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# Diagnostic AI in Hospitals Course: Choosing, Validating and Overseeing Clinical Algorithms

16 – 20 May 2027  
Muscat





## Diagnostic AI in Hospitals Course: Choosing, Validating and Overseeing Clinical Algorithms

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### Programme Summary

Diagnostic AI in hospitals is the subject of this one-week training course for senior hospital and health-system leaders, ending in an adoption dossier for one diagnostic use case. Algorithms that read images, laboratory results and clinical records are entering diagnostic pathways faster than governance routines adapt. The programme moves from clinical need to evidence, validation, bias, deployment and monitoring, using cases from radiology, pathology and primary care screening. Mars Training Centre UK delivers this programme on diagnostic AI in hospitals to mixed-organisation cohorts.

### The Business Case

A diagnostic algorithm changes who sees a finding, how soon and with what confidence. Leaders who approve such tools without a shared method inherit risks they cannot see: performance that differs between patient groups, drift after installation and unclear accountability. A common method lets a board compare vendor claims, set conditions for use and decide when to withdraw a tool.

- Diagnostic Quality: Improves as local validation tests algorithm performance on the hospital's own patients.
- Patient Safety Exposure: Falls as monitoring thresholds and escalation routes are agreed before go-live.
- Procurement Value: Improves as vendor evidence is scored against stated clinical needs.

### Principles and Evidence Base

- IMDRF Software as a Medical Device Framework: Guides how Sessions 1 and 2 classify the clinical significance of an algorithm's output.
- WHO Guidance on Ethics and Governance of Artificial Intelligence for Health: Frames the transparency, accountability and equity checks applied in Sessions 3 and 4.
- Diagnostic Accuracy Principles: Sensitivity, specificity and predictive value underpin the validation work in Session 3.

### Intended Participants

- Hospital directors who authorise investment in diagnostic technology and answer for its safe use.
- Chief medical officers who set clinical accountability for decisions informed by an algorithm.
- Heads of radiology, pathology and laboratories who receive and run diagnostic software.
- Health ministry officials who set expectations for diagnostic AI across a network of facilities.

Typical settings include teaching hospitals, diagnostic imaging networks, reference laboratories and public health authorities.



## Learning Outcomes

1. Participants will be able to prioritise diagnostic use cases by clinical need, data readiness and patient risk.
2. Participants will be able to evaluate vendor evidence for imaging and decision support tools against a structured checklist.
3. Participants will be able to construct a local validation plan covering sample, reference standard and subgroup performance.
4. Participants will be able to diagnose sources of bias and automation bias in a diagnostic pathway.
5. Participants will be able to justify clinical accountability and consent arrangements for algorithm-assisted decisions.
6. Participants will be able to design a monitoring routine with drift triggers and withdrawal criteria.

## Programme Structure

### Day 1: Diagnostic AI in Hospitals and Clinical Need

Where can an algorithm change a diagnostic pathway, and what does its output mean clinically?

- Diagnostic Pathway Map
- Algorithm Output Classification Sheet
- Use Case Priority Matrix
- Data Readiness Checklist
- Imaging and Laboratory Data Inventory

### Day 2: Evidence from Vendors and Studies

How strong is the evidence that a tool performs as its supplier states?

- Study Design Appraisal Grid
- Training Data Provenance Review
- Vendor Claim Scoring Sheet
- Decision Support Transparency Check
- Regulatory Pathway Summary Table

### Day 3: Local Validation and Performance

Does the tool perform safely on this hospital's patients and equipment?

- Reference Standard Selection Note
- Sensitivity and Specificity Worksheet
- Predictive Value by Prevalence Chart
- Subgroup Performance Table
- Validation Protocol Outline



## Day 4: Bias, Accountability and Safe Deployment

Who is accountable when a clinician and an algorithm disagree?

- Bias Source Register
- Automation Bias Scenario Review
- Clinical Accountability Statement
- Patient Information and Consent Note
- Reader Workflow Design Sheet

## Day 5: Monitoring and the Adoption Dossier

Do the earlier records support a decision to adopt, pilot or reject one tool?

- Applying the Session 2 Vendor Claim Scoring Sheet
- Testing the Session 3 Validation Protocol Outline
- Reviewing the Session 4 Clinical Accountability Statement
- Drift Trigger and Withdrawal Criteria Table
- Completing the Diagnostic AI Adoption Dossier

## Methodology

The programme uses a data workshop method built on shared anonymised case sets from imaging, pathology and screening. Participants build each artefact on prepared evidence and then adapt it to a tool under consideration in their own organisation.

- Suggested activity: Scoring two competing vendor evidence packs against the same clinical need.
- Suggested activity: Calculating predictive value for one algorithm at two disease prevalence levels.
- Suggested activity: Presenting an accountability statement to a mock clinical governance committee.

## Capstone Output

Each participant completes a diagnostic AI adoption dossier for one use case. It holds a pathway map, a vendor claim score, a validation protocol, a bias source register, an accountability statement and a drift and withdrawal table. The dossier is used at work to brief a clinical governance committee and to set conditions for a pilot.

## Frequently Asked Questions

### Is diagnostic AI in hospitals training suitable for leaders without a data science background?

Yes. Diagnostic AI in hospitals is taught through clinical cases and templates. It assumes experience of clinical or hospital management but no programming or statistics beyond basic percentages.



## **Which frameworks does diagnostic AI in hospitals training rest on?**

Diagnostic AI in hospitals training rests on the IMDRF software as a medical device framework, the WHO guidance on ethics and governance of artificial intelligence for health, and diagnostic accuracy principles.

## **How is the dossier from diagnostic AI in hospitals training used at work?**

You use the adoption dossier to brief a clinical governance committee, set conditions for a pilot and record the monitoring thresholds that trigger review of a tool.

## **How does diagnostic AI in hospitals differ from general health information technology training?**

Diagnostic AI in hospitals centres on judging and overseeing algorithms that influence diagnoses, while health information technology training covers records, systems integration and data infrastructure.