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The Starfield Signal: A Shared Vision and Roadmap for AI in Primary Care

Insights from the *Starfield Summit on Advancing AI and Digital Health in Primary Care* and how artificial intelligence can strengthen primary care

Presented by the American Academy of Family Physicians and Rock Health

A Shared Commitment to the Future of AI in Primary Care

We are at a pivotal moment. Primary care in the United States faces immense challenges, yet it remains the foundation of a healthier and more equitable health care system. We also find ourselves in the midst of an extraordinary time technologically, as the growth of artificial intelligence and related digital health capabilities explodes exponentially. As leaders of the American Academy of Family Physicians and Rock Health, we are proud to present this report as we culminate the initial phase of collaboration on the Advancing AI and Digital Health for Primary Care Initiative, launched in September 2024.

This publication reflects the collective insights, aspirations and resolve of a diverse group of primary care, technology and business leaders who believe that if developed and deployed responsibly, AI can address many challenges to help primary care achieve its full potential.

The “Starfield Signal” represents more than the title of this report—it is a call to action. It signals the urgent need to align innovation in ways that preserve and advance primary care. If done right, AI can help primary care achieve the Quintuple Aim of health care: better population health outcomes, improved patient experiences, lower costs, improved well-being of care teams and greater health equity.

The importance of these aims is why we believe it is essential to establish and advance a national vision and roadmap for AI in primary care—one that both provides beacons to a thriving future for primary care and is grounded in the core values of the discipline to serve patients, physicians, care teams, support staff and communities.

Our vision cannot be achieved by any single organization or constituency alone. It will require the sustained collaboration of many stakeholders, including physicians and other clinicians, technologists, policymakers, payers, educators, business leaders and advocates. Working together, we can ensure that AI strengthens, rather than fragments, the experiences of patients, physicians and care teams.

We are deeply grateful to the primary care, business and technology leaders who participated in the Starfield AI summit and to the members of the Primary Care Leadership Committee. Your expertise, candor and commitment shaped every aspect of this report. Thank you for partnering with us to chart a path forward to strengthen primary care.

Sincerely,
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Acknowledgements

Publication overview

The American Academy of Family Physicians (AAFP)—in partnership with Rock Health—conducted extensive research on the opportunities and risks surrounding artificial intelligence (AI) and digital health in primary care. This partnership benefited from the expertise and collaboration of the Primary Care Leadership Committee, which is made up of frontline family physicians and other primary care and AI leaders. Committee members' organizations are industry leaders working to build AI-enabled technologies and leading explorers of how AI can be implemented to strengthen primary care. This publication reflects insights and findings derived from several months of research, starting with a national survey of more than 1,200 primary care physicians and other clinicians in the fall of 2024 and culminating in a national summit that convened physician and technology leaders from across primary care in May 2025. The Starfield Summit on Advancing AI and Digital Health in Primary Care brought together primary care physicians, specialty societies and associations, technology industry leaders, payers, policymakers and researchers for two days to create a collective vision and build a shared roadmap. The roadmap is designed to focus and inform the use of AI to address the many challenges in primary care. If done right, integrating AI has the potential to improve care for patients and restore joy in practice for the primary care workforce.

We extend our heartfelt thanks to everyone who contributed to this publication, including those who completed the survey or participated in the summit. Special acknowledgments are due to the individuals and organizations listed below.

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About American Academy of Family Physicians (AAFP)
The AAFP is the largest national association of family physicians, representing 128,300 physicians and medical students. Family medicine's cornerstone is an ongoing, personal patient-physician relationship focused on impactful care for people of all ages, races and genders across all medical conditions. The AAFP supports every stage of a family physician's career and provides evidence-based resources, advocacy and community to empower family medicine. To learn more, visit aafp.org. For information about health care, medical conditions and wellness, please visit the AAFP's patient education website, familydoctor.org.

About Rock Health
Rock Health accelerates innovation in digital health through an early-stage venture fund, a digital health strategy group, and a non-profit advancing equity-centered change. As a leader in digital health since 2011, we are committed to transforming health for all humanity and bringing greater humanity to healthcare by investing in, supporting, and advising innovators and entrepreneurs across the healthcare landscape. From early-stage startups to enterprise health companies to equity-focused innovators, we provide our community with the meaningful support and insights needed to bring innovation to life and improve healthcare for all. Learn more at rockhealth.com.

Using this resource: a reader's guide

Section I: Why AI in primary care and why now?

Primary care in the United States is at a breaking point—and potentially a breakthrough moment. Despite being foundational to better outcomes and lower costs, primary care remains under-resourced and overstretched. [1,2] More than 100 million Americans lack access to primary care—a figure that has more than doubled in the past decade, primarily driven by a shrinking and aging primary care workforce. [3,4] Coinciding with this is a country with rising chronic disease, an aging population itself and a misaligned payment system. The entire situation exacerbates health care workforce shortages and demands clinicians do more with less time.[5, 6]

Against the backdrop of this strained environment, artificial intelligence (AI), also referred to as augmented intelligence, is rapidly expanding into nearly every aspect of our daily lives. [7]AI—especially generative AI—has entered clinical settings at a pace faster than any previous technological wave. [8]According to our survey of over 1,200 primary care physicians and other clinicians, the majority are already using digital health tools daily and 36% have used AI in their practice. [9]Early signs indicate a tremendous opportunity for positive impact. At some large practices, AI tools have saved thousands of workdays for primary care physicians. Specifically, 82% of primary care physicians reported that using AI scribes had a positive effect on their work satisfaction, and 84% reported that it had a positive effect on patient interactions.[10]

> **"We are not here to marvel at the technology, we are here to make sure it works for physicians, patients and the system as a whole."**
>
> **—Katie Drasser, RockHealth.org CEO**

Primary care is particularly fertile ground for the impact of AI.[11]Primary care touches more patients than any other part of the health care system and handles a wide range of issues, often with incomplete data and limited time. That makes it both a clear proving ground for AI tools and a perfect testing ground for their ability to support real-world care. From a market standpoint, the opportunity is enormous, with approximately 500 million primary care visits occurring annually in the United States.[12] The upside potential to the broader health care system is also clear: when primary care functions well, the potential patient and system-wide benefits are profound.[9,13,14]

Why AI in primary care and why now?

