Artificial Intelligence for Authentic Engagement

Patient perspectives on healthcare’s evolving AI conversation
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Executive Summary

Over 2017, artificial intelligence (AI) became a mainstream topic of conversation with industry, investors and the media discussing its possible impact on all areas of our personal and professional lives.

It’s not enough that algorithms upstage human champions in chess, the game of Go and even TV game shows. Today’s smart systems also plot our travel routes, manage our traffic systems, log our financial transactions, structure our searches, predict our purchases, monitor our moods, recognize our faces, listen to our voices and even track our dream states.

Now, the same AI wave is poised to transform healthcare with examples ranging from supercomputers identifying hard-to-diagnose cancers; robots assisting surgeons with complex procedures; and chatbot therapists supporting patients with cognitive behavioural therapy. Increasingly, it seems as if artificial intelligence will offer new doors into the healthcare system and suggest new pathways for both patients and physicians to follow.

While it can admittedly be difficult to separate the hype from the hope around artificial intelligence, the fact is that AI budgets at companies large and small are flush with cash, and still more venture capital will flow into healthcare over 2018 as investors build on the innovations that artificial intelligence technologies and approaches have already delivered.

Need help enrolling in a clinical trial? San Francisco start-up Mendel.ai has an app for that. How about some assistance juggling complex drug regimens for Type 2 diabetes? Dozens of services can help you, many of them even responding directly to your voice through platforms such as Amazon’s Alexa, which has now turned many millions more U.S. and European households into smart homes after dominating sales charts over the holiday season.

But up till now, there’s been a missing component in healthcare’s AI conversation: the voices of patients themselves. For all the hype and the headlines, what do we actually know about how people with chronic conditions will react when presented with the prospect of their health being managed by algorithms instead of doctors, or by smartphones and sensors rather than nurses?
To get answers, Syneos Health Communications™ surveyed approximately 800 European and American patients in three disease areas—atrial fibrillation, Type 2 diabetes, breast cancer—and approximately 200 caregivers for people with Parkinson’s disease.\(^1\)

In an online survey and in follow-up focus groups, we asked patients about their expectations and concerns around the potential role of AI in diagnosis, treatment and support in their day-to-day lives.

The findings present a unique window onto patients’ hopes and fears in an age of ever-increasing accelerations.

They highlight, for example, that a majority of people are anxious about technology encroaching on physicians’ authority and discretion. They’re comfortable with consumer technology in their daily lives, but don’t want tech (or tech companies) to whittle away their access to doctors or compromise their personal information.

In other words, excitement over healthcare AI in the scientific and investor communities doesn’t translate into joy for those at the sharp end of new AI services. Systems that support diagnosis and treatment are all well and good, patients say, but only if they play a supporting, assistive role to the human doctors remaining in control.

But while no one seems to want their doctor replaced, our findings nevertheless show a strong opportunity for using new technologies and capabilities to support patients by scaling and supplementing “nurse” interactions in the gaps between real-world visits and appointments.

This concept of “virtual nurse assistants” is one not only well received by patients, but one which is seen to offer both personal benefits through 24x7 access to support and benefits for society as a whole by freeing up face-to-face time for those who need it the most.

In terms of how AI can help deliver these benefits, one capability stands out in our findings—the potential for voice recognition and conversational interactions to provide a new interface for digital patient support services.

Equally important to patients, however, is who the voice and content of new services is seen to come from.
Our findings highlight that patients do not want to see their doctors replaced, but take on an additional role in healthcare’s future, including oversight of any tools and services developed and, critically, of how they’re delivered.

Artificial intelligence may be the province of the world’s biggest tech companies, but it seems that without the endorsement, recommendation, comfort and control of physicians, AI tools designed to drive patient engagement won’t gain traction in the real world with those who need care and support the most.

Most people who work in healthcare understand that improving patients’ lives is a privilege and, for many, even a calling. As AI-powered devices and services play a larger role in care delivery, all our industry’s stakeholders—from drug manufacturers through payers and physicians to advocacy groups—have an opportunity to pursue that calling still further by developing partnerships to step outside their traditional roles.

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It’s a vision that sees a new empowerment for physicians—a role in which, to reference one of our 2017 Healthcare Trends—AI plays Robin to the doctor’s Batman. More importantly, it’s a vision that recasts AI as more properly standing for “augmented intelligence” than for “artificial intelligence.”

For those who follow financial news, it’s already been obvious throughout 2017 what healthcare AI can do for innovators and investors. Our findings set the stage in 2018 and beyond for healthcare and life science leaders to join the conversation and to demonstrate what AI can do for patients and society.
Investors and tech entrepreneurs are teaming up to radically change healthcare.
The Healthcare-AI Landscape

Artificial Intelligence: “The New Electricity”

It’s hard to escape the excitement around artificial intelligence. The headlines are all around us:

• A computer from Google’s DeepMind subsidiary taught itself to defeat the world’s leading player of the Chinese strategy board game Go, in just three days with no human coaching.

• McKinsey projected that up to half of current jobs across all sectors are susceptible to automation by 2030, all by using technologies that are already in use within businesses now.

• And then there’s the enduring promise of the self-driving car. Tesla vehicles have already logged more than 1.3 billion miles of data from vehicles operating on autopilot, and commentators suggest that as many as 10 million unmanned, autonomous vehicles may be on the road worldwide as soon as 2020.

Artificial intelligence, in the words of leading computer scientist Andrew Ng, is “the new electricity”: a transformative, enabling technology that will soon be added to all existing processes within all current industries, and which will accelerate, improve and radically change every aspect of our lives.

And right now, no sector is subject to more investment and speculation about the shocks that this electricity might cause than healthcare.
The Focus on Health

Over the last five years more than 300 venture capital and private equity deals have been made to fund experiments in AI for healthcare, ahead of all other industries. Nearly half of that money has been flowing to new start-ups—outside innovators—looking to disrupt existing structures and systems.

As with artificial intelligence, the headlines fuel and reinforce both the hype and excitement.

• In November, a robot passed the written exam to become a practicing doctor in China.

• AI has bested human radiologists in the detection and diagnosis of conditions, such as pneumonia.

• Over the last six years, IBM’s supercomputer, Watson, has progressed from winning TV quiz show Jeopardy to being pitched explicitly to oncologists as being able to “Outthink Cancer.”

There's never been a better time than now to look beyond the headlines and try to gain a broader understanding of the ways in which AI might impact patients.

There's never been a better time than now to look beyond the headlines and try to gain a broader understanding of the ways in which artificial intelligence might impact not just healthcare as a system, but healthcare as it's experienced by the people at that system's center: patients.
Artificial Intelligence for Authentic Engagement

**AI Ambition: Replace Physicians**

Much of the current healthcare AI conversation is concentrated on the changing role—or indeed the actual replacement—of doctors in a world where algorithms can make diagnoses, wearables can track vital signs and robots can be remotely controlled to perform surgical procedures.

