Microsoft's Rajya Bhaiya on @Home to Care Anywhere

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Rajya Bhaiya: Director of MedTech at Microsoft and the Cloud for Healthcare life sciences team. I spend a lot of time on PHI data and IoT devices.

Darryl Gibbings-Isaac, MD: A clinician who practiced in the NHS who now co-leads the Virtual Health practice and is a clinical innovation expert for Accenture

Greg Smith: Co-lead of the Virtual Health practice for Accenture.

Greg Smith: We want to go on a journey focused initially on @Home, discuss health equity, and finish with a

perspective on Care Anywhere. There are three main goals.

1. Understand the @Home concept
2. Recognize that health equity is an important consideration
3. Identify how you address health equity in other alternative modes of delivering care - Care Anywhere.

The important thing about the @Home, especially Condition@Home, is how we could leverage the patient's location to offer better care and scale over time.

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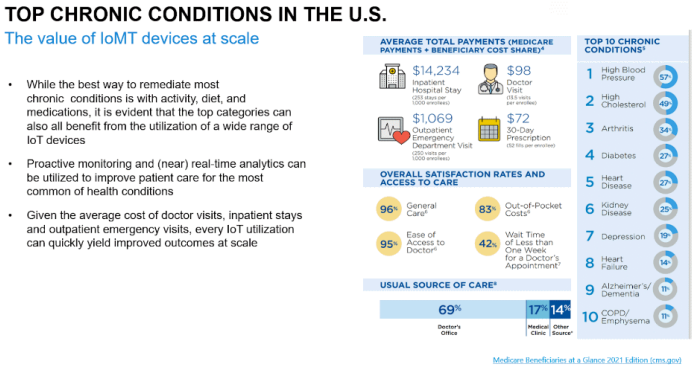
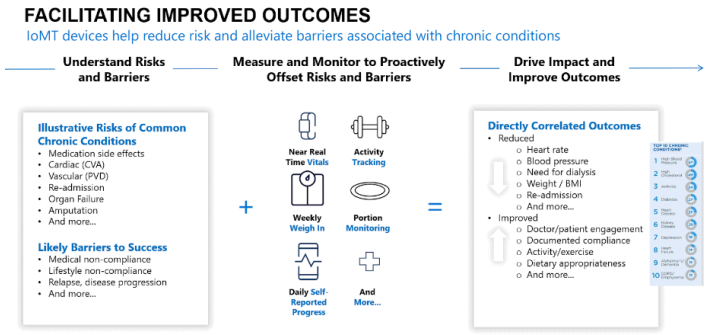
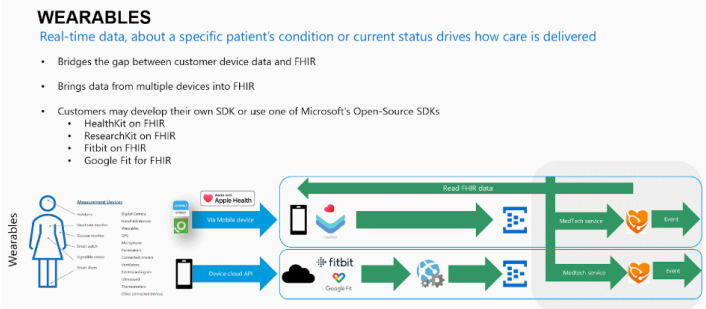


Rajya Bhaiya: The way Microsoft is thinking about it is what's the big tech play in all of this? The big tech place in this is providing a secure data platform that can bring all the data from the different devices and cross-correlate a lot of that data. Give the ability for clinicians actually to have the data over time. So specifically, what we're looking at is, from our vantage point, healthcare is episodic care, and we want to convert episodic care into trends of care. With a lot of the IoT integrations, the wearable integration, the precision device integration, we want to make sure that the data's available to view the trends of the patients specifically. For example, as shown in the figure. What are the top chronic conditions that were paid for by Medicare?



