

**Diploma of Kinesiology
HLT51507**



Chemistry, Biochemistry, Pathology
CBP Manual
Part 3 of 5: Pathology 1

HLT07 National Health Training Package

Competencies covered in this workbook include

HLTAP501C Analyse Health Info: Chemistry, Biochemistry, Pathology

UNIT 1

1. Anatomy is the study of **structure** / **function**.
2. Which of the following axes are not found in the human body
 - a) **W axis**
 - b) X axis
 - c) Y axis
3. The **sagittal** / **coronal** plane is formed from the X and Y axes.
4. Which of the following is described as closer to the front of the body.
 - a) superior
 - b) lateral
 - c) **anterior**
 - d) contralateral
5. Groups of cells from **tissues** / **organs**.
6. Which of the following produces ATP
 - a) nucleus
 - b) ribosomes
 - c) lysosomes
 - d) **mitochondria**
7. **Epithelial** / **connective** tissue forms glands.
8. **Positive** / **negative** feedback mechanisms allow a return to homeostasis.
9. Which of the following is described as an increase in the number of cells
 - a) **hyperplasia**
 - b) hypertrophy
 - c) metaplasia
 - d) dysplasia
 - e) atrophy
10. A **symptom** / **sign** is an objective analysis of the effect of a disease on a patient.

11. Vitamin C deficiency can lead to increased bleeding in a patient. T / F
12. Describe the effect of decreased oxygen levels within a cell.
decreased oxygen will cause change metabolism within the cell and cause it to become predominantly anaerobic in ATP production and therefore also produce lactic acid.
13. Free radicals commonly bind with the cell membrane / organelles.
14. Pathogens cause / prevent disease.
15. Which of the following is a mechanism for pathogens to enter the body
- a) normal secretions
 - b) normal excretions
 - c) fluid expressed from wounds
 - d) all of the above
 - e) none of the above
16. Injuries that occur over a prolonged period of time are called acute injuries. T / F
17. Describe why infections are common consequence of being bitten by an animal.
due to the penetrating nature of bites, bacteria in the saliva or on the fangs of the animal are therefore introduced into the body and cause disease
18. Signs and symptoms of chronic injuries are usually vague and poorly defined. T / F

Unit 2

1. **Direct / indirect** trauma occurs when a bone fractures at the point of impact.
2. Which of the following is not a type of fracture
 - a) transverse
 - b) spiral
 - c) complicated**
 - d) avulsion
3. Simple fractures penetrate through the skin. **T / F**
4. Pathological fractures occur when there is little or no antecedent cause. **T / F**
5. Postmenopausal osteoporosis is due to a lack of **oestrogen / testosterone**.
6. Osteoblasts are **stimulated / inhibited** by parathyroid hormone.
7. Describe why the neck of the femur is a common site of fracture in osteoporosis.
due to the amount of spongy bone tissue as well as the shear forces acting through the neck due to the angle of the neck connecting the head and shaft of the femur
8. X ray imaging is the most appropriate testing method for osteoporosis. **T / F**
9. Dislocations should always be reduced (realigned) in first aid management. **T / F**
10. Which of the following features the greatest degree of damage to a ligament
 - a) first degree sprain
 - b) second degree sprain
 - c) third degree sprain**
11. Describe why a strain occurring to the belly of a muscle will usually heal faster than a strain occurring to the tendon of that muscle
the blood supply is better in the belly of the muscle relative to the tendons

12. In a third degree strain the muscle is nearly but not completely ruptured.

☐ T / ☐ F

13. **Intramuscular** / **intermuscular** haematoma is described as bleeding between muscles.

14. Which of the following is not a common cause of muscle cramps

- a) fatigue
- b) microtrauma
- c) poor blood supply
- ☐ d) sodium deficiency

15. Delayed Onset Muscle Soreness (DOMS) is due to

- a) lactic acid within the muscle
- ☐ b) inflammation to the muscle or its connective tissue
- c) trauma to the nerve supply of the muscle following exercise

16. Which of the following is a theory used to describe the causative process of bursitis

- a) the overload theory
- b) the fatigue theory
- c) both of the above
- ☐ d) neither of the above