Google alum Sebastian Thrun made headlines at the start of 2017 with a paper published in *Nature* that showed an algorithm could outperform the average board-certified dermatologist in the diagnosis of skin cancer.

From the investment side, the same concept of AI as a potential replacement for physicians was floated as long ago as 2012 by Vinod Khosla, whose company Khosla Ventures is one of the largest investors in the healthcare AI start-up boom.

> A world mostly without doctors (at least average ones) is not only reasonable, but also more likely than not.

— Vinod Khosla

The advocates of AI as a replacement for physicians even have a declared first target in their sights: radiologists. In that field, algorithms can process, match patterns and flag likely diagnoses from scans and medical images far more quickly than any human could ever hope to.

Leading computer scientist Geoffrey Hinton—often referred to as the “Godfather of AI”—said, “They should stop training radiologists now,” and if you work as a radiologist you’re “like Wile E. Coyote in the cartoon. You’re already over the edge of the cliff, but you haven’t looked down yet. There’s no ground underneath.”

So how real, right now, is this vision of a world in which artificial intelligence replaces physicians?
AI Actuality: Augment Physicians

Writing in the Journal of the American Medical Association (JAMA) on the real potential impact of artificial intelligence on imaging specialists, such as radiologists and pathologists, Dr. Eric Topol of the Scripps Translational Science Institute notes that AI will elevate these specialists, rather than replace them.

**With AI tools to support them,** the future role of these specialists “will not be so much to extract information from images and histology, but to manage the information extracted by artificial intelligence in the clinical context of the patient.”

In other words, AI will help put back the humanity in healthcare by allowing physicians to focus on the patient versus drowning in data.

It’s a vision that sees a new empowerment for physicians—a role in which, to reference one of our 2017 Healthcare Trends—AI plays Robin to the doctor’s Batman. More importantly, it’s a vision that recasts AI as more properly standing for “augmented intelligence” than for “artificial intelligence.”

From this perspective, it can also be useful to draw a comparison between AI for healthcare and one of the other most hyped areas of artificial intelligence in practice—the vision of the self-driving car.

The first successful trials of self-driving “robot” cars took place in Germany more than 30 years ago, but they’re still not driving on real-world roads in any significant numbers.

Instead, we’ve seen progress toward exactly this type of “augmented intelligence.” AI may not be in the driver’s seat, but it’s almost everywhere else—above and below the driver—in the form of assistive technologies, such as cruise control, automatic parking, lane assistant, GPS and route-finding. Whether AI augments or replaces physicians, it is already changing the interface of health.

In other words, AI will help put back the humanity in healthcare by allowing physicians to focus on the patient versus drowning in data.
Artificial Intelligence for Authentic Engagement

Reality Check on AI

The future is not as close as those commentators outside of the healthcare industry might have you believe.

First, there is the question of the technology itself.

IBM’s Watson is clearly the most established platform in the world of medical AI with customers in oncology centers worldwide, however, recent reports suggest that currently the system is limited.

Despite great promise, even IBM executives admit that Watson for oncology is “still in its infancy,” and as yet the closest the company has come to publishing clinical studies in peer-reviewed journals is a series of abstracts—all but one of which were authored by either IBM staff or paying customers of the system. Cancer, it turns out, isn’t as easy to beat as a gameshow.

Then there are the problems that artificial intelligence for diagnosis or treatment recommendations faces when it comes to approval and regulation.

In May 2018, the EU’s General Data Protection Regulation (GDPR) will come into force, impacting any organisation worldwide wanting to do business in any of the EU’s member states.

Among the many provisions of GDPR is Article 22, which gives citizens “the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her or similarly significantly affects him or her.”

To some commentators, the implication is that decisions made by computers and algorithms, such as a diagnosis or course of treatment, need to be guided by human oversight. Further, these decisions will need to be “explainable,” which poses a problem for many current AI systems.

Not only is the way that machines learn currently something of a “black box,” it’s a black box that gets still more opaque each time a new data point or piece of information is added to it.

In the United States, the FDA must approve new systems and regulatory frameworks that simply do not exist today. In critical new draft guidance that the FDA released in December 2017, there’s abundant detail on clinical decision support tools doctors may use in diagnosing and treating patients. But, the guidance offers no clarity on how to employ or monitor AI programs in such a context.

Radiologists will tell you that systems for computer aided diagnosis (CAD) have been available for years now in areas such as mammography, but “in the form that finally passed the agency’s review, CAD serves as the medical equivalent of a spell checker.”

Perhaps the biggest barrier to the realization of the hopes of AI’s medical evangelists comes in the tension between the worldview of the two different sides of this conversation: the outside innovators of Silicon Valley and the medical establishment.

While much of Silicon Valley still runs on Mark Zuckerberg’s famous mantra of “move fast and break things,” the entire ethos of evidence-based medicine is grounded in an approach of “move slowly and take care.”

Simply put, healthcare is not an industry with dynamics as simple as many of those that new start-ups have disrupted, such as the taxi business.

There is a world of difference between replacing a taxi driver and replacing a physician with years of professional training, a personal relationship with their patients and an actual vocation driving their work.
The Unheard Voice

New data on what patients want—and will accept—from the new interfaces of health
The Unheard Voice

The Missing Patient Voice

The way patients access, experience and engage with health will be changed by this technology in ways large and small.

In fact, the way people access and engage with major healthcare systems is already changing. Today, over half the interactions Kaiser Permanente’s 100 million members have with that healthcare system happen entirely online. Major insurers and centralized payers are using algorithms to prioritize and automate proactive patient interventions. Leaders like the NHS and AstraZeneca are piloting replacing human-run call centers with AI-powered chatbots to triage patients and guide them through care.

Yet, nowhere in current conversations about the future of AI will you hear the voice of the patient.

There has been significant research done around general public and consumer attitudes toward AI, and we believe that patients and consumers are not interchangeable audiences or terms.

Healthcare can be scary. It has its own specific, technical language. And most healthcare is consumed at times when we are least able to exercise choice.

Rationale and Methodology

This report was designed to understand current ideas, expectations and concerns within specific groups of patients, including those with chronic conditions and those who care for them.

To return to our automotive analogy, we’ve tried to address questions such as “What does ‘cruise control’ look like for the person with Type 2 diabetes?” or “What does GPS and route-finding look like for the person starting chemotherapy or caring for a person newly diagnosed with Parkinson’s disease?”

Syneos Health Communications surveyed approximately 800 European and American patients in three disease areas: atrial fibrillation, Type 2 diabetes and breast cancer, as well as approximately 200 caregivers for people with Parkinson’s disease. Primary fieldwork was carried out online with Fieldwork International®, with all analysis and interpretation completed internally by Syneos Health Communications.
In a 30-minute online survey, and in follow-up focus groups, we plotted respondents’ familiarity with consumer technology and social media. We also gauged their exposure to current thinking on AI.

