CLINICAL AI: THE FUTURE OF CARE DELIVERY

Brian Carandang 00:00

Good evening, everybody. Good evening. Our theme this year, *Better Health Within Reach*, reflects both the extraordinary promise of this moment and the responsibility we share to deliver on it. As we reflect on the conversations unfolding across the summit, I want to offer four observations that underscore both the opportunities before us and the challenges we have yet to solve. First, innovation is advancing faster than our ability to deliver on it. From artificial intelligence and precision medicine, to breakthroughs in genetics and novel therapeutics, we are witnessing an extraordinary pace of scientific discovery. But innovation alone is not progress. Progress is measured by whether these breakthroughs reach patients, improve outcomes, and transform lives. The challenge before us is no longer simply what science can achieve; it is whether our health systems can translate discovery into access at scale. Second, meaningful progress requires leadership across sectors. No single institution, industry, or government can solve the challenge facing health. The expertise represented in this room, spanning business, government, science, medicine, philanthropy, and investment is precisely what makes this gathering so important. But convening is only the beginning. What matters is what we do with the relationships, ideas, and commitments formed here. Third, we must recognize that prevention is not simply a health priority, it is an economic imperative. Cardiovascular disease remains the leading cause of death in the United States, with an annual economic burden exceeding $500 billion in health-care expenditures, lost productivity, and other indirect costs. That is a powerful reminder that the cost of disease extends far beyond our hospitals and health systems. It affects our workforce, our economic competitiveness, and the long-term prosperity of our communities. We also know that health is shaped long before someone enters the hospital and physician's office. From the food we eat to the communities that we live in, prevention and early intervention must be central to how we approach health. Building a healthier, more sustainable future means investing in solutions that prevent disease, detect it earlier, and reach the communities that need them most. And lastly, fourth, trust must remain at the center of innovation. As technology transforms how we diagnose, treat, and manage disease, we cannot lose sight of the people these innovations are intended to serve. Patients must be at the center of the care that they receive. Clinicians must have confidence in the tools that they use. And policymakers must establish the conditions that allow innovation to advance responsibly. Ultimately, the question connecting all these conversations is straightforward. How do we move from breakthroughs to broad impact? And that is the question that brings us to this panel today. Before we begin, I want to recognize and thank our sponsors and partners. Their commitment makes this summit possible and supports the broader work of the Milken Institute to advance solutions to some of the world's most pressing health challenges.

Announcer 02:59

Before we begin our program, please turn your attention to the screens as we take a moment to appreciate our sponsors. We thank the following organizations for their support, allowing us to achieve our mission of accelerating progress on the path to a meaningful life.

[Video plays]

Please welcome the panel on "Clinical AI: The Future of Care Delivery," moderated by Michael Milken, chairman, Milken Institute.

Michael Milken 05:57

Good afternoon, and you've finally arrived at the solution to all your problems. "Clinical AI: The Future of Care Delivery." And we have a fantastic panel today to tell you where we are, where we're going, and why there's absolutely no risk along the way. So, John, I'd like to start with you. Northwell operates 28 hospitals. More than 1,000 outpatient facilities with a $25 billion budget. Including in your territory is that low-income area of the Hamptons. You got 108,000 employees, 22,000 nurses, 20,000 physicians who care for more than three million people annually. What do you see as the most important health issue facing us?

John D'Angelo 07:14

Hello, everybody. John D'Angelo. Great. Thank you for having me. The most important health issue. I think at a high level, there are four critical dynamics we have to account for right now, and one is an affordability crisis that's affecting all stakeholders, and we have to find the right solutions that don't impact access, quality, outcomes. Two are kind of related. We have an aging population. At the same time, we have workforce shrinkage and trends that we need to be cognizant of on the workforce side. And most importantly, we have a chronic disease epidemic in this country that I believe we need to address if we're going to make improvements on the three of the above that I just mentioned. So, I see that's where the great opportunity lies in the pace of innovation that's going on right now and how we think about care delivery differently, how we think about patient care in all aspects, in illness management, but also in wellness and driving health. How we think about the workforce challenges of today, not just in pure numbers, but get innovative around care models, around integrating digital solutions and rethinking the administrative burden they're all struggling under. And then lastly, again, the overall administrative waste in the system and how we drive that out as we think about more holistic approaches to fixing the ecosystem and driving more affordable care.

Michael Milken 08:43

So, John, just take a minute here. During COVID, what was the nurse situation during COVID?

John D'Angelo 08:55

So, I had the opportunity to be—I was a market president. No, actually, I was not a market president yet. I ran all of our emergency services prior to—at the time of the pandemic and had the operational oversight of the system as far as all the moving parts and managing staffing, surge units, testing, later vaccination. So, I had that responsibility. And the staffing challenges, nursing included, was one of the greatest challenges. But while we were building the plane while flying it, we had an opportunity to see how we

could be innovative and respond to demand when all of the regulatory and other things got out of the way. So, for example, yeah, there were real nursing shortages at a macro level, and there was also a nursing shortage when one unit lost 12 nurses that had to be in isolation because of an exposure early on before the masking and all the other dynamics. Things that allowed people to come across state lines that were already licensed in good standing in other states that don't exist typically in New York because of regulatory challenges made a big difference. Things that allowed us to be innovative around care model on the fly, how we leverage technology and virtual health on the fly. All of those out of necessity, the things we did, were critically important. And the nursing shortages were one of the bigger challenges, I would say.

