Listening 1

You will hear a part of a conversation about the connection between infection caused by Streptococcus pyogenes, rheumatic heart disease and heart valve stenosis. For each question choose the best answer.

1. At the beginning of the conversation you learn that

A. rheumatic heart disease is now treated with antibiotics.

B. there are virtually no new cases of rheumatic fever.

C. there are virtually no new cases of rheumatic fever complications.

2. What do the speakers say about the 1951 study?

A. The patients were examined with the use of modern techniques, such as MRI.

B. The symptoms of heart valve insufficiency developed progressively and it took on average 20 years to develop valve stenosis.

C. There might have been more cases of heart valve damage than was detected by the investigators.

3. The speakers explain that

A. antibodies against Streptococcus pyogenes damage the heart.

B. both M protein and myosin have alpha helices which are not found in other cells, and this makes the host organism take its own tissue for invaders.

C. heart valve damage results from heart disease, such as pericarditis.

Source: Episode 65 – Taking Things to Heart – The Curious Clinicians

Listening 2

You will hear a part of a conversation between Dr. Larry Benge and John Stanley about mouthguards. Decide if these sentences are true (T) or false (F).

4. You can buy thermoplastic mouthguards at a pharmacy and fit them to your mouth yourself.

5. Mouthguards made by dental technicians are better because they fit better and are bigger.

6. Mouthguards are especially important in children who are changing their first teeth for permanent teeth, but even mouthguards do not provide total protection against injury.

Source: Teeth Wisdom with Dr Larry Benge - 23rd June - Nights with John Stanley - Omny.fm

Listening 3

You will hear a part of an interview with Rob Wynn from the Royal Manchester Children's Hospital about gene therapy for metachromatic leucodystrophy. Complete the sentences with a short phrase (at least two words). You may use different words than these in the recording, but the meaning must be the same.

7. Patients with metachromatic leucodystrophy have nonfunctional arylsulfatase A. In these patients certain cell types die because material ..... .

8. ..... was inserted into cells from Teddi's bone marrow.

9. Additionally, these cells were changed to produce more enzyme. This was done by changing ..... .

10. Cells produced by altered stem cells can .... and engraft there.

11. The principle of this therapy, known as cross correction, is that the enzyme produced by donor cells is..... .

12. The disease, if untreated, leads to ....

Source: Life-saving gene therapy for UK baby | Interviews | Naked Scientists (thenakedscientists.com)

Reading 1

"Periprosthetic Joint Infection"

Periprosthetic joint infection (PJI) is a rare disease which involves interactions between microorganisms, the implant and host immune system. A small quantity of microorganisms can cause PJI; bacteria, and in rare cases, fungi, form biofilms on arthroplasty surfaces. Biofilms tend to be refractory to many antimicrobial agents and the host immune system. Causative microorganisms are often skin microbiota inoculated at placement, although implants may be seeded after placement, either hematogenously or through compromised local tissues. The most common symptom is joint pain. With chronic infection, there may be pain alone. It may be challenging to differentiate PJI from noninfectious causes of arthroplasty failure.

The reported incidence varies across studies because of differences in populations, definitions, and the duration of follow-up. Numerous risk factors have been identified, including anemia, injection drug use, malnutrition, obesity, poor glycemic control, and tobacco use. Arthroplasty procedures should be deferred when there is active infection elsewhere. Receipt of injections into affected joints 3 months or less before total knee arthroplasty or total hip arthroplasty is a risk factor for PJI. Patients who have undergone multiple arthroplasties and present with PJI in one joint have up to a 20% risk of infection in another joint, either synchronously or metachronously, possibly years later.

Patients with Medicaid as a primary payer are at increased risk for PJI, even with adjustment for educational level and household income. Prolonged operative time also increases the risk. Since complications are more likely when arthroplasty is performed at low-volume hospitals by low-volume surgeons, management at specialized centers should be considered. Meta-analyses comparing surgical-site infection and PJI in patients undergoing elective total knee arthroplasty or total hip arthroplasty have shown an increased risk of any infection with little difference in risk according to whether universal decolonization or screening-based decolonization was performed.