We then asked respondents to grade-rank their positive expectations and concerns when presented with different scenarios, including having AI assist a doctor or nurse across a range of healthcare interactions, such as: receiving a diagnosis; getting test results and follow-up care; or being informed about relevant clinical trials.

The responses summarized in this report provide what we believe is the first window into patients’ thought processes as they begin to confront an AI future with few signposts, roadmaps or regulatory guidelines.
Therapeutic Focus for This Report

We surveyed patients and caregivers in four chronic and acute therapeutic areas. Each group was selected for its connection to a critical dynamic in healthcare right now.

Type 2 Diabetes

This epidemic is changing the world’s health and welfare. It’s also a strong focus for AI innovators who think the wisdom of machines can fill in gaps in human motivation and education to ultimately improve self management.

Atrial-Fibrillation

Cardiovascular disease is the most costly and prevalent killer. In the next two decades, the number of Americans with CVD will rise to 131.2 million—45 percent of the total U.S. population—with costs expected to reach $1.1 trillion. This September, atrial-fibrillation was the first chronic condition to make it to the stage of an Apple product launch event with the announcement of the Apple Heart Study, which looks to combine smartwatch with AI back-end for screening and monitoring.

Breast Cancer

For many people, AI means IBM’s Watson; explicitly marketed to industry and the general public as “helping doctors to outthink cancer.” This space represents a real application of artificial intelligence; helping physicians work toward better patient outcomes in more than 50 hospitals in 13 countries across five continents.

Parkinson’s Disease

We chose Parkinson’s because we’ve been inspired by the early adoption—as evidenced by product reviews on Amazon.com—of AI-driven voice systems as an assistive technology to make patients’ and loved ones’ lives easier. This condition also lets us look through the critical lens of how AI can help with limitations many older adults may have, like issues with vision or motor control. All of the respondents in this group are carers, a role 3 in 5 people in the UK will have in our lifetimes.
First Things First: Current Technology and Adoption

Older people are connected but the “digital divide” is still very real.

The great majority of our respondents are connected to digital services. Even within older respondents (65+), more than 70 percent own a laptop or desktop, and more than 60 percent report smartphone ownership. Smartphone ownership, however, drops sharply in our older age cohort.

Clearly, the ongoing trend in developed markets toward increasingly ubiquitous Internet access is not unique to younger people.

Nevertheless, when considering the importance of designing universally inclusive and accessible healthcare services, a clear digital divide can still be observed: for example, one in four of our U.S. respondents over 65 do not own a smartphone.

Specific to our focus on healthcare, we also asked respondents about ownership of health wearables, such as smartwatches or trackers such as Fitbit.

Figure 1: Technology ownership profile: “Which, if any, of the following electronic devices do you own?”

![Technology Ownership Profile](image)

<table>
<thead>
<tr>
<th>EU &amp; US under 65</th>
<th>EU &amp; US 65 and over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Computer</td>
<td>70%</td>
</tr>
<tr>
<td>Laptop Computer</td>
<td>75%</td>
</tr>
<tr>
<td>Tablet (e.g., iPad)</td>
<td>64%</td>
</tr>
<tr>
<td>Smartphone</td>
<td>88%</td>
</tr>
<tr>
<td>Smartwatch (e.g., Samsung Gear)</td>
<td>13%</td>
</tr>
<tr>
<td>Health wearable (e.g., FitBit)</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td>65%</td>
</tr>
<tr>
<td></td>
<td>72%</td>
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<td>62%</td>
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<td></td>
<td>2%</td>
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<td>6%</td>
</tr>
</tbody>
</table>

Our data here is broadly comparable to third-party sources: for example, Rock Health’s consumer health survey, which found that nearly one in four Americans owned some form of wearable device in 2016.

It is important to note, however, that when it comes to connected health wearables, ownership does not equate to usage.

Our focus groups of people with Type 2 diabetes and atrial fibrillation suggested that devices are sometimes given as gifts and—even when purchased with good intentions—sometimes used only for a short period.
This hypothesis is supported by a 2016 year-long randomised study of 800 people published in *The Lancet Diabetes & Endocrinology*.

After six months, about 40 percent of users had discontinued their health-tracking behaviours, and by the end of 12 months, just 10 percent of participants were still wearing their trackers.

**Few True “ePatients”**

* Asking “Dr. Google” is the dominant digital health behaviour.*

Just as ownership of wearable devices for tracking health behaviours doesn't equate to usage of these, frequent usage of the most popular Internet services doesn't translate into patient adoption of these services to support health, wellness or condition-management behaviours.

In line with their global dominance, Google and Facebook are the most used digital services among our respondents on a monthly basis. When it comes to health however, only Google is used by more than 50 percent on an annual basis.

**Figure 2: Monthly usage of digital services versus any usage of digital services for health:** Which, if any, of the following technologies or services have you used? How often do you use these technologies? How often do you use these technologies for health purposes?
This suggests that patients with the conditions covered in our research do not currently use digital to actively “lean in” to their health and self-management behaviours.

Beyond the major digital services, such as Google, Facebook and Wikipedia, we were also interested in the usage made by our respondents of newer digital services where patient-specific data hasn’t previously been available.

To this end, we looked specifically at messenger services, such as WhatsApp or Facebook Messenger, and at voice technologies, such as Apple’s Siri or Amazon’s Alexa.

Our findings suggest that messaging services are used at least monthly by 65 percent of our total respondents, and that usage is particularly strong in the EU5 (72 percent).

For voice technologies, however, the U.S. clearly leads Europe. Nearly one in four of our respondents reported using these services at least monthly, but in the U.S. this rises to 32 percent. We believe this to be driven by the earlier launch of Amazon Echo in North America (2015) than in the EU (2016, and only for the U.K. and Germany).

**But are these new services driving new health-related behaviours?**

Currently, our data suggests that one in 10 U.S. respondents used a voice technology for health in 2017 versus just 4 percent across the EU.

For messenger services, the regional split is reversed, with one in five EU respondents using these to support healthcare versus 4 percent in the U.S.

For voice specifically, driven by anecdotal suggestion that the U.S. Parkinson’s disease carer community was adopting Amazon devices as assistive technologies, we also looked specifically at this report for how our different condition-based segments compared.

While sample sizes for users of voice services are low, our initial results seem to support this early adoption behaviour by the Parkinson’s disease community. Of a global sample of 128 Parkinson’s disease carers, 28 reported using these services for health, which equates to 14.8 percent versus just 5 percent for our global sample as a whole.
How Patients Define AI
Robots and automation dominate thanks in part to Hollywood.

We then switched our survey focus to artificial intelligence and, prior to providing any guiding definition, asked our respondents to tell us what first came to mind when they thought about this term.

Figure 3: Patient perceptions of artificial intelligence in general: What comes to mind when you think about artificial intelligence? (open response)

Fig. 3 shows a word cloud derived from the responses received and highlights key themes in public perceptions of AI—the most dominant of which speaks to the “science fiction” attributes of AI as a topic: robots.