Michael Milken 10:20

So, David, you touch 180 million lives. You've talked about vitality as the ultimate goal, helping people live healthier, more complete, and engaged lives. What needs to change in the health-care system to better sustain vitality? I'd personally like to know also. And how can more connected care and AI help identify needs earlier and intervene before people become sick?

David Cordani 10:57

Mike, thanks for framing the question. Appreciate it very much. It's 182 million customer relationships around the world that we're privileged to serve each and every day. So, our mission is to improve the health and vitality of those we serve, and we're very purposeful about using the word vitality. It's the most comprehensive measure we could come up with for overall health and well-being. Of course, the absence of medical issues, but inclusive of mental well-being, fiscal security, community connectivity, sense of purpose, et cetera. There's a comprehensiveness that's attached to it. For example, the data reinforces that individuals who have active volunteerism in their lives are healthier and have a higher level of vitality. So, that's why the vitality framework is attached up against the overall health framework that we orient around. Our belief set is that health care, as John noted, we have an affordability crisis that's indisputable. Demand continues to go up, and as new supply comes online, new supply is very costly. Whether they're new drugs, new innovations, or otherwise. 80 percent of Americans are dealing with at least one chronic disease. The opportunity is to be much more personalized. Everything in health care largely works on averages. No person is average. AI presents an opportunity to supercharge the path toward more personalization. It presents the opportunity to dramatically accelerate proactivity and identify in advance of a health onset, identify health risks before they manifest themselves into a coronary issue, certain cancers, high-risk maternities or otherwise, and then bring more speed to the equation, to the intervention, but always doing so on a highly personalized basis. Lastly, the belief set is you do so in connectivity with, so the coordination you come back to, the coordination of care with the health-care system. So, how do you extend the health-care system? AI presents another opportunity, and completeness of information presents an opportunity to further extend the health-care system. And I'll end with a concrete example. It's breathtaking that over 2,000 new pieces of global research come to market every day around some health insight. Think about how difficult it is, even for the highest performing medical professional and their team to ingest and digest that, but the ability to curate that and deliver at point of interaction with much more precision. Again, that's data AI interoperability. So, that's the journey we've been on for some time.

Michael Milken 13:25

So, David, when you talk about data, you also talk about intervening before people get sick. So, there was a commission in California, I was one of the commissioners, where we started out as the Personalized Medicine Commission. We're going to personalize medicine. After about six to eight months, they changed the name. We changed the name to Precision Medicine Commission, and when the report was submitted after a year and a half, it was changed again to Precision Health. So, do you see this carrying forward in dealing with people before they're sick and being precise on these individuals?

David Cordani 14:13

In a word, yes. But the before you're sick, I would back up from it for a moment. You could identify elevating health risks over time, and then the question is: Are you able to identify the health risks? Are you able to identify the causation of the health risk, and are you able to constructively intervene? It doesn't mean tell somebody what to do. How do you support an individual in their health journey and their life journey, work with their medical professional team to be able to drive that forward? But yes, how do you identify those high-risk individuals that are emerging risks for a coronary event, for certain forms of cancer, for premature birth, et cetera? Identify it proactively, and then responsibly deliver and coordinate that information with their care team and with them to lower the risk of a more acute event to transpire. In the case of chronic disease, how do you close gaps in care and get more coordination, importantly, including the mental well-being and the mental health that comes along with the equation?

Michael Milken 15:14

So, Suchi, you've taken clinical AI through the FDA. Most people assume regulation slows innovation, not speeds it up. What does it do for parents? What do we need to do to constantly catch up with the technology you first interacted with when you were on the West Coast before you came to the East Coast?

Suchi Saria 15:43

Yeah. I'll start with a very quick example to make it concrete. So, this FDA clearance was for a technology which is the first continuous AI monitor for this problem or syndrome called sepsis. Sepsis is the leading cause of death in hospitals. I lost my nephew to sepsis. Turns out in sepsis, we do have a lot of treatments available to us. The challenge is it looks a lot like—early signs look a lot like something else in 30 percent to 40 percent of cases. Many times it's textbook, but many times it's not. And in the cases where it's not, it's very often that these patients will end up being in septic shock, and then they're getting recognized, and then they're getting the interventions. And turns out, interventions are much less successful when you're there. So, the idea here, which we started—I'm also an AI professor at Hopkins. In our lab, 10, 12, 15 years ago, we started asking this question. We have electronic health records. How do we design AI technology that can safely—that can run in the background, provide a second pair of eyes—proactively identify patients at risk for these life-threatening complications? And what this technology does is—now, in real time—synthesizes data from this encounter, past encounters—which our clinicians don't have the time to do—figure out what is your normal baseline or expected baseline. Then from millions of records, it's learned the different versions of sepsis and how it shows up, identifies these anomalies early, and then flags these cases. And then it's embedded within clinical workflow in a way so that the signal is extremely easy to act on. So, there are AI-powered workflows that automate all the follow-up steps and augment the frontline care teams to identify, explain in a transparent way, why—let the clinician agree, disagree—link up the next set of order sets so that they can do what's needed, proffer up documentation so they can

document. And what this does is makes all of the pieces necessary to act on the signal as quickly as possible.