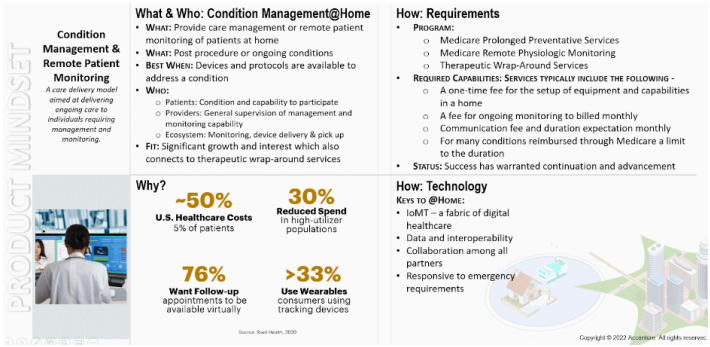
As illustrated above, you can see that if you look at all of these different condition types, there are about 6 or 7 vitals that correlate. These devices are getting cheaper and cheaper, like Apple watches, Google Fit, and Fitbits. So you're about a couple of sensors away from having primary care done every 5 minutes through technology. So, that's what Microsoft is trying to harness.



The other big thing we're also trying to do is better the world. So, we've taken health care data from across the ecosystem - Apple's ecosystem, research data, Google Fit, and created connectors to FHIR. So, we believe FHIR's the future of healthcare. FHIR is in its early stages, but that's where it will go, and we've put all those technologies on open source. You can go to GitHub and get all the connectors available. Apple and Google are connecting to different devices as well. We see a significant uptick specifically around blood glucose so that we can measure blood glucose at home. This integration allows the doctor to view that within the Epic system or the Cerner system directly within their charts. We are bringing a lot of data to the doctor's closer so we can provide the type of care found in Mayo's Hospital@Home program.

Greg Smith: Does this require someone to be in a home setting, in a fixed setting to do this, or is the expectation

that this thing gets to be even more mobile, more expansive than just at home?



Rajya Bhaiya: We're starting at home, but there are other areas of what we are looking at that can be more expensive than home. But our focus is on the two specific areas that allow early detection of problems. So we can keep people healthier longer. The other part of it is the recovery side. So as in a Condition@Home program, recover faster at home because you have your preferred setting. Now you have the ability actually to monitor the vitals and be able to see that at home. So, those are the primary targets today, but many future wellness and mental health care use cases can leverage this technology.

Greg Smith: Are we seeing devices with the clinical capability physicians feel comfortable with?

Rajya Bhaiya: Yes. One of the things we're doing to help is giving the device's classification with the appropriate ICD-10 codes back to the doctor. So that they can say, "Dexcom works great in one specific arena versus the other." The doctor then decides which devices work better for specific conditions.

Greg Smith: Darryl, Rajya has described remote patient monitoring and condition management space. Do you have any thoughts about where you see the market going?

Darryl Gibbings-Isaac: I think there's still a lot of activity happening in the market, but perhaps with a shift of focus on where that level of effort is, and innovation is still happening in the monitoring device level, but maybe a little less around incorporating new biometrics. And more around how to help increase adherence through aggregating existing biometrics in a single device, probably

optimizing for convenient form factors, such as slim profile wearables, medical apparel, et cetera. There's been some merging across safety, wellness, and medical care, as reimbursement remains a challenge at that device level.

So optimizing value remains at the forefront of design choices there. I say the more significant focus is perhaps on the steps downstream of that data collection - in the data aggregation and insight generation piece - finding ways to do this within the provider workflow and the EHR as the system of record. As Rajya mentioned, providing clinical decision support is cost-effective, valuable, and, most importantly, trusted by the providers. A higher level with perhaps broader white spaces is around appropriate intervention, meaning metrics are becoming an increasingly core focus. So, it is partly an exploration of how to use ecosystem partners to provide a comprehensive solution demonstrating value. Value continues to be at the top of the agenda here for payers.

Greg Smith: Do patients see benefits from this, and are there more tangible cost reductions for patients? Darryl, your thoughts around where patient use and patient cost reduction have occurred due to these kinds of programs.

Darryl Gibbings-Isaac: Patient experience is at the core of many of these delivery mechanisms, so the hope is that patients benefit. Some evidence says that patients, at least in the early phase, have benefited and prefer being treated in the home rather than in the hospital environment.

Some value drivers link to patient satisfaction, and reducing the morbidity period by preventing hospital-acquired infections is obviously an appropriate piece for the patient. If you're reducing the length of stay, most patients don't want to stay in the hospital longer than they need to; that is also crucial. Reducing the travel to and from hospitals for patients, their caregivers, and families is another important piece here, so the home, where appropriate, is seen as a preferred place for patients to be from that perspective.

In terms of the cost side of things, that's probably a lagging indicator. As these programs scale, the cost can be reduced to patient savings. You can deliver the service with a lower

unit cost and release those savings for patients. I think it's slightly early in the maturation to do that today tangibly. But that's the path of where things are trying to go.

