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Graham Gardner, MD, MBA Co-Founder & CEO **Kyruus**

"I became fascinated by the idea that providers were in many ways like baseball players. They're all trying to do the right thing, but statistically they might perform better in knee operations than they might in hip operations. I questioned if we could begin to use Moneyball-like statistics to match providers with patients in a way that truly delivered a win-win."

Robert Reiss: How did the idea for Kyruus emerge?

Dr. Graham Gardner: We started many years ago when Obamacare was first coming on the scene and it was clear that there was going to be a major disruption in how health systems began to think about their networks and coordinate care within their defined new health systems. At the same time, there was incredible liquidity happening around data and statistics about healthcare providers and enormous progress in technology, big data, machine learning, and the ability to process information like never before. We saw that intersection as a real opportunity to leverage data and help the health systems make better decisions.

Around that time, I happened to see the movie, "Moneyball," which you may be familiar with from the sport of baseball. Moneyball is very much our worldview at Kyruus; we're all different, we're all beautiful in our own way and we all have our relative strengths and weaknesses. I became fascinated by the idea that providers were in many ways like baseball players. They're all trying to

do the right thing, but statistically they might perform better in knee operations than they might in hip operations. I questioned if we could begin to use Moneyball-like statistics to match providers with patients in a way that truly delivered a win-win – getting patients to the right provider the first time while also ensuring that the providers themselves were doing the things they were uniquely qualified and trained to do.

You're bringing the Moneyball concept to the entire business of healthcare - $2.7 trillion in the United States?

That's right. What became so exciting for us is we began to talk with more and more health systems and realized the impact this allowed on operations and finances, because as it turns out, a lot of health systems are actually struggling with the ability to match supply and demand. What we discovered was that we as consumers oftentimes have to wait weeks, if not months, to get in and access a specialist at one of these big health systems, but it turns out that, in many cases, 20-30% of the appointments actually go empty every single day. We refer to this as the "patient access paradox." There's enormous demand trying to get in and enormous capacity going underutilized and what health systems are struggling with is the ability to make that match in real time. Solving this challenge begins with helping these health systems understand and manage their provider networks by building a comprehensive digital inventory.

Explain what you mean when you say digital inventory.

Digital inventory is a complete, online catalog of the health system's providers that gives health systems detailed visibility into who is actually in their networks – the providers distributed throughout their communities. It's what's fascinating to us. What has been happening over the last several years is that these health systems have been getting larger and larger. They've been affiliating with a practice here, then a hospital over there. At the same time, medicine has become increasingly sub-sub-specialized. There is no such thing anymore as a go-to "orthopedic guy"; there's a hand surgeon, a knee surgeon, someone who specializes in elbows, and a foot and ankle surgeon. Health systems have been getting larger and increasingly more specialized.

Just like there's a lefty seventh inning relief pitcher.

Exactly right. As these health systems have been getting bigger and everyone is becoming more specialized, nobody actually knows who is the right answer anymore for that seventh inning knuckle ball or who can throw against lefties. Being able to provide health systems with a digital inventory – the data platform that enables them to understand who does what, where, when, what insurance products they accept, what gender they are etc. etc. – lays the foundation for helping them understand how to begin routing patients intelligently within that network.

How exactly does this new Moneyball patient access model work in today's healthcare world?

It turns out that in the modern world as patients have become more "consumers" of healthcare, they're trying to access the health systems through multiple different channels – via other providers, online, through call centers etc. They might get the name of a specialist from their primary care provider who says, "Hey, you need to see a cardiologist. Here's my buddy, Dr. Jones," but as it turns out, in up to 90% of these cases, the patient will then go online to do additional research on providers. Ultimately, the majority are calling in to book appointments.

In too many health systems today, the provider data available in each of these access channels lives in separate databases, is only at a basic level, and is frequently inaccurate. The primary care provider is going to direct the patient based on something that may have

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Graham Gardner, MD speaking at the Annual Thought Leadership on Access Symposium (ATLAS) Kyruus hosts in Boston.

been printed five years ago and is now completely out of date. The marketing team is maintaining the website with a completely different database and the call center is actually doing the direct scheduling based on another source of information. What often happens is a breakdown that impedes the patient experience – the patient finds a provider who appears to be a great match, only to discover that they are not accepting new patients, no longer practice at a certain location, don't actually take their insurance, and so on.

What we began to realize was that not only do you need this information period, but you also need it in an application layer available to the individuals handling scheduling – whether they are in a call center, the ER, or provider offices – and to the patient themselves online. Everyone needs to have access to the same information, so there's a consistent patient experience across channels and patients don't end up looking outside of the health system for care after a frustrating access experience.

