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New theory of the business for health, the Stay Left, Shift Left-10X paradigm

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OVERVIEW

The paper begins with explaining why there is a problem in Health, while acknowledging the major progress made in the past two centuries. The paper then identifies a fundamental problem with the current theory of the business in Health before introducing and proposing a new proactive digital paradigm Stay Left, Shift Left-10X (SL2-10X) for Health. The paper then introduces a number of Copernican shifts underpinning SL2-10X and shares a vision of a future health and wellness system. The paper then provides emerging empirical evidence for SL2-10X and explains theoretically how SL2-10X can help create more sustainable health systems through the use of an illustrative Productivity Possibility Function (PPF). Finally, an implementation strategy and potential barriers and solutions are discussed.

INTRODUCTION

Looking from the outside in, it very much looks like that the business model of healthcare is broken. Escalating costs, escalating demand, rising consumer expectations, productivity dropping and unfavourable demographics all point to a potential future collapse of health systems as we know them. Despite this we have much to be grateful for with an unprecedented doubling in life expectancy achieved over the past two hundred years and global population growing 8X or eightfold over the same period. Many of us have received excellent care from dedicated clinicians, which has ameliorated suffering or extended life.

And yet the global healthcare industry faces significant healthcare worker shortages, healthcare worker attrition and morale issues and many clinicians are burnt out from the incessant pressures of working on the frontline with no sign of demand or pressures abating. There has also been a significant shift from the burden of contagious disease to chronic disease with 90% of every dollar in the US healthcare system now spent on people with chronic and mental health conditions.[1] The emergence of digital technologies is creating the opportunity for reimagining, rearchitecting and re-engineering our health systems.

This paper presents a new paradigm SL2-10X,[2 3] which proposes a totally new kind of health and wellness system, which uses digital technology as the enabling trigger/resource and a proactive health mindset, proposes a 10X (10 times) better health system leveraging a number of Copernican shifts, including a shift from illness to wellness and hospital to home. This paper presents evidence of how this SL2-10X paradigm has worked in Ireland delivering multiple 10X benefits in multiple living lab scenarios. The paper argues unlike the 150 years it took for the Copernicus heliocentricity view to replace the centricity view to be accepted, we must urgently drive adoption of the SL2-10X paradigm to build a health and wellness system that revolves around individuals and not hospitals.

HOPE

A recent New York Times Opinion Piece headline read 'Doctors aren't burnt out from overwork; we're demoralized by our health system'[4] and yet there is serious hope with a bright new future ahead powered by digital technology and data. But only if healthcare leadership embraces a new paradigm and/or possibly only if change is introduced from outside in by new organisational forms leveraging disruptive technologies.

We can build on the foundations of modern medicine, tracing its roots back to the University of Padua and people like William Harvey, Galileo Galilei and others. If we can build on this foundation much can be achieved and a metamorphosis of health systems delivered with benefits for all and most importantly patients. I believe the consistent application of SL2-10X delivering exponential and step function benefits can lead to a transformed industry and better outcomes for all. SL2-10X introduces a new logic and a new arithmetic to healthcare. It is what Peter Drucker called a 'theory of the business'.

THEORY OF THE BUSINESS

Drucker[5] states, 'every organisation, whether a business or not, needs a theory of the business' and 'that a valid theory that is clear, consistent and focused is extraordinary powerful'. Looking externally into the health industry, it appears that modern medicine and health systems run on what Johnsen calls the 'the rule of rescue'.[6] It appears that the default choice is to treat illness in the most expensive place, that is, an acute hospital and at the last possible moment, the emergency department. Drucker's theory of the business refers to the set of assumptions about the environment, the mission and the core competencies of the organisation and by extension the system. Drucker argues that organisations fail not because they do things wrong but because the theory is obsolete and fails to adapt to new technologies, changing customer expectations and environment. The overarching business model in health is flawed and unlike other industries where the customer is placed first, in

healthcare it appears the patients is often, but not always, low on the priority list. With ever-increasing cost and health insurance premiums, the business model of health appears *seriously* flawed. The quote 'In healthcare too many people get paid more to do the wrong thing' is widely attributed to Michael Porter and his and Elizabeth Teisberg's[7] seminal work on value-based care has identified that hospitals and providers are rewarded for volume over outcomes and for doing more, not necessarily better. While other information-intensive industries such as semiconductor manufacturing and the computing industry have demonstrated remarkable productivity improvements through the use of technology and collective collaboration and passed the benefits onto consumers and users, the opposite has happened in healthcare.

A European Digitization Study[8] showed that over a 10-year period, healthcare was almost the only industry to experience negative productivity growth. This is even though healthcare is primarily an information management business and Digital driven by Moore's law has been the main productivity improvement driver. Fairly obvious interventions which can transform individual health, and our health systems have not been broadly adopted, while health prices go up and health system funding requirements continue to grow significantly.

I believe this is a business model problem and also a significant leadership and management issue. Ireland's healthcare system is a case in point where health spending has increased by 8 billion euro in the last 8 years, fifty thousand health workers have been added to a base of eighty thousand health workers and yet composite output only increased by 3.8%.[9] Representing an alarming drop in the marginal efficiency of capital for health, senior leaders in Ireland said that the 'identified divergence between resourcing and activity' is 'a big concern'.[9] A recent study on the NHS also showed a significant drop in productivity since COVID-19. We cannot continue to fatten the health system caterpillar, what is needed is a metamorphosis into a health system butterfly.

