Fixing Healthcare Podcast Transcript

Interview with Eric Topol

Jeremy Corr: Hello, and welcome to the Fixing Healthcare podcast. I am one of your hosts, Jeremy Corr. I'm also the host of the popular New Books in Medicine podcast and CEO of Executive Podcast Solutions. With me is Dr. Robert Pearl. For 18 years, Robert was the CEO of the Permanente Group, the nation's largest physician group. He is currently a Forbes contributor, a professor at both the Stanford University School of Medicine and Business, and author of the bestselling book *Mistreated: Why We Think We're Getting Good Health Care—and Why We're Usually Wrong*.

Robert Pearl: Hello everyone, and welcome to the third episode of season five. This season is focused on the culture of medicine and how it both supports doctors and nurses in providing superb medical care in the most difficult of circumstances, such as during the current coronavirus pandemic but also leads them to inflict harm on themselves and their patients. In this episode we explore the topic of technology in American healthcare. If you want more information on the culture of healthcare, you can find links to articles and other podcasts on the subject on my website RobertpearlMD.com.

Jeremy Corr: Our guest today is Dr. Eric Topol. He is a cardiologist, the founder and director of the Scripps Research Translational Institute, a professor of Molecular Medicine at the Scripps Research Institute and editor-in-chief of Medscape. He has published three bestseller books on the future of medicine -- *The Creative Destruction of Medicine*, *The Patient Will See You Now*, and most recently *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*.

Robert Pearl: This season of Fixing Healthcare is about the culture of medicine and how it leads to some of the most remarkable outcomes, and yet at the same time, the same culture can harm doctors and patients. You're one of the world's leading experts in technology, and we thought that in this episode, we'd explore this dichotomy with you, particularly when it comes to information technology, virtual medical care and artificial intelligence, all areas that your expertise is about. By culture, I mean the values, beliefs, and norms that doctors learn, usually in their training, and apply throughout their practice.

Robert Pearl: As an example, if an intervention will save 10 lives, and prevention will save 15, doctors still prefer interventional solutions. Angioplasty versus lipid blood pressure and exercise is a good example. Doctors believe that they're judgement and intuition of better than checklists and machine-driven algorithms, despite a huge amount of data that says they're wrong. And they bring the patients back to their office, when a virtual approach would be better. So let me begin, Eric, by asking you, how do you explain such a culture in the 21st century, that seems to not fully recognize the power of technology, and what would you recommend we do about it, if anything?

Eric Topol: Well, it's a really important question you're asking, Robert, and I think the issue here is not like a simple answer. Just to get into some examples. So technology would be the reflex that if you see a narrowing in an artery, you should go fix it, what I called many years ago, the "oculostenotic reflex." In fact, that's still is the case, that even though, as you cited, a lot of data would suggest that it's perfectly fine to use medical therapy, there's this fix-it mentality to use the technology. So that's part of it. It's not necessarily evidence-based, but it's this bias that if you can fix it, you should. There's another side of this, of course, in the whole world of IT and artificial intelligence, and that is, to be able to use technology in a very favorable way to improve the situation we're at right now. But it also has... we'll discuss, it has a chance to backfire.

Robert Pearl: Why don't you say a little bit more about it then?

Eric Topol: Well, in the near future, and it's already starting now, we'll be able to process data, as physicians, far faster and more accurately with the help of machines. So whether that's scans or slides, or anything that has data, including voice, we... all these things that can be put through deep neural networks. So one potential, if we just proceed as we are now, is that since we have overlords, administrators, they will say, "Oh, that's great. We purchased these algorithms, these software packages, so now we want you, instead of reading 50 scans a day, we want you to read 200 a day." Or slides, or see more patients.

Eric Topol: So you see, this is where technology can really backfire, because what it should be doing is actually enhancing the patient-doctor relationship, which desperately needs help. So it can go both ways. The example you started with, with using a procedure which is not necessarily backed by all the evidence, but also can be used against the practice of medicine, because it's become so business-centric.

Robert Pearl: So let's go one level deeper, Eric, if we could. When it comes to certain tests, like mammograms, the data that I've been shown says that AI is at least equivalent to radiologists. I don't know if you agree with that data, but if so, why don't we just shift from people to machines now, if the two are exactly equivalent in accuracy?

