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UNDERSTANDING HOW AI IS CHANGING HEALTH CARE

WEDNESDAY, NOVEMBER 29, 2023

House of Representatives,

Subcommittee on Health,

Committee on Energy and Commerce,

Washington, D.C.

The subcommittee met, pursuant to call, at 10:30 a.m., in Room 2322 Rayburn House Office Building, Hon. Brett Guthrie [chairman of the subcommittee] presiding.

Present: Representatives Guthrie, Burgess, Latta, Griffith, Bilirakis, Johnson, Bucshon, Hudson, Carter, Dunn, Pence, Crenshaw, Joyce, Harshbarger, Miller-Meeks, Obernolte, Rodgers (ex officio); Eshoo, Cardenas, Ruiz, Dingell, Kuster, Kelly, Barragan, Craig, Schrier, Trahan, and Pallone (ex

officio).

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Staff present: Sean Brebbia, Chief Counsel; Jolie Brochin, Clerk; Abigail Carroll, Detaille, FDA; Corey Ensslin, Senior Policy Advisor; Kristin Fritsch, Professional Staff Member; Tara Hupman, Chief Counsel; Alex Khlopin, Staff Assistant; Peter Kielty, Member Services Director, Emily King, Members Services Director; Chris Krepich, Press Secretary; Molly Lolli, Counsel; Karli Plucker, Director of Operations (shared staff); Lydia Abma, Minority Policy Analyst; Shana Beavin, Minority Professional Staff Member; Waverly Gordon, Minority Deputy Staff Director and General Counsel; Tiffany Guarascio, Minority Staff Director; Stephen Holland, Minority Senior Health Counsel; Una Lee, Minority Chief Health Counsel; Katarine Morgan, Minority Health Fellow; and Avni Patel, Minority Health Fellow.

*Mr. Guthrie. The subcommittee will come to order, and the chair will recognize himself for an opening statement for five minutes.

I will spend my first little bit to say we had news on our ranking member, and we exchanged messages over Thanksgiving weekend, but what a wonderful lady, what a wonderful person, and someone who really puts this committee, this subcommittee, the institution of Congress and _ first and foremost. So we are _ you are going to _ we have another year to work together.

*Ms. Eshoo. Thank you. That is right.

*Mr. Guthrie. But you are just going to be sorely missed _

*Ms. Eshoo. Thank you.

*Mr. Guthrie. _ in this committee.

[Applause.]

*Ms. Eshoo. Thank you. Thank you. Thank you. Thank you. Oh my goodness.

[Laughter.]

*Ms. Eshoo. Oh, goodness. Look at that. Isn't that lovely. Thanks, Cathy. Thank you.

*Mr. Guthrie. But we still have a year to get things done _

*Ms. Eshoo. That is right.

*Mr. Guthrie. _ and we are going to get things done. We're _

*Ms. Eshoo. Yeah.

*Mr. Guthrie. So I would just like to thank our witnesses and _ for being here today, and you will get a chance to holler _ speak when _ now I got to get my statement in in four minutes, but that is good _ that _ I can do it.

[Laughter.]

*Voice. Sorry.

*Mr. Guthrie. But that was important to do. No, that is perfect. I shouldn't use all my time.

So thank you for our witnesses for being here today. This hearing cannot be timelier as our committee, and the Congress as a whole, looks at issues regarding artificial intelligence. It is important that we shine a light specifically on the role that AI could play in solving some of our most significant healthcare problems. These emerging technologies are already changing the way in which clinicians

care for their patients and how researchers conduct clinical trials.

As AI continues to drive innovation in healthcare, it is essential that Congress examine the meaningful benefits that any potential unintended consequences that these technologies could have. The potential benefits from artificial intelligence are seemingly without limit. Future technologies could help our healthcare system save lives by better predicting potential diagnoses and could help us reduce redundancies in our system.

We have already seen this play out in real time over the past several years and have watched unimaginable advances in healthcare as a result of generative AI. For example, there are already numerous success stories in using AI for pharmaceutical research and development to get treatments to the market sooner. This was the case in the AI-assisted research by MIT scientists that found the drug Halicin could be used as an effective antibiotic.

We now have multi-cancer screening diagnostic tools that use AI to help detect early-stage cancers, and AI is being used in operating rooms to augment existing processes to

improve patient outcomes.

However, this is not to say that we should let the use of these technologies go without guardrails. Over the next several months years _ and years, policymakers and those in the health industry will need to answer some fundamental questions regarding the role AI will play in our healthcare system, including are the technologies trained with supervised AI using human-generated inputs to drive outcomes, are these technologies trained with unsupervised AI, this generating outcome is based off human behavior to ease everyday decision making for healthcare consumers, or are these technologies trained with reinforced AI which humans are rewarding the systems for the outputs generated.

Those are very complex and difficult things that we have to explore as we move forward. And in each of the _ these use cases it is important to remember that every decision comes with a cost, both human and financial. Wearable devices that are constantly monitoring someone's heart rate, caloric intake and outtake, and sleep patterns in addition to other metrics can help lead to healthier lifestyles and in some cases to predicting extreme cardiac event or even

strokes.

In the event of using user data to predict better lifestyle habits, how are we ensuring this data is secure and ensuring that consumers has full control over this information and it is not being used or sold without their consent. In the event of predicting a major health event, are there protocols that should be considered to ensure individuals aren't taking unnecessary trips to the emergency room and potentially incurring significant healthcare debt as a result.