Unit 3

1. Stromal repair is described as the repair of the **functional cells** / **connective tissue**.
2. Which of the following is not a phase of healing
 - a) inflammatory
 - b) proliferative
 - c) rejuvenating
3. Bleeding under the skin is called a bruise (contusion)
4. During inflammation the blood supply to the injured area is **increased** / decreased.
5. State the substance that is cleaved from a phospholipid by phospholipase A₂.
arachidonic acid
6. Which of the following is formed by lipoxygenase
 - a) leukotrienes
 - b) thromboxanes
 - c) prostaglandins
7. Which of the following is pro-inflammatory
 - a) prostaglandin E₁
 - b) prostaglandin E₂
 - c) prostaglandin E₃
8. Identify the protein that forms the basis of scar tissue collagen
9. A **primary** / **secondary** intent scar is formed when the two ends are closely approximated
10. Ligaments tend to repair by regeneration rather than scar tissue formation. T / F
11. Mal-union occurs when
 - a) the fracture requires greater than normal time to heal
 - b) the two ends of a fracture are not correctly aligned
 - c) the two ends of a fracture do not meet at all

12. Early mobility **increases** / **decreases** the quality of injury remodelling.
13. Ankylosis is the progressive stiffening of joints due to immobility. T / F
14. The identification of alternate diagnoses are called **differential** / **provisional** diagnoses.
15. All bodyworkers are qualified to diagnose simple conditions. T / F
16. X ray imaging is most effective for **hard** / **soft** tissue injuries
17. CT scans use high frequency sound waves that are directed at the patient. T / F
18. If a hot spot is found when a scan showing radioactive isotopes it indicates there is
- a) greater temperature at the site of the hot spot
 - b) increased cellular uptake of the radioactive isotope
 - c) increased vasoconstriction of the blood vessels
19. Bone density scanning is **more** / **less** sensitive than x ray imaging for identify bone tissue changes of osteoporosis.

Unit 4

1. **Treatment / rehabilitation** refers to the techniques that reduce or resolve the symptoms that the client is experiencing.
2. Which of the following directly applies medications into the central nervous system
 - a) subcutaneous injection
 - b) intrathecal injection**
 - c) intravenous injection
3. Describe why drugs that are absorbed across the intestinal membrane pass through the liver very quickly after absorption
the blood supply of the intestines passes blood directly to the liver via the hepatic portal vein and so any absorbed substances pass directly to the liver
4. The bag that contains an IV medication needs to be held **higher / lower** than the patient.
5. The **brand / generic** name of a medication is the name used by the pharmaceutical industry.
6. Which of the following classification of the NSW schedule of poisons requires a doctors prescription
 - a) S2
 - b) S3
 - c) S4**
7. **Anti-coagulant / anti-inflammatory** medications are commonly used for treating chronic conditions.
8. Which of the following substances actually forms a blood clot and binds blood cells together
 - a) prothrombinase
 - b) thrombin
 - c) fibrin**
9. A myocardial infarction affects the **heart / brain**.
10. **Heparin / warfarin** is administered via injection.

11. Which of the following substances is an enzyme of the inflammation pathway
- a) phospholipase
 - b) cyclo-oxygenase
 - c) lipoxygenase
 - d) all of the above
 - e) none of the above
12. Cortisone /

hydrocortisone

 is the active form of the medication.
13. NSAID medications are derived from cholesterol.

T / F
14. Describe the role of aspirin in reducing blood clotting_____ **aspirin prevents the aggregation of platelets and therefore reduces their stimulation of the clotting cascade**
15. Paracetamol has significant anti-inflammatory action.

T / F
16. Ibuprofen can be freely given to children as it is easily metabolised.

T / F
17. The structure of codeine is similar to

morphine

 / aspirin.
18. Endorphins increase the perception of pain.

T / F
19. State one postoperative complication of open surgery.
infections / bleeding / rupturing of sutures / scar tissue formation
20. Arthroscopy allows the use of small incisions in the skin.

