

Listening**Task 1. Choose the best answer.**

1. You can hear in the recording that
 - a. the use of insulin as injections may cause significant long-term complications.
 - b. diabetes may cause blindness and neuropathy.
 - c. up till now patients have not been able to take insulin orally because it is non-digestible.

2. This is **not** one of the problems the scientists wanted to solve:
 - a. to protect insulin from hydrochloric acid in the stomach.
 - b. to make insulin pass through the wall of the intestine.
 - c. to make insulin pass through the cell layer when leaving bloodstream and entering body cells.

3. You learn this from the recording:
 - a. salts with small ions form solids.
 - b. ionic liquids have small ions.
 - c. ionic liquids can be charged positively or negatively.

4. The scientist says that
 - a. ionic liquids stabilize proteins and act on the cells of intestines.
 - b. the researchers made experiments with only one ionic liquid.
 - c. the ionic liquid the researchers are studying has a complicated formula and unique components.

5. To form an oral insulin pill, insulin
 - a. has to be mixed with two ionic liquids.
 - b. is mixed with a dietary supplement first, and then an ionic liquid is added.
 - c. is mixed with only one ionic liquid.

Task 2. Complete the gaps. Use at least two words in each gap.

The scientists performed (6) to check the effectiveness of the insulin pill. They found that the ionic liquid they have chosen overcomes the mucous barrier by (7) The scientists observed (8) in rats receiving insulin orally. The oral use of insulin will require (9) but it will be more effective and safer because it will prevent (10)

Reading**Delirium and Sedation**

Patients in intensive care units (ICUs) are treated with many interventions that are observed or perceived to be distressing.**1**..... The short-term consequences of untreated pain include higher energy expenditure and immunomodulation. Longer-term, untreated pain increases the risk of post-traumatic stress disorder.**2**..... Sedatives, however, should be used only when pain and delirium have been addressed with the use of specific pharmacologic and nonpharmacologic strategies.

Assessing whether a patient in the ICU is in pain may be difficult. The reference standard for the assessment of pain is self-reporting by the patient, but patients in the ICU may not be sufficiently interactive to give valid responses.3..... Pain scales such as the Behavioral Pain Scale provide structured and repeatable assessments and are currently the best available methods for assessing pain.

.....4..... For the remaining overwhelming majority of patients undergoing mechanical ventilation the use of sedatives and analgesics should be minimized, with the goal that they be calm, lucid, pain-free, interactive, and cooperative with their care.

In a landmark trial that compared routine daily interruption of sedative infusions with discretionary interruption by treating clinicians, patients whose sedation was routinely interrupted received less sedation overall and spent fewer days undergoing mechanical ventilation and fewer days in the ICU. The observed reductions in the duration of mechanical ventilation and length of stay in the ICU were associated with a nonsignificant reduction in mortality and a nonsignificant increase in the proportion of patients who were discharged to their own homes.

The four domains of delirium are disturbance of consciousness, change in cognition, development over a short period, and fluctuation. Studies using magnetic resonance imaging have shown a positive association between the duration of delirium in the ICU and both cerebral atrophy and cerebral white-matter disruption.5..... There is no diagnostic blood, electrophysiological, or imaging test for delirium, which therefore remains a clinical diagnosis.

There are two distinct forms of delirium, hypoactive and hyperactive. Hyperactive delirium affects less than 2% of patients with delirium in the ICU. Patients with hypoactive delirium are less likely to survive, but those who do survive may have better long-term function.

Of the sedation scales, the Riker Sedation–Agitation Scale and the Richmond Agitation–Sedation Scale are the most commonly reported. For the majority of patients undergoing mechanical ventilation in an ICU, an appropriate target is a score of 3 to 4 on the Riker Sedation–Agitation Scale (which ranges from 1 to 7, with scores of <4 indicating deeper sedation, a score of 4 indicating an appearance of calm and cooperativeness, and scores of ≥ 5 indicating increasing agitation) or a score of –2 to 0 on the Richmond Agitation–Sedation Scale (which ranges from –5 to +4, with more negative scores indicating deeper sedation and more positive scores indicating increasing agitation, and with 0 representing the appearance of calm and normal alertness).