Whether these were robots automating currently human tasks, or the more dystopian sci-fi robots familiar from Hollywood movies, there was one underlying concern that emerged in our focus groups: artificial intelligence is inextricably linked with the issue of who remains in control of any future scenario.

Participants clearly said, “there always needs to be an off switch.”
Impact on Society

Security of jobs, as well as information, dominate patient concerns.

To move to a more specific picture, we then provided our respondents with the following definition of artificial intelligence:

“Artificial intelligence (AI) can mean a range of things, but for the purpose of this survey, AI is defined as the ability of a computer to perform tasks that normally require human intelligence. Those tasks could be things like understanding human speech, playing strategic games like chess, operating a self-driving car and interpreting complex data.”

Respondents were asked to select and rank their top three choices from a series of potential benefits and concerns around the impact of artificial intelligence for society in general.

Figure 4: Benefits and concerns around AI for society in general:

- **What are the main benefits of AI?**
- **What are your biggest concerns relating to AI?**

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Concerns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better solutions to complex problems</td>
<td>Job losses</td>
</tr>
<tr>
<td>More consistently and safely completing tasks once done by people</td>
<td>Cyber attacks or computer hacking</td>
</tr>
<tr>
<td>More quickly completing tasks once done by people</td>
<td>Companies or governments having more access to your personal information or behaviors</td>
</tr>
<tr>
<td>New ways to use technologies or services that feel easier or more convenient</td>
<td>Humans losing certain abilities or skills</td>
</tr>
<tr>
<td>Improvements to human health and or longevity</td>
<td>Humans losing control over the machines</td>
</tr>
<tr>
<td>Lower-priced or more affordable products and services</td>
<td>Machines or technologies making bad choices</td>
</tr>
<tr>
<td>Easier decision making for people considering new products, services or other purchases</td>
<td>Ability of laws, ethics or education to keep up with the technology</td>
</tr>
<tr>
<td>A positive impact on our economy</td>
<td>Humans becoming lazy or less industrious</td>
</tr>
<tr>
<td>A positive impact on our environment</td>
<td>Accidents involving humans</td>
</tr>
<tr>
<td>Companionship</td>
<td>Harmful impacts to our economy</td>
</tr>
</tbody>
</table>

*Only 3% of people over 65 years old identified “companionship” as a benefit*
As Figure 4 shows, while the influence of Hollywood can still be seen, top-of-mind concerns and benefits are more practical and day-to-day than they are dystopian.

Respondents see benefits in machines and algorithms being able to take on complex time-consuming tasks and accomplish these better than we can ourselves, but also recognise that this manner of automation may result in job losses or even the potential for humans losing certain abilities or skills.

Unsurprisingly, given the focus of recent world news on hacking and security breaches, concerns relating to personal data and privacy score high, including worries that governments or corporations will have too much access to our personal data. There need to be reasonable restrictions, many respondents said.

With our wider perspective on using this research to inform thinking around AI’s future in patient engagement, two other findings also stand out.

The fourth-ranked benefit of AI is seen as “new ways to use technologies and services that feel easier or more convenient.” This sits well with potential considerations around using AI’s potential for speech recognition and natural language processing as a new user interface for accessing content and services.

The 10th-ranked benefit of AI, however, was “companionship” (particularly for respondents over the age of 65). This is particularly interesting given the focus in recent years on the development of robots for older people, designed with exactly this purpose in mind.

Such “companion robots” attracted a great deal of coverage at this year’s Consumer Electronics Show, but our data suggests that these seem far more attractive to manufacturers of first-generation robot technologies than they do to those who may—one day in the near future—be expected to rely on them.
AI and Healthcare

*Patient excitement around AI does not seem to match that of investors.*

We then moved the focus of our survey to healthcare specifically, and as with issues of how artificial intelligence might impact society as a whole, excitement is clearly tempered with concern.

Looking at splits between regions and age, our data indicates that EU respondents are more excited—and less concerned—than their U.S. counterparts, and also that excitement goes down across the board as respondents get older.

More interestingly, it would seem that the excitement in the scientific and investor communities focused on the healthcare AI sector have not yet been translated into similar excitement among those who would be at the sharp end of any new services developed from these innovations and investments.

*Figure 5: Excitement and concern for artificial intelligence in healthcare: In general, are you excited/concerned about the possibilities for how AI will change healthcare?*
Keeping Their Doctors

Patients do not want doctors replaced by AI. The greatest benefits of AI are seen in scenarios where AI supports and complements a human physician.

We then asked respondents to think more specifically about the potential benefits artificial intelligence might bring to their own healthcare, given their personal experience of their conditions and the healthcare system.

Figure 6 shows their interest in a selection of scenarios, which can be grouped into three broad areas:

**Replacement**
When an algorithm or machine takes on a current function fulfilled by a healthcare provider (e.g., diagnosis, or treatment recommendation)

**Supplementary**
When AI takes on tasks not currently undertaken by a healthcare provider, such as combining and aggregating community- or country-level health records to look for new patterns or possibilities in diagnosis and treatment

**Complementary**
When an AI agent works with a healthcare provider in a supporting capacity

Across the board, contrary to the heat of the investment space around healthcare AI, our respondents are distinctly lukewarm, with one in five either seeing no benefit in any of the options presented, or not offering an opinion.
Confidence in the benefits to be gained through making AI part of the medical workflow is particularly low in those scenarios where a physician is replaced in a traditional role by an artificially intelligent agent.

Diagnosis and treatment recommendations, as well as receiving test results without a real person available for questions and review, seem unlikely to be well-received by either patients or their caregivers.

Only a third of our respondents see any of these scenarios as presenting benefits to their healthcare.

Analysis of the areas in which the greatest benefits are seen supports the current perspective of the medical establishment vs. the Silicon Valley viewpoint. Simply put, it seems that patients have no wish to see their doctors replaced by algorithms and robots, but a “Dr. Batman and AI Robin” situation may be welcomed.

In particular, this applies strongly to the vital processes of initial diagnosis and ongoing collaborative agreement on a course of treatment and management.
Ready to Meet Virtual Nurse Assistants

While patients see little benefit in substituting interactions with their doctors, there is strong comfort in using AI to scale and support nurses.

Once diagnosed, chronic conditions require ongoing, and typically life-long, interaction with a number of stakeholders within an often-complicated healthcare system: from regular check-ins with a primary physician through consultations with specialists; back and forth with insurers; visits with a range of nurses; or even direct interactions with the support staff of a pharmaceutical company responsible for developing medications.

Of these stakeholders, nurses were of particular interest to us when considering potential applications of patient-facing artificial intelligence agents.

Across all of the conditions selected for this report, specialist nurses are a key part of the multidisciplinary team supporting both patients and carers to provide ongoing support, education and monitoring services. However, access to these critical nurse resources is limited both by availability and the ability of patients—particularly older and more infirm patients—to physically access them.

