Commentary

Health Transformation Through Prevention Requires Progress Metrics for Value Creation

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The healthcare system faces significant challenges rooted in its fee-for-service model, which incentivizes interventions for the sick rather than prioritizing preventive measures, predictive health assessments, and early detection.

Resistance to systemic reform results from the complex agendas of stakeholders, including clinicians, hospitals, insurers, policymakers, and technology providers. Patients, the core stakeholders, are rarely involved in shaping their health futures, however.

Transitioning to a prevention-based model demands systemic change, emphasizing early stakeholder engagement, evidence-based solutions, training, and fostering innovation.

Digital transformation and value-based care are essential to overcoming the "healthcare innovator's dilemma," but they also require new business models, initial funding, and progress/value metrics to be accepted and adopted. The article discusses that while a health delivery transformation and disruption are needed, a business model for prevention will need to be developed and established in parallel.

Investments in preventive technologies promise long-term cost reductions and improved health outcomes; they also require substantial upfront funding, which is unlikely to be provided through private investments without a future business model. To convince individuals and other stakeholders to spend more personal money, the value must be demonstrated and respective metrics developed.

The article will also talk about the value of prevention for lower-income health environments and present opportunities in the context of reverse innovation.

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Main Learning Points

- *The key issues with Fee per Service Healthcare - and some global impacts*
- *Concerns and challenges of the current key stakeholders in HEALTH PROVISION*
- *Transformation towards PREDICTIVE PREVENTION is a must, but requires a separate - likely separated parallel - business model*
- *In this context, you will also learn about the HEALTH INNOVATORS DILEMMA*
- *Business models develop with demonstrated value creation, which is difficult in the short term for PREVENTION-based measures*
- *We - individuals and future patients - do not want to get sick or at least want to be informed early on to improve treatment success. And if we want that, then a business model will develop*
- *PREVENTION technologies could also have a huge impact in lower/underprivileged regions!*

Current Healthcare Issues

There is agreement in the high-income nation healthcare segment that there are many issues with health delivery and that the system, including the business model, has to undergo a significant change. This is easier said than done, as the healthcare industry and the associated health economy is one of the largest on this planet and also one with the most employees. And on top of that, it is not just a relation between a buyer and a supplier. There are many stakeholders involved that all have their own agenda and that all have a different view on how the future should develop[1].

> ***Interestingly enough, the core stakeholder - "the individual" or in the case of sickness "the patient" - is not really involved in staking his or her own health future with respect to offering, service, and other related aspects.***

Fee per Service

Our current health provision business model is based on a FEE PER SERVICE for accredited and needed health interventions. So only sick people "benefit" from the health offerings. Most of us, as individuals/potential customers, would rather not benefit, however, and stay healthy. So prevention and predictive health analysis or early detection of detrimental health developments would be the

preferred interaction with a healthcare system for most of us. This desire and fitting offerings is something that is very rarely, or only in a very limited scope, integrated into current health systems.

> ***What the key stakeholder really wants - not to get sick - is not provided and embraced!***

There are many historical reasons why the healthcare systems and the health service provision developed the way it did in the last 100 years. And we should be proud of the achievements, but we should also be aware of needed improvements and reforms in line with what the "customer" wants.

With the existing FEE PER SERVICE model, there are many "customers or stakeholders" within the healthcare industry, and not offering a service and not performing a health intervention also does not provide revenue and income. Healthy individuals that do not require any services are economically not sustainable for these stakeholders.

Sustainability, or better triple sustainability, for healthcare is the intersection of a working and future-oriented economic model, equal and fair provision of associated services with the least environmental impact.

> ***The current healthcare system (in most countries) is not fair anymore, not economically viable, or environmentally conscious.***

Triple Health Sustainability and the issues with the current Business Model Health

The past has shown that we were able to increase average life expectancy (most of the progress coming from reduced child mortality, improved sterility, availability of antibiotics, lack of wars, and epidemic/pandemic measures), which is currently not increasing significantly anymore, while at the same time increasing the number of interventions and, associated with that, the total cost of health provision.