Greg Smith: Rajya, what are you hearing when a patient says," Here's why I love the concept of being able to deliver this, get care at home, and use devices to help enable them?"

Rajya Bhaiya: The most prominent places we're hearing it is on the proactive - where we see the correlation of the data and then suggestive nudges. There are a lot of devices that send a lot of alerts out, but qualitative nudges are what the patients are asking for. "Hey, didn't sleep well, so suggested do X, Y, Z actually to have a better day." If there's a degradation, suggested nudges change the behaviors. But the most important place we are seeing is on the post-surgery rehab side. If someone had knee surgery, their stride length went from 42 to 38 inches. So they're having some discomfort. Measuring differences is where devices can help with better precision, indicating extended rehab and extended exercises are needed to get better faster.

Greg Smith: Rajya, any other thoughts about where Microsoft thinking @Home?

Rajya Bhaiya: We are seeing devices being rented out to patients and being able actually to extract that same information over time. We also see an uptick in mental health care. A lot of chronic conditions begin with some mental reasons and mental stress. These stresses are also causing strain on the body. So, what's the correlation between a person's work habits, and living habits, which are causing the stress?

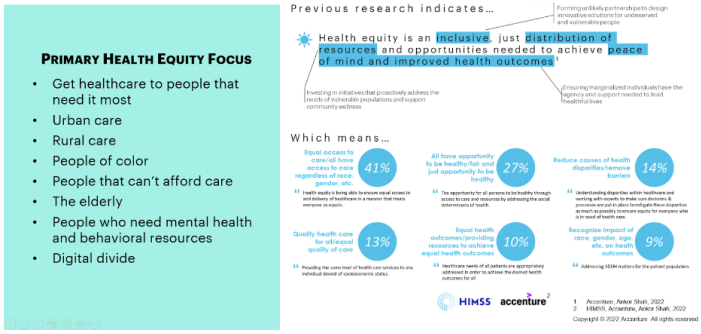
Greg Smith: Darryl, any last thoughts on the @Home and thinking about this from a product mindset?

Darryl Gibbings-Isaac: I think principles at least have the product mindset could be applied in at least two ways. I think one is taking a patient-centric view and pasting their experience at the center of the offering, and that's something I think we've heard throughout our discussion so far. But this can help overcome potential friction from regulatory and payment silos between programs. For

example, care transitions, especially for those eligible for multiple programs, whether Hospital@Home, SNF@Home or otherwise, move towards a total Help@Home or a similar model.

The other is looking at productizing some of the technology components within the offering to scale the offerings economically and sustainably. For example, the demand and supply aggregation and matching, the orchestration and distribution of medical resource bundles, or the analytics capturing and reporting on care effectiveness. Overall, the key here is to be intentional, experience-based and continuously thinking about how to scale the offering effectively.

Greg Smith: There is excitement about @Home, but it also encourages us to consider health equity issues. On the right-hand side of the image is within Accenture, around health equity and HIMSS. But Rajya, on the left side, are some we've identified as we've talked - how do you think about health equity? Rajya, I'd also like your thoughts about security and privacy.

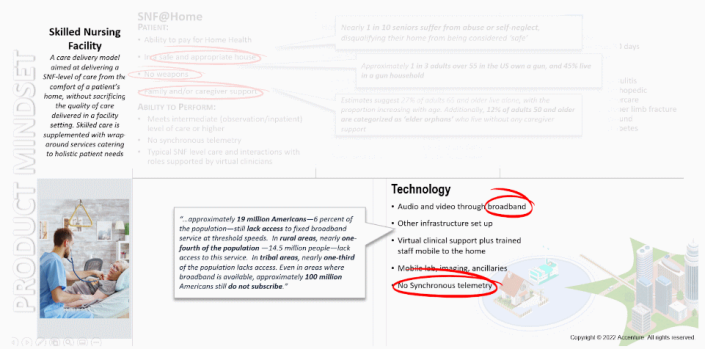


Rajya Bhaiya: Health equity is top of mind for us at Microsoft. Microsoft has teams focusing on different aspects of urban care and rural care. Health equity comes up daily in their teams' conversations around many of those topics.