In closing, I support the real possibilities AI can bring to our healthcare system and in most _ and most importantly to patients. We should give the technology the license to coexist alongside clinicians, patients, and innovators as well as regulators while also remaining vigilant of how this technology is being used.

I look forward to the discussion today.

[The prepared statement of Mr. Guthrie follows:]

**********COMMITTEE INSERT**********

*Mr. Guthrie. And I will yield back. And to continue my praise for the ranking member, I will recognize the gentlewoman from California, and as I said, we have a year to work together, and when you were chair and I was ranking member, you treated with me most respect, and I really appreciate in the areas where we don't _ didn't agree, you challenged my thinking sometimes, and sometimes we had to move forward in different, sometimes we couldn't, but it was always with the utmost respect.

*Ms. Eshoo. Thank you.

*Mr. Guthrie. So with that, I will recognize the ranking member for five minutes for her opening statement.

*Ms. Eshoo. Well, thank you very much, Mr. Chairman. Your words mean a great deal to me, and I am deeply moved and touched by the expression of all of the members of this subcommittee. You know how much I love this committee, and we have gotten so many important things done, gotten them over the finish line. Let's optimize our time and _ so that we can continue that tradition. So thank you to each one of you.

You are all my friends, my fellow Americans, my fellow

colleagues, and _ well, there's so much that I want to say. There _ really there aren't words to express how deeply, deeply grateful I am, and the messages that poured in, I just _ I have kept them all and I reread them before I go to sleep at night.

[Laughter.]

*Ms. Eshoo. And they are really beautiful. It is like falling asleep on this magnificent cloud of good will, so thank you from the bottom of my heart.

So here we are to discuss AI and healthcare, and the nexus between the two is really a very, very, very important one. It represents an incredible opportunity for our country, and it has the potential to make our healthcare system more efficient, improve patient experiences, and reduce burdens on physicians.

And new ways to use AI in the healthcare setting are consistently in the news. I think all of you see this in your national clips as you read them at the end of every day. New York Times in October of this year, "New AI Tool Diagnoses Brain Tumors on the Operating Table.'' Forbes in August of this year, "AI is a Game Changer for Toughest Areas

of Drug Discovery.'' The Wall Street Journal in November of last year, "U.S.-Backed Researchers Use AI to Probe for Weaknesses in Drug Supply Chains.''

And despite this incredible promise, AI, we know and some of the fathers and mothers of AI have instructed us on the potential that AI has to _ at the other part of the spectrum to worsen patient outcomes and exacerbate inequities that we have in our healthcare system if it is not deployed with adequate guardrails.

Earlier this month, reports found, and a lawsuit now alleges, that United Health Group, one of the largest insurers in our country, used an AI algorithm to wrongfully deny care to Medicare Advantage beneficiaries. The AI algorithm made decisions about patient care that went against the recommendations of the patient's own physicians. Another example is our Nation's children are being left behind as AI in medical imaging rapidly expands. And to date, there are no computer-aided detection, computer-assisted triage, or computer-aided diagnosis radiology products authorized for pediatric uses.

And these pediatric radiologists are working with

children. You can't experiment on children. So the _ you know, in many _ in many areas the red lights are blinking, and we need to pay attention to that because children are not little adults.

I am working on a proposal to address this gap for pediatric patients. And in my view and the view of both Republican and Democratic members of both the House and the Senate have created legislation that would democratize AI. Today the resources, the massive resources are really in the hands of a handful of very large high technology companies, but we have many sectors in our country, and the health sector, the medical sector needs to be a partner in this as well.

So this legislation, and I am so proud that there are members of this committee, including Mr. Obernolte, that are original cosponsors of that legislation, and I would urge those of you that are not on it to take a look at it so we can get that over the finish line in this Congress.

So I am pleased that the witnesses are here. I am happy to be with each one of you and my colleagues. I think that this committee can lead the effort on AI as it applies to

healthcare. In fact, we must. I don't think this is, you know, comme-ci comme-ca. It is not on the one hand but on the other hand. We have to rise to this challenge, and I think that we have the capacity to do so.

[The prepared statement of Ms. Eshoo follows:]

**********COMMITTEE INSERT**********

*Ms. Eshoo. So thank you, Mr. Chairman, and I yield back.

*Mr. Guthrie. Thank you. The gentlelady yields back, and the chair will now recognize the chair of the full committee, Chair Rodgers, for five minutes for an opening statement.

*The Chair. Thank you, Mr. Chairman. First, my heartfelt warm wishes to the ranking Democrat, Anna Eshoo. You know, she has been a trailblazer for so many members, including me, and I am grateful for your outstanding leadership and your friendship these years.

This is now the fourth hearing that the Energy and Commerce Committee has held across our subcommittees on the subject of artificial intelligence. Artificial intelligence has the potential to transform every aspect of our lives, for better or for worse. It's critical that America, not China, is the one addressing AI's challenges and leading in this technology's development and deployment.

The best way to start is by laying the groundwork to protect people's information with a national data privacy standard. This is a foundational first step towards a safe

and prosperous AI future in healthcare and beyond. I look forward to continuing to discuss how we can improve privacy protections for Americans as we incorporate AI tools into our lives. And I am proud of each of our subcommittee chairs for leading on this important issue.

