

Considering Healthcare Economics When Pitching to Potential Investors

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When an entrepreneur or inventor pitch their healthcare innovation to investors, they need to clearly address how their innovation stands up to underlying economics. The healthcare ecosystem is driven by a number of forces that affect the supply and demand of healthcare innovation and these forces differ across international borders. The behaviour of the primary players within any healthcare ecosystem (Patient, Patient Advocate, Clinician, Medical Service Delivery Business, Healthcare Innovation Business, Independent Inventor/Entrepreneur, Government Agency / Foundation, Academic Researcher / Technology Transfer Office, Payer and Regulator) is driven by the economic system in place. When selling a healthcare innovation, factors such as the economic incentives driving adoption, need to be clearly addressed. This article discusses how to position a healthcare innovation with respect to the underlying economics.

Understanding the Incentive System

For any healthcare innovation to be successful, the key players will need clear incentives to drive its adoption. At Scarce Insights we focus on the ten key players within most healthcare ecosystems; Patients, Patient Advocates, Clinician, Medical Service Delivery Businesses, Healthcare Innovation Businesses, Independent Inventors/Entrepreneurs, Government Agencies, Academic Researchers / Technology Transfer Offices, Payers and Regulators. Each of these players are driven by a set of economic incentives that will drive their behavior when presented with healthcare innovations.

It is important for the healthcare innovator to understand the economic incentives in place for the segments being targeted. The targeted segment will define which geographies and which players have priority.

As an example, let us choose the United States as a targeted geography, and with an innovation that will be a low cost medical device to diagnose lung cancer at a very early stage, targeted for use in primary care for screening patients whose life style and family history put them in a higher risk category for getting lung cancer.

In this case we can establish the primary benefits are improved clinical outcomes since the lung cancer can be diagnosed earlier for most patients than before, and thus enabling treatment to occur before metastasis has occurred.

We can also define a major benefit as a reduction in the overall cost of healthcare by avoiding the need for expensive treatments and hospital stays of advanced lung cancer patients.

We can now determine what will drive the adoption of this new device by aligning the benefits we offer with the incentives that various players have to decide what to choose to adopt. For the owner of a primary care practice (a medical service delivery business) there would be an economic incentive to purchase such a device for use by its clinicians if the payers of healthcare would reimburse them accordingly.

So now we raise the question of who will be the payer. There is strong economic incentive for a patient to pay for the screen himself or herself if they believe they are at risk of lung cancer. The personal economic impact of the cancer metastasizing would be devastating. There is a potential incentive for private healthcare insurers and the Centers for Medicaid and Medicare Services (CMS) to drive the adoption of this screen through a reimbursement scheme. The cost to them of paying for advanced cancer treatments is very high, but this would need to be weighed against the cost of implementing a screening program.

So with this example we can see some of how we can determine where the economic incentives lie, and point to an analysis to determine the economics that would drive adoption or not. We would of course need to look at the

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incentives related to the impacted ecosystem players previously identified.

Counter-Productive Incentives

There are a number of incidences in real healthcare incentive systems driving decision-making that is counter-productive to the overall system. One example is when clinicians are reimbursed by payers based on the amount of time they spend with their patients - a pay for service model. This creates an economic incentive to avoid innovation that prevents patients from needing to see the clinician. When clinicians are incentivized based on the quantity of care they provide, then adopting innovation that improves quality of care resulting in lower quantity is not viable in economic terms. Having said that, there is some counter-balance in a system that is operating over capacity. However, there are several examples where systems introduce counter-productive behaviors because of the incentive system. An example is how medical device manufacturers maintain proprietary inter-device communications. Because they are not incentivized sufficiently to have a common set of protocols, we see hospital rooms where major pieces of diagnosis and treatment equipment cannot communicate to each other and have a negative effect on clinical outcomes.

Performance Measurement drives Economics

There are a number of ways to measure the success of a healthcare system. Understanding this system for your target markets is critical. An example of how the performance of healthcare is measured is captured across the following three high level factors:

1. **Improving Clinical Outcomes.** This is all about diagnosing health problems as early as possible and thus allowing intervention with a treatment as early and effectively as possible. The principle here being one of “left-shift”. In general, the earlier you can diagnose a problem, then you have a better chance to fix it. Also, as problems persist, they become more costly to resolve. A caveat here is that it is only worth investing in earlier diagnosis if there is a treatment option available.
2. **Improving Access to Healthcare.** This is about providing increasingly higher quality healthcare to an increasing proportion of a population. The balance here is to make more clinically effective, and yet more cost-effective healthcare available to people who previously had no or less effective access.
3. **Prevention of Health Problems.** The focus of a prevention program is to generate healthy

environments where the behavior of individuals is optimized for their personal health, and/or the health of the people they interact with, and thus avoids having health problems in the first place. This then reduces the cost of healthcare.

