

By Robin Robinson

# Trend: Voice Assistants

Pharma is discovering several viable applications for voice-enabled technologies, including patient adherence, clinical trial recruitment, data collection, patient education, and provider information.

**A**lexa, how will voice assistants impact the pharmaceutical commercial landscape in the next five years?

Alexa is “not sure about that,” but our experts have the answers as smart speakers and voice technology begin to penetrate not only healthcare, but the pharma commercialization process as well.

Juniper Research predicts there will be 275 million voice assistant devices used to control smart homes by 2023. This is up from an estimated 25 million in 2018, a growth of 1,000%. According to DRG Digital, almost one-third of physicians are using Amazon Echo voice services or electronic health records with voice capabilities. According to data from

NPR and Edison Research, one in six Americans now owns a voice-activated speaker, up 128% just from January 2017. As reported in the Smart Audio Report, voice-driven devices have quickly become essential to many owners, with 42% of smart speaker owners saying their smart speakers are essential to everyday life.

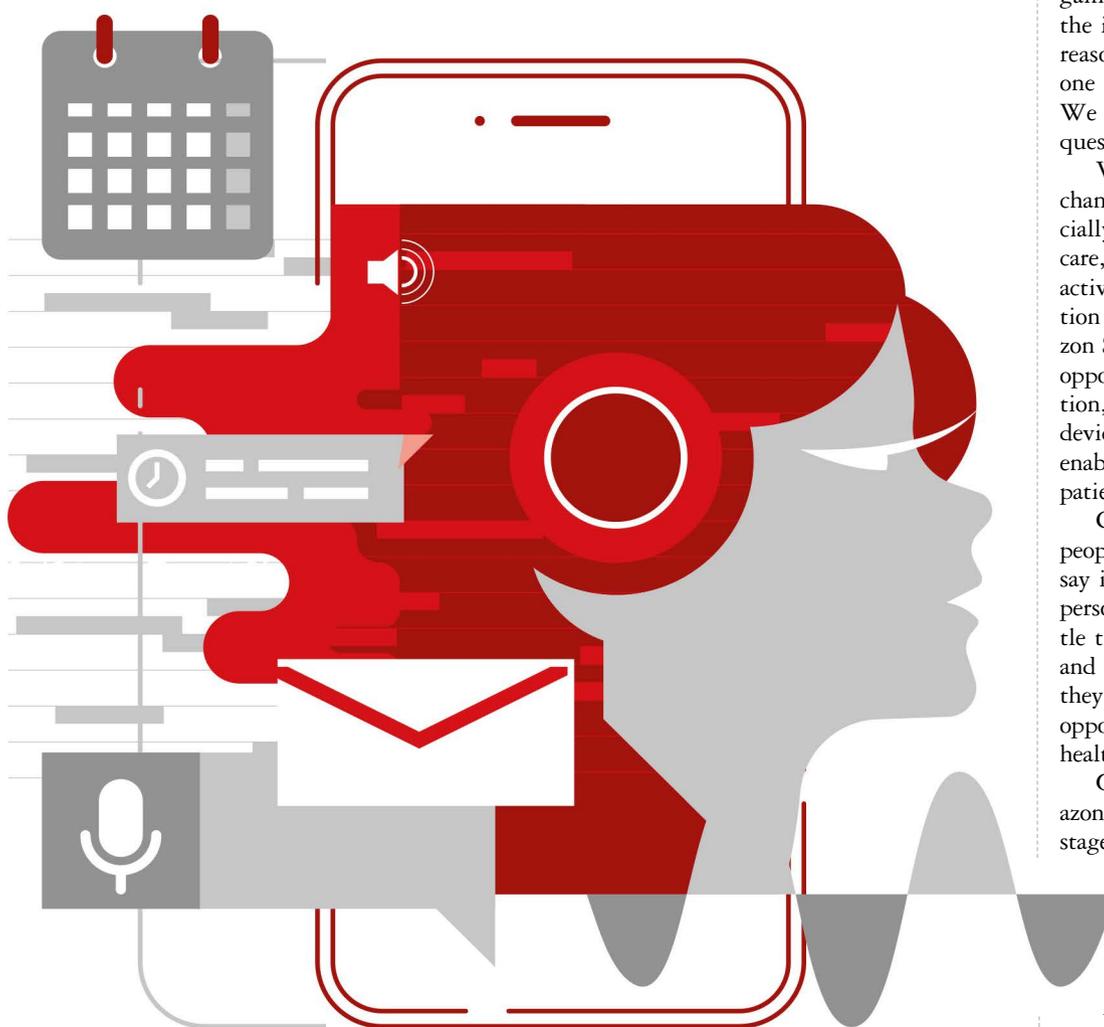
Voice assistants are going to continue to gain tremendous ground and greatly impact the industry over the coming years for many reasons, but perhaps the most important one is: they are so easy for consumers to use. We all know how to use our voice to ask a question.