T / F

Unit 5

1. Which of the following is not a feature on an increased intracranial pressure
 - a) sudden headache
 - b) unilateral fixed and constricted pupil
 - c) nausea
 - d) tinnitus

2. A counter coup injury is characterised by an injury to the brain on the opposite side of the head to the trauma.

T / F

3. Describe why bleeding within the cranial cavity may cause death **increased pressure forcing the brain and brainstem into the foramen magnum to compromise breathing control**

4. Which of the following is not assessed in the Glasgow coma scale (GCS)
 - a) eye opening
 - b) verbal response
 - c) motor response
 - d) awareness of sensory stimuli

- 5) Which of the following concussions are characterised by confusion without amnesia
 - a) grade 1
 - b) grade 2
 - c) grade 3

6. Le Fort fractures affect the bones of the pelvis.

T / F

7. If the floor of the orbit is fractured, the eye may move inferiorly into the
 - a) frontal sinus
 - b) maxillary sinus
 - c) ethmoidal sinus
 - d) sphenoidal sinus

8. A nasal fracture will always cause a deviation of the nose.

T / F

9. A depressed cheek bone fracture is a fracture of the zygomatic bone.

T / F

10. A fractured tooth that does not cause pain is likely to have damaged only the
 a) enamel only
 b) enamel and dentin only
 c) enamel, dentin and nerve pulp
11. The most commonly avulsed (dislodged) teeth are the **upper / lower** central incisors.
12. Open facial wounds do not commonly bleed significantly. T/F
13. An orbital haematoma can be caused from trauma to
 a) the eye only
 b) the nose only
 c) either the eye or the nose
 d) neither the eye nor the nose
14. An epistaxis is the medical name of a **nosebleed / headache**.
15. If you have a patient with suspected cervical (neck) damage, you should mobilise (move) the neck to ascertain if there is a greater amount of movement than normal. T/F
16. In a whiplash condition, force is first applied to the **anterior / posterior** aspect of the body.
17. The vertebral basilar insufficiency syndrome is characterised by decreased blood flow to the **brain / heart**.
18. Laryngeal trauma will cause neck stiffness but will not compromise breathing. T/F
19. State one muscle involved in the causation of torticollis.

SCM . scalenes / trapezius / levator scapulae

Unit 6

1. Paradoxical breathing is due to **rib / neck** fractures.
2. A **pneumothorax / haemothorax** is due to blood entering the pleural cavity.
3. The portion of the clavicle most commonly injured is the curved portion. T / **F**
4. In an acromioclavicular separation (dislocation) the **medial / lateral** end will be raised.
5. Surgery is the medical management of all severe acromioclavicular separations. T / **F**
6. Glenohumeral dislocations most commonly occur in an **anterior / posterior** direction.
7. Describe why care must always be taken with shoulder movements in patients who have had a shoulder dislocation
because of the laxity of the ligaments following dislocations, it is common for the patient to experience subsequent GH dislocations following the first one
8. Recurrent glenohumeral instability may cause damage to the
 - a) cervical plexus
 - b) brachial plexus**
 - c) lumbar plexus
 - d) sacral plexus
9. Most shoulder rotator cuff injuries affect the
 - a) supraspinatus**
 - b) infraspinatus
 - c) teres minor
 - d) subscapularis
10. Describe the implication of the CAZ of the supraspinatus tendon.
decreased blood flow in the CAZ means that most injuries to the tendon will occur there and any injury that does occur there will have a decreased healing potential
11. Supraspinatus **rupture / tendinitis** is considered a chronic injury

12. The **drop arm** / **empty can** test is used to diagnose supraspinatus tendinitis.
13. Subacromial bursitis causes extreme pain on active shoulder movements. T / F
14. Which of the following is not a medical management of subacromial bursitis
- a) NSAIDs
 - b) cortisol injections
 - c) bevelling of the acromion
 - d) tightening of the coracoacromial ligament
15. Biceps brachii ruptures are usually due to extreme force generation during lifting. T / F
16. A complication of a rupture of the biceps brachii is damage to the
- a) acetabular labrum
 - b) glenoid labrum
 - c) radial labrum
17. In bicipital instability, the biceps tendon may move out of the intertubercular groove of the humerus.
18. Which of the following injuries may be caused by falling onto the outstretched arm
- a) shoulder joint dislocation
 - b) acromioclavicular separation
 - c) fractured humerus
 - d) all of the above
 - e) none of the above
19. Which of the following is not a feature of a thoracic outlet syndrome
- a) compression of the brachial plexus
 - b) compression of the subclavian artery
 - c) compression of the spinal cord

Unit 7

1. A supracondylar fracture may cause growth defects in children if it affects the
 - a) shaft of the humerus
 - b) growth plate of the humerus
 - c) neck of the humerus
 - d) greater tubercle of the humerus

2. In which Gartland classification of fracture, is there no displacement of the affected bones
 - a) type I fracture
 - b) type II fracture
 - c) type II fracture

3. Elbow dislocations commonly occur due to **hyperflexion** / **hyperextension**.

4. All cases of elbow dislocations should be reduced (realigned) as part of the first aid management.

T / F

5. **Acute** / **chronic** olecranon bursitis is caused by falling onto the olecranon.

