Tech in healthcare reimagined with Michael Archuleta and Lorand Gabos - Part 1

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BRADLEY HOWARD (BH): Hello. I'm Bradley Howard and welcome to our podcast Tech Reimagined, a place where we get technology experts together to explore innovative ways to reimagine the relationship between people and technology. Today, we're talking about the future of the healthcare industry. Joining me is Michael Archuleta and Lorand Gabos. Michael, would you like to give a brief overview of your background?

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MICHAEL ARCHULETA (MA): Absolutely. Well, thank you guys very much. Really honoured to be here on this podcast. You guys are doing an amazing job. My name is Michael Archuleta. I'm the chief information officer for Mt. San Rafael Hospital. We're a hospital here in southern Colorado. I've been what you consider an actual transformational CIO, really incorporating technology to really improve on better patient outcomes. My motto has always been patient care is number one. And my new CEO is the patient. And that's really the bottom line. My overall goal has been building strong technology base asynchronous tools that have benefited our patients both inside and outside of our organisations. And during COVID, you know, we just all continue to be in this together. But working together and really continuing to transform our industry is extremely important.

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BH: And Lorand?

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LORAND GABOS-SZOVERDI (LGS): Hi, I'm Lorand Gabos. I'm a techie, I have a background in technology, but also healthcare. I used to run the R&D department of the biggest healthcare software provider in the Netherlands.

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BH: Well, welcome to both of you. So, let me start by asking to set the scene. Healthcare spending in the US is higher than anywhere else at around 10 and a half thousand dollars per person. And to put that into context, the next highest is Switzerland at three thousand dollars less and in the UK in the top 15, that's around four thousand dollars. For our listeners, how is the additional income from US patients being invested by the industry?

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MA: So, when you look at the overall evolution of healthcare, we look at it how it basically started. So, when the Affordable Care Act came out, it basically mandated a lot of these healthcare facilities to implement an electronic medical records system. If these organisations weren't basically being compliant in implementing an EMR into their organisation, they were going to be penalised moving forward. So, again, we're starting to see a massive increase on investments when it comes to electronic medical record system. We're seeing a massive increase of investments when it's coming to technology advancements, artificial intelligence, predictive analytics. We're starting to see more investments towards cloud base initiatives. The healthcare industry here in the United States has been a very progressive industry, really moving forward with the acceleration of digital transformation. At the end of the day, technology is definitely a high-cost specific item, but it is an item that is necessary for these actual industries to move forward. I always state that healthcare organisations and clinics are digital companies that happen to deliver

healthcare services. We are a digital company. We have to continue to basically act like a digital company. We have to continue to innovate like a digital company. And again, with all of these different initiatives, it becomes one of those items that we have to invest in technology. And then when we look at healthcare on a security standpoint, when it comes to security investments, you know, the healthcare sector is one of the most attacked sectors out there because PHI is so valuable and that becomes a major problem because the extensive amount of data that PHI basically contains. So, moving forward as an organisation continue to progress in the digital age of healthcare, we're starting to see some more investments–a lot more investments in cybersecurity, innovation, technology, cloud base, artificial intelligence, predictive analytics, and again, continuing to make sure that we have the ability to create better focus on interoperability. And what that means is how are we connecting these systems to communicate successfully and efficiently together? And again, all of those types of specific items definitely cost money. And it continues, unfortunately, to even get more expensive moving down the line as well.

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BH: And for the benefit of our listeners. PHI? What does that mean?

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MA: PHI's Personal Health Information. So, that is your electronic medical record information.

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BH: Hence it's so sensitive.

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MA: Absolutely.

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BH: So, one of the things you talked about was digital transformation, which since the COVID crisis has become digital necessity. And in healthcare–that's different to most other industries, with healthcare practitioners generally focused on much more non-digital skills–how do you encourage frontline practitioners to join you in the digital transformation?