That also ties into that is the privacy of that data. So the biggest thing that comes with specific mental health care is the privacy of that data. It is essential to be consent-based and secure at transit and storage. Still, we also see the implementation within our platform of being able to grant consent on specific vitals to specific people. So I may choose only to share my cardiac data with Greg and my

mental health care data with Darryl. The ability to have consent at the granular level is of the utmost importance, and everything has to be driven through consent. Managing variability in consent is where it breaks down, so we are working to create templates to manage consent over time.

Greg Smith: Let's take a look at a SNF@Home concept. In the figure below, I've circled areas that highlight where you might have health equity or issues that would preclude you from wanting to bring someone home. Rajya, I see the bottom ones as typical sort of digital divide kinds of problems. People don't have broadband access. So, consequently, you can't do certain things. How did Microsoft think about the digital divide and how to resolve the digital divide kind of issues?



Rajya Bhaiya: Yes, I mean, there are programs at Microsoft for the cellular network and the cellular back thing. So, while broadband might not be available, cellular is pretty available in most areas where it's getting popular. So how do we ensure the payloads are small enough to transmit the data? That's where we are spending some time. But then, how do you create clusters of technology available at the edge itself? That's why edge processing can also help.

Greg Smith: Darryl, has Rajya highlighted Care Anywhere?

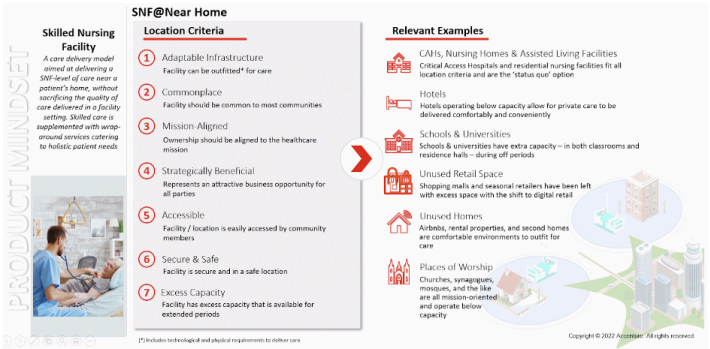
Darryl Gibbings-Isaac: Absolutely. The key here is appropriateness. They are finding an appropriate environment to deliver that the use case determines care. Different places would be right, depending on what that use case is. Let's think about what determines the appropriateness. There are some things specific about the location, which could be, you know, elements around the

ability to provide privacy or the sterility of the area and all those kinds of pieces within it. There could be a part around the resource characteristics and how we must move resources. So, how mobile are those things, and how much space is required?

There also could be a piece around the, you know, the care intensity. Essentially, how much supervision is required? What's the degree of medical staff? And how far are they away from that location itself? These are some important considerations. Covid stretched our minds as to what could be done outside the hospital. Field hospitals were created pretty quickly that could scale up or scale down. Some of the considerations in the illustration, such as places of worship or hotels, et cetera, may create a visceral reaction. But when you think about what we can do to build around those things, for example, if you have mobile care units with imaging within, it could be an adjunct to some of these places, which could be converted into outpatient centers, et cetera. The possibilities are endless, but the key is having that appropriateness and flexibility at the center.

Greg Smith: This feels like that product mindset again?

Darryl Gibbings-Isaac: Absolutely. I think it speaks to that first principle, which is putting the patient and their experience at the center instead of taking a service line view when it comes to these things. Because I think if you do that, you can transcend some of those silos that wouldn't be introduced if you're looking specifically at SNF@Home or Condition@Home, or any of these other kinds of programs, which have a particular set of regulations and requirements around it.



If you're looking at what experience you are providing and the care you're providing, you can start productizing the components required to provide this care. And those components can have some flexibility around it in terms of their application. We have these components, which are played in a specific setting, such as Condition@Home. Components can be redeployed with a new location as a focus, but you need to have that structure around those components to know where you are redeploying. And to be able to reapply those then where required. So, I think the key is to have that kind of intentionality around that organizing principle.

Greg Smith: Rajya, let me come back to you any last sort of thoughts around this, this sort of journey we've been on in the previous sections.

Rajya Bhaiya: From my viewpoint, I mean, I think the episodic care transition to trends in care is a very critical part of health, and that's a transition that you know care at home could provide because you can detect a lot of things early. Recognizing issues early is where you can have a better mental state of your health cross-correlated with your working and eating habits. These associations lead to better health which probably hopefully helps with care at home, and you know fewer people in the hospital over time.

Greg Smith: Thanks, Rajya and Darryl. Your thoughts highlight the strategy and market development opportunities to impact care's future.

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