Arthrocentesis is a highly recommended mainstay of PJI diagnosis. Normal laboratory-reported values and those for septic arthritis of a native joint do not apply to the leukocyte count and neutrophil percentage. Arthroscopy with biopsy may be considered if the PJI diagnosis remains unconfirmed. Plain radiographs have low sensitivity and specificity; periprosthetic radiolucent lines, osteolysis, implant migration, or a combination of these findings may be present with infection or aseptic loosening.

At surgery, tissue should be collected for histopathological evaluation, unless the diagnosis of PJI has already been established, with multiple tissue specimens collected for aerobic and anaerobic culture. Ideally, samples should be cultured in blood culture bottles, and anaerobic cultures should be incubated for 14 days. The culture yield is likely to be higher when antibiotics are withheld for at least 2 weeks before culture. However, prophylactic preoperative antibiotic therapy does not reduce the culture yield. Frozen-section analysis for acute inflammation permits intraoperative assessment. By using diagnostic methods for biofilm detection such as sonication, the sensitivity for diagnosing PJI is increasing, especially in chronic infections caused by low-virulence pathogens. The use of biofilm-active antibiotics enables eradication of micro-organisms in the presence of a foreign body. The total duration of antibiotic treatment following revision surgery should not exceed 12 weeks.

Sources: https://www-1nejm-1org-1inii60m002a4.hanproxy.cm-uj.krakow.pl/doi/10.1056/NEJMra2203477

EFORT Open Rev 2019;4:482-494. DOI: 10.1302/2058-5241.4.180092.

Choose the best answer.

1. The text states that

A. PJI often develops when the patient's immune system is weakened.

B. the infectious organism may reach the joint when the prosthesis is being inserted or through the bloodstream.

C. there are not many types of microorganisms that can cause PJI.

2. The text states that

A. diabetics are at a greater risk of developing PJI.

B. patients who have had multiple procedures of arthroplasty have a higher risk of developing PJI.

C. studies report a different incidence of PJI because they studied too few patients.

3. The text states that

A. patients without private insurance (Medicaid patients) are more likely to develop PJI because they are poorer.

B. PJI is less common when it is performed in smaller hospitals.

C. research shows that there would be no great profit in testing patients for *S. aureus* before surgery.

4. The text states that

A. a keyhole surgery will help to decide if the damage in the joint is linked to PJI.

B. if the implant changes its position in a bone, it can result in joint infection.

C. the values of the leukocyte count and neutrophil percentage present in PJI resemble the values present in infectious arthritis of a non-implant joint.

5. The text states that

A. antibiotics should not be administered before tissue collection for histopathological evaluation.

B. histopathological evaluation may also be performed very rapidly.

C. sonification is especially useful when the pathogen causes much damage to a host.

Reading 2

"The Next Medical Revolution?"

In medicine today, uncertainty is generally suppressed and ignored. Embodied in our teaching, our case-based learning curricula, and our research is the notion that we must unify a constellation of signs, symptoms, and test results into a solution. .....(**1**)..... Yet, the reality is that doctors continually have to make decisions on the basis of imperfect data and limited knowledge, coupled with the uncertainty that arises from unpredictable patient responses to treatment and from health care outcomes that are far from binary. The unintended consequence — an obsession with finding the right answer, at the risk of oversimplifying the richly iterative and evolutionary nature of clinical reasoning — is the very antithesis of humanistic, individualized patient-centered care.

Being uncertain instills a sense of vulnerability in us — a sense of fear about what lies ahead. .....(**2**)..... We are still strongly influenced by a rationalist tradition that seeks to provide a world of apparent security.

Great tensions are created by the conflict between the quest for certainty and the reality of uncertainty. .....(**3**)..... Physicians' difficulty in accepting uncertainty has also been associated with detrimental effects on patients, including excessive ordering of tests that carry risks of false positive results or iatrogenic injury. In addition, we risk premature closure in our decision-making process, with increased potential for diagnostic error.

Our need to tolerate uncertainty has never been more urgent. In our experience, many current medical students, the digital natives, insist on knowing "the right answer" and are frustrated when one cannot be supplied. .....(**4**)..... Given the easy access to information online and electronically, students spend less time at the bedside in the gray-scale world of medicine and more time in front of a screen absorbing processed and general information rather than immediate and idiosyncratic realities.