AI has a unique role to play in the future of healthcare. AI could help find the next breakthrough cure or improve our ability to catch deadly diseases earlier, and we are already seeing that artificial intelligence can be used to aid in the assessment of medical imaging, which is one of _ which one of our witnesses will discuss in detail.

Additionally, AI is reducing administrative burdens on healthcare providers. We have all heard from providers in our districts about the burden of necessary but cumbersome paperwork, how often this leads to burnout for doctors and nurses, and how it eats up time that they could be spending providing actual patient care.

For just about my entire tenure in Congress, one of the top issues that we have struggled with has been finding ways to cut paperwork and redundancy in our healthcare system so that we can let doctors do what doctors do best, treat their

patients. For years we have nibbled around the edges of this issue, but the future of AI could be transformative and will hopefully let doctors be doctors instead of administration staff. We will hear more Dr. Schlosser from HCA on how this is being tested out in hospitals.

To be clear, AI will not solve all of the problems with America's healthcare system. One concern we have been _ we have frequently heard is the potential of human biases to be implicitly baked into AI technologies.

The first piece of healthcare legislation that this committee advanced this year was my bill to ban the usage of quality adjusted life years, or QALYs, which are discriminatory measures that are used by federal payors to deny healthcare services to people with disabilities and chronic illnesses. If AI is reliant on QALYs or other similar measures when assisting in clinical decision making, our most vulnerable will be left behind. No one here wants to advocate for discrimination, and we need to be conscious of how federal programs and AI technologies incorporate these types of biases and what we should be thinking about in this area.

I will close by saying that I am optimistic about these technologies. I think these technologies can make a difference in the lives of patients, and this committee needs to lead the way in supporting innovation. For America to lead, we must strike the right balance with AI, one that gives businesses the flexibility to remain agile as they develop these cutting-edge technologies while also ensuring responsible use.

A national standard for the collection and handling of data will provide businesses, healthcare providers, and every American with clear and understandable protections wherever they are. Today's hearing will hopefully shed more light on the current landscape of AI in healthcare and hopefully provide us with further insight on the next steps that we should take to support patients.

[The prepared statement of the Chair, Mr. Guthrie, follows:]

**********COMMITTEE INSERT**********

*The Chair. I yield back.

*Mr. Guthrie. The gentlelady yields back. The chair will now recognize the gentleman from New Jersey, Ranking Member Pallone, for five minutes for an opening statement.

*Mr. Pallone. Thank you, Mr. Chairman. And I want to start out by thanking our two Democratic members of the subcommittee who have announced their retirements at the end of next year. Of course I told them both they should change their minds and they said they don't want to.

But let me start with Ranking Member Eshoo who served as the top Democrat on this subcommittee for the last five years, including four years as chair, and she led this subcommittee through the COVID-19 pandemic. She played a critical role in our successful efforts to reauthorize user fees and to create ARPA-H, but that is just in the last session. She has been so much involved in all healthcare issues on this committee for a long time.

But I also think a lot of you don't know that I have worked with Anna even before the Energy and Commerce Committee, and she has played a critical role outside of the committee in many ways, particularly with Armenian causes.

If it was not for Anna, the House would never have recognized the Armenian genocide, which was such an important thing in the history of Armenians that that happened and that we did that. So thank you, Anna.

And then Tony _ I have to say Tony Cardenas has been a long-time leader on this subcommittee. He has also served as the vice chair of our Consumer Protection and Commerce Subcommittee for four years. He has led several of our key efforts to put consumers first, including a new law that protects babies from dangerous sleeping products.

But again, you know, I want to emphasize Tony's role outside of the Energy and Commerce Committee with the Hispanic Caucus, with Bold Pack. He has just played a tremendous role in promoting not only Latino members but also the issues that are important to the Latino community.

So in both cases, in Anna's case as well as Tony's case, what they accomplished here is important for our committee but really goes beyond the committee. So thank you both. But I have to say, we still have another year left, so I want to thank them for their contributions, but there is still more to be done, as they have already said.

So let me go if I can to the issue that we are dealing with today, and we are exploring how artificial intelligence is changing healthcare now and potentially in the future. This is an important hearing because the integration of AI presents opportunities to enhance patient care and streamline processes to bring more efficiency to the health sector. At the same time, Congress must recognize and address the complex ethical, legal, economic, and social concerns raised by the specter of greater deployment of AI in our healthcare system.

As we are going to hear today, access to patient medical data is often central to the use of AI and the delivery of healthcare. As the patient's medical data passes between physicians through these AI products, protecting individual's information and privacy becomes even more important. So I remain concerned that the expanded use of AI in healthcare has generated significant risk. It is critical that safeguards are in place to protect the privacy and security of the patient's data.

And I have said at each of our AI hearings this year, I strongly believe that as the bedrock of any AI regulation, we

must enact strong federal data privacy protections for all consumers. AI cannot function without large quantities of data, and we must ensure that this increased data demand does not come at the expense of consumers' right to privacy, and I am going to continue to push for a comprehensive national federal privacy standard. I know the chair is just as concerned.

I believe it is the only way we can limit the unscrupulous data collection and selling practices of Big Tech and third-party entities. It is also the only way we can ensure all of our personal medical information is protected online and protected against algorithmic bias or security breaches. AI's role in the adjudication of medical claims specifically poses a great concern to me. Despite potential to revolutionize the healthcare landscape, AI in certain instances could result in the denial of medical care potentially worsening health inequities.