We are still not in control - on the contrary - of the increasing burden of most non-communicable diseases and, most importantly, their root causes (e.g., lung diseases caused by smoking or environmental pollution; diabetes resulting from obesity / malnutrition; the large number of cardiac and vascular problems that can be related to nutrition and lack of physical activity, and many more).

Just a few stakeholders and some of their main agenda items for a future health transformation. You will realize that they are not that well aligned, and the most concerning ones are related to the current

business model:

- *Clinicians (and outpatient services): want less administration, better devices and digital offerings for health management / diagnosis / therapy, more time with the patient, stable income*
- *Hospitals: want to offer better (and preferably cheaper) service to the patients, expenses being covered by the health service reimbursement, a chance to make a profit*
- *Health Insurance companies: offer everything needed for the individual's health provision, including investment in future health (prevention), create a profit to invest in these programs*
- *Pharma: come up with novel drugs to treat diseases, sickness, or other conditions, want to sell their products*
- *Health politics: ensure equal health service provision at the utmost level, provide part financing, keep people not only healthy but also content, as health provision is a very prominent agenda item for upcoming elections*
- *Technology provider: sell novel systems providing incremental innovations within the current business model*
- *Patient / Individual: Preferably wants to be healthy and not interact with the healthcare issues and stakeholders.*

> ***All of the stakeholders require (or need to provide) a business model for health services or products, and all of them cannot sustain their operation in a quickly changing health business environment. Slow adjustments are likely despite the need for disruption!***

While it is beneficial in the mid- to long term to invest in and embrace health prevention measures, it will unlikely create any immediate or short-term health and financial benefits for the system. This is the main crux: While it is clear that personal health prevention measures would have a positive impact on everyone's health in the future, with that on total health expenditures, it requires an investment right now.

One of the things that should be done is to improve current processes, avoid unnecessary examinations and treatments, reduce administrative costs, and many more. Should be done and could be done, but will also not have an immediate savings effect. You could also take some funds from the existing health providers and use it for prevention measures. That would likely cause more uprising and also lead to closures of institutions and a reduced attractiveness of working in the health segment.

Health Innovators Dilemma

Without an established business model for **PERSONALISED PREVENTION AND PREDICTIVE HEALTH ASSESMENT**, there will be no or only little investment going into that segment. This is called the "healthcare innovators dilemma," which refers to the challenges faced by healthcare organizations in adopting disruptive innovations while balancing existing systems and priorities. Rooted in Clayton Christensen's "Innovator's Dilemma," it highlights how established players struggle to embrace transformative technologies due to entrenched workflows, fee-for-service models, and resistance to change. In healthcare, this dilemma is compounded by the need for evidence of clinical utility, patient engagement complexities, and the industry's focus on incremental improvements rather than groundbreaking changes. Overcoming this requires rethinking patient-centric approaches and fostering adaptability to disruptive trends and a process towards **HEALTH TRANSFORMATION**[2][3].

Health Transformation Process

A main component of that transformation process is understanding and overcoming resistance from physicians, which is governed by fear of impacts on patient care, professional autonomy, and associated workflow disruptions[4]. A potential strategy is based on ENGAGEMENT, ***"involve Physicians Early"*** in the development and implementation of new technologies or processes. This can help mitigate resistance by making them feel like stakeholders in the change[5].

A second important aspect is to ***"provide Evidence and Training"*** by presenting clear data demonstrating the benefits of new technologies, including improvements in patient care quality and efficiency. And that needs to come along with providing adequate training to ease the transition and enhance comfort with the new systems. A feasible way, already often employed for getting incremental solutions into the market, is to "***identify, leverage and empower Champions***" or well-known and outspoken early adopters among the physician staff who can advocate for the change and influence their peers positively. These champions can also help bridge gaps between management and clinical staff[6].