SL2-10X—NEW PARADIGM FOR HEALTH

SL2-10X is a new paradigm, which combines a proactive health mindset enabled and catalysed by the digital and data revolution, which empowers and educates individuals, so that they own their own health and coproduce it with clinicians. For too long, the focus of the health industry has been on illness and the industry makes most of its money out of illness. The new approach is SL2-10X.

Stay Left is about a new focus on keeping people well at home or if a person has a chronic illness or needs rehab that this can be best done at home, also focussing on early detection.

Shift Left is about getting patients as quickly as possible from hospital to home.

10X is the notion and the aspiration, backed by real-world empirical evidence that digital and data applied to healthcare can deliver 10X (10 times) better, cheaper, earlier, higher volume, etc benefits.

With its roots in software engineering and then the subsequent introduction of the Shift Left Paradigm at Intel, SL2-10X has a focus on both proactive wellness management and early detection and remediation of disease. In software engineering, if a bug is detected and fixed in the design phase, it may cost $80 to fix, but if the bug is detected when a product or service is deployed, it will likely cost orders of magnitude more to remediate. Similarly, in health, prevention is the first step followed by early detection to help remediate and allow reversal of chronic and other disease. Early detection of issues such as rise in blood pressure, weight gain or blood glucose levels as measured by HbA1C can allow fast and relatively easy remediation. Kevin Jon Williams[10] argues that every heart attack is a medical failure and proposes a new health pathway using statins to reverse atherosclerosis and seeks to eliminate heart attacks. Solutions such as the Paris-based Rarecells Circulating Tumour Cells (CTC test), which promise early detection of cancer through CTC detection are showing promise, with initial trials showing a sensitivity and specificity of 95%.

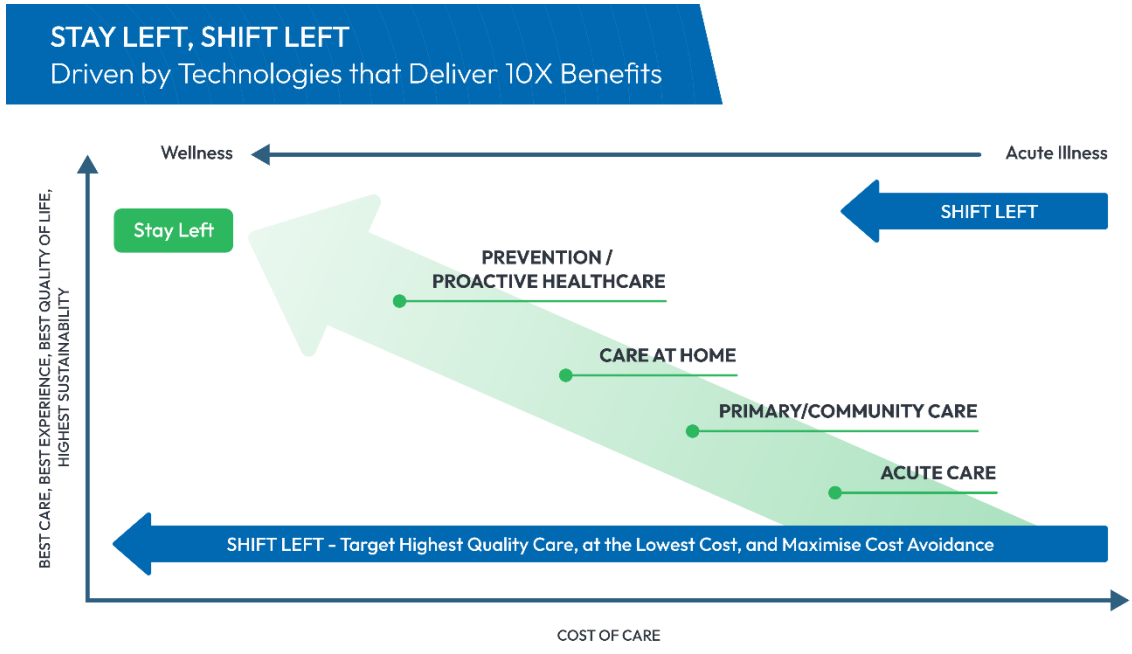

Figure 1 Stay Left, Shift Left-10X—source: M Curley.

Thus, SL2-10X seeks to find interventions, often digitally enabled which shift to the left in figure 1, shifting the locus or point of care from acute hospital to the community and ultimately the home. The hypothesis is that using a proactive health mindset, each time we make an intervention which is digitally empowered we are able to improve the care or outcomes, while reducing the cost of care or improving value, and while improving the patient and clinician experience as well as improving sustainability. This hypothesis is supported by a number of underpinning principles—Shortliffe' s[11] assertion that medicine is primarily an information management discipline is a starting point. Then applying increasingly powerful digital and data tools will help, and through digital transformation when an entity, organisation or even complex adaptive system is digitised, it starts to display exponential properties. When health and medical information and diagnostics are increasingly democratised by digital, these benefits will become ever more impactful and widespread.

