Whitepaper

The state of AI in diagnostic imaging: readiness, resources and risk tolerance

PHILIPS

Survey in partnership with

ahra

Executive summary

Artificial intelligence (AI) is no longer a distant promise in healthcare – it's here, reshaping diagnostic imaging and redefining what's possible in modern medicine. From streamlining workflows to enhancing image quality and supporting clinical decisions, AI is poised to address some of the most pressing challenges in radiology, including rising imaging volumes and critical radiologist shortages. But while the potential is undeniable, the path to widespread adoption is complex, marked by financial, operational and cultural hurdles.

To better understand the current landscape, Philips Healthcare conducted a nationwide survey of AHRA members, capturing insights from radiology leaders across hospitals, imaging centers and clinics. The findings reveal an industry at a crossroads: while 79% of respondents see meaningful value in AI, only 13% identify as early adopters using AI broadly. Most remain in pilot or evaluation phases, navigating barriers like budget constraints, integration challenges and staff readiness.
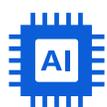
Only 13% of imaging leaders identify as early adopters using AI broadly, while the majority remain in pilot or evaluation phases.

This white paper dives deep into these insights, offering a comprehensive view of where the industry stands and where it's headed. It highlights the uneven progress between large hospitals, which are leading the charge with enterprise resources, and smaller facilities, which face intensified financial and technical challenges. Yet, the message is clear: AI is moving from experimentation to expectation, and radiology leaders must act now to unlock its full potential.

> "Our conversations with radiology administrators reveal a pivotal moment. AI is moving from experimentation to expectation, reshaping how imaging departments think about capacity, quality, and clinical impact."
>
> **Sonia Tripathi**
> Head of Marketing,
> Precision Diagnosis
> Philips

Key takeaways include:

Opportunities for transformation
AI is already delivering measurable benefits, from faster triage and improved image quality to reduced diagnostic errors and enhanced efficiency. Early adopters are seeing gains in operational performance and patient care.

Barriers to overcome
Financial justification, seamless integration and building trust in AI's reliability are critical to accelerating adoption. Solutions must fit naturally into existing workflows, minimizing complexity and maximizing impact.

A roadmap for success
Organizations can thrive by focusing on workflow-native AI, building a clear ROI case, forming cross-functional governance teams, and investing in education and transparency.

Refer to the **Step-by-Step Guidance for Radiology Departments diagram (page 7)** to consider more best practices for integrating AI at your hospital or healthcare system.
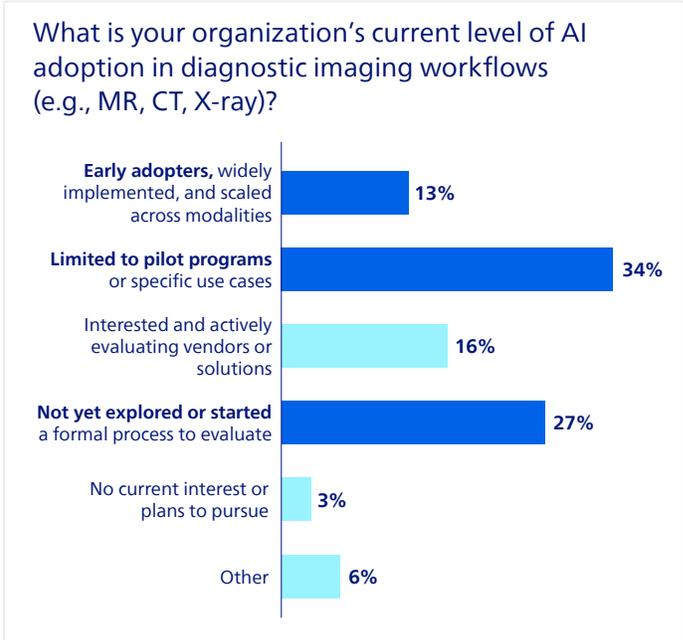
As one respondent aptly put it, **"AI is a must in a critical radiologist shortage…workloads are double what they were 10 years ago."** This sentiment underscores the urgency of embracing AI not as a replacement for human expertise but as a powerful ally in delivering better, faster and more precise care. By addressing barriers and fostering collaboration, the healthcare industry can turn AI's promise into a transformative reality.

Here we provide actionable strategies to help radiology departments navigate this pivotal moment, build a foundation of trust, and harness AI's potential to improve outcomes for patients and providers alike.

The current state of AI adoption: early momentum, uneven progress

Current AI adoption in imaging shows strong momentum but uneven progress. While interest is high, only 13% of respondents consider themselves early adopters using AI broadly. Another 34% are experimenting through pilot programs, and 27% have not yet begun formal evaluations. Among those already using AI, the leading drivers include efficiency gains (43%), improvements in image quality (33%) and workflow enhancements that help prioritize urgent findings for radiologists (27%).

