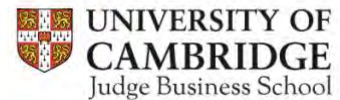


The Global Centre for Healthcare Convergence incubates, accelerates, and finances businesses that scale the best possible population health outcomes



Delivering **equal & effective** health outcomes for society: The promise of Precision Population Health Solutions

Executive Summary

Precision Population Health Solutions offer a transformative approach to healthcare, drawing inspiration from successful models in the tech and food sectors. These solutions, focused on specific population segments with chronic disease management and prevention needs, are designed to be effective, predictable, and replicable on a global scale using a 'clinical franchise' model. This approach integrates various elements such as technology, workforce strategies, and incentives, aiming to deliver effective healthcare outcomes standardized across different geographies. The development of these solutions involves a phased approach, starting with a viability study at the Global Centre for Healthcare Convergence, followed by proof of concept and scalability demonstrations. The commercialization phase involves gaining market access, onboarding providers, engaging and enrolling eligible patients, and continuous reporting to stakeholders. This approach addresses the healthcare industry's challenges of fragmentation, variability, and technological asynergy by promoting integration, patient empowerment, and technological interoperability, ultimately striving for scalable and sustainable population health outcomes.

The Case for Technology-Enabled Population Health

Good health is fundamental to both individual well-being and a nation's economic vitality. It is foundational for productive and fulfilling lives. In response to this essential need, the past century has seen the emergence of extensive and complex healthcare industries, committed to providing medical care to those in need. However, the true effectiveness of this sector in serving the broader needs of society remains a matter of debate. Despite its growth and advancements, the healthcare sector faces increasing challenges in meeting the escalating health needs of diverse populations in an equitable and efficient manner.

In the most developed countries, where healthcare accounts for a significant portion of GDP, the industry often provides advanced medical treatments and technologies. However, these advancements do not always result in better overall health outcomes. Health outcomes are

heavily influenced by factors such as the health professional a patient sees during their visit, the available diagnostic and therapeutic technologies, the consistency of caregiver engagement, the quality of handovers, and the effectiveness of data sharing between teams. This inconsistency leads to significant variability in health outcomes. Additionally, there is the equally critical issue of lifestyle and behaviour-influenced diseases, which have become increasingly prevalent despite high healthcare spending.

In the least developed countries, challenges are even more acute. Scarce resources, inadequate infrastructure, and a dearth of trained healthcare professionals frequently lead to suboptimal health outcomes. Preventable diseases continue to be a major issue, with access to basic healthcare remaining a significant struggle for many.

Today's healthcare systems, originally designed to tackle acute diseases, are now grappling with the complex realities of long-term conditions and escalating costs. These challenges, exacerbated by increased life expectancy and the prevalence of chronic illnesses, call for a more holistic approach. Effective solutions must include not just improved care services and prevention strategies, but also an integration of medical science with nutrition, exercise, monitoring, AI, and other technologies, moving beyond traditional medical practices.

There's a wealth of tools and technologies available in healthcare today, yet there's a noticeable lack of consistent, scalable methods for deploying them effectively. A more comprehensive, technology-enabled approach to population health management is needed. This approach should balance advanced medical care with preventive measures and health education, while also addressing the socio-economic factors that impact health. Essentially, a 'systems approach' is required, one that ensures the delivery of the best possible healthcare uniformly across different geographies and brings consistency to the variable experiences patients may encounter during their healthcare journey.

Innovative Provider Models: The Missing Link for Advancing Population Health Outcomes

Population health management focuses on the overall well-being of communities, and prioritizes the strategic prevention and control of chronic conditions. A major barrier to enhanced population health is the lack of providers that are integrated in a way that they can effectively tackle these challenges at scale.

To optimize population health, engaging communities to identify high-risk individuals, stratifying them into manageable groups using technology, and offering support across clinics, homes, and everyday life is essential. This strategy is crucial for standardizing healthcare solutions and setting an objective standard of care, representing a significant advancement in the field. Such an approach is key to developing sustainable healthcare systems that balance the limited workforce with increasing demand. Consequently, governments and payers are increasingly interested in investing in programs that enhance critical health outcomes, such as reducing work absences due to mental health issues or back pain, decreasing avoidable emergency visits, and lowering the rates of diabetes, heart attacks, and strokes. However, it remains unclear who can deliver these outcomes

consistently, measurably, and on a broad scale. Put simply, there are no vehicles to deliver the best possible population health at scale.

Today's healthcare is predominantly delivered through hospitals and primary care clinics, funded by governments and payors, often involving some patient out-of-pocket costs. However, each setting faces unique challenges in effectively delivering population health. Hospitals are complex, multifaceted institutions focused on acute care delivery. Their ability to focus on early diagnostics and episodic treatment of individual patients makes it difficult to integrate population health effectively, adding a further layer of risk to their already substantial complexity.

