ENGINEERING THE NEXT ERA OF HUMAN HEALTH

Esther Krofah 00:00:04

Okay. Good morning. Good morning, and welcome to the 2026 Future of Health Summit under the theme *Better Health Within Reach*. We come together at a time of major breakthroughs in health care. Screening and diagnostic tests are getting more precise at detecting and predicting disease. Personalized cancer vaccines are on the horizon, and AI has rapidly moved from pilot to practice in the clinic and in research. Patients, however, are not waiting for the system to catch up. More than 40 million people turn to ChatGPT every day with health questions. One in four adults use AI chatbots every day. But innovation alone does not guarantee better health. Chronic diseases, aging populations, workforce shortages, and new technologies are placing growing financial burdens on patients, caregivers, families, and health systems. Employers are projecting a median 9.2 percent increase in health-care costs in 2027 alone. Almost half of US adults say it's difficult to afford health-care costs. From a global perspective, technology is opening new paths to reach underserved populations and build a bridge to better care. So, this is the paradox that we face. We have more possibilities than ever before to improve health outcomes, and yet health remains out of reach for far too many people. So how do we close the gaps? In our Power of Ideas essay series, 18 leaders presented ideas for how to bring better health to more people. From the kitchen to the clinic, from the pharmacy to the policy arena, their message and our message is clear. Prevention, closer to home, stronger collaboration are among the solutions for how breakthroughs get to the people who need them the most. These ideas will be part of the conversations we hear from 200 speakers across industries and sectors in over 60 panel sessions with innovative and impactful ideas. Alongside the summit, Milken Institute Health is proud to release over 10 new reports with actionable recommendations to support the change we want to see and believe is possible. One of the areas that we are putting into action is the Milken Institute Women's Health Network, a global collaborative of more than 200 organizations working to accelerate progress in women's health. Women represent half of the world's population, yet women's health remains systematically underfunded and undervalued. That gap is also one of the most significant opportunities in health today, both for impact and investment. This week, the Women's Health Network announced our inaugural cohort of the Elevate Investment Initiative, designed to mobilize a billion net new dollars in capital for women's health. The Elevate Investment Initiative is proof of what happens when ideas meet capital and partnership, and that is what the summit is all about. At the Milken Institute, we believe that no one single organization can meet these challenges alone. More than ever, we need spaces like the Future of Health Summit, where leaders can make connections, learn from each other, and find the partners to act. So as we begin the program, here is my charge to all of you. Over the next two days, don't just listen, commit. Leave the summit with a new partner, bold ideas, and at

least one action that you will implement with your stakeholders when you return. Let's not just talk about better health within reach. Let's build it together starting today. Thank you to our sponsors and those who make this summit possible. I hope you enjoy the summit. Thank you so much.

Announcer 00:04:24

Before we begin our program, please turn your attention to the screens as we take a moment to appreciate our sponsors.

[Video plays]

Announcer 00:06:22

Please welcome the panel on "Engineering the Next Era of Human Health," moderated by Meg Tirrell, medical correspondent, CNN.

Meg Tirrell 00:06:46

All right. Good morning, everyone. It's so nice to be back here and to see all of you. We have a great panel this morning. We did have a last-minute change. Kimberly Powell is no longer with us here. We're going to have a great conversation with all of our folks. I'm going to ask each person, even though I'm sure you know all of them and their companies, to give a brief introduction of themselves and what the work is that they do in health care. Noubar?

Noubar Afeyan 00:07:12

Great. Well, thanks for having me. I'm Noubar Afeyan. I'm founder and CEO of a company called Flagship Pioneering, which is in the business of inventing new companies. One of them that I'm a cofounder and chairman of was Moderna. We work now across about 50 such companies based on breakthrough innovations, try to have an impact on human health and the planet's health.

Chris Boerner 00:07:31

I'm Chris Boerner. I'm the CEO of Bristol-Myers Squibb. For those of you who don't know, BMS is a 170-year-old US pharmaceutical company. Over that time, we've had the great fortune of being on the front end of a lot of technological changes. Everything from the first chemotherapy, first immuno-oncology agent, all the way now to being on the front end of hopefully transforming neuroscience. I've been at the company for 11 years, CEO for three years, and I'm excited about this particular engagement because I think while there's been a lot of incredible scientific advancement over the last 25 years that I've been in the industry, I think we have a lot of challenges around access and reimbursement, and how do we make sure we make this technology available. I grew up in Arkansas, first generation of family to go to college, so these issues are not academic, and I think it'd be good to have a discussion around that today, so looking forward to it.

David Rhew 00:08:25

Yeah. Hi, everyone. My name is David Rhew. I'm the global chief medical officer at Microsoft. I'm a physician, a technologist, a health services researcher, and my particular area of interest is on how

technology improves outcomes. Access to care, quality of care, patient safety, and finding ways that we can improve the overall experience for both patients and providers.

Robert Stone 00:08:46

Everyone, Robert Stone. I'm the CEO of City of Hope. City of Hope is one of the country's largest and most advanced cancer centers in the country, and my passion is representing and channeling the voice of patients with cancer and their doctors who are closest to them and their treatment. We were founded in 1913 in Duarte, California. For those of you who have not had the great opportunity of checking "visit Duarte" off your bucket list, Duarte is about 22 miles east of Los Angeles. We have developed a national network and expanded out of Southern California. We're now in five metropolitan areas with five cancer-only hospitals. We're not embedded in a university or a larger health system, as many of my brethren cancer centers are. We treat around 200,000 cancer patients a year. We have a national clinical trial network that sees patients and can open trials now within 10 days once it's activated at any of our sites, depending on the need. And we were the birthplace of biotech. Chris and I were talking earlier about his time at Genentech. Genentech is the first biotech company started with a City of Hope invention back in the 1970s. It's really a pleasure to be with you all.

