

Pre-Mix – 5 MCQs for Prelims

Subject – Science & Technology

Date – 15th February 2023

1. Consider the following statements regarding vaccine-derived poliovirus (VDPV) seen in news recently.

1. It is primarily caused by Injectable inactivated polio vaccine.
2. Generally oral poliovirus vaccines contains a live, weakened form of poliovirus that replicates in the intestine to decrease cases related to vaccine-derived poliovirus (VDPV)
3. VDPVs can cause outbreaks in places where vaccine coverage is low.

Which of the statements given above/are correct?

- A. 1 and 2 only
- B. 2 and 3 only
- C. 3 only
- D. All of the above.

2. Consider the following statements regarding Lumpy skin disease seen in news recently:

1. It is an infectious disease in cattle caused by bacteria
2. The disease is zoonotic, meaning it spread from animals to humans
3. It is not safe to consume milk from the infected animal.

Which of the statements given above /are incorrect :

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. All of the above.

3. Recently Ramsay Hunt Syndrome seen in news related to

- A. Decrease in bone density
- B. Inflammation of nerves
- C. Lungs infection
- D. Hypervitaminosis

4. Consider the following statements in context to West Nile virus (WNV) and Malaria:

1. Anopheles mosquito transmits malaria to humans, Culex mosquitoes transmit the West Nile virus.
2. Both diseases are caused by a parasite called plasmodium
3. Malaria has a specific line of treatment and can be cured but there is no specific treatment for West Nile virus

Select the correct answer code:

- A. 1 only
- B. 1 and 2 only
- C. 1 and 3 only
- D. 2 and 3 only

5. Consider the following statements:

1. Glucagon increases blood sugar levels, whereas insulin decreases blood sugar levels
2. Pancreas releases both Glucagon as well as insulin.
3. Body produces no or little insulin in type I Diabetes
4. In type II Diabetes body unable to utilize insulin properly

Select the correct answer code:

- A. 1, 2 and 3 only
- B. 2, 3 and 4 only
- C. 1, 3 and 4 only
- D. All of the above.

Answers with Explanations

Click [here](#) to watch the following topics on YouTube.

1. Consider the following statements regarding vaccine-derived poliovirus (VDPV) seen in news recently.

1. It is primarily caused by Injectable inactivated polio vaccine.
2. Generally oral poliovirus vaccines contains a live, weakened form of poliovirus that replicates in the intestine to decrease cases related to vaccine-derived poliovirus (VDPV)
3. VDPVs can cause outbreaks in places where vaccine coverage is low.

Which of the statements given above /are correct?

- A. 1 and 2 only
- B. 2 and 3 only
- C. 3 only
- D. All of the above.

Answer : C

Explanation

What is vaccine-derived polio?

- Oral polio vaccine (OPV) contains an attenuated (weakened) vaccine-virus, activating an immune response in the body. When a child is immunized with OPV, the weakened vaccine-virus replicates in the intestine for a limited period, thereby developing immunity by building up antibodies. During this time, the vaccine-virus is also excreted. In areas of inadequate sanitation, this excreted vaccine-virus can spread in the immediate community (and this can offer protection to other children through 'passive' immunization), before eventually dying out
- On rare occasions, if a population is seriously under-immunized, an

excreted vaccine-virus can continue to circulate for an extended period of time. The longer it is allowed to survive, the more genetic changes it undergoes. In very rare instances, the vaccine-virus can genetically change into a form that can paralyse – this is what is known as a circulating vaccine-derived poliovirus (cVDPV).

- the problem is not with the vaccine itself, but low vaccination coverage. If a population is fully immunized, they will be protected against both vaccine-derived and wild polioviruses.

2. Consider the following statements regarding Lumpy skin disease seen in news recently:

1. It is an infectious disease in cattle caused by bacteria
2. The disease is zoonotic, meaning it spread from animals to humans
3. It is not safe to consume milk from the infected animal.

Which of the statements given above /are incorrect :

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. All of the above.

Answer : D

Explanation

Lumpy skin disease

- Some 1,229 cattle across five districts of Gujarat have been infected with Lumpy Skin Disease (LSD), an infectious viral disease, in the past one month.

Lumpy skin disease

- It is caused by infection of cattle or buffalo with the poxvirus Lumpy skin disease virus (LSDV).

- Historically, LSD has remained confined to Africa, where it was first discovered in 1929, and parts of West Asia.
- LSD was first reported in Asia and the Pacific region in 2019 in north west China, Bangladesh and India.

