

## READING TEST 8

### PART A

**TIME: 15 minutes**

- **Look at the four texts, A-D, in the separate Text Booklet.**
- **For each question, 1-20, look through the texts, A-D, to find the relevant information.**
- **Write your answers on the spaces provided in this Question Paper.**
- **Answer all the questions within the 15-minute time limit.**
- **Your answers should be correctly spelt.**

#### **Text A**

As demonstrated by elegant analyses of cancer in various patients, the continued deletion of cancer cells expressing T cell targets may enable cancers to evolve to avoid the attack. Despite these findings, recent results from human cancer have demonstrated that overcoming negative regulators to T cell responses in lymphoid organs and in the tumor bed is likely to explain the failure of immune protection in many patients. Factors in the tumor microenvironment can act to modulate the existing activated antitumor T cell immune response, acting as an immune rheostat or “immunostat.” This class of molecules, including PD-L1:PD-1 emphasizes that the immune response in cancer reflects a series of carefully regulated events that may be optimally addressed not singly but as a group. The most challenging part is now is to use this new understanding to develop new drugs and implement clinical strategies.

#### **Text B**

For an anticancer immune response to lead to the effective killing of cancer cells, a series of stepwise events must be initiated and allowed to proceed and expand iteratively. We refer to these steps as the Cancer-Immunity Cycle. In the first step, neoantigens created by oncogenesis are released and captured by dendritic cells (DCs) for processing. In order for this step to yield an anticancer T cell response, it must be accompanied by signals that specify immunity lest peripheral tolerance to the tumor antigens is induced. Such immunogenic signals might include proinflammatory cytokines and factors released by dying tumor cells or by the gut microbiota. Next, DCs present the captured antigens on MHC I and MHC II

molecules to T cells, resulting in the priming and activation of effector T cell responses against the cancer-specific antigens that are viewed as foreign or against which central tolerance has been incomplete. The nature of the immune response is determined at this stage, with a critical balance representing the ratio of T effector cells versus T regulatory cells being key to the final outcome.

### **Text C**

Finally, the activated effector T cells traffic to and infiltrate the tumor bed, specifically recognize and bind to cancer cells through the interaction between its T cell receptor (TCR) and its cognate antigen bound to MHC I, and kill their target cancer cell. The killing of the cancer cell releases additional tumor-associated antigens (step 1 again) to increase the breadth and depth of the response in subsequent revolutions of the cycle. In cancer patients, the Cancer-Immunity Cycle does not perform optimally. Tumor antigens may not be detected, DCs and T cells may treat antigens as self rather than foreign thereby creating T regulatory cell responses rather than effector responses, T cells may not properly go well with tumors, may be inhibited from infiltrating the tumor, or (most importantly) factors in the tumor microenvironment might suppress those effector cells that are produced.

The goal of cancer immunotherapy is to initiate or reinstate a self-sustaining cycle of cancer immunity, enabling it to amplify and propagate, but not so much as to generate unrestrained autoimmune inflammatory responses. Cancer immunotherapies must, therefore, be carefully configured to overcome the negative feedback mechanisms. Although checkpoints and inhibitors are built into each step that opposes continued amplification and can dampen or arrest the antitumor immune response, the most effective approaches will involve selectively targeting the rate-limiting step in any given patient. Amplifying the entire cycle may provide anticancer activity but at the potential cost of unwanted damage to normal cells and tissues. Many recent clinical results suggest that a common rate-limiting step is an immunostatic function, immunosuppression that occurs in the tumor microenvironment

## Text D

Attempts to activate or introduce cancer antigen-specific T cells, as well as stimulate the proliferation of these cells over the last 20 years, have led to mostly no, minimal or modest appreciable anticancer immune responses. The majority of these efforts involved the use of therapeutic vaccines because vaccines can be easy to deploy and have historically represented an approach that has brought enormous medical benefit. Yet, cancer vaccines were limited to two accounts. First, until recently, there was a general lack of understanding of how to immunize the patients for effective cytotoxic T cell responses. This limitation reflects continued uncertainties concerning the identities of antigens to use, their mode of delivery, the types of adjuvants required, and the proximal characteristics of the desired T cell response. Second, the presence of the immunostat in the tumor microenvironment may dampen or disable antitumor immune responses before clinically relevant tumor kill can occur. Thus, as long as these negative signals are in place, the prospects for vaccine-based approaches used alone are likely to be limited. - Mark Stephens, Cardiologist, Care CRM, London.

