



SHINE

Preserving the Promise of Healthcare

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Why Precision Matters

The Late Intervention Crisis Driving Healthcare's Collapse

Every week, 1,500 Americans progress from manageable chronic conditions to irreversible states that require intensive intervention. Each progression is not only a personal tragedy but also adds \$300,000 to \$500,000 in preventable annual costs. When you multiply this across millions of patients, it becomes clear why healthcare spending, already at \$4.2 trillion, is projected to rise to \$8.6 trillion by 2033.

The projected inflation rate for 2026 healthcare costs is alarmingly high, ranging from 8.5% to 11%. This is the highest level since 1982, a stark indicator of the escalating crisis. Meanwhile, real wages have only increased by a modest 1% to 1.5% annually since 2022. This mathematical disparity threatens to render healthcare completely unaffordable for millions of Americans-affecting not just the vulnerable, but middle-class families as well.

When middle-class families can no longer afford coverage and employers struggle to sustain benefits, the entire healthcare system teeters on the brink of collapse. Immediate action is desperately needed to prevent this looming catastrophe.

The 80's Great Divide - when US healthcare costs accelerated beyond median wages; despite COVID economic recovery incentives, it's been a 45-year accumulation of economic loss

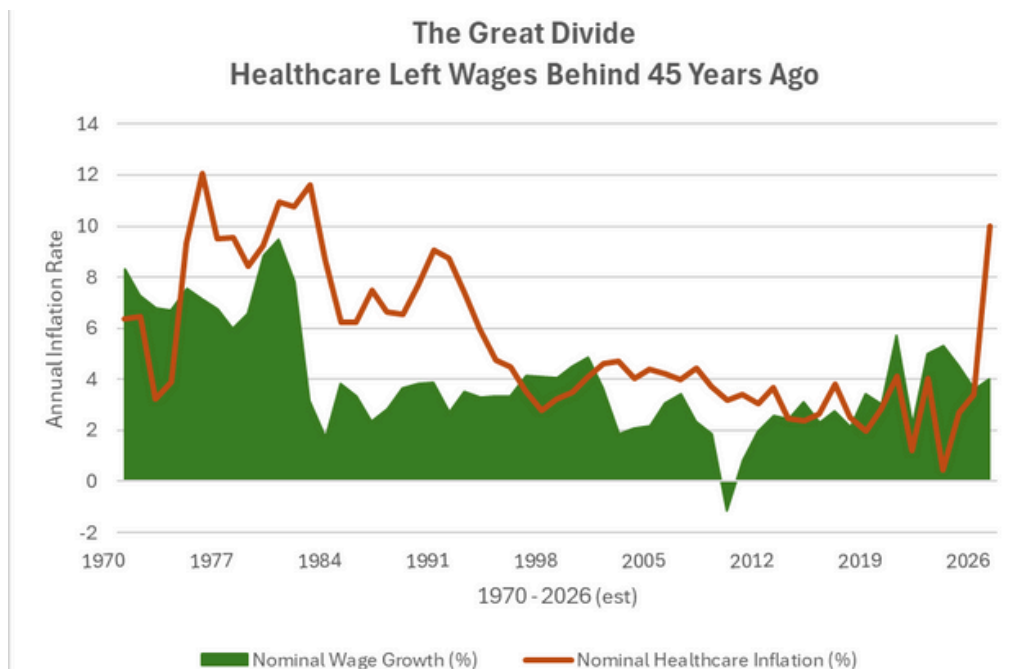


Figure 1: healthcare cost inflation vs. wage growth from 1970-2026 - the growing affordability gap

The sad truth is that we know precisely who will face kidney failure, cardiac events, or dementia, often years ahead. Despite this knowledge, we tend to intervene too late, once the effective treatment window has passed, leaving only costly and less successful options.

For example, a patient who could be managed with a reasonably priced medication might instead end up needing dialysis that costs hundreds of thousands of dollars each year. Similarly, pre-diabetics who could benefit from lifestyle changes often develop complications requiring lifelong care. Every missed chance for early intervention increases overall healthcare costs and adds to the strain on acute care resources.

This is not merely a knowledge challenge; it's a matter of precision. We possess the data. We understand how the disease progresses. What we desperately need is the capacity to identify, with absolute clinical confidence and operational urgency, which patients require immediate intervention-before they cross irreversible thresholds and face preventable decline.