Symptoms:

- It appears as nodules of two to five-centimetre diameter all over the body, particularly around the head, neck, limbs, udder and genitals.
- The lumps gradually open up like large and deep wounds.

Transmission:

- The LSD virus easily spreads by blood-sucking insects like mosquitoes, flies and ticks and through saliva and contaminated water and food.

Treatment:

- There are no specific antiviral drugs available for the treatment of lumpy skin disease.
- Vaccines are the only cure to an LSD epidemic.



3. Recently Ramsay Hunt Syndrome seen in news related to

- A. Decrease in bone density
- B. Inflammation of nerves**
- C. Lungs infection
- D. Hypervitaminosis

Answer : B

Explanation

Ramsay Hunt Syndrome

- Recently, Pop sensation Justin Bieber revealed that a viral disease has temporarily paralysed one side of his face.
- Bieber said he has **developed a rare condition called the Ramsay Hunt Syndrome**

Ramsay Hunt Syndrome

- Ramsay Hunt Syndrome is neurological disease in which a virus - **Varicella Zoster - causes inflammation of the nerves** involved in facial movements.
- When the **nerves get inflamed, they lose their ability to function, leading to temporary facial palsy or paralysis.** What it means is that facial muscles in the infected person **cannot receive necessary signals to function properly.**
- There are **12 cranial nerves in the body.** Ramsay Hunt Syndrome is the viral infection impacting the **7th cranial nerve that is involved in facial movements.** The inflammation caused by the Varicella Zoster Virus makes the nerve ineffective.

4. Consider the following statements in context to West Nile virus (WNV) and Malaria:

- Anopheles mosquito transmits malaria to humans, Culex mosquitoes transmit the West Nile virus.
- Both diseases are caused by a parasite called plasmodium
- Malaria has a specific line of treatment and can be cured but there is no specific treatment for West Nile virus

Select the correct answer code:

- A. 1 only
- B. 1 and 2 only
- C. 1 and 3 only**
- D. 2 and 3 only

Answer : C

Explanation

West Nile virus Vs malaria?

- The similarities are that they are **both mosquito-borne diseases** and sometimes, both can be potentially **life-threatening**.
- However, **malaria** is caused by a parasite called **plasmodium**, and the **West Nile virus** is a single-stranded **RNA virus** that causes West Nile fever.
- Also, while the **female Anopheles mosquito transmits malaria to humans**, **Culex mosquitoes transmit the West Nile virus**.
- Additionally, malaria presents symptoms like fever with chills and, an immediately throbbing **headache** with chances of complications being high. But the **symptoms of West Nile virus do not always immediately become evident**.
- Treatment wise, **malaria has a specific line of treatment and can be cured**. There is **no specific treatment for West Nile virus** because it is a viral disease. As reported, many people do not even realise they have been infected.

5. Consider the following statements:

1. Glucagon increases blood sugar levels, whereas insulin decreases blood sugar levels
2. Pancreas releases both Glucagon as well as insulin.
3. Body produces no or little insulin in type I Diabetes
4. In type II Diabetes body unable to utilize insulin properly

Select the correct answer code:

- A. 1, 2 and 3 only
- B. 2, 3 and 4 only

C. 1, 3 and 4 only

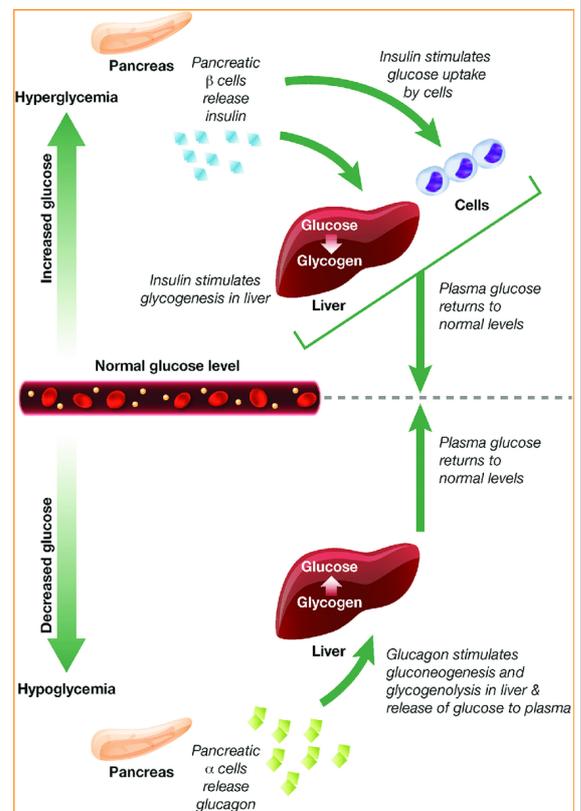
D. All of the above.