The SL2-10X paradigm drives a change in roles for everyone—for patients they take more responsibility for their health, moving to a health coproduction mode[12] and there are some changed roles for clinicians, embracing digital technology and a more proactive health and wellness mindset. Many clinicians do already embrace this mindset, but their work is often predominately about trying to help patients recover from illness. Thomas Edison famously said, 'The doctor of the future will give no medication but will interest his patients in the care of the human frame, diet and in the cause and prevention of disease'. This would be a worthy NorthStar.

A vision of SL2-10X

A schematic of this new paradigm SL2-10X is shown in the following figure and this figure is an integral output of the Manhattan Manifesto produced as a synthesis of the second UNGA Digital Health symposium in New York.[13] SL2-10X advocates for health systems where people are at the centre and is underpinned by 10, I call Copernican shifts, including shifts from illness to wellness, hospital to home, analogue to digital and a shift by patients from being passive to participative with individuals empowered to own their own health. The first three of these shifts are at the core of the 10-year NHS reform strategy[14] being driven by UK Health Secretary Wes Streeting.

The new vision of a future health and wellness system was in part inspired by pioneering work by Carolyn Gullery and others in Canterbury New Zealand which had a quest for integrated health and social care (figure 2). Since the birth of modern medicine, the dogma that 'Doctors know best' has prevailed and been practised but now that digital and the internet have increasingly democratised health and other information, patients are sometimes even better informed than doctors about their conditions and potential treatments. A new era of partnership between clinicians and patients is possible, where the balance of power is more balanced and promises substantial benefits. I had originally called this the Shift from 'Doctor knows best to Patients Knows Best' but at the 2024 Global Drucker Forum Health specialist interest group, Dr James Mountford suggested the shift be renamed 'from Paternalism to Partnership'. This name was adopted, and I extend it with a shift from patient passiveness to participation, as often the most impactful improvements happen when a person participates in their health through regular exercise, better diet and sleep hygiene.

This new SL2-10X paradigm is underpinned by 10 Copernican Shifts, which result in shifts from activity to outcomes, treatment to prevention, fragmentation to integration, physical to hybrid/virtual and passive to active participation. This is in fact the opposite to what has been happening where arguably we have had the over-medicalisation of health, an obesity epidemic and in the UK alone, there has been a 'shift right' of over 10% of resources going from the community to acute hospitals over the past decade. Contrast this shift right to the shift left that has happened at Northwell Health in New York where visionary CEO Michael Dowling has opened a thousand and fifty ambulatory care centres in the past 5 years to support care in the community and now just 47% of care at Northwell Health occurs in acute hospitals.

Figure 2 A new vision for health systems—source: Curley *et al.*[13]

Other shifts include a shift from human to augmented intelligence, which will be transformational, providing an extra pair of eyes to clinicians and a shift from episodic to continuous care enabled particularly by wearables, which can measure and in future respond to a variety of vital signs and other measures.

PROBLEM DISSOLUTION

In solving problems, there is a hierarchy of types of solution approaches with the most basic being problem absolution, that is, ignoring the problem and this can be the approach taken by governments by simply pouring more money into the healthcare system to meet growing demands rather than looking for smarter ways of solving problems and delivering better health. Next in the hierarchy comes resolving where one creates a design and solution, which creates a satisfactory outcome, followed by solving where one creates a design and solution which delivers the optimum outcome.

The new Sl2-10X paradigm primarily takes an even higher order problem *dissolution* approach, as advocated by Russ Ackoff,[15] which focusses on making the problem disappear. Thus, SL2-10X using proactive wellness management and early disease detection and remediation, enabled by digital technologies, significantly bends both the demand and cost curves, which make current healthcare systems unsustainable. In health, as in life perhaps, the most valuable and least replaceable resource is time and this new SL2-10X paradigm can have a dramatic impact on time by enabling time warping innovations such as 10X earlier diagnosis and 10X faster interventions while also creating the opportunity to extend years of healthy living through changing health, behaviours, nutrition and other determinants of health enabled by digital. There are many devices and tools which are enabling 10X benefits, delivering, for example, 10X earlier diagnosis, 10X higher volume, 10X admission reduction, 10X better glucose control and so on. A related major opportunity is to use digital technology and artificial intelligence to improve clinician productivity by a factor of 10X or even more. With a clinical workforce shortage as a key gap globally, a productivity improvement of this magnitude or more would have an enormous positive impact on health systems' sustainability.

EMPIRICAL EVIDENCE FOR SL2-10X

So SL2-10X works in theory but does it work in practice?. To demonstrate the empirical evidence of SL2-10X, the author presents a number of vignettes from the Irish Health system where digital health solutions were deployed producing multiple 10X benefits and SL2-10X outcomes enabling patients to be treated at home or in the community or discharged earlier. The evidence presented in the vignettes shows that often multiple 10X benefits were realised across all five dimensions of the quintuple aim. The Quintuple Aim[3] is an evolution and extension of IHI's triple aim[16] to include a focus on sustainability (both environmental and financial) and clinician productivity as well as the more traditional clinician experience. The five dimensions of the quintuple aim include better care/outcomes, lower cost/higher value, improved patient experience/quality of life, improved clinician experience and productivity and finally improved sustainability.

