問題①　Question①

Read the article and answer the following questions in English.

The text of the question has been omitted for copyright protection. Please refer to the following sources.

(From Elizabeth Gourd, Lung cancer treatment compromised by delayed genomic test results, *The Lancet Oncology,* Volume 26, Issue 4, p 420, April 2025)

Questions①

1. List and briefly explain two negative effects of delays in genomic testing for lung cancer patients. Please write around 20 words for each effect.

2. What is the recommended maximum turnaround time for genomic testing from biopsy to full results report in the UK?

A. 7 days
B. 10 days
C. 14 days
D. 21 days

3. Which of the following is NOT cited as a consequence of delays in genomic testing?

A. Stage-shift in disease
B. Reduction in treatment cost
C. Increased patient anxiety
D. Decline in overall survival

4. Which of the following interventions was proposed to help ensure timely genomic test results?

A. Increased chemotherapy access
B. Expansion of radiotherapy units
C. Mandatory hospitalization of all patients
D. Digital tracking of patient samples

5. What innovation is being pioneered to help accelerate lung cancer genomic testing?

A. MRI-based genetic profiling
B. Circulating tumour DNA (ctDNA) testing
C. AI-based radiation dosing
D. Robotic biopsy navigation

6. What has the National Institute for Health and Care Excellence (NICE) reported regarding lung cancer treatment approvals over the past decade?

A. A six-fold increase in positive recommendations
B. A three-fold increase in approvals
C. No significant changes
D. A 50% reduction in treatment cost

7. Which initiative was established in 2024 to streamline the cancer pathology and genomic testing pathways?

A. National Cancer Plan
B. Genomic Innovation Partnership
C. Cancer Genomics Improvement Programme
D. National Radiotherapy Access Scheme

8. What specific opportunity does Lyndsy Ambler identify as a means to enhance genomic services across the UK?

A. Integrating genomics into primary care diagnostic routines
B. Centralizing all genomic testing within private laboratory networks
C. Introducing a national framework for personalized medicine reimbursement
D. Utilizing the upcoming National Cancer Plan to invest in workforce and service development

問題②　Question②

Read the article and answer the following questions in English.

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(From: Abu Fraiha Y, et al. Health Care Bridges — Pathways toward Trust in Gaza and Beyond. *New England Journal of Medicine*. 2025 Mar 27;392(12):1145–1148.)

Question②

1. Please describe within 50 words how the war affected health care systems and medical professionals in Gaza and Israel.

2. Please describe within 50 words the emotional and personal losses experienced by the individuals mentioned in the article.

3. What challenges did Dr. Ahmed face when treating patients at the Indonesian Hospital in Gaza? Describe within 30 words.

4. What personal losses did Noam Alon experience during the October 7, 2023, attacks? Describe within 30 words.

5. According to the article, how did Avner Halperin respond to the aftermath of the conflict? Describe within 30 words.

問題③　Question③

Read the article and answer the following questions in English.

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(From Traci Watson, Fat cells have a ‘memory’ of obesity - hinting at why it’s hard to keep weight off, *Nature*, News 18 November, 2024, 635, 798)

Question③

1. Answer the questions 1)-3) within 30 words each.

   1) What is the 'memory' of obesity that fat cells carry, according to the article?

   2) What evidence from the human study supports the idea that this cellular memory persists after weight loss?

   3) What was one effect of this cellular memory observed in the fat cells from mice that had slimmed down after being obese?

2. According to the article, which of the following statements are True or False? Circle ‘True’ or ‘False’ in the parentheses on the answer sheet.

   1) The research showed that weight-loss surgery successfully reversed the obesity-linked pattern of genetic activity in fat cells after two years.

   2) In the fat cells of both humans and mice with obesity, genes associated with inflammation and the formation of stiff, scar-like tissue were found to be more active than in those from individuals who had never been obese.

   3) The study's authors agree that they have not yet established a definitive causal link between the observed epigenetic alterations and the body's tendency to regain weight.

   4) The scientists determined that the epigenetic memory of obesity is permanent and can never be lost.

Answers to Question ①

1: (30 points, 15 points for each effect)

- Delays in genomic testing cause lung cancer patients to wait longer for the best treatment, which allows the cancer to worsen.
- Delays in care cause anxiety, worsen patient health, allow cancer to progress, and can reduce chances of survival.

2. C (10 points)

3. B (10 points)

4. D (10 points)

5. B (10 points)

6. A (10 points)

7. C (10 points)

8. D (10 points)

Answers to Question②

1. (20)

Medical care in Gaza collapsed under constant bombardment. Hospitals were bombed, raided, and lacked beds, anesthetics, and staff. Doctors treated patients on the floor without trauma teams. Infrastructure was destroyed, and physicians faced impossible workloads and severe resource shortages while treating mass casualties and outbreaks in inhumane conditions.

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2. (20)

Many doctors lost family, friends, and colleagues. Noam Alon's relatives were killed and her home destroyed. Dr. Ahmed was displaced from his home and forced to work under extremely harsh medical conditions.

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3. (20)

He faced overcrowding, lack of beds, no anesthetics, and had to work without a trauma team under chaotic and dangerous conditions.

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4. (20)

Three family members were murdered, her home in Kibbutz Kfar Aza was destroyed, and another relative's remains were found later.

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5. (20)

He developed technologies to treat trauma and physical injuries, aiming to help survivors recover from the effects of war.

Answers to Question ③

1. (20*3)

   1) It is a set of changes in the cell’s epigenome that alters gene activity.

   2) Two years after weight-reduction surgery, participants' fat cells still displayed the same obesity-linked pattern of genetic activity, despite their significant weight loss.

   3) These fat cells absorbed more sugar and fat than those from control mice that had never been obese.

1. (10*4)

   1) False

   2) True

   3) True

   4) False