Voice assistants have the opportunity to change the pharmaceutical landscape especially in the areas of adherence and distance care, says Ray Rosti, executive VP, platform activation, Publicis Health Media. “The addition of visual voice devices, such as the Amazon Show and Google Home Hub, creates the opportunity to add a new dimension to education,” Mr. Rosti says. “Pairing these connected devices with scheduled tasks and reminders enables care teams to track the adherence of patients and loved ones.”

Google recently reported that 41% of people who own a voice-activated speaker say it feels like talking to a friend or another person. At a time when patients get very little time with a physician and leave the office and pharmacy with a handful of paper that they will never read, voice assistants have the opportunity to bolster patient education and health literacy.

Connected home devices, such as the Amazon Echo and Google Home, are setting the stage for a new kind of computing: ambient computing — the backdrop of sensors, devices, intelligence, and agents that can put the Internet of Things to work.

“There is a very long road ahead to achieve a truly intuitive ambient computing world, but it is coming sooner than most people think,” says Chris Cullmann, head



of digital, Ogilvy Health. People who own voice assistant technology become quickly accustomed to asking for health advice. The behavior is internalized and quickly becomes routine and instinctive.

“It’s this routine, the aspect of expecting to interact with the personality built into the device, that is so critical to pharmaceutical manufacturers,” Mr. Cullmann continues. “By adding assistance to patients and caregivers through skills, well-thought out search placements, and content, healthcare brands can borrow a lot of trust-equity afforded by the familiar voice assistant already in the home setting.”

According to Bill Rogers, CEO at Orbita, interacting with a voice assistant gives patients a very natural way to become educated on their illness or condition. “A problem in healthcare in general is that a vast majority of people are not educated or informed and using natural language to interface with a smart speaker enables discussions on a particular topic, resulting in a better educated patient that leads to healthier patients, which lowers costs; so, there is a big, big benefit all around.”

Voice assistants are not taking the place of people, he says, but rather are doing tasks that nobody was doing anyway. “There’s this void in care, and voice and chatbots can fill that void and enable patients to follow their treatment and care protocol right at the time they need to,” Mr. Rogers says.

As the use of voice assistance becomes ingrained in everyone’s daily rituals, its use will also spread to the healthcare side of our lives, says Karin Beckstrom, senior product manager, ERT. “Voice assistance itself will rapidly evolve over the next five years and, as a result, will become deeply embedded in our daily routines,” Ms. Beckstrom says. “We can expect the technology to reach beyond activation with a wake word, to becoming more proactive, more contextually aware and facilitating interactions that could improve healthcare and health outcomes.”

For example, she says, consider the role voice assistance (VA) could play as a health coach. Through the IoT, data from wearables, such as activity trackers that also monitor sleep patterns, could be integrated into VA applications. Imagine awaking to this conversation: “Your sleep data show you took a long time to fall asleep last night. Studies show reducing the blue color on your smartphone can improve time to sleep — would you like me to change the setting on your phone?”

“VA can be used for interventions, to prevent patients from forgetting medications and appointments, or for monitoring blood glucose and/or blood pressure as advised by a health-



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**RAY ROSTI**  
Publicis Health Media



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**KARIN BECKSTROM**  
ERT



Conversational interfaces from voice assistants to chatbots will become the defacto mechanism for how we search, gather insights, and connect with stakeholders across the ecosystem.