Sedation and Delirium in the Intensive Care Unit | NEJM

Task 1. Choose the best answer.

1. The text states that most ICU patients
 - a. have an increased risk of post-traumatic stress disorder if oversedated.
 - b. should receive as little doses of analgesia as possible.
 - c. are rarely correctly diagnosed regarding pain they experience.

2. The study mentioned in the fourth paragraph proved that
 - a. if the doctor decided whether to continue or stop analgesia, the patient was more likely to return home after discharge.
 - b. regular pauses in sedation administration decreased the number of days patients stayed in ICU and other health facilities.
 - c. regular pauses in sedation administration improved patients' condition.

3. It is **not** true that delirium
 - a. can be diagnosed based on imaging tests.
 - b. is an unstable state.
 - c. is an acute state.

4. The text states that when patients arrive at an ICU
 - a. sedating them is a priority.
 - b. they are usually in pain, mostly treated inadequately.
 - c. and become delirious, they are more likely to be too calm than agitated.

5. The text states that
 - a. in comparison with the Richmond Agitation–Sedation Scale, the Riker Sedation–Agitation Scale, has more scores for deeper sedation.
 - b. patients are usually sedated more deeply than it would be necessary for them to be calm and normally alert.
 - c. both scales recognize more degrees of agitation than deeper sedation.

Task 2. For each gap (1-5) choose one sentence (a-g) that best completes the text. There are two extra sentences that you do not need to use.

- a. A minority of ICU patients have an indication for continuous deep sedation, for reasons such as the treatment of intracranial hypertension, severe respiratory failure, refractory status epilepticus, and prevention of awareness in patients treated with neuromuscular blocking agents.
- b. Pain is the most common memory patients have of their ICU stay.
- c. Among patients in the ICU, the duration of delirium was cut in half with early mobilization during interruptions in sedation.
- d. Consequently, sedatives and analgesics are among the most commonly administered drugs in ICUs.
- e. Currently, the evidence that specific treatment of delirium may improve outcomes is tenuous.
- f. On the other hand, physiological indicators such as hypertension and tachycardia correlate poorly with more intuitively valid measures of pain.
- g. Separating the effects of delirium status from those of illness severity with respect to the risk of death is difficult, since patients with more serious illnesses are at increased risk for both delirium and death.

Vocabulary

Complete the text with the words given. There are seven extra words you do not need to use.

dispense	emesis	numbness	posology	drowsy	attenuate
precautions	popliteal	generic	onset	disposable	assess
guarding	persistent	tinnitus	rule out	contusion	

The (1) vein is one of the major blood vessels in the lower body. It runs up the back of the knee and carries blood from the lower leg to the heart. Sometimes, a blood clot can restrict circulation in your legs. The symptoms include pain and tenderness around the area of the clot. The patient also may experience (2), that is, a loss of sensation.

At the (3) of appendicitis, people often feel an aching pain that begins around the belly button and then slowly localizes over the lower right abdomen. To diagnose appendicitis, your healthcare team may:

- Conduct an abdominal exam to (4) pain and detect inflammation
- Your doctor also may look for abdominal rigidity and a tendency for muscle (5) in response to pressure over the inflamed appendix.
- Order a urine test to (6) urinary tract infection and kidney stones.

If your patient feels (7), has a (8) or worsening headache, experiences (9) (ringing in the ears) you should suspect head injury. Look for signs of trauma, including (10) , and swelling.

Grammar

Complete the sentences with the correct forms of the verbs in brackets.

1. Nowadays more and more people (choose) to use Internet medicine.
2. When I heard the noise, I looked around to see what (happen).
3. This is the first time a thoracic aortic dissection (repair) in this hospital.
4. This was a dangerous thing to do. You (can/hurt) yourself!
5. I spent three days learning English but the exam was so easy! I (need/learn) so much!

Write new sentences so that they have the same meanings as the sentences given. Use the words given, do not change them.

6. "Did you fall?"
..... KNOW
7. I don't have a prescription pad here, so I can't prescribe these pills for you.
..... IF
8. I regret not having taken this job.
..... WISH
9. This research paper is much more detailed than the other one.
..... AS

Use a relative clause to form one sentence.