There is a clear role for innovation to enhance our performance across all of these factors. These include devices that can diagnose healthcare problems earlier. Therapeutic devices, Treatment Procedures or Pharmaceuticals that can reduce the problems or even cure health issues. Living and Working Environmental Materials and Designs, Healthy Living Behavioral systems, Infection Control Methods and Materials, Nutritional Innovations, Fitness Equipment etc. that can help prevent health problems occurring.

Intimate familiarity with the way that success in healthcare is measured in targeted markets is something that innovators must acquire. These are critical factors that will drive the economics since they will typically define how the various players will be rewarded or penalized. Clarity of the mechanics of the measurement system in which you operate will help align the value proposition of your innovation with how decision-making players choose where to invest. There are cases where a great medical innovation has been created, and yet not adopted because they did not align with the economics. A frequent example is when an innovation has not considered the economic impact facing a clinician when a new innovation exposes them to greater liability risk. A focus on clearly defining the Marginal Benefit and the Marginal Cost to the ten ecosystem players will yield a strong basis for predicting adoption rates.

The ACO

One cannot discuss healthcare economics in the USA without understanding how the Accountable Care Organization (ACO) experiment has progressed as a result of the Patient Protection and Affordable Care Act of 2010 (PPACA). An ACO is a healthcare organization characterized by a payment and care delivery model that seeks to tie provider reimbursements to quality metrics and reductions in the total cost of care for an assigned population of patients. A group of coordinated health care providers forms an ACO, which then provides care to a group of patients. The ACO may use a range of payment models (capitation, fee-for-service with asymmetric or symmetric shared savings, etc.). The ACO is accountable to the patients and the third-party payer for the quality, appropriateness and efficiency of the health care provided. According to the CMS, an ACO is "an organization of health care providers that agrees to be accountable for the quality, cost, and overall care of Medicare beneficiaries who are enrolled in the traditional fee-for-service program who are assigned to it."^[ACO1]

The Patient Protection and Affordable Care Act of 2010 (PPACA) describes ACOs as provider groups that accept responsibility for the cost and quality of care delivered to a specific population of patients cared for by the groups' participating clinicians. The legislative intent is that these groups will have an incentive to invest in infrastructure and redesigned care for high quality, efficient delivery of services.

year 2 results from the first group of ACO pioneers showed a total savings of over \$96mm and at the same time qualified for PMMS payments of \$68mm. They also saved the Medicare Trust Fund approximately \$41mm. In terms of the quality of care provided, all of the participating ACO's scored an improved 71.8% to 85.2% mean quality rating.

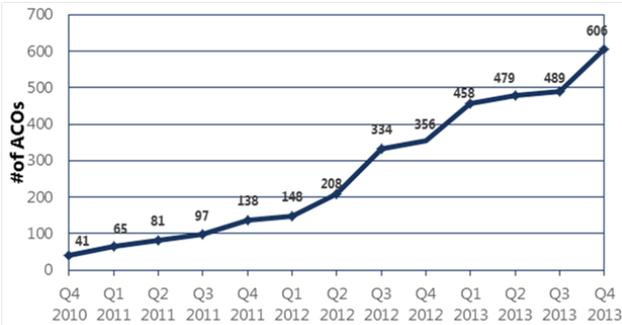


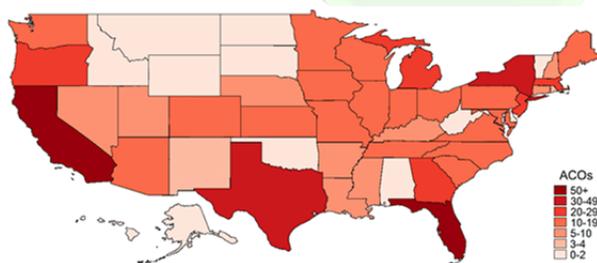
Figure 1 – Steady Growth in ACO's

There are a number of pilots underway for ACO in many states. For the April 1st 2010 startup of ACO's, the CMS designated 27 healthcare entities in 18 states as the first Medicare Shared Services Program (MSSP) accountable care organizations. A number of rounds of participants have been announced since, for example, for the fourth round announcement in December 2013, the CMS named 123 new ACO's. The very latest CMS announcement identifies a list of 89 more MSSP participants effective January 1st 2015. There has been steady growth as shown in the chart in Figure 1 of Total Accountable Care Organizations - sourced from Leavitt Partners Center for Accountable Care Intelligence. This growth is spread nationwide with over 5 million lives covered after the fourth round announcement. The chart in Figure 2, again from the Leavitt Partners Center for Accountable Care Intelligence, shows the number of ACO's across the United States.