## Questions 1-7

For each question, 1-7, decide which text (A, B, C or D) the information comes from. You may use any letter more than once.

In which text can you find information about;

1. Seven crucial progression acts.

Answer \_\_\_\_\_

2. Initiating Anticancer Immunity.

Answer \_\_\_\_\_

3. Checkpoints and (immunostat function)

Answer \_\_\_\_\_

4. Didn't achieve any proper result.

Answer \_\_\_\_\_

5. Talking about the process of removal of cancer cells.

Answer \_\_\_\_\_

6. Killing of target cancer cell.

Answer \_\_\_\_\_

7. Immune editing.

Answer \_\_\_\_\_

### Questions 8-14

Answer each of the questions, 8-14, with a word or short phrase from one of the texts. Each answer may include words, numbers or both

8. Did experiments or endeavors with respect to T-cells lead to any significant results or immune responses?

Answer \_\_\_\_\_

9. At which stage the nature of the immune response is determined?

Answer \_\_\_\_\_

10. Which cells may find it difficult to home to tumors?

Answer \_\_\_\_\_

11. What is the term referred to describe the series of events involved in anticancer immune response?

Answer \_\_\_\_\_

12. Presence of what will dampen or disable antitumor immune responses in the tumor microenvironment?

Answer \_\_\_\_\_

13. What are the most effective approaches in an immunotherapy?

Answer \_\_\_\_\_

14. What target was not achieved so far in immunizing cancer patients?

Answer \_\_\_\_\_

## Questions 15-20

Complete each of the sentences, 15-20, with a word or short phrase from one of the texts. Each answer may include words, numbers or both.

15 Destroying the cancer cell releases additional \_\_\_\_\_

16 \_\_\_\_\_ is referred to as partial or complete suppression of the immune response of an individual

17 Majority of the processes with respect to activation of the T-cells comprises use of \_\_\_\_\_.

18 Presently, the challenge is how to effectively use this understanding and develop \_\_\_\_\_.

19 In \_\_\_\_\_, activated effector T cells may entirely infiltrate the tumor bed.

20 The initial step can provide a response only when it is along with \_\_\_\_\_, which can clearly show immunity.

## PART B

In this part of the test, there are six short extracts relating to the work of health professionals. For questions 1-6, choose the answer (A, B or C) which you think fits best according to the text.

### Questions 1-6

#### 1 The GCA symptoms can;

- A Begin and grow suddenly or gradually.
- B Begin all of sudden.
- C Occur more gradually.

#### GCA - Giant Cell Arteritis

The onset of giant cell arteritis (GCA) may be either abrupt or insidious. GCA may begin with constitutional manifestations such as anorexia, fever, malaise, myalgia, night sweat, and weight loss. These prodromal symptoms may occur for a few days and may even stretch out to weeks.

The most commonly reported symptoms in patients with GCA are as follows:

- Headache (initial symptom in 33%, present in 72%)
- Neck, torso, shoulder, and pelvic girdle pain that is consistent with polymyalgia rheumatica (PMR; initial in 25%, present in 58%)
- Fatigue and malaise (initial in 20%, present in 56%)
- Jaw claudication (initial in 4%, present in 40%)
- Fever (initial in 11%, present in 35%)

- 2 Head anastomosis venture may mean;
  - A human head transplantation.
  - B head transplantation in China.
  - C adding head of one patient to the body of the other.

Neurosurgeon Sergio Canavero proposed the HEAVEN procedure – i.e. *head anastomosis venture* – several years ago, and has recently received approval from the relevant regulatory bodies to perform this body-head transplant (BHT) in China. The BHT procedure involves attaching the donor body (D) to the head of the recipient (R), and discarding the body of R and head of D. Canavero's proposed procedure will be incredibly difficult from a medical standpoint. Aside from medical doubt, the BHT has been met with great resistance from many, if not most bio- and neuro ethicists.

### 3 What this notice talk about?

- A Patients with LS should undergo a range of ongoing surveillance activities.
- B Patients with LS are recommended to undergo a range of ongoing surveillance activities.
- C There are a wide range of ongoing surveillance activities which are undertaken by caretakers.

LS surveillance support initiatives or ideas have included earlier and more frequent colonoscopy, consideration for the transvaginal ultrasound and endometrial sampling with the possible recommendation for a total hysterectomy, and clinical neurologic examination. Upper endoscopy, annual urinalysis, and pancreatic cancer screening may also be considered based on family history. Screening guidelines continue to be updated as new research clarifies what recommendations are beneficial, but few participants receive repeat genetic counseling to update surveillance and surgical recommendations based on a patient's specific LS gene mutation and family history.