Many primary care physicians are optimistic. Most are hopeful that AI can reduce administrative burden, improve work efficiency, restore time for connection, reduce burnout and stabilize the specialty.[15] However, many also harbor deep concerns about privacy, ethics, bias and legal risk. And rightly so—previous major technology rollouts, such as the EHR, while well-intentioned, have often contributed to burnout more than alleviating it.[16]

This moment, therefore, presents a rare opportunity. While AI is poised to reshape primary care, the critical question is how it will do so. If implemented thoughtfully and in close partnership with clinicians, AI could help stabilize primary care and reverse the impact of decades of underinvestment and fragmentation.[1] But if AI is misaligned with the core values of primary care, AI could just as easily widen equity gaps, deepen data fragmentation and accelerate burnout. Let's start by exploring what is at stake.

Challenges facing primary care

AI offers an opportunity to address many of the most persistent and urgent challenges to primary care. However, many of these challenges are deeply intertwined and structural, making it difficult to address any single one. Therefore, at the outset, we will not claim that AI will solve every challenge facing primary care. We are clear-eyed that technology alone will not fix payment models, rebuild trust or fully close access gaps. Still, we believe that the smart, targeted use of AI could meaningfully move the needle on some intractable problems. We aim to be clear about where we believe technology can make a significant impact and where we will likely continue to see ongoing challenges.

Figure 1 is a snapshot of the key challenges primary care faces and the degree to which we envision AI can help address them. These challenges will continue to be explored throughout this publication.

"Primary care is where the power, opportunity and future of AI are most likely to be realized in the broadest and most ambitious scale."

—Steven Lin, MD, Megan Mahoney, MD, Christine Sinsky MD, in the *Journal of General Internal Medicine*

Why AI in primary care and why now?

Figure 1. Summary of five key challenges in primary care and the potential for AI to address them

High = AI is well-suited and readily able to address the challenge.
Low = AI likely has a limited near-term ability to address the challenge, as the challenge is more structural or complex in nature.

Challenge	Key Indicators	Potential for AI to Address
Financial: Primary care is chronically underpaid, and payment models do not sufficiently incentivize innovation or prevention.	• Primary care receives just 3.5% to 8% of health care spending despite substantial evidence that it improves care and lowers costs.[17] • Primary care physicians earn less money than many other medical specialists (sometimes as much as $100,000-plus less annually), which drives many students to other specialties.[18] • Operating costs for medical groups are growing faster than revenue,[19] with 92% of groups seeing higher operating costs in 2024 than the previous year[20] (and 2025 will likely be worse). • Most payment models (e.g., fee-for-service [FFS]) reward volume, not prevention or coordination.[21]	Low
Workforce: The primary care workforce is burned out, dwindling and lacking a strong pipeline.	• Despite a record-high number of residency slots, many remain unfilled (15% of family medicine slots went unfilled in 2025).[22] • Fewer advanced practice providers (i.e., nurse practitioners and physician associates [sometimes called physician assistants]) are choosing to go into primary care.[23] • Many existing primary care physicians are nearing retirement, with nearly half being 55 years or older.[24] • A shortage of 20,000 to 40,000 primary care physicians is predicted by 2036.[25]	High
Patient Population: The population is quickly aging and facing more chronic disease and associated complications, while younger populations are seeing disease onset sooner.	• The population of individuals 65-plus years is expected to be 34% greater by 2036 (with those 75-plus years growing by 54.7%).[25] • A 23% increase in heart disease prevalence and a 22% increase in diabetes prevalence are projected by 2036. Individuals with a history of heart attack and stroke will grow by 23% and cancer will grow by 20%.[25] • Multimorbidity is rising in younger adults,[26,27,28] with many lacking primary care physician relationships.[29]	Moderate

Why AI in primary care and why now?

Challenge	Key Indicators	Potential for AI to Address
Continuity of Care: The longitudinal and relationship-based nature of primary care is under threat from new point solutions, competitors and changing patient preferences.	• Nearly one-third of health care may be delivered by "new entrants" or nontraditional providers (i.e., concierge, retail, advanced primary care and payer-owned providers) by 2030.[30] • Half of generation Z patients use retail clinics, which can exacerbate fragmentation and reduce continuity.[31] • Only 5% of adults receive recommended, evidence-based preventive health care.[32]	Moderate
Access: One hundred million Americans—nearly one-third of the country—do not have access to a usual source of primary care, and wait times are long, especially for new patients.	• More than 100 million Americans lack a usual source of care.[3] • Having a usual source of care for children dropped by 36% and for adults by 21% from 2012 to 2021.[33] • The average wait time for new patients to get an appointment with a physician is 26 days.[34] • Nearly one in three patients delayed or did not receive health care due to costs, and 11% had difficulty paying their medical bills.[35]	High

Grounding AI in the core attributes of effective primary care

To consider how AI could impact these challenges, we first need to understand the core attributes of effective, high-value primary care. For decades, researchers, primary care physicians and other clinicians have identified the same foundational elements that make primary care effective. Dr. Barbara Starfield famously named the following four attributes of primary care[2]:

- **First contact:** Patients often turn to primary care first as a trusted partner for navigating symptoms and making informed health decisions.
- **Continuity:** Relationships with physicians often extend over time, allowing physicians to come to know patients beyond their medical charts.
- **Comprehensiveness:** Physicians address a broad range of health needs, including preventive, social and behavioral.
- **Coordination:** Primary care serves as the thread that connects patients across the health care system, ideally preventing duplication and ensuring care is aligned with the patient's goals.

Another important consideration is community, as it provides the essential framework for delivering high-quality primary care. Within the context of community, the concepts of equity, trust and cultural relevance are not optional but rather essential ingredients of effective care.

Taken together, these core attributes of primary care must serve as the north star for assessing new tools. AI should be measured not only by its technical capabilities but also by whether it strengthens each of these essential differentiators of high-quality primary care delivery.

Starfield AI summit: building a shared vision

To build a clear vision for AI in primary care, the AAFP and Rock Health convened the Starfield Summit on Advancing AI and Digital Health in Primary Care in May 2025. The summit brought together more than 80 stakeholders across various sectors—physicians, technology leaders, payers, researchers, policymakers and patient advocates—for two days of purpose-driven collaboration.