Meg Tirrell 00:10:12

So, our panel is going to think about where we are right now, where we could be within five, 10 years, and what the barriers are to achieving some of the hope that we all have right now for where technology could take us. And I guess I'll start with Noubar, but I'll pose the same question to everyone, and I'm sure given what you focus on, that we'll get some really interesting and varied answers here. But what is the most—it's hard to choose for a person in your profession, but one of the most transformational or impactful things that is under your portfolio right now?

Noubar Afeyan 00:10:45

So, I thought I'd answer it in two parts, so that I can fit it in one. I think that what's happening in the last few years is a good illustration of what's going to be possible, and that is, for example, the amount of molecular understanding we're having of immunology, somewhat boosted through COVID and just the sheer experimentation that was possible of our ability to precisely tune the immune system to do what we want. Now applied to cancer, which Moderna recently and together with Merck showed some evidence of, is just the tip of the iceberg as to what's going to be possible as a result of newfound understanding, which then can translate into engineered molecules. Your session on engineering of health care, it's interesting, when I got into this field in the early '80s, it was called genetic engineering. It was barely genetic, and it was barely engineering. And except some clever person, probably in San Francisco, picked the name. And so, since then, the rest of the world thinks we've been doing genetic engineering for 50 years, when the reality is not really. But we're now beginning to understand some of the mechanisms involved, and it really should be stunning to people that we've been coming up with treatments, phenomenal treatments like what BMS has pioneered for many decades, but with relatively limited understanding. That's beginning to change, and you're seeing the effects of that because now we can program molecules to go after and precisely tune the immune system. Why does this matter? Well, in cancer, of course, there's speculation. Does it only work in one case? I think over time we will show where it can work. But more exciting, and zooming out from that, is that the advent of AI as a companion scientist by the millions, that is through agents, not by the one or two companions, will, I think, accelerate

the rate at which we'll have some semblance of at least a model-based understanding of what's going on, even if we can't sit there and write some theory around biology like the way physicists do. And when that begins to happen, I think the chunks of territory that's going to become available to go after with medicines or prevention or diagnostics may well increase over the next just few years dramatically. I'm not here to claim, like some AI companies are, that all these diseases will be cured in the next few years. But I can tell you as somebody in biotech for 40 years, that is the most exciting thing, is better representation, better models leading to better treatments, and shorter ways to demonstrate their efficacy and safety.

Meg Tirrell 00:13:12

Hmm. Chris?

Chris Boerner 00:13:14

Look, it's hard to decide on one thing, and BMS has the great fortune of working on some of the most difficult-to-treat areas of science. All of the medicines we strive to make are either first or hopefully best in class. If I had to pick one, I would say cell therapy, primarily because 15, 17, 18 years ago, I guess it was now, I worked at the first biotech that was really doing close to commercial-scale work in cell therapy, and the technology was very nascent. We didn't think it would work. It actually didn't work. We certainly never envisioned that it would become standard of care in a part of oncology. We're now at a place now just 15 or 20 years later where it is standard of care in multiple myeloma. It's becoming standard of care in lymphoma. We will get into solid tumors. It's going to take a while for us to figure out exactly how to design these assets. And as a company that's at the front end of this technology, we're now at a place where we may, if the data continue to pan out the way we hope, we could potentially transform autoimmune disease. And we're talking about very long, durable remissions where patients are off of their supportive care for late-line lupus, multiple sclerosis. And if it works in these later-line settings, you could potentially think about moving it up and begin to talk about, can you cure some of these patients? I mean, this was science fiction 15 years ago. So, it's a great example of, I think, what this industry does and does very well. Hard science, it's very difficult and challenging with low probabilities of success. But it also poses some of the opportunities that we have going forward. These are therapies that are still very expensive. They're expensive because they're individual cells that are being re-engineered. It's a very manual process. It's very complex. But we do have the ability to advance that technology, make it more automated, make it more off the shelf, and ultimately be able to deliver these medicines to patients in a more accessible way and hopefully at a lower cost.

Meg Tirrell 00:15:27

David, when I heard Noubar say decades ago it was barely genetics and barely engineering, it reminded me of the story you were just telling us before we started, how you studied computer science as an undergrad and wrote your thesis about AI in 1988.

David Rhew 00:15:44

That's right. Yes. That was a long time ago, before the internet was around, and so there wasn't a whole lot of AI going around. But we did have a very interesting question that we had posed, which was if you took a look at some of the images that people have, the doctors used, and at the time, a doctor would look at something called a cine film, and you'd see the heart beating. It's like one of those old films, like the Charlie Chaplin. It was very poor quality, and they would kind of go, "Hmm, what is the ejection fraction?" And

they kind of used their own judgment, and they come out with some number. I mean, that's how health care was and to some degree is still practiced. And so, we were wondering, could you quantify that? Could you use a technology to be able to do that? And so, my job was to take all the individual images and then to detect what the edges were and then determine if we could actually determine if the edges were moving in a certain way that we could quantify that. So that was 1988, and then fast-forward to today, where we have now some incredible technologies. But I'd say a lot of the technologies are being used in, I'll call it, single use cases. What we're now starting to think about is can we combine the technologies in a way that allows us to be able to address some really complicated problems? And so, one of the most exciting initiatives that we're working on today is around can we improve outcomes for more people at lower cost in communities that have low resources, rural communities, urban communities? So that's like a big question that a lot of people have. And to answer that, we started with the patient, started with the individual. And today, most Americans find life unaffordable, cutting back on gas, food, and medicines. And so, the challenge you have is when people are cutting back on services and doctor's visits and preventive care, we are rapidly moving to a reactive mode of health care. So, the sad thing is, if we continue down that path, we're going to see more advanced-stage cancers. We're going to see more advanced-stage chronic disease. It's happening already. And so, we have to think of a new way to be able to address this issue. And the reality is the system is not set up in a way that allows us to do it because the patient has to decide, "I'm going to see the doctor." I mean, that's how you get into the system. Everything in the electronic health record was based on an encounter. The encounter is because the patient said, "I need to go see the doctor," for whatever reason, or go to the hospital, and now you're in the system. What about all the people that did not come in? And this is what we're talking about, people that are at risk for disease, people that have disease, they don't know about it, people that have disease and they don't realize it's progressed. That's the group that, if in an ideal world, we could go in, look inside that population, find those individuals that have the disease, and pull them back into the system, we could be much more proactive.