Right now there is a class action lawsuit against one major insurer's use of AI to deny medical claims. AI systems allegedly played a role in the denial of over 300,000 payment requests within a two-month period. The average time spent

supposedly reviewing each of these claims was a mere 1.2 seconds.

Now AI tools can aid and support healthcare providers, but the recommendation should not serve as a substitute for the nuanced judgment of our healthcare professionals. AI has potential to supplement medical decisions. However, when A _ when healthcare companies driven by efficiency implement AI suggestions without subjecting them to critical scrutiny, I worry that patient safety could be put at risk.

So there is a lot of work to be done here, and I want to thank the chairman of the subcommittee and the chair of the full committee for prioritizing this. Thanks again.

[The prepared statement of Mr. Pallone follows:]

**********COMMITTEE INSERT**********

*Mr. Pallone. I yield back.

*Mr. Guthrie. If the gentleman will yield me a couple of seconds?

I didn't see that Tony Cardenas had come into the room when I _

*The Chair. Yeah.

*Mr. Guthrie. _ talked about Anna. I want to say the same thing. There has been several issues, but specifically one I remember that we had to plow through a lot of issues to get through to help small businesses that were affected, and we were focused on working together and coming to common ground, and that was a great experience. And so, congratulations to you, and we got another year to work together moving forward.

So the gentleman yields back, and I will yield back. And so thanks, and we will have more time to congratulate as we move forward this year. To party? Is that what you said?

*Ms. Eshoo. Right.

*Mr. Guthrie. Okay.

[Laughter.]

*Mr. Guthrie. That sounds _ we will see what happens,

right?

So now we will _ that concludes member statements, and we will move to our witness's opening statement, and I will introduce each one of you then call on you _ introduce you as a group and then call on you to give your opening statement. And those of you who have not testified, I think some of you have, some of you may not have, is that you will have a green light. I think it goes for four minutes?

*Voice. Five.

*Mr. Guthrie. Five _ the green light's for five minutes?

*Voice. Okay.

*Mr. Guthrie. They have five minutes to testify. Four minutes you will have a green light, then you will get a yellow light, and once you have the yellow light, that shows you got a minute left, and when the red light hits, it is time to wrap up and we will move forward.

So today I will first rec _ introduce Dr. Michael Schlosser, Senior Vice President of Care, Transformation, and Innovation at HCA Healthcare; Dr. Benjamin Nguyen, and you said that was a proper pronunciation of your name, Senior

Product Manager, Transcarent; Mr. Peter Shen, Head of Digital Health, North American Siemens Healthineers; Dr. Christopher Longhurst, Chief Medical Officer, Chief Digital Officer, and Association Dean, US (sic) San Deigo Health; and then also Dr. David Newman-Toker, Director, Division of Neuro-visual and Vestibular Disorders, Department of Neurology, Professor of Neurology at Johns Hopkins University School of Medicine.

I appreciate you all for being here and taking the time to be here today. This hearing's important. And I will begin by recognizing Dr. Schlosser. You are recognized for five minutes for your opening statement.

*Dr. Schlosser. Thank you. Thank you _

*Mr. Guthrie. Make sure your microphone is either on and then push _ and then _

*Dr. Schlosser. Here we go.

*Mr. Guthrie. Yeah, up to your _ yeah, if you will lift it up. It should bend towards you. There you go.

*Dr. Schlosser. Thank you.

STATEMENT OF MICHAEL SCHLOSSER, MD, MBA, SENIOR VICE PRESIDENT OF CARE TRANSFORMATION AND INNOVATION, HCA HEALTHCARE; BENJAMIN NGUYEN, SENIOR PRODUCT MANAGER, TRANSCARENT; PETER SHEN, HEAD OF DIGITAL HEALTH - NORTH AMERICA, SIEMENS HEALTHINEERS; CHRISTOPHER LONGHURST, MD, CHIEF MEDICAL OFFICER, CHIEF DIGITAL OFFICER, AND ASSOCIATION DEAN, UC SAN DIEGO HEALTH; AND DAVID NEWMAN-TOKER, MD, PhD, DIRECTOR, DIVISION OF NEURO-VISUAL AND VESTIBULAR DISORDERS, DEPARTMENT OF NEUROLOGY, PROFESSOR OF NEUROLOGY, JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE

STATEMENT OF MICHAEL SCHLOSSER

*Dr. Schlosser. Thank you, Subcommittee Chairman Guthrie, and Ranking Member Eshoo, as well as Chairman McMorris Rodgers, and Ranking Member Pallone, and esteemed members of this committee for inviting me to testify here today.

I am Dr. Michael Schlosser, Senior Vice President for Care Transformation and Innovation at HCA Healthcare. I have a background in neurosurgery, in hospital operations, and

deep involvement in healthcare in AI technology and so excited to share my perspectives in how HCA is approaching AI in healthcare.

At HCA Healthcare, our commitment to integrating AI into healthcare is driven by a vision to enhance patient care and operational efficiency and effectiveness. Our initial use cases are focused largely on removing administrative burden from clinicians, providers, and leaders so we can return precious time to them, allowing them to focus on patients, critical decision making, and other high-risk activities like transitions of care. Allowing these colleagues to function at the top of their license will create expanded healthcare workforce with the time and tools to deliver a superior standard of care.