Meanwhile, primary care practices are hampered by fragmentation and varying levels of performance, which undermines their ability to deliver consistent, scalable population health services. While primary care can incorporate basic preventive measures, such as point-of-care monitoring for chronic disease patients, this approach falls short of being able to effectively intervene in a holistic way - for instance, to integrate sustainable lifestyle improvements alongside medical interventions. They are not set up to be 'specialists' to focus on the highest-risk populations that often are the costliest to treat, and they are ill-equipped to support and monitor people in their daily lives in navigating novel digital technology.

BioPharma and MedTech companies frequently see the opportunities for population health, but their natural incentives don't make them well-aligned to act. For instance, if a pharma company with a drug for heart failure can identify the patients who are living with heart failure and don't know it, the company clearly can benefit from increased sales by improving the early diagnosis of such patients. However, it is not in their interest to identify how they can gradually take patients off expensive therapies that themselves come with side-effects. And if a patient is prescribed the medicine but it is not used or used inappropriately or if it doesn't work for the population group, this undermines the overall intent. Such misaligned incentives cause mistrust that is further fuelled by high-profile scandals, such the opioid scandal in the USA and professional bribery scandals in China. It is paramount that providers of population health are set up so that their commercial success is aligned with the achievement of population health outcomes at a fair cost to society.

Consequently, there is a need for innovative business entities capable of delivering health outcomes at a population level, free from the constraints of traditional healthcare settings like hospitals and primary care clinics. These entities should operate in the intermediary space between primary and secondary care and engage patients as active participants in their own health. These new vehicles would collaborate with various sectors - including pharmaceutical, digital, diagnostic companies, insurers, and governments - while maintaining a sharp focus on improving specific population health outcomes in a scalable and sustainable manner. This challenge is not insurmountable; indeed, other sectors like tech and food have built modern economies on scalable business models that enhance effectiveness and reduce variability. Even within healthcare, such approaches have been successfully implemented for decades in specific clinical areas like dialysis, though not yet broadly applied to population health.

Key challenges for patients, payers and innovators

Building on the concept of innovative business entities in healthcare, new providers of technology-enabled population health services must confront several critical challenges specific to the sector. These challenges are frequently faced by patients, payers, and technology providers, and must be effectively addressed to ensure the success and sustainability of these new models in improving population health outcomes.

Challenges for patients

Patients often find themselves navigating a labyrinthine healthcare system, where care is fragmented and difficult to access, and care quality is contingent on the provider they see. This variability results in inconsistent outcomes. Currently there is no seamless 'one-stop-shop' for health services, forcing patients to seek out each service individually, often encountering poor communication between each and with ineffective guidance from family and friends or the worldwide web. In this system, patients frequently adopt a passive role, deferring to medical authorities rather than actively engaging in their own care. This passivity exacerbates the fragmentation challenge and undermines the effectiveness of treatments and patient satisfaction.

Challenges for commissioners and payers

For those who fund healthcare services, through a plethora of contracts, there is simply no vehicle that scales outcomes for them. This is what they need and want. The siloed nature of care provision, including pharmaceuticals and health tech, makes it practically impossible to substantially improve the clinical and economic cost curves of care delivery. Commissioners and payers struggle to incentivize integration across services, which leads to inefficiencies and duplicated efforts.

The compartmentalization of healthcare also means that they are often paying for services that are reactive, rather than investing in connected, preventive care that could improve outcomes and reduce costs for both the short and long term.

Furthermore, the issue of scalability is a significant challenge. Solutions that are effective in specific local contexts often struggle to be expanded across diverse healthcare ecosystems with varying population needs. This is primarily because few interventions are designed with scalability in mind. What proves successful in one clinic may not necessarily be effective in a neighbouring one.

Challenges for technology providers and innovators

On the technological side, there's a noticeable lack of synergy. Most health technologies function independently, failing to interconnect and offer a cohesive solution. This results in a fragmented user experience and gaps in care continuity. When a potentially transformative technology enters the current complex and often chaotic healthcare system, it is likely to be underutilized or misused. This is particularly evident in the use of many drugs, where health systems struggle to identify the right patients who would benefit and then effectively

monitor their progress. Such misalignment undermines the potential impact of transformative health technologies.

A second integration issue is the leap from proven efficacy of a new drug or technology in a randomized controlled trial to effective deployment in a population. The challenge lies in the 'context' of these trials, typically set within a clinic, which includes specially trained health professionals, IT systems, frequent monitoring, advanced diagnostics, and follow-ups with adjustments – a setup not designed for scalability. This context is rarely replicated in the real world, meaning the actual effectiveness of a technology often differs significantly from what was demonstrated in the controlled 'lab' environment. In fact, this 'context' varies even from one trial to another, leading to inconsistent results in the trials themselves. Therefore, the development of a technology-enabled population health solution must aim to deliver a holistic, scalable solution, overcoming the fragmented nature of technology development and its inconsistent implementation. The effectiveness of a technology for a population crucially hinges on the scalability of the delivery model it integrates into. Without scalability in the delivery model, the technology's effectiveness cannot be scaled either.