Other measures that need to be implemented are maintaining "***Transparent Communication***" about the reasons for change, expected outcomes, and how it will ultimately benefit both patients and providers. This transparency helps build trust and reduces skepticism.

And, a more "***creative and supportive environment***" needs to be created that fosters a culture of innovation where physicians feel safe to express their ideas and concerns. Encouraging feedback can lead to adaptations that make changes more acceptable, and combined with a "***Reward Adaptation***," recognizes behaviors that support change initiatives through positive reinforcement[7].

These are all well-established and known organizational and change management practices and strategies from other fields and likely might also lead to a positive and supporting change environment in the healthcare segment.

But this is also a slow and intensive process, driven by engaged management, that will need to be implemented in parallel, but that will likely not lead to measurable changes in a reasonable timeframe.

> ***Health provision change is needed and will slowly come. New measures will be implemented to address the Health Innovators dilemma. This will likely initially cost even more money before we see cost and delivery improvements.***

As one of the main stakeholders, clinicians are not only important in a future change process, but it is essential to have them as convinced and active proponents in the driver's seat, which in return requires involving them early and empowering them.

But there will likely be no more funds available for innovations in PREDICTIVE HEALTH, PRECISION MEDICINE, and PREVENTION - at least not from the existing public health funds.

Successful PREVENTION will eventually disrupt existing healthcare provision, not in its entirety (we will still become sick or have accidents) and not regarding the general need to have a trusted medical advisor (*general MD, Physician Assistant, specialist MD, **and NEW, a healthy longevity MD***), but in a general shift towards more early and, with that, less acute, complex, and invasive procedures. This will have a huge impact on the amount of needed maximum treatment and care facilities in the midterm future.

Before that happens, we (talking as individuals with a personal health interest — specifically in my own and the ones around me) are the ones that will establish and create a parallel PREVENTION HEALTH business model. We will need to - and should - spend extra money on our own wellbeing.

> ***There is likely nothing out there with a better dividend than to invest in your own health.***

So is it again something for the rich only? Of course, the more affluent ones will be able to spend money on measures that promise to benefit them, but does PREVENTION really need to be expensive?

As already mentioned,

> ***a core element of successful PREVENTION is addressing the underlying root cause problems, e.g., lifestyle, nutrition, exercise, monitoring, packaged around the most important solution: health education.***

This can be provided through relatively inexpensive sensor and monitoring devices combined with machine and deep learning approaches via your smartphone or IoT device.

A smartphone is available to a majority of the world's population, while professional healthcare provision is still a luxury item or is not accessible in many countries. For these lower-income environments, prevention measures are significantly cheaper than the occasional physician or hospital visit in case of serious health issues.

There is good reason to believe that offered and inexpensive PREVENTION solutions are adapted faster and with more enthusiasm there than in the higher-income nations. This process is called **REVERSE INNOVATION** and could lead to the required evidence needed for large-scale acceptance[8].

Health issues are one of the main reasons for economic problems, particularly in poorer individual households, and with that, also a major reason for the desire to migrate to a more stable economic and a more advanced healthcare environment. It would also make sense to think about investments from the higher-income nations providing PREVENTION and PREDICTIVE HEALTH solutions to these countries. That would also reduce the existing health inequality gap.

But how do we get started stimulating individuals there and everywhere else to embrace prevention and use prevention tools and technologies?

> ***We need to provide meaningful and trustworthy metrics that show the short-, mid-, and long-term effects of focusing on PREVENTION and its core elements.***

Such metrics will show the value, convince laggards and skeptics, and will lead to the development of a novel **PREVENTION BUSINESS MODEL,** based on the following core principles:

1. ***Value-Based Care***: Transition from traditional fee-for-service to value-based models that focus on outcomes and patient satisfaction, incentivizing preventive measures[9].
2. ***Smart Capacitating Investment (SCI)***: This model emphasizes long-term financial benefits that outweigh initial costs, promoting sustainable investment in health promotion[10].