To achieve these goals, our first step was to develop a responsible AI program involving a robust governance structure to ensure our AI applications are fair, robust, accountable, and continuously evaluated for safety and effectiveness. The stated goal of the program is to both govern and enable the use of AI across our organization. Ensuring the technology is used responsibly but also ensuring

we take full advantage of these innovations and the benefits they can provide to our care teams and our patients.

When it comes to privacy and security, we have several decades of experience in protecting patient data that has positioned us well to meet the challenges of deploying AI in a secure and private manner. Building on our experience managing patient data under the HIPAA standard, we ensure that all our AI applications adhere to these stringent standards. Patient data and the output of any AI model that could include protected health information about our patients as well as the models themselves are all protected in the same way. Private and secure is also a key feature of our responsible AI program.

Finally, we are deploying a new data architecture to support AI _ our AI agenda which focuses on deidentified datasets the primary _ as the primary source of training data. This allows for the use of large datasets to develop models in advanced analytics without having to expose individual patient PHI.

Another safeguard that we have implemented is a human-centric approach to AI. In all our AI applications, we

emphasize a human-in-the-loop approach. This ensures that when we leverage AI for efficiency and accuracy, we do not compromise on safety and responsibility. The human-in-the-loop models also allow for ongoing model development through direct feedback provided inside the workflow for those using the models. The more the models are used, therefore, the better they become.

Finally, when it comes to AI-driven decision support tools, these are the models where they are directly advising on the treatment or diagnosis of patients, we believe this is an existing opportunity for AI in the future, but an area that requires significant testing and research before they can be deployed safely.

So with my final time, let me add just three examples of how we are using AI in healthcare across HCA. The first is enhancing clinical documentation. We have a system in a partnership with Augmedics where AI can listen to a provider interview a patient in the emergency room, this is live in four ERs, and then transcribe the event, and then using natural language processing and large language models turn that into structured clinical documentation, moving

documentation into an AI assistant mode rather than the doctor as a data entry analyst.

The second is streamlining nurse handoff. Nurse handoff occurs almost 400,000 times every week across our 183 hospitals. It is a risky time during a transition of care. We have taught a large language model to read our EHR data and therefore be able to interpret that data and create a handoff tool that the nurses, after they review it themselves, can use to drive that conversation. This will bring standardization and safety to a highly variable and risky time during care delivery.

Finally, we are using AI for staffing and scheduling. We have taught an AI algorithm to understand the data surrounding how our care teams are deployed in our hospitals. Care teams are our most valuable resource and ensuring we have the right team in the right place at the right time with the assistance of an AI algorithm is proving to be able to create more balanced, fair, and equitable schedules for our care team members.

So in conclusion, at HCA Healthcare, we are dedicated to exploring and leveraging AI to enhance patient care and

experiences, improve operational efficiency, and uphold the highest standards of privacy and security. We are committed to ongoing dialogue with Congress and with this subcommittee to help ensure the pathway forward provides all the opportunities that our patients deserve.

[The prepared statement of Dr. Schlosser follows:]

**********COMMITTEE INSERT**********

*Mr. Guthrie. Thank you. Thank you for your opening statement.

The chair now recognizes Dr. Nguyen. You are recognized for five minutes for your opening statement.

*Dr. Nguyen. Thank you; thank you. Chairman Guthrie _

*Mr. Guthrie. You have to turn your microphone on.

*Dr. Nguyen. Oh.

*Voice. And point it up towards you.

*Dr. Nguyen. How is that?

*Mr. Guthrie. Yes.

*Dr. Nguyen. Better?

*Mr. Guthrie. Turn yours off, Doctor. There we go.

*Dr. Nguyen. Oh, that is why. Can you hear me now?

*Mr. Guthrie. We are good now.

*Dr. Nguyen. Okay, all right. Thank you.

STATEMENT OF BENJAMIN NGUYEN

*Dr. Nguyen. Chairman Guthrie, Ranking Member Eshoo, Chairwoman McMorris Rodgers, and Ranking Member Pallone, distinguished members of the committee, it is my pleasure to appear before you today to discuss how artificial intelligence is changing healthcare.

And my name is Dr. Benjamin Nguyen. I am a Senior Product Manager at Transcarent, leading our AI team, which is tasked with expanding the Transcarent affiliated clinic suite of AI tools while maintaining the highest standards for patient safety. I have worked at the intersection of technology and care delivery throughout my career, with a special focus on artificial intelligence.

Transcarent was founded to make it easy for people at access high-quality, affordable healthcare and to offer greater choice and control for healthcare consumers, our members, and employer-sponsored group health plans, our clients. Transcarent is not a stand-alone health plan, rather our services make the healthcare journey for our 4.4 million members a more informed and easy one. We help make

their existing health medical plan easier to understand and use.

Our platform is personalized for each member, guiding them to appropriate care. We offer access to physicians, on demand care teams in a connected ecosystem of in-person and virtual care point solutions. Our affiliated virtual clinic provides chat and video-based telemedicine visits for a wide spectrum of urgent and primary care needs, and in the face of significant demand for virtual care, we use AI tools to improve the experience for our members while reducing the administrative burden on clinicians.

When a patient comes to the virtual clinic, an AI assistant immediately begins to gather information from them about the reason for their visit so that by the time the clinician greets the patient, they have a detailed and relevant summary of the patient's symptoms and history. They can spend their time discussing the diagnosis, treatment decisions, and follow-up care with the patient. AI is already helping these clinicians reduce the administrative burden and frees them up to spend more time on the patients who need it the most without replacing their clinical

judgment.