Eric Topol: Well, we got a few problems with that. Firstly, the studies which... You're citing correctly. There's notably NYU study and a big Google study, and several others. Machines, through deep networks, can be trained to be more accurate than a radiologist in interpreting mammograms for false positive or false negative. That's true. The problem is those data sets are all retrospective, they're not real world data sets. There's been no prospective studies, nor has there been randomized studies. Not meaning you have to do randomized studies, but that would make it even more firm evidence.

Eric Topol: So what we have is these in silico, beautiful, pristine data sets that make that conclusion. Also noteworthy is, the conclusion's wrong, because we don't want to entrust an algorithm to interpret a mammogram and put a woman's life at

potential risk or having unnecessary procedures. What we want is the combination. So the problem we have in AI medical research, it's always man versus machine. With few exceptions, what it should be is man plus machine, versus either component, that is, the sum of the parts is greater than either of the components, and there's just not enough of that type work.

Eric Topol: So I think always, there will be oversight. So eventually, there will be prospective studies, to your point, they will likely validate that the accuracy's improved, but it's going to be even better when you have the clinical context that a radiologist would have in that example. That goes across all disciplines of medicine.

Robert Pearl: The challenge with a prospective one in this area is you have to wait a certain number of years to find out whether the patient really had a negative mammogram or actually developed breast cancer that was missed on the mammogram. So I think that's why most of these studies have been done the way they are, although you can easily look back, take studies from five years ago that were not included in the AI database and apply them. But I've also [crosstalk].

Eric Topol: You're bringing up a point, which is a good one, the so-called ground truce that you want for a deep neural network. But there's another way to look at it that you get the answer very fast, in a matter of weeks, which is, just do a paired assessment and see how concurrent they are, and then just zoom in on the ones where there's discrepancy to see which one is the right assessment. So we're not talking about here, the prognosis, which is what you're getting at, of what the neural network interprets versus the radiologist, we're just talking about the accuracy of the interpretation. Is there really a nodule or not? Is something missed or was it falsely picked up? So that part, we can get the answer really quickly, and that would provide lots of reassurance.

Robert Pearl: Well, we certainly have lots of listeners who are in the academic world. Hopefully, one of them will take the challenge and do exactly what you're suggesting, and by next year, maybe have an answer to this question. But let's move on to something that I think is very vital, the electronic health record, another piece of technology. It's hard to imagine providing excellent medical treatment; high quality, coordinated, and efficient without comprehensive information, and yet, as a nation, we remain very distant from that goal. Why are we not there, and equally importantly, why do doctors seem to demand surgical robots that have to be proved that they can save a life, and not scream for 21st (century) IT systems that have been proven, many times over, to accomplish that goal?

Eric Topol: Well, that's a good one there. First of all, electronic health records, here it is, almost 2021, and they're truly pathetic. They were set up, as you well know, to be promoting business and billing, never for the patient or the physician. They're so inadequate that what's important here as we go more and more into

the era of AI, it's all about the input. And when the inputs are shaky, then you get compromised output.

Eric Topol: The other thing about these electronic health records is that they not only are making physicians and nurses, and all clinicians, into data clerks, but they're largely a big part of the burnout phenomenon that is detracting from ability to provide care. So they have been an abject failure, as you're well aware. The problem is that the companies involved, not just Epic and Cerner, but the other ones, there's never been the teeth it requires in the government to require these software programs to have uniformity, to have complete interoperability, and also to be favoring patients, that is, that a patient should have a copy of all of their records. So it's partly the fact that at a level of the country, we've never had the teeth and the regulation that... A lot of lip service, a lot of fancy documents, but never really executed as it should be. So that's the EHR part of it.

Eric Topol: Now, you also brought up about technology that gets embraced with little or no data. So a fine example of that would be the surgical robots, as you've mentioned, that are now largely used. They're, in many instances, just a marketing type of promotional for the health system or for the doctors, that we use the robots, but the data are scanned for providing benefit. So that's just like the proton centers for cancer, these very costly technologies that don't have proven value. This is a recurrent problem in medicine, and it just makes healthcare all the more expensive and all the more off the track.

Robert Pearl: When COVID-19 ends and travel resumes, people will once again be able to book a flight, reserve a hotel, make dinner plans, and schedule a car relatively quickly online, and yet if they want to schedule a doctor's visit or find out their laboratory results, they need to call the doctor's office between 9:00 and 5:00, Monday to Friday. Why do doctors seem, this is a cultural issue, not to value patient convenience?