Suchi Saria 17:57

We've done now massive studies across big hospitals, little hospitals, systems like Cleveland Clinic, Mayo Clinic, Northwell Health, and others, where we've been able to show, repeatedly, 20 percent to 30 percent relative reduction in mortality in this disease. We've also been able to show half a day to two-and-a-half-day reduction in length of stay. On average, principally resulting from these patients who would otherwise have a very complex multi-organ failure, turning it into something that is a lower acuity case. So, now back to the question that Michael asked, which is how did we think about the FDA? We partnered with the FDA for a four-year period, which is a long time in any start-up's history, that's a long period of time to get approval. One of the reasons we focused on that is because for us, turning the field is going to be largely about trust. And so the question is, what are all the mechanisms by which you build trust? One, you do studies, large-scale studies that show outcome data. Number two, you implement it in a way that there's peer-to-peer influence. But three, going through groups like the FDA to be able to show that you've gone through the highest level of scrutiny and all the claims that you make, they're indeed true. And then very recently, a month ago, we announced a CMS reimbursement through the new technology add-on payment, which also required going through a lot of scrutiny. So, this is just a long-winded way of saying, ultimately, trust is probably the most complicated, difficult thing. You can have all the data there. It all makes sense. It's better for health systems. It makes them safer, more reliable. It improves their margins. It reduces mortality. It reduces penalties. It's better for patients, of course, and it's better for our frontline providers because we're streamlining workflow. Despite all this, you go to a system and it's not uncommon for people to sit there and say, "Well." And Mike had a great example of how Intuitive Surgical—everybody sees the benefit of intuitive, non-invasive surgery. It took them 10 years. 10 years, people sat and watched. Why? And so I guess as the founder, the way we thought about it is let's just do everything that's necessary to build trust and adoption, and getting endorsement from groups like the FDA is a good way. Getting results at lots of large institutions is a great way, and that's been the journey we had to go through.

Michael Milken 20:27

So, I think you've touched on an important issue we're going to come back to, and that is acceptance, not only by regulatory agencies, but acceptance by medical professionals in the field. So, Zeke, when I look around this room with you, it looks about the same size of the room when I used to visit you in the executive office building in your office.

Ezekiel J. Emanuel 20:52

You mean one of the tables.

Michael Milken 20:55

So, you're at a university today as a professor, which some feel helped create the computer and built the computer decades ago. What are the biggest barriers to autonomous AI deployment in your opinion?

Ezekiel J. Emanuel 21:13

There are four. One is licensure. We just heard about the FDA. I think the FDA is probably not the best place for licensure of autonomous AI. The FDA is used to drugs and devices where it's one and done, not something that's constantly learning and evolving, and as a platform. You need a different kind of mentality for that. The second is obviously liability. Who's going to be responsible when something goes wrong? Because something will inevitably go wrong. AI, as good as it is going to get, is not going to be perfect. And doctors are nervous about the liability, health systems are nervous about the liability, and there's a good reason to have developers be the primary site of liability, in part because they have deeper pockets, but also you want them to fix the AI, and they won't know where it's going wrong unless they're party to the malpractice, or the liability issue because so many cases are settled out of court. And the last one—the third one—is reimbursement. How do we reimburse so that not everyone gets AI that doesn't do anything, and that it actually leads us to better outcomes, the kind of outcomes that David was talking about, better health, prevent complications of chronic illness, and more vitality. And the final one, which I think is going to turn out to be the big one, is the implementation. We don't know what the right deployment strategy is. We don't want to layer AI on our broken health-care delivery system. That would be a disaster. That would just make it gum up the works. And we learned from telemedicine that it's actually hard to implement these things. Everyone thought, wow, with COVID, we got telemedicine. It went way high. 45 percent of all visits were now telemedicine. And then, when people could go back to the doctor, it went back down. Not quite to baseline. Why was it? Because it was hard to integrate into workflows, and we hadn't figured it out. We're going to have to spend a lot more time thinking about AI, and how we build the health-care system around AI rather than layering AI onto the health-care system. And we haven't done that kind of thinking or work, to do it correctly. And so I think those are going to be your four big barriers. I think licensure can be solved. We're already talking with state medical boards. You can see Utah's already got out ahead of it. I think liability can also be solved. You saw Doctronic. One of the first things it did out in Utah when it was doing the autonomous renewal was buy malpractice insurance, but there was no malpractice carrier, so it had to go to the Lloyd's of London. Reimbursement, we're still not there, and I think people aren't thinking about it necessarily in the right way, but it cannot be fee for service. And then I think—I really do believe, deployment's going to be our big problem. Every time we have an invention, deploying it properly, getting it integrated into a system—as you just heard, it's like too many years. So, I think we have to start now to think about how we build a system around it.