But I want to paint a picture for how next gen AI used thoughtfully can transform the way patients experience healthcare. Imagine a single mother for whom English is a second language with limited health literacy. For us, maybe the 10 to 15-minute doctor visit is enough, but she may need 30 to 60 minutes to ask all the questions she rightfully has about her son's care, and there is nothing wrong with that, but current constraints make this kind of engagement very challenging in a modern medical practice. There are patients in the waiting room and there aren't enough practitioners.

But thoughtfully built AI systems using next gen technology can help. Imagine an AI chatbot built in partnership with clinicians that can simplify information to her level of comfort or even fluently translate into any language she prefers. In this very near future, she can spend as much time as she wants and needs to. Well-designed systems like this can help us move from a one size fits all approach to a many sizes for many needs approach.

A few years ago it would have been immensely difficult and expensive to build an AI chatbot so perfectly tailored to

this mother's needs, but recent leaps in AI technology have made it easier to do this. This kind of technology, generative AI, is of a different nature than AI systems you may be familiar with. It can be applied in many domains, but its most common application is in large language models powering chatbots.

Chatbots powered by this new AI technology are not human, but they act human-like. They can converse with users, grasp complex, nuanced topics, engage in reasoning, and write in a way that sound _ sounds indistinguishable from a human. To use an analogy, the technological leaps in AI that happened in the five years past to enable this are so great that they are akin to going from locomotives to powered flight. And like the move to powered flight, this leap brings with it many opportunities and dangers.

Because generative AI is not perfect and it is prone to certain shortcomings, even amongst AI companies and experts, there isn't consistent agreement on the best practices for measuring capabilities and safety risks of these new generative technologies, much less how to mitigate them. Healthcare's unique challenges and opportunities mean that we

also need to develop our own internal expertise in generative AI. This won't come from the outside; it has to come from within.

This brings me to my last point which is there is a significant and growing gap in AI talent in the healthcare industry. We need more doctors and nurses at the bedside who are as comfortable speaking the language of AI as they are the language of medical care. And the same goes for our healthcare leaders. Having gone to medical school, I know that this doesn't come naturally to our institutions, which are rightfully focused on teaching the science and art of bedside medicine.

But ensuring that AI products serve all Americans equitably demands active participation from all levels of the healthcare system. We need the incentives, frameworks, and collective effort to create these opportunities if we want to ensure that AI achieves its potential in changing the healthcare system for the better.

Thank you for the opportunity to testify, and I would be happy to answer any questions you may have.

[The prepared statement of Dr. Nguyen follows:]

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716 **********COMMITTEE INSERT**********

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*Mr. Guthrie. Thank you. Thank you for your testimony.

Mr. Shen, you are now recognized for five minutes for your opening statement.

STATEMENT OF PETER SHEN

*Mr. Shen. Chairman Guthrie, Vice Chair Bucshon, Ranking Member Eshoo, and members of the subcommittee, on behalf of Siemens Healthineers and our nearly 17,000 employees in the United States and approximately 71,000 employees globally, thank you for the opportunity to testify today on the topic of artificial intelligence in healthcare.

My name is Peter Shen. I am the North America Head of Digital Health for Siemens Medical Solutions USA, Incorporated, also known as Siemens Healthineers. My career focuses on the introduction of new and emerging technologies in the healthcare market, including artificial intelligence.

Siemens Healthineers is a leading medical technology company with more than 120 years of history and experience bringing breakthrough innovations to market that enable healthcare professionals to deliver the best care for patients. Our core portfolio includes imaging, diagnostics, and therapies augmented by digital technologies and artificial intelligence. We partner with more than 90 percent of the leading providers in healthcare to address

issues around population growth and chronic disease management, healthcare workforce shortages, and the lack of access to care in underserved areas.

We have the distinction of being the only medical technology company capable of end-to-end cancer care from diagnosis and screening to treatment and survivorship. This is a responsibility we take very seriously as we keep patients at the center of everything that we do.

Siemens Healthineers has been working on applying artificial intelligence in medical technology for more than 20 years. At our AI office of Big Data in Princeton, New Jersey, we have built one of the most powerful supercomputing infrastructures dedicated to developing AI in healthcare. This allows our research scientists to collect, prepare, and organize correct and secure medical data needed to train and deliver accurate AI algorithms.

From its inception, we create and maintain a transparent quality assurance process which involves clinical validation to guarantee the data being used to train the AI algorithms is accurate for diagnosis and treating disease. This training data is based on a balanced cohort of people of

different ages, genders, and ethnicities, thus ensuring we develop reliable, accurate, and unbiased AI algorithms that are reflective of the patient populations that they will be applied towards.

The patient journey is at the heart of Siemens Healthineers' AI work, and AI has the ability to help improve care and outcomes for the patient. AI helps patients undergoing a CT scan for lung cancer screening by optimizing the resulting generating images while minimizing the time the patient spends in the scanner. Radiologists reviewing those images can utilize our AI-guided computer software as a companion to identify small nodules and other suspicious abnormalities that they previously weren't able to visualize without the assistance of AI.

Suspicious lung nodules diagnosed to be cancerous by the clinician can potentially be treated by radiation therapy which includes the very tedious task of manually drawing these unique contours of the cancerous tumor to target radiation while preserving healthy tissue. Our AI-enabled auto-contouring software can automatically detect these contours of the cancerous area, significantly speeding up the

patient's time to treatment and potentially eliminating unwarranted radiation.

