Medicine and technology

VOCABULARY PRACTICE

ADVANCED | C1

Name: _____ **Date:** _____

1 Match each advanced health-technology concept with its meaning.

1 software as a medical device	____	a formal review allowing a product onto a regulated market
2 federated learning	____	b tendency to over-trust an automated recommendation
3 model drift	____	c systematic evaluation of clinical, economic and social value
4 explainability	____	d monitoring safety and performance after release
5 automation bias	____	e software performing a medical function without being part of hardware
6 human-in-the-loop	____	f meaningful human review within an automated process
7 post-market surveillance	____	g change in performance as populations or conditions evolve
8 digital phenotype	____	h training across separate datasets without centralising raw data
9 regulatory clearance	____	i ability to give understandable reasons for system output
10 health technology assessment	____	j health-related pattern inferred from digital behaviour and sensors

2 Complete the governance collocations.

assessment | bias | clearance | drift | explainability | learning | loop | surveillance

1 conduct health technology _____

2 obtain regulatory _____

3 monitor model _____

4 improve system _____

5 reduce automation _____

6 keep a human in the _____

7 use federated _____

8 perform post-market _____

3 Choose the concept that best captures the distinction.

1 Hospitals train one model without pooling raw records: *federated learning / interoperability*.

2 Accuracy falls as practice patterns change: *model drift / algorithmic bias*.

3 A clinician accepts an alert without adequate review: *automation bias / explainability*.

4 A qualified person can override the system: *human-in-the-loop / full automation*.

5 Safety is tracked after commercial release: *post-market surveillance / clearance*.

6 Phone and sensor patterns indicate changes in health: *digital phenotype / biometric identifier*.

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4 Complete the governance review with terms from the box.

automation bias | digital phenotype | explainability | federated learning | health technology assessment | human-in-the-loop | model drift | post-market surveillance | regulatory clearance | software as a medical device

The product qualifies as **1** _____ and requires **2** _____ before deployment. A broader **3** _____ examines comparative value and distributional effects. Development uses **4** _____, while documentation addresses **5** _____. The workflow retains a **6** _____ to mitigate **7** _____. Continuous evaluation detects **8** _____, and **9** _____ captures rare harms after release. A separate study tests whether a **10** _____ can be inferred responsibly.

5 Read the text and answer the questions concisely.

From promising model to accountable system

Strong performance in a retrospective dataset does not guarantee safe prospective use. Deployment changes behaviour, workloads and decision pathways, while new populations may differ from training data. Evaluation must therefore examine the whole sociotechnical system rather than the model alone. This includes usability, calibration, subgroup performance, escalation routes and responsibility when recommendations conflict with clinical judgment. Governance should specify who may override the tool, how incidents are reported and what evidence would trigger modification, suspension or withdrawal.

1 Why may retrospective performance not transfer? _____

2 What can deployment itself change? _____

3 What should evaluation examine? _____

4 Name three aspects beyond model accuracy. _____

5 What conflict must governance anticipate? _____

6 What three possible responses should evidence trigger? _____

6 Paraphrase using the expression in capitals.

1 Performance changed as the patient population changed. **DRIFT** ___

2 The system gives understandable reasons for its output. **EXPLAINABILITY** ___

3 A clinician remains responsible for reviewing decisions. **LOOP** ___

4 Safety is monitored after the product enters use. **POST-MARKET** ___

OVER TO YOU

Write a **160-190 word** governance proposal for an AI-enabled medical technology. Address validation, workflow, explainability, human oversight, drift, incident reporting and withdrawal criteria.

[ ] Use at least ten target terms or collocations. [ ] Evaluate the sociotechnical system. [ ] Define accountability and post-market action.

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ANSWER KEY

1 Advanced health-technology concepts

1 **e** 2 **h** 3 **g** 4 **i** 5 **b** 6 **f** 7 **d** 8 **j** 9 **a** 10 **c**

2 Governance collocations

1 **assessment** 2 **clearance** 3 **drift** 4 **explainability** 5 **bias** 6 **loop** 7 **learning** 8 **surveillance**

3 Conceptual distinctions

1 **federated learning** 2 **model drift** 3 **automation bias** 4 **human-in-the-loop**
5 **post-market surveillance** 6 **digital phenotype**

4 Governance review

1 **software as a medical device** 2 **regulatory clearance** 3 **health technology assessment** 4 **federated learning**
5 **explainability**
6 **human-in-the-loop** 7 **automation bias** 8 **model drift** 9 **post-market surveillance** 10 **digital phenotype**

5 Reading - suggested answers

1 Populations and real-world conditions may differ. 2 Behaviour, workload and decisions. 3 The whole sociotechnical system.
4 Any three: usability, calibration, subgroup results, escalation or responsibility. 5 A conflict between the tool and clinical judgment. 6 Modification, suspension or withdrawal.

6 Paraphrasing - possible answers

1 The model experienced **drift**. 2 The system provides **explainability**. 3 A human remains in the **loop**. 4 The product undergoes **post-market surveillance**.

Over to you: Answers will vary. Check governance precision, system-level evaluation and explicit accountability.