes with 5–10 minutes of warm-up and cool-down.

An exercise session longer than 60 minutes is not recommended in the activity guidelines for outpatient cardiac rehabilitation. Warm-up and cool-down periods are both recommended during outpatient cardiac rehabilitation exercise sessions.

87.

You are working with a patient recovering from a recent spinal cord injury who does not have the necessary abdominal muscle strength to perform an effective cough. You have been asked to assist the patient with airway clearance. Which of the following is the **BEST** airway clearance technique for this patient?

Assisted cough

Tracheal stimulation

Huffing

Endotracheal suctioning

Correct answer: Assisted cough

An assisted cough is an airway clearance technique that is used on patients who do not have the necessary abdominal muscles to perform an effective cough. The assisted cough technique is when the physical therapist uses their hands or fist to force a patient to exhale air. This technique is generally used on patients who have a spinal cord injury.

Tracheal stimulation is an airway clearance technique that is used on patients who do not have the ability to cough on command, like infants or those with a brain injury. Huffing is an airway clearance technique that is used on patients who have collapsible airways, such as those with COPD. Endotracheal suctioning is an airway clearance technique that is used on patients who have not been able to clear their airways in any other manner; this would be an appropriate technique for a patient in a coma.

88.

Which of the following would be **MOST** likely to increase myocardial oxygen demand?

Exercise

Coughing

Inspiration

Decreased blood pressure

Correct answer: Exercise

Myocardial oxygen demand (MVO_2 represents the energy cost to the myocardium) is clinically measured by multiplying heart rate and systolic blood pressure. As heart rate or systolic blood pressure rises, so does myocardial oxygen demand.

Coughing and inspiration are both known to increase right atrial filling pressure. Decreased blood pressure causes a decrease in myocardial oxygen demand.

89.

A physical therapist is providing manual secretion removal via percussion to a patient in the hospital. Which of the following patients would be the **MOST** likely to benefit from this treatment?

A 25-year-old patient with cystic fibrosis

A 60-year-old patient with COPD

A 70-year-old patient with emphysema

A 40-year-old patient preparing for a lung transplant

Correct answer: A 25-year-old patient with cystic fibrosis

Percussion is a manual secretion-removal technique that involves a rhythmically applied force using cupped hands over the involved lung segment. Percussion is primarily used for patients with excessive pulmonary secretions, aspiration, and atelectasis due to mucous plugging or obstruction in the airways.

Patients with COPD and emphysema may benefit from percussion depending on their presentation, although a patient with cystic fibrosis is more likely to benefit from percussion as a treatment. A patient preparing for a lung transplant may or may not benefit from percussion; more information would be required to determine the benefit.

90.

A physical therapist is treating a patient who is recovering from a myocardial infarction in the hospital. What is the **MOST** accurate activity restriction recommendation for the patient?

5 METs or 70% of age-predicted max heart rate for 4-6 weeks

5 METs or 70% of age-predicted max heart rate for 8-12 weeks

7 METs for 4-6 weeks

6 METs for 8-12 weeks

Correct answer: 5 METs or 70% of age-predicted max heart rate for 4-6 weeks

Activity can be increased once acute MI has stopped, as indicated by a peak in cardiac troponin levels. Activity should be limited to 5 METs or 70% of the age-predicted HR max for 4-6 weeks following MI.

Activity restrictions at 5 METs or 70% of the age-predicted max heart rate are for 4-6 weeks, not 8-12 weeks. Activity at 6 or 7 METs would be too high following acute MI.

91.

You are referred to the neonatal unit of a hospital to evaluate a 3-day-old infant for reflexes and motor skills. As part of your evaluation, you analyze the infant's respiratory rate. You note hyperpnea and contact the nurse to confirm the newborn's recent respiratory rate readings for comparison.

Which of the following respiratory rates is the **MOST** likely in this situation?

- **50 breaths per minute**
- 40 breaths per minute
- 30 breaths per minute
- 20 breaths per minute

Correct answer: 50 breaths per minute

The normal respiratory rate for a newborn is 30-40 breaths per minute. If the newborn is demonstrating a breathing rate of >40 breaths per minute, it is referred to as hyperpnea. A respiratory rate of 40 breaths per minute or 30 breaths per minute would be considered normal in this case. A respiratory rate of 20 breaths per minute in this scenario would indicate slower than normal breathing, but not hyperpnea.