3. ***Platform-Based Ecosystems***: Develop multi-sided platforms that connect various healthcare stakeholders, enhancing collaboration and data sharing for improved preventive care[11].
4. ***Predictive Prevention***: Utilize data analytics and AI to tailor interventions, improving engagement and health outcomes through personalized approaches[1][11].

Another key innovation is the adoption of the ***Prevention-as-a-Service*** approach, which focuses on proactive health management rather than reactive treatment, allowing healthcare providers to engage patients in maintaining their health through preventive measures. By utilizing, for example, remote patient monitoring (RPM) and telemedicine services, providers can deliver care more efficiently, especially in underserved or remote areas, thereby expanding access to essential health services[12].

But all of these need meaningful and possibly new **HEALTH and HEALTH ECONOMICS METRICS** showing the benefits and personal health progress for all stakeholders involved.

Health transformation towards prevention, underscored by progress metrics for value creation, represents a critical shift in healthcare paradigms aimed at enhancing population health outcomes. The growing recognition of chronic diseases and the social determinants of health has propelled the discussion in healthcare systems to adopt comprehensive frameworks that address both individual and community health needs, fostering a more equitable and sustainable healthcare environment[13].

> ***The implementation of performance metrics is a pivotal component in the health transformation journey towards PREVENTION.***

These metrics enable healthcare providers to evaluate their effectiveness in delivering preventive care and improving patient outcomes, thus guiding strategic decisions that enhance value creation in healthcare. The integration of data-driven decision-making and predictive analytics further supports this shift, allowing for a more personalized and proactive approach to patient care, which is increasingly essential in a landscape marked by an aging population and rising chronic disease prevalence.

Many of these future measures will be based upon digital tools continuously acquiring personal health data information. This also requires that we discuss the controversies surrounding this transformation, including the challenges associated with data collection, privacy concerns, and the need for standardized measures across diverse healthcare settings[14].

Central to the future health business model is the concept of digital transformation, which is not merely an enhancement of existing systems but a comprehensive strategy that integrates digital tools into the core operational framework of healthcare organizations.

Not just better traditional medicine with digital tools, but new medicine utilizing the additional information provided through exponential technologies.

Metrics for Progress

To gain a comprehensive view of health transformation, organizations should incorporate both leading and lagging metrics. Leading metrics focus on the actions taken during transformation, such as the percentage of aligned and engaged physicians and the availability of non-acute services, while lagging metrics assess the outcomes of these actions, such as hospital readmission rates and patient satisfaction scores[15][16].

Leading metrics, such as training session completion rates and user adoption, provide insight into ongoing initiatives, while lagging metrics, such as financial performance and customer satisfaction, confirm the achievement of desired outcomes.

Emerging leaders must navigate challenges associated with data collection and metric standardization. Issues such as data silos, privacy concerns, and the lack of standardized measures can hinder the assessment of health transformation efforts[14]. Integrating various data sources into a centralized system can help overcome these barriers, while adherence to data protection regulations ensures the integrity and trustworthiness of the collected data.

By integrating predictive analytics into population health management, healthcare organizations, such as Kaiser Permanente, have achieved notable improvements in patient outcomes and cost-effectiveness. The integration of clinical data with social determinants of health provides a more comprehensive understanding of population health, facilitating targeted interventions for high-risk patients[17].

Value creation in healthcare can be categorized into several domains (e.g., for patients and populations benefitting in terms of treatment outcomes and patient centricity; or for healthcare workers measuring engagement and wellbeing of the employees), each reflecting the diverse stakeholders involved in the healthcare ecosystem.

Value creation for medical care organizations is more oriented towards improving organizational efficiency and explores patient outcomes, including methodologies that demonstrate the potential for significant improvements in patient satisfaction and cost reductions.

