

Application of AI in Medicine

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The medical AI landscape has reached a critical scaling phase, with global venture capital investment hitting \$11 billion in 2024. As of mid-2025, the number of FDA-cleared AI algorithms has surpassed 1,000, with radiology accounting for 75% of these clearances. The focus is shifting from 'pipeline thinking' to 'platform thinking,' where AI serves as the operating system for entire clinical workflows.

Company A's stroke triage system has demonstrated an 11-minute reduction in door-to-groin time. Company B's intracranial hemorrhage triage achieved 96.6% accuracy in a study of over 100,000 cases. Company C INSIGHT CXR4 has shown a lung nodule detection AUC of 0.93, surpassing the human mean of 0.81. In breast cancer screening, Company D's AI reduced radiologist workload by 63.6% while increasing cancer detection rates by 15.2%.

Mayo Clinic's ECG AI predicts atrial fibrillation up to 10 years in advance with 90% accuracy. Johns Hopkins' AI Command Center has improved referral capacity by 60% without adding new beds. In South Korea, SNUBH's 'ECG Buddy' processes 180,000 ECGs monthly across 70+ hospitals. Korean AI firms like Company C and D are seeing rapid global expansion, with Company C generating 92% of its revenue from overseas markets.

Operational AI is transforming hospital management; Company E's platform reduced patient placement time by 83%. Ambient AI tools like Company F's scribe save physicians 1-2 hours of documentation time per week. Reasoning models like Med-Gemini and Company G o1, scoring 92-96% on MedQA benchmarks, suggest AI has reached parity with human experts in medical knowledge.

Risks such as 'Polite Fiction' and algorithmic hallucinations are major safety concerns. The PROTECT framework emphasizes that the clinician remains the final legal decision-maker. While surgical robots like STAR have outperformed humans in consistency, empathy and value-based judgment remain uniquely human. AI literacy is defined as the most critical professional competency for the next decade.

Profile

- * MD, Seoul National University College of Medicine
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- * Present, Professor of Cardiology, SNU Bundang Hospital