David Rhew 00:18:40

Now, that was sort of a pipe dream. I think many of us thought that was impossible until we started seeing some evidence that we can actually do this. So, in East Texas, in a place called Tyler, I'm not sure if any of you are from Texas, but what they found was that when they implemented a retinal scan, it was a simple two-minute, noninvasive—everyone has had one. When you get your eyes checked, you get the same exam. It's like a desktop machine. You put your chin on there, two minutes. They did this as a part of vital signs. So, when people came in, for whatever reason, they also got their eyes checked. Well, they also ran an AI model in the background to just look for diabetic retinopathy. One out of five persons in this clinic had advanced-stage, moderate to severe diabetic retinopathy. The average hemoglobin A1c was 10.5 percent. These are individuals, the natural history is they will go blind in the next year, given that A1c. Guaranteed, 100 percent of them will go blind. We found them, and we're now trying to bring them into care, working with the University of Texas, to be able to help facilitate that. So that was just an example of what could be done. Now, the problem is, as we started going and doing this in other places, you can do multiple different exams. So, with one exam, we can screen for seven or 10 different conditions. And when we found cardiometabolic disease, the four leading causes of blindness in other areas, 67 percent of people in communities had referable disease. So, the issue is not, is there disease out there? In fact, you can throw a stone and you're going to find the disease. The issue was, how do you manage it with limited resources? And then this got us to the next point of saying, the problem isn't just finding disease. Finding it is the easy part, actually. The problem is, what do you do when you have limited resources? So, we realized that there's actually five steps, five stages, in order for us to solve this problem. The first is find the

disease. The second is manage with limited resources. And to do that, you actually have to risk-stratify the entire population. And that's another area where AI can come in. And then the high-risk individuals get sent, which is what we did. But then the rest of the folks, if you sent them to the system, you would overload the system. So, we had to realize how to be able to build capacity. And this is where we've now been exploring new models of care. Can you use retail pharmacy? Can we empower other organizations and other individuals to handle that overload? And then AI is being used as a means to survey all the patients to determine, are they actually getting worse, and pull them out of the queue. So that was the second step. And then the third, which is really a critical one. You can bring a horse to water, but will the horse drink? Will people change their lifestyle to be able to ultimately address this?

David Rhew 00:21:18

And we know that that's going to require education, addressing issues around motivation and demotivation, and addressing social determinants. And so those were the three clinical pillars, and we realized that we actually had to stitch together solutions and partners to be able to address all three. Now, the latter two are economic pillars, because at the end of the day, none of this matters if we can't get it paid for. And so, what we realized is that the only way for us to do this is we have to rethink the model. If we identify the 5 percent of individuals who are responsible for 50 percent of the total cost of care before they have an event within a time period that people care about, which, generally speaking, is a year, if we can show that that proactive management can result in lower cost, we might be able to demonstrate that this is a sustainable program. And so that's exactly what we're doing. We're working with health plans. We're working with state Medicaid departments across multiple areas to be able to measure this, both the clinical and financial outcomes, and also determine whether or not this aligns with current value-based care plans. And so that's really what we've discovered. We've discovered that while we originally thought AI is going to solve it by finding the disease, it really was all of those things together, of which AI and different stakeholders need to work together.

Meg Tirrell 00:22:27

And Robert?

Robert Stone 00:22:30

So, Meg, I'm so fascinated by what we said. What was the question? I'm kidding. Look, I think for cancer care, we're in a wondrous era, truly, for all the reasons that you've heard about. Cellular therapy, immunotherapy, precision medicine, the potential of AI to really take data and move. I'm going to take a different tack, because all of that is important. But if you ask me what is the one thing I'm most excited about over the next five years, it's really changing the definition of access. Everybody will talk about access. Access is more often than not an insurance question. Does everybody have insurance? I'm going to tell you, for cancer, despite the wondrous era that we have, it's at a crossroads. So, 70 percent of cancer patients now overall can expect to live greater than five years. That is a first time, and it's cause for hope and excitement. Yet we're still at a point where 40 percent of people in the country should expect to get cancer during their lifetime. If you understand what happens at academic centers and the ability to apply all of this great technology, only one in every five patients gets their care at an NCI-designated comprehensive cancer center. One in five. That means 80 percent don't always have access. And as City of Hope has grown, as I described at the beginning, we've tried to bridge the academic-community divide so that we can bring these new therapies to more and more people. And you know what the biggest

challenge is? The biggest challenge that we've faced when we talk to patients—I ask patients all the time, "What is it you want most?" They want three things, and it's really simple, folks. It's really simple. They want access to a specialist in their cancer, they want access to the newest treatment, most likely a clinical trial, and they want to be treated with dignity. And that happens too infrequently. So, the biggest challenge we have is how to create a system so that doctors, treating physicians, can keep up with the newest therapies and deliver those newest therapies at the point of care. That's where so much of our time is spent. And I can tell you, Meg, when we have time, we've spent the last decade building a system by putting the patient at the center of the system and figuring out not how do we draw patients to us, to one of our five facilities, how do we get care to patients? I'll give you one example. We have a company, a spin-out, called AccessHope. It's in the name, AccessHope. And AccessHope is a partnership that City of Hope founded but has seven other comprehensive cancer centers, and it is designed so that patients do not come to us. Think about that. Its design, access is defined as not having patients come to us. It's how can we collectively, as NCI centers, provide guidance to treating physicians in the community so that patients get the right diagnosis and the right treatment plan? And I'll tell you this, after four years of that company being in existence, we have 800 employer clients, we manage 10 million people. 80 percent, 80 percent of the cases we review, either the diagnosis or the treatment plan is changed because of new innovation. That's what access really is about, is getting the optimal care to patients, not just giving them some type of cancer care.