In which ways is your organization currently benefiting from the use of AI?

43%
Improvements to operational efficiencies

33%
Image quality enhancement

27%
Workflow prioritization

What is your organization's current level of AI adoption in diagnostic imaging workflows (e.g., MR, CT, X-ray)?

Early adopters, widely implemented, and scaled across modalities	13%
Limited to pilot programs or specific use cases	34%
Interested and actively evaluating vendors or solutions	16%
Not yet explored or started a formal process to evaluate	27%
No current interest or plans to pursue	3%
Other	6%

"AI will improve outcomes by helping find disease processes that are missed. It will allow radiologists to work more quickly and more accurately."

AHRA member survey response

As survey participants noted, "results to date look very promising," and many believe AI will meaningfully improve efficiency, especially as imaging volumes rise and radiologist shortages continue. Radiology leaders signal that successful AI adoption depends on choosing solutions that work within existing workflows rather than adding new layers of complexity. The goal is to have zero additional clicks and no extra review steps, allowing AI to accelerate interpretation and reduce redundancies.

Uneven progress across health systems

However, progress is not uniform across the healthcare landscape. Larger hospitals are moving faster, driven by enterprise IT capabilities, capital resources and staffing pressures. Smaller facilities, however, face intensified budget constraints, risk aversion and uncertainty about ROI.

400+ beds More likely to have **early adoption or pilot programs** already in place.

<200 beds Tend to be in **evaluation or non-adoption** phases.

Radiology systems: large vs. small facilities

	AI adoption	Major barriers	Optimism	Short-term focus
400+ beds	More pilots & early deployments	Cost, integration	High	Efficiency, accuracy, predictive tools
<200 beds	Mostly evaluation phase or no adoption	Cost, technical expertise gaps, staff resistance	Mixed, more neutral	Workforce support, cost reduction

"With burnout impacting health care providers across the board, health care systems are increasingly looking to AI for options to remove repetitive, administrative tasks and allow more focused impactful time providing care to patients."

Heather Chait
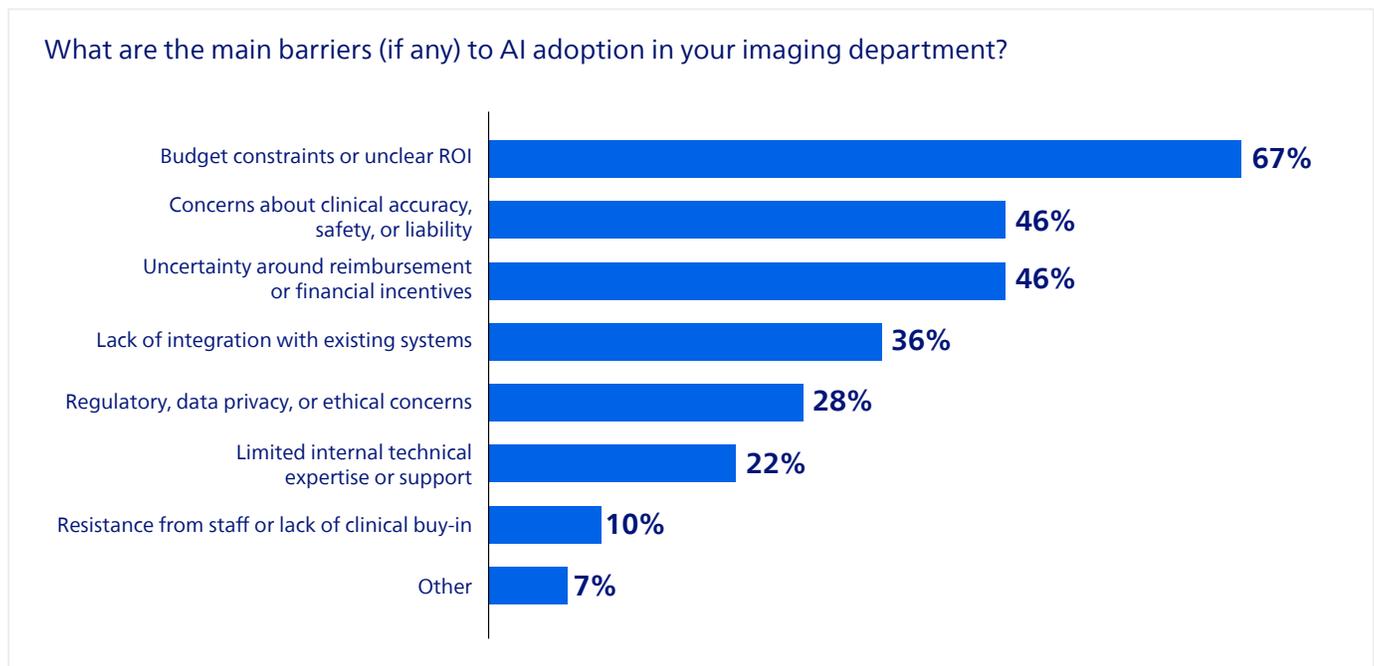AI Clinical Ecosystem Lead
Philips