10. The ambulance was not fully equipped. We had already paid for the ambulance.
.....

Writing

Napisz **list formalny** do zespołu fizjoterapeutów pracujących w szpitalu dziecięcym. Opisz przypadek swojego pacjenta, 3-miesięcznego chłopca imieniem Tom Beaddle, który będzie odtąd pod ich opieką. Chłopiec cierpi na porażenie mózgowie (*cerebral palsy*). Przekaż poniższe informacje, napisz co najmniej 90 słów. Pamiętaj, że nie znasz nazwisk adresatów. Nie pisz adresów.

1. Chłopiec urodzony przez cesarskie cięcie, szyję miał owiniętą pępowiną.
2. Zaraz po urodzeniu akcja serca wolna i nieregularna; wymagał wentylacji mechanicznej przez 2 dni.
3. Badania dodatkowe wykazały encefalopatię niedotlenieniowo-niedokrwienną; dziecko ma trudności z ogniskowaniem wzroku.
4. Dziecko musi być karmione co 3 godziny mieszanką sztuczną; z wysoką zawartością węglowodanów.
5. Wymaga fizjoterapii w celu rozluźnienia mięśni i zapobieżenia zapaleniu płuc.
6. W przypadku wystąpienia drgawek wymaga jednorazowego podania benzodwazepiny (*benzodiazepine*); doodbytniczo w dawce 1 mg na kilogram masy ciała.

KEY

Listening

Task 1

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

Task 2

6. several/a number of/many studies/experiments/much research
7. lowering/reducing its viscosity
8. (blood) glucose (level) reduction
9. higher/bigger doses/greater amount
10. (sudden) glucose level fluctuations/jumps, etc./going down and coming up/jumping/too sudden/abrupt reduction of/changes in glucose level

Reading

Task 1

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

Task 2

1. b
2. d
3. f
4. a
5. g

unnecessary sentences: c, e

Vocabulary

1. popliteal
2. numbness
3. onset
4. assess
5. guarding
6. rule out
7. drowsy
8. persistent
9. tinnitus
10. contusion

Grammar

1. are choosing
2. was happening/had happened
3. has been repaired
4. could have hurt

5. needn't have learnt
6. I want to know if/whether you fell.
7. If I had my prescription pad, I could/would prescribe these pills/write a prescription for you.
8. I wish I had taken this job.
9. The other research paper is not as detailed as this paper/one.
10. The ambulance, which had been already paid for/we had already paid for/for which we had already paid, was not fully equipped.
The ambulance, which was not fully equipped, had already been paid for.

Reading – Miara trudności tekstu

ut patients in the ICU may not be sufficiently

Statystyka czytelności	
Counts	
Words	469
Characters	2 672
Paragraphs	7
Sentences	18
Averages	
Sentences per Paragraph	2,5
Words per Sentence	26,0
Characters per Word	5,5
Readability	
Flesch Reading Ease	18,9
Flesch-Kincaid Grade Level	17,0
Passive Sentences	0,0%

stic blood, electrophysiological, or imaging test

Text Formatting Attributes

Word Total:	465
Sentence Total:	18
Average Words Per Sentence:	25.8
Paragraph Total:	7
Average Words Per Paragraph:	66.4
Quoted Words Total:	0
Genre:	Informational



Tip

If these values are not consistent with your expectations, please review our [TextEvaluator formatting guidelines](#).

Difficulty Relative to Target Grade

Dimension of Variation/Component Score	Value
Sentence Structure	
Syntactic Complexity <i>(Higher Values Indicate Higher Complexity)</i>	72
Vocabulary Difficulty	
Academic Vocabulary <i>(Higher Values Indicate Higher Complexity)</i>	89
Word Unfamiliarity <i>(Higher Values Indicate Higher Complexity)</i>	100
Concreteness <i>(Lower Values Indicate Higher Complexity)</i>	18
Connections Across Ideas	
Lexical Cohesion <i>(Lower Values Indicate Higher Complexity)</i>	64
Interactive/Conversational Style <i>(Lower Values Indicate Higher Complexity)</i>	6
Level of Argumentation <i>(Higher Values Indicate Higher Complexity)</i>	57
Organization	
Degree of Narrativity <i>(Lower Values Indicate Higher Complexity)</i>	49
Overall Text Complexity	
TextEvaluator Complexity Score	1500

Results

- Lexile® Measure: 1500L - 1600L
- Mean Sentence Length: 26.06
- Mean Log Word Frequency: 2.95
- Word Count: 469

Listening – Transkrypcja

Millions of people worldwide are afflicted by diabetes and regularly have to inject the insulin they lack to control their blood sugar. Now scientists have developed a way to package the drug into a pill and protect it from digestion.

