

Credentialing the Algorithm: A Framework for Institutional Oversight of Clinical AI Systems in Radiology

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Purpose

AI tools influence diagnosis and management but are purchased and deployed like general software rather than credentialed like clinical practitioners. AI systems are often acquired through IT procurement without medical staff evaluation, even though they perform clinical decision support functions. These systems also change over time through data drift and silent vendor updates, yet most institutions lack processes for approval, performance review, or ongoing oversight. This project aimed to define the governance risks created by non-credentialed AI deployment and to outline an institutional credentialing approach for clinical AI systems.

Methods/Materials

We synthesized principles from AI drift and update behavior, calibration science, FDA SaMD guidance, ACR governance recommendations, and medical staff credentialing standards. These elements were integrated into a conceptual institutional lifecycle for clinical AI that includes pre-deployment evaluation, defined indications for use, privileging requirements, version control, drift surveillance, and periodic or update-triggered review.

Results

Three observations demonstrate the need for credentialing and structured oversight:

- 1. AI systems bypass clinical governance. Most tools enter practice without local validation, defined indications, privileging, version tracking, or integration into quality and safety review.**
- 2. Model performance changes over time. Calibration and accuracy shift with data drift, vendor updates, protocol changes, and evolving patient populations.**
- 3. Hospitals lack mechanisms to detect or evaluate these changes. There is no structured process for credentialing, update-triggered review, or verifying sustained performance. Based on these findings, we outline an institutional credentialing approach that includes pre deployment evaluation, defined indications, version control, drift monitoring, and periodic or update-triggered review.**

Conclusions

Despite performing clinical functions, AI systems, treated like software, introduce unmanaged institutional and patient-safety risk. Credentialing and structured oversight provide a pathway for safe, accountable integration of AI tools into radiology practice.

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