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MA: Yeah, absolutely. So, I always say that the acceleration of digital transformation is truly here. And we've seen the mass adoption of telecommunicating, which in my opinion has been one of the most explosive changes to occur, you know, due to the overall Coronavirus pandemic. And this crisis has fully displayed the value of IT. And like I always tell my whole entire team is out of every crisis, a new opportunity truly arises, and that's been one of those items that has really happened during COVID-19. You know, these industries are completing to change, you know, evolve on what they are doing. The healthcare industry has been behind when it comes to technology advancements compared to the finance industry, compared to the natural gas industry. But we are here dealing and taking care of patients' lives. We, as a healthcare industry, need to continue to basically incorporate digital transformation and IT and have it as a core component to the overall organisational strategy, because at the end of the day, this will take us to a much better place. And that's what your critical point is. And we're starting to see a lot more healthcare organisations are truly intensifying their focus on a strategic planning, you know, for the digital future. And we as an organisation need to continue to basically build strong asynchronous tools to benefit our patients, both inside and outside of our organisations. Because the bottom line is everyone, yes, everyone has a CEO, but my new CEO is a patient because patient care is number one. And we look on the new evolution of how healthcare in healthcare consumerism is really coming into play. Individuals are taking more responsibility of their care. We're seeing this mass

adoption of telecommunicating. You know, individuals selecting different facilities to basically do a telehealth visit. If we don't build those initiatives into our practice, how do we continue to be progressive? How do we continue to be competitive? We won't be. So, again, we need to move forward and we need to incorporate IT as a core component to the overall organisational strategy, which, again, will take us to a much better space.

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BH: I really like how you keep on referring to the patient as the CEO as the most important person in the room. And I guess in healthcare, you have the added risk that getting something wrong with your CEO or the patient can have dire consequences compared to most other companies have a financial consequence rather than a health one. So, onto you Lorand. Do you think that consumer wearables with 24-hour health tracking will provide individual-based healthcare monitoring and diagnosis? Do you think the wearables are going to help enhance the quality of studies?

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LGS: Most definitely, yes. So, not only their own health, but we have experienced, for example, in Germany that this is taken very seriously by companies themselves. So, they initiate wearable-based employee health programmes. Of course, by being to the very strict privacy laws, but still even abiding to those laws, you can get a lot of relevant information that will help you enable your employees to do better in sports or health programmes. All in all, you decrease the number of sick days or areas like that. So, very helpful.

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BH: And Michael, are you using wearables on your patients or your myriad of CEOs?

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MA: Absolutely. So, we are definitely incorporating wearables into our organisation. We've done a lot with population health initiatives. So, we did an overall project to determine an initiative that would really benefit our community. We saw that the community basically had a really high rate of diabetes and we really wanted to develop an overall programme that allowed us to effectively and efficiently obtain data from that specific patient while at home. So, we did create a Bluetooth initiative that basically allowed us to sync all the data from the patient's home to our patient portal. So, it was a wearable device that continued to basically see the progress of this patient and then allow this patient to have that direct communication with the patient's physician. So, again, we are really building strong continuing of care initiatives, especially with the utilisation of wearable technology, because wearable technology is truly one of those future initiatives to really improve better care moving forward.

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BH: And do you find that in the primary care perspective, wearable users are now approaching you, saying, "My watch is telling me this", or "Apple Health is telling me a particular reading", and therefore they need to go to the doctor?

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MA: Yeah, absolutely. So, we're starting to see a lot more of those initiatives. And if you look at some of the interoperability roadmaps, I mean, some of the requirements now for healthcare organisations are to obtain data from any type of wearable device to basically place into your electronic medical record to have that specific point of verification, to make sure that the physician has that 360° view of the patient that they're treating. So, again, this is going to be more of a progressive thing. We're starting to see more individuals, again, take more care of themselves and really start bringing these initiatives in place. Because every patient is our new CEO. Their

decision affects our revenue, and that's the bottom line. And if we want their loyalty, we will have to earn their trust by truly knowing them and providing them with the tools that meet their needs.