And lastly, the value creation for health systems is mainly examining how health systems can optimize their operations and interdependencies to maximize value creation across their services, with a subdomain covering the payors that are interested in the financial aspects of value creation, particularly how payors can incentivize high-value care through innovative payment models[18]. By prioritizing value over volume, **VALUE BASED HEALTHCARE** has the potential to create a much more sustainable healthcare delivery system that benefits patients, providers, and payors alike[19][20]. This still covers, however, the current fee-per-service setup for actual patients that require diagnosis and therapy.

For patients, value for actual health delivery is perceived through various dimensions, including the effectiveness of treatment, involvement in decision-making, and the overall experience with health-care providers[21].

But we actually want to prevent individuals from getting sick or at least to reduce the burden and invasiveness that comes with disease by early detection and predictive prevention, which is currently not paid for and generally embraced.

To show actual personal value for the individual, the PREDICTIVE PREVENTION, which will not immediately show any effects, requires active participation and interest in one's own health, is initially heavily based on education and likely lifestyle adjustments, so requires engagement and is a little painful, requiring the building of habits. Additionally, we need to convince (and better show) the individuals/patients that there is actual health value created for themselves, especially if they are asked to financially support the transformation towards PREVENTION by buying and adopting additional tools and services.

So what we need to establish the move towards PREVENTION and to build a viable business model at the same time is:

> ***To convince individuals to engage (financially as well as actively) in PREDICTIVE HEALTH MEASURES requires a clinically validated Status Quo assessment and meaningful progress metrics.***

The role of the Government

The shift towards preventive health interventions necessitates comprehensive policy implications that align with the goals of health transformation. Effective implementation and rigorous evaluation of these interventions are crucial in determining their impact and efficiency on public health outcomes.

The implementation of preventive health policies often requires a series of governmental approvals and coordinated actions among various departments. This interdepartmental coordination is essential to ensure that health policies are harmonized across sectors and that interventions are supported at all levels of government. Additionally, health economic evaluations play a pivotal role in assessing the cost-effectiveness of proposed interventions, which influences public reimbursement and policy decisions. Policymakers must consider factors such as budget impact, economic evaluations, health system readiness, and equity considerations when making decisions about preventive health measures[22][23].

Conclusion and Summary

The healthcare system faces significant challenges, primarily rooted in the "fee-for-service" model that rewards sickness rather than prevention. This model prioritizes interventions for the ill but neglects preventive measures, predictive health assessments, and early detection, which could help individuals avoid illness altogether.

Historically, healthcare systems have achieved remarkable milestones, such as increased life expectancy and reduced child mortality. However, they now struggle to address the rising prevalence of non-communicable diseases caused by lifestyle factors like poor nutrition, smoking, and inactivity.

The healthcare industry's resistance to change is compounded by the complexity of its many stakeholders, including clinicians, hospitals, insurers, policymakers, and technology providers, each with distinct agendas. Physicians often resist changes that threaten workflow or autonomy, while hospitals and insurers focus on profits and sustainability.

Meanwhile, patients—the central stakeholders—are rarely involved in shaping their health futures.

Transitioning to a prevention-based healthcare model requires systemic reform, including early stakeholder engagement, evidence-based solutions, training, and fostering a culture of innovation. It

also demands investment in preventive technologies such as remote monitoring, AI-driven analytics, and education. Although prevention promises long-term cost reductions and better health outcomes, it requires significant upfront investment, making it economically challenging.

Digital transformation and value-based care are pivotal for this shift. Preventive health models, such as "Prevention-as-a-Service," combined with meaningful metrics to measure progress, can drive adoption. Governments must play a central role by implementing supportive policies, funding prevention, and addressing health inequalities globally. Ultimately, the success of this transformation hinges on fostering individual engagement and leveraging technology for accessible, equitable, and sustainable preventive care.

Conflicts of Interest

The author is a founding partner and shareholder of 5P FUTURE OF HEALTH GmbH, an investment boutique for early-stage prevention-based start-ups. This is not in conflict with the content of this paper.

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