Answer : D

Explanation

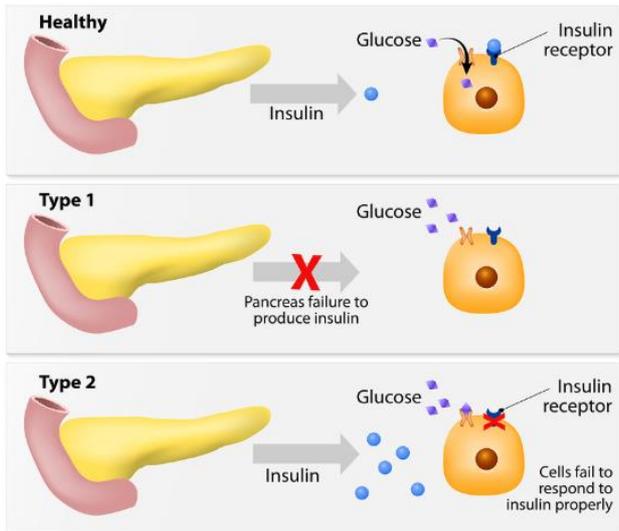
Diabetes

- Recently **Indian Council of Medical Research (ICMR)** released guidelines for the diagnosis, treatment, and management for **type-1 diabetes**.
- This is the **first time the ICMR has issued guidelines** specifically for type 1 diabetes, which is rarer than type 2 – **only 2% of all hospital cases of diabetes in the country are type 1** – but which is being diagnosed more frequently in recent years.
- It gives **detailed guidelines on managing** the disease in different conditions such as when one is pregnant or when one is travelling.



- The guidelines provide details on **diet and exercise, insulin monitoring, and prevention and treatment of complications** such as retinopathy, kidney disease, and nerve disease.

DIABETES MELLITUS



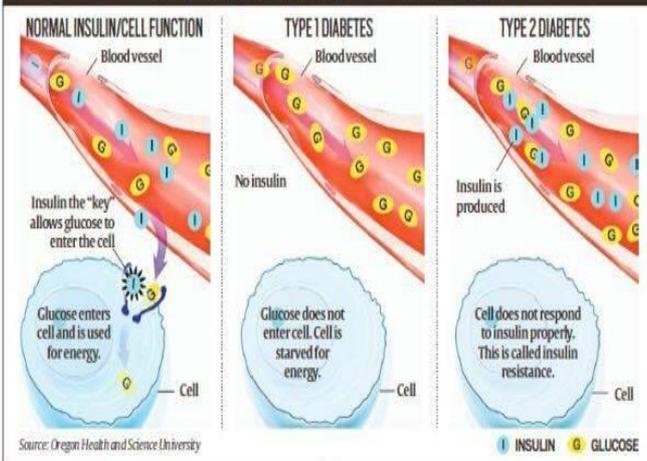
Diabetes: Type 1 vs. Type 2

Diabetes is on the climb - but there is a difference between Type 1 and Type 2. Do you know it?

Type 1 Diabetes	Type 2 Diabetes
Why Your body is no longer able to produce insulin	Why Your body still produces insulin, but it doesn't make enough of it or it doesn't use it efficiently
Age Usually develops during childhood, but can develop at any age	Age Can develop at any age but is most common in adults over 45
Risk Factor Family history	Risk Factor - Overweight and/or inactive - Family history - High blood pressure
Symptoms - Bedwetting - Blurry vision - Frequent urination - Increased appetite & thirst - Mood changes, irritability - Tiredness and weakness - Unexplained weight loss	Symptoms - Increased appetite & thirst - Dark patches on armpits/neck - Frequent urination - Blurry vision - Tiredness & weakness - Unexplained weight loss
Prevention No known prevention methods	Prevention Healthy lifestyle
Treatment Insulin injections	Treatment Healthy living, possible insulin support

OhioHealth Visit blog.ohiohealth.com for ways to stay healthy!

HOW DIABETES TYPES 1 & 2 AFFECT THE BODY



- A similar guidebook for **type 2 diabetes** already exists.