Participants from various disciplines collaborated to co-create a shared, cross-industry vision for how AI can strengthen primary care. They aligned on foundational principles, identified opportunities and risks, and debated the best action steps to move forward. The summit culminated in a session designed to generate a shared vision among participants on the impact of AI on primary care. Drawing from the insights of this broad, cross-industry group, we distilled a central thesis and vision that anchors this publication.

AI can strengthen primary care to improve human health—but only if:

- Physicians and other primary care stakeholders are involved throughout the innovation lifecycle
- Training and support are provided
- Key system barriers are proactively addressed

This publication builds upon this vision, sharing key insights from the summit and describing how we can translate this vision into real action across the health care ecosystem.

AI can strengthen primary care to improve human health—but only if primary care stakeholders are involved throughout the innovation lifecycle, training and support are provided, and key systems barriers are proactively addressed.

Section II: A shared vision for how AI can strengthen primary care

Primary care leaders at the Starfield AI summit agreed that primary care will undergo significant changes due to the impact of AI. The urgent question they asked was: Will AI impact primary care in a way that strengthens or weakens the core attributes of the specialty?

The consensus was hopeful, but cautious. Leaders expressed conviction that AI can help enhance the core attributes of primary care—first contact, continuity, comprehensiveness and coordination—recognizing the needs and resource constraints of the communities served. Notably, AI could make these functions more effective than today. Many summit participants anticipate a future vision where AI assistants are considered trusted members of the care team. If trained and treated as members of the care team—each with unique and distinct roles—these assistants could be trained to complete key tasks, such as triaging patients, summarizing chart highlights, drafting personalized educational materials, providing timely decision support, designing personalized care plans and flagging care gaps. Offloading these tasks could free physicians to focus on complex clinical decisions and allow all human members of the care team to concentrate on the non-transferable personal elements of quality primary care. These important shifts can bring more professional satisfaction and joy to the primary care workforce, preserving future access for patients.

Attendees were also clear that this vision will not be realized automatically. During the summit's visioning session, attendees identified three critical preconditions that must be in place to ensure the shared vision is achieved. We explore each below.

1. Physicians and other primary care stakeholders are involved throughout the innovation lifecycle

The first precondition is critical but straightforward—primary care physicians and other care team members must be actively involved in AI development. AI is attracting a significant share of new investment dollars in health care.[36] Development is moving rapidly, and health care delivery organizations are leading the industry by quickly transitioning AI projects into proof-of-concept and scaling phases (from ideation and experimentation).[37] Given the fast pace, summit attendees underscored the risk of primary care voices being sidelined. It is a genuine concern for many primary care physicians and other care team members who still carry the scars of digital tools that were not built by or for them, and thus added friction rather than easing it.[38]

This time can be different, but only if primary care voices are at the development table from the beginning and remain active participants throughout implementation. Their expertise is essential, not just for surfacing use cases, but also for refining tools, stress-testing workflows, identifying blind spots and ensuring safety, effectiveness and relevance. We explore specific ways to enable this co-development in Section IV.

2. Training and support are provided

For physicians and clinicians to effectively shape and safely utilize AI, they require time, training and resources to build confidence, acquire expertise and exert influence. Summit attendees envisioned a future where physicians can vet AI tools with the same fluency they bring to reading medical literature or reviewing clinical guidelines, with the ability to interrogate algorithms and evaluate their efficacy.

A shared vision for how AI can strengthen primary care

Conversations at the summit also highlighted that the skills physicians and other clinicians will need will change in this new era. In addition to clinical judgment, primary care physicians may increasingly be valued for their ability to train and supervise AI models, prompt effective responses, guide workflow design, know when to trust (or override) an output and act as ethical stewards of sensitive data. AI literacy must become part of the professional toolkit, supported by CME, residency curricula and peer learning.

3. Key system barriers are proactively addressed
Finally, even the most primary care-aligned tools will not scale without challenges. Summit attendees underscored several systemic barriers that could derail innovation. These barriers, discussed in Section III, are centered around misaligned financial incentives that undervalue and overburden primary care, as well as inadequate infrastructure and systems that negatively impact primary care workflows. Along with general concerns, such as unclear regulatory oversight and accountability, this results in a loss of human trust and engagement.

We explore these barriers more fully in Section III and propose actionable solutions in Section IV. Before we delve into what might hinder progress, we next turn to what is possible—and what AI could help primary care achieve if we get this right.

What primary care could look like if AI helps it realize its full value

The defining strengths of primary care could become more visible and sustainable if we can overcome the aforementioned barriers. At the summit, participants spent considerable time imagining what this might look like in practice. From those conversations, we distilled five “beacons” for what effective AI use could enable and support. Each is designed to enhance team-based, patient-centered care and reduce unnecessary burdens experienced in current practice environments.

These beacons are not prescriptive endpoints, but rather practical signposts intended to guide implementation, investment, policy and collective action. We hope they serve as inspiration for the full spectrum of primary care leaders—physicians, clinicians, large health systems, payers, investors, technologists and policymakers—who are shaping the future of AI.

Importantly, these beacons also signal a broader shift in mindset. Attendees emphasized that future visions for AI in primary care must extend beyond addressing physician burnout or improving productivity. AI should be deployed to strengthen the care team as a whole and improve patient health outcomes for the communities it serves. In this vision of the future, AI solutions may handle more routine tasks, such as documentation, triage and patient education, while humans focus on empathy, complex decision-making and relationship-building. With this broader vision, success can be measured less by patient volume or throughput and more by meaningful metrics, such as population health and quality outcomes, patient trust, health literacy, patient-provider relationship “stickiness” and physician joy and sense of purpose.

A shared vision for how AI can strengthen primary care

Five beacons for effective AI use

If AI can strengthen primary care effectively, it can:

Ensure primary care continues to be the key source of preventive, continuous and team-based care

Enable the delivery of deeply personalized care that builds trust and drives outcomes

Serve as the steward of shared decision-making across the health care journey

Become a key driver of population health decisions and outcomes

Enable true team-based care where all members work at “top of purpose”

1. Ensure primary care continues to be the key source of preventive, continuous and team-based care

Continuity and prevention are pillars of effective primary care and improved health outcomes, yet they are often the first to erode when access is limited or patients disengage from the health care system.[39] Only 5% of U.S. adults receive all high-priority preventive services,[32] and continuity has declined as many new models prioritize convenience over long-term relationships.[30,31]

AI could help primary care reclaim these core attributes, but it could also accelerate a shift toward more fragmented and transactional care. For instance, AI-powered Google searches, virtual agents and on-demand care apps may become patients’ first (and sometimes only) point of contact, reinforcing existing consumerism trends that prioritize convenience over sustained relationships. While these trends reflect the importance of accessibility and patient preferences for immediacy, the proliferation of siloed solutions (e.g., mental health chatbots that do not connect to existing care teams or patient-specific clinical records) risks fragmenting care and leaving complex needs unmet by serving as endpoints, rather than entry points.

