



BVE WHITEPAPER:

OPPORTUNITIES IN THE FUTURE OF HEALTHCARE DELIVERY

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SCA Group

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ABSTRACT

Healthcare delivery is at a crossroads, and consequently presents one of today's greatest investment opportunities. The industry is undergoing a wholesale restructuring that is creating clear winners and losers, and investors will be able to choose between participating directly in providers, or instead through companies that provide the industry with critical products and services.

At first glance, there is much to be negative about, ranging from astronomical rates of physician burnout, to record, or near-record levels of financial distress across the industry. While there is broad agreement that the industry must fundamentally reinvent itself in order to survive, there is little agreement as to how this is to be achieved. Instead, a state of near-paralysis exists as the industry awaits the arrival of a new technology or operator that will fundamentally disrupt the current order, and provide a roadmap to the future. This white paper will argue that "The Great Disruptor" has already arrived in the form of a fundamental shakeup of the industry's existing economic model. It will further look at the implications of this revolution, and examine the opportunities it presents investors.

The destruction of an existing economic model has been the basis for the wholesale restructuring of several industries; look no further than airline and telecom deregulation. The healthcare sector has been shielded from the disruptive forces that have re-ordered other industries, in large part due to the exceptionalism argument that it has enjoyed: it is first and foremost about saving lives, not money. Protectionism in the form of fixed remuneration and cost insensitivity has been removed from virtually every other part of the economy. It is now the turn of healthcare, for the simple reason that costs have moved beyond the control of payers to influence, and patients to afford. The root cause of this is that the historic model is based on health consumption, not health care, and has created a false equivalency between the two.

The shift in emphasis from consumption to care comes with a concomitant shift from cost-based to outcome-based remuneration; known as [Value Based Care](#). Under the traditional Fee-For-Service model, the patient's journey through the medical system has been unbundled into separately billable services. In this model, all providers of services, whether physicians, acute and post-acute care providers, or pharmaceuticals, are broadly aligned against the payer. The payer must negotiate to try to control the costs with each of these, but the providers themselves have few incentives to keep prices low. Equally, as the model is consumption based (no treatment, no reward), providers are actively incentivised to provide as many services and cost touch-points as possible.

Driven by the introduction of Value Based Care requirements in the Affordable Care Act, coupled with the growth in risk-based Medicare Advantage Plans, the remuneration model is moving from unbundled Fee-For-Service, to a series of approaches collectively known as Alternative Payment Methods. These range from traditional Fee-For-Service coupled with incentive bonuses, to bundled payment structures that incorporate varying degrees of savings or risk sharing. The typical model now looks at a patient's journey as a series of what are known as Episodes of Care, which constitute all the elements that go towards the treatment of a pre-defined condition. Instead of treating each of those elements as individual fee-generating services, the payer now pays one single, pre-determined amount for the whole Episode.

The truly revolutionary aspect of this approach is how the payment is administered. Instead of the payer remunerating each of the element providers individually, there is now an appointed Principal Accountable Provider; a physician, group, or institution nominated as being responsible for the outcome of the Episode of Care. This Provider receives a single payment, and is responsible for paying the other providers in the Episode out of that amount. Depending on the level of savings- or risk-sharing involved, the Provider now keeps a portion of the difference between the amount received, and the amount paid out. The previous alignment of providers against the payer is thereby effectively broken, and this will impact everything from hospital admissions, to specialist treatment and drug prescription. Moreover, it is not just the government applying this approach, but also commercial insurers.

Although shared savings programs currently predominate, the pressure is on for providers to move to partial- or full-risk sharing models. The analogue for this, in the form of Medicare Advantage, already exists. Effectively the industry is looking at HMO 2.0, but in this version the payer shares the risk with an independent provider. The roles and responsibilities are split between the payer, who collects the premiums and manages the administration, and the provider, who is remunerated a fixed monthly amount out of which the patient's healthcare must be managed and paid.



The move to a Value Based Care model, especially as it continues to evolve from upside-only shared savings to some form of risk bearing, will require a wholesale change in the way providers structure and manage their businesses. The recognition of this, and the associated burdens, is already driving many providers to embrace employment over ownership, as they lack the financial, operational, or managerial wherewithal to cope with the transition. However, the good news is that many of the tools and practices necessary to succeed already exist in other industries. These can, and should be adapted to healthcare.

Success for healthcare delivery in the future will depend upon certain key traits. Primary among these is recognition of the fact that the industry will be in a near-constant state of flux for a considerable time to come, and so a static business model will be doomed to irrelevance. As with manufacturing, the only constant will be change, and healthcare delivery companies will need to have business models anchored in that concept. They must formulate a clear strategy for survival, and invest now in the necessary infrastructure to support it.

Providers will be faced with the need to master a whole new set of skills, and will need to invest in, and change the makeup of their staff accordingly. A new remuneration model will alter the way patients are seen and treated, and this requires a different approach to numbers and types of medical staff. Management will need to become more professional, and there will be a new emphasis on finance, with risk identification and management becoming a core function. This will require significant levels of investment in technology, from workflow optimisation, through diagnostic tools, to data gathering and analysis.

Perhaps the most important change wrought by the move to Value Based Care is that providers must now co-opt patients into owning and managing their healthcare. While outcome is the focus for how remuneration is calculated, in a risk-bearing model prevention becomes the essential determinant of provider margins. This is because the industry is moving from a fixed-cost-variable-revenue model, to a fixed-revenue-variable-cost one. While there is much talk about the consumerization of the industry, this has largely centered on patient empowerment and choice. This is to miss the essential point that the goal is actually to change patients' behaviour, not just affect their shopping patterns.

To do this, healthcare will need to adopt the [tools and traits](#) of the finance and consumer industries. Combining the theories underpinning behavioural finance with the permission-marketing strategies of the consumer industry will result in a process whereby providers can help shape patient behaviour through a four-step process: Engage-Inform-Explain-Reward. First, create a situation where the patient is open to being engaged. Then provide the information the patient needs to make an informed lifestyle or medical decision, and explain the benefits of making that decision. Finally, reward the patient for making the choice through a gamification strategy that combines actual rewards with peer group rankings and communication. Successful providers will effectively become [lifestyle platforms](#) that create opportunities for multiple points of engagement beyond simple medical visits.

The use of technology in Healthcare Delivery will also see a fundamental change. The digitization of [patient data](#) will need to be adapted from the current, passive model utilised by [Electronic Medical](#) and [Electronic Healthcare Record](#) systems, to one that provides active workflow and diagnostic support through the use of analysis of historic patient and peer group data. These systems must among other things also be able to provide management support by setting and enforcing guidelines, as well as helping with compliance in risk coding. Finally, data must become portable so that the whole of a patient's journey through the healthcare system can be mapped, and the results used to improve the treatment outcome.

There will also be an increase in the use of technology for monitoring, guiding, and managing patients' health and lifestyles. The rise of the [Internet of Medical Things](#) will mean that device connectivity will become paramount, as will the collection and maintenance of data. Data integrity will likely become a separate discipline, as the multitude of different devices and methods employed in monitoring will lead to duplication of data, as well as lapses in accuracy.



The cost associated with the change to Value Based Care will alter the structure of the industry. Consolidation will gather pace, and M&A activity will dominate the landscape. Three types of provider will eventually emerge. The first will be large groups that have been created through a strategy of either horizontal acquisition, where the primary strategy is increasing the size of the risk pool while benefiting from economies of scale, or vertical acquisition, where the strategy is to control as much of the risk as possible, expanding into other areas of the value chain such as specialist or post acute care. Examples will be large physician or hospital groups. The second group will be providers that choose to operate solely in the cash retail market, or who follow a hybrid subscription/Fee-For-Service model. Examples of this model would be retail and urgent care clinics, or concierge practices. The final group will constitute smaller players who either operate as [capitated](#) service providers, or provide resources such as premises or services. Examples of this latter group will be single practice entities, or smaller hospitals that adopt a storefront model.

The emergence of the three models, and the requirements necessary for them to succeed, will provide significant opportunities for investors. They can choose to participate either through the providers themselves, or take a picks-and-shovels approach. With the former, the consolidation will provide investors the opportunity to invest either in the provider companies that will dominate, or to create their own platform companies following horizontal or vertical rollup strategies. As larger groups continue to evolve, there will be no shortage of exit opportunities.

A picks-and-shovels approach targets companies that deliver products or services to healthcare providers. Technology will be a major focus, providing opportunities in hardware, software, and services. Patient facing technology will need to focus on engagement and ease of use, while physician-facing technology will need to focus on utility and seamless integration into physician workflow. In hardware, patient devices will continue to attract attention, especially wearables. However, these have a very mixed record of success, with the counter-intuitive result that those with chronic on-going illnesses that require the most monitoring, use smart technology the least. Wearables have been more successful when applied to lifestyle and fitness, but competition in the space is intense. Success here depends upon the ability to create a platform that engages through the successful use of socialization and gamification, and works in combination with provider visits.

In software, the focus should be on companies and products that improve provider workflow, including financial and risk management, or ones that address physician shortage. For the former, the ability rapidly to create large and clean datasets, and to utilize analytical and management tools in their application, will determine success. This will automatically handicap start-up or young companies. For investors wishing to participate in such opportunities, it is essential that target companies have early access to a critical mass of data, either through its acquisition, or through alliances and joint ventures with entities such as insurance companies. This will be especially true of companies utilising blockchain technology, where network integrity is greatly dependent upon the number of users.