The potential role of artificial intelligence agents to act as “virtual nurse assistants” is also one explored in the analysis of the healthcare opportunities for AI conducted by Accenture in April 2017.

It's a category benchmarked to reach $20 billion a year by 2026 in the United States alone.

The potential value of virtual nurse interactions was further supported in our focus groups with people with Type 2 diabetes and atrial fibrillation: nurses are a critical, consistently highly regarded and well-respected, yet under-available resource for patients managing chronic conditions on a day-to-day basis.
High-Comfort Use Cases for Virtual Nurse Assistants

To narrow down where this opportunity might be most immediately realised, we asked our respondents to indicate their level of comfort for substituting a human interaction for a virtual one in a series of interaction scenarios ranging from the administrative (e.g., appointment booking) to the specialist, such as examination or diagnosis.

We also provided the following definition to clarify what we mean by a virtual nurse assistant: “Virtual nurse assistant is a term that describes a technology or service which performs some of the functions of a real nurse.”

The data in Figure 7 shows relative patient comfort levels with these different scenarios and suggests that, while the more abstract benefits of AI for healthcare in general elicit only a lukewarm response, there is strong patient support for a number of nurse interactions being managed by AI assistants.

Figure 7: Comfort with, and perceived benefits of, virtual nurse interactions: For each of these scenarios, indicate how comfortable you would be with a virtual nurse assistant instead of a real nurse. What would you say the potential benefit of a virtual nurse assistant is to you?
Heading the list as “most comfortable” are task-oriented functions (e.g., making appointments and picking up prescription drugs), but also ranked highly are use cases around receiving ongoing support and monitoring—both for general health or wellness, or around specific prescription products.

Our research also shows the benefits that patients believe could be delivered by supplementing real-world interactions with additional virtual check-ups and check-ins.

In particular, it shows that one key benefit stands out: the ability to answer questions and receive information on-demand, 24x7 at times when “real” nurse support may be unavailable.

It would seem that the answer to the question posed by our earlier automotive analogy—“what do services such as ‘cruise control’ or GPS and route-finding look like to patients with chronic conditions?”—is simple: they look like nurses. And if virtual assistants can scale this support between visits, then their value will be stronger still.

There also appears to be strong recognition by patients and their caregivers of the reality of a world in which nurses are often in too short supply. Forty-eight percent of respondents in the EU5 and 41 percent in the U.S. even see an altruistic benefit in using virtual nurse services in order to allow real-world nurses to spend more time with those who need it most.
AI Nurses Already in Practice

A number of solutions worldwide already apply elements of artificial intelligence to providing nurse support to patients between visits.

Virtual nurse assistants also represent a category where solutions are starting to emerge. All have one thing in common: they aim to “humanise” the experience of interacting with technology, whether by presenting a visual avatar of a nurse, offering the ability to chat either out-loud or via chat/messaging capability, or—most commonly—by presenting their virtual assistants as having real names.

**Sense.ly:** Funded by investors including the Mayo Clinic, Sense.ly is a live example of an AI-powered virtual nursing assistant currently available both in the U.S. and in the U.K. (as part of a trial with the NHS). Sense.ly delivers ongoing patient monitoring and self-care guidance via an interactive nurse avatar with which patients can communicate by voice or by text. The nurse avatar may even be able to examine an image the patient transmits.

The app can integrate both with connected medical devices, such as blood pressure cuffs and weighing scales, and with patients’ electronic health records. In its NHS trial, Sense.ly also covers two of the top three “most comfortable” use cases from our survey: booking appointments with participating practices and providing triage/referral to the right doctor or team.

**TAVIE:** Developed in Canada, and now also available in Europe, TAVIE has been available via Web and now smartphone—again offering a virtual nurse avatar to provide coaching and support to patients.

A strong focus is on coaching patients in self-efficacy behaviours for improved adherence to medications, and limited artificial intelligence in natural language processing is used to answer specific questions from an interactive knowledge base. TAVIE is validated by clinical evidence and is already used for patients with conditions including Type 2 diabetes and HIV.

**Ada:** Europe’s Ada doesn’t use a virtual nurse avatar, but has been designed as a “personal health companion” using a “chatbot” approach. It’s an approach familiar to all users of smartphone-based messaging services, and allows you to interact with an intelligent agent to check symptoms, receive advice and (although currently only possible in the U.K.) to switch the patient from chatting with an artificially intelligent agent to a real physician, depending on the response given.

*Wired Magazine* recently selected Ada as the best of a number of symptom-checking services reviewed, in part due to the way that its service could take user text inputs and translate these to clear, practical advice.
A Human Voice from The Machine
More than any other attribute, patients value an authentic human “voice” and conversational tone in prospective virtual nurse interactions.

The nature of what makes a virtual assistant seem human, persuasive and convincing is one in which there has been a growing body of academic research over the years.

The late Clifford Nass, for example, who consulted on product design for companies including Microsoft, Sony and BMW, explored the range and role of possible voice for virtual assistants in use cases ranging from call-centres and cars to home appliances in his 2007 work *Wired for Speech.*

In healthcare specifically, Professor Timothy Bickmore, head of the of the Relational Agents Group, has also looked at the role played in improving outcomes by providing patients with physically “embodied” agents represented by visual avatars.

To provide further clarity on what the ideal artificially intelligent, virtual-nurse assistant of the near future might look like, we asked our respondents how appealing a number of human characteristics might be. As Figure 8 highlights, one attribute stands out above all others—a voice, and tone of voice, that matches those we already associate with the best nurses: professional, warm, empathetic and factual.

**Figure 8: The anatomy of a virtual nurse:** What would you say is the appropriate personality or tone of voice of a virtual nurse assistant? What would you say is your preferred gender of a virtual nurse assistant? How “human” do you think a virtual nurse assistant should attempt to be? Please select which elements you would find appealing (or not) from the list below.

<table>
<thead>
<tr>
<th>Professional 60%</th>
<th>Cheerful 10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm 46%</td>
<td>Don’t Know 7%</td>
</tr>
<tr>
<td>Empathetic 32%</td>
<td>Funny 7%</td>
</tr>
<tr>
<td>Factual 27%</td>
<td>None of the above 5%</td>
</tr>
<tr>
<td>Casual 11%</td>
<td>Strict 4%</td>
</tr>
<tr>
<td></td>
<td>Other (please specify) 1%</td>
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</tbody>
</table>
Only one potential attribute of a virtual nurse scores low across the board and should probably be avoided for patients who fit the older age profile of our respondents; this is the use of a deliberately “non-human” face. For example, in the language of our survey, a “cartoon or a computer simulation.”

We also asked respondents about their thoughts on how appealing a physical presence might be; for example, an actual robot or potentially a kiosk available in a clinic/hospital environment.

Despite robots being the key top-of-mind association with artificial intelligence, only a third of respondents said they would find this appealing. Their responses suggest that the presence of a PC or smartphone screen, as with the examples we have highlighted of existing virtual nurse solutions, is in itself a sufficient physical embodiment for delivery of such services.
Artificial Intelligence for Authentic Engagement

Accessing Virtual Nurse Assistants
Virtual nurse assistance via AI demands pervasive presence.