Samir - In diabetes insulin is not produced by the pancreas, or not used very well by the cells, so the sugar level in the body goes up and that has significant long-term complications, such as loss of eyesight, loss of sensation.

The main therapy is to take insulin. Now insulin is the protein, which means it gets digested by the stomach and, even if some insulin remains in the stomach intact, it goes into the intestine, and it cannot be absorbed from the intestine into the blood circulation. So, a long story short, you cannot take insulin as a pill, it'll just get digested so that's why people have to inject it into the body.

Chris - What have you done to try and surmount the problem?

Samir - We figured that if we want to deliver insulin orally, which would tremendously help diabetics, we had to figure out three things:

One: we had to protect insulin in the stomach from the enzymes and the acidity in the stomach. When insulin reaches the intestine, we had to make sure that it can cross the mucus layer which is present on the inner lining of the intestine.

We had to make sure that insulin can cross the cell layer which is also present on the intestine and is connected by tight junctions. These are the barriers which are designed by the body to keep large molecules out and we had to overcome them to be able to deliver insulin into the blood circulation.

Chris - How do you think you can do it?

Samir - That's where ionic liquids came into the picture. Ionic liquids are a very interesting class of materials. These are basically liquid salts, so just think about your table salt which is sodium chloride. In the case of sodium chloride, the sodium and the chloride ions are very small so they form a solid. Now, imagine a large positive charge and a large negative charge molecule, when they form a salt they are a liquid, and that's basically ionic liquid.

These ionic liquids have very interesting properties; they can stabilise proteins like insulin, they can overcome the barrier of the mucus, and they can also open the tight junctions by acting on the cells of the intestine. We tried a number of ionic liquids and it turned out one in particular is very effective in overcoming all three barriers in a single formulation and that's what allowed oral delivery of insulin in our study.

Chris - My question is then, what is the liquid in question and how do you mix it up with the insulin so that you end up with a form of insulin that will get in via mouth into the bloodstream?

Samir - The ionic liquid that we used has two components. The first component is choline, which is basically a dietary supplement that many people take. And the second molecule in the ionic liquid is geranic acid, which is also a naturally occurring molecule present in lemongrass and cardamom. When we combine them they form this ionic liquid that we call CAGE which stands for choline and geranic acid eutectic, and we add insulin to it and essentially make a suspension and fill that liquid in a capsule, and that's the formulation that we deliver.

Chris - Does it work? I mean, when you take this, does the insulin get protected from the stomach acid and does it end up getting into the bloodstream?

Samir - It works very well. We did a number of studies. We looked at the ability of CAGE to protect insulin against the enzymes and it was quite effective. We also looked at the ability of CAGE to reduce the mucus barrier by lowering its viscosity and it worked very well. And the third set of studies we also looked at how well this CAGE worked in opening the tight junctions of the intestine, and that also worked very well. When we delivered this insulin pill to rats, we saw a significant reduction of the glucose levels, which is an indication of insulin getting into blood circulation.

Chris - Was it as good or better than if you inject insulin? Does it work equivalently well?

Samir - You had to deliver a little bit more insulin by oral route compared to an injection, but the end result is much better than what we got with injection. And what I mean by that is when you inject insulin by needles it is all delivered very quickly into the blood, so the glucose level goes down quickly, and the insulin is eventually cleared, and the glucose level comes up quickly. So, there is a big jump in insulin concentration and a big reduction as opposed to that when you deliver it orally you see a long-lasting effect of insulin on the blood glucose level. So, a single oral pill can reduce the glucose levels for a much longer time than an injection can.