Meg Tirrell 00:26:32

A lot of really interesting themes to follow up on from what everybody said. Noubar, I'm going to come back to you because you alluded to something I had planned to ask all of you later in the panel, but since you mentioned it, it's the quote from the Anthropic CEO, who, yes, has an IPO coming up, but said in a video this week, quote, "Cancer, Alzheimer's, heart disease, mental illness, these will be relics of the past in, I think, less than a decade." Disagree?

Noubar Afeyan 00:27:01

I think given that there's a lot of numbers between 100 percent probability and zero, you can—I mean, reality. I think the problem is, in our circles, what we've all discussed, I know Dario pretty well, and he actually has a biology background, so he's a bit more qualified than folks. And although sometimes the background inhibits you from saying things, and so. But in this case, I think the difference between biotechnology, that I've observed, and the tech field is that in the tech field, if something is possible, they will assert that it is likely, and then they'll attract the resources to actually work hard, see if it's possible. In our field, we aren't allowed to say something is possible unless we're really, really sure that it's very likely. And that creates this odd thing because then the resources often aren't there to do these things. So, I kind of, in a way, understand the motivation behind the statement, which is really resource-oriented. Now, from where they stand right now, I think the one scenario is that capital alone, which then would go into models, and now these models are becoming, I would say, more and more available. Open-weight models are really competitive with the closed-weight models. We'll see how it plays out. But then the application of it in molecular biology all the way to patient care, that's quite a journey. So, people who've been in that journey would like nothing more for the 10, 15 years it takes to shrink to a few months. But I think on the way to there, we're probably going to have to learn a lot of things that really have nothing to do with just the basic science. I think the basic science is and will be accelerated. We're kind of heavily at the forefront of that. I'll give just the audience a little bit. My alternative answer to your first question, what's really exciting, is one of the things that we, for the last few years, and others, have been really instantiating, is

the ability to take the entire wheel of science, hypothesis generation, experimental design, running experiments that falsify things, interpreting the data, and then going round and round. That wheel of science, arguably the most important wheel perhaps in humanity in terms of progress. The other wheel, obviously, we know a lot about. But the wheel of science, pretty important wheel. Putting all of that in the hands of various autonomous either agents or generative AI systems, that is feasible. Now, from there to we're going to cure these diseases, for us, is a kind of an important learning-filled journey that could take years, it could take maybe more than decades. But the fact that it's possible is super exciting. I think once you bring the time frames down, you set yourself up for disappointment. If you're a diversified business like Anthropic, it's one of many, many, many sectors. In our field, I think actually, ironically, City of Hope, one of the things when you're in the scientific world—and I'd be curious what Chris thinks—that you have to be super careful about is to create hope that you can't fulfill. Because when you're dealing with people's health, they actually think that what they read on Twitter actually is now an available therapy. And so, I'm answering in a complicated way to say, I think it's a low probability that it's very proximal. I think it's a high probability that we now know it's feasible to think about developing cures. And I think it's up to us to manage expectations while trying to get resources, but also not creating mass disappointment or backlash, as we saw in the vaccine space. I do worry that these things may well face a growing distrust of AI-based science because claims made aren't fulfilled, and people will start turning against it. That worries me a lot.

Meg Tirrell 00:30:39

Oh, interesting. Do you think that's what happened with vaccines? That claims made weren't fulfilled?

Noubar Afeyan 00:30:44

I actually think that in the case of vaccines, there were, in the heat of the moment, statements made that were more general than could be backed up with the science, and worse yet, by scientists. And I think they were trying to manage a moment. People who are not scientifically trained took that as facts, whereas in science, we're often essentially explaining things in the land of probability. I do think, having talked to a bunch of the people who lead some of the kind of backlash movement, let me call it that, they do point to that as a source of the need to push back, to hold people accountable for what they're saying. Again, this was a many-body problem. You had regulators, you had policymakers, you had the physicians, you had all sorts of people. And all I'm just saying is, from that, as innovators, entrepreneurs, we have to learn that this is a very different field than a chatbot or something else where you can create expectations, then your next model is 50 times more intelligent. And if it's five times more intelligent, okay, so you spend a little bit more money doing the same task. In this space, a good example, as we mentioned earlier, what's been in the news with Moderna's vaccine, we have been super careful not to claim certain things that would be easy to claim about how transferable it is to other cancers, how proximal that is, etc. And so, it's an interesting thing that the tech field is kind of entering with its, let me just say, history, legacy of how they behave into a field in which I'm not so sure that that's going to be compatible in ways that I think we'll all find out, the regulator being a very important part of that. But I'd love to hear Chris. Chris, you've been in this field forever. Don't know if you agree or disagree.

Chris Boerner 00:32:33

I agree with almost everything you said. The reality is that—we have a partnership with Anthropic. We have a partnership across a lot of different areas of AI. I genuinely believe it's going to change every piece of the value chain of the work that we do. Everything from basic discovery all the way to how we bring