The burdens on physicians, both historic and future, are leading to a [provider shortage](#); especially acute among Primary Care Physicians. In the immediate term, telehealth will provide a solution, although significant changes to its remuneration structure need to occur to see large scale uplift in its use; these are currently underway. For companies in this field, good communications and video technology will simply be the price of entry. Success will instead be determined by numbers of users, and investors should therefore focus on companies with an ability or strategy for rapid user growth; it is essentially a land grab play. For the longer term, investors should focus on the emergence of Artificial Intelligence as a tool for diagnosis and healthcare management.

Services provide one of the most interesting sources of investment opportunity. The new focus on data will require solutions in both data integrity and security. Companies that can source and/or clean large datasets from multiple providers will predominate. Equally, providing secure storage is a focus for many Healthcare CIO's, and while own-build currently dominates, success can come from providing the tools necessary for this.

Beyond technology, companies that can provide other services such as staffing and training will also benefit, as will companies that can provide help with resource management. Finally, there is also white space for the outsourcing of risk management, as many providers will struggle to build up the necessary expertise in this area. Third-party companies that are able to analyse and manage risk for smaller and medium-sized providers, as well as to ensure compliance, will likely form a successful investment niche.

ABOUT THE PAPER

This paper has been written with a primary focus on investors looking to understand and benefit from the dynamics currently driving healthcare delivery; excluding post-acute and specialized care. It is designed to address differing levels of knowledge and understanding, from those completely new to the industry, to those with a deep and fundamental understanding of it. As such, those in the latter group will wish to skip the first part of the paper, which constitutes an overview of the industry and the changes underway, including a more detailed look at the effects of risk transference. The implications and opportunities sections form the bulk of the paper, and assume a certain level of knowledge of the industry's terminology and concepts. However, as an aid, there is a glossary at the back of the paper that explains many of the acronyms and concepts that are defined in the background sections. The modular construct of the paper should allow informed readers simply to pick those sections that cover the topics of most interest to them, without the need to read the rest of the paper. To aid in navigation, hyperlinks are used to allow readers to jump from high-level references of concepts to sections that cover these in more depth.

The breadth of the topic requires that this paper be a lengthy one. Despite this, it can only be a distillation of the concepts and strategies that will define success in modern healthcare delivery. Later papers will address some of these topics in more depth, especially those of patient engagement and healthcare technology.

The paper is a result of the author's own experiences in the healthcare and related industries, as well as a reliance on the immense amount of work done by other participants in the field. Most of the sources for specifically cited statistics and information are referenced in the text. However, a general debt of gratitude must be acknowledged to the work of the Healthcare Dive team and their excellent daily bulletins, as well as to the work done by the Rock Health Group with regard to investment trends and statistics.

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INTRODUCTION

Healthcare is a \$3.5 trillion industry ^(CMS Office of the Actuary, 2018 Report), and by many measures it is a failing one. From doctor burnout rates to hospital bankruptcies, there is seemingly no end of bad news that analysts and operators can point to as an indicator of a sector in crisis; one in need of rescue, if not outright reinvention. Structurally, costs appear to be beyond the control of payers to influence, and patients to afford. Naturally, the negatives also attract investors and operators who see opportunity in crisis. There are countless new ventures that claim to address some, if not all of the industry’s problems, and the sector continues to attract record levels of investment. Underlying all of this is the search for “The Great Disruptor”. This is the belief in the industry that the ultimate solution can only be found in the introduction of an operator or technology that will completely revolutionize the way that healthcare is delivered and managed. While believers in The Great Disruptor may prove to be nebulous in their description of what, precisely, will constitute this deliverance, most will declare that rescue in whatever form will most likely come from outside the industry, not from within.

This White Paper will contend that The Great Disruptor is already upon us. It has arrived in the form of the seismic shift in the industry’s underlying economic model, and the subsequent transference of risk ownership from payer to practitioner. The shift from the traditional Fee for Service model (“FFS”), one that has for decades driven the Healthcare Industry’s economics, means that every aspect of the industry will change. This is because the change affects its very core, namely frontline delivery of healthcare to patients. This is the hub from which acute care, pharmaceuticals, finance, and technology all radiate outwards. This transfer of risk will mean increased use of technology, alternative methods for healthcare delivery and payment, long-term pressure on pharmaceutical companies, and the co-opting of the patients themselves into the management of their healthcare. It will require new financial structures and models for many operators, and whole new skillsets that will need to be learned and adopted.

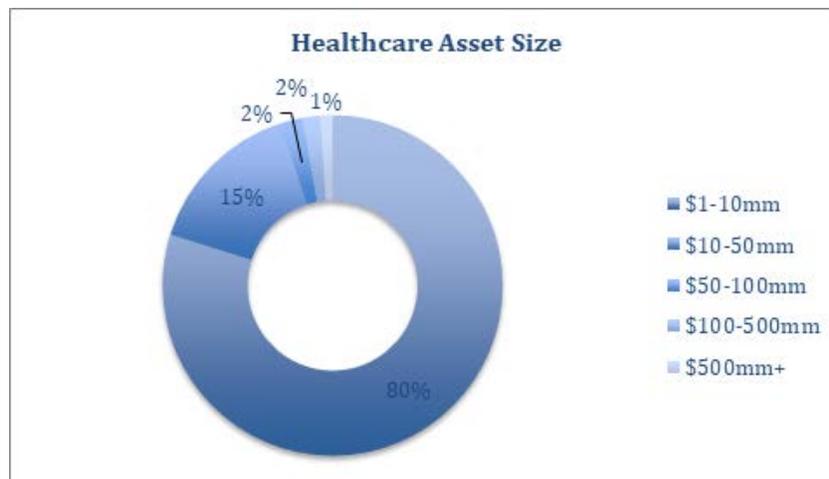
Whilst all are aware of the changing climate, and indeed reams have been written on the topic, many either fail to understand and accept its implications, or are fighting a hopeless rear-guard action to protect an infrastructure incapable of adapting. As with any climate change, those who cannot adapt will suffer extinction, while whole new species of players will evolve to enter and eventually perhaps dominate the new environment. This paper will explore the risks and opportunities that operators and investors will need to be aware of and consider, in order to succeed.

AN INDUSTRY IN CRISIS

Signs of crisis in the Healthcare industry are everywhere, but a good place to start is with the physicians themselves. This is because physician burnout rates are now at historic highs, with 57% of physicians in a recent study reported to be “burned-out” or depressed ^(2018 Medscape Physician Lifestyle Report). The single greatest contributor to this high rate was too many bureaucratic tasks, at 56%, with rates highest in the 45-54 year-old bracket. The net result is that 7 out of 10 physicians would not recommend medicine as a career ^(2018 National Survey of Physicians). The estimated cost of this high rate of psychological attrition is some \$17bn per annum, according to the National Taskforce for Humanity in Healthcare, but more troubling is the resulting rising shortage of physicians in the United States, particularly among Primary Care Physicians (“PCP”). As these physicians occupy the frontline in healthcare delivery, and are the linchpins for any form of coordinated patient care, their attrition in numbers poses significant hurdles for any success elsewhere in the industry. This will be examined in more detail in the section on implications, [below](#).



Financial stress is also acute in the industry. Healthcare distress, as measured by Chapter 11 filings, has soared 305% in the period 2010 to 3Q18 (Polsinelli-TrBK 3Q18 Distres Indices Report). By way of comparison, Chapter 11 filings across all industries have fallen by 53% in the same period, and by 68% in Real Estate. Distress indices for the Healthcare Industry have been at, or near, record highs in each of the past eight quarters. Put another way, healthcare currently makes up 9.7% of all Chapter 11 filings, up from 1.7% in 2010.



Source: Polsinelli-TrBK

Chart 1: 3Q18 Healthcare Chapter 11 Filings by Asset Size

The above chart records filings by asset size within the industry. 95% of all filings are for businesses with fewer than \$50mm in assets. This is reflective of the fact that the primary casualties are to be found among small practices, and small and medium-sized hospitals. Since 2010, 89 rural hospitals have closed (64 in the last four years), with an additional 673 operating at a loss or a risk of closing.

Perhaps the unsurprising result of the above data is the increasing consolidation within healthcare delivery, at both a practice and hospital level. The greater question, though, is what lies behind this.

THE CHALLENGE OF RISK TRANSFERENCE

With Medicare representing 20% of all healthcare spending in 2017, and Medicaid 17% (CMS Office of the Actuary, 2018 Report), the Center for Medicare & Medicaid Services (“CMS”) is the beast in the healthcare jungle, topping the 34% represented by commercial insurance. More so given the shifting demographics of the United States, which will see 10,000 baby boomers turning 65 every day until 2030; when fully 18% of the population will be 65 or older (Cerner: The Value Proposition (9/25/2018)). In conjunction with requirements under the Affordable Care Act (“ACA”), the government has through CMS been pushing to lower Medicare and Medicaid costs not just by reducing remuneration rates, but also by shifting the cost of care from the Government to the operator. In order to achieve this goal, ACA and CMS introduced two concepts to the market: Value Based Care (“VBC”), and Medicare Advantage (“MA”). Of the two, VBC has had the greatest impact across the Healthcare Industry, as the basic concept (originally only an ACA Marketplace requirement) has increasingly come to be adopted by commercial healthcare insurers in all their lines.

VALUE BASED CARE - AN ILL-DEFINED IDEA WHOSE TIME HAS COME

Now, the concept of VBC is extremely simple: instead of payment being made purely upon the basis of the number of medical services consumed (FFS model), remuneration will now be based upon the eventual patient outcome. Whilst for the most part the underlying FFS structure remains intact for a simple VBC model, the shift in emphasis seeks to ensure that healthcare delivery is now rewarded only after the whole of the patient journey is taken into account, requiring all parts of that journey to be managed.