John D'Angelo 24:30

I couldn't agree with you more on the last thing. If we just apply this over the current operations and the current infrastructure, 70 percent of the work has to be what's the right processes, what's the right ecosystem, and how all the pieces of the ecosystem are supported by this tool, as opposed to layering it on top of earlier—

Ezekiel J. Emanuel 24:45

So, here's the way I'm thinking about that and the way I would test it out. There are two or three cases where it absolutely is going to help, no question about it, and we should deploy it there first. The first one is we have about 100 to 140 million Americans, depending on how you want to count it, that are in primary-care-shortage counties. They can't get a doctor. So, you're not even comparing them to a doctor, you're comparing them to wait. We could deploy primary care AI in those circumstances. We've made a calculation—I won't bet my last dollar on it, but I'm pretty good—we would save, even with modest adoption—and I'm talking about modest adoption—you would save easily more than 10,000 lives, and you would save more than 20 million hospitalizations that could be prevented just with very modest

enrollment in those areas—and again, not at perfection. The second area is there are three big chronic illnesses in this country. Hypertension, 120 million Americans have it, and we do an absolutely terrible job controlling it. Diabetes, 40 million Americans have it, and we do a terrible job controlling it, and dyslipidemias, and we do a terrible job at control. Better than the others, but still terrible. Those are all algorithmic to manage them. No fancy judgments. To get to 80 percent control in each one of them is algorithmic, and we already have real patient data, by some of the people in this audience, that you can actually manage diabetes better with autonomous AI than you can with doctors, and that is a place where they can't be worse than—we're so bad, it's hard to be worse than doctors. And so you want to deploy it in that area. Literally, I was just on the phone today talking to people in Arizona. "Well, what about the Pima Indians?" Doing it in those communities where they don't have that kind of service. And once you get it, you can then apply it to pregnant women. What are the big problems with pregnant women? Well, there are multiple, but one of them is gestational diabetes, and the other is preeclampsia. Again, formulaic and algorithmic. And I'm an oncologist. You know what that's like. All the side effects of chemotherapy, there are 15 of them. All of them have good algorithms. You don't need an oncologist with four years of medical school, three years of internship and residency, three years of oncology fellowship to manage nausea and vomiting. You can have autonomous AI do it. So, I think those are the places where I would roll it out first, and you will get reduced costs, better control, and public trust.

Michael Milken 27:39

Munjal, the idea of abundance—just this idea is uplifting. And so in the United States, we felt we could always grow, that it wasn't a zero-sum game. Unfortunately, in France, much of the discussions over the last 20 years is it's a zero-sum game. If you work less, I get more hours. And we had a company in France where they let us know you can't work more than 38 hours a day.

Ezekiel J. Emanuel 28:15

A day? A week.

Michael Milken 28:16

That was me. For the general group, it was 38, and their idea was if they went from 38 to 36 it would create more jobs. And so when you talk about the abundance thesis and how it's impacting health care, let's talk about that.

Munjal Shah 28:37

Yeah. So, let me start by just—what we do at Hippocratic is we make clinical voice agents that call patients. And we do that within the scope of a registered nurse—or less. Registered nurses don't prescribe or diagnose. We've now done that for 330 million patient interactions without a significant safety incident and have done it for about 50 health systems, five of the top seven payers, and basically eight of the top 20 pharma. Now, what I want to do first before we talk about abundance is I'm going to play a de-identified patient call. I want you all to hear actual voice AI talking to patients, and one of the luxuries you have is infinite time to get to know patients. We're so transactional, "Hi, how are you? You need to get your colorectal screening. Okay, bye." And listen what happens when you reverse it. So, can you play the clip?

[Audio plays]

Munjal Shah 31:17

Anyway, so we could stop it. So, couple things there. That conversation went on for 20 minutes, and then she brought him back later and said, "Hey, the reason for my call was to encourage you to do your colorectal screening." I bet it's more effective than just calling up and saying, "Hi, how are you? You know, you got to do your screening. Okay, thanks. Bye." But we run call centers on average handle time, so we don't have an abundance there. But when we have an abundance of time, we can persuade at a level that I don't think we've ever been able to. And people say, "Oh, I have text messages. I remind people." I'm like, that's like four levels of self-driving car. That's like level one. It's not this full engaging kind of experience. The second thing is, as we roll this out, a lot of people think you're going to use voice AI like this, that's clinical, to do things you do today cheaper or to do things you can't staff for. Actually, we found that didn't work. It's been really hard to roll out those use cases, actually, for a variety of reasons, including people throwing sand in the gears in middle management. But one of the things that we have found is things you never thought to do until you had an almost infinite supply of clinicians at a very low cost are actually what's working. So, an example is, in New York for a Medicare Advantage plan, in July, there was a heat wave. We called 50,000 people at the hottest two hours of the day, every single day of the heat wave. We did a heat stroke education. We also did an assessment on some of them. We called them an Uber and got them to a cooling center. Now, without AI, that would've cost you about $5 to $10 million a day. You would've needed 3,000 clinicians to make that call, which you wouldn't have found with, what, a 10-day notice of a coming heat wave. With AI, it cost $35,000 a day and ended up—so if you offset three ER admissions, you roughly break even. Great for patients, great for the system, great for total cost of care. And this is the abundance thesis. We did it twice. I think this one has the seven. The year before, we did 16,000. But this is what I mean. I don't think we've ever had the luxury to think about an abundance mindset. But now I think—and I think all of health care and all of medicine's been designed assuming clinical scarcity. But for the first time, we get to redesign it. And I think this is the big idea that will emerge. I don't think we'll call this the AI decade. I think when we look back, we'll call this the abundance decade.