In summary, the healthcare industry's fragmentation, variability, and siloed nature, combined with patient passivity and the technological asynergy, all contribute to a system that is often inefficient and difficult to navigate. Tackling these challenges requires a concerted effort to promote integration, patient empowerment, and technological interoperability. **It requires, first and foremost, novel businesses that are focused on delivering on this challenge at scale.**

Towards Precision Population Health Solutions

Precision Population Health Solutions represents a transformative shift in the healthcare paradigm, emulating the business model convergence pioneered by tech giants like Apple and Dell. These companies entered a fragmented sector in which everyone 'built their own computers'. It meant there was little practical application for machines and no component could guarantee its performance as it depended on the other components that the user connected it with. In response, a new industry emerged that converged the business model. An industry of integrators, such as Apple, Dell, Samsung, and Compaq, that did not develop the components but optimised them into an end-to-end architecture to achieve different types of jobs. These companies focused on what the consumer needed to deliver a 'total computing solution'. This business model convergence made computing the ubiquitous sector that it is today and is a template for how healthcare can be similarly transformed in the coming decades.

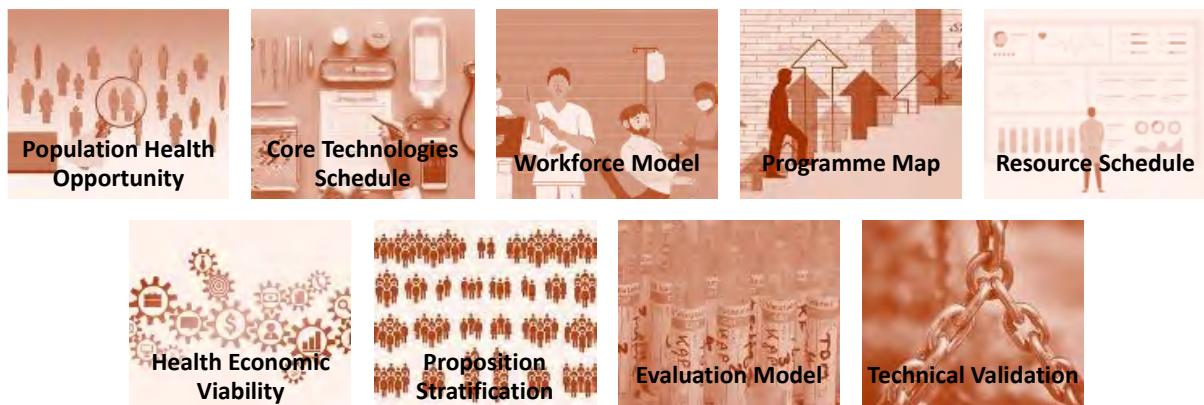
Precision Population Health Solutions are convergent business models that merge various elements - technology, workforce strategies, incentives – focused on the needs of specific population segments that are poorly served in terms of chronic disease management and prevention. These models are designed to be predictable, effective, and easily replicable on a national/global scale, using a 'clinical franchise' model that integrates therapies, diagnostics, sensors, digital tech, into a comprehensive workforce model and process. These franchisors provide a turn-key solution within their local environments that eliminates

duplication and waste and is focused on the delivery of population-specific and predictably effective healthcare outcomes.

How can such novel providers be established? In a similar way to the pharmaceutical model, the establishment of these population health focused businesses proceeds in distinct phases.

A. Research and Development within the Global Centre for Healthcare Convergence

1. **Viability Study.** In response to an identifiable population health issue that can be addressed with current technologies, an iterative co-creation process is initiated in the not-for-profit setting of the Global Centre for Healthcare Convergence. The goal is to develop a Precision Population Health Solution blueprint, encompassing several key components:



2. **Proof of Concept:** A robust real-world demonstration of the PHO using suitable study design methods.
3. **Proof of Scalability of Outcome:** A rigorous demonstration of the PHO's scalability in real-world settings, using appropriate study design methods.

B. Commercialization within a Venture Funding Model

- **Market Access:** Achieve endorsement from payors and government entities for the proposition. Secure Service Agreements with per-patient-per-year contracts and establish effective clinical networks.
- **Provider Onboarding:** Collaborate with centres in both secondary/specialist and primary care sectors to implement specific solutions for their patients. This includes handling licensing, training, onboarding, supply agreements, and quality assurance components.
- **Eligible Patient Engagement:** Work alongside primary care practices and payors to identify and recruit eligible patients. This process should utilize a mix of population data, word-of-mouth, and community engagement strategies.
- **Patient Enrolment:** Ensure patients are thoroughly prepared and supported for the end-to-end intervention necessary to deliver the Population Health Opportunity.
- **Reporting:** Provide continuous, detailed reports on population outcomes and improvements to all relevant stakeholders.

Partnership

The Global Centre for Healthcare Convergence, a joint initiative by the Centre for Health Leadership & Enterprise at the University of Cambridge and Excite Ventures, partners with preeminent academic institutions across the US, Europe, and Asia, as well as leading technology providers, payers, and government agencies, to forge a pioneering research institute. This institute's core mission is to catalyze the shift in medicine towards population health. As a 'think-do tank,' its distinctive edge lies in fostering enterprise creation — incubating and scaling innovative ventures that embody the principles of healthcare convergence, while also influencing global health policy through its research, which guides payers, governments, and regulators on the sector's evolving landscape.