



Introduction

Imagine a healthcare system where intelligence is built into every step of care. Appointments are scheduled by AI that balances clinical urgency and patient preference. Insurance verification happens seamlessly. During visits, clinicians focus entirely on patients while AI listens, documents, and creates care plans, no typing or toggling screens. Follow-ups are proactive, prior authorizations are pre-filled, and quality data updates in real time.

AI is already beginning to enable this kind of care, not by replacing clinicians but by enhancing how we deliver and measure quality. The goal isn't perfection, it's to make care more human, equitable, and effective by rethinking how we define "quality" itself.

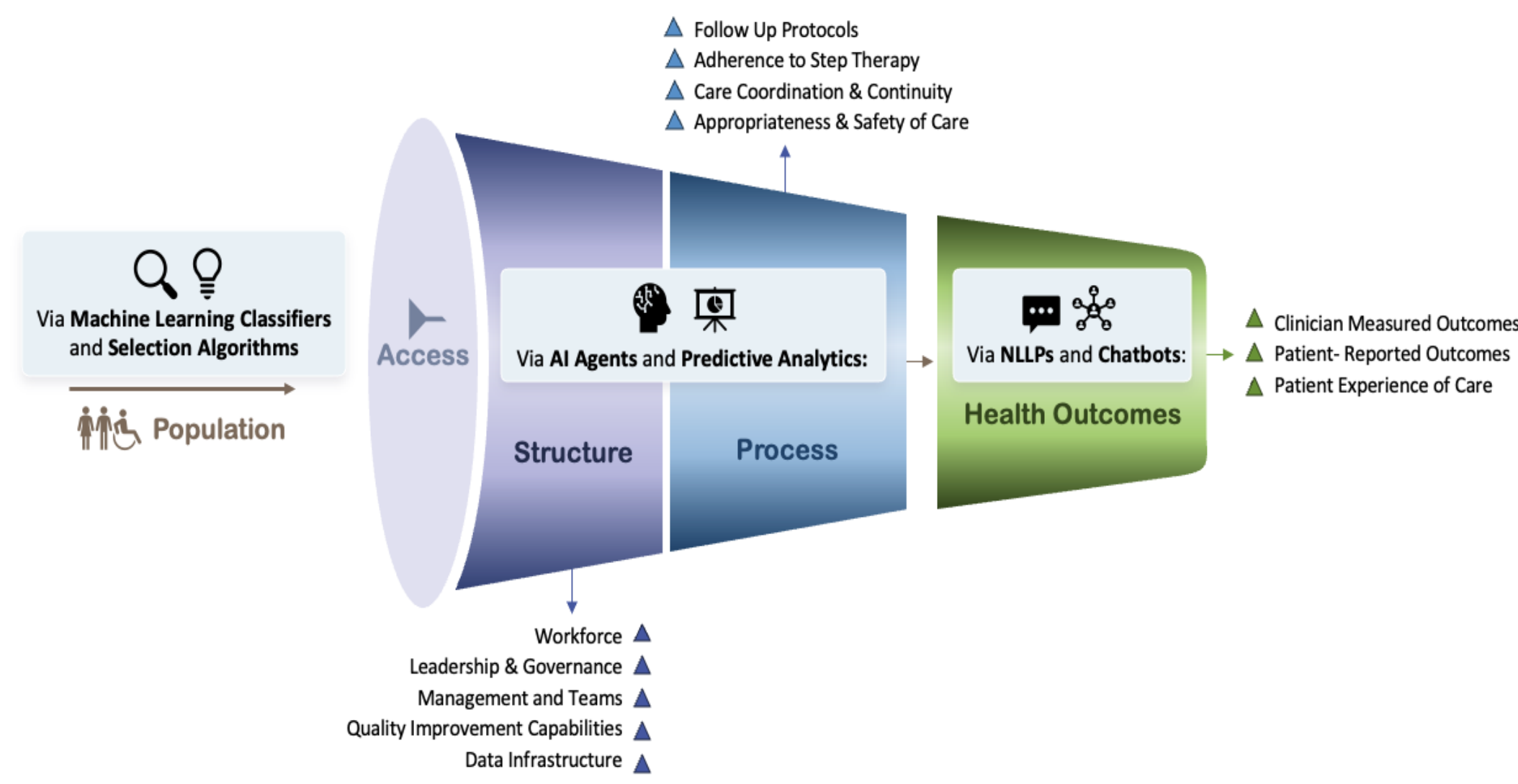


Figure 1: Illustrates how current QM processes are fragmented and manual, funneling clinical data through disconnected systems that slow feedback and increase reporting burden

Current Approach & Why Changed is Needed

The Problem: Healthcare systems strive for safe, equitable, and effective care, yet our current quality infrastructure remains **slow, fragmented, and burdensome**. Clinicians spend hours collecting and correcting data that rarely improves patient outcomes. Reporting varies by payer, measures lag behind practice, and meaningful insights come too late to drive change.

Key Challenges:

- Fragmented Systems:** Data trapped across EHRs, claims, and registries prevents a full view of the patient journey.
- Administrative Burden:** Manual abstraction and measure reporting drain clinician time and morale.
- Stale Feedback:** Quality metrics often reflect past performance, not real-time care quality.
- Limited Scope:** Traditional measures overlook coordination, experience, and patient-defined outcomes.

Our Aim

To explores how **artificial intelligence** can help **measure and improve the quality of healthcare**. We look at how AI can make **traditional measurement** faster and easier, while also enabling entirely **new ways to capture** what really matters, **like patient experiences, care coordination, and outcomes** that were previously hard to measure. The goal is to show how AI can make healthcare safer, more effective, and more patient-centered.

Advancing Outcome Measurement with AI

Domain	Current Challenges	AI Opportunities
Clinician - Measured	Manual documentation, scattered EHR data	• Auto-extract notes, real-time alerts
Patient Reported	Long, static surveys, low use	• Dynamic, tailored surveys, trend tracking
Experience of Care	Low response rates, delayed feedback	• NLP on open text, real-time sentiment

Figure 2: Outlines current measurement gaps and how AI automates and personalizes data collection