The healthcare sector has adopted artificial intelligence with a mix of hope and immediacy, but existing methods do not provide the accuracy needed for early, large-scale intervention. The industry feels stuck between two disappointing choices.

General-purpose AI systems and large language models achieve approximately 70% accuracy in clinical prediction tasks. Although this is impressive in demonstrations, it indicates that three out of ten predictions are incorrect. No clinical leader would allocate limited nursing resources or intervention efforts based on predictions with a 30% error rate. False positives lead to the waste of scarce resources, while false negatives can result in lost lives. These systems are proficient in pattern recognition and natural language processing, but they lack the clinical precision necessary for making critical intervention decisions.

Traditional machine learning models tailored for disease progression usually achieve 85% to 90% accuracy, meeting the threshold for clinical trust. Nonetheless, their development process often requires 24 to 36 months and costs \$8 million to \$15 million per deployment. By the time they are operational, many patients have already passed their effective treatment window. The very patients these models aim to assist have transitioned from manageable conditions to irreversible, costly states.

Major EMR vendors and healthcare technology companies face similar challenges. They use general-purpose AI for documentation and communication tasks, where 70% accuracy is acceptable, but depend on traditional methods for clinical predictions, which can take years to develop. Neither approach allows for the systematic early intervention needed to control costs.

Organizations are caught in a dilemma: rush to deploy quickly, risking wasted resources and missing critical cases or commit years of resources and millions of dollars into traditional machine learning approaches that deliver higher accuracy but often arrive too late to prevent escalating costs. Society has come to accept this tradeoff as unavoidable, but it doesn't have to be.

A better solution is within reach.

"Cogitativo helps care teams quickly identify patients, often those with multiple complex chronic conditions, who need urgent intervention while there's still time to change the course of their health. This precision not only enables clinical teams to work more efficiently, but also ensures patients receive life-changing care in a timely manner."



Dr. James Bonnette, MD
Chief Medical Officer
86 Borders

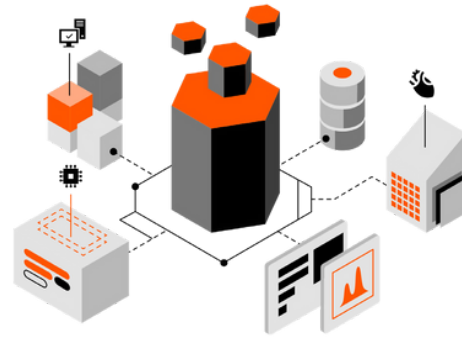
SHINE

Delivering Precision at the Speed of Clinical Demand

SHINE (Systematic Health Intelligence for Early-intervention) is a high-precision ML development platform that addresses the core challenge of balancing accuracy with speed. It operates completely within customer environments, shown to reduce ML development time by 84% and lowering costs by 55% compared to conventional approaches, while still achieving the 85% to 90% accuracy required for clinical decisions. Instead of taking 24 to 36 months and costing \$8 to \$15 million per model, organizations can deploy accurate models in just a few weeks.

This transformation enables healthcare organizations to match the rapid progression of diseases with equally swift and precise model deployment. When clinical teams detect an emerging risk pattern within their population, they can quickly deploy a validated, accurate model in a timely manner, well before patients cross critical thresholds. The platform makes this possible through three integrated capabilities.

First, purpose-built precision ensures that models are calibrated to the specific conditions and populations they serve, meeting the accuracy standards required for clinical confidence. Each model is developed and trained using our client's population, validated against real-world outcomes, and continuously refined based on performance. These are not broad, generic AI systems attempting to mimic clinical judgment; rather, they are specialized tools created for specific, well-defined, clinical decisions.



Secondly, fast iterations recognize that healthcare needs differ across settings. What works in rural Alabama may not be suitable for urban Seattle. SHINE empowers organizations to adapt models to their unique populations while upholding clinical standards, completing testing cycles in weeks rather than months. This disciplined learning approach fosters clinical trust through openness and responsibility.

Furthermore, SHINE will ensure that these rapid iterations remain safe and effective by implementing comprehensive AI guardrails—including continuous validation, bias monitoring, human oversight, and transparent governance—recognizing that while speed matters in healthcare innovation, patient safety and clinical integrity must never be compromised in the pursuit of localized solutions.