6. Lateral epicondylitis features pain on resisted **extension** / **flexion** of the wrist.

7. Following reduction and fixation of a fractured forearm, the pulses that are **proximal** / **distal** to the fracture site should be checked.

8. Describe the causation of the dinner fork deformity of a Colles fracture.
the force and location of the contact causing the hand to be forced superiorly relative to the forearm

9. An x ray assessment will usually be performed on a severely sprained wrist to rule out a fractured bone.

T / F

10. The median nerve is compressed in which condition carpal tunnel syndrome

11. Which of the following is not a test for carpal tunnel syndrome
 - a) Phalens test
 - b) Tinels sign
 - c) Griffiths examination

12. Which of the following is the most commonly fracture carpal bone
- a) pisiform
 - b) scaphoid**
 - c) triquetrum
 - d) trapezium
13. A common complication of the scaphoid is **avascular** / **agranular** necrosis.
14. The metacarpal bone that is most commonly fractured is the
- a) first metacarpal
 - b) second metacarpal
 - c) third metacarpal
 - d) fourth metacarpal
 - e) fifth metacarpal**
15. The phalanges are usually fractured from crushing types of trauma. T / F
16. Which of the following is not a cause of finger dislocations
- a) hyperflexion**
 - b) hyperabduction
 - c) hyperextension
17. Mallet finger is due to a rupture of the extensor **digitorum** / **pollicis** tendon.

Unit 8

1. Falling onto the pelvis can cause a crush fracture of the lumbar vertebrae. ☐ T / ☐ F
2. Spondyloysis is caused by a fracture on ☐ **one** / **both** sides of the vertebrae.
3. The fractures of spondylololosis will always show up on an x-ray. ☐ T / ☐ F
4. **Spondyloysis** / ☐ **spondylolisthesis** is characterised by movement of the vertebrae.
5. Severe spondylolisthesis can cause changes to the posture of the patient. ☐ T / ☐ F
6. The movement that should be avoided in a patient with spondylolisthesis is
 - a) hyperflexion
 - ☐ b) hyperextension
 - c) hyperabduction
 - d) hyperadduction
7. A disc herniation is due to the rupture of the
 - a) nucleus fibrosis
 - ☐ b) annulus fibrosis
 - c) nucleus pulposis
 - d) annulus pulposis
8. Define sciatica
pain or altered sensation along the course of the sciatic nerve
9. Management of strained muscles of the back includes advice on correct lifting technique ☐ T / ☐ F
10. Scoliosis is an anterior - posterior deviation of the spine. ☐ T / ☐ F
11. **Structural** / ☐ **functional** scoliosis may be caused by leg length differences.
12. Describe the cause of fat emboli following a fracture pelvis.
bone marrow from the fractured bone leaving the bone and entering circulation where it eventually blocks a blood vessel
13. A dislocated hip usually requires the hip joint to be **flexed** / **extended**.

14. A consequence of reducing the blood supply to the head of the femur is
avascular necrosis of the femoral head
15. A fractured neck of femur is a common consequence of **osteoporosis / osteoarthritis**.
16. Surgery is the usual medical management of this condition. **T / F**
17. State why the femur is seldom fractured **it is the strongest bone of the body**
18. Trauma to the trochanteric bursae may cause haemobursa. Define this condition.
bleeding into the bursa
19. Chronic trochanteric bursitis most affects **sprinters / long distance runners**.
20. Iliopsoas tendinitis can often irritate the **gluteal / iliopsoas** bursa.
21. The major muscle involved in a groin strain is the
 a) **adductor longus**
 b) vastus lateralis
 c) semitendinosus
22. The rectus femoris will usually rupture from the **proximal / distal** attachment.
23. A quadriceps contusion is caused by a **hard / soft** object impacting the thigh.
24. Myositis ossificans causes the formation of a small bone within muscle tissue. **T / F**
25. Hamstring ruptures can be caused by
 a) extreme stretching
 b) strong contraction whilst the muscle is stretched
 c) **either of the above**
 d) neither of the above
26. Following healing, hamstring ruptures seldom reoccur. **T / F**