medicines to market. This is an industry, as I think all of you know, where the likelihood that anything we start working on is ever going to work is infinitesimally small. Couple of billion dollars, 10 to 12, 15 years in order to get an idea into, ultimately if you're successful, into patients with low single-digit likelihood before you enter the clinic it's ever going to work. AI, I think, will change that. We've made a commitment that we're going to reduce the time from IND to when we get an approval by 30 percent. We'll beat that number, and we'll use technology to do it. We'll be able to improve the probability that a new target that we have in discovery will be successful when it enters the clinic by using AI models to better predict the likelihood of success and be able to tweak the molecule before we actually enter the clinic. Things that are done sequentially can be done in parallel. All of that is going to be true and enable us to make tremendous progress. But I do agree that we need to be very skeptical about claims that we're going to cure cancer in three or four or five years. And just a few reasons why, number one, this is really complex stuff. There are, by some estimates, somewhere on the order of 68 trillion cells in the human body built on a foundation of seven quintillion atoms, which, if you don't know, that's a number with 16 zeros behind it. Any one of those atoms is in or out of place, it can create, cause, or be the source of a cure for a disease. We don't understand how all of that works. Then you layer that onto how does that work, human biology work within the context of human disease? You treat a cancer, it has the unfortunate quality that it mutates, which makes it hard to then treat it the next time around with the same therapy. Then you layer onto that the fact that oncology is not one thing. When I started in the industry, you had effectively three types of lung cancer: small cell, non-small cell, and within non-small cell, you had squamous and nonsquamous. The challenge is where we are today, 15, 20 years later, there are multiple histologies, molecular subtypes. There are dozens of those, only maybe 10 or 15 that we know enough in order to treat. So just to say we're going to cure cancer is itself somewhat naive because you're not talking about one thing. You're talking about many different things. So, we've got to get sort of grounded in reality as to what we can accomplish. Is this going to change the future of health care? I genuinely believe it will. We're in the early innings. There's a lot of hope. But I think we have to balance that with a little dose of reality that we still know a small fraction of what we're ultimately going to need to know to really get after some of these difficult-to-treat diseases.

Meg Tirrell 00:35:37

One of the themes I'm sort of picking up from what you guys are saying, among many, is an idea of trust. Building, proving what you're working on and what you're saying is actually possible. And the idea of trust, even just thinking about going into the communities, and I just think this retinal scan idea is totally fascinating and wonderful, bringing things to people where they are. So, you're going into these federal health centers, and people are coming in. They're getting their blood pressure checked. You offer them this retinal scan. When you say, "Okay, Microsoft is going to help you with your diabetes," how do people respond to that? And tell us more about the follow-up with it, too. Are the people actually getting into the system and getting that care? And are you going to publish data showing that it reduces cost at the end of the day?

David Rhew 00:36:21

Yeah. So, I think one of the first things we've learned, in every initiative, technology is an enabler. It is not the answer. It is the enabler. And so, who leads? It's the local community that says, "We want to solve this. We're doing it this way. We need help. We're doing it very manually. Can we use technology?" And we're here to help. So, the messaging is very important. I think we oftentimes underappreciate also the challenges of, we'll call it implementation science. We believe that since we've found the answer, that

we're going to solve the disease or we're going to solve the problem. The reality is the implementation science may be the bigger challenge. Getting people to change their lifestyle, to do things, to see the doctor, to get this paid for, all of those things are part of how you get life-saving treatments to lead to the better outcome. And I think that has been one of the things that we underappreciate, that we have to start looking at all the different stakeholders. There's an element of the providers and the health systems, and being able to understand how do they embrace this technology and how do they use it, how do we get into their workflows? We need to understand the workflows for the patient and the challenges that they have, and the reasons why they don't see the doctor on a regular basis, and how do you make it more accessible? And so, the patient journey and helping them navigate very complicated systems, that's another area where AI could be very helpful. To tell you, knowing your history, knowing your situation, being able to navigate and find things for you. And then, of course, you need to figure out a way to sustain this. Who pays for it? And if you don't have that last piece in place, then these things don't work. And so that's why this is complicated, and it's not something that we can just simply say, we've created a solution. We know that when we have proven evidence, it gets adopted by clinicians only after many years of adoption. And even when we measure today quality of care, we see wide variations consistently. If you were to look in cancer care, how many of the patients consistently receive biomarker testing for precision medicine, and how many are concordant with the treatments? It's not 100 percent like you would think, but that's the challenge that we run into. We have to find ways to continue to measure, evaluate, and ultimately empower those with information, which technology can help.

Meg Tirrell 00:38:36

Go ahead.

Robert Stone 00:38:37

No, I was going to just pick up on that, Meg. What David says is absolutely right. There's studies out there that half of the cancer patients in this country do not receive care that is consistent with evidence-based guidelines today. A third of people eligible for genomic testing don't get it ahead of time. There is a gap, and to go back to the question, I don't know if my own answer matches what we've talked about here. Five years, are we going to cure cancers? We may cure a cancer. We may make a big part of a cancer. Cancer is hundreds of diseases. The big question for me, I will tell you, patients are excited about the idea of speeding up the discovery pipeline. They're excited to get medicine to market. They want to know: How does that impact them? And their future is not measured. Cancer is hard. If I ask you to raise your hand, I won't, but if I ask you to raise your hand, who in this room has been touched by cancer or had a loved one touched by cancer or a friend touched by—the whole room would go up. It's hard, it's personal, and it is immediate. So, the real question isn't, to me, are we going to cure all cancers in five years? I don't think patients believe that we will, even if we say it. The real question is, what is that doctor going to do today to help me get better? I tell our folks all the time, David, you are exactly right. AI is not going to replace doctors. I do not believe AI is going to replace doctors. I believe doctors who use AI will replace doctors who do not use AI. And for patients today, how are we creating access to the discoveries that these gentlemen and others are putting out there in the market?

Meg Tirrell 00:40:33

Well, I have another question about how to address cancer and possibly make a bigger dent, and that's to move toward earlier screening. We have universal age-based screening guidelines for breast cancer, for

colon cancer. We've got screening guidelines for lung cancer, which are really based on risk factors. I was just at Northwestern earlier this week. They've done some studies looking at their own population of cancer patients diagnosed with lung cancer and found that 65 percent of them wouldn't even qualify for the current lung cancer screening guidelines, yet they were diagnosed with lung cancer. They think 40 percent of people diagnosed have never smoked. Pope Leo has been diagnosed with lung cancer. As far as we know, he's never smoked. I wonder about moving to universal screening for lung cancer, low-dose CT. How do you get folks into something like that so you can catch cancer, mention stage 1, you can do an outpatient procedure to cure them?