With a dramatic increase in staffing shortages and workloads that have doubled in the last decade, radiologists are seeking proven innovations. As one respondent noted, AI is a "must in a critical radiologist shortage." AI is positioned to deliver automated reporting, predictive analytics and prioritized workflows that not only alleviate strain but could also attract new talent to the field.

"[AI is a] must in a critical radiologist shortage… workloads are double what they were 10 years ago."

AHRA member survey response

Key barriers to widespread adoption

AI's promise in medical imaging is clear, but so are the challenges preventing widespread adoption. These hurdles can be grouped into three main categories: **financial and operational, technical and integration, and trust and readiness.**

What are the main barriers (if any) to AI adoption in your imaging department?

Barrier	Percentage
Budget constraints or unclear ROI	67%
Concerns about clinical accuracy, safety, or liability	46%
Uncertainty around reimbursement or financial incentives	46%
Lack of integration with existing systems	36%
Regulatory, data privacy, or ethical concerns	28%
Limited internal technical expertise or support	22%
Resistance from staff or lack of clinical buy-in	10%
Other	7%

Financial and operational hurdles

Budget constraints are the most cited barrier, with 67% of respondents highlighting it as a major concern. Articulating a clear financial case is critical, especially for smaller hospitals. Building a strong ROI framework can help leaders justify investment by quantifying the impact of radiologist time saved, reduced turnaround times, increased scanner throughput, fewer repeat scans and decreased reliance on outsourced reads.

"Staff/physician pushback and budgetary constraints hamper progress."

AHRA member survey response

Technical and integration challenges

The difficulty of integrating AI with existing systems was the second most common barrier, cited by 46% of imaging leaders. There are concerns about the complexity of implementing AI across multiple vendors and systems, which requires strong IT support. Fragmented point solutions can add complexity, whereas integrated AI embedded within diagnostic imaging platforms can deliver greater value by streamlining workflows, improving interoperability and reducing the IT burden.

"Technology is ever-changing the healthcare landscape – AI is another step."

AHRA member survey response

"An integrated diagnostics foundation connects imaging data with clinical information across modalities and enables AI to support clinicians with meaningful context throughout the entire diagnostic workflow."

Wilson To
Head of Strategy, Enterprise Informatics
Philips

Trust, readiness and risk

Concerns about clinical accuracy (35%) and staff readiness are significant. Many survey respondents expressed uncertainty about AI's reliability and capabilities, noting resistance among some clinicians. Liability also emerges as a key factor, with leaders emphasizing the need to weigh clinical risk against potential benefits. As one survey respondent said, there are "Just a lot of unknowns at the moment." These concerns point to a clear need for stronger validation, transparent ROI and solutions that streamline rather than complicate radiologist workflows.

"AI catches small details and improves patient experience."

AHRA member survey response

Unlocking the opportunities: the value of AI in imaging

Despite the barriers, a strong majority of imaging leaders (79%) see meaningful value in AI, viewing it as a supportive assistant rather than a replacement for radiologists. They believe AI can improve departmental efficiency (73%), reduce diagnostic errors (51%) and address workforce gaps (43%).

What are the key long-term goals your organization hopes to achieve with AI in imaging?

73%
Improving operational efficiency

51%
Reducing diagnostic errors

43%
Bridging workforce gaps (radiologist/technician shortage)

"The AI [in MRI scanners] is smart, speedy, precise; it scans three times faster. Everywhere in the world, the waiting times for patients are such because the throughput is so limited. So when you scan faster with the same or better resolution, you improve throughput and patients don't wait as long."[1]

Shez Partovi
Chief Innovation Leader
Philips

Enhancing clinical value and efficiency

AI's immediate impact is seen in its ability to enhance workflow. Respondents believe it can help prioritize urgent cases (22%) and support radiologists with complex findings (21%). Beyond efficiency, AI adds significant clinical value by supporting the identification and management of incidental findings. For example, a chest CT performed for a cough may reveal incidental lung nodules. AI helps flag these findings, allowing patients to be enrolled in surveillance programs earlier, enabling more personalized, precision-based care.