At Siemens Healthineers, commercial AI algorithms have gone through a regulatory approval process with the FDA. We follow all AI ML-enabled medical device regulatory requirements for the pre-market review and post-market surveillance to ensure the safety and efficacy of our devices. We believe with the rapid acceleration in development and innovation of AI medical devices, the need for a regulatory environment to be able to have _ be balanced in innovation and adoption is going to be critical.

While we believe the current regulatory framework is sufficient to support innovation in AI, we support the continuation of flexibility in the approval process as well as efforts to facilitate global harmonization and the development of appropriate international consensus standards.

While CMS has recognized the value and the complex nature of AI, the agency's reimbursement decisions have not uniformly and consistently ensured appropriate levels of payment for these AI products. This inconsistent, unpredictable approach stifles adoption and limits access to

patients benefitting from AI technologies across our healthcare system, especially in rural and underserved areas. We support a solution that ensures a predictable and consistent approach to CMS, an approach that recognizes the cost of AI and reimburses AI analysis with a temporary and separate payment system until more data can be evaluated.

Siemens Healthineers believes AI has the greatest potential to improve access to care, diagnose the disease faster, and enable physicians to make more precise treatment decisions. As a market leader, we are excited to see what the future folds for AI in healthcare.

Again, thank you for the opportunity to testify before you today, and I look forward to your questions.

[The prepared statement of Mr. Shen follows:]

**********COMMITTEE INSERT**********

*Mr. Guthrie. Thank you. Thank you for your testimony.

Dr. Longhurst, you are recognized for five minutes for your opening statement.

STATEMENT OF CHRISTOPHER LONGHURST

*Dr. Longhurst. Good morning. Thank you, Chairs Rodgers and Guthrie, Ranking Members Pallone and Eshoo, and members of the subcommittee for the opportunity to speak with you today about our experience at UC San Diego Health using machine learning and AI models to improve healthcare delivery.

My name is Chris Longhurst. I am a practicing pediatrician, and I have the privilege of serving as the Chief Medical Officer, Chief Digital Officer, and Associate Dean at UC San Deigo Health. At our institution, we have been carefully evaluating and implementing machine learning models to enhance quality and safety for over five years, and we believe our experience can be helpful as the committee considered the implications of healthcare AI.

As a leader at the intersection of care delivery and technology, it has been disappointing to see so little progress in patient safety over the last two decades, with a recent study from Boston suggesting that one in four patients admitted to the hostel _ hospital continue to experience an

adverse event, many of which are preventable. Healthcare organizations are complex sociotechnical systems and these new AI tools may be the key to finally bending the patient safety curve in a better direction.

One instructive example of our use of this technology at UCSD arose early in the pandemic. Because Marine Corps Air Station Miramar served as one of the first two sites for evacuation of Wuhan ex-patriots, we hospitalized some of the first COVID patients in the country back in February 2020. This early experience led us to broadly deploy an imaging AI tool which helped to identify COVID pneumonia on chest x-rays. Remember this is months before widespread testing became available.

We published the results of our outcomes evaluation which showed that this tool impacted clinical decision making for one in five patients in our emergency department over the course of the summer of 2020. However, after processing over 60,000 chest x-rays, we turned the tool off at the end of 2020 because it was no longer useful to our clinicians when testing became ubiquitous, which demonstrates the importance of ongoing monitoring to ensure that AI tools continue to be

both safe and effective.

The study was recently cited in review of all research about COVID and AI which found our publication was one of _ was one of just four out of over 9,000 which actually demonstrated an impact on clinical outcomes. This demonstrates another key point which is the huge gap between the creation of algorithms and the actual implementation and measurement to benefit patients, what we refer to as the AI hype cycle.

A second instructive example comes from our use of AI to support earlier identification and treatment of a blood infection called sepsis. UC San Diego has chosen to develop a local model using local data, and we even trained it to tell our users, I don't know, when predictive confidence was low. This was implemented with significant clinical process redesign such as notifying a central team and not just the frontline clinicians.

The results have been associated with a decreased risk of death among patients with sepsis in our emergency department. And this case study highlights the importance of not only creating these algorithms but ensuring the

algorithms are transparent in their predictions to generate trust, and doing the hard work then of integrating these into clinical workflows where they can impact meaningful outcomes and care quality.

A final example is our recent use of generative AI to help our busy clinicians answer patient messages which have reached unprecedented levels with the rise in virtual care. UC San Diego authors published a study earlier this year showing generative AI could draft high-quality and empathetic responses to patient questions, perhaps even higher quality than some physician responses.

On the tale of these results, UCSD became one of the first sites in the Nation to implement generative AI to help our clinicians respond to patient messages. But importantly, we chose to ensure full transparency with our patients by ensuring every message has an addendum disclosing that this message was automatically generated and reviewed by your doctor. These messages cannot be sent to patients without a clinician review and our preliminary results have shown this has been well-received by clinicians and patients and may save cognitive burden. This case study illustrates the

importance of both transparency and keeping a human in the loop at all times.

Now from a privacy and security perspective, I want to note that in all three cases no protected health information has left our HIPAA-protected environment. In fact, we recently founded the first Center for Healthcare Cybersecurity with an ARPA-H grant and a focus on continuing to improve our digital protections and resiliency.