Despite strong preference for a specific conversational tone of voice as the most appealing “human” aspect of a virtual nurse, there was, however, no strong preference for how exactly our respondents would like to interact with such a service.

Looking at the data below in Figure 9, which examines channel preferences for each of the leading use cases and scenarios we assessed for patient comfort, the strongest theme is a lack of certainty with new interactions: “Don't Know” and the most familiar existing channel (websites) dominate our responses.

Figure 9: Channels of choice: How would you prefer to interact with a virtual nurse assistant?

<table>
<thead>
<tr>
<th>Service Description</th>
<th>Don't Know</th>
<th>Messenger</th>
<th>Mobile App</th>
<th>Physical</th>
<th>Voice Conv.</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making appointments</td>
<td>37%</td>
<td>14%</td>
<td>12%</td>
<td>16%</td>
<td>7%</td>
<td>14%</td>
</tr>
<tr>
<td>Receiving triage or emergency care (i.e. being assessed and directed to the right doctor or team)</td>
<td>26%</td>
<td>11%</td>
<td>13%</td>
<td>12%</td>
<td>10%</td>
<td>28%</td>
</tr>
<tr>
<td>Picking up or receiving a prescription drug</td>
<td>20%</td>
<td>19%</td>
<td>15%</td>
<td>7%</td>
<td>5%</td>
<td>34%</td>
</tr>
<tr>
<td>Receiving test results</td>
<td>34%</td>
<td>12%</td>
<td>12%</td>
<td>14%</td>
<td>6%</td>
<td>22%</td>
</tr>
<tr>
<td>Receiving ongoing support or monitoring related to a prescription product you’re taking</td>
<td>27%</td>
<td>11%</td>
<td>16%</td>
<td>12%</td>
<td>8%</td>
<td>26%</td>
</tr>
<tr>
<td>Receiving ongoing support or monitoring related to your general health and wellness</td>
<td>26%</td>
<td>11%</td>
<td>17%</td>
<td>11%</td>
<td>9%</td>
<td>26%</td>
</tr>
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To be properly inclusive, particularly of an older audience who may not be comfortable or capable with smartphone screens and functionality, artificial intelligence in patient support needs to be delivered as a cross-cutting enabler, powering interactions across all channels—including face to face (whether that’s with a real-life physician or with a touch-screen kiosk in a clinical setting).

As such, AI-powered services offering virtual nurse assistance need to be designed to be pervasive and inclusive, rather than being tied to specific devices or channels. Leading examples here are Siri, which is available across Apple’s full range of devices, and Amazon’s Alexa, which is increasingly integrated not just into the company’s Echo and Dot devices in the home, but into third-party speakers, wearables and even consumers’ cars.
Patient Concerns Around Virtual Nurse Assistants

*Lack of human supervision and control remains a dominant issue with all applications of artificial intelligence.*

Regardless of how they are delivered or accessed, or the perceived benefits of 24x7 access to specialist support, AI-powered virtual nurse assistants do come with their own concerns. Unsurprisingly, these reflect the wider concerns of our respondents around AI in general—the lack of human support and supervision.

Absence of human oversight and the potential for machine errors in the mismanagement head our list of concerns for all the groups we surveyed.

**Figure 10: Concerns around virtual nurse assistants**: What would be your biggest concerns about having a virtual nurse assistant rather than a real nurse?

This reinforces a dominant theme of this survey’s findings; for patient-support scenarios, AI needs to play a supplementary and supporting “physician-endorsed and reviewed” role, rather than being presented as a substitute, replacement or “second-best” option.

The uniquely personal nature of healthcare data is also a strong theme here, with more than a third of respondents concerned about privacy issues, e.g., systems being “hacked” or data being shared without permission.
These concerns around the personal nature of data are also reflected in the worry that the use of such systems might mean a lessening of the personal relationship between a patient and their physicians. This is a higher concern for U.S. patients than those in the EU, and one which also rises in prominence with the age of respondents.

Again, this can be seen to suggest that the use of virtual nurse assistants should be to supplement and support existing real-world relationships rather than to substitute and replace them.

**Appropriate Providers of AI**

*Without the endorsement, recommendation, comfort and control of physicians, AI tools for patient engagement are unlikely to gain traction.*

With concerns around the potential of machine errors and the lack of human oversight, we asked our respondents about their trust in a variety of organisations/individuals to provide virtual nurse-assistant solutions.

The strongest preference across the board was for virtual nurse assistants to be provided by trusted healthcare stakeholders, such as doctors, hospitals or pharmacists. As with the recommendation of all patient-support materials, the role of the healthcare provider as an endorser is clearly key in this area.

**Figure 11: Trust in organisations/individuals to provide a virtual nurse:** Which of the following groups or organisations, if any, would you trust to provide a virtual nurse assistant? How trustworthy do you consider each of the following companies in providing a virtual nurse assistant? (Specific to the four technology companies provided as examples.)
In Europe, trust in this area also extends to national healthcare systems, with 39 percent of respondents indicating trust in these bodies, higher than the trust placed in pharmacists. In the U.S. however, this level of trust in a national healthcare system stands at 17 percent.

This contrasts strongly to the trust in the “Big Four” consumer technology companies, and can be seen as matched to concerns around privacy and the usage of personal health data by corporations seen elsewhere in this survey. Patient-support solutions provided for chronic conditions by these types of organisations will likely need to be provided in partnership with physicians and physician bodies.

Likewise, while one in 10 respondents under 65 would trust a drug manufacturer to deliver such services, acceptance of solutions developed by pharmaceutical companies seems unlikely without the endorsement of healthcare providers.

Final words on this topic come from our focus groups, suggesting that no single type of player alone is equipped to deliver virtual nurse assistants on their own.

Asked to envision ideal AI-driven services of the future, members of our Type 2 diabetes and atrial fibrillation groups described a need for a multidisciplinary coalition, which is powered by physicians, delivered through the tech savvy of technology companies, endorsed by healthcare systems and patient advocacy groups, and includes—where relevant—the product-specific expertise of drug manufacturers.
A New Role for Physicians and Their Professional Bodies

Not only do patients not want to see doctors’ roles reduced by artificial intelligence, they believe that responsible rollout of AI extends physicians’ remits.

Finally, building on the theme of trust, we asked our respondents for their opinion on the wider issue of regulating future use of AI in medicine and healthcare.

Figure 12: Responsibility for ethics and regulation of healthcare AI: Who do you think should have responsibility for regulating use of AI in medicine and healthcare?

The data above suggests that again, physicians have a strong role to play, alongside government and national healthcare systems, to ensure that the right tools are rolled out in the right way, and to realise the right benefits for both individuals and society.