Michael Milken 33:41

So, when I—over the years, particularly when senior military people are diagnosed with some life-threatening disease and one of our medical philanthropies is interacting with them, there's always a general reaction of how archaic the health-care system is. The technology that's available to them in the military at the highest level is so significant. They're kind of shocked from that standpoint. So, as we think about the deployment of AI, it comes—to me, I walked into this meeting we had in Chicago. I was late, and they were talking about getting rid of the weak link in the system. I missed the opening, so I didn't know what the weak link was. And it turned out everyone looked at me like I was crazy. "You don't know what the weak link is? It's the human being." So, they were talking about cars, trucks, transportation, and how do we get the human being—who has to eat, go to the bathroom, gets distracted—out of the equation. So, when I think about the deployment of this technology in an industry that's the number one user of fax machines today, and also thinking about the resistance that Suchi pointed out with the leading surgeons trying to tell you, "We're not going to do a minimally invasive surgery till we look at it 10 years from now in outcomes," why do you believe we're going to be able to deploy this, and how is it going to reduce your cost, David?

David Cordani 35:37

Reduce our cost or the cost of the system, I think you're referencing it at large?

Michael Milken 35:41

Your cost and the system.

David Cordani 35:42

So, as a health service company, our costs pass directly to our clients and our customers. That's what I come back to with the affordability crisis. If you take this picture, you come back, there's no other industry in the world that lacks the interoperability standards or shared infrastructure that you would need for an industry of this scale. US alone, we're talking a $5.5 trillion ramping to a $6 trillion industry. So, we've observed and admired for decades the fact that our ecosystem doesn't have those standards, doesn't have the interoperability. Now, flip it on its head. We are now at a place where we could accelerate that in warp speed. So, the fax machine, in a way, is a relic indicator of the past, where we use old technology and old modality to fill gaps. If we agree on standards, as, for example, the industry did voluntarily and coordinated with CMS, you could actually take for up to 300 million Americans of 340 million Americans, a set of standards to carry across, remove this, remove the cost out of the system. But more important than the cost is the ability to have more complete information in a more real-time basis, identify decisions real time or near real time in terms of seconds, identify safety risks or gaps in concern, and then take some of the savings out of it and repurpose it into higher-order opportunities. So I think it comes down to the interoperability, the standards, and the infrastructure. But Zeke, I'll let you jump in. Our industry needs not to be paralyzed by observing the problem. We've stepped forward with voluntary actions. We've stepped forward with cross-industry collaboration. We've stepped forward with working with government, public, private, to drive accelerated change here, which is both cost savings, but it's quality savings, and it's customer and provider-experience savings. Go ahead, Zeke.

Ezekiel J. Emanuel 37:22

I think the underlying structural problem for that, Mike, and for everything that David said, is we have a fragmented system. We have over 1,000 payers. Each one of them has different benefit packages, different standards for the documentation they want. Coding and billing is all over the place. And then you've got the public programs. And all of that fragmentation has meant that there's no standardization that is common in other places. You might want to take just one minute. Why do we have an ATM system that works? You can go anywhere in the world. Thank you, Federal Reserve. Right? We don't have a Federal Reserve that oversees the health-care system and basically forces everyone to a standard system. Even if it wasn't the best, second-best would save literally hundreds of billions of dollars in administrative waste across the board. Same thing with credentialing, accreditation. You can just go down the list. That fragmentation and the multiple efforts that people have to make. Average hospitals, they probably have contracts with more than 50 different payers, and each one of them is different. And that is the fundamental problem, and we need to have a system. You want to know how we would have efficient adoption and common infrastructure. We need to have a system where we can actually standardize across the whole industry, without having to negotiate with each payer, each health system.

Munjal Shah 39:00

Can I jump in on this? So, look, I'm actually far more optimistic. Actually, this is the first time, if you look at adoption of AI across industries right now with generative AI and voice AI, actually, health care is ahead. It's ahead of banking. There's actually, I'm seeing, we have 50 health systems in 24 months who said, "Yes, I want to try it and deploy it." When has that ever happened before?

Ezekiel J. Emanuel 39:22

How many? 50?

Munjal Shah 39:23

50.

Ezekiel J. Emanuel 39:24

Oh. That's nothing.

Munjal Shah 39:25

And just 24 months.

Ezekiel J. Emanuel 39:26

That won't change the American health equation.