**BRYAN HILL**  
Cognizant Life Sciences

care provider,” Ms. Beckstrom says. “And let’s not forget its capacity for automatic trending, for example, ‘You walked 10% more this week than average. Good job.’”

Leveraging the presence of VA smartly, brands can now participate in the morning routine, help guide behavior change through the day, and perhaps intervene in education. “More so, delivering healthcare information to patients through the spoken word now allows a greater opportunity to bridge low health literacy with authoritative disease education materials and curated actions that can provide care to patients in an intuitive way,” Mr. Cullmann says. The voice assistant can also provide regular access to information in a central location and manage everything from dosing information and regimen to questions about access information.

Patients have been found to interact more readily with a voice assistant rather than a real person, perhaps because Alexa doesn’t make them feel awkward. Patients, especially the elderly and the disoriented, may struggle to remember which pills they have taken and when their dosage needs to be checked or changed. The array of providers and caregivers who encircle a patient can always be more helpful with a coordinated care plan to help track current prescriptions and dosages. A voice assistant can play the arbiter in these situations, providing a source of truth that the patient can check — again and again throughout the day, if necessary — to keep track of which medica-

tions are taken and provide a nudge or an alert if the patient falls behind. The information that drives the assistant can inform all of the other parties involved in the patient’s care on dosages and adherence.

“The greatest virtue that a voice assistant can provide is patience,” says Chris Dahlen, senior VP, application development, Mad\*Pow. “This basic, subservient role of answering questions again and again — and only for approved users — will provide the most value to patients and the people who support them, keeping even the most disoriented patients from falling off track with the many medications they rely on.”

The impact of voice gets an extra boost when it is coupled with a device, such as an in-home companion robot that combines artificial intelligence with voice technology, like the Pillo robot.

The companion robot market is expected to top \$34 billion by 2022, according to a 2017 P&S Market Research report. The report also noted that the global aging population has been driving personal robots markets in developed regions.

In collaboration with Orbita, Pillo Health developed the Pillo robot, which can be programmed to dispense medicine. It uses AI algorithms that proactively engage with patients, improve therapy adherence, and deliver personalized care for adults living with chronic conditions. The Pillo robot can accompany a patient at every point on his or her care jour-



Voice assistants are critical for pharmaceutical companies to have an overall understanding of the patient journey and clinical trial landscape.

**MARK ANDREWS**  
Verilogue

ney. Mr. Rogers says this type of powerful tool is going to be revolutionary for the pharma industry, as it ensures the patient is taking his or her medication.

And pharma companies are not lagging behind on the emerging voice assistant trend. Companies such as Merck and Johnson & Johnson are creating ways to use voice assistants to help educate and motivate patients.

For example, Merck's subsidiary StayWell is the type of innovation that will drive other companies forward. StayWell, a health empowerment company, developed StayWell Voice, an omnichannel application that uses voice-first technology and advanced analytics to help individuals manage their weight and stress, and take action on biometric values. StayWell Voice leverages the O Voice platform to power multi-modal creation and management of intelligent conversational applications for devices such as Amazon Echo and chatbots for mobile and web environments.

Merck also sponsored the Alexa Diabetes Challenge to generate solutions that can help patients manage the disease.

Additionally, last year, Novo Nordisk focused its 17th health innovation World Cup solely on voice-activated technology to improve diabetes care.



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**CHRIS DAHLEN**  
Mad\*Pow



Voice is such a massive trend that's moving in the marketplace; it's going to be big and fast and it is going to affect everything.

**BILL ROGERS**  
Oribita

"We're starting to see more projects from pharmaceutical companies that want to create a brand that can help and interact with patients," Mr. Rogers says.

Consumer adoption is driving the market, and with one in six people owning a smart speaker and nearly every smartphone, car, and IoT-enabled device having VA capability, conversational experiences are becoming the norm, says Bryan Hill, chief technology officer, Cognizant Life Sciences. "The behavioral data captured from these experiences will fuel the machine learning and cognitive capabilities required for more sophisticated conversations that integrate a given voice assistant's conversational knowledge from multiple sources and drive a dialogue."

Much like the smartphone transformed the way we communicate and transact over the last 10 years, conversational interfaces from voice assistants to chatbots will become the defacto mechanism for how people can search, gather

insights, and connect with stakeholders across the ecosystem, Mr. Hill adds.

