

ARTIFICIAL INTELLIGENCE IN HEALTH CARE

The Impact of AI on Primary Care Doctors and Patients

Promise and Peril

Eric Schneider, MD, FACP

California Public Employees' Retirement System (CalPERS) Retreat

July 14, 2026

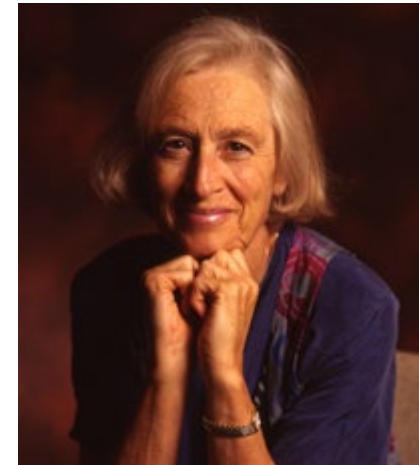


HARVARD
T.H. CHAN

SCHOOL OF PUBLIC HEALTH

What is Primary Care?

There is no such thing as a “primary care service”. There are only primary care **functions** and specialty care functions. We know what the primary care functions are; they are evidence-based.



-Barbara Starfield

Key Primary Care Functions: The 5 C's

- **First-Contact Access**
- **Longitudinal Continuity**
- **Comprehensiveness (Whole-Person Focus)**
- **Coordination**
- **Person-Centeredness**

Two Flavors of AI for Primary Care

Predictive / Machine Learning

- Finds patterns in structured data and outputs a score or category.
- Risk scores, medical-image reading, readmission and sepsis prediction.
- Mature, increasingly validated, often embedded behind a clinician.
- *Main question: is it accurate and unbiased for our population?*

Generative AI

- Creates new content — text, images, audio — in response to prompts.
- Ambient documentation, chatbots, drafting, summarization.
- Newer, advancing fast, and harder to validate.
- *Main risk: it can be fluent and confidently wrong.*

The Challenge of Emerging AI: Capability vs. Real-World Benefit



THE PROMISE

AI often matches or beats clinicians in controlled tests

- Strong diagnostic and clinical-reasoning accuracy in controlled studies
- Extends specialist-level insight to under-served settings
- Automates documentation and routine administrative work
- 77% of clinical-AI trials beat usual care on tested outcomes



THE PERIL

Accuracy in controlled settings has not yet become real-world benefit

- Confident but wrong answers (“hallucinations”) can reach patients
- Bias in data can widen, not narrow, health disparities
- Over-reliance can erode clinician skill and the human relationship
- Benefits evaporate without workflow fit, training, and oversight

Promise 1:

Better Chronic-Disease Management

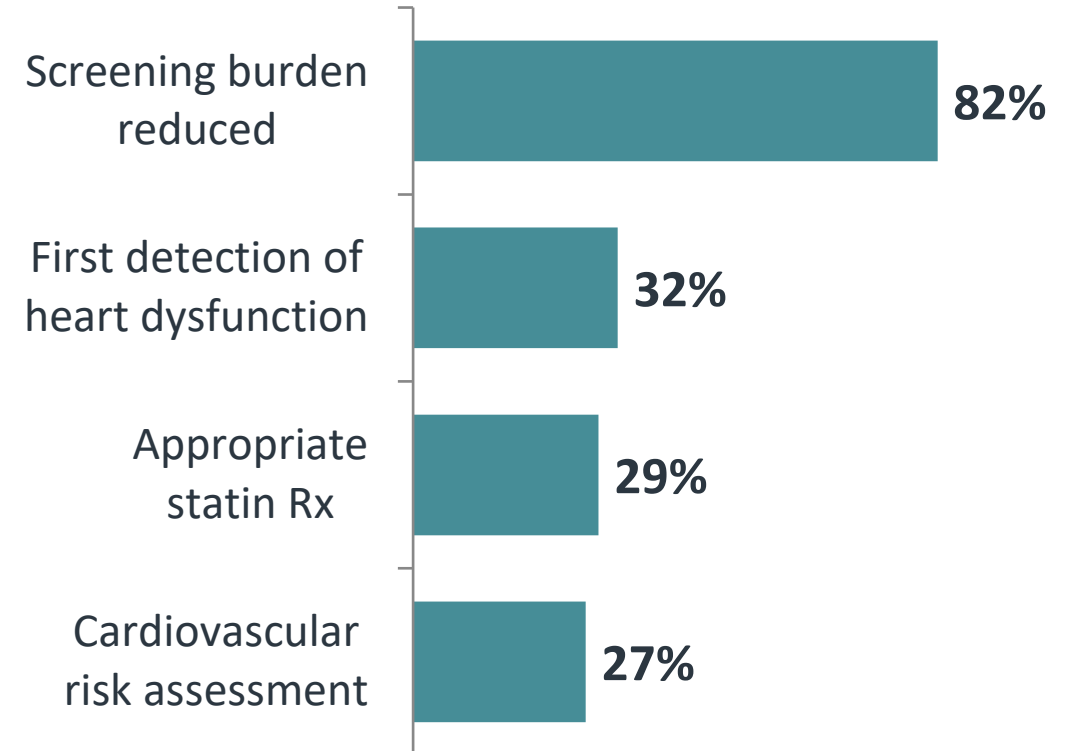


For two conditions (diabetes and cardiovascular care)
AI improves patient evaluation and early detection.

Where it helps most

- Personalized treatment optimization across multiple conditions
- Continuous monitoring and risk prediction between visits
- Coaching and adherence support for diabetes and hypertension
- Managing complexity for patients with several conditions at once

Measured improvement vs. usual care



Sources: Hwang et al. 2025; EDF Delphi consensus, Diabetologia 2025; AHA, Circulation 2024; Mao et al., J Clin Oncol 2026.

Promise 2:

Relieving the Documentation Burden



Administrative/operational uses growing fastest: automated intake, referrals, ambient “scribe” generated notes, prior authorization.



Less time on paperwork

Ambient AI listens and documents so clinicians can pay attention to the patient.



Lower risk of burnout

AI documentation and coding reduces clinician “night and weekend” work



Faster access and coordination

Automated intake, referral, and prior authorization can reduce delays in follow up.

Caution: Benefit of reduced administrative burden only redirected to patient care — not converted into higher throughput. That is a contracting and culture choice, not a technology default.

Sources: Katonai et al. 2025; Sadeh-Sharvit et al. 2023

Promise 3:

Expanding Access to Care



Best evidence from resource-constrained settings and under-served populations.

Better decisions in high-volume clinics

Catching disease earlier at the point of care

Smarter screening, less waste

Reaching rural and non-English-speaking patients

Sources: Susanto et al., J Med Internet Res 2025; AHA Scientific Statement, Circulation 2024; Mao et al., J Clin Oncol 2026; Osonuga et al., Int J Med Inform 2025.

Promise 4: Behavioral Health



AI offers scalable behavioral health screening and support — but also the clearest safety warnings in the entire field.

Opportunity

- Automated PHQ-9 / GAD-7 screening flags “silent” patients missed by self-report (up to ~96% sensitivity in one study)
- Structured CBT chatbots show modest but real symptom reductions in meta-analyses
- An AI tool supporting therapists cut depression symptoms 34% vs. 20% and raised attendance

Serious caution

- General chatbots can “validate” harmful thoughts, worsening crises in vulnerable users
- Only 3 of 22 chatbot trials properly tracked adverse events
- Best positioned as a supervised adjunct, not a standalone, especially for high-risk patients

Sources: Zhu et al., *Front Psychiatry* 2026; Yang et al., *Psychother Psychosom* 2026; Sadeh-Sharvit et al., *J Med Internet Res* 2023; Santos et al., *J Affect Disord* 2026.

Perils: Confident, but Sometimes Wrong



Large language models can produce fluent, authoritative answers that are factually wrong (“hallucinations”). In safety testing, the error is rarely obvious.

Inflexible reasoning: models overconfident and rigid even when scenarios require flexible clinical judgment.

Overuse of diagnostics: erroneous suggestions can trigger unnecessary tests and follow-up, adding costs.

Regulatory gap: no generative-AI/LLM tool has been FDA-approved for clinical decision-making.

Sources: Wu et al., NOHARM benchmark, 2025 (preprint); Kim et al., Sci Rep 2025; Razai et al., PLoS One 2024; Maddox et al., NEJM 2025.

THE NOHARM BENCHMARK

31 leading AI models tested on 100 real primary-care-to-specialist cases

22.2%

of cases carried potential for severe patient harm

77% of those errors were **omissions** — failing to recommend something necessary, the hardest error to notice.