#### 4 As per the given notice, hereditary breast cancers;

- A occur commonly due to pathogenic mutations.
- B can easily be detected with advanced strategy.
- C can be treated more cost-effectively.

Hereditary breast cancers account for approximately 10% of all breast cancers, and approximately 23% of all ovarian cancers are considered hereditary. According to *Plakhins* et al., *BRCA1* pathogenic founder mutations contribute to 3.77% of all consecutive primary breast cancers and 9.9% of all consecutive primary ovarian cancers. *BRCA1* and *BRCA2* pathogenic founder mutation analysis is a relatively straightforward and cost-effective screening strategy to identify mutation carriers. In Latvia, all consecutive breast and ovarian cancer cases are eligible for *BRCA1* pathogenic founder mutations (c.181 T > G, c.4035delA, c.5266dupC) screening, and the costs of the test are covered by the public health care system.

## 5 What is correct?

- A The average age of PMR patients with amyloidosis is higher than the average age of PMR patients without TA.
- B the average age of PMR patients without TA ( $p < 0.0164$ ) is significantly lower than the average age of PMR patients without amyloidosis.
- C The average age of PMR patients with TA is significantly higher.

The average age of PMR patients

**Total (female & male)**

**Female**

**Male**

PMR versus Ath

0,4494

0,2972

0,4217

PMR with Ath versus without Ath

0,4222

0,2703

0,0004

PMR with TA versus without TA

0,0164

0,0159

0,7951

PMR with amyloidosis versus without amyloidosis

0,0000

0,0000

0,0037

TA with amyloidosis versus without amyloidosis

0,2995

0,3727

0,7228

## 6 Patient clinical data shows that the patient;

- A is suffering from BP.
- B is suffering from heart disease.
- C is suffering from chest pain.

### Patient clinical data

Features	Description	Ranges
Age	Age (in years)	30–86
Gender	1: male; 0: female	0–1
HTN	Hypertension, 0: no; 1: yes	0–1
RBS	Random blood sugar	57–180
Chest pain type	0: nonspecific chest pain	0–2
	1: atypical chest pain	
	2: typical angina	
HT	Height (cm)	133–188
WT	Weight (kg)	33–110
DBP	Diastolic blood pressure (mmHg)	46–110
SBP	Systolic blood pressure (mmHg)	100–170
CAD	Coronary artery disease	0: no; 1: yes



## **PART C**

In this part of the test, there are two texts about different aspects of healthcare. For questions 7-22, choose the answer (A, B, C or D) which you think fits best according to the text.

### **Text 1: A note on Eye Infections – Conjunctivitis**

Conjunctivitis is a common and often very contagious condition more commonly referred to as a pink eye. Conjunctivitis often involves inflammation and swelling of the conjunctiva or the clear membrane covering the eye and lining the inner eyelids. It is very common among young children, particularly those in school or daycare. Elderly people can also be affected. Conjunctivitis typically poses no real threat to the patient's vision or wellness. There are multiple causes and risk factors for conjunctivitis. Some of the more common causes of conjunctivitis include Allergic reactions, Viral contamination, Bacterial contamination, Exposure to irritants or chemical pollutants. Infectious conjunctivitis typically results from bacterial or viral contamination. While bacterial conjunctivitis may be treated with certain antibiotics, there is no traditional treatment for viral conjunctivitis. Multiple strains of bacteria are responsible for bacterial conjunctivitis; these include haemophilus influenzae and Staphylococcus aureus. Viral conjunctivitis is a common condition affecting children from the time of birth through to their adult years. Viruses can enter the eye in many ways, resulting from the common cold or contagion with the flu. Some patients may develop a more serious form of viral conjunctivitis associated with a herpes infection; in this case, prompt medical attention is necessary to prevent permanent damage to the eye or vision.

One of the more commonly reported signs and symptoms of conjunctivitis include discomfort and pain in the eye, accompanied by redness or swelling of the eyelid,

hence the name "pinkeye." Patients may experience reddening of the inner and outer eyelid or may experience swollen eyelids. Some patients may report increased sensitivity to light and other irritants including the wind. Many patients with conjunctivitis will have discharge from the eyes that may be clear, white, green or yellow in color. Yellow or green discharge from the eye may suggest an infection and may require antibiotics or other forms of aggressive treatment. Conjunctivitis can spread from person to person or from eye to eye. Simply touching one eye then the other can spread viral conjunctivitis. Allergic conjunctivitis is a non-contagious condition. Typically, children exposed to bacterial conjunctivitis will have a two to four day window before symptoms appear.