The concept may be simple, yet when asked to describe what this actually means in practice, operators and payers become wonderfully vague. What everyone can agree on is that there are four core elements to VBC. These are: The Continuum of Care, The Episode of Care, Value-Bundled Payments (also called simply Bundled Payments), and the Principal Accountable Provider (“PAP”). The definition of these terms is relatively straightforward.

- Continuum of Care:** This can basically be understood as the complete patient journey, from initial diagnosis through treatment, including hospital stays, post acute care, hospice, and so forth as relevant. Essentially it describes the patient’s transitions of care along the care journey.
- Episode of Care:** This is often confused with Continuum of Care, and for good reason, as they are conceptually similar. However, Episode of Care can best be thought of as a subset of the Continuum. An Episode describes a defined set of services provided to treat a clinical condition or procedure. A patient journey (the Continuum) may involve only one Episode if there is a single, simple condition being treated. A Continuum may also involve several different Episodes if there are multiple conditions.
- Bundled Payments:** A Bundled Payment is a single payment for treating a patient with a specific medical condition across a full cycle of care.

PAP: The clinician, practice, or institution primarily responsible for an Episode of Care, and the overall outcome of the patient’s treatment. The PAP is responsible for all treatments received during an Episode of Care, regardless of whether or not that PAP is the one administering the treatment.

In practice, VBC can mean different things to different players. The starting point, though, should be the payers, but there is in fact a lack of a standardised approach across different payers as to what constitutes an Episode of Care, and what the Bundled Payment for such should be. From the providers’ standpoint, there is therefore a lack of clarity as to what constitutes delivery of value of care, or how to adjust their workflow to secure it. Further complications arise from the different types of payment structure different payers use, each with differing levels of risk. In turn, this can make the job of being a PAP somewhat unenviable, as that individual or institution is now responsible for matters that fall outside their traditional silos, and may be taking on risks over which they have no control.



Chart 2: The Risk Transference Journey

The above chart represents a snapshot of where the Healthcare Industry stands today with regard to payment methods and risk. Furthest to the left, and drawing the least risk, is the traditional FFS model. It is the most fragmented model, as it essentially unbundles care into distinct and individual services, each paid for separately. It therefore also encourages over-delivery of services, as provider remuneration is entirely dependent upon quantity of services, rather than quality of outcome.

The remaining four models all bear increasing amounts of risk to the provider, ranging from performance based FFS to full capitation/risk; capitation refers to a pre-negotiated “capped” fee for a specific service or procedure. These are collectively known as Alternative Payment Methods (“APM”), and together accounted for 34% of all US Healthcare payments in 2017; up from a mere 12% in 2015.

ALTERNATIVE PAYMENT METHODS - SHARING THE WEALTH, SHARING THE PAIN

Performance based remuneration is essentially the traditional [FFS](#) model, but with bonus payments for attaining certain pre-agreed goals that might be either financially- or patient-oriented, or indeed a combination of the two. Examples might be keeping costs beneath a certain pre-agreed amount, limits on the use of ethical drugs, or patient feedback scores. Shared savings and shared risk together form the cornerstone of today’s [VBC](#) model, with providers here being known as Accountable Care Organizations (“ACO”).

Currently, most ACO’s will be operating under some sort of a shared-savings model, using the [Bundled Payment/Episode of Care](#) approach put in place by either commercial insurers or [CMS](#); through its Medicare Shared Savings Program (“MSSP”). As the name implies, payers and providers under this model share whatever savings are achieved under the agreed value of a Bundled Payment. However, CMS is seeking to drive providers further to the right on the risk curve, and commercial insurers are watching closely.

According to CMS, fully 82% of ACO’s operating in the Medicare space are on upside-only MSSP’s. The shared risk, or partial-capitation model, has to date received less support from operators because under this model they have to share the downside risk of when an Episode of Care costs more than the agreed Bundled Payment. This distinct lack of enthusiasm from the majority of the industry has meant that CMS’s attempt to push more risk onto providers commencing 2019 has been delayed until at least 2020.

At first glance, it would seem apparent why providers are not desperately keen on moving to a shared-risk model from an upside-only one. However, for a view as to why the shift in risk is coming, and why at least some operators welcome a move to shared or full risk models, one need look no further than CMS’s Medicare Advantage initiative.

MEDICARE ADVANTAGE - A MODEL FOR THE FUTURE

Medicare Advantage (“MA”) was introduced by [CMS](#) as a way to provide patients with an [HMO](#)-type managed health product, where the risks and rewards of a well-managed program were entirely borne by the private sector. It deals with Part C benefits under Medicare, and was an evolution/re-branding of the old Medicare+Choice plans; brought about by the 2003 Medicare Modernization Act. In simple terms, it works like this:



DESCRIPTION

CMS contracts with a commercial insurer who will offer a MA plan to individuals who qualify for Medicare. For every individual that signs up (Member), they receive a set sum each month, known as a PMPM payment (Per Member Per Month). This PMPM payment will vary depending upon a Member's risk score, which is determined by his or her medical condition. For example, a relatively healthy 65 year-old will score lower than a 75 year-old diabetic amputee, and will consequently have a lower associated PMPM payment.

The commercial insurer will create a network of [PCP's](#) and other providers, and Members must be registered with an approved PCP. The PCP's cannot pick and choose who will be in their risk pool, but are fully responsible for the healthcare of the Members who constitute it. They may themselves negotiate capitation agreements with specialists and other providers as a way to control costs, but will typically work within the network established by the commercial insurer with whom they are associated. PCP's will be paid the bulk of the collected premium, and out of this they must pay all the health costs incurred by their Members. Payment is usually in the form of a monthly payment in the month of service, followed by a later payment that will be the sum of all the PMPM payments for a given service month, minus the sum of the costs of all the claims that were incurred in that month and all previous months not already accounted for. The PCP's do not administer the collection of premiums or processing of claims, as the contracting insurance company does this.

RISK TRANSFERENCE - NOT ALWAYS FULLY APPRECIATED

One key aspect of the above description immediately leaps out at the reader: in being the key responsible party in a MA plan, PCP's are effectively adopting insurance company profiles. They are collecting a fixed monthly payment, but have no real idea of what their profits will be until the claim tail has run a reasonable period of time. For many PCP's, there is a lack of understanding of the risk they are actually taking. They are thus typically distinctly unimpressed when they learn that their monthly cash flow is really a draw, or advance, and cannot be counted on as "theirs" until all claims have been fully processed and paid, and that consequently cash already received may be subject to recall if there is a deficit.

Given this shift in risk profile, one must ask the question what doctor in their right mind would choose to be a MA plan PCP. The answer, of course, is that if you are a traditional single practice, with a good FFS business, you will probably steer well clear, viewing participation as a shortcut to financial suicide. For now, this view makes sense, as such a single or even small-group practice is likely to be ill-equipped to deal with the demands of successfully managing the processes necessary to stay on top of the risk pool, let alone have a sufficient number of members to diversify that risk pool adequately. However, with the continued pressures being applied to the traditional FFS model from VBC in both the commercial and traditional Medicare environments, as well as the increasing infrastructure requirements to maintain even a traditional practice, there can be significant benefits to the MA model.



BENEFITS TO THE PROVIDER - WHY IT WORKS

If one rotates the view 180 degrees and looks at the revenue model rather than the risk model, the potential attractions become more apparent. One of the greatest pressures on traditional practices is the lack of revenue certainty. As a MA PCP, there is a much higher certainty of revenue as a practice or group will be able to predict its PMPM payments with some degree of confidence; after open enrollment, there are typically only marginal changes in membership. The real question is whether they can manage the risk. This will be discussed further in the implications section, below. However, in principle, shared risk can be more advantageous for those operators structured to deal with it, because it means fixed cash-flow with a greater upside if costs are managed; they can now capture all of the saving, not just a portion.

For those doubtful of the viability and attraction of MA plans, it is hard to argue with its success. MA has grown in premiums from \$69.9bn in 2007 to \$202.7bn in 2017, representing a total of 25% of all industry premiums ^(CMS Office of the Actuary, 2018 Report). Furthermore, it is an area attracting considerable investor attention. Devoted Health, a healthcare start-up focusing exclusively in the MA space, recently raised \$300mm in a Series B, valuing the company at \$1.8bn. It started business in 2017. Other successful raises include Oscar Health (\$375mm), and Bright Health (\$200mm); although neither are pure MA companies, it represents a significant portion of their business. Thus whilst there are clear risks to the model, well-capitalized and well-managed companies are having enormous success in the space.

Risk transference, whether through MA or VBC, is happening. According to Change Healthcare, the shift to VBC is occurring more quickly than expected, with 63% of payers surveyed shifting to some form of value-based system, versus 37% fee-based; the latter being expected to fall to 26% by 2021. Furthermore, there is a clear momentum behind the continued shift of risk from payer to operator. Perhaps the real question is can risk transference work? The short answer is that it has to, because no country can afford for it not to. The US healthcare industry aside, this is a global trend, and is happening even in socialized, single payer markets like the UK and Sweden. Simply put, no healthcare industry can survive the combination of an aging population, increasing demands for consumption of healthcare, and the economics of a pure FFS model.

IMPLICATIONS

Risk transference to the operator has real implications not just for those delivering healthcare services, but also for acute care, healthcare technology, and the pharmaceutical industry. Under the old [FFS](#) model, whilst the different segments of the industry were perhaps not allies, they were at least broadly aligned. The change to any form of [VBC](#) or risk bearing model will effectively end that alignment, for the first time setting up an economically adversarial relationship.

History has shown clearly that the breaking of a static economic model causes severe disruption, upending traditional business models, and allowing the entry of new players utilising different approaches. For examples of what this can mean, look no further than airline and telecom deregulation, or the arrival of the Internet and the resulting disintermediation between consumer and retail. The Great Disruptor has already arrived, and the Healthcare industry must now deal with its implications. This section will focus on healthcare delivery, as it faces the most immediate challenges.