Eric Topol: Well, what you're saying is really true, and this is a holdover from over two millennia, that is, the idea that doctor knows best, the doctor is in control of everything, and it's not set up to be promoting this term, patient-centered. It's so important, but the way it's used or established today is bogus. If we're patient-centered, then everything that we do, the patient should be getting a copy of. They have right to that, just like they have a right to healthcare, they have a right to their data, that they paid for, and their body, and they're the primary focus of whatever test or whatever visit that they've had.

Eric Topol: And when that's been explored, it's been shown that both patients and clinicians favor that. But the problem is, as you've touched on, is the culture issue. Still, today, physicians, more than 60%, are unwilling to give patients their notes. The idea of making appointment, which should be the norm electronically, is still a rarity. So, we have to fix this. It really is something that other countries around the world that are not so hung up on the cultural issues have been able to override. So I'm confident in the future, we will get there.

Jeremy Corr: There has been a lot of talk about potential mandatory contract tracing. Americans value freedom and privacy, that being said, I do not think most Americans know how much data Facebook and Google collect. That being said, aren't you at least a little worried that contract tracing could open a potentially dangerous door or precedent for the tracking of American citizens against their will, that could then be used for ill or more nefarious means?

Eric Topol: Right. Well, the smartphone contact tracing apps, they're clever, but they only work if you have the vast majority of people on them, and there's very few examples around the world where it's actually made substantive contribution. So because there's just so many people still today that think that this is all a hoax and it's a flu or whatever, we're not going to get to the point where it's worthwhile. Maybe in a very small pocket of the country, but in the U.S., It's a lost cause.

Eric Topol: I think the hope is that in the months ahead, because this pandemic will be with us for a good part of 2021, we're going to have better ways to trace, and certainly digital tracing would facilitate. We can't ever have enough people contact tracers. Also, you can't do any tracing when you have overwhelming number of cases a day, like we have right now. So as we start to get control, as vaccination starts to take hold, then it will give us an opportunity to use both the people, as well as, hopefully, getting the digital apps. But the privacy will remain a concern. Again, it's all about the modeling. If you have leadership that are showing how helpful this can be in suppressing, containing the virus, there's much more likely that there'll be adoption.

Robert Pearl: In general, Eric, as doctors, we're trained to follow branching algorithms as we pursue a diagnosis or provide treatment for chronic diseases. That's how our professors taught you and me, and how I continue and you continue to teach medical students and residents. Combining AI and algorithms provides more consistent and better outcomes than humans, based on a variety of studies, not only in medicine, but other disciplines, as well. Embracing these technological solutions would make the steps coming from information technology superior, I believe, at least, to physician judgment, at least for the 80% or more of patients whose problems are not overly complex.

Robert Pearl: The data demonstrates that strict adherence would save more lives than relying on intuition and the experience of the physician, and yet I think most doctors would reject that concept, they'd call it "cookbook medicine." Why is this? Why do you believe that people seem unwilling to accept the power now available in AI, in algorithms, in technology, and what do you believe should and can be done about it?

Eric Topol: Well, that's a kind of multi-prong strategy going forward. Firstly, as you're well aware, there's more than 12 million serious diagnostic errors a year in the U.S., So it's a big issue. A lot of those, because of insufficient time with patients. Because if the diagnosis isn't conceived in the first five minutes and the differential, the accuracy drops down from 95% to 20%. So, we can do better by

having a boost support through AI and helping to get a diagnosis. Also, of course, if there was more time, the gift of time afforded by AI, that would help, as well.

Eric Topol: The other thing that you got to, Robert, was about giving patients more charge. They want more charge, they're generating a lot of data now, whether it's through sensors or whether it's those who've had some of their genomic data, those who have the portal to their electronic health records, or even more than the portal provides. Over time, there's going to be even more data. So the patients who wanted to take charge are going to have more and more capability.

Eric Topol: Today, the first FDA deep-learning algorithm was a smartwatch diagnosis of atrial fibrillation, but we're already seeing inroads in skin lesions and skin cancer self-diagnosis, urinary tract infections, ear infections in children, and a long list of things that give patients far more capability to get a doctor-less initial diagnosis. Now, they need treatment, whether it's an antibiotic for urinary tract infection or a biopsy for a skin lesion or whatever. That's, of course, where they can connect.