Unit 9

1. Major complications of a fracture to the femur include
 - a) infections
 - b) fat emboli
 - c) damage to growth plates
 - ☒ d) all of the above

2. Most cases of patellae dislocations occur in a ☒ lateral / medial direction.

3. Osteochondritis dessicans affects the knee ☒ meniscus / cruciate ligament.

4. Abduction of the tibia is called a ☒ valgus / varus movement.

5. If the medial collateral ligament of the knee is ruptured there will be a greater movement of the leg in a ☒ lateral / medial direction during testing.

6. The medial meniscus is less likely to be injured than the lateral meniscus. ☐ T / ☒ F

7. Which of the following is not a test performed on the knee by qualified practitioners
 - a) Apleys grind test
 - ☒ b) Apleys opposition test
 - c) Apleys distraction test

8. If the anterior cruciate ligament is ruptures then the leg will move ☒ anteriorly / ☐ posteriorly relative to the femur.

9. The anterior cruciate ligament is more likely to be injured than the posterior cruciate ligament. ☐ T / ☒ F

10. Which of the following is not affected in O'Donohues unhappy triad
 - a) anterior cruciate ligament
 - ☒ b) lateral collateral ligament
 - c) medial meniscus

11. Massage is an important early treatment of knee bursitis. ☐ T / ☒ F

12. The Q angle is commonly greater in females than males. ☐ T / ☒ F

13. Chondromalacia patella is due to a lateral movement of the patella over the lateral **epicondyle / condyle** of the femur.
14. ITB syndrome affects the **lateral / medial** aspect of the knee.
15. In a condition of jumpers knee, which of the following classifications is described as pain occurring only after activity
- a) **phase 1**
 - b) phase 2
 - c) phase 3
16. Osgoods -Schlatters disease affects **children / adults**.

Unit 10.

1. A compression fracture of the tibia will cause the limb to be **longer** / **shorter** than normal.
2. Describe why a bone scan (rather than an x ray) will commonly be performed on a suspected stress fracture of the tibia.
the bone scan is more sensitive to the minor fractures and will show up the effect of hyperactive osteoblasts
3. A Potts fracture (of the distal fibula) is commonly caused by forcing the ankle into excessive **inversion** / **eversion**.
4. A ruptured syndesmosis is often associated with a ruptured deltoid **ligament** / **muscle**.
5. Describe why muscles in a compartment syndrome become acidic.
increased levels of lactic acid within the muscle
6. The first treatment of a compartment syndrome should be surgery to incise the fascia of the compartment and therefore reduce the pressure. T / **F**
7. Shin splints (periostitis) can affect the
 - a) medial margin of the tibia only
 - b) lateral margin of the tibia only
 - c) either the medial or lateral margin of the tibia**
 - d) neither the medial nor lateral margin of the tibia
8. Sudden pain during activity is most commonly associated with a
 - a) gastrocnemius rupture**
 - b) DVT
 - c) myositis ossificans
9. The CAZ region of the Achilles tendon has a **greater** / **lesser** blood supply than the rest of the tendon.
10. A gap may be palpated in the ankle region in a **partial** / **total** rupture of the Achilles tendon.

11. Thompsons test is used by qualified practitioners to identify Achilles tendonitis. T / F
12. An ankle sprain usually damages the
- a) anterior talofibular ligament
 - a) posterior talofibular ligament
 - a) calcaneofibular ligament
 - a) deltoid ligament
13. Describe why ankle sprains commonly reoccur if the original injury is not rehabilitated correctly
- poor proprioception following poor rehabilitation
-
14. A common cause of a fractured calcaneus is falling and landing on the heels. T / F
15. Stress fractures of the feet most commonly affect the
- a) tarsals
 - b) metatarsals
 - c) phalanges
 - d) none of the above
16. An elevated medial longitudinal arch is called pes cavus / planus.
17. All cases of plantar fasciitis lead to a heel spur. T / F
18. Tinea pedis is a
- a) fungal infection
 - b) viral infection
 - c) bacterial infection
19. The big / little toe is most commonly affected with an ingrown nail.
20. Hallucis valgus is a progressive lateral / medial deviation of the big toe.