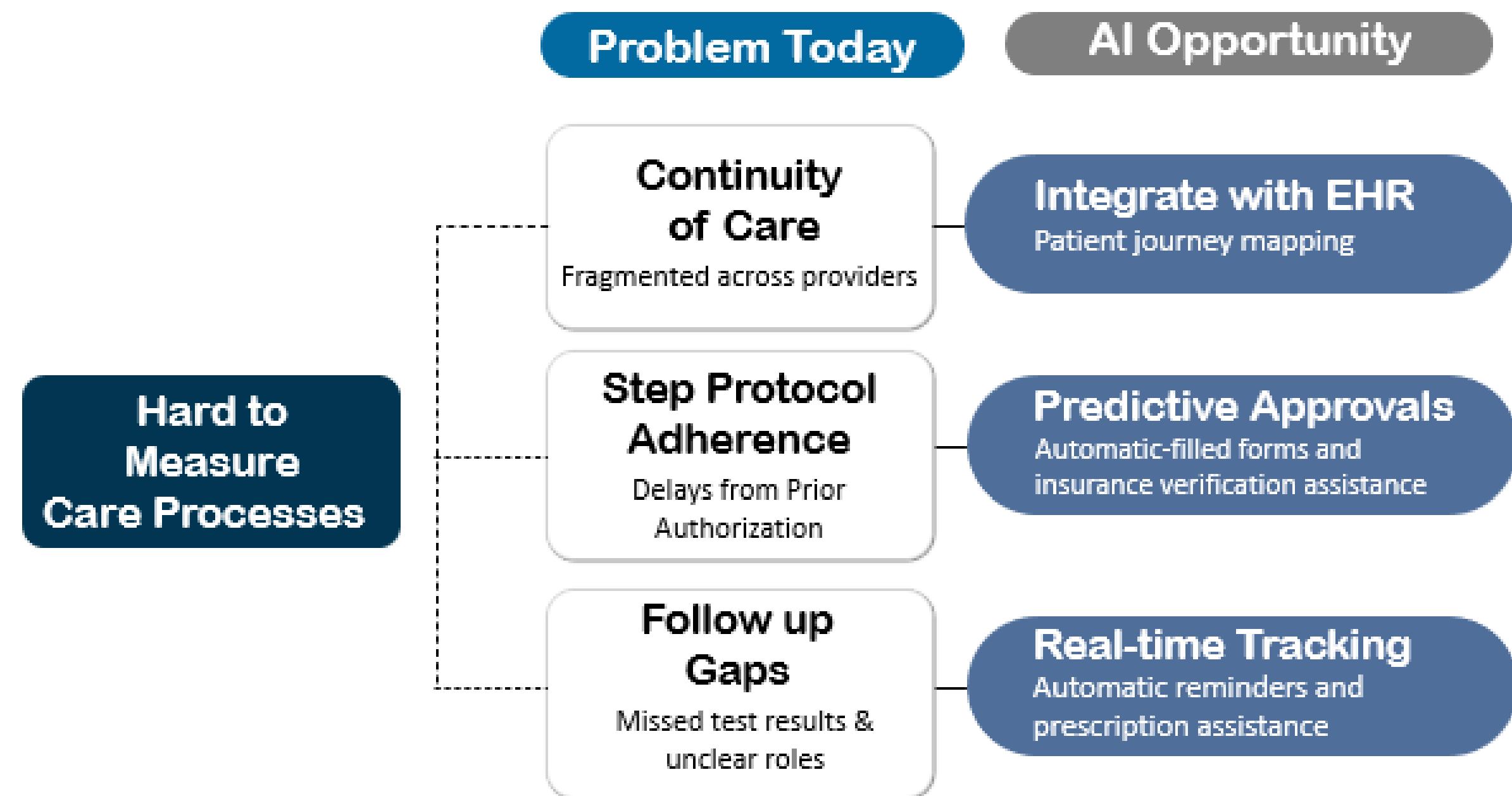


Figure 3: Highlights complex, team-based care activities that current metrics overlook but AI can help capture

Reimagining Donabedian: Structure, Process, Outcome

The Donabedian framework evaluates healthcare quality through **Structure, Process, and Outcome**. In our paper, we show how AI can transform each element to capture what truly matters for patients and care teams.

Structure: The foundation of care: leadership, workforce, data systems, and team dynamics. AI strengthens these by supporting governance, training, communication, and reliable data infrastructure.

Process: How care is delivered: patient journeys, protocol adherence, and follow-ups. AI can detect gaps, automate tasks, and flag unsafe or low-value care in real time.

Outcome: The results of care: clinical, patient-reported, and experiential outcomes. AI enables richer, real-time measurement that reflects the quality of care from both patient and system perspectives.

Transforming Quality Infrastructure

Modernizing Structures for Quality Care



Figure 4: AI strengthens quality structures by integrating leadership, data, workforce, and team dynamics