Eric Topol: We're going to see more of a level playing field, if you will, where over time, patients, through AI support, will be able to do more and get the answer quickly, and not have to go through all the rigmarole, as they do today. So that's good, because that further decompresses the work of physicians, and that's a good thing.

Robert Pearl: Let me dive a little bit deeper into this area, because it's a realm that I'm very interested in. As you've pointed out, we now have monitors that can monitor blood pressure, glucose, cardiac arrhythmias, oxygen, a whole dozen or more parameters at a time. Moreover, AI could identify changes. Here's the key question I have; AI could tell the patient, you're okay, based upon either stability in the clinical parameters, or the fact that something bad didn't happen in someone who already has the problem, and yet, so far, there are no manufacturers that have been willing to create such a device that would say to you in the morning, Eric, your three diseases are under control, there's no need to see the physician, as opposed to another morning, when the AI would tell you, it's time to see the physician.

Robert Pearl: Instead, what we either have is a broad search for a rare diagnosis, as in the AI example in younger people, or we have this notion that we're going to send information to your doctor, who doesn't have the interest or time in seeing a hundred rhythm scripts or glucose measurements. How can we get these companies to create the products that are patient-driven that's exactly what's needed for patient care rather than the things that are easy for them to make or ones that are safe for them to sell?

Eric Topol: Right. Well, you kind of just had a glimpse of the future here, that is where we're headed. But not there yet, and that's partly because the models of deep

learning are not matched up with the challenge. So what you're really getting at is a virtual medical coach or assistant that takes all of one's data, not just one piece of it, but all of the data, and process it to either, as you've mentioned, provide better management of a chronic illness, whether it's diabetes or high blood pressure or whatever, but also, to prevent those illnesses in people with high risk, whether it's genomics or family history or biomarkers or whatever.

Eric Topol: So we are going to get there eventually, but deep learning by itself isn't going to get us there. We need hybrid models. No company, yet, has been able to come up with the answer, although many are working on that. We're starting to see it initially in high blood pressure and diabetes, because they're so common, but they're isolated. They're, as you asked, Robert, about multiple conditions, the holistic person, that we're far away from that, and we haven't even gotten the isolated condition nailed. So we're getting there slowly. It's not moving as quickly as I'd like, but I think eventually we will have that.

Robert Pearl: Well, I actually have more confidence in the AI than the physician culture shifting. A good example to me is a device you're very well familiar with, the implantable defibrillator, which is, you know by law, whenever it fires, it has to go to a large dataset, so that everyone can be notified about it. When I was the CEO in Kaiser Permanente, we shifted our practice. So rather than seeing the patient every three months to check on how their device was doing, we saw them at the start of the year, we made sure they had all the information and understood how it worked, and then we said, "We're going to see you whenever it fires." It could be tomorrow, three months from now, or it could be nine months from now, because the thing that we're going to treat is going to be the fact that the machine detected an arrhythmia that required it to fire and defibrillate the heart, or at least address the cardiac arrhythmia that existed.

Robert Pearl: That's the notion that I have of where medicine could go. I'll see you for your chronic disease whenever there's a need to see you. I might see you three times this month, or I might not see you for nine months, and the AI can tell you whether you have that critical condition. But will physicians change their practice, or will they continue to say, "Let me see you in three months, in three months, in three months"? So far, the doctor culture has prevented a change in practice, when we've had data that's allowed a more variable schedule, and doctors have not really been willing to do it, particularly, as an example, in the area of cancer. What do you think?

Eric Topol: Well, I think you're bringing up an important topic, and I think that the guidance, the individualized assessment and need for direct interactions will get rebooted. But you're well aware as anyone that we work in a ritualistic, sclerotic, ossified culture as physicians, so we stick to our habits. In order to break those, there have to be really strong evidence and peer pressure, and you have to break through the issues of reimbursement and the norms and standard of care, because people don't want to worry about legal matters if they're not seeing someone with the right periodicity because of some breach of what

would be norms. So we've got a lot of things to kind of reset here, and it'll happen. But as we both know, it takes much longer than it should.

Robert Pearl: Yeah, that's the real question. The focus of the podcast is, why should patients have to wait? Why should we have to wait for this cultural change? Yes, there are systemic issues, AI's got to get better, the EHR has got to improve, but we seem to just tolerate it in a way that doesn't make sense, because we are talking about, obviously, thousands, hundreds of thousands, and millions of lives every year.