Yet, AI can be harnessed to strengthen the central role of primary care. At the summit, attendees envisioned AI as a powerful enabler to help primary care teams be more proactive about patient outreach and continuous health management. When integrated within existing care team relationships, AI can help synthesize system-wide data to anticipate patient needs, delivering relevant preventive care reminders and/or guidance for chronic conditions. These tools can make care feel less episodic, supporting engagement between patient visits and giving physicians and their teams the insight and capacity to intervene more effectively at the most impactful moments. The possibility of this is already starting to take shape. For instance:

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- AI medical summary tools ingest patient data (beyond the EHR) and help physicians and their teams craft more interactive, shared care plans with patients. Refined through clinician and patient input, these plans help patients gain a clearer understanding of how to prevent disease progression and improve their health rather than regress it between visits.
- AI-enabled remote patient monitoring tools and health coaches equip patients with more effective options for continuous, active self-management, while also informing care teams of their progress. Novel AI chatbots and agents hold the promise of providing ongoing conversational health coaching tailored to a patient's specific goals and needs.[40]
- Asynchronous communication tools, such as secure portal messaging and automated text message reminders, have already become foundational in extending preventive care beyond the clinic walls. AI stands to make these services more efficient, scalable and effective, especially as tools like customer relationship management systems centralize more patient data.

For this future to be fully realized, AI must be designed with continuity, trust and equity at its core, delivering insights that help patients feel genuinely understood. AI care plans should be updated to reflect what works and what does not work for the patient. Tools will also need to be built on datasets without systemic gaps or inequities, while adapting to diverse needs and demonstrating real-world effectiveness in day-to-day clinical settings.

2. Enable the delivery of deeply personalized care that builds trust and drives outcomes

At its best, primary care is deeply relational, rooted in understanding each patient's values, context and lived experience. But systemic barriers, such as short visits, workforce strain and data fragmentation often make truly personalized care hard to achieve (especially for patients from marginalized communities). As a result, many summit attendees noted that primary care is often not as "sticky" or trusted as it was in the past (a finding reinforced by Rock Health's research).[41]

AI can help surface meaningful, human-centered insights from social barriers and behavioral health needs to learning preferences and communication styles. AI tools can help care teams understand the person behind the patient, delivering more culturally responsive care and maintaining trust in a health care system where the United States ranks near the bottom globally in terms of clinician trust.[42] AI tools could also offer solutions tailored to individual-specific contexts and needs (e.g., insurance eligibility, geography, housing and social and family circumstances). We are already seeing early signs of this future with the potential for AI tools, including:

"AI has the opportunity to radically improve equity. You can test the model as to whether it has bias. Today, you don't have a way to test bias in every single clinician."

—Kyna Fong, CEO and co-founder, Elation Health

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- Context-aware decision support tools which can use the holistic patient data summaries to suggest care adjustments or actions based on the patient's past engagement data or personal barriers (e.g., missed appointments, transportation issues). For example, a primary care physician might see a concise, unified summary that shows a patient's housing instability alongside rising blood pressure readings and missed medication pickups.
- Ambient listening tools generate visit notes that reliably capture the patient's goals, values, concerns and traumas. This enables care teams to quickly and easily surface this information, tailoring care plans and education specifically to each patient's history and preferences.
- Precision medicine and biomarker tools are emerging, enabling proactive and personalized care based on biological and genetic profiles.

Getting this right requires intention: personalization must feel personal, not generic. Tools must be accurate, attuned to diverse populations and trained on data that spans silos and can reflect patients' whole selves.

3. Serve as the steward of shared decision-making across the health care journey

Fragmentation across systems, specialists, urgent care and digital tools often leaves patients navigating conflicting recommendations and disconnected care plans. Primary care physicians often feel this fragmentation, as they lack the necessary information about patients. Only 15% of family physicians report having the necessary information when they need it.[43]

At the summit, many attendees envisioned AI helping primary care physicians reclaim their role as the quarterback of care by delivering more timely, relevant and actionable information. By synthesizing data from disparate sources—such as labs, specialist notes and hospital discharges—and surfacing key insights, AI can reduce cognitive burden and recenter primary care as the locus of shared decision-making.

AI-powered summarization tools distill lengthy consultation notes into relevant summaries, while digital assistants flag follow ups, track referrals and close care loops to prevent patients from falling through the cracks. AI can also empower patients through personalized education and real-time navigation tools that clarify what to expect and what to do next. Some of the specific AI tools to enable shared decision-making include:

- Previsit AI summaries synthesize relevant information, such as lab results, consultation notes, medications and social history, allowing primary care physicians to focus visits on shared planning rather than fact-finding.
- AI-enabled clinical decision support tools extend the scope of care for primary care physicians to include flagging care gaps, surfacing risks or guiding treatment plans, especially in areas where access to specialty care is limited.
- Background coordination tools monitor missed referrals, pending labs and follow-up needs to automatically direct tasks to the appropriate team member. To get this right, data flow must recognize the central role of primary care in the health care journey. That means that information generated across the system must flow quickly and accurately back to primary care, which requires overcoming the interoperability barrier previously mentioned.

4. Become a key driver of population health decisions and outcomes

Primary care plays a foundational role in improving population health, health equity and long-term health outcomes while lowering health care expenditures.[13] When primary care physicians and care teams have enough time and resources to track the health of their entire patient panel and act proactively, the result is better patient outcomes. However, few primary care physicians currently have the time or bandwidth to do so.