Chris Boerner 00:41:24

Look, I think everyone will have an opinion on this subject, but I think that you're unquestionably right. We've got to be catching disease earlier. We've got to be getting folks before they even show signs of a disease, so we can treat them and have a better likelihood we'll change their outcomes. In some ways, this underlies the fact that we have a health-care system that's really kind of a sick-care system. It's designed to treat people when they get sick. We're partnering with Microsoft, for example, to make mobile screening for lung cancer more accessible, leveraging AI technology. We've worked with a company called Viz.ai to try to diagnose patients with cardiomyopathies before they actually show symptoms. And this is a disease when you hear about athletes who drop dead on the football field, this is in many cases what they have. So, it comes out of nowhere, but you can actually detect it, but you got to change the way you do routine physicals, for example, and we're working with Viz.ai to do that. I think that in some ways, once you've gotten to the physician, doing screening is complicated for a whole host of reasons that you can speak to. But you've already overcome the first challenge, which is actually getting to see a physician. There are places in my home state that have maybe one hospital that covers all of western Arkansas. That hospital goes out, you have no access to care. 50 percent of the counties in the United States don't have a practicing psychiatrist. They will never get access to the next generation of cures or treatments for brain health or mental illness. So, we've got to step back and think through, how do we get basic health-care capabilities into these communities? I was talking to a member of Congress just recently from a rural state who said, "Farmers are under a lot of pressure right now." You lose farms in most of these rural communities; there is no other industry. Farmers go out, you don't have that, then whatever health-care infrastructure exists begins to deteriorate. We have a real crisis of health-care deserts in the United States, and it's going to take all of us to figure out how do we start finding patients who need treatment and can benefit earlier. I love the idea of working with retail pharmacies. We're beginning to work with retail pharmacies on detecting cardiovascular disease earlier. Because unfortunately, the notion that you're going to send physicians into southeast Arkansas in the bayous and get them to stay there and treat patients, it's fiction. It's never going to happen. So, we're going to have to take a fundamentally new approach to how do we get these services to places that need them. Then, to your point, diagnose conditions earlier, connect them with the health-care system, and there's a lot of technology that we can leverage to do that. And then ultimately, God forbid if they need a medicine, continue to have an innovative ecosystem where companies like mine can provide those types of treatments.

Noubar Afeyan 00:44:24

I think everything Chris says is right. I think the thing, though, that has hampered this somewhat from broader, not access, but adoption in many cases, is that the first wave of screening tests, by and large, have had very high false-positive rates. And so, the number of cases where somebody's told that they might have cancer, and then spend six months, sometimes nine months, actually in that mode, only to then

be told that three, four out of five of these may not, do not. I think that is a scientific test—that's what I'm saying. So, I think that's going to be what will make—so in other words, I think the fact that people hear about tests being available makes them feel like they should be having the tests. I think when the tests are available that can deliver closer to a diagnostic result than a risk assessment. Electronic medical records plus AI, I think, are getting better and better at predicting whether you have cancer with no screen, just because there are a bunch of other things that can be collected to actually say you're in a risk zone. From there, a test that says with a high false-positive rate that you do. So at least in our case, we have a group called Harbinger Health that's trying to do this step from screening to diagnosis, which is, can we shorten that path and can we do that cost-effectively? That will unleash more demand for screening because it'll be okay to screen, even if you still have to go through a follow-up procedure. But I think if the system was overrun by, it just is in our estimates, with very high false-positive tests, the diagnostic system would be crushed even if the screening business would grow.

David Rhew 00:46:00

Yeah, I want to build off of that. Early in my career, I used to develop a lot of guidelines and work with societies to build guidelines. And the way we did it was we looked at the literature, we looked at what was available, and we identified the risk factors, and we put these together into a set of recommendations, and we wanted to make sure that we had the right sensitivity, specificity, etc. That was based on information that we could capture that was published years ago, but we have new sources of data. And ultimately, the reason why we struggle today with the guidelines is because they're general. When you're talking about lowering the age, for certain people, we absolutely need to lower the age. But for other individuals, it probably doesn't make a lot of sense. And that understanding of the specifics and getting to more of a personalized approach for screening, we are getting to the point where we can get to that, where we have the information today to be able to create personalized screening recommendations. We can use this as a general rule of thumb, but we're getting to the point where we now have better understanding of your own personal risk for cancers. There may be other factors that we haven't even considered, that we are not even incorporating, but they're not in the guidelines. It doesn't matter, because we know that those factors matter, and those are the things that we can capture. And so that's where I think we're heading. We're heading towards more of a personalized approach to screening as well as just to treatment.

Robert Stone 00:47:16

So, you will head that way, David, I agree. So, age might not be the most determinant factor. Improving screening techniques are. But it also will fit into the whole conversation, Meg, around cost, value-based care. How are we going to pay for it in a health system that's overburdened? And I saw a study from, I think it was 2023, so relatively recent, that has stayed with me, that if you look beyond, for cancer care, just the transaction of the cost of treating the one patient and look at the macro cost. Was it a 25-year study? Screenings for colorectal, lung, breast, and cervical cancer saved 12 million life years and had an estimated $6.5 trillion impact to the economy. And if you included everybody who should've been screened, it would've added another $1.7 trillion. So, when we talk about screening, it's both in the personal journey for cancer, the import, and it's also, I believe, a really important factor in the affordability of health care as we move forward.

Meg Tirrell 00:48:30

Well, speaking of affordability of health care, we just had a big election, a big change as a result of the election, and you have a number of the people coming into Congress who support Medicare for All. I'm constantly told by people who've worked in health care forever that it's never going to happen. There's just no support for it. I'll throw this up to anybody on the panel who might want to comment on it. What would be the impact of Medicare for All from your perspective, and/or do you see opportunities with this new change coming in politically to improve things in any facet?

Robert Stone 00:49:14

So, David told me he wanted to answer that question for us.