The normal respiratory rate for an adult is 12-20 breaths per minute. The normal respiratory rate for a child is 20-30 breaths per minute.

92.

Use the following scenario to answer the question.

According to the Modified Borg Dyspnea Scale, which of the following **BEST** describes the patient's shortness of breath?

Somewhat severe

Very slight

Severe

Very severe

Correct answer: Somewhat severe

Dyspnea refers to shortness of breath, which can be graded as 0-10 using the Modified Borg Dyspnea Scale. A dyspnea rating of 4/10 is described as somewhat severe, which is most consistent with the score provided in the scenario.

A rating of 1/10 is described as very slight. A rating of 5-6/10 is described as severe. A rating of 7-8/10 is described as very severe.

93.

A physical therapist is assessing the recent pulmonary function test of a patient and is specifically interested in their tidal volume. What information represents the patient's tidal volume on a pulmonary function test?

The volume of gas that an individual inhales (or exhales) during a normal breath

The volume of gas that an individual can inhale beyond normal tidal volume inhalation

The volume of gas that an individual can exhale beyond normal resting tidal volume exhalation

The volume of gas that remains in the lungs after the expiratory reserve volume has been exhaled

---

Correct answer: The volume of gas that an individual inhales (or exhales) during a normal breath

If you are assessing the volume of gas that an individual inhales (or exhales) during a normal breath, you are assessing their tidal volume.

If you are assessing the volume of gas that an individual can inhale beyond normal tidal volume inhalation, you are assessing their inspiratory reserve volume.

If you are assessing the volume of gas that an individual can exhale beyond normal resting tidal volume exhalation, you are assessing their expiratory reserve volume.

If you are assessing the volume of gas that remains in the lungs after the expiratory reserve volume has been exhaled, you are assessing a person's residual volume.

94.

While working with a patient recently admitted for exacerbation of COPD, you receive the results of their recent pulmonary function test. The results indicate a total lung capacity of six liters. Of the following options, what measurements were **MOST** likely used to calculate this result?

Inspiratory Reserve Volume + Tidal Volume + Expiratory Reserve Volume + Residual Volume

Inspiratory Reserve Volume + Tidal Volume

Inspiratory Reserve Volume + Tidal Volume + Expiratory Reserve Volume

Tidal Volume + Residual Volume

Correct answer: Inspiratory Reserve Volume + Tidal Volume + Expiratory Reserve Volume + Residual Volume

An individual's total lung capacity is the entire amount of air that the thorax contains during the individual's maximum inspiratory effort.

Inspiratory reserve volume + Tidal volume + Expiratory reserve volume + Residual volume is the formula used to calculate one's total lung capacity. There are several types of lung capacity. These can be calculated with the following formulas:

- *Inspiratory Reserve Volume (IRV) + Tidal Volume (TV) = Inspiratory Capacity (IC)*
- *Inspiratory Reserve Volume (IRV) + Tidal Volume (TV) + Expiratory Reserve Volume (ERV) = Vital Capacity (VC)*
- *Expiratory Reserve Volume (ERV) + Residual Volume (RV) = Functional Residual Capacity (FRC)*
- *Inspiratory Reserve Volume (IRV) + Tidal Volume (TV) + Expiratory Reserve Volume (ERV) + Residual Volume (RV) = Total Lung Capacity (TLC)*

95.

A physical therapist is providing gait training to a 75-year-old male patient in a skilled nursing facility. During the session, the patient experiences ventricular arrhythmia.

Which of the following arrhythmias **MOST** likely indicates an emergency situation?

Ventricular fibrillation

Premature ventricular contractions

Non-sustained ventricular tachycardia

Atrial fibrillation

Correct answer: Ventricular fibrillation

Ventricular fibrillation is a pulseless, emergency situation requiring emergency medical treatment including cardiopulmonary resuscitation (CPR), defibrillation, and medication. It is characterized by chaotic activity of ventricles originating from multiple foci.