A shared vision for how AI can strengthen primary care

At the summit, attendees emphasized the potential of AI to help bring contextualized care from an individual to a population level by equipping primary care teams to deliver targeted, proactive support on a large scale. This includes using AI for population management (e.g., segmenting patients into groups and creating care plans for them), as well as identifying rising-risk patients to prioritize access across the population. We are already seeing early signs of this future through tools, such as:

- AI-powered panel stratification sorts patients by risk, complexity or social needs and guides the team on what actions to take and when. These tools can extend across panels to surface population-level insights, including rising-risk patients and those with unmet care needs.
- In-visit prompts and clinical decision support tools flag care gaps, suggest diagnoses, recommend laboratory tests or identify patients at risk for high total cost of care, all based on real-time, cross-system data.
- Community intelligence tools analyze public health trends, identify local service gaps and recommend resources that reflect patients' broader contexts.
- Agentic AI tools semi-autonomously work across the patient panel, executing follow-up tasks, distributing workloads across care teams and ensuring continuity of support between visits.

Ultimately, this vision is about enabling greater impact with the same team and time, in part by providing visibility on how to better direct resources within the care team. AI becomes the infrastructure behind the scenes—quietly managing risk and guiding outreach, while making population-level insights feel tangible and actionable in the flow of care. To realize this vision, tools must surface insights that are clinically relevant, actionable and aligned with the community. Tools should track outcomes that truly matter—such as improved control of chronic conditions or having social needs met—and they must empower the entire care team, not just physicians.

5. Enable true team-based care where all members work at "top of purpose"

As we have noted, workforce challenges loom large in primary care today. Fewer clinicians are choosing the field, with many primary care physicians retiring early and burnout is pervasive. While AI may help reduce burnout, this should not be the goal. The cause of burnout varies for each clinician, so narrowly targeting it would risk missing the broader picture. Instead, we should focus on what truly matters: bringing more joy and meaning to primary care work.

Central to this vision is a renewed commitment to team-based care, where AI enables every member of the care team to focus on what they do best and where they find meaning, value and purpose. This means not only automating tasks, but also redistributing work in smarter, more intentional ways. It also means aligning the time and energy with what physicians and other clinicians and their staff find most valuable about their careers so they can perform at the "top of their purpose," not just at the "top of their license."

Too often, delegation in practice is messy and inefficient, requiring painstaking coordination and leading to role confusion or duplication. AI can help change that. With intelligent task routing, contextual prioritization and awareness of workflow coordination, AI tools can structure care delivery so that primary care physicians, nurses, medical assistants, care coordinators and front-desk staff have the information they need when they need it. This creates not only more efficient operations but also more cohesive and human-centered care. We are beginning to see this future take shape through tools, such as

- AI assistants manage clerical tasks, along with intelligent task-routing systems that align messages and tasks to the appropriate team member, allowing physicians, nurses and care coordinators to work where they find the most purpose.

A shared vision for how AI can strengthen primary care

- Augmented decision support tools serve as smart co-pilots, providing recommendations while preserving clinical autonomy and judgment.
- Workflow-aware AI structures the day around high-impact, high-value and purpose-aligned work, reducing fragmentation, delays and unnecessary rework.

To get this right, AI must prioritize purpose over productivity. Tools should be evaluated not only by efficiency metrics, but also by whether they reduce physician and other clinician turnover, increase job satisfaction and enable deeper patient connections and impact. They must adapt to diverse cognitive styles, workflows and communication preferences. Joy should be an explicit design goal.

It is worth noting that many summit attendees anticipate that AI tools may initially increase the administrative burden before ultimately relieving it. For instance, many tools currently increase click counts before reducing them. Therefore, it will likely be essential to allocate funds in budgets and protect the time of physicians and other clinicians and office staff so that practices feel comfortable navigating new tools without feeling pressured to have them immediately improve the patient, physician and other clinician experiences.

How primary care evolves in this AI-enabled future

As AI tools improve and become more integrated into primary care workflows, the roles of primary care physicians and other clinicians, primary care teams and the specialty of primary care itself will inevitably evolve. Discussing how the roles of the care team, as well as those of each physician and other clinician, will change is a lengthy conversation beyond the scope of this publication. However, we believe it is essential that primary care leaders consider this evolution, as well as the numerous pros and cons of the impact of AI.

We explore some of these “cons” at a high level in Section III and encourage the industry to continue partnering with physicians and other clinicians and their teams to explore how to most efficiently and impactfully step into this new future.

Section III: Barriers to achieving the vision

Summit attendees identified numerous risks and challenges that could hinder the implementation of AI in ways that would ultimately strengthen primary care. The issues they identified are grouped into three categories: misaligned financial incentives, inadequate infrastructures and systems, and lack of human trust and engagement. This section examines these potential barriers, providing a detailed description of each, along with a table that delves deeper into the specific risks and challenges associated with them.

Misaligned financial incentives: Success will require multiple changes to address the decades-long underinvestment in primary care using a misaligned FFS payment mechanism that pays only for discrete services. Unlocking the potential of AI in primary care settings requires that its implementation must address both the level of funding and the structure of primary care payment. The AAFP has long advocated for an approach that moves away from sole reliance on FFS and toward appropriately funded, prospective population-based payments embedded in a range of alternative payment models, including value-based payment. Making these changes simultaneously is crucial to support primary care practices' ability to adopt AI in ways that serve patients without compromising financial sustainability.

Under a strictly FFS approach, practices will lack the ability to invest in AI tools that reduce administrative burdens, enhance clinical care and improve the patient experience.

Figure 2. Summary of key barriers in primary care

Key Barrier: Misaligned Financial Incentives	**Magnitude:** How large is the barrier?	**Difficulty:** How hard is the barrier to overcome?
Misaligned payment structure and models FFS payment structures may lead organizations to invest in AI tools only for high-margin service lines (thereby overlooking primary care) or only to boost productivity or specialty referrals, rather than improving outcomes or patient experiences. Prioritization based on profitability (e.g., insurance status) could worsen patient inequities. Furthermore, the effective use of AI could reduce the need for synchronous, transactional care, thereby decreasing FFS revenue—particularly for lower-acuity issues—and creating a financial disincentive for many organizations. The current relative value unit FFS structure also does not facilitate payment to providers for AI use, especially for preventive or population-level care. If primary care payment is not substantially reformed, primary care physicians who want to use AI tools to improve care quality may have to do so unpaid, thereby worsening their financial burdens. In the worst case, productivity gains from AI use could lead payers to reduce primary care payments.	Significant	Significant