Cultivating a tolerance of uncertainty will require a revolutionary change in medicine's cultural attitude. .....(**5**)..... Educators can start by asking questions that focus on "how" and "why," not "what" encouraging students' curiosity to explore and capacity to sit comfortably with uncertainty. Our curricula should recognize diagnosis as dynamic and evolving — an iterative process that accounts for multiple, changing perspectives. So, shifting away from the black-and-white multiple-choice questions that are all too common, to focus on evaluating clinical reasoning and the demonstration of tolerance for uncertainty. We can speak about "hypotheses" rather than "diagnoses." This shift may entail discussing uncertainty directly with patients, reflecting on its origins — subjectivity in the illness narrative, diagnostic sensitivity and specificity, unpredictability of treatment outcomes, and our own assumptions and unconscious biases.

As we move further into the 21st century, it seems clear that technology will perform the routine tasks of medicine for which algorithms can be developed. Our value as physicians will lie in the gray-scale space. We must remind ourselves of Osler's maxim that "medicine is a science of uncertainty and an art of probability." Ironically, only uncertainty is a sure thing.

Source: http://www.nejm.org/doi/full/10.1056/NEJMp1606402

Match the sentences (a-g) to gaps in the text (1-5). There are two extra sentences you do not need to use.

a. Doctors' maladaptive responses to uncertainty are known to contribute to work-related stress.

b. Despite early work, the systematic study of uncertainty did not begin in earnest until the 1990s.

c. The public could be forgiven for regarding physicians as trafficking in certitude, producing diagnoses or summarizing research with triumphant finality.

d. It is unsettling and makes us crave black-and-white zones, to escape this gray-scale space.

e. Our curricula (formal, informal, and hidden), assessments, and evaluations will need to be modified to emphasize reasoning, the possibility of more than one right answer, and consideration of our patients' values.

f. This attitude no doubt increases the likelihood that they will perceive uncertainty as a threat.

g. Too often, we focus on transforming a patient's gray-scale narrative into a black-and-white diagnosis that can be neatly categorized and labeled.

Use of English 1

Complete the sentences with words transformed from the words given.

1. _____ rheumatic pain can have an effect on the whole body. **OS**
2. There are many cases of _____ cancer in the UK. **PENIS**
3. _____ are remedies that allay coughing. **TUSSIS**
4. _____ is a reeling sensation, caused by a temporary decrease in blood flow to the brain. **HEAD**
5. These effervescent tablets _____ in lukewarm water. **SOLVE**
6. Six weeks after _____ your baby is the size of your little fingernail. **CONCEIVE**

Use of English 2

Give medical terms to the following definitions.

1. high level of proteins in urine: **p**_____
2. surgical removal of the gallbladder: **c**_____
3. pain in muscles: **m**_____
4. a medical term for a woman who has never been pregnant: **n**_____
5. about a patient: able to walk, not bedridden: **a**_____
6. vomiting with blood: **h**_____

Use of English 3

Paraphrase the following sentences, using the given clues. Do not change the word given.

1. Please, can you stop smoking in my room? **RATHER**

.....

2. I'll be starting my shift in a second. **ABOUT**

.....

3. Dr Black almost never performs ultrasounds. **EVER**

.....

4. The OR is empty. I'm sure the operation has finished. **MUST**

The OR is empty. .....

5. She can't be here today because she's caught the flu. **COME**

.....

6. The integumentary system serves to cover and protect the body. **FOR**

.....

7. I wish I had applied the ointment the way the doctor prescribed. It would have cleared by now! **REGRET**

..... . It would have cleared by now!