In order to survive the new climate, operators will need to re-think entirely how they operate their core business, how they engage and co-opt the patient into managing their own healthcare, and how they invest in, and use technology.

THE BUSINESS MODEL - PHYSICIANS AS INSURERS AND RETAILERS

Perhaps one of the greatest challenges facing healthcare delivery is the view the industry has of itself. There is an exceptionalism argument applied, based on the premise that the industry is different because it saves lives. However, because the FFS model actively rewards the use of services over outcome, resulting in confusion and false equivalency between health consumption and healthcare, the industry's economic imperative has been in favour of the former. That is not to say that physicians do not care about their patients, but rather that they have never needed to focus on cost.

No industry can survive economically if it provides an unaffordable product or service, however vital. Nor can one apply the argument that healthcare should be a societal cost, untainted by commercialism. This is a factual, not political statement, as there is not a single-payer model in the world that has not effectively run out of money, and so is also being forced to adapt to new models requiring higher economic burden on the patient, coupled with increased cost-cutting or savings.

The truth is that operators need to upend the way that healthcare is viewed. It has traditionally been about waiting for demand to occur, and then satisfying that demand through a consumption model. This needs to be rethought and repositioned as a healthcare model, where it becomes about prevention and outcome, reflected in a new economic model. In essence, physicians' practices need to transform from being channel-based to being holistic in their treatment, and their economic models from fixed-cost-variable-revenue to fixed-revenue-variable-cost. The move towards VBC and bundled payments makes such moves imperative.

DOCTORS ACTING AS INSURERS

The greatest shift will be in emphasis and management of practices. The traditional model for a physician's practice has the primary back-office function being revenue-cycle management; dealing with insurance companies or [CMS](#). This involves a pre-approval process from an insurer, treatment, billing and collection. Collection involves trying to ensure full and timely payment by both insurance carrier and the patient, and most times trying to close the gap between Accounts Receivable and collected, all whilst maintaining a positive cash flow.

Under a shared savings or shared-/full-risk model, the function now expands. First with regard to revenue-cycle management, practices need considerably more expertise and oversight. Under a shared-savings/bundled payment system, a [PAP](#) must ensure that the overall cost of the [Episode of Care](#) for which it is responsible matches as closely as possible the amount of the associated bundled payment, preferably less. Whilst there is no downside risk here, every practice will want to maximize its revenue potential, especially as in many instances the bundled payment will equate to less than they would have earned under the old FFS model.

A PAP must now have the expertise at least to monitor and control costs, and to negotiate capitation agreements with other providers such as labs, hospitals and specialists; where these are not already provided as part of the insurer's network. This in turn requires more detailed knowledge and monitoring systems than a traditional practice would have in place. Acquiring such requires more time, and increased cost and training.



The picture becomes considerably more complex with a shared- or full-risk model. Now, practices need to have an infrastructure more akin to that of an insurance company. The cornerstone of this is a practice's Medical Risk Adjustment coder(s) ("MRA"). In simple terms, the MRA is the individual, or team of individuals, that ensures that a patient's healthcare records are correctly coded for the diseases and conditions for which they are being treated. These individuals are found in most practices, although some smaller FFS practices might outsource this task, or give it to a non-certified employee to deal with. In a FFS practice, the risk of miscoding is relatively limited, unless it becomes a systemic issue.

In a shared- or full-risk model, the MRA's job becomes critical. The best illustration of why this is the case can be given by looking at the way a [MA](#) plan deals with risk coding. Each patient is coded only once per year, and this is done de novo every year. Two examples of how this can go awry are worth noting. Assume a patient with an acute renal condition that, whilst not terminal, will require on-going dialysis. Given the costs associated, if this is incorrectly coded, then the [PCP](#) will receive a lower [PMPM](#) payment, and the patient will be highly loss-making for a whole year, until he or she can be recoded the following year. More extreme is the example of an amputee. This condition needs to be coded each year. If this is not done, then to all intents and purposes the limb grows back for the year, and the PMPM will be lower than the previous year.

In addition to the issue of correctly identifying and coding conditions, the practices must have a thorough understanding of their risk pool. Just as with an insurance company, their overall profitability will be dependent upon having a greater number of non- or low-claiming members than they do ones that claim. Because physicians cannot (legally) pick and choose their members under current risk-sharing programs, practices must develop ways to identify members who may potentially become high-risk, and be pro-active in managing their conditions.

As with an insurance company, this requires significant expertise in crunching and analyzing data. For example, if a practice is in an area with a known high-incidence of diabetes, it may undertake certain preventative measures such as higher rates of monitoring, and active engagement with patients regarding lifestyle management. In addition, practices must be actively engaged in growing their pool of Members in order to diversify its risk. Practices will therefore have to improve the makeup and management of their medical and staff functions to encompass the new skill-sets necessary.

STAFFING - NEW ROLES, NEW RESPONSIBILITIES

Historically, the primary suppliers of diagnostic services have been medical doctors. There are two problems with this model under a VBC approach. First, is the fall in the number of available PCP's/diagnosticians, explored more fully below. The second is the cost structure of hiring those physicians who are available. In a cost conscious world, the primary question asked must be whether a service or product can be supplied at the same price, but at a lower cost. The answer is yes. [Nurse Practitioners](#) ("NP") and [Physician's Assistants](#) ("PA") have increasingly become the go-to resource for primary care practices seeking to increase coverage and lower costs. In the period 2012 to 2016, PCP visits fell by 18%, although overall visits were up 14%. The difference is accounted in large part by a 129% increase in visits to NP's and PA's (Healthcare Cost Institute, Oct. 2018 Report). Their key part is that the charge for these visits is almost the same, at \$103 for a NP/PA versus \$106 for a PCP (ibid).

Management of staff will change because doctors are, under the FFS model, largely left to their own devices, because as costs are fixed, doctors' decisions are solely revenue determinant; more visits equal more revenue. Under a VBC model, regardless of whether it is shared-upside or risk-based, doctors' decisions no longer affect solely the revenue line. The role of [Chief Medical Officer](#) ("CMO") becomes even more critical, as this role now encompasses a policing function of everything from what drugs are prescribed, to where patients are sent for further treatment. Doctors become individual P&L centers that must be actively managed. This in turn requires a new type of CMO.



PHYSICIAN SHORTAGE - WILL THE REVOLUTION CLAIM THE VERY PEOPLE IT NEEDS?

The above laundry list of impacts to the business model places a considerable burden on the PAP, which in most instances will also be the PCP, a branch of medicine that is already under considerable pressure. Are PCP's ready to deal with the change, or is this adding an intolerable strain to an already existing crisis in Primary Care?

There is no doubting the issues facing PCP's. Today, fewer than one in five medical school graduates choose a career in Primary Care, down from over 50% in the 1990's (Colin West, Prof., Mayo Clinic), whilst only 30% of physicians currently practice primary care medicine compared to over 70% 50 years ago (ibid). As a result, 13% of Americans live in a county with a PCP shortage (United Healthcare Group, Nov. 2018). The reason for this fall is primarily financial, with 65% of respondents in the previously cited Leavitt survey stating that they had little or no confidence in their practices' financial stability. The second and third most common reasons, tied at 51%, were a lack of confidence in practice management and in technology. Thus the very qualities most necessary for the success of a VBC model are the ones exciting most pessimism in the physicians who must bear the greatest responsibility in the shift.

Ultimately, three types of practice will evolve. The first type will constitute large groups that have expanded horizontally by rolling up independent smaller practices, vertically, to control more of the risk, or both. These groups must in turn possess better and broader management than is currently the case, employing new statistical and analytical tools to measure and control cost and risk. The second will be those who choose to pursue an existence outside insurance either through a cash-based subscription or concierge model. The final type will be those practices that provide services under capitated agreements.

THE BUSINESS MODEL - CAN HOSPITALS SURVIVE?

PAs with physicians, the acute care industry is also facing considerable financial pressures, with profitability impacted by three key factors:

- i. Babyboomers are ageing out of commercial insurance into Medicare, with commensurately lower rates of remuneration;
- ii. Medicaid expansion; and
- iii. Higher deductibles leading to increased bad debt.

Added to this is the continued and systemic pressure on reducing the length of hospital stays, as well as their costs. This is part regulatory, through legislation such as the RUSH-Act (Reducing Unnecessary Senior Hospitalization), and partly through tighter commercial oversight and control. With the move towards [VBC](#), and especially risk sharing, the pressure being applied to reduce hospital stays and costs is becoming intense. The result is continued erosion of margins.

Juniper Advisory recently conducted a survey of 91 independent hospitals with an average of \$437mm in annual sales. Of these, 61% had an operating margin of 3% or below; the average operating margin was -0.8%. The average net income margin was 3.7%, the discrepancy with the operating margin being explained by the rather disturbing fact that, on average, 47% of the net margin was tied to revenue from investment income. In other words, hospitals in this group appear to earn more from investments than from medicine.

Large hospital groups, such as [Baptist](#), are still able to counter the pressure being applied by utilizing dominance in local markets to ensure strength in negotiations with insurance companies. However, insurers are pushing back with the nuclear option of removing some systems from their network, as Humana did with Baptist in Miami, and so there is currently a test of strength underway to determine who, ultimately, has pricing power in acute care.



