



International Union of Angiology

Society for Vascular Medicine, Vascular Surgery
and Endovascular Interventions

Union Internationale d'Angiologie

une Société pour la Médecine et la Chirurgie Vasculaire ainsi que les
Interventions Endovasculaires

International Union of Angiology Official Manifesto on Responsible Artificial Intelligence in Vascular Medicine

A Call for Human-Centered, Evidence-Based, and Ethically Governed Artificial Intelligence in Angiology

Preamble

The International Union of Angiology recognizes that artificial intelligence (AI) is rapidly transforming medicine, medical education, clinical decision-making, research, and patient care. In vascular medicine, angiology, venous and lymphatic disease, endovascular therapy, vascular surgery, imaging, diagnostics, and longitudinal patient monitoring, AI offers extraordinary opportunities to improve precision, efficiency, access, safety, and education.

However, AI must never replace the foundational duties of the physician: clinical reasoning, responsibility, compassion, judgment, accountability, and the individualized care of every patient.

The Union affirms that AI should serve as an instrument of human intelligence, not as its substitute. Its value depends not only on technical performance, but on how it is supervised, validated, interpreted, taught, governed, and integrated into clinical practice.

Recent medical education literature has emphasized the risks of excessive dependence on AI, including loss of skills, failure to develop essential competencies, reinforcement of incorrect reasoning, and automation bias. It also highlights the need for critical thinking, adaptive practice, structured supervision, verification of outputs, and responsible/appropriate human–AI collaboration.

Therefore, the International Union of Angiology declares the following principles:



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I. AI Must Strengthen, Not Weaken, Clinical Judgment

AI in angiology must be used to support clinical reasoning, not to bypass it.

The physician must remain the final authority in diagnosis, risk assessment, treatment selection, procedural planning, follow-up, and communication with the patient.

AI-generated recommendations must be interpreted as preliminary inputs requiring verification, not as definitive medical conclusions.

II. The Patient Remains at the Center

Every AI-assisted decision must preserve the dignity, autonomy, safety, privacy, and individuality of the patient.

In vascular medicine, where treatment strategies/decisions involve wide spectrum of modalities including major surgical procedures and endovascular interventions, wound care, long lasting anticoagulation, compression therapy and others, no automated system should override patient-specific context/approach.

Therefore, clinical care must remain personal, contextual, and accountable.

III. Verification Is Mandatory

The Union endorses a principle of **"verify and trust"**, rather than only blind trust.

Physicians, trainees, researchers, and institutions must verify AI-generated outputs against:

1. Patient history.
2. Clinical examination.
3. Validated diagnostic criteria.



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4. High-quality evidence.
5. Peer-reviewed literature.
6. Institutional protocols.
7. Patient preferences
8. Expert clinical judgment.

Unverified AI outputs should not guide high-risk clinical decisions.

IV. AI Must Be Evidence-Based and Clinically Validated

AI tools used in angiology must be evaluated according to scientific standards.

Before adoption, tools should demonstrate:

- Accuracy.
- Reproducibility.
- Safety.
- External validation.
- Clinical usefulness.
- Bias assessment.
- Transparency of intended use.
- Performance across diverse populations.
- Monitoring/re-assessment after implementation.

A tool validated for one population, disease, imaging modality, or clinical setting must not be assumed valid for another.

V. Human Responsibility Cannot Be Delegated

AI does not assume medical, legal, or moral responsibility.

The physician, clinical team, institution, and health system remain accountable for patient care.

No AI system should be used in a way that obscures responsibility, weakens informed consent, or creates uncertainty about who made a clinical decision.



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VI. AI Literacy Must Become a Core Competency

The International Union of Angiology strongly calls for formal education in AI literacy for medical students, residents, fellows, vascular surgeons, angiologists, interventional specialists, nurses, technicians/technologists, researchers, and educators.

AI literacy should include:

- Understanding what AI can and cannot do.
- Recognizing unreliable outputs.
- Identifying bias.
- Designing effective prompts.
- Evaluating evidence behind AI tools.
- Knowing when not to use AI.
- Maintaining independent clinical reasoning.
- Communicating AI-assisted decisions to patients.

AI education must not be optional; it must become part of modern vascular training.

VII. Training Programs Must Prevent Deskilling, Never-Skilling, and Mis-Skilling

The Union warns against three major educational risks:

Deskilling: the loss of clinical abilities because AI performs tasks previously done by clinicians.

Never-skilling: the failure of trainees to develop essential competencies because AI is introduced too early or used too passively.

Mis-skilling: the reinforcement of incorrect clinical habits due to biased, inaccurate, or poorly supervised AI outputs.