Perils: AI Tools Can Undermine Equity Goals



AI is only as good as the historical data used to train it.

Six ways AI affects equity

Access, trust, dehumanization, self-care agency, algorithmic bias, and system effects.

Who is most at risk?

Traditionally underserved populations defined by social factors (race, ethnicity, gender most studied).

The fairness–accuracy trade-off

Technical “fixes” can introduce errors for other groups; human judgement needed to manage tradeoffs.

The digital divide

Benefits flow to those with devices, connectivity, and digital literacy

Sources: d’Elia et al., *Fam Med Community Health* 2022; Sasseville et al., *J Med Internet Res* 2025; Ahluwalia et al., *JACC Adv* 2025; Chin et al., *JAMA Netw Open* 2023.

Perils: Over-Reliance and Interrupted Relationships



Two slower-moving risks could reshape the quality of care: the erosion of clinician skill, and the erosion of the patient relationship.

Four documented risks of AI over-reliance

De-skilling

Never-skilling

Mis-skilling

Automation bias



The patient relationship

A review of patient and clinician views found concerns about AI-mediated visits:

- Lost empathy, human connection, and trust.
- Patients fear clinicians will be distracted by the AI.

Sources: Abdulnour et al., NEJM 2025; Martínez-Martínez et al., J Med Internet Res 2025; Hou et al., J Med Internet Res 2026.

Perils: Privacy, Workload, and Accountability



Data privacy & security

- AI needs large volumes of sensitive patient data, creating new exposure points



Workload paradox

- Tools meant to save time can add alerts and unnecessary test prompts



Accountability gap

- Unclear who is liable when AI contributes to harm — developer, system, or clinician

Sources: Chen & Esmailzadeh, *J Med Internet Res* 2024; Giebel et al., *J Med Internet Res* 2025; Bergman et al., *JAMA* 2026; Warraich et al., *JAMA* 2025.

The Decisive Factor: Integration, Not Algorithms

Model accuracy alone is insufficient-- benefit of AI will be defined by workflow fit, clinician trust, and humans learning how to use the technology safely, effectively, and efficiently.

CASE IN POINT — THE TRICORDER TRIAL

205 UK primary-care practices · AI-enabled stethoscope for heart failure and rhythm disease

The algorithm worked. Yet population-level detection did *not* improve — because uptake was low and the device did not fit how clinicians actually worked.

Robust technology + poor integration = no benefit at scale.

What separates benefit from disappointment

Workflow fit

Clinician training

Transparency and trust

Co-design with users

Source: Kelshiker et al., TRICORDER cluster-randomized trial, Lancet 2026; Bergman et al., JAMA 2026.

Power to the People? AI as the New “Dr. Google”

How people are using AI outside traditional health care delivery

- General chatbots for symptom research and "should I worry?"
- Medication and treatment questions between visits.
- AI mental-health and wellness apps for everyday support.
- Navigation help — what's covered, where to go, what to ask.

Promise

24/7, low-cost, low-stigma access between appointments, especially if cost or wait times are barriers.

Peril

Hallucinated medical advice, sensitive data shared in consumer tools, no clinical oversight, known risks of AI “companions.”

Guardrails: Work in Progress

The mitigation playbook is fairly well developed. National bodies broadly agree on five domains of safeguards — useful as a checklist when evaluating health-plan and vendor practices.



Trustworthy systems



Bias mitigation



Monitor over-reliance



Protect the relationship



Governance & oversight

Sources: Labkoff et al., JAMIA 2024; Chin et al., JAMA Netw Open 2023; Abdulnour et al., NEJM 2025; Angus et al., JAMA 2025; EU AI Act 2024.

Takeaways

- 1 Promise is real — but uncertain** AI can outperform clinicians in controlled tests. Real gains in chronic care management and access. AI decision support moving into practice slowly.
- 2 The risks are real too** Confident errors, bias, deskilling, privacy exposure, and accountability gaps are documented — not hypothetical.
- 3 Effective integration of AI and human interaction matters** Workflow fit, training, and clinician trust separate benefit from costly failure. AI model performance is not enough.
- 4 Impact on equity will depend on design** The same tools can increase or reduce gaps in care — depending on whether equity is deliberately designed in.
- 5 Governance is a work in progress** Benefits and risks of AI tools are shaped by federal and state regulation, accrediting standards, and contracts between payers and primary care groups.