HOW TO SURVIVE IF NOT THE GORILLA IN THE ROOM

For small to medium-sized hospitals, especially those in rural areas, the picture is much more troubling. They are confirmed price-takers, and need to adapt their underlying business models to rescue their margins. There are a number of ways in which they can do this. The first is to extend the outsourcing model that has been successfully applied to Emergency Medicine. Many hospitals now outsource their ER's to outside companies, who use the premises and facilities of the hospitals, but where liability and operating cost resides with the ER operator. This storefront concept is being applied to other departments too, particularly surgical specialties, where excess capacity is made available to surgical groups. Under this model, hospitals can maximise use of their fixed assets, significantly boosting margins.

The second way hospitals can improve margins is to revisit the concept of acute care. Hospitals have in the past relied almost exclusively on in-patient care as the principle revenue driver. This model is out-dated for many conditions, as treatment protocols and technology have enabled many more acute patients to spend little or no time in hospitals. The more forward-thinking hospital groups, such as [Ascension Health](#), have grasped this and re-oriented their business models accordingly. Having taken a conscious decision to pivot away from the in-patient/admissions model to outpatient and health maintenance, Ascension's revenues from the latter now account for 53% of their total revenues, and income has tripled ([Ascension Health 1QFY19 Financial Results](#)).

Finally, Hospitals can look towards strategies of vertical integration. Hospital groups have already been active in establishing urgent care centers, but they have also been buying up physicians' practices in order to control the pre- and post-care pipeline. The practice of channeling patients through wholly owned physicians' groups is currently being challenged by [CMS](#), which is seeking to level remuneration rates between hospital-owned and independent practices; the American Hospital Association is challenging this in court. In some form, however, vertically integrated care groups are here to stay, and as such, the larger hospital systems will effectively turn themselves into [HMO](#) 2.0 companies. Smaller hospital groups may not have the ability to do this, as they will not have the financial wherewithal, so a multi-tiered structure will develop within acute care in the same way that it is doing for [PCP](#)'s.

ENGAGEMENT - THE PATIENT AS CONSUMER

One of the greatest impacts of the move towards [VBC](#)-based healthcare is the need for individuals to become more actively engaged in the management of their health and lifestyles. Most people view healthcare as something to be consumed when absolutely necessary and, other than worrying about possible future costs, not something to think about in between medical episodes. People are currently only engaged when they or their family become patients.

Doctors have much the same opinion. A popular saw among physicians is that in medicine, unlike other industries, if you do your job properly you will never see your customer again. This, in their view, makes a nonsense of the notion of engendering patient loyalty. It is simply unnecessary, because unless the patient has a long-term condition, they are best viewed as a series of one-off transactions rather than long-standing relationships.

As tenuous as this approach may be under the [FFS](#) model, it is completely inapplicable in the era of VBC-based medicine. If providers are to prosper under a VBC model, then having the patient engaged and invested in the active management of their health becomes critical. The challenge for healthcare providers, though, is not the changing of their own opinions, but rather those of their patients.



CONCEPT - HEALTH CARE VIA BEHAVIOURAL FINANCE / CONSUMER MODELS

In practice, trying to engage with a patient to take preventative action is far more challenging than for something that provides instant gratification. The insurance industry has grappled with this problem for over 350 years, during which time it has managed to develop one single, economic incentive: the no claims bonus. Even as it tries to harness technology to differentiate lower and higher risk practices, rewarding the former with lower premiums, such moves appear to have only limited success in influencing behaviour. There is no question that it is harder to engage on a hypothetical than an actual event; it is akin to having to prove a negative adopting the model of the insurance industry, but rather using the tools of behavioural finance, combined with those of consumerism.

Behavioural finance is a sub-field of behavioural economics, and its relevance here is the basic premise that information structure, coupled with the characteristics of market participants, systematically influences individuals' investment decisions as well as market outcomes; shockingly, it transpires that humans rarely act on logic alone. Knowledge of specific information is therefore insufficient on its own to determine an outcome.

Consumer industries have long been aware of this. People buy goods based in large part on emotional decisions rather than informed ones. Successful brands appeal to how people want to feel about themselves, rather than for the intrinsic value of a product alone. How people feel about themselves is largely determined by interaction with, and participation in a peer group. Retailers, in turn, understand that to generate sales, they must utilize a system of engagement and reward, resulting in a satisfying experience; one that a consumer will want to repeat, and to share with their peer group.

While there is much talk about the consumerization of healthcare, it has to date mostly focused on increased patient choice and power. As such, the typical focus is on the mechanisms that generate increased or repeat custom. However, that largely misses the point that the desired outcome is a change in patient behaviour, not increased consumption. What the healthcare industry needs to adopt is less the traits that drive repeat business, but rather to extract from behavioural finance and the consumer industry what can be applied to changing and influencing underlying belief systems and behaviour. In essence: what information is provided, how it is provided, and how use of both impacts the user, his or her standing in their peer group, and the peer group itself.

A full examination of this topic with regard to Healthcare will be covered in a future paper by this author, drawing on his past work with experiential marketing and branding. However, for the purposes of this paper, only the more basic concepts will be explored. The starting point is to recognize that there is a four-step process to effect a change in behaviour: Engage-Inform- Explain-Reward.

First, *Engage* the target audience. Advertising provides a good analogue for how this works, using the concept of permission marketing. The old model, interruptive marketing, is largely ineffective because among its many drawbacks, it inconveniences the audience, and so potentially creates a negative interaction. Permission marketing creates a perceived value to the audience, which in turn makes that audience more receptive to being informed.

Once engaged, *Inform* the target audience of the desired message, and Explain the benefits of acting on that information. Finally, *Reward* the audience for changing its behaviour by gamification of the experience; in extremely simple terms, utilize a mixture of actual rewards (monetary and/or experiential) and pressure through peer group reporting and ranking.

In healthcare, there are three elements that need to come together to effect the above process: the changing role of the physician, creating multiple points of engagement to create a customer experience, and technology. They are not sequential, but rather they need to be viewed as a single, interdependent whole.



PROVIDERS AS LIFESTYLE PLATFORMS

The shift in emphasis to healthcare away from consumption requires physicians, particularly [PCP's](#), to take an interest in, and oversight of not just single [Episodes of Care](#), but also such aspects of a patient's lifestyle as may prevent conditions from occurring, recurring, or becoming chronic. To do this, they must engage with patients not just when there is an Episode, but also in their day-to-day lives. This in turn requires an ability to see and monitor patient behaviour repeatedly, so that patients can be correctly risk-coded and managed.

Unsurprisingly, most people are less than thrilled when told they must visit their physicians for regular check-ups, or that they are to be monitored more closely. This is at best viewed as highly intrusive; the effective equivalent of [interruptive marketing](#) as described above. The answer is for the PCP model to adopt the concept of permission marketing. PCP practices can do this by transforming themselves from treatment channels into lifestyle platforms.

Transforming PCP practices into platforms that provide more than purely medical services involves creating as many points of engagement as possible. Examples would include offering ancillary services such as holistic treatments (acupuncture, massage, diet), community services such as including [DCF](#) advisory services, and hosting community events. A small number of more progressive and successful PCP companies are already doing some, or all of these things.

The above model can be expanded into transforming the whole patient experience, and changing what it means to visit a medical practice. A good example of this can be found in the banking industry, and [Capital One's introduction of banking cafés](#). Instead of walking into a traditional bank branch, an event that is rarely viewed with pleasure by customers potential or actual, individuals are now treated to an experience more akin to visiting a neighbourhood coffee house. This does not mean that loan officers are suddenly being cross-trained as baristas. The roles of selling and servicing remain separate, but are now conducted against the background of an experience in which the customer is relaxed, and more receptive to being provided banking services.

If medical practices can adopt a platform approach that provides individuals with an inviting and relaxing experience and multiple services, then not only will it transform the process of going for treatment, but it will also provide opportunities for multiple engagements on a frequent basis with individuals willing to listen to and provide information as they visit practices for other than solely medical reasons.

ENGAGING THROUGH TECHNOLOGY

Providing physical locations for multiple points of engagement must be supported by the intelligent use of Healthcare Information Technology ("HIT"). The broader implications for HIT will be explored more fully in the next section. Here, it will be looked at solely with regard to engagement. The most important concept to grasp is that technology works best when it forms a personal connection; it otherwise becomes intrusive. In healthcare, there are two widely held beliefs regarding the use of technology by patients. The first is that those with self-reported, chronic, or on-going conditions are the most likely to track health goals. The second is that the greatest number of these is to be found among the older population, the group least likely to utilize technology.



[Rock Health](#), which has published some outstanding research and data on the use of technology in Healthcare, found that in instances such as the taking of medications or tracking blood pressure, 54% and 63% respectively tracked their goals actively, but only 11% in each case used a healthcare app to do so. This was replicated across multiple conditions, with the only exceptions being weight, diet, and physical activity. The same results can be found when looking at wearable devices, where over 25% of those who own a device cease to use it within a relatively short period of time. One study by AARP found that while seniors admitted that a digital tracker increased their motivation to follow a healthier lifestyle, many participants in the same study discontinued use before its end due to perceived data inaccuracies, challenges with instruction, device malfunction, or simple discomfort.

It is extremely tempting when asking the question of how to engage aged populations with technology simply to give up, and assume that as the younger and more tech-savvy population ages, the problem will solve itself. However, this ignores two simple but important points. First, just because younger people know how to use the technology, it doesn't mean that they will. Secondly, the move to VBC demands that it is the greatest consumers of healthcare today who are brought onto health management platforms the soonest. The second of these is the more urgent, and so we return to engagement.

Capability is not the real issue challenging the use of technology. Older people, for example, do use Facebook, because it helps them keep in touch with family and friends, and they do so using tablets and smartphones. The issue is therefore not inability, but lack of interest and engagement. All individuals are discerning about their time and how they use it, so if they don't perceive a need or a benefit, they will simply not adopt a new technology.

