

CASE OF IAMYIAM— INNOVATING IN PREVENTIVE HEALTH DELIVERY

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Innovation in health delivery has long been associated with technical advances in curative care. While this has brought improvements in treatment outcomes, it has yet to deliver meaningful progress in mitigating the rapid growth in preventable non-communicable diseases (NCDs)—which reflect global trends in the way we work, eat, and live.¹

Not only are lifestyle diseases the leading cause of death in developing countries, but they also account for, including mental health, 90% of public and private health expenditures in developed economies.² Moreover, they reduce the meaningfulness of progress made in increasing life expectancy. Half of a retiree's remaining years of life will be significantly impacted by one or more lifestyle-related illnesses, reducing the quality of life and adding treatment costs.³

To address this growing issue, lifestyle enhancement and prevention research has expanded and matured significantly over the last three decades. There are now over 1.8 million published studies evaluating the effects of lifestyle, diet, traditional therapies, and personal biology on health outcomes.⁴ With an emphasis on daily lifestyle interventions, these sustainable health approaches are proven to reduce disease burden, resulting in lower overall costs and higher impact.⁵ Over the past decade, this research has translated into a call for action in medical and health provider communities and also spawned over 300,000 start-ups focused on prevention by enhancing lifestyle.⁶

These include preventive activity booking platforms, such as BookRetreats; interpreters of biological wellness markers from saliva and blood samples, such as 23&me and WellnessFX; and digital engagement gadgets, such as fitness watches and

phone apps that influence behavior by providing real-time feedback about miles walked, calories burned, or sleep quantity and inferred quality. There are also digital coaching platforms, like *Omada*, that seek to prevent pre-diabetics from requiring medical interventions.

Growing recognition that prevention is the key instrument for tackling health care costs is driving governments, insurers, corporations, and healthcare providers to actively seek new frameworks, as well as innovations and partnerships to foster widespread adoption of healthier lifestyles. In the United Kingdom (U.K.), the Department of Health and Social Care has prioritized spending on new approaches to prevention in order to reach the government's mission of enabling its people to enjoy five additional, healthy, and independent years of life.⁷ An Asian insurance company, AIA, introduced a platform to create incentives for members via product discounts and other rewards to engage in preventive activities such as quitting smoking.⁸ Fullerton Healthcare has made a long-term commitment to bring prevention innovations to its millions of members across Asia Pacific through its recent partnership with iamYiam. Moreover, Discovery Health Medical Scheme offers its South African members a gamified prevention program called Vitality,⁹ using inputs from fitness wearables, while Bupa healthcare targets corporate culture in Australia with its multipronged wellness programs.¹⁰

Nevertheless, prevention is still viewed mainly through the lens of curative medicine. For many, the entry point for engagement with preventive measures follows a medical diagnosis of mental or physical symptoms. As a consequence, the medical community has been the primary recipient of health policy initiatives focused on prevention, even though there may be

more effective channels. Institutions that already seek to influence the actions of their constituencies, like schools, employers, and social communities,¹¹ may be in a better position to promote activities associated with a healthier lifestyle. Moreover, investment capital earmarked for “preventive” innovations flows primarily toward technologies that aim to reduce or revert the progression of chronic disease and pre-morbidity conditions—such as elevated blood sugar, blood pressure, or cholesterol—rather than toward technologies that sustain health in the broader, asymptomatic population.

Viewing health as merely the absence of ailments continues to drive the “repair shop” model that dominates institutionalized health delivery—fixing what is broken. At its core, this paradigm is reactive, allocating substantial resources to finding fixes for problems when their burden becomes unmanageable for the individual and the system itself. Nearly a century ago smoking was linked by researchers to disease, yet restrictions on advertising, sales to minors, and product warnings were initiated decades later—after the burden on public health could no longer be ignored.¹² Similarly, mental health has become a focus of health policy now that costs from treatment and lost productivity are skyrocketing; by 2030 depression is expected to be the leading cause of the global disease burden.¹³ Centered on medical treatment rather than the individual’s lifestyle and environment, reactive healthcare has proven itself unsustainable as it fails to keep pace with the alarming growth in chronic and debilitating diseases linked directly to unhealthy lifestyles.