Munjal Shah 39:27

That's okay, but that's—

Ezekiel J. Emanuel 39:28

Not enough—

Munjal Shah 39:28

I mean, come on, now you're just being negative to be negative. But my point is—

[Crosstalk]

Munjal Shah 39:35

And then you've got 900 million people who use ChatGPT every week, of which 200 million put in a health-care query. So, what's interesting is they're almost solving their access issue on their own. What are they doing with that? They're doing a little bit of pre-triage. They're doing second opinions. They're doing—it's really encouraging. Probably the biggest killer app right now of using generative AI, smart intelligence, is health care. So, people are already just doing this. This is adopting. Clinicians are understanding it. They're deploying ambient AI at a large scale that's actually quite large. I'm actually quite optimistic in a way that honestly, I haven't been before, and I think we've attacked admin because that's all the tech we had before. You made this panel, Clinical AI is the name of it. We never really could do clinical AI with software before, and we finally now have it both in the form of classifier AI as well as voice AI and generative AI, and we can now do things we've never been able to do.

David Cordani 40:36

I share your optimism in the moment, and Zeke, the examples you provided of the chronic disease, the opportunity to understand that you articulate it. The patients need the desired outcome and then harness AI to achieve that and drive it forward and then get to agreed-upon standards. I think the opportunity is present in the current environment and we've had some steps forward for the industry at large, working across provider, across government, and across public-private payer. So, the problem statement of the past, I agree with. The opportunity going forward—

Ezekiel J. Emanuel 41:09

Let's be clear. I'm the guy—

David Cordani 41:09

AI allows you to jump curves.

Ezekiel J. Emanuel 41:13

David, I'm the guy in September who said that by 2030, we're going to have a lot of autonomous AI out there, and it's going to be better than doctors alone or doctors—

David Cordani 41:22

So, you're optimistic—

Ezekiel J. Emanuel 41:23

—working with AI. I was the optimist. The issue, I think—so, it will work. The issue isn't will it work, but will it be implemented in the system and benefit patients? That's a whole different question than will it work. Yes, it will work. There's no doubt about it.

Michael Milken 41:41

Zeke, let's go to right now to John to answer that question. Okay?

John D'Angelo 41:45

I'm, like, jumping out of the chair now.

Michael Milken 41:48

So, John—

Ezekiel J. Emanuel 41:51

Is it going to work? You've got to have the answer.

Michael Milken 41:53

—we know that AI can read an MRI or a CT scan better than a pathologist. What's going to happen when it hits your 108,000 employees, many of them prestigious in their community, and you tell them that we're

going to have to switch to these technologies here, and they can assist it. But to talk about doctors and AI, the study at Stanford showed you that doctors, doctors plus AI, and AI, that the outcomes were better just with AI alone. The doctors confused AI. But this was a well-trained AI. It's not off-the-shelf systems. So, let's talk about real-world that Zeke has given us. You've got a lot of employees. Some might accept, some might not accept. How are you going to implement that?

John D'Angelo 42:59

There's so many things to unpack here. So, one, the major challenge we heard about is the fragmentation, and I believe that's why the technology will amplify the capabilities of the workforce. Now, again, a pathologist, if the AI can read the millions of pixels on a slide better than a human, or read an image and see things that the human eye can't see earlier and drive better outcomes by going further upstream, great. Let's embrace that, and there will still be a shortage, which we have tremendously right now in pathologists, and there will be things that need to escalate to the human, I can guarantee you that. So, we can find that right balance of where we leverage AI to break down the fragmentation. I think the examples of hypertension, diabetes, and those things are real examples because right now it's being managed by a once-a-year primary care office visit. It's transactional, it's not continuous, and we have people walking around with wearable devices and other things, and between the continuous data that's out there and how we bring that all to bear following algorithms, we've demonstrated improvements in preeclampsia and maternal health through an algorithm that we've deployed. But I still have a tremendous need for obstetricians. And I think it's finding that balance. The real opportunity in my mind is—I would throw out every single fax machine if I could. You mentioned a zero-sum game. The provider side of the equation, we are in a zero-sum game situation. I can tell you in New York alone, 60 percent of the hospitals are operating in the red. They rely on huge subsidies from the state and others to keep their doors open. We have workforce shortages and if we don't embrace this to break down the fragmentation to level set, we're not going to be able to invest in the technology the way we'd like to, and it'll be point solutions. So, there'll be fragmentation there, although also value. And this is where it all comes down to, I think where David started us off is we have to take advantage of the opportunity of the moment to, again, rethink all the processes and the structures, drive health and wellness as much as we worry about the precision medicine on the really acute phases of disease. The intelligence will give the workforce in early sepsis, the intelligence will do in the cancer treatment, on the right diagnosis, the right treatment for that right patient based on their genomic sequence and all these other things. But 80 percent of the health outcomes are driven by things we could be attacking that aren't as complicated. It's mobility, it's mindfulness, it's nutrition, it's obesity, it's diabetes, hypertension, and that's where the opportunity is. So, anyway, to answer your question, our workforce is overworked, they're burdened, they're stressed, they're leaving the industry because they can't keep up with the demand. There will be little pockets, but we can reskill people and use them in other ways, and I would take that challenge on any day.

Michael Milken 45:46

Suchi.