Equally, even if there is a perceived benefit, complexity can be an overwhelming issue. The reason Facebook works is because it is extremely simple to use. It requires minimal training or understanding. The reason Apple products are more popular than Android systems for older people is that, at the outset, they were the easiest to use, with the cleanest and simplest user interfaces. However, ease of use is as important for more tech-savvy, or younger users. A good example here is the "home screen rule" applied to any mobile app. In order to garner use, an app needs to be considered sufficiently beneficial and easy to use to ensure that it resides on a smartphone's homescreen, not out of sight and out of mind. For this reason, the User Interface Experience ("UIX") needs to be radically rethought.

Technology is not the solution, it is but a tool; there must also be committed human interaction. A good example of this can be found with the use of Telemedicine. Rock Health found that 92% of those surveyed that had used telemedicine coupled with a prior in-person visit expressed satisfaction with the service received, versus 53% without such a visit. Technology can certainly inform, explain, and reward, but engagement is best achieved when coupled with live interaction. For [PCP](#)'s to manage health, one of the most important things is to keep the patients checking in. Technology alone cannot solve this.

To engage patients successfully, and to change their behaviour, the business model must be to move from the current standard of a 10-minute appointment focused on treatment. The new model must combine physical interaction with technology into a complete package that focuses on wellness and outcome. It must provide a platform that can engage with the individual, allow staff to gather on-going data, establish and explain the need for a patient to engage with the management of their health, and then to introduce them to the tools that will help them do so. These tools must be behavioural in nature, backed by a technology platform that informs, guides, and validates such behaviour. Engage-Inform-Explain-Reward.



TECHNOLOGY - FROM BURDEN TO BENEFIT

There are broader implications for the use of [HIT](#) beyond patient engagement. As in every other industry, there is a B2B audience in addition to the B2C one. In both instances, though, not only must technology solve an identified need, it must do so in a way that works with users, not against them. In many ways, technology within the healthcare space has failed on both these fronts when it comes to the nuts and bolts of managing healthcare delivery. The reason is because the past has focused on treatment over workflow, with development and investment flowing primarily into the production of devices, both in the form of hardware and software; the latter more commonly referred to as [Software as a Medical Device](#) (“SaMD”).

As with engagement in the section above, the broader issues and trends in healthcare technology will be examined in a later paper. Here, the focus will be on how data gathering and use will need to be adapted to suit the new environment, and how technology can be used to address the rising physician shortage.

THE INESCAPABLE RISE OF DATA

Data forms the basis of any move from health consumption to health care. The key questions are:

1. What is the purpose of the data?
2. What data should be collected?
3. How should it be accessed and analysed?
4. How should it be shared?
5. How should it be kept secure?

Under the [FFS](#) model, data collection and use is largely a passive affair. It is the simple recording of individuals’ key health metrics, and a history of diagnoses and treatments. These are then primarily accessed when a patient next visits a physician in order to be diagnosed and receive treatment. Historically, these data records have been kept on paper records in patient files.

Over the last few years, as a result of regulatory changes, these records have been digitized into Electronic Medical Records (“EMR”) and Electronic Health Records (“EHR”); the former is simply a narrower version focusing on purely medical histories, whereas the latter looks at broader health. So, an EMR might be a single practice’s digital version of a patient’s chart, whilst an EHR would include a record of a patient’s entire Continuum of Care. In many ways, the distinction is similar to that between a Continuum and an Episode of Care, one forms a subset of the other.

With [VBC](#), this data still needs to be collected, but it also serves additional purposes. It must allow a [PAP](#) to assess future risk, possible outcomes, and likely costs. Therefore the type of data that needs to be collected becomes broader. Not only should there be information about an individual, but ideally there should also be data as to that individual’s behaviour, and their determinant socio-economic factors. There also needs to be details about treatment protocols and costs, and variances in these by geographic location and type of vendor.

Because the shift to VBC is ongoing, the primary tool for access remains EMR/EHR’s. However, these are, broadly speaking, not fit for purpose. Most physicians’ groups now have them, but only because they have to. They have been vastly unpopular, and because their design and implementation were rushed, they typically hinder rather than help the physician. Physicians complain that they have made an already difficult administrative burden intolerable, with 7 out of 10 physicians reporting [HIT](#) stress, and 61% specifically citing EMR/EHR’s as hindering efficiency, productivity, and work-flow ^(The Journal of the American Medical Association). The problem has become so bad that the Department of Health and Human Services (“HHS”) published a draft report in November of 2018 to try and improve the situation.



The problem is that as with many technology products, EMR/EHR's are the result of engineers designing for engineers. A lot of systems tout flexibility and customization, but this proves hard to do in practice, usually requiring large amounts of time and a skilled IT staff. There is a disconnect in description between what physicians need/want, and what IT programmers understand and implement; and that's when physicians can be bothered to sit down and explain. In most instances these systems actively obstruct physician work-flow rather than compliment or improve it.

Clearly the method for storing and accessing data will need to change, but so too will the analyzing of it. EMR/EHR's are much like social media marketing plans. All companies know they need one, but few really spend much time determining exactly what they want out of it, and how to achieve that goal. Because the existing data platforms were largely designed for passive access, they are ill suited for the implementation of algorithmically –based predictive modeling and analysis. New data management systems will need to be designed that can access data from multiple sources, and use this to provide forward-looking solutions for physicians in the management of their patients' healthcare.

Interoperability of systems and the sharing of data is a high priority for Healthcare CIO's, but there is little cooperation from EMR/EHR companies. Given all the presentations and papers written on the need for interoperability, and the fact that it is technologically not difficult to achieve, the question must be why it is proving to be so difficult to bring about. The cynical interpretation is because there is too much vested interest in keeping the system the way it is now. Closed eco-systems become easier to own and manage if you are the system provider. Equally, there is a lucrative consulting industry in engineering workarounds and practices. A simple fix may be operationally attractive, but it is not economically so for the technology industry as a whole. Regulatory change will eventually force the issue, but for now it remains a largely intractable problem.

Security of data is fundamental not only to the current information model, but is even more so in a new, more data intensive environment. As a result, 87% of Healthcare CIO's report that they intend to increase expenditure in this area ^(Center for Commercial Medicine). There are already extremely strict regulations governing the collection, storing, and sharing of patient data under the Health Insurance Portability and Accountability Act ("HIPAA"). Concerns over data security breaches generally, and of HIPAA specifically are driving CIO's to invest more in private storage solutions, with 80% planning to keep data in bricks and mortar warehouses or hybrid/private cloud storage, and only 10% planning to use public cloud storage ^(ibid).

At all levels, the gathering and use of data will be fundamentally altered with the increasing dominance of VBC. It will require significant amounts of new investment, and a wholesale rethink in system design and interface. It must be made to integrate smoothly into physicians' work-flow, and provide them with an intuitive and forward-looking tool to manage risk, and so economic return.

CAN TECHNOLOGY SOLVE PHYSICIAN SHORTAGE?

The single most critical factor facing [VBC](#) medicine is the [shortage of practitioners](#) due to the issues discussed in the previous sections. The issue is two-fold: lack of actual physician numbers, and lack of easy-access to practices. For the former, the short-term solution, [already touched on](#), will be to increase the use of [NP's](#) and [PA's](#). In the longer term, technology will need to provide the answer. This will come in the form of increased use of Artificial Intelligence ("AI") in diagnostics. While neither Machine Learning nor AI are yet at a sufficiently advanced stage to provide standalone medical advice, this must be the future.

However, the future is not as far away as may be thought. Japan, already at the forefront of robotics, is using AI powered Carebots to treat elderly and incapacitated patients. This involves not just the physical manhandling of patients, but also an ability to infer, diagnose, and treat a simple set of problems. Much development remains, but it is an area that will experience explosive growth in the medium term.



Remote access to healthcare is another key opportunity. Telehealth, which ranges from video-visits to remote robotic surgery, is still in its infancy; only 15.4% of physicians used it in 2016; mostly for physician-to-physician consultation work. According to [CMS](#), just 0.25% of 35mm Medicare enrollees used telehealth in 2016, whilst a 1% increase would increase telehealth 13-fold. The issue here, however, is not technological challenges, but CMS re-imburement. CMS has recognised the issue, and as of October of 2018, is planning to loosen some of the restrictions it applies, as well as to increase re-imburement rates.

OPPORTUNITIES - INVESTING IN THE REVOLUTION

As can be seen from the sections above, the shift from consumption to care, and from [FFS](#) to [VBC](#), will present significant challenges and expenditures. Precisely because of this, the investment and operational opportunities are significant. However, investor success will be determined by correctly identifying key trends and characteristics. This section will examine what investors should look for in three areas: Healthcare delivery models, patient engagement, and technology.

HEALTHCARE DELIVERY MODELS - ROLL UP OR GO NICHE

In non-acute care, success can only come from transformation into health care and [lifestyle platforms](#). Typical objections are to do with time and cost, and it is certainly true that smaller practices will struggle to make the changes necessary. This means that consolidation will continue, and that Mergers & Acquisitions will become very important driver of the future. Deals will either need to be horizontal, to increase the size of patient pools and optimize resource, or vertical to own and control more of the risk chain. For investors, this means targeting larger entities with clear [VBC](#)-based strategies, and the financial resource and infrastructure to implement these, or themselves engaging in a roll-up strategy with an eventual industry-based exit. Given the success of the platform model, and the financial requirements, this will be an area of on-going opportunity.