Barriers to achieving the vision

Key Barrier: Misaligned Financial Incentives	**Magnitude:** How large is the barrier?	**Difficulty:** How hard is the barrier to overcome?
Unequal access to AI High upfront and ongoing costs may make AI tools inaccessible to independent, safety-net or rural providers and/or under-resourced communities, thereby widening health disparities. Furthermore, limited access to AI could exacerbate physician and other clinician recruitment challenges at these practices, resulting in less representative AI use and data collection.	Moderate	Moderate
Further erosion of physician practice ownership As patients expect AI-enabled care and AI tools to streamline back-office operations, independent primary care physicians may struggle to compete even more. This could lead to more corporate ownership and consolidation among independent practices.	Moderate	Moderate

Inadequate infrastructure and systems: AI will not work if it cannot easily and confidently integrate into real-world primary care workflows. A general lack of health care data interoperability contributes to several data-related concerns. EHR systems are currently fragmented and encounter-based, and therefore ill-suited to the longitudinal, patient-centered records that AI tools will require to deliver meaningful insights.

Summit attendees agreed that EHRs serve as essential workflow tools and interfaces, not repositories of all necessary data. To enable accessibility, continuity, comprehensiveness and coordination, a stronger data infrastructure will be needed.[44]

Many summit participants highlighted the promise of regional health information exchanges—especially when linked through national frameworks, such as the Trusted Exchange Framework and Common Agreement and Qualified Health Information Network—as a way to bridge the gap and make actionable, aggregated data available at the point of care. This is consistent with the AAFP's position on the need for a more robust information exchange framework to support primary care's success in value-based payment, the second important policy and infrastructure consideration.[45]

These persistent challenges—along with siloed vendors and vendor-driven solutions that lack sufficient input from physicians and other clinicians in vendor integrations and partnerships—can hinder adoption and negatively impact outcomes. To realize the full potential of AI in primary care, these infrastructure gaps must be addressed through close collaboration among physicians and other clinicians, developers, policymakers and health IT leaders.

Barriers to achieving the vision

Figure 3. Summary of key barriers in primary care

Key Barrier: Inadequate Infrastructure and Systems	**Magnitude:** How large is the barrier?	**Difficulty:** How hard is the barrier to overcome?
Regulatory and legal grey zones A lack of clear regulatory frameworks, definitions of "clinical grade" AI and/or oversight (especially at the federal level) could stall adoption or result in uneven uptake across health systems. A fragmented, state-led regulatory landscape could result in inconsistent oversight and hinder the sharing of cross-state data exchange.	Significant	Significant
Data fragmentation Developers face a fragmented data landscape with siloed EHRs and a lack of interoperability. Without these holistic inputs, AI risks making incomplete, generic or biased recommendations. Furthermore, if unreliable or incomplete data (e.g., missing key populations or data from certain payment models) is used to train models, it could amplify existing biases or inaccuracies.	Significant	Significant
Fragmented vendor ecosystem The health IT landscape is saturated with niche vendors and poor interoperability. If AI tools do not integrate with existing tools or with those from other vendors, they may exacerbate fragmentation and may fail to gain initial uptake. Furthermore, overall costs may become prohibitive for providers, particularly across multiple development or testing of AI tools, these tools may be insufficient to meet real-world workflows or could even worsen them.	Significant	Moderate
Risk of outdated or biased data Given that the number of citations is a proxy for trustworthiness in the medical literature and older research tends to have more citations, there's a risk of promoting outdated research or clinical practices. Missing or underrepresented population-level data can lead to inaccurate or clinically irrelevant predictions, while labels used to train models may reflect substandard care or implicit biases.	Significant	Moderate
Lack of primary care physician input in AI development If primary care physicians are insufficiently involved in identifying challenges or unmet needs that AI could potentially address, AI tools will not be effective in primary care. Furthermore, if primary care physicians are not involved in the tool development or testing, tools may be insufficient to meet real-world workflows or could worsen them.	Significant	Limited

Barriers to achieving the vision

Lack of human trust and engagement: Even with proper infrastructure in place, the success of AI in primary care ultimately depends on whether people—patients, physicians and other clinicians and care teams—trust and engage with it. Without trust, AI tools risk being ignored, misused or actively resisted. And without engagement, they cannot provide meaningful improvements in care.

Physicians and other clinicians must be able to evaluate how a model was trained, whether it applies to their patient populations and where its limitations lie. Reference-level model explainability will be central to earning the confidence of physicians and other clinicians and their practice administrators. Just as importantly, vendors will need to demonstrate real-world return on investment (ROI) with mechanisms that preserve accuracy, trust and reliability by accounting for evolving data sets and model drift. AI tool adoption will hinge on the following measurable, practice-level outcomes: improved access, enhanced panel health, enhanced workflow efficiency and reduced administrative burden.

Figure 4. Summary of key barriers in primary care

Key Barrier: Lack of Human Trust and Engagement	**Magnitude:** How large is the barrier?	**Difficulty:** How hard is the barrier to overcome?
Unclear accountability for AI-driven decisions (e.g., cases of errors or patient harm) Unclear accountability for AI may hinder physicians and other clinicians from buying in to the technologies and limit their desire for coordination. If they overutilize AI, they may be held liable for decisions they did not consciously make ("automation drift"), which could result in legal consequences. Conversely, if they underutilize AI, they may be held liable for missed prevention measures, misdiagnoses or inappropriate treatments. Furthermore, establishing liability for data breaches may be challenging as AI tools layer on top of each other.	Significant	Significant
Lack of physician trust If physicians lack or lose trust in AI (e.g., due to a lack of model explainability, inaccurate outputs, poor validation or holding it to too high a standard), it could hinder its widespread adoption. A loss of physician trust—without the autonomy to decide when to use it—would add a burden by forcing physicians to validate AI outputs.	Significant	Significant
Increase in primary care physician cognitive and care team burden AI could reduce the direct involvement of primary care physicians in managing relatively healthy patients, shifting their time primarily to managing highly complex patients and thereby inadvertently increasing their cognitive burden (and potentially further straining the primary care physician-patient relationship). Additionally, less-than-perfect AI accuracy may necessitate the manual review of AI outputs, thereby increasing human burdens. AI could also strain the time of care teams by requiring patient consent and disclosure for each use of AI, resulting in substantial time spent on visits.	Significant	Moderate