Eric Topol: It's a lot like this country's response to COVID-19, which has been largely passive instead of taking an active role, whereas many other countries around the world took a very aggressive role and completely contained the outbreaks. Instead of learning from those countries and acting like them to manage COVID, you know, it's the same story is with the things we've been discussing. If you take a model country like Estonia, they've nailed down everything we've discussed today. They're a model system, and there are many other country like that, but we don't learn from these, because this U.S. Arrogance of, oh, we have the best healthcare system, which couldn't be further from the truth.

Robert Pearl: Since you've raised COVID, let me go there for a little while. We've seen a leap in the use of telemedicine during COVID-19, from low single digits to 70% or so, and then a decline when social distancing restrictions were lifted. Where do you believe we should be, and how do you explain the gap between that number and today's usage?

Eric Topol: Well, I think it was a good thing. There's not many silver linings of this pandemic, but one thing that was important was to show that you could provide care at scale without having to be physically together. It isn't ideal, it's not the same because of the issues of what you can pick up when you're in the same room together, but it sure is a lot more convenient and it's safe when you have an infectious disease that could be lethal, or certainly create very severe illness.

Eric Topol: What we have today is telemedicine 1.0. It's basically a video chat. Unless you happen to have a skin rash or something, you could show a picture. There's not a lot of data transfer. But I think what's going to happen, Robert, is that we're going to see telemedicine 2.0 emerge, where there is data transfer, not just sensor data, the ability to image through a smartphone, the ability to get a lot of data and scans and whatnot.

Eric Topol: So I think it'll be still not the same as when you get together, but on the other hand, you're also getting a window into the person's home, and you're also having constant eye contact. Whereas if you're in the office, you might be looking at a keyboard, and your back turned to a patient. So I think overall, what the pandemic did was force telemedicine to be operational in many places that it wasn't, to get both doctors, patients, nurse clinicians to realize how helpful it can be.

Eric Topol: I do think over time, it's going to be broadly accepted for a lot of reasons that is, it decompresses the important visits that need to be done in person for a serious diagnosis, a new patient, an important treatment decision, that sort of stuff. So we can get a lot of things done through quick teleconsults that are inexpensive and convenient, and save the real deal for when you need to come together, and that's when you need all the concerns addressed. The communication that's exquisite and the empathy, and all that stuff, we want to try to segment that into visits that are the conventional ones.

Robert Pearl: Five years from now, if we have a COVID equivalency, what technology would you like to see doctors have that today they don't have, and will the culture of medicine drive the change or block it?

Eric Topol: Well, if we really want to do this right, we'd have multi-layered, real-time monitoring of patients as a prevention. As you cite, as an example, if there was another pandemic... Today, it's just incredible, the absence of what our capabilities are. We could know everything about an individual and their venue or where they live by all these layers of data. Not just their smartphone mobility, their searches for things like the current pandemic of loss of smell, but also their heart rate at rest and other markers that we know now are helpful, particularly in a cluster to diagnose COVID at the earliest possible time.

Eric Topol: We'd also have wastewater surveillance and all these different layers of data, so that we would be able to pick up an outbreak before it happened, and also, to be able to monitor patients without being in the hospital. So for example, there are now these chest patches or arm-wearable sensors that get continuous vital signs, except blood pressure, but all the vital signs you need to be able to keep a person who potentially could decompensate. But if they're healthy enough with COVID or the next pandemic, as your framing, they wouldn't be in a hospital setting. But we're just not using these the way we should. Right now, we have the analytics. All these capabilities exist today, it's just the lack of support overall, why they're not being implemented.

Robert Pearl: But again, I'm going to go back to this physician culture, the physician who today is hospitalizing people in the community hospital, and tomorrow is going to have to try to manage them while they're at home, with a variety of sensors and data coming through their office 24 by seven. Are they going to be able to embrace this? And I don't I mean themselves, I mean forming groups and moving out of the culture of the past to the culture of the future? Because I don't see the technology of the future and the culture of the past being able to coexist. Is it going to happen and if so, how?

Eric Topol: I agree with you, fully. I think firstly, today, doctors don't like to get sensor data from patients, because it's just a lot of data to look at and it's just, who has time to do that kind of thing? That's why we need advanced analytics to do that. Also, we have to have the triggers, the alerts for the patient and for whoever's monitoring the patient to be not like the alarms that work in a hospital today,

which are going off 80 or a hundred times a day with false alarms. They need to be the real deal alarms that the person has an issue.