An alternative is for investors to avoid the issue of VBC entirely, and invest in a cash-based subscription model. Concierge-only practices are already prevalent, and will continue to grow. It is an attractive model as the “client” is price-insensitive, and cash flow is highly predictable with limited risk; there is always a [FFS](#) element in the contract. However, there are also attractive subscription-based opportunities outside of the pure concierge model. Hybrid models, such as [OneMedical](#), provide a combination of the VBC health and lifestyle platform with a subscription-based membership. Its success and rapid growth prove that there is a customer base willing to pay in order to receive the ancillary benefits, thereby ameliorating the high investment cost associated with a platform model.

A third model, retail and urgent care clinics, is also experiencing explosive growth, experiencing a 214% increase in investment over the period 2005 to 2015. This model of healthcare delivery is filling the void created by the paucity of primary care, and the economically impossible option of using hospital ER's as substitute [PCP](#)'s. For investors, the attraction is two-fold. First, this model benefits from its active promotion by payers as a lower cost option than ER use, and secondly, they are extremely attractive targets in the on-going vertical integration underway.

Despite, or perhaps because of their [financial distress](#), small to medium-sized hospitals also provide interesting opportunities. The focus here needs to be on the move to a [platform model for larger entities, and to a storefront model for smaller](#). Most importantly, the ability to change the revenue model from inpatient/admission to outpatient/health management presents the greatest opportunity for significant uplift in revenues and profitability. Ancillary to this is developing the ability to provide home care and care management services, either organically or through acquisition.



The changes in the underlying models will also prove a boon to areas that service the healthcare providers; investing in the “picks and shovels” of healthcare delivery. So staffing agencies, permanent and temporary, will continue to see enormous demand, and investment in entities that focus on [NP](#) and [PA](#) placement, as well as specialized support staff such as [MRA](#)'s, finance, and risk will continue to show significant returns.

Outsourcing of key functions will also be an area of investment opportunity. As discussed in the previous sections, one of the greatest challenges facing smaller- and medium-sized groups is identifying and attracting the necessary talent to manage the new [risk profiles](#). This opens space for entities that can take on the analytical and processing burden of risk pools, from raw data to coding. These could be built de novo, or grafted onto existing MRA outsourcing companies by pursuing a build and buy strategy.

Higher fixed costs associated with VBC will also increase the need for efficient resource and financial management. In the former category, new companies such as [Allevion](#), which offers a platform for comparing and securing peer-reviewed surgery for patients, and surgery capacity matching for physicians and hospitals, is a good template for this kind of business model.

PATIENT ENGAGEMENT

Companies that provide patient empowerment and wellness dominate investment in patient engagement. These have also been the principal recipients of start-up investment over the last few years, and break into three groups: those focusing on content, but which use third party gathering/delivery platforms; those that combine ownership of data and platform; and those that manufacture the platform alone. There are relatively few companies that have generated sustained success, and those that have largely follow the process explained previously in the [Engagement section](#): Engage-Inform-Explain-Reward. Furthermore, the economic model they pursue is tailored to the perceived benefit and need of the target consumer. This is in principle no different from the equation for success in any consumer-facing business, but it does not always appear to be followed in healthcare. The three categories are further explored below.

BANKING ON CONTENT

In the pure content category, there is a clear split between health and wellness. [As discussed in the previous section on engagement](#), pure health has not been as successful to date when left entirely to the patient. Typically, patients will use social media and Internet based services such as WebMD to check particular symptoms only when they are addressing a specific episode. Even when patients have conditions that require ongoing monitoring or management, they tend not to use apps or services to do so.

For investors or operators in the health space, this means focusing either on opportunities that appear to solve the [UIX](#)/engagement issue, or on companies that provide services in combination with physician visits. [CheckedUp](#) is one example of a number of companies that provide health and lifestyle content that they produce or obtain from healthcare companies, and then display on dedicated screens in physicians' practices. Their success is based upon the fact that they touch the user at the time and location they are most interested in learning about their condition. Patients arrive engaged and at their most receptive to being informed. It is the essence of the permission-marketing approach previously described.



In the lifestyle space there are several companies that provide apps helping inform and monitor food, exercise, and general wellness habits of individuals. Examples would include Scelta, Cyclemeter, and [Bodysite](#). While these types of app do well with regard to ongoing use, it is also an area attracting significant investment and start-up activity, so competition will be intense. This is a therefore a higher risk area for investors and operators, despite the demand. Areas to focus on would be integrity of data, site and service comparisons, and gamification strategies.

HARDWARE AND HYBRID CONTENT /HARDWARE PROVIDERS - PLATFORMS WIN

Companies that utilise a hardware or a hybrid hardware/software approach have to date also had a mixed degree of success; not included here are pure medical devices such as blood pressure or diabetes monitors. Here the focus has been largely on wearables, and [as already discussed](#), the drop off in use after an initial post-purchase period is relatively high. Equally, as cited above, this counter-intuitively appears to be more the case with wearables that monitor health conditions than those that monitor lifestyle.

The real opportunity here lies with companies that can create a platform around their product. The clear winner in this category to date has been Peloton, which has positioned itself as a combination of the Facebook and YouTube of fitness, anchored in a subscription model tied to its own equipment. It has expanded rapidly, and secured \$500mm in its latest financing round. The lesson for other companies entering or already in the space is clear: any product offering that stands in isolation is unlikely to reward the investment necessary to create the hardware.

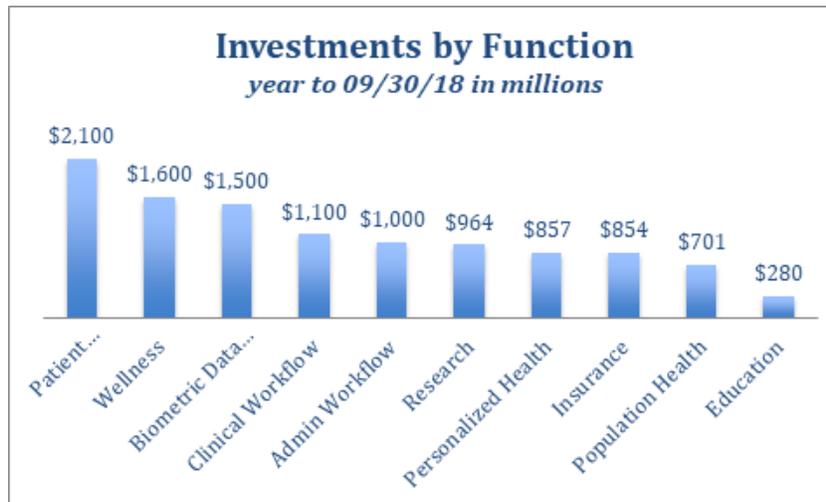
The Peloton model also illustrates the opportunity to be found in products that have a robust gamification strategy. Peloton does not offer a rewards system, but rather relies on peer pressure to motivate. Using a combination of live and archived classes, the ability to create user groups and followers, and with rankings and (limited) in-session communication between riders, users become engaged and motivated by being part of a community, and a desire to succeed within it. These are elements that investors and operators must look for when reviewing any opportunity.

The use of social media as part of any health management platform will be critical, but beyond this we should ask the question of whether a completely immersive healthcare platform could be built. Something where the healthcare platform forms the nexus of everyday life? Larger players such as Amazon and Alphabet are obvious candidates to succeed in this area, especially when coupled with their in-home voice-activated technology; Amazon has already patented an Alexa skill that can use voice stress to analyse possible health issues.

The key for companies to succeed will be to offer services or smart-gadgets, with clean and simple UIX's, that are highly customizable, and require little input or expertise on the part of the user; this will hold true regardless of a user's age. Investors can choose to invest in companies that match this profile, or in entities that provide the components necessary to achieve this. This will range from companies that either scrub or provide clean data, to those that design and manage gamification strategies. Given the high attrition rate of end-providers, it may once again prove more effective for investors to pursue a picks-and-shovels strategy, investing in those that service or provide the component pieces that the end providers need.

TECHNOLOGY - MANY OPPORTUNITIES, MANY RISKS

While patient engagement has been the greatest target for investment to date, there is opportunity to be found in the somewhat less glamorous areas of data use by physicians, work flow and productivity improvement, as well as for remote and non-physician solutions for diagnosis and treatment.



Source: NuVista

Chart 3: Total of Seed, Venture, Corporate Venture and Private Equity funding by function

As can be seen from the chart above, data acquisition, together with clinical and administrative workflow solutions attracted as much investment in 2018 as patient engagement. While there is no lack of opportunity to invest, it will be important to avoid the mistakes made by the first generation of products in these areas. Companies in this area will only succeed if they are able to engage physicians in the process. Traditionally Silicon Valley has relied on interviews with physicians, coupled with observation in the work environment. However, as it is engineers and designers that do this, they typically fail to grasp precisely what it is physicians need, and how they interface with the technology.

DATA PLATFORMS 2.0 - MORE THAN A NECESSARY EVIL

Technology companies that succeed in providing management tools for physicians will be those that turn them into platforms that aid decision-making. Products are currently largely passive in use, and at best neutral with regard to workload burden; the best ones only match the workload of transcription-based record keeping. In essence, they have simply replaced the method of storage and access of patient data, and in the process have not improved the method by which the data is gathered or recorded into the databases. Added to this is the incompatibility of several of the major system providers, resulting in lack of portability of patient data from one physician to another, unless both use the same system.



In a [FFS](#) environment, this level of functionality is perhaps acceptable. In a [VBC](#) environment, physicians need more guidance. [CMO](#)'s of [PAP](#)'s, in particular, need tools that not only give them oversight of what is going on in the group for which they are responsible, but also help them navigate interaction with all the providers in an [Episode of Care](#) for which they are responsible; especially where care is taking place outside the PAP. This means that they need systems that can provide a full picture of a patient's [Continuum of Care](#).

