



#### Products and Services

Azure Bot Service (AI)  
Azure Cosmos DB  
Azure Data Lake Storage  
Azure Databricks (AI)  
Azure DevOps  
Azure Event Hubs  
Microsoft 365 Enterprise  
Microsoft Teams  
Power Apps  
Power BI Pro

#### Industry

Health Provider

#### Organization Size

Corporate (10,000+ employees)



An average patient at Northwell Health generates about 5,000 data points during a five-day hospital visit. Even the most tech-savvy physicians must spend too much time just accessing that information. "Electronic medical record [EMR] systems were not designed to make this amount of information consumable. Every activity that you do in the EMR takes a long time," says Dr. Vish Anantraman, Chief Innovation Officer for Technology at Northwell Health. "Today, clinicians may spend 50 percent of their day in front of a computer. Having our most expensive resources sit at a computer instead of seeing patients is not financially productive. We want to let our clinicians spend more time with patients, which is what they want and what the patients want as well."

**Now our clinicians can look at all their communications and access all the information that they need about their patients with Microsoft Teams.**

Dr. Vish Anantraman: Associate VP and Chief Technology Innovation Officer  
[Northwell Health](#)

Northwell Health, an integrated healthcare delivery network in the New York City area, includes 23 hospitals and nearly 800 outpatient facilities. It has transformed its care team collaboration with Microsoft Teams, deploying the platform to 72,000 users across the organization. By providing clinicians, pharmacists, social workers, and other care

team members with a common tool for highly secure messaging, the organization is enabling better patient care, improving processes such as patient transport and medication delivery, and helping clinicians to maintain a better work-life balance by improving mobility options.

With Teams rapidly becoming clinicians' favorite communication tool, Northwell began investigating how to use it as a platform to solve other issues that the care teams faced. "As we started looking at Teams as more than just a highly secure texting tool, we realized it can be a great platform for accessing and collaborating on all kinds of information," explains Dr. Anantraman.

## Simplifying access to patient information with a clinician chatbot

As Head of Northwell's Innovation Center, which uses employees' collective knowledge to create technology solutions to improve patient care, Dr. Anantraman led his team to take on the challenge of making medical information more accessible. "We don't want to just improve the EMR experience by 10 or 20 percent; we want to improve it exponentially. In other words, if it took clinicians five minutes to access a piece of information in the EMR, we want to get that down to one second."

The result was NORA, a chatbot extension to Teams. NORA enables clinicians to use Teams chats to search the EMR solution and get patient information quickly. NORA also has a notification feature for clinicians to request alerts when lab results become available. They can also forward responses from NORA to other clinicians to get specialist opinions on the results. "Using NORA, I can pull up all sorts of EMR information right on my phone through the Teams platform. If I need a blood count, I can type in 'CBC,' which stands for 'complete blood count,' and all the CBCs for my patients will come up, or I can type in a patient's name, and all that patient's labs will come up," explains Dr. Mark Atlas, Director, Fellowship Training Program Division of Pediatric Hematology/Oncology and Stem Cell Transplantation at Cohen Children's Medical Center, , part of Northwell Health. "The biggest impact is patient satisfaction, because families want to know everything. They want to know it in real time, and they deserve to know it in real time. With NORA, we can do that. It's changed our patient interactions in a way I never thought possible."

Dr. Atlas continues, "The NORA bot in Teams is the only technology that I've ever worked with that's going to decrease my work, increase patient satisfaction, and, in fact, improve safety. I think it's truly revolutionary. I can spend less time interfacing with computers outside of the patient's room and more time talking with patients and their families." NORA is just one example of the ways Northwell is extending Teams to improve its processes and deliver better, more efficient care to patients.

# Using the Azure cloud platform to quickly build in-house apps

Northwell's small development team built NORA using an assortment of Azure technologies, which allowed the team to build a complex app without spending a lot of time and money. "A typical development cycle for a language bot like this might be years," says Dr. Anantraman. "But it ended up taking us only a few months, even without any expertise in bots or language processing, because we could use preexisting technology, both from Office 365 and the Azure platform."

The application itself is largely event-driven and completely serverless. NORA leverages the health information exchange system at Northwell, which aggregates messages from close to 200 data sources across the organization. These events are ingested into an Azure Event Hub and then processed into several Azure Cosmos DB instances. The data is staged by Azure Cognitive Search and Azure Databricks, and then consumed by Azure Bot Service, which delivers the data back to Teams. The analytics pipeline uses Azure Databricks to push data into Azure Data Lake, which feeds real-time analytics on Power BI. Northwell uses Azure DevOps for continuous integration and deployment so that changes can be pushed out to users very quickly. "We can iterate quickly. In the last week, we've probably released 10 to 15 different features," says Dr. Anantraman. "The beauty of Azure is that we can create all of these end-user features without complex engineering cycles to deploy them. We can also scale to a much larger audience without having to buy new servers or hire a system operations team."

## Managing care plans to reduce hospital stays

Using the same microservices and event architecture that were developed for NORA on the back end, the Innovation Center developers built the Rounding App, using Microsoft Power Apps, part of Microsoft Power Platform. Nurses access the app by adding it to channels and chats in Teams, and then they can use it to track patient care plans created during patient rounds and ensure that relevant information is available to every care team member. The app replaces paper-based processes whereby the nurse manager would record the patient care plan and its required tasks on a piece of paper while doing rounds. By giving the entire care team a clear view of the treatment plan and specific interventions that require extra attention, Northwell has been able to reduce delays and meet discharge goals.

Emily Laino, a Nurse Manager on a Medical-Surgical Cardiac Monitoring floor at Northwell Health, uses the Rounding App on her phone to access care plans for each patient on her floor. The app contains an expected discharge date and all the required tasks to meet that date. She explains, "Using the Rounding App, we can easily see all of the tasks required each day to ensure patients are discharged on time and then prioritize those tasks."

# Extending better patient experiences to the call center

Teams is also providing benefits for patients outside of the clinical environment. When patients call in to Northwell's Patient Access Services to schedule appointments, call center agents now use Teams to handle their requests more efficiently. "Patient Access Services loves Teams, because they can use tabs in Teams to access their service desk tickets and all of the other applications they use in one place, making it much easier to find the information the patients need," says Mary Goss, Director of Web Services at Northwell Health.

# Creating a single place to find and share patient information

Northwell has taken advantage of the extensibility offered by the Teams platform to greatly increase the value that Teams delivers for both patients and clinicians. "The fact that we can easily do something like building a tab in Teams to developing much more sophisticated, full-blown applications, like the Rounding App and the NORA bot, has allowed us to build on top of what we were using as a highly secure chat app to create solutions that clinicians didn't think were possible," concludes Dr. Anantraman. "Now our clinicians can look at all their communications and access all the information that they need about their patients with Microsoft Teams."

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