This suggests the need for a pre-emptive model that focuses on enhancing an individual’s lifestyle and environment to support health in a sustainable manner—every day and lifelong. Such a model would align with what was commonly considered preventive for most of written history. Prior to the antiseptic and public hygiene revolutions in the late 19th century and the development of antibiotics in the early 20th century, models for obtaining and maintaining health were holistic and, by necessity, activity-based—eating, exercising, resting, and thinking right.¹⁴

Building on this view, this chapter focuses on how a creative start-up designed a framework for prevention that leverages both the time-tested preventive model of health delivery and cutting edge artificial intelligence (AI) technology to provide an accessible, sustainable, and affordable solution. This example traces the development of iamYiam and the challenges faced in designing and bringing to life this framework. Following an overview of the vision and concept behind creating and delivering scalable prevention, we discuss how advances in machine learning, genomics, plus heightened privacy concerns led to essential shifts in iamYiam’s market development strategy, delivery platform, and business model. We extend the discussion to look at the impact of regulation on health delivery start-ups. In the final segment, we reflect on the key lessons for entrepreneurs and policymakers engaging with preventive health.

Necessity—the mother of invention

iamYiam was launched in 2016 to provide the most efficient path for achieving optimal health—personalized to the individual. The idea for the company grew out of the experience of the founder, Lorena Puica, in overcoming her own debilitating health condition: “Doctors in Germany, as well as in the U.K., recommended a course of action—thyroidectomy—that I disagreed with due to the severity of the implications for my overall wellbeing. I started researching what the most effective courses of non-medical action for my condition were and, after a year and a half of experimenting with everything from yoga, meditation, acupuncture, massage, nutrition, etc., I achieved a sustainable state of health without any medication or other form of medical intervention. What baffled me was that, while the path to a science-based medical solution was straightforward, an analogous approach to non-medical, preventive alternatives for my challenges did not yet exist. I decided to get involved so that no one else would need to take a random walk among anecdotal advice, internet searches, and experimentation to find the best preventive solution.”

Lorena learned through her research that emotions, social connections, career success, financial security, purposeful action, and environmental impact are interrelated with biological and mental health and—for health to be sustainable—must be integrated into a new framework. As a former investment industry professional, she viewed health as an optimization problem analogous to portfolio theory and investment decision-making. Just as an optimal investment portfolio achieves its goals by allocating capital efficiently among a mix of asset classes, optimal health is the result of an efficient allocation of time, energy, and nutrients based on an individual’s biological, environmental, and psychological idiosyncrasies. Prevention stems mainly from how one allocates the hours of the day to various activities ranging from sleep to mental processes and physical exertion, as well as how one thinks, eats, and acts. At the same time, active measures—including traditional and modern nonmedical interventions, such as acupuncture and cognitive behavioral therapy—can also be regarded as preventive activities.

To implement this concept, a team was formed to develop a research base and build a digital platform to provide evidence-based recommendations personalized to one’s biology and preferences. A marketplace was also offered where vetted practitioners and nutrition providers could offer members access to tools, therapies, classes, meal plans, and other resources that appear in some recommendations—such that individual health information, personalized recommendations, and resources are accessible in one health account with lifetime access.

A technical approach to quality of life

The key technological innovation the company developed is a comprehensive framework for understanding an individual's life context and goals. It combines biological (genetic), behavioral, and environmental factors in a predictive model that guides members to their maximum potential by tracking their progress toward optimizing the quality of their life. This is modeled by a life quality index (LQI) composed of nine interrelated dimensions, ranging from the environment to physical health.

At the heart of the platform is an AI agent referred to as *See Yourself Differently* (Syd), which acts as an optimal controller. Syd estimates the current state of being of a person in relation to their goals and uses platform-wide observations to optimize specific guidance for reaching one's desired outcomes. Over 200,000 published research papers were referenced to create the baseline for the predictions that Syd continuously improves upon via its internal model and interactions with all members. Progress in an individual's journey to better health is tracked and displayed in the member's LQI as Syd becomes a life partner—and an accurate, adaptive representation of the member's state of being.

For example, an individual with a goal of better sleep may have genetic traits that predict poor caffeine metabolism. Through analysis of the behavioral, environmental and biological data across the platform, Syd might determine that others with similar genetics, environmental, and personal characteristics—such as the same postal code, satisfaction with their careers, and low screen time—might sleep better if caffeine consumption is followed by five minutes of brisk walking. The individual's response to this guidance updates the LQI score and serves as input for Syd to further personalize recommendations.