In deploying and validating these technologies, the open innovation 2.0 (OI2) living lab methodology was used to help define, design and then deliver for value. OI2 is a new breakthrough digital innovation methodology[17 18] whose development was spearheaded by Intel, The European Commission and Maynooth University and is ecosystem innovation approach, which attempts to introduce radical digital innovations in a non-threatening risk-managed fashion.

SL2-10X vignettes

In the following sections, I will briefly describe several vignettes where different digital health solutions provide empirical evidence for the SL2-10X paradigm at work, demonstrating it is possible to define, design and deliver 10X benefits. These Living Lab projects were all part of the HSE Digital Transformation portfolio funded from a variety of sources to address significant problems in the Irish Healthcare system.

Remote monitoring of COVID-19 PatientMPower

Within 2 days of Covid hitting Irish shores, PatientMPower (PMP) led by CEO Eamonn Costello codeveloped with the author a remote monitoring solution for COVID-19, which was deployed by St James Hospital and the Mater Hospital within a week of development. Within 5 weeks, the solution was deployed in more than 30 acute sites across the country. Thousands of patients were able to be treated and monitored at home, freeing up critical hospital space for more acutely sick COVID patients. For the second wave of COVID, the remote monitoring solution was adopted by over 500 General Practitioner (GP) practices across the country in all 26 counties, keeping thousands of patients out of hospital and freeing up hospital beds for people more acutely sick with COVID. An Irish Department of Health Study[19] showed that the cost per day and the admission cost for managing a patient at home in a community virtual ward were 10X (10 times cheaper) than an inpatient stay in an acute hospital. The cost per day in a community virtual ward was 88 euro a day with a cost of admission, 969 euro compared with a cost of 820 euro per day, and a cost of admission of 9020 euro for an acute hospital.

The same PMP technology was used in a Slaintecare pilot in Galway University Hospital, combined with other technologies and the results were a >10X increase in the output physiotherapy sessions delivered by Telehealth delivered versus face-to-face sessions in the previous 12 months with all other indicators in the quintuple aim significantly improving, including a 58% reduction of average length of stay from 12 to 5 days[20]. The mean savings per patient were 898 euro per year and a zero did not attend (DNA) rate was achieved for appointments.

Real-time respiration monitoring—PMD Solutions

PMD Solutions was founded to address the fundamental clinical need to more accurately measure patients breathing rates compared with the current manual method of counting breaths. Their product RespiraSense transforms the measurement of a patient's respiratory rate with continuous, innovative, technology monitoring—improving the measurement and identification of deterioration, in a real-time manner to help save lives. PMD founder Myles Murray and Prof Richard Costello of Beaumont Hospital worked with HSE Digital Transformation to deploy this technology the first weekend COVID-19 was in Ireland in March 2020. We quickly discovered Respirasense could provide up to 12 hours' notice of a patient desaturating, which in some cases saved lives and avoid ICU admissions. Because of its value Respirasense was deployed to 23 hospitals in just 4 months and has been since successfully deployed in community settings in Donegal[21] remotely monitoring patients with severe Chronic Obstructive Pulmonary Disease (COPD) with impressive results. In the living lab study, there was a 25X return on investment,

zero admissions and a cost reduction of almost 15 k per patient for patients remotely monitored in their homes.

Heartcare at home

Heart failure is a leading cause of death in the western world. Centric Health, Roche and HSE Digital Transformation established a living lab to monitor heart failure patients at home. The results were impressive with an 8X reduction in hospitalisations and patients feeling much safer and better. As a result, a new firm Care-Connect was formed to broadly drive the adoption of this kind of solution. In parallel Karen Kelly, an advanced nurse practitioner (ANP) in the regional Midlands Hospital Portlaoise adopted the PMD solution in Vignette 1 for use with heart failure patients in Irish Midlands. Against an expected HF readmission rate of 30% just one patient was hospitalised in a period of over 1 year, a more than 10X reduction in readmissions.

Vital signs automation

Syncrophi's KEWS 300 is a software product which is deployed in hospital settings at point-of-care, with the goal of performing vital signs automation. The KEWS system was initially deployed in a living lab in Cavan General Hospital. Its principal function is to automate and digitise Patient Observation Records, informing accurate, responsive clinical care and supporting better patient outcomes. A return on investment analysis showed an 1100% return on investment (ROI) for the deployment of the Syncrophi KEWS system, and a rapid procurement process was run during the COVID-19 pandemic, with the plan to deploy the solution to wards in 20 different hospitals across Ireland. The major anticipated benefits included reducing average length of stay, eliminating national early warning scores (NEWS) errors from a baseline of 50% to zero and improving the nursing and patient experience.

Beyond Ireland and across the world, there is an emerging portfolio of digital health solutions, which display SL2-10X attributes. For example, handheld point of care ultrasound tools such as GE's VScan and Butterfly's IQ are examples of solutions, which are 10X cheaper, provide 10X better access, 10X earlier diagnosis than conventional ultrasound equipment, which are typically only found in Acute Hospitals or Diagnostic Facilities. Now a doctor or a nurse can perform an ultrasound at the point of care in a GP clinic or even in the back of an ambulance, and these are particularly effective and efficient when they are assisted by AI software such as CaptionAI. AliveCor's Kardia, developed in Mountain View, California is a personal ECG device and software, which allows a patient or a clinician to perform an AI-assisted ECG in any location whether it will be home or a care location. The Kardia is 10X cheaper, 10X easier to use, 10X faster and 10X more sustainable than using a conventional ECG machine and is highly accurate for its intended use such as detecting conditions such as Atrial Fibrillation. Similarly, smart watches from companies such as Apple, Samsung and others now routinely provide ECG testing, which is helping democratise and shift health diagnostics all the way to the left to the end user, at a price point which even a decade ago would have been unimaginable. There is in fact a veritable Cambrian Explosion of new applications and devices, which are shifting the health industry to the left, putting powerful diagnostics in the hands of non-hospital-based clinicians and indeed patients. Let's explore this phenomenon in the context of a proactive health mindset using a theoretical economic construct.