The message for innovators, is that they would be very wise to become familiar with how ACO's are incentivized and rewarded. They have a well-defined but evolving set of quality of care metrics they must adhere to, and they are incentivized with a specific set of reward criteria. When pitching an innovation to investors, having a clear link to how an ACO would be compelled to adopt your innovation based on the economic system are under will be very well received.

Economic Drivers for Disruptive Innovation

As well as understanding the existing economics driving healthcare in your target markets, it is also worth understanding how the existing system fares with respect to a more macro view, and with respect to how supply and demand curves are trending over time. For example, the USA is approaching spending 20% of its Gross Domestic Product (GDP) on healthcare. Demand for healthcare is trending upwards with effects such as an aging population demanding more healthcare, and supply is restricted with a growing shortage of physicians. The existing systems in place are clearly exceeding the budget available to deliver the expected level of care, and demand is accelerating away from the supply of qualified clinicians.



As of October 2014, the initial results published from the

Figure 2 - Number of ACO's in various States

pioneers of ACO's have shown mixed results. However, in a report from the CMS [CMS1] from November 2014, the overall

While these issues threaten the overall economic success of the USA, they also provide a clear set of imperatives for healthcare innovators. The window is open for innovators to disrupt the existing unsustainable system, with game-changing innovation. A complex and unaffordable system means that necessity now truly becomes the mother of invention. For example, innovations that allow less skilled medical staff to perform services at least as well as their more skilled colleagues will help address supply issues. Innovations that are targeted to allow for more efficient and high quality of care to be delivered to the older demographic will see a high level of demand. As we look at how other industries have coped with growing demand and transformed their supply chain we see that the following forces need to drive healthcare transformation [JMS¹]: Decentralization, Democratization, Automation and Personalization.

In many cases it is the incentive systems that are the barriers to the type of changes we need to see to overcome the growing supply and demand imbalance. For example, current reimbursement systems are heavily biased towards rewarding

clinicians for in-person consultations over remote consultations. This, combined with severe restrictions in the sharing of patient medical records caused by the Health Insurance Portability and Accountability Act (HIPAA) and the inability of clinicians to practice across state lines, means that remote medical encounters are de-incentivized, and yet could provide a means to improve the supply of clinical services as well as reduce the cost of healthcare.

When pitching for investment, if you can show how your innovation can have a disruptive effect in relation to driving a new set of economics, then do so in relation to the above factors with clarity on your assumptions and dependencies. However, a great healthcare innovation that is incompatible with the existing economics will not be readily adopted. Nevertheless, laws and regulations change and innovation that provides a clear path to implement improved incentives provide a force for change and can translate into significant competitive advantages related to being first to market.

Economics of Single-Payer Systems

A single-payer healthcare system describes the funding mechanism for healthcare within a geographic region. An example of a single-payer system is a devolved implementation across various regions within the United Kingdom (UK). The system in England is the National Health Service (NHS) and is the oldest single-payer healthcare system in the world. Within this system there is a focus on providing maximum access to healthcare, and indeed all legal residents of the UK have access to care services that are free at the point of care. Even visitors have free access to areas such as an emergency care.

When trying to introduce healthcare innovation into such systems, the underlying economics need to be understood. At the point of care the decision to provide care is determined by clinical need and not the ability for a patient to pay. In the case of the UK the payer is the central government, funded by taxation. With an annual budget of over \$150bn there is a structure of government bodies who decide on what care to provide along with guidance for clinicians and patients.

A very important government body we will discuss here is the National Institute for Health and Care Excellence (NICE). The NICE has an important function in driving how healthcare economics work in the UK. The NICE conducts assessments of healthcare technologies and pharmaceuticals, taking into account both the effect on clinical outcomes and the economics, thus trading-off clinical outcomes with economic value. The NICE recommends on adoption of new healthcare technologies and treatments based on a cost-effectiveness approach. A fundamental system used to

achieve this is the Quality-adjusted Life Year (QALY) and a variant called the Disability-adjusted Life Year (DALY). A monetary amount of 1 QALY is set as the threshold amount a new healthcare option should achieve. This is set as approximately £30,000. Although only a guideline since there are several complications that make a strict QALY-based spending approval system impractical, this provides a clear target for innovators to achieve when wanting their innovation accepted into the NHS.