Suchi Saria 45:47

I just want to summarize. John is saying, I heard that it's very doable.

John D'Angelo 45:53

It's doable, but it's not going to be doable with a single point solution. It's not going to be doable if all the stakeholders in the ecosystem don't come together to agree on the solutions that are going to have the highest value. Munjal, it's hard to separate from my mind the clinical application and the workforce without also tying in the administrative burden, which ties in 20 percent to 30 percent of the cost and is what my staff is dying on. I tell people, AI's not going to replace the doctor. It's going to give the doctor back to the patient. Because for every 10 minutes they spend with a patient, they spend 20 minutes with their back to the patient, making sure they cross all the "I"s and dot all the "T"s on a computer. So, we can meet the demand and the capacity challenges if we just leverage the technology to let people do what—I'm a doctor—we came into health care to do, and that's where the opportunity is.

Michael Milken 46:39

Suchi, so a lot of AI historically has looked great when you study it, and somehow it has disappointed when it reaches a real hospital. You studied exactly this gap at Hopkins. Why does it happen? How do we close it?

Suchi Saria 47:03

Such a great question, Mike. What's interesting is we have probably, I want to say, upwards of 20,000 papers now of research papers where people have shown in a lab setting, you take some data, some retrospective data in a variety of different clinical condition areas, and you're able to show, oh, look, this AI can identify something or detect something. And then there's this chasm, which is how do you go from it can to is it going to actually work in real practice, and is it actually going to get adopted? And that chasm has a number of challenges. The first one is can you integrate it within a workflow? Two, can you figure out a way for what the workflow is that can deliver value? For instance, there are examples of scenarios where you needed the cardiologist to do something that puts the cardiologist out of the job. So, they're not incented to do that anymore. So, you have to create a workflow that's tenable for people to do what's needed in order to create value. Third, when you start putting it in the real world, there's a lot of variation across hospitals in the way they record data, the messiness in the data, practice patterns, et cetera, which is in the research literature is called drift and shift. How do you build systems that are reliable and robust across these different settings? And that was another challenge. The great news, though, is that these are all possible to overcome. We've been able to show now across a number of different implementations—and we have to do this with the FDA, we have to do this in our work with CMS—where across many different sites, there is science to implementation. Zeke brought up implementation barrier. We have to think of this as implementation science, which is what are the barriers and what is our way of fixing it? And part of that is, is it transparent? Is it within workflow? Do we have a way of measuring adoption gaps? Do we have a way of building trust? Do we have a way of driving outcomes? And now we've been able to reliably—what used to be 5 percent to 10 percent adoption, which was standard best in class in the field—90 percent adoption repeatedly across many, many sites, big sites, little sites we've gone to. Very recently, I had the team do a study where we pulled adoption data from 40 different sites. And I said, "Can you tell me what are the drivers of high adoption sites versus low? What differentiates them?" Interestingly, we had a handful of low adoption sites. Here are the predictors. Number one, they were stubborn in their ways. I hate to say this out. I'm not going to call anyone out. But basically, they were set in their ways of this is how we do things. We're not going to innovate on workflow. We're not going to innovate in how we implement. We're going to use our own instinct of implementing it the way we've always done it, which means you're not creating a chassis where this thing can flourish, and that was a very big predictor. The second was use of archaic technology where things weren't set up in a way that you could thrive. So, I

think this is very much something we can succeed in. I feel like there's an opportunity to do so. It still sucks that our largest electronic medical record, which is sort of the infrastructure for the country, is still built on MUMPS.

Michael Milken 50:23

So, Zeke—

John D'Angelo 50:24

Can I weigh in on that for a second? I'm sorry.

Michael Milken 50:26

Yeah, I want to go to Zeke next, though.

John D'Angelo 50:27

Okay. I think it's important, I think you make a great point. This is why I say 70 percent of the success here is going to be on workflow, process, improvement science, implementation science. I can give you examples, pre-EMR, where, Dr. Doerfler in the front row over here, and I led a sepsis initiative when we reduced sepsis mortality across our system, by 50 percent, won the Eisenberg Award and all these awards, and were on the roadshow talking about that for years, and it was with solid improvement science and implementation science, and it was sustainable before we had this technology. And it was really understanding what we needed to achieve and why and how we put the right execution around that and the right level of transparency and accountability and understanding that the who and the how in different environments is very different in a tertiary versus a community hospital, but everybody aligning around that improvement work and being accountable to it. So, it's not just because we're going to layer technology on top of this stuff that we're going to make these incredible achievements. There's got to be real effort here, and there's got to be real commitment to process improvement, to make your point even stronger, in the overall ecosystem. Or we're just going to be layering more technology on top of a broken system.

[Crosstalk]

Michael Milken 51:35

So, Zeke, before you go, I am going to ask you a question.

Ezekiel J. Emanuel 51:37

And then I'll say what I was going to say.