THE PRODUCTIVITY POSSIBILITY FUNCTION

The Production Possibility Function (PPF) is a very useful tool to explore the impact of SL2-10X on the range of health outputs a country or health system can produce. A PPF can be used as an economics visualisation tool that demonstrates the relationship between inputs such as capital, assets and labour and the maximum output that can be produced from the inputs. Put simply, a Health PPF displays the range of outputs a country or health system can produce from the available resources and can be used to explore the impact of macrointerventions on the health output through achieving better allocative and productive efficiency. Allocative efficiency concerns the best reallocation and configuration of health inputs to maximise the desired health outputs. Productive efficiency occurs when health services are produced at the lowest possible cost, maximising health output from a given set of health inputs.

To understand how SL2-10X can potentially transform the health outputs of a country or system let's consider the impact of the first four Copernican shifts in SL2-10X on the health output given a fixed input. In figure 3, we begin with current output delivered by the current allocated input in terms of labour, capital and assets, which is base lined in the red bar on the left of the figure. A good macro level of health output could be total quality-adjusted life years achieved for a certain level of input but more commonly intermediate measures of output such as available bed days, utilized outpatient appointments capacity,

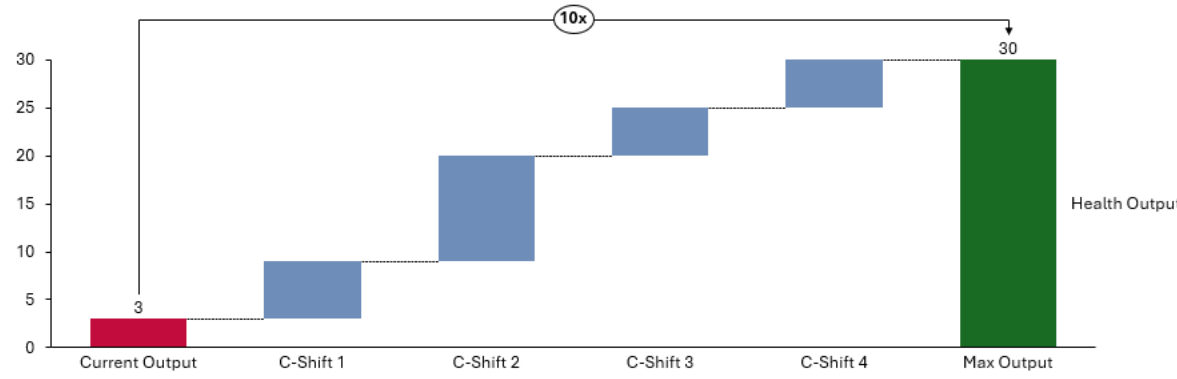

Figure 3 Health production possibility function with Copernican shift impacts—source: M & L Curley.

waiting list reduction and so on are used. In figure 3, we begin with exploring the potential of impact of Copernican shift 1, from illness to wellness as we move from left to right in the figure. By proactively investing in wellness, this means that less people need health services, freeing up more capacity for those that need it most and otherwise would have had to wait longer to be seen. Thus by making this shift, we are able to achieve increased health output as depicted by the C-Shift1 increase.

The second Copernican shift from analogue to digital results in a significant uplift in outputs through enabling substantially more to be done with the same input or indeed more to be done with less. For example, a PillCam, which is a swallowable vitamin-sized capsule containing a miniature camera that performs a capsule endoscopy, allows multiple endoscopies to be performed in parallel in distributed locations compared with the current norm of one clinician performing a single colonoscopy in a fixed location. A PillCam captures thousands of images which are transmitted via a radio signal to a body-worn recorder, which can then send the images for remote analysis by a clinician, which can also be increasingly augmented by AI analysis also. Peter Diamandis, founder of the Singularity University, argues that when something is digitised, it starts to perform like an exponential technology and thus the impact of the digital shift enables a significant increase in health outputs as shown in the third bar in the figure entitled C-Shift2.

The impact of the third Copernican shift from hospital to home, in part enabled by the second shift from analogue to digital results in another increase in capacity and uplift in health outputs as shown in the fourth bar in figure 3. Here, system bed capacity can be significantly expanded through facilitating hospital like services to be delivered in the home through the use of remote vital signs monitoring, digital telemetry and telehealth services. Finally, the fourth Copernican shift from paternalism to partnership allows a dramatic expansion of the health workforce into a health 'Careforce' as patients themselves (and sometimes family members) become a part of the health service as they do more self-management and coproduction of care, resulting in a further uplist in capacity and resulting health outputs as depicted in the fifth bar (C-Shift4) shown in figure 3. Over 50 years ago, EHR pioneer Warner Slack said 'Patients are the most underused resource in Healthcare' and now the fact that most people have a smartphone dramatically lowers the barrier and cost to utilising patients themselves as part of the new 'Careforce'.