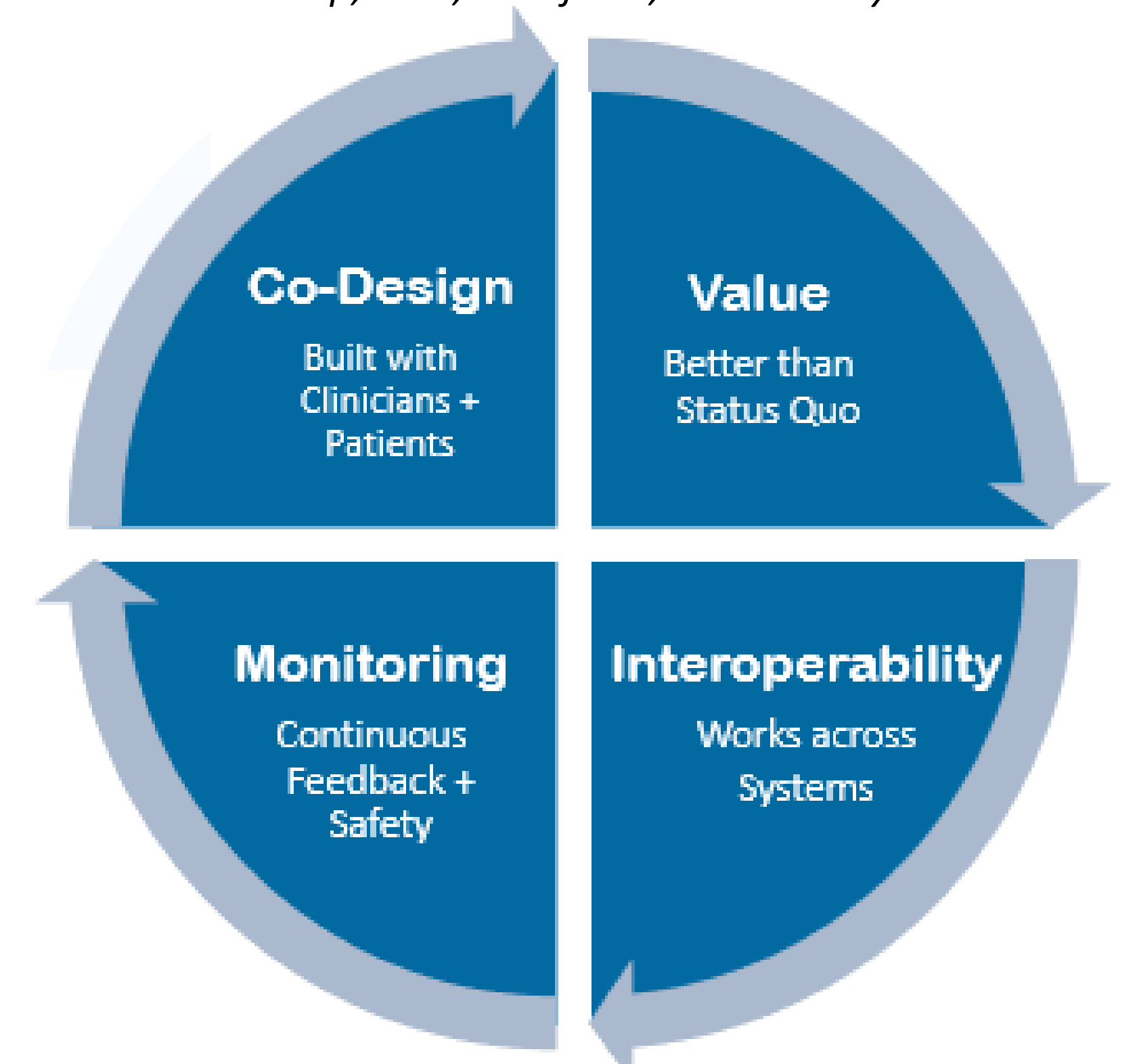


Figure 5: Collaborative design between clinicians, patients, and AI systems to align technology with care needs

Call to Action/ Next Steps

Next Steps:

- Co-design AI tools with clinicians and patients
- Evaluate for fairness, safety, and real-world accuracy
- Establish oversight and continuous performance monitoring
- Expand measurement to include patient stories and lived experiences

Takeaway:

AI's promise in healthcare quality lies not in replacing human judgment, but in freeing it, making measurement faster, fairer, and more meaningful for patients and clinicians alike.