Challenges of going to market

A key challenge of bringing this innovation to market was the product's complexity. While there had been rapid growth in the number of adults engaging in preventive activities, few were actively seeking an all-encompassing system for delivering qualified guidance on activities tied to their biology and personality. The goal was to target the market segment that most severely felt the need for timely and effective advice on what steps to take and how to easily access what would work best for them.

iamYiam.com was launched with a focus on professionals who were aware of, or had already previously engaged with, preventive practices. The messaging initially focused on the platform's efficiency: "We believe that experiencing natural health must be simpler." Subsequent customer feedback pointed toward highlighting evidence-based guidance and other benefits. During the first year, a significant increase in consumer-oriented genetic testing websites offering ancestry,

health risks, and other tests went to market. This exacerbated the need for a sharper positioning of iamYiam as an adaptive model for preventive health delivery—especially to limit comparison with genetic testing companies.

This same messaging challenge also applied to fundraising. The amount of time to develop and test the AI-driven algorithms meant the company was similar to a pharma start-up—requiring substantial investment for testing and development before the product was complete. Accordingly, market penetration and ROI were expected to lag the development phase. Venture capitalists tended to relegate the company to a predefined narrow category for lack of one with a better fit—either a genetics services business, a digital health application, or a two-sided marketplace. Anticipating this challenge, the company aimed its capital raising efforts at investment angels with a shared passion for the company's mission.

To smooth the market penetration strategy, the product was positioned as an everyday, lifelong companion to support one's health, offering evidence-based guidance at every step of the way. A broader market analysis also revealed that employers would respond favorably to the company's offering, as many were actively seeking a single comprehensive preventive solution for their rising healthcare costs.

Market expansion into business-to-consumer (B2C)

During 2017, iamYiam laid the groundwork for taking its offering directly to corporations. Employers were becoming acutely aware that rising rates of obesity and impaired mental health were dragging down productivity and raising health insurance premiums. Depression, which the platform addresses, was increasingly becoming a significant cause of absenteeism and lost productivity.

While most corporations that were approached had already implemented one or several preventive programs, these were not tailored to the specific health issues individual employees faced. Moreover, the expected results were neither based on scientific evidence nor measured in a way that aided decision-making. Companies were interested in assessing the health risks they faced and getting an overall picture of the state of health of their employees. An executive dashboard was developed to demonstrate the potential risk mitigation and return on investment (ROI) from deploying the platform. Besides calculating ROI, it presented insights and risks for employee health as a group by pairing preventive activities with productivity, absenteeism, and other outcomes. What initially began as a means to demonstrate the platform's effectiveness became key features within the iamYiam corporate offering: custom dashboards, employee memberships, and member support.

Regulatory impact

The platform's AI engine does not perform disease diagnosis. This allows the company to operate in the prevention space rather than the medical industry, enabling a faster path to market. Such an approach is efficient for addressing the current market while remaining open to future collaborations with innovators in disease treatment if, as anticipated, the prevailing medical model becomes more integrated. Recent research supports the view that preventive activities play an important role in life quality during and after treatment for disease.¹⁵ A new emphasis in medicine on life quality over disease treatment may lead to innovations in treatment models that combine a patient's historical lifestyle data with treatment protocols to deliver better health risk predictions and a higher quality of life. The personalized analysis provided by Syd could well become a useful input for collaborators developing new diagnostic methods or treatments that adjust medical measures to LQI scores or other information from the platform's data analysis. In such a case, the genetic tests that many members undertake to further personalize the guidance they receive about their activities may trigger more intense regulation as the data use crosses the line between wellness and clinical use.

Regulation proves to be more of a challenge for data protection—however, not for the reasons one would expect. Coinciding with the product launch, new data protection requirements were being planned by European and U.K. policymakers. From inception, personal privacy has been an overarching goal in developing the iamYiam and Syd platform. The company made extensive efforts to find the most reliable technologies available to protect the privacy of personal data and formed a board composed of thought leaders in ethics to provide oversight on the collection and use of data. As a result, the company has been well positioned to meet the challenge of navigating a continuously changing landscape of regulation leading up to the recently issued General Data Protection Regulation (GDPR) and the U.K. Data Protection Act.

Lessons learned

The unpredictability of how policymakers will interpret what is in the best interests of consumers results in resources wasted on contingency planning. Health start-ups, in particular, must not only comply with established medical regulations and new interpretations—driven by genetics evaluation and other evolving methodologies—but also predict the impact of recent regional directives in data privacy and copyright protections. Local differences in regulations compel start-ups to weigh possible compliance stumbling blocks when choosing whether to relocate operations to maintain their speed of development. Ideally, policymakers will not only consider the intent of the regulations but the long-term implications for innovators in the digital health space. Addressing their concerns early on would avoid penalizing them with excessive costs and delays in delivering impact in their markets.