Eric Topol: So we have to be able to prove that that is working, working well, and then hopefully, we'll get the buy-in. But the thing that you've emphasized in our conversation is the cultural blocks, and that is going to... We'll see it more likely to occur in younger physicians and those that I think are eager to see changes, but it is going to take perhaps many years before we fully can get this turned around for the better.

Robert Pearl: To that end, Eric, you work in an academic world. How do you see the culture of medicine being different, as it relates to technology, between what's often called "town and gown"?

Eric Topol: I think it's a gap which is probably, in many ways, not necessary or not real, because there's... practice of medicine can be exemplary in either setting, it also can be faulty and subpar in either setting. Of course, there is an overall sense of arrogance that occurs in academic the setting that the patients that are not in those places are coming from Saint Elsewhere or whatever. So there really isn't the unity that we'd like to see, and there's not enough respect across the board for how patients are looked after, irrespective of where they are being cared for.

Eric Topol: So I think this has been a long-term issue. That too is going to take some time to get a better sense of solidarity, but I do think, as we've been talking about, that AI will give support across the board to all clinicians. That ranges from paramedics, to pharmacists, to geriatricians, to family medical specialists, everyone. No one will be spared of getting help, that is, they all will get support of their daily work.

Eric Topol: For example, you can get a diabetic retinopathy screen today in a grocery store in many places by an untrained person. That's great, because people with diabetes, half of them don't even have any screening throughout their lifetime for preventable blindness. So you're going to see a lot of this gap reduced over time because of technology.

Robert Pearl: Two last more general questions I can't resist, having Eric Topol on the show, just the world's leader in a lot of different areas. But Eric, you've spoken about the potential for doctors to unionize. If so, to what end, and how will culture either promote or inhibit the process?

Eric Topol: Well, the term wouldn't be unionized necessarily. That has a bad connotation. But we did form the Osler's Alliance, and the aspiration is to get all physicians to work together, to stand up for patients. That is, to reclaim the soul of medicine, which is that precious relationship that can be restored, needs to be restored. We've talked about one reason, AI, but obviously, that's in the works, which could make it better by decompressing the work of clinicians and giving patients

more charge. But there are many other parts of this story that are unattended, because the current professional organizations, not just the AMA, but across the board, they just don't attend to this matter.

Eric Topol: So we have formed this... Actually, we just recently launched the Osler's Alliance, and I hope that over time, we'll get the vast majority of physicians to be part of it. Because the singular goal of this organization or alliance is to stand up for patients, so that the things that could detract from what they want and need and what we believe they deserve is no longer the case. That then, in fact, the outgrowth of this will be a restoration of the critical relationship that is necessary to avoid burnout, to avoid depression, and all the bad parts of healthcare today, where it just can't go on. It has to have a remedy, and the real remedy, we think, is this one.

Robert Pearl: If you could wave a wand and alter the culture of medicine, what would you do?

Eric Topol: Well, that's quite a hypothetical, because it'll never happen. But I think the wand for me would be the human connection, to bring it back, whatever it takes. I finished med school in the late '70s, and I'm very familiar with how different it was then, how much time we had with patients, how the human touch... whether that's just the time together to listen, not interrupt, to do a really more thorough, proper physical exam, to be available, to really go through important matters and concerns of patients.

Eric Topol: Well, that time has basically been vanquished, and the relationships have eroded. So the magic wand I would put towards would be to get that back, and even get it better than ever before, and that overrides technology. It leans on technology to get there, but I will never give up. I hope we eventually will have this back to the future capability.

Robert Pearl: Let me push one last time on this. Those are the things that I'll say are being done to the doctor and the patient-

Eric Topol: Right.

Robert Pearl: ... but what about the things in the physician culture, if you think they exist, that actually harm the patients, that need to change in order to maximize that patient care?

Eric Topol: Well, the number one thing would be liberation from keyboards. There would be no ever working on a keyboard, or the need really to be connected with computers and screens, because that all could be done through voice, that is, the notes could be synthetic, as well, or any tests that need to be ordered, and all the things that are being done today that require data clerk function. That should not be any part of a clinician's time. We have the ability to eliminate all that, but we're not giving it the priority.