The cumulative impact of just four of the 10 Copernican shifts in SL2-10X discussed in this example could realistically deliver a 10X improvement in health output and by extension health outcomes as depicted in the green bar at the right of the figure. The conclusion is that for a given level of health input, a 10X or 10-fold shift in health output can be delivered by implementing these Copernican shifts. Further increases in health output can be achieved by implementing the other Copernican shifts, such as the shift from human to augmented intelligence using tools such as AI scribes and AI radiology tools and so on.

HEALTH SPENDING PARADOX

A quick review of healthcare spending across Europe reveals the extent of the potential misallocation of resources. In Europe, just 3% of health spending is allocated towards prevention with the remaining 97% allocated towards supporting illness and restoring illness[22]. In Europe, outpatient care accounts for about 30% of spending, with inpatient care spending just marginally less while spending on pharma/medical devices and long-term care is almost the same around 18% approximate of total spending. With much literature supporting the returns from preventative health[23], what financial portfolio manager would allocate such a small proportion of the overall investment into a high-performing prevention portfolio segment? In addition Jeffrey Braithewaite et al report that on average 30% of health spending is waste and 10% is actually harmful.[24]

Contrasting the allocations, for example, in Ireland to a higher performing health system such as Denmark, with Ireland having the highest percentage allocation to inpatient care, whereas Denmark's highest allocation is to outpatient care[22] would appear to support the hypothesis for investing in community/outpatient care rather than inpatient care delivers more overall benefits, reinforcing the Shift Left Model. Migrating to a new theory of the business for health will critically require a reallocation of more resources to proactive health and an increase in expenditure in digital infrastructure and solutions. Importantly, the systematic deployment of preventative and digital health solutions could lead to a reduced overall spend in health or creating increased care capacity as discussed in the prior section on the health PPF.

THE DETERMINANTS OF HEALTH

Looking forward digital technology and diagnostics are now enabling much of what was previously performed in hospitals to being done in the community or even in the home. The Blair institute[25] report in 2023 summarises the health spending paradox very well: 'it is clear that individual factors including lifestyle, the environments in which we live and the genetic material we inherit account for between 70 per cent and 90 per cent of what constitutes health. In contrast, treating sickness accounts for as little as 10 per cent, but consumes more than 90 per cent of available resources'.

This imbalance and misallocation of spending is not just a European problem. The McGinnis *et al*'s[26] paper on the case for more active attention to health promotion points out the portfolio imbalance 'only 10% to 15% of premature deaths could be avoided through improvements in healthcare, 95% of aggregate national spending on health goes to medical care services'. A McKinsey report[27] linking improved health to prosperity suggested that over 70% of the potential benefits come from known behavioural, social and environmental interventions and preventative health measures.

Implementing SL2-10X

Implementing a completely new paradigm across an industry, especially one as complex as the health industry, is both daunting and very challenging, but not impossible. I suggest that at least six vectors need to be managed, which I call the six Ps: Paradigm, Political, Policy, Portfolio, Payments and Practice.

Paradigm

The first consideration is an acceptance that a new paradigm exists or at least could exist. The UNGA Digital Health Symposium is a global leadership community led by the Innovation Value Institute at Maynooth University, Ireland, which is pioneering and pathfinding this new paradigm.

Political

The next prerequisite step to transform is a political decision with Singapore being an exemplar country in leading the shift towards a digitally enabled wellness system. Both the UK and Ireland have also made political decisions to move towards the health shift left direction. The OECD advocate that the political

decision to transform health systems is the most important decision.

Policy

The Health Singapore Policy, known as Healthier SG, is a national initiative driven by the Ministry of Health to encourage a healthy lifestyle among Singaporeans and promote preventative health. The UK 10-year health reform plan and the Irish Slaintecare plan are also good examples, but in the case of Ireland, the lack of a practice (see below) to implement such a policy has led to a near doubling of wait lists despite record funding.

Portfolio

Considering the determinants of health, we know that behavioural aspects contribute 40% to health outcomes and genetic predisposition 30%,[26] with healthcare just contributing to 10% of outcomes. A relatively small shift of budget to a focus on proactive health and wellness could yield wide-ranging benefits. A shift of just 10% of overall budget from illness to wellness could make a remarkable impact.

Payments

For payors and financiers, it involves devising a business model, which pays for wellness and early detection. Arguably, the health maintenance organisation movement in the US tried to do this, but it was not equipped with smart digital diagnostic tools, which can help detect the earliest signs of disease. Accountable Care Ecosystems (ACE) which use alliance contracting to manage care collectively and share risk and reward are one kind of business construch to facilitate the business model shift required. Health insurers could be the first movers as they stand to significantly benefit from healthier subscribers and notably health insurers such as Elevance Health, Irish Life Health and Ireland's VHI are taking steps in this direction.