Collaboration will be key. Technology companies may be the players with the data and skillsets to bring solutions to market, but without close collaboration and co-creation across the solution development life cycle, it is unlikely that physicians will accept the tools that they develop.

Likewise, without collaboration between the worlds of technology and medicine, there is the real risk that outside innovators may create solutions that fail to address real-world patient or physician needs.
AI Implications for Life Sciences Brands

Priorities for engaging patients and helping them successfully access advice and care
AI Implications for Life Sciences Brands

The patient voice adds an important new lens to what role life sciences companies need to play in this next era of change and uncertainty. There will be opportunities to support patients in powerful new ways that break down the barriers of ability and access. But with each new shift and each novel interface, we will also see unaddressed needs in education and understanding for doctors and patients alike. Life sciences brands have roles in both leveraging these augmented intelligence technologies and decoding them for reluctant users.

To support people living with chronic conditions and those who care for them, our research points to key priorities that will lead to a better understanding of patients’ experiences and new tools and pathways to guide them.

Know the New Front Door of Healthcare

The patient journey we thought we knew is rapidly evolving and our understanding of the pain points, on-ramps and experience has to change with it. As AI-driven bots and systems increasingly become both the front door for healthcare triage and the patient’s constant companion in the journey, we need to challenge each of our support and education initiatives against the new environments they’ll be used in and the new sources recommending them.

This starts with replacing simplified, one-size-fits-all, patient-journey documents with ones that are much more reflective of the changing healthcare experience today. These insight-driven maps will be increasingly connected to the profile of the healthcare system the patient uses, and the unique resources and expectations created there.

The new insights will evolve current tactics first. Over time, they’ll also point to new needs for clinical research and market validation. Compelling evidence of impact will need to be relevant to more than just advocates and providers. Increasingly, it will need to be relevant to, and optimized for, algorithms.

To support people living with chronic conditions and those who care for them, our research points to key priorities that will lead to a better understanding of patients’ experiences and new tools and pathways to guide them.
Focus on Generation “Right Now”

New consumer technologies are often first adopted by younger generations. We see something very different in healthcare. In this industry, patients are aging into technology. That means AI needs and experience won’t just be focused on the Generation Now millennials. Instead, they’ll first serve Baby Boomers, the generation with the greatest healthcare need: these are healthcare’s Generation Right Now.

This data shows for the first time that voice navigation and Messenger chat are being adopted by patients today and they’re open to engaging with the virtual nurse assistants that are on the horizon. We expect to see that adoption quickly curve up as plans and providers both introduce new incentives and require stepped interventions that drive patients to use AI-driven technologies first.

A recent PwC study showed just how quickly adoption rates can double. They asked 65+-year-olds if they would use a healthcare technology if it saved them money. In 2013, 16 percent said they would use live telemedicine on a smartphone; in 2017, that number jumped to 30 percent. Other tech, like having a pacemaker checked at home wirelessly, started with even stronger numbers (40 percent in 2013) and have continued an upward climb (45 percent in 2017).

Although some of Generation Right Now will quickly adopt these new tools, others will struggle, potentially creating new gaps in care and risks to outcomes. Right now, in some quarters, artificial intelligence has created artificial expectations, e.g., that diagnosis and treatment via algorithms and robots may be right around the corner. But our research highlights another form of artificial expectations; the lack of awareness that, in many ways, the applications of these technologies for healthcare are inevitable, and patients—particularly in Generation Right Now—need greater awareness and understanding of their potential uses and benefits. This presents an opportunity to level-set the excitement of AI in development and deal-making with patients’ expectations via AI-benefit education.

One of the industry’s first priorities must be to combat artificial expectations.

In our 2018 trend report, an important shift called Rise of the Illiterati shows just what can happen when health illiteracy is paired with technology naïveté. In fact, recent research found that around half of adult Americans demonstrate low health literacy, struggling to both find and use health information. These issues are compounded for tech-challenged patients who are doubly impacted when apps, portals or technology tools are part of their care.
As understanding of the new data-driven patient journey map expands to encompass the potential role of new technologies, this already evident digital divide could grow wider still. More than ever, both patients and the organisations that serve them will need support from partners who can act as navigators and translators as we move deeper into this new territory.

Life science leaders should continue to look for opportunities to train patients and providers on how to be the best navigators of all the tools and systems available to them.

The U.K.-based bank Barclays has set a strong example of what that kind of education can look like. Their Digital Eagles team is a free service aimed at helping customers keep up-to-date with technology and get the most out of being online. In healthcare, they partnered with Friends of the Elderly, a national charity providing daycare and support for older people, to train its volunteers on how to use tablets and apps with their clients.

By focusing their training on the staff first, many of whom were also digitally excluded, they were able to make sure the skills were transferred and reinforced throughout their facilities. They also offer simple how-to guides to help a truly first-time user confidently navigate a seemingly ubiquitous technology, like shopping online or starting an email account.

**Talk Healthy to Me**

Said simply: Voice applications are not a tactic. They are the new standard in healthcare accessibility.

There’s a reason caregivers of people living with Parkinson’s disease and autism were among the first to write Alexa product reviews that testified to how the device was changing the lives of people with health limitations. They instantly saw in their own lives how voice could remove massive barriers to accessibility and create a sense of intimacy and connection.

In this report, you see more evidence to back up the anecdotes with 37 percent of caregivers for people with Parkinson’s saying they already use voice technology (Alexa/Home/Siri or similar) as a user interface (UI) at least monthly. [The index for comparison to all patients is 24 percent.]

As first noted by Dave Morin of mobile social networking company Path in 2013, “AI is the new UI.” Pharmaceutical innovators need to move quickly to add this presentation layer to patient support and give critical healthcare information a new access point.
Previous advances in technology have left life science leaders on their back foot. As an industry, we struggled to integrate digital touchpoints, were slow to prioritize mobile and late to the game in social.

With voice and conversational UI, the evolution simply cannot wait. Voice navigation is more critical to patients than any other type of consumer. It simplifies interaction, eases connectivity and brings healthcare home. This is particularly important for brands supporting Generation Right Now. Those older patients have the greatest need for health support and may have issues with vision or motor control.

In terms of geographic priority, we expect the U.S. to have a jump on the rest of the world, with massive home adoption of voice assistants.

Merck is moving quickly to lead the transition to voice navigation and interaction. It recently partnered with Amazon to launch a voice navigation challenge for healthcare.

Dubbed the Alexa Diabetes Challenge, the contest incented upstarts and individual developers to create apps that harness Amazon Alexa’s voice-enabled technologies particularly for patients recently diagnosed with Type 2 diabetes. Their goal: bring interactive patient support into the home through tools already preferred by consumers. The competition received 96 entries from 82 countries, including a diabetes educator, an at-home coach and a nutrition partner. The winner was Sugarpod from Wellpepper, an interactive, multimodal diabetes care solution. Sugarpod provides tailored tasks based on patient preferences, delivered via voice, mobile, video and web interactions.