Start-ups can also prepare for changes in rules governing data and privacy protection by not second-guessing regulators.

A better strategy is to keep the interests of their customers—the rightful owners of data and intellectual property—in mind by putting themselves in their customers' shoes at every step of the product development process. If there is something you would not enjoy in terms of security, privacy, or data sharing, your customers will reach the same conclusion sooner or later.

Lessons for policymakers: sustainable health vs. early diagnosis

Prevention strategies and digital technologies need to be at the forefront of long-term planning. Some national health agencies, such as those in Singapore and the U.K., are focusing their strategies on these two areas. Singapore is also an example of a country ready to partner with health innovators. For instance, the Singapore Ministry of Health partnered with the U.K. start-up Tictak to motivate its citizens to improve their lifestyles by interpreting information collected from fitness wearables, such as Apple Watch.¹⁶

In the U.K., the National Health Service (NHS) is taking the lead in partnering with digital health start-ups to accelerate the innovation process.¹⁷ In that role, the NHS actively solicits the input of innovators, like iamYiam, on the future of prevention and how to deliver affordable, accessible health outcomes.

Much more attention is still needed to create innovative public policies that target prevention where it is most effective—before one requires medical diagnosis or treatment. Public policy would benefit from being primarily directed at sustainable health. This translates into teaching people and providing the means for them to access activities that enhance their lifestyle and environment—as well as rewarding innovators who create the tools and systems for this purpose. One example of an agency that directly targets sustainability is Singapore's Health Promotion Board, which rewards employers, builders, and landlords for finding innovative ways to prevent obesity in young workers before it creates serious health issues.¹⁸

Rising costs have pushed large corporations to try new models that more effectively deliver health to their employees. One prominent example of an innovative model is the cooperative arrangement formed by JP Morgan, Amazon, and Berkshire Hathaway to self-insure. This nonprofit venture focuses on improving care for its one million employees—and eventually making their innovations available to the 150 million Americans who get their health insurance through work.¹⁹ However, policies that nudge companies to create new models for healthier work environments are still needed, which means addressing all dimensions of their employees' lifestyle, ranging from financial security to social interactions.

In closing, although lifestyle improvement is where the highest return on expenditures is possible, nearly all preventive initiatives by government services still focus on the “repair shop” medical model of health delivery—taking action after one is diagnosed to be at risk for diabetes, heart disease, depression, etc. Preventive technologies have become increasingly sophisticated for addressing health issues at the pre-chronic

and treatment stages, yet they are more burdensome in monetary and societal terms than other approaches aimed at root causes. Policymakers who make a concerted effort to reposition the fundamental health delivery model as an integrated model with a core focus on the relationship between health and lifestyle can also effect an improved social climate, beyond the substantial cost savings. Technologies are rapidly evolving to support this model with tools and systems to guide individuals to make healthier choices. To ensure that policies do not hamper innovation, greater dialogue is needed between governments and those in the vanguard of innovation. Policies that promote long-term investments encourage innovation in systemic solutions that have long development cycles.

The potential benefits of getting prevention policy right far outweigh the costs of promoting innovation. Poor lifestyle choices drive health risks that drive chronic disease and health care costs. Governments are uniquely positioned to encourage change by shining a light on unhealthy behaviors and empowering the innovators of tomorrow to bring their solutions to global audiences.

Notes:

- 1 World Health Organization, 2018.
- 2 Centers for Disease Control and Prevention, 2019.
- 3 Salive, 2013.
- 4 Google Scholar, 2019.
- 5 Minich et al., 2013.
- 6 Global Entrepreneurship Monitor (GEM), 2019. The authors made their own estimates based on the data in the GEM Global Report.
- 7 UK Department for Business, Energy, and Industrial Strategy, 2018.
- 8 Further information about AIA's corporate wellness program is available at <https://vitality.aia.com.sg/en/vitality/home.html>
- 9 Further information about Discovery's Vitality application is available at <https://www.discovery.co.za/vitality/vitality-active>
- 10 Further information about Bupa's workplace programs is available at <https://www.bupahealthierworkplaces.com.au/solution/creating-healthier-cultures-social-connection-packs/>
- 11 Ibjijaro, 2012.
- 12 Bachinger et al., 2007.
- 13 World Health Organization (WHO), 2011.
- 14 Petersen et al., 1996.
- 15 Segal et al., 2017.
- 16 McEleny, 2018.
- 17 UK Department of Health and Social Care, 2018.
- 18 Health Promotion Board, 2019.
- 19 Tracer, 2018.

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