[Laughter]

David Rhew 00:49:16

Yeah. Well, I do think that there is one thing we can definitely say. The current model that's based—no matter whether you talk about who's paying for it or how much you're paying for it—based on a fee-for-service, is driving behaviors that are not healthy for the economy, and it's not healthy for the patient as well. We talk a lot about value-based care, and we say that value-based care is the right answer, doing more with less and being able to—if that's not married into this capability, then all we're doing is we're just adding more fuel to the fire. We really do have to marry the value-based care component to that. And I think what we've now found is a way for us to be able to do value-based care that we could not have done before. For the first time, if you're doing value-based care, you have to take risk on a population. To take risk on a population, you have to understand what's going on in that population. We have now an ability to go into communities and find out what's going on, to be able to monitor, to be able to help engage. So, there are new tools not only to find it, but to provide engagement and navigation. Now, if we can somehow leverage that with the fact that we can have opportunities for increased funding, absolutely. But if it's just simply we need to focus only on the funding piece, I think we're missing part of the equation there.

Robert Stone 00:50:30

Meg, I'd only add to that—we need to, as an industry, and cross-industry, but I'll take just the provider side for a second, we need to be ambitious about value-based care, about cost affordability. We do. And we have room to improve there. We have to be equally ambitious about outcomes. And at the end of the day, I believe it's going to take both a private-public partnership in solving these problems of access. And if you asked yourself, if you were a cancer patient, what do you want? You measure value by survival, by the experience, by getting back to the life that you had before. And any solution we come up with has to take those into account. I would guess if you were diagnosed with cancer and you think through, who would you go see? You'd now call me. You'd come to City of Hope. You'd come to a place like City of Hope. Most people in this country don't have that option, and we have to figure out a system that does give access, both that is value-based and values the outcomes.

Chris Boerner 00:51:50

I agree with the comments that have been made so far. I think that whether it's Medicare for All or whether there are components of other policy proposals, I think we have to step back and think about access in a very broad way. Number one, this is really complicated, and it's going to take not one industry,

but a multitude of industries to come at this and get this right. Number two, within that complexity, there's a cost dimension and there's just a core infrastructure dimension that we've been circling around. On the cost side, again, I think if we're going to take on health-care costs writ large, you can't look at it one industry at a time. So, from a pharma standpoint, look, branded pharmaceuticals are somewhere between 10 and 15 percent, and it's consistently been that way for many, many years of overall health-care costs. So, if you're going to take on overall health-care costs, it's got to be a broad conversation. Within pharma, I think there are some things that we can absolutely agree to do that aren't Medicare for All that would begin to make a lot of progress. Number one, you bring the cost down through advancement of technology and encourage the kind of technological advances we've been talking about. That's, I think, an easy one. That's a nonpartisan issue. Second, bring the copay costs, what patients actually pay for new innovation, down. The average cost of an oral oncolytic from Bristol-Myers Squibb, if you're commercially insured, is roughly zero. I am prohibited by law from providing the same patient support services to commercial patients, to Medicare patients. So, we can't do the same things we do for uninsured or commercial patients for patients who turn 65. That makes no sense. We should solve that. There are a number of structural impediments to doing pay-for-performance contracts in the United States, where I get paid if my medicine works, I get paid less or not at all if it doesn't. It's impossible to do those kinds of contracts today because of things that should be fixed in the health-care system. And again, that should be bipartisan. We should be able to do that. And we ultimately have to get at the fact that, and this is not just a pharma issue, the health-care system, if anyone in this audience and I were to ask you, say, "Is the health-care system easy to navigate?" No one would raise their hand. 50 cents of every dollar spent on a branded medicine goes to somebody who took no risk to discover or develop that medicine. That screams inefficiency. So, we've got to take that inefficiency out, and if you do, you bring the cost down. That's what we can do on the pharma side that I think is way easier to do than Medicare for All and would be bipartisan. Now flip to the access issue. That one is super complicated, and I agree with what's been said so far. But we have got to take a very serious look at how do we make sure that innovation actually gets into the hands of patients who need it, because if you have innovation and you have no access, it's not innovation at all.

Meg Tirrell 00:54:39

This is a total non sequitur, but it is a question I wanted to make sure I asked you guys. Just thinking about AI, there's so much promise. We're thinking of all the good things and, of course, the concerns about overpromising. But the other concern about AI, of course, that we've heard a lot about this year is that it's going to destroy us all. It's going to kill us. And I just wonder how much do you all have to think about that personally? And I also wonder, from the biotech history point of view of this, I've thought about Asilomar a lot during these conversations. This, of course, this conference—1975. Where biotech was worried about the risks of genetic engineering, which was barely genetics and barely engineering, but—and they stopped. They put their own moratorium on the research, and they got together and discussed how to go forward. Is that something that can or should happen now with the AI industry, or are we just in a totally different place?

Noubar Afeyan 00:55:29

I'm happy to give you my—I've actually been drawn into this because, interestingly, the more nervous people are getting, the more they're looking for models of where similar risks have confronted society. And I think Asilomar is one example, but not for shock value. Thalidomide is the other example. And I think that as an industry, and that's what I've been counseling our AI colleagues quite actively to consider, is if

you keep talking about this as though the government's supposed to do something, but then you're not responsible, and all of a sudden something really goes wrong, the reaction to that, as was the case with thalidomide, is decades of regulation that is largely the result of an event that you wish you could've gotten ahead of, but no longer can you. And I do think that there are lessons, from my point of view, to be learned, ironically, from the drug industry, which of course we all wish it was better regulation, faster regulation, etc. But at the end of the day, the regulation that exists in our industry actually is for the benefit of the innovators who, at least if they go through a set of steps, know where they stand vis-à-vis the liability of what they've made. Whereas in this sector, the notion that product liability is going to self-regulate, which can only happen after damage has been done, if I was in this industry, I'd really worry that these trillions that are going into it could well be undone if there are real, in my view, safety concerns. So, I actually think that a model to think about is not just to replicate the FDA, but to think about, where do we put the onus? And there are folks from Microsoft here. They'll have more knowledge. But the way I look at it is the large language models are a capability. These intelligent agents that are being generated now, especially with the scariest part of it, these recursive self-improving systems, which means the agents are free to pick up whatever capabilities they need just to get the job done, those things are intentionality. They're not capability. And if you can't create some type of what they call harness, but from my point of view, I think we should explicitly have a dialogue about what's the responsibility of the enabler. I like the word enabling for technology. The enabler of that safety problem, they need to sit at the table and say, "Here's what I can do to show efficacy. Here's what I can do to show safety and the efficacy, the trade-off is worth it, and I've done what I can do, and society should allow me then to practice this." Without that, I really, really think we're headed not just to a safety problem, but an economic problem that you can't count on now being sure that the value you've created you can keep, because of the downstream effects. That's my view.