Bacterial infections mostly come from staphylococci and streptococci organisms that can come from your own skin or upper respiratory tract. The indicating symptoms of bacterial infections are thick, ropy mucus discharge accompanied with red, irritated and inflamed eyes. Luckily, bacterial eye infections are easily treated with antibiotic eye drops and, in most cases, will clear up within a few short days. Viral infections are commonly caused by an enterovirus and often associated with an upper respiratory infection or common cold. Eyes are red and inflamed and become watery and runny. One of the most common viral infections is epidemic keratoconjunctivitis, also known as EKC; it is highly contagious and can last up to 2 weeks or more. This viral conjunctivitis is caused by an adenovirus and does not have a specific treatment to cure the infection. The doctor may prescribe steroid eye drops and artificial tears to help decrease inflammation, but mostly the virus simply needs to run its course.

Conjunctivitis may also result from chlamydia and gonococcal infections or STD's. Usually, the inner eyelid becomes infected. This condition is more commonly noted in teens and young adults who are sexually active. When left untreated, this condition may affect newborn infants born to mothers infected with an STD. Signs may include a history of pelvic pain or vaginitis as well. Patients with Gonococcal infections may feel like a foreign object is chronically present within their eye, and are more likely to experience burning and inflammation. It is possible to transfer these conditions to the eye from hand contact so it is important,

to help prevent the spread of infection, that frequent hand washing is adopted by patients and family members. Treatment usually involves use of antibiotics taken topically or orally and concomitant treatment may be necessary to treat genital and eye infections.

### **Text 1: Questions 7-14**

**7 Which part of the eye is affected by conjunctivitis?**

- A Conjunctiva
- B White membrane
- C Eyelids
- D Only A and B

**8 Conjunctivitis is common among;**

- A Children
- B Teens
- C School goers
- D Daycare children

**9 What is linked with the herpes infection?**

- A Bacterial infections.
- B Viral infections.

- C Allergic reactions.
- D Exposure to chemical pollutants.

10 What is the most common symptom of conjunctivitis?

- A Mild pain in the eye.
- B Watery eyes.
- C Reddening of the inner and outer eyelid.
- D All of the above.

11 The color of discharge from eyes may be;

- A Yellow and green.
- B White, yellow and green.
- C Yellow or green.
- D White or green.

12 Paragraph 3 is focused more on;

- A Types of conjunctivitis.
- B Types of bacterial conjunctivitis.
- C Types of viral conjunctivitis.
- D Types of bacterial and viral conjunctivitis.

13 viral conjunctivitis is caused by;

- A Androvirus

- B Adenovirus
- C Enterovirus
- D Adenonvirus

**14 Which is more common in gonococcal infections?**

- A Pain around pelvis.
- B Discharge or pus.
- C Inflammation of the eyes.
- D Reddening of the eyes.

**Text 2: Osteomyelitis is an infection of the bone.**

Osteomyelitis is an infection of the bone. Osteomyelitis can occur in infants, children, and adults. Different types of bacteria typically affect the different age groups: in children, osteomyelitis most commonly occurs at the ends of the long bones of the arms and legs, affecting the hips, knees, shoulders, and wrists, whereas in adults, it is more common in the bones of the spine (vertebrae), feet, or in the pelvis. There are several different ways to develop the bone infection of osteomyelitis. The first is for bacteria to travel through the bloodstream (bacteremia) and spread to the bone, causing an infection. This mostly occurs when the patient has an infection elsewhere in the body, such as pneumonia or a urinary tract infection that spreads through the blood to the bone. An open wound over a bone can lead to osteomyelitis. A recent surgery or injection around a bone can also expose the bone to bacteria and lead to osteomyelitis. Patients with conditions or taking medications that weaken their immune system are at a higher risk of developing osteomyelitis. Risk factors include cancer, chronic steroid use, sickle cell disease, human immunodeficiency virus (HIV), diabetes, hemodialysis, intravenous drug users, and the elderly.