Barriers to achieving the vision

Key Barrier: Lack of Human Trust and Engagement	**Magnitude:** How large is the barrier?	**Difficulty:** How hard is the barrier to overcome?
Lack of patient trust If patients do not trust AI (e.g., due to a history of systemic inequity, privacy concerns or inadequate education/consent processes), the expanded use of AI could lead them to withdraw (or further withdraw) from the health care system and exacerbate existing inequities. A lack of consistency around the disclosure of AI use could also alienate some patients or sow mistrust.	Significant	Moderate
Insufficient education on AI If care teams lack practical training on how to safely and effectively use AI or leaders lack the AI literacy needed to guide implementation or evaluate ROI, it can lead to misuse, underuse or misaligned expectations. A lack of education, particularly in legal protections and malpractice risk, may hinder the use of AI by physicians and other clinicians.	Significant	Limited
Climate-based ethical concerns High-energy and freshwater uses of AI may raise concerns about sustainability and environmental impacts. Physicians and other clinicians may be hesitant to use or avoid using AI due to these ethical issues, which could potentially hinder its widespread adoption. Despite the magnitude of this challenge, it remains under-discussed and unsolved.	Moderate	Significant
Signal-to-noise mismatch With numerous potential AI tools available, “alert fatigue” may be so high that care teams avoid even considering AI solutions. Furthermore, most AI tools may have strong sensitivity but weak specificity, flagging too many low-risk patients for intervention. This would waste care team time and erode trust in the tools, further increasing the total cost of care. Conversely, if tools miss high-risk patients or information, care teams may want to return to manual reviews.	Moderate	Moderate

Section IV: A roadmap to achieving the vision

The vision outlined in this publication—a vision of AI advancing primary care's core attributes—reflects what Starfield AI summit attendees and many other primary care and technology leaders believe is possible if we act boldly and collaboratively. But as Section III makes clear, significant barriers stand in the way. Without strategic action, even the most promising AI tools may fail to deliver the meaningful change that is so desperately needed.

Overcoming barriers will require collaboration across a diverse group of stakeholders, including physicians and other clinicians, technology developers, policymakers, payers, community advocates and health system executives. Although many of these stakeholders do not regularly sit at the same table, they were represented by the leaders who convened at the Starfield AI summit. Attendees—physicians and other clinicians, technologists, payers and policymakers—spent a significant share of their time together generating concrete, near- and mid-term steps to overcome barriers to using AI in primary care.

Their collective thinking served as the foundation for the early roadmap outlined below. Each action item is designed to accelerate the responsible, effective and equitable integration of AI into primary care. The summit's hosts and advisors are well aware that this roadmap outlines the first steps of many to come and that priorities and directions might change over time. The action items on our roadmap broadly fall into three categories: convening the right stakeholders, advocating for policy and payment reform, and building resources and tools to help practices keep pace with the rapidly changing landscape of AI.

Convening the right stakeholders

Creating forums for productive discussions between primary care physicians and other clinicians, care team leaders, technology developers, policymakers, payers and other key stakeholders will be essential to ensuring AI solutions work across a broad range of primary care settings.

Action Item	Key Stakeholders
Support frontline primary care innovation networks as learning labs to inform real-time development and participate in academic research. Establish a national network of physicians and/or practices and clinics that partner with technology developers and vendors to help shape AI-enabled tools. Network participants could provide feedback on tools and/or pilot them to assess their real-world applicability in primary care. Alternatively, they could participate in longer-term, more rigorous research studies to understand the broad impacts of AI tools on practices and/or patients. **Possible early activities:** • Develop (potentially through hackathon-type events) a catalog of primary care-specific AI use cases for developers to consider • Create a sandbox of anonymized primary care patient data from many patient populations and types of care settings that developers can use to train models • Pilot ambient listening in more diverse primary care settings to test methods for more effectively capturing patient goals and encourage the development of AI tools for non-English language visits • Build cross-border partnerships to pilot and validate the use of AI tools in a variety of international settings and identify mechanisms to translate learnings for U.S. practices	• Innovative primary care practices (owned by physicians and health systems) representing a broad spectrum of populations and care settings • Primary care-focused technology developers • Payers, durable medical equipment suppliers and others who work with practices to facilitate streamlined workflows • Patient advocates or co-designers • International primary care associations

A roadmap to achieving the vision

Action Item	Key Stakeholders
Build a transparent peer-buyer network to de-risk purchasing. Create a peer-buyer network that includes transparent user reviews, information about cost ranges and a directory that allows clinics to contact existing users of the tools they are considering. This could be expanded so that smaller and/or independent primary care practices could co-invest in tools and potentially share implementation experiences, outcomes data and procurement guidance to support the smarter adoption of AI tools. **Possible early activities include:** • Build a crowd-sourced, Wirecutter-style index of top AI tools across practices • Create user support groups	• Practice leaders • Primary care-focused medical associations (e.g., the AAFP) and their members • Health IT collaboratives
Develop trusted governance and certification standards. Form partnerships among clinical, legal, technology and regulatory stakeholders to define best practices for responsible AI governance in primary care, including safety benchmarks, validation thresholds and transparency expectations. This work could build upon existing frameworks (e.g., National Institute of Standards and Technology, Coalition for Health AI) to create primary care-specific standards for evaluating AI tools. **Possible early activities include:** • Publish an open-source governance toolkit, which could include a risk matrix, patient consent language, standard operating procedure templates for protected health information, etc. • Release a "Trusted for Primary Care" seal or grading system that scores AI products on error rate, evidence strength, equity and transparency • Launch a global AI in primary care working group to share case studies, governance models and datasets relevant to U.S. implementation	• Assistant Secretary for Technology Policy (ASTP) • CMS • Technology vendors • Patient safety organizations • Experts in the law and ethics • World Organization of Family Doctors (Wonca) • Domestic and global physician-leaders • Domestic and global AI coalitions

A roadmap to achieving the vision

Advocacy for policy and payment reform

Many of the barriers to using AI in primary care—especially those related to payment, liability and equitable access—will not be resolved through product innovation alone. Addressing them will require policy changes. Advocacy will be critical to align incentives with long-term value, build safeguards that ensure patient and clinician trust, and create regulatory clarity.