Michael Milken 51:38

Then you can answer or not answer. I'm teeing you up, Zeke. A number of years ago, there was a child that underwent gene therapy at Penn. The child was going to die, and it was an attempt to save the child's life, and the child died. And gene therapy was slowed down for years, not just at Penn, throughout the country. So, when you think of autonomous AI, where would it first be employed? If something goes wrong, how

long is it going to delay adoption again? And what would be the first use case for this autonomous AI to be, and how do we protect ourself that one breakdown or failure doesn't slow things down for a long period of time?

Ezekiel J. Emanuel 52:36

I know this is a worry, but gene therapy was different and that case was totally different because there were all sorts of violations of the protocol and other things that made it not just an unfortunate case, but actually a bad action. The bigger point I think here is to get adoption of technology, to actually have it widespread, you need three things to line up. Victor Fuchs, who's an old colleague and a brilliant health economist, used to say, "To get change in health care, you need three Is." You need information. You need the data. You need to show that AI is going to be better than humans or humans with AI and convince people that that's consistent in the real world. You need incentives. Incentives for people to actually use it so that they don't oppose it. And the third is you need an infrastructure, so it's not difficult to use it. You don't have to keep reinventing something. You don't have to spend more time on it. And unless you have those three things lining up for the adoption of AI or for any new intervention, it's just not going to work. And I think John is 100 percent right. We've had plenty of technologies. We have plenty of improvements that have been adopted without AI, without a lot of high tech. I just go to your home state, California. They've dramatically reduced maternal mortality with toolkits, old style toolkits. This is how you do it. We're going to collect the data and see who's improving. We're going to give you feedback on your data and where you're not improving and what kind of cases. So, we have to think about the whole process. Do we have the right information? Do we have the right incentives? And let's make sure we have the right infrastructure so it's easy and convenient to use. Why does the public use AI for health care? It's easy, right? They can just go into ChatGPT—which you shouldn't, by the way, do, because it's not trained on health care, and it doesn't have the right guardrails or harnesses. But it's convenient to them. It's like going to Amazon. Okay? We have to actually make AI that easy to use in the health-care system on the reliable models that have been really proven, and then the public will accept it, and I don't think we're going to have the problem you suggested, that one adverse event is going to shut the whole thing down. I don't think that's really going to be the threat.

Michael Milken 55:25

Abundance. We all wish for abundance. Obviously, you can have an infinite number of agents. Assuming your theories turn out to be 100 percent correct, what does health care look like five years from now?

Munjal Shah 55:46

Yeah. The predominant disease burden, as I think Ezekiel mentioned, is chronic disease. And the management of chronic disease is actually the heavy dose. Diagnosing diabetes is easy. What's your A1C? High blood pressure. Oh, you've got high blood pressure. Great. Managing it, whole other thing. And I think that what we've not realized is that we need a lot more clinical capacity on the management side, but we now have it. We can now do things that we couldn't do before. We now have a persuasive AI. And so I believe there was this old saying, "An ounce of prevention is worth a pound of cure," but the truth is, that never actually penciled. It was a pound of prevention is worth only an ounce of cure. That's the truth if you looked at the actuarial math on most things. But today, now that your cost of intervening drops by an order of magnitude, you can go after the low acuity, high volume interventions, where before, all you could go after was the high acuity, low volume interventions because it cost you $90 an hour to intervene. And so I think you end up with a far more preventative—abundance leads to a giant preventative system.

I'll give you two quick examples since we're out of time. One, the other day, one of our health system partners in rural Pennsylvania said, "We're not going to deliver the normal mammogram results back to women on their MyChart alone. We're going to call them on the phone and give it to them verbally with the voice AI." Why would you do that? It's so cheap to do the other thing. Yeah, well, it turns out most people are in a good mood when they get a normal mammogram result, and they then asked them, "Can we book the next year's exam?" They got so many that they're actually buying an additional machine now, and they have a whole year to get ready for it. So, there are these kind of unintended positive consequences like that. And another example is we got 1,700 patients lost to follow-up for a large health system in the middle of the country, for low-dose CT scans for lung cancer. And lost to follow-up is we gave up on you. It's really a nice way of saying that. Well, we didn't get all 1,700, but it was going to be zero, basically, at that point. We got 252 to schedule. We got 180 to show up. We got nine significant findings, three cancers. We saved three lives. Do you know how many lost to follow-up lists there are in a health system? There's, like, 100 different lists across every specialty. And so I think we get to a level of proactivity that we haven't been able to get to at a cost structure we can afford. And this is where we remake health care. I feel like everything we've been doing is rearranging deck chairs. We've never been given a lever that gave us an infinite supply for an order of magnitude lower cost, and we can finally start doing it. But we need the creativity to even think of this because we don't think in abundance. That's not natural human. Every war is about scarcity. Everything's about zero-sum thinking. That is what human beings have always done. And I just think that this is why I call this the abundance decade.

Michael Milken 58:30

Well, I want to thank our panelists this afternoon. This is the largest industry in the United States. This is the most important industry in many ways, because if you don't have your health, you haven't got much. And so as we look at the potential change to deploy the technology, as I mentioned to our panelists, if you're in a group and you ask them, "List all the industries or things that most things can go wrong in AI," it's not at the top of the list in health care. And hopefully, the world of abundance is coming to all of us in the next five years. Thank you very much.

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