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BH: The way that you talk, Michael, about loyalty and patient care, do you talk to CIOs in other industries to learn from them about some of the best practices that they have?

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MA: I sure do. You know, and that's the thing. My overall focus has been how are we continuing to be a transformational CIO? And that just doesn't mean just focusing on one industry. How is the natural gas industry doing? What is the finance industry doing? I think we can learn from all of these different industries moving forward.

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BH: Thank you, Michael. Let's look back at 20 years ago. So, Lorand, what did the healthcare industry look like 20 years ago, and how has it changed so much?

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LGS: I can only echo what Michael was saying about the patient being the CEO and definitely 20 years ago that was not the case. So, 20 years ago, there were healthcare providers providing services and products to patients, but it was all product and service centric and the patients came last to be honest. Especially from an IT perspective, all software was more on the ERP side. So, managing back office processes and patients were not even connected to those IT applications. A change came, and I was in the middle of the change, and it also changed the way I think about software development and product development and how we create new services, is the moment we set the patients in the centre of the whole offering and the way healthcare is done. I actually spent two full days in a mental health institution as a strategist to try to understand what the patients need and try to understand how we can get their lives to be better. And that brought a major change in how we approached product development and how we created the new software, because it was more to enhance the lives of patients and to create a better outcome for them instead of just running day in, day out job.

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BH: And Michael, what's become the new digital necessity in healthcare nowadays then?

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MA: So, one of the new digital necessities is telecommunicating. I think that's, again, been one of those initiatives that has been one of the most explosive changes to really occur during this overall COVID-19 pandemic. Having that strong initiatives, those strong communication applications like Slack, Microsoft Teams, etc., you know, allowing that to communicate effectively, efficiently, allowing us to continue to have a strong cloud base infrastructure that allows us to send our patients home, that allow us to basically utilise virtual desktop infrastructure, which allows the patient to basically access our virtual machine just from any place in the world. And the way we do things now is going to completely change moving forward. So, again, these are strong initiatives and telecommunicating has been one of the most explosive changes to truly occur due to the overall COVID-19 pandemic.

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BH: And moving forward into predicting the future through the new normal, if we look forward 10 to 20 years into the future, Lorand, what do you think the future of healthcare is going to look like? For example, artificial intelligence might start coming to the fore.

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LGS: Yes. So, artificial intelligence will play a very big role in things, but it will be in a seamless way. So, don't think that it will be visible for the patients. The results will be visible for the patient as well as the healthcare provider. You can think of applying artificial intelligence in the operational parts of hospitals, for example, but also in the communication with the caregivers or communications with the patients. But you can think of artificial intelligence as being a part of the care process itself. And this is where things get a little bit edgy because people will ask, "Is this safe?". So, I don't think we are yet at the prescriptive part of things, but we definitely venture already into the predictive areas where we can propose, for example, you can see diagnoses done by AI or machine learning algorithms, but they are not prescribing yet. They are just predicting or giving it a probability. In 20 years, I do believe that we will already be doing prescriptive stuff. So, you will probably not visit your GP for everything. Just take a reading from your wearables and it will give you advice on what would be the next step.

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BH: And Michael, anything to add?