Meg Tirrell 00:58:14

So, do you think the government should form an FDA to regulate AI?

Noubar Afeyan 00:58:19

Not an FDA, but an X, Y, Z that can be taking into account different experiences we have, but an entity that does not shy away from saying, "Well, the Chinese are going to do it, therefore we should let these folks do it." I cannot be in this industry and not feel concerned. We just went through a pandemic. That was one minute virus that almost took down our immune system. The notion that these agents, which are being permitted without people even realizing it, access to just about all kinds of information, that somehow that's going to self-regulate, I just don't see it happening. So, I'm not advocating for an FDA, but nor do I think we should throw away the example of the good things that have come out of FDA. Look, phase 1, phase 2, phase 3 trials, you can have an equivalent of that. You can show safety long before you can actually show what the intended use is. I just think that it's a shame to say this is not a drug or this is not a food, therefore I think we just need to do better. I'm, as one citizen, quite concerned as of '26, never before that, about these emergent AI-based agents that can pick up capabilities that in nature are what lead to these unexpected kinds of events. And yeah, so there.

Robert Stone 00:59:34

Yeah. I'm sort of—what do you really think? *[Laughter]*

Chris Boerner 00:59:39

I would agree with Noubar. I think we're going to have to have some oversight and guardrails put around particularly these most advanced, cutting-edge frontier language models and the agentification of what we do in health care. We spend a lot of time and energy, and increasingly this year, on making sure that we're not only protecting our data. We worry, of course, about nefarious actors doing nefarious things. How do we protect our data? How do we protect sensitive patient data? How do we make sure that our partners are doing the right things? Because that's the other issue. We can put all sorts of controls on what we're doing, but we work with hundreds, if not thousands, of partners around the globe, so we've got to be cognizant of that. I will tell you, and this is a different take on your question, the thing I'm worried about right now, though—and we just rolled out Claude Cowork to 30,000 people. We've been on the front end of making this technology available to everyone in the company, and we've reaped the benefits of that. But we now have technology that can generate content, that can manipulate that content, and we've just given them the ability to execute against that content. The thing I'm worried about right now is, I don't want people phoning it in. We got to have humans at the center of this, and we need to make sure in our industry in particular, this technology is fantastic. It has so much potential, but we got to keep the human at the center of it, and that's the thing I spend a lot of time sleeping with one eye open on right now.

David Rhew 01:01:08

Yeah. I wanted to say that there's a shared responsibility that we all have to take. When our president, Brad Smith, made a comment that there are more regulations and safety precautions for a carton of milk than there are for AI models. And what we've now recognized is that that is something because we realize that it's important when you launch something that it has to be safe. And there are things that we can do as manufacturers, as developers, as AI technologists to be able to help ensure that product is safe. But at the same time, there is also a shared responsibility for those implementing it. So, hospitals, health systems, you cannot assume that once AI has been launched, that it'll work exactly for everybody the same way. It is unlike other technologies where an FDA seal guarantees that it's going to be fine and you don't have to worry about it. There has to be a level of monitoring around this. The challenge we're running into is that no site has the capabilities to do all that level of monitoring. We have to think about ways that we can work together, leverage technology, and collaborate so we can learn what's happening in the real world. So that's at an organizational level. But at the personal level, individuals are afraid of AI, not because of the scenarios we talked about, but they're afraid they're going to lose their jobs. And what is the reason why? Because we're applying AI in a way that solves a problem, and it's like, "Hey, you're doing the same thing that somebody else is doing." The analogy I use is the medical analogy. I was a medical student at one point. I learned everything. I became an intern, and I did everything. And then I became a resident, and I oversaw all the interns. And then I became an attending, and I had responsibility for all the residents. That is the level that we have to start thinking about. How do we escalate from being interns to becoming residents and then eventually attendings? We have to learn new sets of responsibilities. How can we govern? How can we oversee? Can we ensure accountability and quality? And once we start doing that, then we can start changing the paradigm of AI taking away jobs.

Robert Stone 01:03:06

Meg, I appreciate you letting me talk about AI after the Microsoft guy. That was perfectly well-planned. Look, other than saying I'm anti-Skynet, I don't have a lot to add to what's going on. Let me change the perspective really quickly. I know we're running out of time. Go back to what I said at the beginning.

Patients are not a stakeholder in our health-care system. They're the purpose of our health-care system. And whether it's AI, access, or value-based care, we need to put patients in the center, cancer patients in the center. And what that means in the AI conversation, for me, and where I spend most of my time thinking about, is how are we going to take these tools and change the workflows and operating models for our physicians and our organizations? Because I'll be honest with you, David, long-term looking out, City of Hope financially does well, in part because of philanthropy, but does well. I can't afford your tools if it doesn't create efficiencies in how we provide care, and we won't fulfill our mission if it doesn't lead to better outcomes for patients.

Meg Tirrell 01:04:24

All right. We're out of time. Thank you so much to our panel. Thank you, guys.

Disclaimer: This transcript was reviewed by individuals for accuracy and serves as a reference. However, it may still contain errors or omissions. Please verify any critical information independently.