For the healthcare system, what are the financial implications?

"We've been able to measure the leakage and we can reduce that by 50% or more."

I'm a cardiologist by training. Because so many patients get heart disease, there were opportunities to do large trials to understand the impact of various stents and medicines on this. It's something that's deep to my medical training and I very much wanted to be able to instrument our solutions to be able to demonstrate that we're having impact on health system performance – financial, operational, and clinical.

From day one, we've been working with these organizations to understand how we can better coordinate care within the system. A lot of hospitals and health systems as they think about their businesses today think about leakage out of their network. If you're a health system with 1,000 primary care providers working with you, they might each have several hundred patients, and every time those patients get sick and need to see a specialist, you want to ensure that care is happening within your network of specialists. In many systems, 20%, 30%, sometimes 50% of that business is leaking outside the network and getting referred to a competitive system. In a fee-for-service environment today, this has a huge opportunity cost. In the model where you are now accountable for care, that could be fatal if you're not able to control and effectively manage that care. We've been able to measure that leakage and found we can reduce it by 50% or more. You're talking about potentially hundreds of millions of dollars of revenue being steered back into the health system into those previously empty appointment slots for enormous impact on the health system's finances.

The hospital is similar to an airplane that has a lot of vacant seats. You're filling up those seats.

That's exactly right. We make the airline analogy a lot because it turns out that airlines wrestled with very similar capacity utilization challenges a generation ago. If we went back to 1990, every time an airplane took off, four out of ten seats were empty. What transformed that industry was the creation of a digital inventory, initially the Sabre System, which ultimately became Travelocity and KAYAK, that gives schedulers the ability to search across all the inventory. You could look across American

Airlines, United, and JetBlue the same way the health system needs to understand its inventory across Epic, Cerner, and athenahealth. You can sort and filter by business logic in the case of traveling. For instance, a traveler wants to take off after 9:30 and sort by price. In healthcare, the technology needs to be able to identify the right provider for each patient – accounting for clinical needs, logistical requirements (e.g., location, insurance), and other preferences (e.g., languages) – and provide enterprise-wide visibility into appointment availability to ultimately help health systems fill their "seats."

What is the website for Kyruus?

While we have our own company website, www.kyruus.com, we don't maintain a website for consumers themselves and that was an explicit decision to align with the health system, our primary fiduciary. With regards to the consumer channel, we are not trying to attract eyeballs, we're not choosing whether to send patients to one health system or another; we power the find-a-provider capabilities directly on health system websites. We view our role as enhancing health systems' relationships with their patients rather than acting as an intermediary, so we help them attract patients to their own websites and ultimately convert that demand into booked appointments or "filled seats."

How does the Moneyball concept impact your leadership philosophy?

The Moneyball worldview that drove the founding of Kyruus extends not just into our product, but also to how we think about our team. I believe, again, that we all have our relative strengths and weaknesses. I certainly have them as a CEO; I've made plenty of mistakes. As we've built and expanded the Kyruus team, we've looked closely at what unique strengths applicants can bring to solving patient access challenges.

We've tried to build a team that leverages expertise from outside of healthcare, from finance and travel, as well as people who have been deep in the trenches of healthcare – and all of their secret handshakes–and bring those people together to learn from each other and play the right positions on the team, so we as a team can be better.

Being at the intersection of business and healthcare technology, what are some of the takeaways that you've learned?

It's interesting. At times, when I'm on panels at conferences, I'll ask people how many of their patients can directly schedule online and one or two hands may go up. Then I'll say, "How many of your own call center agents

Graham Gardner, MD with Bob Kocher, MD one of the architects of the Affordable Care Act and now a Partner at Venrock, which is a Kyruus investor. The two trained together at Beth Israel Deaconess Medical Center and Harvard Medical School.

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Graham Gardner, MD with Kyruus Co-Founder & Chief Product Officer, Julie Yoo.

"We've been talking to health systems recently about the rise of consumerism in healthcare. How do you manage consumerism intelligently? How do you engage consumers where they are? How do you help them search for the right kind of care? The other corollary to that is how the health system itself becomes more efficient in delivering their services."

can actually do all of that scheduling themselves?" and a few more hands will go up. I'll then say, "We've been doing that in the airline industry for 40 years," and this is why we in healthcare get laughed at as an industry for being so far behind. I don't think it's because we're silly and we can't figure it out. Healthcare is very complex and getting to the right provider is a lot more difficult than buying an airline seat. In fact, whereas in the travel industry a consumer knows they're trying to get to Chicago and can buy seat 18F, in many cases in healthcare the consumer just knows they've got a funny fluttering in their chest. It's like the sense of, "I'd like to go somewhere warm for spring break, but I don't even know where to start." It's a much more complex process one has to go through to engage the patient, understand what they're trying to do, understand again that digital inventory, and then make the right matches. There's such an opportunity for us to bridge that.