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MA: Healthcare is definitely continuing to change and we're starting to see, you know, the future come in in place. In the next five years, we, again, are going to see a massive increase of artificial intelligence, predictive analytics. We're also going to see, you know, AI in medical decision support tools. We're going to see more initiatives when it comes to robotic technology. We're going to start seeing more initiatives on 3D printed items. And then moving forward, I mean, to the next 25 years, you know, we're going to start seeing more nanotech technology coming into place. We're going to see how predictive analytics is being utilised to basically predict an attack before it happens. I mean, some organisations are trying to utilise that. We are going to start seeing more of what we call brain computer interfaces. We're going see more of how these individuals are basically redesigning hospitals. And again, too, genomic analysts. That genomicism is one of those items that are basically continuing to grow. Genosequences of an individual is such an important aspect. You know, how are we learning from these patterns? How are we incorporating technology to improve better outcomes? I mean, when you saw some of the initiatives, even with IBM Watson, IBM Watson was put into medical school. They were basically, one of their projects was to be utilised on a radiology standpoint, looking at specific mammos, looking at high density areas on the mammogram DICOM images to kind of determine if there was anything that the eye cannot catch. Again, we're starting to utilise technology as an actual tool. And we're starting to see it increase, be more efficient, continuing to basically improve on better outcomes, continuing to improve on the reliability of patients' lives. You know, how much longer can we live as a patient just because of the advancements in medicine? But now incorporating technology into place, that's going to continue to basically move forward, continuing to see this as a massive process. And again, 3D technology from 3D printing organs, you know, from 3D printed tissues, blood vessels, etc., we're starting to see a mass increase on that. Robotic technology, artificial intelligence, predictive analytics, genome sequencing. I mean, a lot of these initiatives are really coming into play into the next five years and 25 years.

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BH: That's one hell of a technology shopping list that you got going on there. What do you think that schools and universities need to change in order to prepare for these changes?

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MA: Schools really need to step up when it comes to digital transformation. It's going to be interesting on the new CDC guidelines on opening up schools moving forward due to COVID-19, because the problem is, is on the education system as well, a lot of funding is being cut. So, these schools have to become more innovative on how are they doing more with less.

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BH: And Lorand, I know you've worked with some university clients. So, what's your feedback on that?

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LGS: I can give you a very nice example of an engagement and the collaboration we had with the NHS where we tried to improve the lives of premature babies. And how did we do that? They are on ventilators and sometimes you would not think, but a lot of times too much oxygen is as just as bad as too little oxygen. Those machines are just mechanical machines. And what we tried to do and we implemented is a machine learning based solution where the ventilator adapts to the needs of the baby. What does this have to do with the universities? We had an MD we have worked with who could actually write a machine learning algorithm so he could understand how things are working. And that helped a lot. So, what I would do in universities is try to introduce future doctors to as much technology as possible. Not overdo it, but they will need it more and more. They have to become first class citizens in technology. It's hard, but that's the way to go.

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BH: Thank you for that. Now we're going to move on to our quickfire round. I'm going to ask you both an A or B question. I'm looking for a one-word response, which I know is going to be the biggest challenge for both of you. I'm going to start with Larond, and I'll flip between both of you in turn. So, Larond, Apple Mac or Windows PC?

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LGS: Doesn't matter.

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BH: [LAUGHTER] I knew this was going to be challenging with both of you. Michael, Apple or Android phone?

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MA: Apple.

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BH: Larond, Netflix or Amazon Prime?

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LGS: Amazon Prime.

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BH: I was expecting neither. Michael, analogue or Apple Watch?

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MA: Apple Watch.

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BH: Larond, PlayStation or Xbox?

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LGS: Xbox.

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BH: What's your favourite game, Larond?

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LGS: I don't have a favourite game. I have Xbox and Kinect. It was third question.

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BH: [LAUGHTER] Michael, Spotify or Apple Music?

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MA: Apple Music.

[00:22:12]
BH: You're Apple across the board, aren't you?

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MA: I'm an Apple guy.

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BH: [LAUGHTER] Larond, cash or Bitcoin?

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LGS: What's cash?

[00:22:20]
BH: Michael, Zoom or Teams?

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MA: Zoom.

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BH: Larond, plastic cards or Apple Pay?

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LGS: Apple Pay.

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BH: Michael, doorbell or Ring, the video doorbell?

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MA: Ring.

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BH: And Larond, finally, paper book or Kindle?

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LGS: Both.

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BH: [LAUGHTER] You're always so awkward. In part two, I take a closer look at how Michael and Larond started their careers and we'll look back at how the industry has changed over the past two decades. Don't forget to like this podcast and subscribe to automatically get all our new episodes directly on your device.