Opportunities therefore exist for companies that in the first instance can automate the process of data gathering and entry; either through integration with medical devices, or by making the process voice controlled. Secondly, companies that can make the accessing and processing of data into a decision-making tool, not just record keeping, will see demand as more physicians are eventually forced into becoming VBC practices. This ranges from the simple use of prompts to ensure that all necessary steps in a visit have been followed, to compliance, and treatment options. Finally, companies that either produce open systems, or who are able to provide a bridge between incompatible systems, will also see success.

DATA GATHERING AND MANAGEMENT - UNGLAMOROUS BUT MISSION CRITICAL

Data companies will provide significant investment opportunities, as the sourcing of relevant health data at an industry level will become imperative for analytics. The rise of the [Internet of Medical Things](#) ("IoMT") is driving device integration, and successful companies will be those that can combine multiple data gathering opportunities with a high degree of data integrity. This will either be in the form of companies that combine measurement devices with provider data systems, or those that provide bridging tools for previously incompatible devices and systems. The cleaning of data will be a cornerstone of any provider system, as there is much duplication of data, as well as basic integrity issues when accessing data from multiple sources. Finally, modelling and analysing data at a practice or group level will be necessary to turn raw data into something that can support both diagnostics and risk management. In a part- or full-risk practice, the need for this is obvious, but even a shared savings environment will benefit from these types of tool.

Understanding outcomes is both knowledge and data based. An ability to determine best courses of treatment with statistical probability of outcome would be an invaluable support tool for any practice seeking to improve decision-making and workflow to maximise profitability. Ideally, this type of product would be integrated into the patient data systems to create an integrated platform, but in the short term most investment opportunities will lie in companies that provide standalone products or services that provide any of the above elements.

DATA SECURITY - HIGHEST SPEND AREA FOR HEALTHCARE CIO'S

An important element of data management is its security. Currently, the primary focus for security is on improved physical or hybrid storage, [as discussed above](#). There are, however, high hopes with regard to blockchain as a solution. A fuller discussion of the merits and challenges of blockchain is reserved for a later paper. For the present, it is hard to recommend blockchain-based companies to investors due to one important factor: numbers of users. Blockchain based networks become more robust and usable the greater the number of users.

There are a number of companies whose primary offering is security or interoperability anchored in a blockchain solution, but all will struggle with the classic chicken and egg conundrum: they can only be successful by offering a large user base, which is extremely difficult if they are new. An example is [Open Health Network](#). The actual product and methodology they propose is quite intriguing, as is their niche; matching health research groups with willing test subjects. However, to be of any use, they need to reach a critical mass of users in a very short time. Their solution is effectively to buy them using cash and rewards as incentives to upload personal health data. Investors in app companies will know the perils of a business model that relies on buying its users, however good the actual product.



The solution for investors who wish to gain exposure to blockchain companies in the healthcare space should therefore focus on those that provide tools or systems to other companies that already own sufficient data to make a migration to blockchain worthwhile. Obvious candidate clients for such companies are large insurance companies or government health entities.

ADDRESSING PHYSICIAN SHORTAGE - GREATEST POTENTIAL, BUT IN THE FUTURE

While Artificial Intelligence (“AI”) offers great longer-term opportunities for solving the [PCP shortage](#), investors today have a limited opportunity to see a return in a reasonable timeframe. For now, AI investments are best made through patient lifestyle apps that utilise it, or Machine Learning, for providing individualised solutions to users; although AI powered healthcare “concierges” would be an interesting idea. On the provider side, companies that use Machine Learning and AI tools in the improvement of workflow and risk analysis or management should be a focus. A final possibility is companies that provide AI tools for research purposes.

The primary investible technology today for addressing the shortage of physicians is Telehealth. Factors that will determine success will depend upon the target market. For patient-facing products, ease of use and, as appropriate, the size of the physician network using the service will be determinant. For both patient and physician, the ability for a service to integrate with diagnostic tools will make it considerably more convenient and attractive. For physicians, ease of use and access to information will be key. Whatever the target market, the ultimate key to success will rest on an ability rapidly to generate a large user base. Functionality will simply be the price of entry, platform dominance will be key, and that means pursuing a strategy that is able either to acquire users rapidly, or to ally with large insurance, hospital, or physician groups.

[HIT](#) represents the easiest access for investors to tap into the changes being forced by VBC. However, as with technology investment generally, there needs to be a clear-eyed understanding of the risks for failure, as much as of the traits that will determine success. Rather than a focus on moonshot solutions, investors will be better served focusing on the more mundane factors that determine success in any industry: a clearly identified and defined customer with a specific and mission critical need, a fundamentally flawed approach by much of the competition, and a focus on the nuts and bolts of the industry. Whether patient or physician facing, technology must be simple to use, and non-intrusive into the work- or life-flow of the user. It must put data at the core of what it does, and make the use and understanding of the data as intuitive as possible, with a minimum need for external, manual input. Finally, it must have the ability rapidly to create a dominant platform. Companies that match this profile will likely succeed in providing a return for what in all cases will be significant requirements for capital.



CONCLUSION

The destruction of the FFS model and the fundamental re-writing of the economic rules governing healthcare delivery present to the investor one of the most significant investment opportunities today. It will bring about the wholesale restructuring of the industry, creating clear winners and losers. The investor will be able to choose between investing either directly in providers, or instead participate through companies that will provide them with critical products and services. If they choose providers, the increasing M&A activity in the industry will mean that investors will need to decide if they wish to pursue a passive strategy of investment in dominant players, or an active strategy of creating and pursuing roll-ups.

In all instances, whether provider or service companies, investors must focus on a core discipline that includes at least the following:

1. They must avoid companies with static business models;
2. They must only invest in companies with clear strategic vision, and with the finances, or access to finance, to invest in the necessary infrastructure to execute that vision;
3. If those companies are providers, they must have a thorough understanding of, and an ability to manage risk;
4. Whether patient or provider facing, companies must be able to engage with their customers, and become integrated into either their workflow or their lifestyle;
5. In almost all cases, a platform approach will be the key to establishing dominance of a sector or a niche.

In order to succeed, investors will also need to adopt many of the above principles into their own strategies.



GLOSSARY

ACA:	The Affordable Care Act, also know as “Obamacare”
ACO:	Accountable Care Organization. An organization principally accountable for the management and risk associated with patient care.
APM:	Alternative Payment Methods. The collective term for all forms of payment other than Fee-For-Service, typically involving some element of savings or risk sharing. For a fuller discussion, click here .
Bundled Payment:	A single payment intended to cover the full cost of a predetermined set of treatments and care for a predefined condition.
Capitation:	A method whereby costs for a specific medical service are capped at a certain, pre-agreed amount.
CMO:	Chief Medical Officer. The physician within a practice or organization responsible for setting and managing treatment protocols.
CMS:	The Centers for Medicare & Medicaid Services
Continuum of Care:	The patient’s transitions of care along the care journey.
DCF:	Department of Children and Families
EHR:	Electronic Health Records. A record of a patient’s entire Continuum of Care.
EMR:	Electronic Medical Record. The digitized version of a patient’s individual chart.
Episode of Care:	An Episode describes a defined set of services provided to treat a clinical condition or procedure.
FFS:	Fee-For-Service. The payment model whereby all medical services provided to the patient are unbundled and charged separately. Essentially the polar opposite of Episode of Care.
HHS:	The Department of Health and Human Services
HIPAA:	Health Insurance Portability and Accountability Act. The principal legislation that governs the collection, ' storage, management, and sharing of patient data.
HIT:	Healthcare Information Technology. A collective term for all hardware, software, and technology services to have to do with healthcare.



GLOSSARY CONTINUED

HMO:	Health Maintenance Organization. A network of providers that members of an HMO plan may use. Members typically not see providers outside of the network, and may typically not self-refer to specialists.
IoMT:	The Internet of Medical Things. A collective term to describe interconnectivity of devices and services by means of communication over the Internet.
MA:	Medicare Advantage. An HMO type product sponsored by CMS or Medicare-qualified individuals, that typically offers members the benefits of lower co-pay and ancillary health benefits.
MRA:	Medical Risk Adjustor. An individual tasked with identifying and charting the correct risk codes for a patient's treatment, and ensuring that the correct remuneration is accordingly received.
MSSP:	Medicare Shared Savings Program. A program whereby participating providers are able to share in any savings that they achieve in the cost of treatment for pre-determined medical conditions with predefined costs.
NP:	Nurse Practitioner. An advanced practice registered nurse classified as a mid-level practitioner able to assess patient needs, order and interpret diagnostic tests, prescribe medication, and formulate treatment options.
PA:	Physician's Assistant. A professional who practises medicine under a supervising physician.
PAP:	Principal Accountable Provider. A similar concept to the ACO, this is an individual, practice, or institution responsible for the management and cost of an Episode of Care.
PCP:	Primary Care Physician. A physician who provides both the first contact for a person with an undiagnosed health concern, as well as continuing care of varied medical conditions.
PMPM:	Per Member Per Month. The monthly risk-adjusted payment received by the ACO/PAP from the payer (typically CMS), out of which the whole of a member's medical and healthcare costs must be paid.
SaMD:	Software as a Medical Device. Software which on its own is classified by the FDA as a medical device. This is software intended to be used for one or more medical purposes that perform these services without being part of a hardware device. An example would be software that allows MRI images to be viewed and interpreted on a mobile device.
UIX:	User Interface Experience.
VBC:	Value Based Care. The method by which treatments and remuneration of identified medical conditions are outcome rather than consumption based. Instead of unbundling the constituent treatments for a medical condition and charging them separately as with a FFS model, they will instead be bundled into predefined Episodes of Care, with associated Bundled Payments.