Third, actionable intelligence offers clear explanations for every prediction. When SHINE identifies a patient for intervention, it details the driving factors, whether rising creatinine levels, medication adherence patterns, or specific combinations of comorbidities. Unlike traditional approaches that focus narrowly on predicting the progression of a single chronic disease, SHINE uniquely integrates data across all of a patient's conditions. This enables clinicians to act on patient-specific predictions that reflect the complexity of multiple comorbidities, ensuring interventions are both precise and holistic. Clinical teams can verify recommendations based on their expertise and communicate decisions effectively to patients. This interpretability contrasts sharply with black-box systems that provide predictions without explanations.



“Health data, enterprise clinical knowledge and patient clinical foresights belong together. And now we have them on one platform.”

Dr. Tuan Dinh
Chief Data Scientist, Cogitativo

Precision to Prevention: Breaking the Cost Spiral

SHINE's precision capabilities transform healthcare economics, making early intervention a systematic reality instead of a rare occurrence. Think about the multiplier effects throughout the entire care continuum.

A cardiologist supported by the SHINE program can significantly increase their impact by managing their existing patient roster more efficiently and effectively. By strategically focusing on individuals nearing critical transition points, the physician directs expertise where it can truly prevent disease progression. This targeted approach enables the same number of specialists to avert exponentially more acute and costly events, ultimately saving more lives and reducing healthcare burdens.

TA	ICD -10	Description	Top 100K	100K-250K	250K-500K	500K-1M	Beyond 1M
ASCVD	I10	Essential Hypertension Chronic	15%	16%	18%	19%	20%
ASCVD	E785	Hyperlipidemia, unspecified Chronic	13%	14%	14%	13%	9%
	Z79899	Other long term (current) drug therapy No Determination	12%	12%	13%	14%	11%
ASCVD	I2510	Atherosclerotic heart disease of native ... Chronic	10%	10%	9%	9%	0%
	Z87891	Personal history of nicotine dependence No Determination	9%	10%	10%	10%	8%
	D649	Anemia, unspecified Chronic	9%	0%	0%	0%	0%
GI	K219	Gastro-esophageal reflux disease without... Chronic	8%	8%	8%	8%	6%
Type 2	E119	Type 2 diabetes mellitus without complic... Chronic	8%	8%	8%	8%	9%
CKD	N179	Acute kidney failure, unspecified Not Chronic	8%	7%	0%	0%	0%
	Z7901	Long term (current) use of anticoagulant... No Determin	0%	7%	6%	0%	0%
	G4773	Sleep Apnea Chronic	0%	0%	6%	6%	7%
MSK	M5459	Low Back Pain	0%	0%	0%	6%	13%
MSK	M542	Neck Pain (Cervicalgia Chronic)	0%	0%	0%	0%	9%
	H524	Presbyopia Not Chronic	0%	0%	0%	0%	7%

Figure 2: By building predictive, explainable personalized patient population stratified by risk, health care organization can now concentrate on clinical resources with the right therapeutic intervention



Nurse navigators reach out to patients whose therapeutic windows are closing, instead of simply following alphabetical call lists. Care managers focus on preventing acute episodes rather than just coordinating crisis responses. Each clinical professional maximizes their effectiveness through exact timing and targeted efforts. This approach is not about working harder but working with greater precision.

The economic benefits of early intervention in chronic kidney disease are compelling. Preventing a single patient's progression to dialysis can save approximately \$500,000 over a five-year period.

For example, a major Midwest health system utilizing precision machine learning (ML) achieved a 34% reduction in kidney failure progression within just six months, resulting in approximately \$12 million in savings and significantly improved patient outcomes. When scaled across thousands of patients and various conditions, these precision-enabled strategies not only cut costs by millions but also enhance the quality of care. These savings generate additional capacity for preventive measures, creating a positive cycle that proactively bends the rising cost curve downward—making healthcare more sustainable and patient-centered.