### Voice Assistants and Clinical Trials

Mr. Cullmann says voice technology is also very helpful in the complicated clinical trial space. A voice assistant can help patients navigate complicated location, audience, and eligibility information in addition to real-time enrollment information. By allowing for a plain-language interface to these services, the

industry can reduce strain on trial locations and patient frustration, he says.

Just last year, Orbita and ERT partnered to research the potential of voice assistants to improve patient engagement and optimize data collection in the clinical trial setting. Patients used their voice to complete interactive surveys, verify completion of care tasks and report health concerns while clinical trials investigators and coordinators use built-in analytics to track user engagement and respond to user input.

"There are many reasons voice can help out in clinical trials, and one of the main topics that comes up when talking to sponsors and patients is the capability to be a companion, someone who's always there for patients," Ms. Beckstrom says. "The concept of bringing a clinical trial partner right into the home of the patient brings a powerful experience to that patient. Patients can ask questions and get guidance."

The biggest challenge in a clinical trial is to keep patients engaged and keep them adherent, and voice can lower some of the obstacles for patients to engage in clinical trials. "Any friction in the way to engage with that patient is a problem," Mr. Rogers says. "Voice literally is the lowest interface for friction to be able to interact in an application."

All of these advances can ease participation in clinical trials by allowing VA to become a patient's personal trial guide, automatically reminding them of tasks and appointments, passively collecting data from their smart speakers or sensors, and transmitting it to trial sponsors, as well as alerting the primary investigator of noteworthy or other safety-related information.

"Over time, the digital connectivity of patients through connected devices and biometric monitoring devices has the ability to provide meaningful data for other health-industry-related applications, such as identifying

patients who are a potential fit for clinical trials,” Mr. Rosti says.

“Any necessary data can be automatically sent to the FDA, alongside other test-based data that can be gathered by the patient,” Mark Andrews, marketing manager, Verilogue says. “In this light, opportunities arise to perform a specific leg of qualitative research, cognitive linguistic interviewing, to judge and understand the patient engagement, emotions, and feelings in the exam room.”

### Voice Applications and Commercial Applications

Voice can also be very effective for the sales team. With more and more specialty and orphan drugs, the commercial model of large sales teams is changing. Also, more specialists with different skillsets need to call on and service many different customer stakeholders beyond the physician. “Voice assistants can be the front line to answer many questions and serve as a concierge to facilitate transactions and connections to the right resources within a pharma company,” says Julie Pilon, chief strategy officer, Publicis Health+ Sapient.

Using an on-demand resource, an HCP doesn't need to wait to get a question answered on the next medical or sales call. In addition, the voice assistant can get real-time insights into what questions and issues are on an individual's mind, and service them through both digital and human interactions.

However, voice assistants introduce new challenges for pharma's legal and regulatory staff given they can have open-ended user input, Ms. Pilon cautions.

“It's important to work with the legal and regulatory teams and start with existing submission formats for channels such as call scripts, SMS streams, and automated phone systems,” she says.

The key to an effective and efficient review of this new experience is educating the legal and regulatory team on what the channel is and how it works. Additionally, the more companies can leverage the format

The consumer's expectation to be able to interact with the personality built into a smart device is critical to pharmaceutical manufacturers.

**CHRIS CULLMANN**  
Ogilvy Health

### How Consumers Used Voice Assistants for Healthcare

- ▶ 70% asked about symptoms they are experiencing
- ▶ 59% asked about health or diet tips
- ▶ 46% of people with voice assistants have used it for an issue concerning health or health care.
- ▶ 48% used it to connect to a hospital or doctor
- ▶ 41% used it to ask about health plans or insurance

#### When Voice Assistants Weren't Used:

- ▶ 67% didn't think to do so
- ▶ 25% didn't feel secure
- ▶ 17% said needs were too complicated
- ▶ 15% said they didn't think there would be useful tasks for their needs

Invoca report; The Rise of Voice: What the Increase in Conversation, Voice Assistants and AI Means for Business

of existing similar submissions and look to use as much content from the submissions as possible, the better, she adds.