Today you're working with about 30 of the systems which is over 350 hospitals. When you started with the original concept, what were the challenges that you had to overcome in the early days?

One of the biggest challenges was actually a personal one. I'm a cardiologist by training and I had subsequently gone on to business school and spent time in venture capital. I had been a Chief Medical Officer before, but not a CEO. My wonderful co-founder, Julie Yoo, gave me a lot of confidence that we could do something special together. We had this audacious goal that we could transform healthcare and change the way the patients and providers were matched together. Who was I to walk into the massive health system and tell them to trust me with all of that though?

It was actually in our first year that we took the Moneyball concept and, in some ways, tried to hit singles and bunts. We tried to understand whether we could help with recruiting first, which was nowhere near the same

kind of business opportunity, but it felt safer in some ways as a place to start and begin to build a momentum rather than going for something more dramatic. What we began to realize over the course of that first year was that it's hard enough to push one ball up a hill; we were trying to push three different ideas up the hill, which was difficult. At the end of the day, if you're going to do something transformative, go for it. That was something that I had to build up the confidence to do, to go for something that was risky and audacious, but at the end of the day, something that was going to be incredibly meaningful if we could pull it off.

Another of the major challenges since then has been the sales cycle nature of the healthcare industry. My co-founder and I would joke earlier on about this analogy of being in a submarine and sending a ping, and then not hearing back for nine months: "It's not like there's nothing there, they just take that long to get back to us, right?" There's a danger of moving too quickly, but of course, there's also a danger of sitting there, burning cash and not moving quickly enough. I talk to entrepreneurs all the time in the healthcare space and you just have to orient yourself around the fact that it takes a long time to get the inertia moving, to get the story out. In fact, we smile now when we hear health systems say, "Oh, hey, we're looking for a patient matching solution." That's the language I seeded four years ago and it's finally beginning to pick up steam. That was the first thing, just knowing the cadence and having the patience to stay with it and keep the investors and employees motivated throughout that time.

What has been incredibly exciting for the company in the last year to year and a half is that we have achieved the hockey stick growth. In an early stage company, you're always wondering, "Is this the hockey stick? Is this what it's like being pulled into a market?" When it happens, you say, "Okay, now I get it." There was a palpable sense that all of a sudden, health systems around the country had picked their heads up and said, "I need that."

Let's talk about the future of healthcare.

One thing is certainly the consumerization of healthcare. We've been talking to health systems recently about the rise of consumerism in healthcare. How do you manage consumerism intelligently? How do you engage consumers where they are? How do you help them search for the right kind of care? The other corollary to that is how the health system itself becomes more efficient in delivering their services. Health systems are going to need chatbots; chatbots have to be part of the answer here in the next few years. We've been hearing from a lot of our health

Graham Gardner, MD with Paul DePodesta, the mastermind behind the Moneyball concept Kyruus is now applying to patient-provider matching

systems saying, "Our call center staff a lot of times will just pick up the phone and say, 'Oh, you want to cancel? Okay, great. Thank you.'" Why does a human being need to do that? That's where developing all of this conversational UI and chatbots can drive efficiency with the scheduling and rescheduling or cancellation of appointments. Where can we deploy some of these technologies, not necessarily to replace providers, but to take away some of the administrative duties that could make the health system more efficient while also serving patients better?

What is the future of Kyruus?

As we look at the healthcare industry, I typically see a category of the decade. EHRs were a big and important part of what happened. Revenue cycle management has been a huge category. We're convinced that patient access and care coordination is the next big category in healthcare. If you look historically, that means there will be a new multi-billion dollar company that helps define that space, and we would love to be that company.

What I'm hearing more and more from health systems is "we can't do all of it ourselves anymore and we actually need to go out and engage with vendors out there and figure out how to incorporate them into our business model to keep ahead."

Graham Gardner and Robert Reiss – Interview aired 10/19/17

Graham Gardner, MD, MBA is the Chief Executive Officer and Co-Founder of Kyruus. Prior to founding Kyruus in late 2010, he was a Venture Executive at Highland Capital Partners, where he co-founded Generation Health, a genetic benefit management company that facilitates the optimal utilization of genetic testing. Graham served as Generation Health's Chief Medical Officer through its acquisition by CVS Caremark. He completed his clinical training in internal medicine and cardiology at Beth Israel Deaconess Medical Center and Harvard Medical School, where he also served as Chief Medical Resident. Graham completed his BA and MD degrees at Brown University and earned his MBA from Harvard Business School.

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