Eric Topol: I've seen incredible synthetic notes from the conversation that occurs between patients and clinicians, and they're rapidly... with machine learning, so that the doctor doesn't even have to put any time into reviewing them, maybe a few seconds to check something. But the fact that we could have that, and the fact that we get patients involved in their own... reviewing their own notes and editing it, that's what we should be doing, because it's the electronic health record and the data clerk function that so much of that accounts for the demise.

Robert Pearl: Again, let me push a little bit harder. In terms of the physician culture, so as an example, the fact that we value intervention more than prevention, or a hierarchy that puts an interventionalist like you or myself, often, above primary care, or the culture that says, we don't really pay much attention to costs, because that's the insurance company's problem, and it's actually our responsibility, particularly in those situations where we do things that don't add much value, are any of these areas that you think need to happen simultaneously to these more systemic changes you're describing?

Eric Topol: Well, your point about prevention can't be emphasized enough, because we're not using the tools we have today. We have polygenic risk scores that would assign a risk that's quite accurate for conditions that range from coronary disease, to type 2 diabetes, to different cancers, like prostate and breast and atrial fibrillation, and a long list, and we're not using it. You could get that kind of data for very minimal costs.

Eric Topol: So if we start to come up with a plan, where we gauge the risk of people, and we go into full prevention mode rather than secondary prevention, which is largely it is today, after they've already had a stint or a heart attack. So we can do so much better, and the knowledge base is there, it just hasn't been implemented. The same would be for pharmacogenomics. There's almost 200 drugs that have a genomic label. How many of them are used in clinical practice to prevent side effects or to get maximum efficacy? Almost zero.

Eric Topol: So, we have this separation of knowledge and practice, which has to stop being in different orbits. But the intervention priority is... Unfortunately, that's somewhat tied to reimbursement, somewhat tied to cultural, as we discussed at the beginning. We have to get a better... What's the best for the patient? Again, here's where AI can click in for patients as to... They get an assessment and they get a second and fifth opinion through AI tools, and that eventually will be the case, too. They might not have to actually see another doctor, they may have multiple AI checks and simulations to see, was that procedure, or is that test really necessary with the evidence that's all processed?

Jeremy Corr: When I look at the one thing from the pandemic that I think has really changed how I go about my life for the better significantly, is, like you touched on earlier, but telehealth visits, just being able to... just to have a 10-minute telehealth visit with my doctor versus going in and spending an hour, hour and a half or whatever it is in the waiting room and filling out forms there in person. I can just

do it at home, while I'm working, and then as soon as my telehealth's ready, pause from work, do it, 10 minutes, and I'm back to it.

Jeremy Corr: The convenience of that and how much I actually liked it kind of blew my mind, that just how could... I don't think people realize just how much more convenient it is until they actually do it. That being said, are there things like that, that have come either from the pandemic, or do you think that we've learned from the pandemic and we'll be integrating into the future, we'll be implementing in the future that have just really changed things for the better and kind of set a new precedent for how things will be handled going forward?

Eric Topol: Yeah, I'm glad you asked that, Jeremy. I actually think it goes both ways, not just for patients' the whole ordeal of having to go to an office and drive there, and the parking, and the waiting, and the waiting room and on and on, it's also on the physician side, the convenience. Not all these middle people that you're waiting to get the medications or the vital signs or whatever they're doing... You basically just have a direct connect. It's fast, it's convenient, and for a lot of matters, it's all you really need.

Eric Topol: So we have to partition that, that when... By the way, you might pick up, during a televisit, as you well know, that there's something that's deeper of concern, and you've got to have a real visit in person. So I think this is perhaps the biggest lesson. We had projected telemedicine was going to take up off much faster because people would realize, mutually, both on the patient and clinician side of the value, of the decompression potential to make any real visit, I mean in-person visit, that much more effective and helpful.

Eric Topol: So I think that even though it's somewhat on the wane right now, because it was the only choice for some time during 2020, it's going to be a very big part of the future, and we're going to see partitioning. I enjoy doing teleconsults. I think they're great. I know the patients do. We can do a lot of things that way, and as I mentioned earlier with Robert, we're going to be able to do even more. So they're not going to go away, they're going to be a very important part of the practice of medicine going forward.

Jeremy Corr: I think of my first couple of times doing telehealth, it reminds me of how when I... The first couple of times I sent a text messages, it was like, "Oh, hey, pick up some milk on the way home," or something like that. It's like, holy cow, that was easy. I didn't need to make a whole phone call. My question for you is, what do you think is coming next, that is going to have that same kind of mind-blowing, either time-saving, or revolutionary impact on the way people perceive their relationships with their doctors or the way they perceive medicine?