Orbita is collaborating with Brigham and Women's Hospital Digital Innovation Hub to advance the use of voice-enabled and conversational AI solutions in the hospital setting. The organizations will collaborate on innovating digital healthcare applications that leverage voice assistants, chatbots, and other conversational user interfaces to improve patient engagement, remote care, clinical efficiency, and business processes.

Acceleration will happen once stakeholders recognize the promise that can be realized so quickly, and this will be proved through the success of ongoing projects such as the Brigham and Women's Hospital initiative.



Mr. Rogers predicts that in just two to three years, both mobile apps and medical devices will move to voice applications. “This is a massive trend that's moving the marketplace,” he says. “It's going to be a big, big, big fast wave that is going to affect everything.” <sup>PV</sup>



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CODE READER OR GO TO  
[bit.ly/PV1118-VoiceAssistant](http://bit.ly/PV1118-VoiceAssistant)



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**JULIE PILON**  
Publicis Health+ Sapient

## Best Practices for Voice Assistant Technology

Our experts provide tips to help pharma companies prepare for the voice tech revolution.



**KARIN BECKSTROM**  
Senior Product  
Manager, ERT

When you think about it, voice assistant (VA) technology is not an entirely new concept in the clinical trial space. It's basically the next iteration of interactive voice response (IVR), which for decades has enabled patients to verbally select yes or no to study questionnaires. VA is simply taking these conversations away from the phone to Internet-connected, intelligent smart speakers.

It's the technological advances in artificial intelligence (AI) that are enabling voice assistants to engage with users much more naturally, respond to a wide range of commands in a conversational manner, and in many ways, act as a companion to patients during lengthy clinical trials.

Before these advances, IVR was often seen as being more frustrating than useful. But applied in clinical research, VA can serve numerous purposes, including enabling patients to complete interactive questionnaires, verifying the completion of care tasks and acting as medication/investigative site visit reminders, all of which help sponsors achieve their clinical development objectives.

But, before implementing VA in clinical research — especially for the purpose of important patient data collection — sponsors should keep in mind the nuances of working with such an interactive technology. For example, sponsors would be wise to build the VA workflow to meet regulatory standards, such as allowing the user to confirm the smart speaker heard the patient's response correctly and is submitting the correct data to the database. And, it would behoove them to ensure that the question and answer choices are the same in the study database re-

gardless of whether the patient is using VA or an app to respond to questionnaires. This eliminates the possibility of one patient's response of "3" having a different meaning on an app than it does via VA. Finally, implementing any technology requires building a process that is intuitive for the user so it can be quickly adopted and will be maintained throughout the trial.



**JEN BRISELLI**  
VP, Experience Strategy  
and Service Design,  
Mad\*Pow

Merck's StayWell Voice activation is an example of the type of innovation that will become more critical for pharma companies to embrace going forward. It's critically important for organizations to invest beyond the traditional manufacture and marketing of medicines as products, and to step forward into new innovative spaces and technology enabled services that support total health and well-being.

There are few downsides to this type of human centered service design perspective — the worst that can happen is Merck fails forward as it learns and iterates toward success for patients and stakeholders. We think the investment in the public's patience is going to be invaluable here.

On the cautionary side, pharma will want to avoid capitalizing on patient data in ways that degrade feelings of trust and utility for patients. Focus first on patient value as a priority objective, and create buy-in and credibility as a key strategic imperative; good things will come from a patient-centered process.

**CHRIS CULLMANN**  
Head of Digital, Ogilvy Health

Developing emerging platforms, especially at a



time when interfaces are undergoing a paradigm shift as they are with voice, is awkward. As new devices, form factors, and software flood the market, companies should consider key factors in their design. The first, and most critical factor, is aligning the solution with the audience. Many solutions fail and falter because they are misaligned with the needs of the audience. Many of the challenges of compliance and health are faults of human nature: miscommunication, forgetfulness, reluctance, and procrastination. How is your device, solution, software going to answer the user's need on a simple level?

A second challenge is maintaining innovative solutions beyond launch. Healthcare has an incredible history of losing interest in platforms. There is an iOS app healthcare graveyard filled with apps that launched with fervor, but never received the attention to be updated for new operating systems, user needs, or integrated with other systems in the host organization. It's important to have a pipeline and strategy to support the solution post-launch.