Again, in Parkinson’s disease, early adopter life sciences leaders are listening to the trend in voice. Acorda Therapeutics has developed an Alexa skill that adds their latest community Facebook post to the daily briefing read out to users who subscribe to the service.

Nevertheless, to assume that today’s voice experiences are “good enough” to meet patients’ needs would be wrong. While devices such as Alexa can support simple commands, call and response, and transcription-style applications such as helping patients diarize or log their feedback, they are still a long way from supporting proper, authentic, free-flowing conversation. Work still needs to be done, but this shouldn’t prevent brands and organisations from thinking right now about what their voice in this environment should be. In a world where AI can come close to natural conversation, voice solutions will rapidly make the leap from being available only through home assistant technologies or smartphone to being available to any user with any kind of phone or connected device.
Design for Conversation

Gartner recently declared that, “By 2020, the average person will have more conversations with bots than with their spouse.” We can confidently counter that by 2020, the average patient will have more conversations about health with bots than they do with their doctors.

It’s an exciting moment in healthcare when we can potentially realize our ambition to change how our industry talks to patients and caregivers, to ultimately better foster learning. It could and should lead us to communications that are more conversational, less formal and infinitely more human.

But, how do you design for a conversation?

Nothing we learned about user experience (UX) on the screen has prepared us for this new era of human-machine interaction.

The challenge with voice, and the larger bucket of modern experiences that leverage conversational interfaces (chatbots are another great example), is that creators cannot simply rely on traditional approaches to user-experience design.

We’ve perfected the art of designing for the screen, be it desktop or mobile. All of our websites and apps rely on information architecture, visual design and hierarchy, eye-tracking and clicking (or tapping). With voice, few of these qualities or functions apply.

Instead, we need to design for an experience that is essentially a series of back and forth messages. That’s where NLP comes in. It stands for natural language processing or the ability of a computer program to understand human speech as it is spoken. That means navigating accents, grammar, slang, different languages, etc., and being able to interact in a way that feels distinctively human.

To make conversations feel more natural, bots and voice assistance need a range of responses; from “yes,” to “sure,” to the occasional “hell yeah” (as brand appropriate). They also need to know when and how to make it right. Conversations will go off track when human and machine misunderstand each other. The bots need language to get things back on course and the ability to use cleverness, self-awareness and other human qualities to reconnect.

In 2018, brands need to commit to building the frameworks and foundations for creating, reviewing and approving content delivered in conversational interfaces.
Even without considering deployment of artificial intelligence for natural language processing, or active plans to develop a first-generation, menu-driven chatbot interface, there is no brand that wouldn’t gain immediate benefit from a process of re-imagining its current patient support content as interactive, bite-sized, “human” responses to questions around patients’ support needs.

One company that is boldly moving into this space is the BBC. Their R&D division has a project called “Talking with Machines” that is exploring the possibilities of voice-driven tech, specifically developing design and content creation standards for these interfaces. In a recent blog post, Prototyping for Voice, Henry Cooke of the R&D division describes some of their work to develop a new prototyping approach.

He shared a five-step process that the BBC is using for its prototyping. It has some similarities to designing for screen, but there are some major differences and additional considerations. For one, they place a big emphasis on thinking through the possibilities of the setting that users might be in when they are engaged with the experience. Even more so than mobile, voice is an untethered experience. The user could be at a desk, in the bath, or standing on a ledge.
Conclusion
No patient wants to see their doctor replaced, but this new data shows patients are really quite comfortable with virtual nurse assistants and other supportive AI interfaces.

But, imagine how the relationship changes when a computer stands in a place where a trusted advisor once did.

Creating meaningful patient experiences that leverage AI requires thinking about an important aspect of the context: trust.

To deliver experiences that earn trust, the source matters.

Technology companies have been some of the first to innovate in the space. But our data says people don’t trust them with their health. Life science companies want to get closer to those patients, but they have trust challenges of their own. Doctors have the trust, but aren’t as close to the technology.

The best experiences will be built from partnerships that focus not just on collaboration, but co-creation as well.

Life science brands will create new advisory boards and working groups that engage doctors at the highest levels. They’ll not only be authors of the experience, but the most important credentializers of it. Their confidence, recommendation and endorsement will be critical to rapid patient adoption.

Those brands will also forge new partnerships with proven technology leaders that own, or are incredibly fluent in, the platforms and devices consumers and patients already trust. The Merck-Amazon challenge discussed above is a perfect example of how companies can move farther faster, with front-line expertise and tech muscle. Likewise, Boehringer Ingelheim is working to support hackathons looking towards new technologies for the front-line of NHS care.

When brands move from AI strategy to full-solution design, there’s one more critical partner to engage: nurses. The best AI experiences won’t replace nurses, instead they’ll scale them.

Nurses will bring the nuance of patient needs to the forefront and ensure experiences that feel comfortable from the start, while building trust and increasing usage over time.
More than ever, nurses are critical to maintaining coverage of care in an aging population, and despite the media's focus on the potential for algorithms and robots to displace existing job roles, the need for nurses is only growing more urgent. In 2018, leading brands will proactively convene these advisory groups.

Not only do patients not want to see their healthcare providers replaced by artificial intelligence, they believe that artificial intelligence asks for them to take on yet another role—the guidance, support and oversight for which tools are developed, by whom and when.

Radiologists—the frequently highlighted canary in the coal mine for the proponents of AI as a physician replacement—are already showing the way here.

The Data Science Institute (DSI) at the American College of Radiology is already focused on using AI and machines to revolutionize medicine. They’re starting with just one of these collaborations. The DSI Advisory group brings together imaging informatics experts, technology stakeholders and patient advocates with member physicians from private practice, research and education. The board is designed to represent the diversity of patient experience with members from large and small practices; rural and urban settings; early and late-career professionals; and women and diversity specialists.

Their goal, like ours, is to use AI to improve care for Generation Right Now and deliver experiences that make change not only possible, but uniquely valuable to patients and their caregivers.

There is a truism, attributed to computer scientist Roy Amara, paraphrased by Bill Gates in his 1996 book *The Road Ahead*: “We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten. Don’t let yourself be lulled into inaction.”

Whichever side of the healthcare AI conversation you take—booster or skeptic—there is a window open to act right now, and there is a third way between “move fast and break things” and “move slowly and take care.”
Syneos Health Communications is the only healthcare communications network that is part of a company on the frontlines of healthcare, with a clear view into the everyday complexities of life and health. As part of Syneos Health™, our agencies—consisting of leading brands and experts in advertising, branding, public relations, managed markets and medical communications—are engaged in every point of influence in health, providing real-world insight into markets and audiences in ways that no other partner could.

We work in scalable, collaborative teams that partner across disciplines and geographies to deliver integrated communications strategies that accelerate brand performance. Our agency teams have received more than 1,000 awards for work that disrupts markets and drives behavior change. We create ideas that will work in the real world because they were built there.

Find out more at syneoshealthcommunications.com.

Contacts

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