Precision can modify trajectory

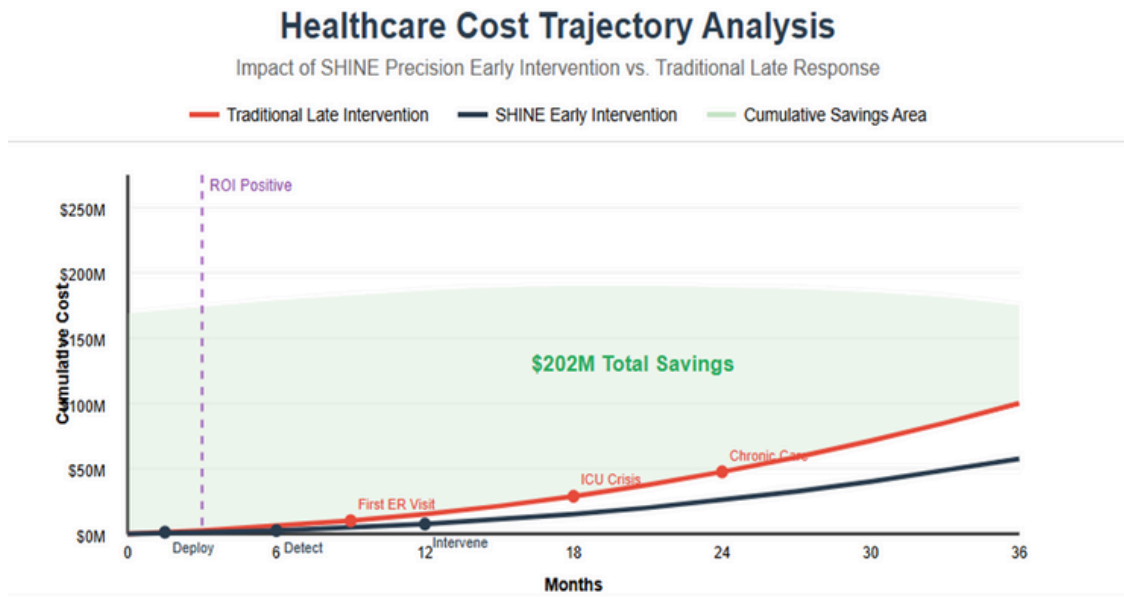


Figure 3 - cost curve comparison showing traditional late intervention trajectory vs. precision-enabled early intervention, with cumulative savings area highlighted

Strategic Imperative: Act Now or Accept Consequence

Healthcare leaders face a pivotal decision with real and lasting consequences. Without early interventions powered by precise data, the affordability crisis will only deepen. Rising premiums, outpacing wage growth, will push millions to lose their coverage. The insurance death spiral, where healthy people withdraw from coverage, leaving only the sick, will intensify, eventually making the system unsustainable.

Every month of delay compounds the problem. Patients miss critical therapeutic windows and advance into irreversible, high-cost conditions. Preventable emergency events add millions in avoidable expenses, while scarce clinical resources are often diverted to handle preventable crises rather than focusing on proactive care. The result: escalating costs and shrinking access to care across entire communities.

By contrast, organizations adopting precision ML platforms like SHINE are already charting a different path. They reduce costs dramatically while improving outcomes, enabling clinicians to practice at the top of their license with the support of advanced tools.

These organizations also gain a competitive advantage in attracting top clinical talent and proving to payors and employers that affordability and quality can advance together. With each passing quarter, the gap between those leveraging precision ML and those that do not grow wider.

Where competitors remain trapped in the false trade-off between accuracy and speed, either waiting years for models to mature or settling for less accurate predictions, forward-looking organizations are breaking free. With SHINE, they achieve both precision and speed, deploying clinically trusted models in weeks rather than years.

The reality is stark and inescapable: delays in intervention inevitably drive unsustainable costs. Precision enables proactive action, and SHINE delivers that accuracy quickly and at scale. The platform is proven, ready, and available, empowering organizations to break free from the cost spiral and build a more sustainable future.

The question is not simply whether to adopt precision ML, but how quickly you act while therapeutic windows remain open for your patients and your organization. A precision assessment of your highest-cost groups can reveal just how soon you can begin reshaping your cost trajectory. The time to act is now.

Seize the opportunity to deliver better outcomes while driving costs down.

Cogitativo SHINE consists of several products including data engineering solutions, clinical models and development tools. Each a distinct offering in its own right.

The statements by customers of Cogitativo described herein are based on results that were achieved in the customer's unique setting. Because there is no "typical" hospital or health delivery system and many variables exist (e.g., size, samples mix, case mix, level of AI and/or automation adoption) there can be no guarantee that other customers will achieve the same results.

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