Lastly, think through the overall user experience: how will the end user discover your solution? How will they install it? Who will they turn to if there is an issue? Will they grow bored of it? Think about all of the various iterations and plan for more. Plan to pay for drivers, plan for bugs, plan for support, and most importantly — plan for success.



**KRISTI EBONG**  
Senior VP, Strategy and  
General Manager of  
Healthcare Providers,  
Orbita

The ability to recruit patients where they are within an existing clinical workflow with the clinician, as well

as to continue to engage them in the home, is a huge opportunity for voice assistance and not just from a business perspective. It's an opportunity that never existed until now. I'm very excited to see that both providers and pharma are very interested in using this technology to better connect with patients. Some of these patients are really facing challenging circumstances and are enrolling in clinical trials, and we're trying to move the needle on research and provide them with treatments and options that can change their lives. The ability to have a voice and a chatbot interface to streamline the engagement is something that we haven't encountered before.



**BRYAN HILL**  
Chief Technology  
Officer, Cognizant  
Life Sciences

At the end of the day, the objective is to create the most human of experiences — a conversation. Designing a solution to enable meaningful conversation between human and technology requires close attention to forming its personality — areas of knowledge, tonality, and even gender — so that the voice assistant is personally relatable to the human.

When two people are talking, they draw on past experiences or what they learn of each other during the course of the exchange to have an efficient relevant exchange of ideas. So, consider integrating sources such as CRM and EHR platforms to interject working knowledge of the person as well as behavioral models and sentiment detection to bring more empathy to the conversation.

In the near term, humans will need to be trained on what the voice assistant knows and how to speak to her/him, which will require planning for promotion and outreach. And much like mobile devices

challenged content providers to adapt to multiple display formats, conversational interfaces from voice assistants to chatbots will challenge companies to provide a consistent conversational experience at each touchpoint.



**JULIE PILON**  
Chief Strategy Officer,  
Publicis Health+ Sapient

Interactions that require a large number of inputs from the user or return large amounts of dense data are generally less suited to conversational interfaces than to traditional graphical user interfaces. Picking and narrowing your use case is critical — decide on the one thing you want to do really well that is aligned with a user's need, desire, and ability to interact with the assistant. You need to consider the customer preference for channel and modality, for example ease of speaking versus the aversion to verbalizing sensitive information in a public space, as well as considering the possibility of multiple modalities within a single interaction, such as initiating a transaction via a smart speaker that is completed via a mobile web page shared via SMS.

You can't over-index on conversational scripting because you have to account for many variations while also designing for modularity and scaling of content. To create a natural language experience that is intuitive and engaging to users, we observe the user in their natural environment or look at existing voice recordings to categorize and prioritize observed requests.

Things will go wrong so you have to minimize those occurrences, and plan on ways to gracefully handle them when they do. We call this non-happy path planning. After we design the conversation, we work to get ahead of what could go wrong. This could include conversation not feeling natural, the

assistant not understanding the user, or being unable to support the user's desired action.

Troubleshooting needs to decipher if the issue was due to the assistant not understanding the use or if the experience was not effective. It's important to have metrics that are specific to voice assistants such as the intent accuracy and confusion rate — what percentage of utterances were matched to the correct intent and what percent were misunderstood.



**RAY ROSTI**  
Executive VP, Platform  
Activation, Publicis  
Health Media

The most important thing to understand with voice assistants is that the identification of answers was built by analyzing years of search behavior. Keywords are the questions, while content within the search results acts as the answers. When developing a voice strategy, start with understanding current behaviors or questions, determine how they play out digitally, then find a way to participate in that moment by providing helpful content.

Second, own your brand questions. When patients or physicians ask questions about your brand, make sure you own the answer. This is the first and easiest place to win in the voice search landscape. Use search data and call-center transcripts to understand the most common questions and create voice-accessible content from this information.

Finally, before building a voice experience for health, be sure to pre-qualify the experience by asking if it makes a task easier, delights or entertains, or has a clear utility or function. If the experience doesn't cleanly fit into one or more of these buckets, it may be doomed to fail.