

Supplementary

Table S1. Representative Randomized Trials of AI-Enabled Interventions in Cardiovascular Medicine

Trial	Condition	Intervention	Centers	Primary Endpoint	Key Finding	Limitation
Yao, 2026 ¹	Hypertension	AI-recognition–based telerehabilitation vs offline exercise guidance	Single center	Change in 6-minute walk distance (6MWD)	Greater improvement in 6MWD	Small sample and short (8-week) intervention
Deisenhofer, 2025 ²	AF	PVI+AI-targeted ablation vs conventional PVI-only	Multicenter	Freedom from documented AF at 12 months after a single procedure	Higher 12-month AF-free rate in the AI-guided arm	No significant between-arm difference in freedom from any atrial arrhythmia after one ablation
Schuurmans, 2025 ³	Hypotension during cardiac surgery	ML-derived early warning tool vs standard care	Single center	Severity of hypotension	Median hypotension severity reduced, time in hypotension reduced	No significant differences in hypertension severity, treatment choice, or fluid, vasopressors, inotrope amounts
Rakai, 2025 ⁴	AF	ML-based risk prediction model to enrich screening + patch ECG vs general	Multicenter	6-month AF incidence	Higher AF detection in the AI-enriched screening cohort	Only 43% of invited individuals participated

			population approach						
Yu, 2025 ⁵	CAD	after	Telemedical	platform	Single	1-year MACCE	Lower 1-year MACCE in the	AI-specific contribution cannot	
	PCI		including	AI-assisted	center		intervention group	be isolated	
			consultation/education/reminders vs usual care						
Trivedi, 2025 ⁶	AF		Fully	automated	Single	Change in AFEQT	No statistically significant	Small sample	
			conversational AI	phone calls	center	quality-of-life score	difference in AFEQT total		
			vs usual care				score between groups		
Liu, 2025 ⁷	AF		AI-ECG	alerts	to	Multicenter	NOAC prescription	Higher NOAC prescription	No significant differences in
			non-cardiology	clinicians	vs		within 90 days after	and higher AF diagnosis rate	echocardiogram arrangements,
			usual care				discharge, new AF		cardiologist visits, or the rates
							diagnosis,		of ischemic stroke,
							echocardiogram		cardiovascular death, and
							arrangements, and		all-cause death
							cardiologist visits		
Yang, 2023 ⁸	Stable CAD		On-site	AI-enabled	FFR-CT	Multicenter	Proportion of patients	On-site FFR-CT reduced	No improvement in 1-year hard
			guided management	vs usual			undergoing invasive	potentially unnecessary	outcomes, symptoms, or QoL

		care				coronary angiography invasive angiography / without obstructive CAD low-yield catheterization or with obstructive within 90 days disease did not undergo intervention within 90 days						
Yao, 2021 ⁹	HF	AI-ECG decision vs usual care	support	clinical	Multicenter	New diagnosis of low EF ($\leq 50\%$) within 90 days of the ECG.	Increased detection of low EF	Long-term impact on HF hospitalization or mortality not established				

References

1. Yao, Q. et al. Effects of Artificial Intelligence Recognition-Based Telerehabilitation on Exercise Capacity in Patients With Hypertension: Randomized Controlled Trial. *J Med Internet Res* **28**, e81400 (2026).
2. Deisenhofer, I. et al. Artificial intelligence for individualized treatment of persistent atrial fibrillation: a randomized controlled trial. *Nat Med* **31**, 1286-1293 (2025).
3. Schuurmans, J. et al. Effect of a Machine Learning-Derived Early Warning Tool With Treatment Protocol on Hypotension During Cardiac Surgery and ICU Stay: The Hypotension Prediction 2 (HYPE-2) Randomized Clinical Trial. *Crit Care Med* **53**, e328-e340 (2025).
4. Rakai, E. et al. Systematic, randomized atrial fibrillation screening using detailed phenotyping with a risk prediction model combined with patch electrocardiogram in a Swedish population aged 65 years or older: the CONSIDERING-AF trial. *Europace* **27** (2025).
5. Yu, X. et al. Efficacy of Telemedical Interventional Management in Patients with Coronary Heart Disease Undergoing Percutaneous Coronary Intervention: Randomized Controlled Trial. *J Med Internet Res* **27**, e63350 (2025).
6. Trivedi, R. et al. Conversational AI Phone Calls to Support Patients With Atrial Fibrillation: Randomized Controlled Trial. *JMIR Cardio* **9**, e64326 (2025).
7. Liu, W.T. et al. Artificial Intelligence-Enabled ECGs for Atrial Fibrillation Identification and Enhanced Oral Anticoagulant Adoption: A Pragmatic Randomized Clinical Trial. *J Am Heart Assoc* **14**, e042106 (2025).
8. Yang, J. et al. On-Site Computed Tomography-Derived Fractional Flow Reserve to Guide Management of Patients With Stable Coronary Artery Disease: The TARGET Randomized Trial. *Circulation* **147**, 1369-1381 (2023).
9. Yao, X. et al. Artificial intelligence-enabled electrocardiograms for identification of patients with low ejection fraction: a pragmatic, randomized clinical trial. *Nat Med* **27**, 815-819 (2021).