Eric Topol: Well, I think the big thing is just the self-diagnosis of many conditions, whereby it completely bypasses the need for the visit, or when there's a treatment, as mentioned, that connection is important. If you're in the UK now, you get your urine check infection diagnosed with an AI kit, and increasingly, a lot of skin problems are going to be done through AI. So that, I think, is going to be the big

change, imminently, that is, in the next few years, more of those things on the list of common reasons why people see doctors for visits, and they're not life-threatening or serious matters, largely, but they are things that can be automated to a large extent.

Eric Topol: That's going to be a big help for patients, that's going to be like what you just asked about, that simple text that's transformative, which basically doesn't add to the burden of clinicians who are already overwhelmed, and it gives, for those patients... not all, there are many people who still want traditional connections, but for many to be able to get the answer they need and want quickly at zero cost or low cost. That is very attractive.

Jeremy Corr: Do you have an optimistic view of how the American healthcare system will come out of the pandemic? Are you more pessimistic, or what are your thoughts on that?

Eric Topol: Well, I'm kind of halfway there. On the one hand, I know it could be fantastic. All the lessons we've learned about the inequities laid bare, and the need to have universal healthcare, that it's a right of every human being, we've got to get that, because technology could make those things worse. So I know there is a path that...

Eric Topol: Here, we spent trillions of dollars, I don't even know where they went, over the course of the pandemic in this country. If we put a fraction of that towards the of fixing healthcare that's desperately needed, we could come up with a far better system that all of us would be proud of, that for the amount that we spend would be commensurate rather than disproportionate. So I'm optimistic it can get there, the question is, will it get there, and what is in store? We have a huge bureaucratic, monolithic country to try to change the system, which is absent, really, dysfunctional, afunctional. Hopefully, we'll take the necessary steps to get there.

Robert Pearl: Thanks Eric for being on the show today and for providing your exceptional expertise on the topic of technology and the culture of medicine.

Jeremy Corr: Robbie, what are your thoughts on what Dr. Topol said?

Robert Pearl: Jeremy, I was impressed by his fact-based assessment of the impact technology can have and the areas where the hype exceeds the reality. I would however expand on his assessment in a couple of ways. The first is how technology can help doctors overcome some of their biases. The data on culture identify the many ways all of us are more empathetic and compassionate to people like ourselves than we are to individuals of a different race or ethnicity. We saw that bias when researchers looked at how often doctors ordered Covid tests on patients of different races with identical symptoms.

Robert Pearl: Black patients tended to be tested less often than white patients. Similarly, we know that there’s a three to four times higher mortality for Black women during childbirth, and some of that can be explained by white doctors not paying

adequate attention to their complaints. When Black doctors provide the care, the mortality rates among Black and white patients were identical. Technology can factor race into the decision-making process in positive ways. And it can remind doctors to be aware of their biases when caring for individuals of a different race or background.

Robert Pearl: The second way technology, particularly artificial intelligence, can save lives, is by monitoring patients on a more frequent basis than doctors alone can do. As an example, if a patient has a blood-pressure cuff that directly transmits the readings or simply allows the patient to enter the results into an algorithm, a computer can assess whether the patient is moving towards control in a rapid fashion or not. And in response, more frequent medication adjustments can be made for those individuals whose clinical results are lagging, whether the adjustments are made by doctors or pharmacists.

Robert Pearl: Similarly, the technology can assess blood-glucose measurements each time they're taken and identify the need for medication and insulin adjustments far sooner than is done today. Technology can be a partner to the doctor. But only if the culture of medicine changes to welcome that relationship.

Jeremy Corr: Please subscribe to Fixing Healthcare on iTunes or other podcast software. If you liked the show, please rate it five stars and leave a review. Visit our website at fixinghealthcarepodcast.com. Follow us on LinkedIn, Facebook, and Twitter @FixingHCPodcast.

Robert Pearl: We hope you enjoyed this podcast and will tell your friends and colleagues about it. If you want more information on these topics you can visit my website: RobertPearlMD.com. Together, we can make American healthcare, once again, the best in the world.

Jeremy Corr: Thank you for listening to Fixing Healthcare with Dr. Robert Pearl and Jeremy Corr. Have a great day.