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Training programs must ensure that learners first develop strong foundations in anatomy, physiology, pathology, hemodynamics, imaging interpretation, procedural indications, patient selection, and clinical reasoning before relying on AI assistance.

VIII. AI Use Must Be Supervised in Medical Education

Educators must actively supervise AI use during clinical learning.

When trainees use AI for diagnosis including imaging interpretation, treatment planning, literature review, note generation, or patient communication, supervisors should ask:

- What AI tool was used?
- What clinical question was asked?
- What prompt was entered?
- Was the output verified?
- Did AI support or replace clinical reasoning?
- What evidence supports the answer?
- What errors or biases may be present?
- What did the trainee learn from the interaction?

The goal is not to prohibit AI, but to transform AI use into a structured educational opportunity.

IX. The Union Endorses Adaptive Human–AI Collaboration

AI use should vary according to the risk and complexity of the task.

For low-risk, administrative, repetitive, or creative tasks, closer collaboration with AI may be appropriate.

For high-risk clinical decisions — including diagnosis, invasive treatment planning, anticoagulation strategy, vascular access decisions, limb-threatening ischemia, venous reconstruction, pulmonary embolism management, aneurysm



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surveillance, or interpretation of complex vascular imaging — human judgment must lead/prevail.

The more consequential the decision, the greater the need for human oversight.

X. AI Must Be Transparent to Patients When Clinically Relevant

Patients have the right to know when and how AI meaningfully contributes to their care.

Transparency should be proportional to the clinical relevance of the AI tool. For example, AI-assisted administrative documentation may not require the same explanation as AI-assisted diagnosis, imaging interpretation, risk prediction, or therapeutic planning.

When AI influences care, communication should be clear, honest, and understandable.

XI. Data Privacy and Security Are Non-Negotiable

Vascular care often involves sensitive clinical data, imaging, genetic information, procedural records, photographs, wound documentation, and longitudinal follow-up.

AI systems must comply with rigorous standards for privacy, cybersecurity, data protection, consent, and responsible data sharing.

No patient data should be entered into non-secure AI platforms without appropriate institutional authorization, safeguards, and consent when required.

XII. AI Must Reduce, Not Amplify, Inequity

The Union recognizes the risk that AI systems may reproduce or magnify existing disparities in health care.



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AI in angiology must be evaluated across sex/gender, age, ethnicity, geography, socioeconomic background, disease severity, comorbidities, and access to care.

Special attention must be given to regions with limited vascular specialists, limited access to imaging and other facilities, and unequal health infrastructure.

AI should help democratize high-quality vascular care, not concentrate it further.

XIII. AI in Research Must Be Transparent and Reproducible

AI-assisted research including angiology/vascular medicine must follow rigorous scientific standards.

Authors, investigators, journals, and institutions should disclose meaningful AI use in:

- Study design.
- Data analysis.
- Image interpretation.
- Manuscript preparation.
- Statistical modelling.
- Literature synthesis.
- Patient selection.
- Predictive modelling.

AI-generated content must not replace scientific responsibility, authorship accountability, or methodological transparency.

XIV. Professional Societies Must Lead

The International Union of Angiology calls on vascular and cardiovascular societies, academic institutions, regulatory agencies, journals, hospitals, industry partners, and patient organizations to collaborate in the creation of standards for AI in vascular care.



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These standards should address:

- Clinical validation.
- Education.
- Governance.
- Data quality.
- Equity.
- Safety monitoring.
- Liability.
- Patient communication.
- Regulatory oversight.
- Post-deployment surveillance.

The future of AI in angiology must not be defined only by technology companies. It must be shaped by clinicians, scientists, educators, patients, and professional societies.

XV. A Declaration for the Future

The International Union of Angiology affirms/recognizes that AI will become an integral part of vascular medicine.

We welcome innovation.

We support research.

We promote education.

We defend clinical judgment.

We protect patients.

We reject passive dependence.

We demand evidence.

We insist on verification.



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We affirm that the future of angiology must be technologically advanced, scientifically rigorous, ethically governed but profoundly human.

Final Declaration

AI must not create physicians who think less but it must help create physicians who think better.

It must not distance clinicians from patients but it must help clinicians understand patients more deeply.

It must not replace vascular expertise but it must amplify responsible vascular expertise.

For this reason, the International Union of Angiology calls upon the global vascular community to adopt a disciplined, transparent, evidence-based, and human-centered approach to AI.

Finally, the future of vascular medicine should belong to clinicians and patients who use intelligence — human and artificial — wisely.

Always keep in mind this ancient Greek phrase: «Ωφελέειν ή μη βλάπτειν» which can be translated as "To help but not to harm the patient".

The Executive Board of the IUA

Jorge H. Ulloa – President