Action Item	Key Stakeholders
Create a shared blueprint to enable payment for the use of AI tools. Advocate across sectors for payment models that allow AI use in primary care to be financially feasible for all practices. Cross-sector stakeholders should consider mapping each category of AI tool to fit-for-purpose payment structures and launching multi-payer pilots to test new approaches. **Possible early activities include:** • Create FFS structures that reward investing in AI tools that drive cost savings and/or reduce long-term costs • Build payment pathways for asynchronous, continuous, AI-supported care, especially preventive care and care coordination • Develop shared savings models that allow upfront investment in AI infrastructure and ROI tracking • Build a public “who pays for what” guide to help individual primary care practices negotiate payment without having to reinvent the wheel locally each time	• CMS • State Medicaid agencies • Commercial payers, Medicare Advantage payers • Commercial payer advocacy organizations • Think tanks • National patient advocacy organizations • National policy organizations • Industry leaders
Define guardrails and legal liability frameworks for the use of AI in primary care. Advocate to create clearer standards about the development of AI and its use in primary care. This includes defining adverse event reporting, setting thresholds for oversight, clarifying the accountability of clinicians versus AI and determining malpractice considerations.	• Primary care-focused medical associations (e.g., the AAFP) and their members • CMS • Policymakers (especially the ASTP) • Lawyers • Patient advocates

A roadmap to achieving the vision

Building resources and tools

The rapid development of AI innovation makes it challenging for individual primary care practices—especially those that are small, independent or under-resourced—to keep pace and implement new AI tools safely and effectively. By building shared resources for primary care practices (e.g., standardized ROI frameworks, education initiatives, patient-facing tools), stakeholders across the ecosystem can scale their efforts and ease the burden on each practice.

Action Item	Key Stakeholders
Develop practical AI vendor evaluation frameworks/guidelines and establish a standardized, trusted method for assessing the ROI of AI tools. Create shared evaluation frameworks that primary care practices can use to assess vendors during initial implementation, as well as to monitor ongoing solution utilization and performance. Establish best practices for successful vendor partnerships to ensure optimal outcomes. Develop resource guides that define shared success metrics (e.g., quality, equity, cost, patient experience, physician experience) and can assess and/or demonstrate the ROI of AI tools.	• Primary care-focused medical associations (e.g., the AAFP) and their members • Health systems • Payers • Policy organizations (e.g., CMS and the ASTP) • Technology vendors
Conduct meta-analyses of multiple implementation studies to derive validated implementation considerations. Apply implementation science frameworks that support rapid dissemination of research findings and facilitate evidence-based approaches to implementing AI solutions. Ensure that research findings relevant to primary care are synthesized and made available to primary care practices in ways that can be more easily understood through a practice implementation lens.	• Researchers and implementation scientists • Innovative practices • Technology vendors
Make AI literacy a baseline competency. Develop and scale AI education across the primary care workforce and beyond —via undergraduate and graduate medical education, CME, executive training and policymaker education. Focus on safe and practical use, risk awareness and implementation strategy. **Possible early activities include:** • Develop and launch: ◦ Series on AI use cases in residency ◦ CME series on AI for primary care physicians (e.g., brief weekly videos covering topics, such as prompting tips, de-identification safeguards and model-switching tactics) ◦ Train-the-trainer programs • Executive education series on AI strategy ◦ Policymaker education ◦ Health system executive education	• Medical schools • Health systems • Residency programs • Professional societies • National AI coalitions (e.g., Coalition for Health AI, National Academy of Medicine)

A roadmap to achieving the vision

Action Item	Key Stakeholders
Launch patient-facing consent and literacy tools for AI in primary care. Develop multilingual tools (e.g., videos, handouts, chatbots) for all literacy levels to support informed consent and enhance trust in, as well as understanding of, AI-supported care.	• Patient advocacy groups • Vendors • Federally qualified health centers • Public health organizations • Patients
Highlight success stories and create case libraries from centers of excellence. Elevate examples of successful AI adoption in primary care—particularly in independent practices and under-resourced settings—to support learning, reduce hesitancy about AI and inform future implementation. This could eventually lead to a centralized case library of real-world narratives and outcomes data.	• Early-adopter practices • Leading academic centers • Primary care-focused medical associations (e.g., the AAFP) and their members • Funders

Section V: What's next?

The future of primary care is being written right now. The choices we make today about how AI is developed, implemented and scaled will define whether it strengthens or further weakens the essential foundation of primary care in the U.S. health care system.

This publication outlines a shared vision presented by a broad group of primary care and AI leaders, offering an early roadmap to guide us forward through greater collaboration. What comes next will be determined by the actions of the key stakeholders. We must work together, not in silos.

No single group of stakeholders can do this alone. Everyone has a role to play, including:

- **Physicians and other clinicians and care teams:** Continue to use your voice, leading with your unique insights about what primary care needs. Share what's working—and what's not—in your practices. Insist on AI tools that are built with you and for you, and bring your experience to the table in development, evaluation and implementation efforts.
- **Technology developers:** Consider building specifically for primary care, which is a strong proving ground for the value of new AI tools. But do so with primary care, not just for it. Approach the complexity of primary care with humility, and measure success not by novelty or speed but by sustained outcomes, continuity and trust.
- **Policymakers and regulators:** Suggest guardrails that protect patients and empower physicians and other clinicians to feel comfortable using AI. Prioritize equity, transparency and safe innovation. Ensure new models of care can be measured and reimbursed based on the value they create.
- **Payers and purchasers:** Consider aligning payment with the use of AI tools that strengthen primary care. De-risk innovation for independent and safety-net practices so all patients can benefit.
- **Educators and professional societies:** Embed AI literacy into clinical training and continuing education. Help build a workforce that can confidently navigate the future of primary care and highlight stories of AI innovation so others can learn.
- **Patients and community advocates:** Continue to call for care that is personalized, continuous and trustworthy. Make it clear when AI tools are working effectively, and identify areas in which further refinement or development may be needed.

This is a moment of shared responsibility and monumental change for all of humankind. The need for immediate action takes precedence over the desire to wait for the perfect tool, the perfect regulation or the perfect moment to take action. Our plan is to act with intention and collaboration, to ensure that AI appropriately supports—but does not replace—the deeply human work of primary care.

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