Practice

Implementing SL2-10X on a broad scale also requires a new systems innovation paradigm/practice and the new innovation paradigm and methodology, Open Innovation 2.0[17] can underpin this change. Guided Open Collaborative Ecosystems are emerging as a major disruptive force in Health[28 29] and where a holistic community of organisations coalesce around a shared vision with shared values, significant shared value and shared velocity can be created. The construct of OI2 Living Labs[17] is important mechanism for introducing radical disruptive change in a low-risk non-threatening way. Empowering clinicians and patients to coinnovate using a stage gate approach linked to a common platform and evaluating the clinical, technical, business and regulatory validity of a new solution is critical. This allows a potential solution to progress from first patient to proof of concept to larger demonstrator and then finally broad adoption, so that fast iteration, improvement and deployment of integrated solutions can be achieved in an effective risk and cost-managed way.

Potential barriers and solutions

With the introduction of any new innovation into health systems, there are generally barriers and resistance to their introduction. But with the introduction of a new theory of the business for health and all the solutions, which underpin SL2-10X, the barriers to introduction can escalate dramatically. Machiavelli famously said, 'It ought to be remembered that there is nothing more difficult to take in hand, more perilous to conduct and more uncertain in its success than to undertake the lead in introducing a new order of things'. Thus, because of the anticipated change in the business model, the empowerment of patients and the occurrence of what Schumpeter's calls 'Creative Destruction', there will be significant barriers and difficulties to be overcome as the implementation of SL2-10X has the potential to change the very structure of the entire health industry and the way value gets created and captured. An example of this is Ireland where a high-performance Directed Open Collaborative Ecosystem[29] experienced extreme resistance from the HSE strategy division and only ambivalent support from other HSE leaders. This led to the transition of orchestration of the OCE to an Academic focal point at Maynooth University.

Let's look in turn at the key barriers and potential solutions.

Culture

A key barrier is the cultural issue in medicine and health where change is often resisted. However, Eric Topol's 2012 observation 'Many of these digital medical innovations lie unused because of the medical community's profound resistance to change… But radical innovation and a true democratization of medical care are within reach, if we consumers demand it' offers hope. Thus, as most people can do other everyday tasks such as banking and shopping easily and seamlessly on their phones, a radical reshaping of health is possible if we centre the health system around people and their phones and if people collectively demand change.

Business model

A key barrier is the current business model for Health. Porter and Teisberg[7] argue that currently, health systems are structured and organised in a way that is anything but designed to maximise value. Thus, we need a complete redesign of the payments and reimbursement model that supports the health industry. Payors and Health Insurance companies have a massive incentive to drive this change, so that health outcomes are improved for more people at lower costs. A related barrier is Institutional Inertia. Institutional inertia is the tendency and behaviour of large complex organisations to maintain the status quo and resist change, even when it is patently obvious that significant change is needed. Leadership is the obvious antidote to this phenomenon.

Leadership and education

Leaders set the culture and vision for organisations and the wider health system. Quickly educating a critical mass of leaders with the knowledge and skills to drive the paradigm transition is crucial. Ireland's National Masters in Digital Health Transformation (MDHT),[30] codesigned and codelivered by all of Ireland's research universities, which trained over two hundred senior clinicians in a period of 5 years could serve as a model and a basis for a global Masters in MDHT similar to the very successful global Masters in Public Health. In parallel, the Medicine 2050 initiative led by Northern Health in Victoria, Australia to integrate the principles of SL2-10X into a proposed new medical school and curriculum is a first step to educate future clinicians.

Adoption

Because of the high demand on health systems and high task saturation, health systems have limited absorptive capacity for new innovations. A key strategy to overcome this is the 'Design for Adoption' pattern.[17] When we can design solutions which are 10X easier to use, 10X more effective, expand access by 10X, etc, it is very possible that adoption barriers will rapidly disappear. For example, when a clinician can speak directly to an electronic health record (EHR) and a companion AI annotation tool captures the information faithfully and enters it into the EHR and indeed suggests potential diagnoses and treatments, this can dramatically reduce the barrier to adoption.

Cost

Another perceived barrier is the cost to implement digital solutions. The widespread deployment of scalable cloud computing and the fact that almost every patient has access to powerful computing capacity on their mobile phone makes this barrier much less formidable than before. Prof. Matt Mullarkey of USF advocates that a key learning from Covid was that digital transformation could be achieved from operational funding.

Health and digital literacy

Another barrier is digital and particularly broader health literacy. Compact eLearning classes on health can quickly bring everyone up to speed on the key things individuals should do to maintain and improve their health. Designing easy to use solutions with great user experience is the path to fast user adoption. For instance, there is no user manual provided with the iPhone, and this is a useful benchmark for the user interface for future digital health solutions.

CONCLUSION

Opportunity abounds by adopting a new theory of the business for health, which involves a proactive health mindset, turbocharged by digital technologies and an associated reallocation of health budget spend towards wellness, early detection and the broad scale of adoption of interoperable digital health solutions. The new paradigm SL2-10X discussed proposes significant benefits for all including payors, providers, policymakers and most importantly patients. Through the use of a PPF, the paper has identified how key Copernican shifts underpinning SL2-10X can transform health systems through more efficient allocation of resources (towards proactive and preventative health), increase of inputs (patient coproduction and use of hospital at home solutions) and technological innovation (improved productivity). The paper also presents early empirical evidence that the new theory of the business actually works in practice. Transforming our health systems using the SL2-10X paradigm is not only possible but also completely essential if we are to extend lives and put our health systems on a much more sustainable footing.