Premature ventricular contractions (PVCs) are premature beats arising from the ventricle. PVCs occur occasionally in the normal population and are considered serious if they occur more than six times per minute. Non-sustained ventricular tachycardia is a run of four or more consecutive beats in duration, terminating spontaneously in under 30 seconds. Atrial fibrillation is not an example of ventricular arrhythmia.

96.

Physical therapy has been ordered for a 60-year-old female recently admitted for poor activity tolerance and irregular heart sounds. While reviewing the patient's medical record, it is seen that recent echocardiogram results indicate backflow of blood into the left atrium during ventricular systole. Given this information, which heart structure is **MOST** likely affected?

Bicuspid valve

Tricuspid valve

Pulmonary valve

Aortic valve

Correct answer: Bicuspid valve

The bicuspid valve, also called the mitral valve, is responsible for preventing backflow of blood into the left atrium during ventricular systole. Given the patient's recent echocardiogram findings, this is the structure most likely affected.

The tricuspid valve prevents backflow of blood into the right atrium during ventricular systole. There are two semilunar valves: the aortic valve and the pulmonary valve. These valves prevent the backflow of blood from the aorta and the pulmonary arteries to the ventricles of the heart.

97.

Physical therapy has been ordered for a 50-year-old female patient with a recent history of pleuritis following abdominal surgery. If the physical therapist claps over the patient's lower ribs near the spine on either side, what is the **MOST** likely goal of this intervention?

Drainage of the posterior basal segments of the lower lobes

Drainage of the lateral basal segments of the lower lobes

Drainage of the superior segments of the upper lobes

Drainage of the right middle lobe

Correct answer: Drainage of the posterior basal segments of the lower lobes

A physical therapist can assist secretion drainage in the posterior basal segments of the lower lobes by clapping over the patient's lower ribs near the spine on either side. Because this patient recently had surgery and resulting pleuritis, it is likely that they are experiencing atelectasis, which is an indication of postural drainage.

A physical therapist can assist secretion drainage in the lateral basal segments of the lower lobes by clapping over the uppermost portion of the lower ribs. A physical therapist can assist secretion drainage in the superior segments of the upper lobes by clapping over the middle of the patient's back at the tip of the scapula on either side of the spine. A physical therapist can assist secretion drainage in the right middle lobe by clapping over the right nipple area.

98.

A physical therapist is working with a 72-year-old male patient in an outpatient facility for left shoulder pain. During the session, the patient reports dyspnea, orthopnea, and paroxysmal nocturnal dyspnea. The therapist also notes that the patient has a dry cough.

Which condition is **MOST** likely?

Pulmonary congestion due to left-sided heart failure

Pulmonary congestion due to right-sided heart failure

Myocardial infarction

Angina pectoris

Correct answer: Pulmonary congestion due to left-sided heart failure

Lef-sided heart failure, or congestive heart failure, is characterized by pulmonary congestion, edema, and low cardiac output due to a backup of blood from the left ventricle to the left atrium and lungs. Common clinical manifestations of left-sided heart failure pulmonary congestion consist of dyspnea, dry coughing, orthopnea, paroxysmal nocturnal dyspnea (PND), and pulmonary rales.

Common clinical manifestations of right-sided heart failure pulmonary congestion include dependent edema, weight gain, ascites, and liver engorgement. Myocardial infarction is usually characterized by crushing chest pain and left arm pain. Angina pectoris is often a symptom of other conditions.

99.

A home health physical therapist is reviewing the past medical history of a patient and discovers he has orthopnea. Which position would be **LEAST** appropriate to treat this patient?

Supine in a flat bed

Sitting in a standard chair

Standing

In bed at a 45-degree incline

Correct answer: Supine in a flat bed

In a supine position, the patient will be lying on his back. Orthopnea describes an inability to breathe when the patient is lying or reclining. Typically, this condition is a shortness of breath when lying flat, causing patients to sleep propped over several pillows or even upright in a recliner chair.

It would be entirely appropriate to treat the client in a sitting or standing position. Although lying in bed at a 45-degree angle may be less ideal than a sitting or standing position, it will be more ideal for this client than a flat supine position.