Early adopters are already seeing measurable benefits. Among organizations that have deployed AI, 43% report gains in operational efficiency, while 33% have seen improvements in image quality. Additionally, 27% note enhanced case prioritization and faster triage. These are clear indicators that AI is delivering on its promise.

Philips AI: integrated solutions in action

Philips delivers an end-to-end approach that connects image acquisition, analysis, and reporting into a seamless workflow. Our AI solutions are designed to give back time to healthcare professionals and enhance their decision-making.

MR innovation

Philips SmartSpeed Precise for MR improves image quality and reduces exam times, leading to up to 3X faster patient throughput and an 80% increase in MR sharpness.[2] SmartSpeed Precise is compatible with 97% of clinical protocols[3] and offers a single-click automated workflow.

> "We are in the early phases of evaluating this technology. So far, we have good initial impressions of the ability to improve image quality and reduce imaging exam time."

Dr. Jeff Miller
Chief of Radiology at Phoenix Children's Hospital

Additionally, Philips BlueSeal helium-free technology incorporates AI-enabled EasySwitch, which allows MR magnets to be proactively powered on and off directly from the console, improving operational control and efficiency[4]. This capability supports radiologists and imaging departments by reducing energy consumption, streamlining workflow and enhancing safety during system management. As Dr. Miller summarized, this innovation is "meaningful from energy cost savings and possibly from a safety standpoint," highlighting its benefits for both providers and patients.

CT advancements

Philips CT Smart Workflow with Precise Image is an AI-based reconstruction that delivers improved image quality with up to 80% lower radiation dose, 60% better low-contrast detectability and 85% less noise.[5] These gains enhance diagnostic confidence and reduce the need for repeat scans.

X-ray workflow

For diagnostic x-ray, Smart Collimation Thorax automatically adjusts detector height and proposes optimal collimation, reducing exam time by up to 35 seconds per upright adult chest patient. This decreases technologist workload and improves consistency.[6]

These cutting-edge applications demonstrate AI's positive impact on diagnostic decision-making and efficiency, empowering caregivers to focus on what matters most: patient care.

Building a framework for success

Successfully integrating AI requires a strategic, cross-functional approach. Organizations that thrive will be those that build a strong foundation of governance, trust and continuous education.

Step-by-step guidance for radiology departments

01 **Choose workflow-native AI**
Select tools embedded into scanners, PACS or your existing interpretation process. Avoid solutions that require extra windows or clicks.

02 **Build and document the ROI case**
Create metrics that quantify productivity gains, fewer repeat scans, and financial savings to secure budget and leadership alignment.

03 **Form an AI governance committee**
Include radiology, IT, compliance, clinical operations and cybersecurity. Establish shared criteria for vendor evaluation, risk management and validation.

04 **Start with a single high-value use case**
Choose an area with clear, measurable improvement, such as stroke triage or automated reporting, to create early internal wins.

05 **Invest in training and transparency**
Provide structured education, share accurate data and begin with opt-in pilots to build trust before a broad rollout.

The foundation of trust

Building trust in healthcare AI hinges on transparency, communication, and strong regulation. Clinicians play a critical role as trusted messengers who can confidently explain AI's role to patients, demystifying the technology. When patients and providers understand that AI enhances rather than replaces human care, it enables faster diagnoses, more efficient workflows and better health outcomes. This turns AI's promise into a meaningful, life-changing impact.

For more information on Philips diagnostic imaging solutions, visit us at https://www.usa.philips.com/healthcare/diagnostic-imaging.

Sources
1. The Guardian, May 2025, "Do you think Doctors are going to be out of a job?"
2. Compared to SENSE imaging. Sharpness was evaluated with phantom scanning.
3. On average, measured across a sample of sites from Philips MR installed base.
4. 7 liters of helium is permanently enclosed in the cryogenic circuit
5. In clinical practice, the use of Precise Image may reduce CT patient dose depending on the clinical task, patient size, and anatomical location. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task. Dose reduction assessments were performed using reference body protocols with 1.0 mm slices at the "Smoother" setting, and tested on the MITA CT IQ Phantom (CCT189, The Phantom Laboratory) assessing the 10mm pin and compared to filtered-back projection. A range is seen across the 4 pins, using a channelized hoteling observer tool, that includes lower image noise by 85% and improved low-contrast detectability from 0% to 60% at 50% to 80% dose reduction. NPS curve shift is used to evaluate image appearance, as measured on a 20 cm water phantom in the center 50mm x 50 mm region of interest, with an average shift of 6% or less.
6. Based on data from a 3D camera for each upright adult chest patient individually. Compared to not using SCT on the Radiography 7300 C, validated by 12 clinicians in a Philips development environment. Daily time saving calculation based on 35 adult upright chest patients per day. Results may vary.

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