The idea of assigning a monetary amount to a QALY has been historically unthinkable from a political perspective in the USA. Placing a numeric number on the value of life is not something the USA been ready for to date. Yet with the need to control healthcare spending in order to provide better access to healthcare, the adoption of a means to prioritize expenditure is inevitable. There are many pros and cons of the QALY system that we will not delve into in this article.

Innovations in healthcare are needed not only in the technology and medicines space, but also in the business and operating models that are the basis for aligning incentives across multiple players within the ecosystem – e.g. an improvement to the QALY system.

Summary

The overarching message in this article is that healthcare innovators must clearly understand, and communicate to potential investors, how the adoption of their innovation will be affected by the underlying economics driving decision-making within their targeted markets.

There are various players within any healthcare ecosystem who are incentivized in different ways. An innovator needs to understand how these players will choose to spend their time and resources, and the prevailing economics are a critical factor in how anyone makes decisions.

When pitching to investors, having clarity of how your innovation either aligns with existing incentives, or attempts to disrupt the existing model based on impending changes, will go a long way to satisfying the question of adoption. There are many other factors that make up a great business proposition, but a simple, carefully targeted and compelling economic argument for the adoption of an innovation is a crucial.

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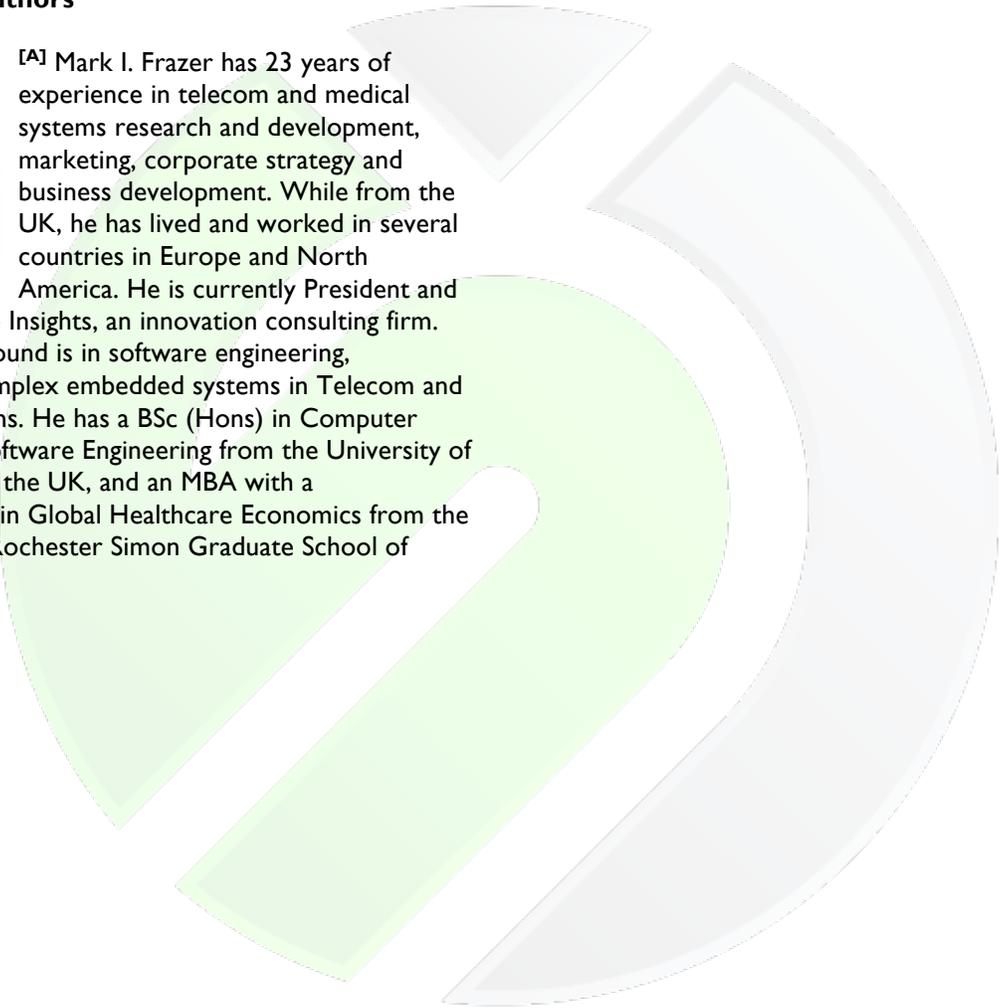
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