8. I waited for my patient unnecessarily; he didn't come. **NEED**

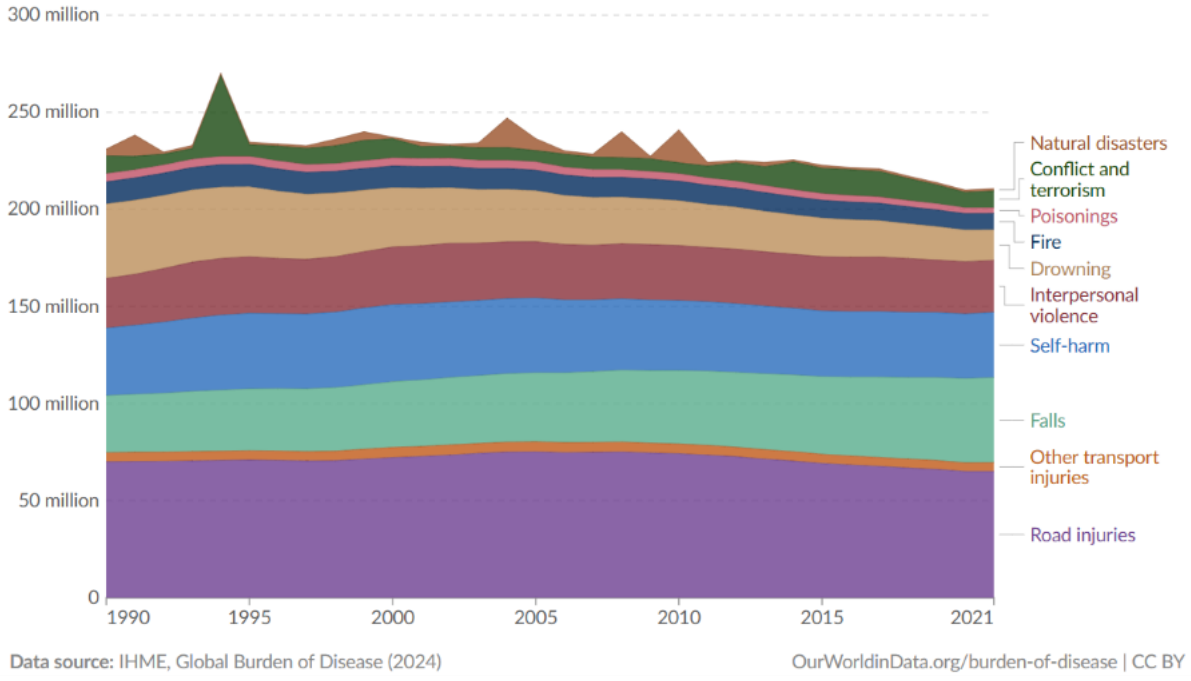
..... ; he didn't come.

Writing 1: graph summary

Summarize the information shown in the graph. Provide your interpretation in the last paragraph. Use formal language. Write at least 100 words.

Disease burden from injuries

Disease burden is measured in DALYs (Disability-Adjusted Life Years).
One DALY equals one lost year of healthy life.



Writing 2: mini essay

Topic: The shortage of healthcare professionals is a growing problem worldwide.

- What are the main reasons for this issue and what consequences does it have for patients and healthcare systems?
- In your essay, clearly state your opinion on which reasons and consequences are the most significant.
- Write at least 2 reasons and 2 consequences, supported by 1–2 examples.
- Use formal language and write 150–180 words.

Answer Key

LISTENING 1

1 B 2 C 3 A

LISTENING 2

4 F 5 F 6 T

LISTENING 3

7. builds up inside them
8. A healthy copy of the gene
9. the promoter (next to the/of the) gene
10. cross the blood-brain barrier
11. is taken up/ (and) metabolized by neighboring cells
12. premature death/loss of functions/skills

READING 1

1. b 2. a 3. c 4. a 5. b

READING 2

Gap 1—g Gap 2—d Gap 3—a Gap 4—f Gap 5—e

USE OF ENGLISH 1

1. osseous/osteal
2. penile
3. antitussives
4. lightheadedness
5. dissolve
6. conception

USE OF ENGLISH 2

1. proteinuria
2. cholecystectomy
3. myalgia/myodynia
4. nulligravida
5. ambulant
6. hematemesis/haematemesis

USE OF ENGLISH 3

1. I would/'d rather you didn't smoke/stopped smoking in my room.
2. I'm about to start my shift.
3. Dr Black hardly ever performs ultrasounds. / Hardly ever does Dr Black preform ultrasounds.
4. The operation must have finished.
5. She can't be here today because she's come down with the flu.
6. The integumentary system is responsible for covering and protecting the body.
7. I regret not having applied the ointment the way the doctor prescribed.

OR... I regret not applying the ointment the way the doctor prescribed.

8. I need not have waited for my patient.

OR ... There was no need to wait for my patient.