Implementing the SL2-10X paradigm shift will require significant leadership, investment and energy but the consequences of not doing this are very serious. To take the first step towards a new health future, the author and colleagues in the UNGA Digital Health Symposium community are proposing two parallel initiatives, Vision10X, a strategic moonshot concept to cocreate a new health system, which is 10X better than our existing health systems and Mission10X, a strategic initiative to bring 10X digital solutions to existing health systems. Arguably less developed health systems, unencumbered by massive investments in legacy technologies are best positioned to 'leap frog' to the new kind of health and wellness system proposed by SL2-10X. Nobel Prize winner Ilya Prigogine suggests that 'When a system is far from equilibrium, small islands of cohesion in a sea of chaos have the capacity to lift the system to a higher order'. We are already seeding these islands of cohesion.

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REFERENCES

1 CDC (2025) fast facts: health and economic costs of chronic conditions. 2025.
2 Curley M, Boyle G, Braithewaite J, *et al*. Stay Left, Shift Left, Accelerating the Digital Transition of Healthcare, UNGA 1st Digital Health Symposium. 2021.
3 Curley M. Stay Left, Shift Left-10X, The new proactive digital paradigm for health transformation, Amazon. 2025.
4 Reinhardt E. New york times. 2023. Available: https://www.nytimes.com/2023/02/05/opinion/doctors-universal-health-care.html
5 Drucker P. The theory of the business. Harvard Business Review; 2007.
6 McKie J, Richardson J. The rule of rescue. *Soc Sci Med* 2003;56:2407–19.
7 Porter M, Teisberg E. *Redefining healthcare*. Harvard Business School Press, 2006.
8 McKinsey (2016) european digitisation study, mckinsey.
9 Shine C, Hennessy M. Hospital performance: an examination of trends in activity, expenditure and workforce in publicly funded acute hospitals in ireland, irish department of health. 2024.
10 Williams KJ. Eradicating Atherosclerotic Events by Targeting Early Subclinical Disease: It Is Time to Retire the Therapeutic Paradigm of Too Much, Too Late. *Arterioscler Thromb Vasc Biol* 2024;44:48–64.
11 Shortliffe EH. The computer meets medicine and biology: emergence of a discipline. In: Shortliffe EH, Cimino JJ, eds. *Biomedical informatics. Health informatics*. New York, NY: Springer, 2006. Available: https://doi.org/10.1007/0-387-36278-9_1
12 Lachman P, Batalden P, Vanhaecht K. A multidimensional quality model: an opportunity for patients, their kin, healthcare providers and professionals to coproduce health. *F1000Res* 2021;9:1140.
13 Curley M, Gullery C, Larkin C, *et al*. The manhattan manifesto, unga 2nd digital health symposium. 2022.
14 DHSC (2025) Fit for the Future: 10 year health plan for england, department of health and social care. Prime Minister's Office and NHS England; 2025.
15 Ackoff RL, Magidson J, Addison HJ. Idealized design – creating an organization's future. PA, USA Wharton School Publishing; 2006.
16 Berwick DM, Nolan TW, Whittington J. The triple aim: care, health, and cost. *Health Aff (Millwood)* 2008;27:759–69.
17 Curley M, Salmelin B. *Open innovation 2.0, the new mode of digital innovation for prosperity and sustainability*. Springer, 2017.
18 Curley M. Twelve principles for open innovation 2.0. *Nature New Biol* 2016;533:314–6.
19 Lewis C, *et al*. The testing and results of an integrated nurse-led community virtual ward proof-of-concept. Department of Health Ireland; 2021.
20 Maguire I. Summary of outcomes and achievements of sif 111: cf physiotherapy telehealth project, guh. Galway University Hospital/HSE; 2021.
21 Doherty A, *et al*. Community Virtual Ward (CVW+cRR) Proof-of-Concept Examining the Feasibility and Functionality of Partnership-Based Alternate Care Pathway for COPD Patients- Empowering Patients to Become Partners in their Disease Management. *International Journal of Nursing and Healthcare Research* 2022.

22 OECD/european observatory on health systems and policies (2021), state of health in the eu companion report. Paris OECD Publishing; 2021.
23 Iacobucci G. More targeted spending on prevention could double return on investment, say analysts. *BMJ* 2024;q2206.
24 Braithwaite J, Glasziou P, Westbrook J. The three numbers you need to know about healthcare: the 60-30-10 Challenge. *BMC Med* 2020;18:102.
25 Heitmuller A, Carkett M, Blakeley P. Fit for the future, how a healthy population will unlock a stronger britain. Tony Blair Institute for Global Change; 2023.
26 McGinnis JM, Williams-Russo P, Knickman JR. The case for more active policy attention to health promotion. *Health Aff (Millwood)* 2002;21:78–93.
27 McKinsey global institute (2020) prioritizing health, a prescription for prosperity. 2020.
28 Curley M. Guided open collaborative ecosystems as a major disruption in health systems. Health Manage; 2025.
29 Hope B. Ireland's digital health transformation journey, healthcare digital. 2022. Available: https://healthcare-digital.com/brochure/irelands-digital-health-transformation-journey
30 Curley M, McElligott A. A novel masters in digital health transformation: driving cohesive system change, advances in higher education. 2024 Available: https://ocs.editorial.upv.es/index.php/HEAD/HEAd24/paper/viewFile/17357/8845