Symptoms of osteomyelitis can vary greatly. In children, osteomyelitis usually occurs more quickly. They develop pain or tenderness over the affected bone, and they may have difficulty or inability to use the affected limb or to bear weight or walk due to severe pain. They may also have fever, chills, and redness at the site of infection. In adults, the symptoms often develop more gradually and include fever, chills, irritability, swelling or redness over the affected bone, stiffness, and nausea. In people with diabetes, peripheral neuropathy, or peripheral vascular disease, there may be no pain or fever. The only symptom may be an area of skin breakdown that is worsening or not healing. Acute osteomyelitis occurs with a rapid onset and is usually accompanied by the symptoms of pain, fever, and stiffness. It generally occurs after a break in the skin from injury, trauma, surgery, or skin ulceration from wounds. Chronic osteomyelitis is insidious in onset; it may be the result of a previous infection of osteomyelitis and, despite multiple courses of antibiotics, it may reoccur. Symptoms of chronic osteomyelitis are subtle but may include fever, pain, redness, or discharge at the site of infection.

The diagnosis of osteomyelitis begins with a complete medical history and physical examination. During the discussion about medical history, the doctor may ask questions about recent infections elsewhere in the body, past medical history, medication usage, and family medical history. The physical examination will look for areas of tenderness, redness, swelling, decreased or painful range of motion, and open sores. The doctor may then order tests to help diagnose osteomyelitis. Several blood tests can be used to help determine if there is an infection present; these include a complete blood count (CBC), the erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), and blood cultures. None of these is specific for osteomyelitis but they can suggest that there may be some infection in the body. Imaging studies of the involved bones may be obtained; these can include plain radiographs (X-rays), bone scans, computed tomography (CT) scans, magnetic resonance imaging (MRIs), and ultrasounds. These imaging studies can help identify changes in the bones that occur with osteomyelitis.

In many cases, osteomyelitis can be effectively treated with antibiotics and pain medications. If a biopsy is obtained, this can help guide the choice of the best antibiotic. The duration of treatment of osteomyelitis with antibiotics is usually

four to eight weeks but varies depending on the type of infection and the response to the treatments. In some cases, the affected area will be immobilized with a brace to reduce the pain and speed up the treatment. Sometimes, surgery may be necessary. If there is an area of localized bacteria (abscess), this may need to be opened, washed out, and drained. If there is damaged soft tissue or bone, this may need to be removed. If bone needs to be removed, it may need to be replaced with bone graft or stabilized during surgery.

With early diagnosis and appropriate treatment, the prognosis for osteomyelitis is good. Antibiotics regimens are used for four to eight weeks and sometimes longer in the treatment of osteomyelitis depending on the bacteria that caused it and the response of the patient. Usually, patients can make a full recovery without longstanding complications.

However, if there is a long delay in diagnosis or treatment, there can be severe damage to the bone or surrounding soft tissues that can lead to permanent deficits or make the patient more prone to recurrence. If surgery or bone grafting is needed, this will prolong the time it takes to recover.

### **Text 2: Questions 15-22**

**15 Which of the following statements is not true, according to the information provided in paragraph 1?**

- A An osteomyelitis is common among people of all ages.
- B An osteomyelitis can be caused by bacteria.
- C In most of the cases, people who have pneumonia may develop osteomyelitis.
- D An osteomyelitis is commonly observed in people who are prone to bacterial infections.

**16 Which of the following can lead to osteomyelitis?**

- A Bacterial infection.

- B An open wound.
- C Underrated bone operation.
- D None

17 Symptoms of osteomyelitis in children may include;

- A Tenderness in the bone;
- B High fever;
- C Inability to walk;
- D All of the above;

18 Which type of osteomyelitis is slow in the beginning?

- A Chronic
- B Acute
- C Both chronic and acute
- D None

19 Which group is more specific for diagnosis?

- A CBC and ESR only
- B Only ESR and CRP
- C CRP, ESR and CBC
- D None

20 According to paragraph 3, involved bone suggests

- A Wounded bone
- B Operated bone area
- C Bacterial infected bone
- D Bone with tenderness

21 According to paragraph 4, which one of the following statements is not correct?

- A Treatment may be completed within 4 to 8 weeks.
- B The duration of the treatment varies depending on the type of osteomyelitis.
- C Working of the affected area is stopped in order to speed up the treatment.
- D Bone is often replaced with bone graft for perfect treatment.

22 According to paragraph 5, delay in treatment of diagnosis may result in;

- A Inability to walk properly.
- B Permanent damage to bone.
- C Removal of affected bone.
- D None

22 According to paragraph 5, delay in treatment of diagnosis may result in;

- A Inability to walk properly.
- B Permanent damage to bone.
- C Removal of affected bone.
- D None