So to summarize, as a health system engaged in the procurement, development, and use of large-scale machine learning models that can perform a wide variety of tasks, we commit to pursuing these technologies' benefits while mitigating their risk and protecting patient privacy. For almost five years our health AI committee has been evaluating all machine learning models proposed for implementation from an ethical and health equity framework to ensure safety, security, and trust, which is well-aligned with the model proposed by the Office of the National Coordinator for Health IT to ensure fair, appropriate, valid, effective, and safe use of AI, or FAVE.

Now while some advocate for a centralized testing

process, our experience suggests that local audits could be more effective in the hospital setting for sure _ ensuring alignment with these principles, as these models must be evaluated within the context of the care they support.

Finally, with the generous support of Joan and Erwin Jacobs, Center for Health Innovation, we see an opportunity for moving this industry forward together engaging with you and the administration on responsible AI use. I look forward to answering any questions you may have. Thank you.

[The prepared statement of Dr. Longhurst follows:]

**********COMMITTEE INSERT**********

948 *Mr. Guthrie. Thank you, we appreciate your opening
949 statement.
950 And the chair now recognizes Dr. Newman-Toker, five
951 minutes for your opening statement.
952

STATEMENT OF DAVID NEWMAN-TOKER

*Dr. Newman-Toker. Chairman Guthrie, Ranking Member Eshoo, and members of the committee, thank you for the opportunity to address Congress on this critically important topic of artificial intelligence in healthcare.

My name is David Newman-Toker, and I am a physician scientist with doctoral-level training in public health and a research focus on improving medical diagnosis, including the development and deployment of novel diagnostic technologies such as AI. I have been a faculty member at Johns Hopkins School of Medicine for more than two decades where I am currently a Professor of Neurology and Director of our AHRQ-funded Center for Diagnostic Excellence. I am also past President of the Society to Improve Diagnosis in Medicine.

My testimony today will focus on opportunities and challenges for AI in healthcare from a public health perspective with a special emphasis on AI to improve medical diagnosis. I would like to state for the record that the opinions I express here today and my written testimony are my own and do not necessarily reflect those of the Johns Hopkins

University.

AI is the branch of computer science concerned with endowing computers with the ability to simulate intelligent human behavior. The most complex cognitive task in medicine is the act of diagnosing the cause of a patient's symptoms. Errors in diagnosis account for an estimated 800,000 deaths or permanent disabilities each year in the U.S., more than 80 percent of which are associated with cognitive errors or clinical reasoning failures. This creates a unique quality improvement opportunity for AI-based systems to save American lives at public health scale.

Potential benefits of AI include better health outcomes for patients at lower costs, greater access to and efficiency of care delivery, especially for those currently underserved and disadvantaged, and decreased healthcare cost _ decreased healthcare workforce burnout. However, none of these benefits will be realized without tackling foundational data challenges facing AI. The rate-limiting step for developing and implementing AI systems in healthcare is no longer the technology, it is the sources of data on which the technology must be trained.

There are three critical data problems. First, using data that are wrong, often called the garbage in/garbage out problem; second, relying on the wrong kinds of data, sometimes called the looking where the light is best problem; and third, not having the right kinds of data at all, especially health outcomes such as inaccurate diagnoses, unexpected adverse events, or reduced quality of life.

Data quality in healthcare is non-uniform, even for diagnosis. The most reliable and complete digital datasets exist in radiology and laboratory medicine. Here, good AI diagnostic systems are already being built. The least reliable and most incomplete digital data are from routine clinical encounters. Key details about patient symptoms or clinical examination findings in the electronic health record are often missing or inaccurate. Here, good AI diagnostic systems must wait for a radical shift in the way we capture diagnostic information about patients.

AI systems that learn on faulty data will generally make the same mistakes that humans make. Put simply, if available electronic health record datasets are used to train AI systems, the best we can hope for is AI systems which

replicate and formalize implicit human biases, and the worst we can expect is AI systems that are frequently wrong in their recommendations. If AI-based systems are deployed without adequate testing, the quality of healthcare will drop.

The biggest public health gains from well-designed AI can reasonably be expected in parts of the healthcare system where there are large quality gaps that could be closed for many individuals, diagnostic errors, lack of access to care in underserved areas, and health disparities.

For AI and healthcare to maximally benefit the health of all Americans, the following are essential. First, AI systems must be trained on gold-standard datasets that are unbiased and include complete information on both clinical inputs and care outputs. Second, AI systems must be effectively integrated into clinical workflows, leveraging the strengths of computers and humans together to produce a better result that could be achieved by either alone. And third, wherever AI is used, systems to monitor, maintain, and even enhance clinician skills, including diagnostic ones, should be co-deployed so the clinicians and AI systems will

continue to fact check each other.

I have three primary policy recommendations for the committee. First, AI systems must be held to a high regulatory standard that must be demonstrated scientifically to improve care quality over current care. Second, new payment incentives will be needed to ensure AI systems are unbiased and health outcomes are being monitored. Special incentives will likely be needed for AI-based diagnostic tools since diagnosis is generally unaffected by current disease-based payment models. And third, targeted research funding to address known barriers is essential.

Special consideration should be given to funding programs that support development of large gold-standard datasets from which high quality AI systems for diagnosis can be trained.

In summary, AI has great potential to transform healthcare for the better, but absent carefully crafted regulations, innovative payment incentives, and targeted research resources, risks will dominate. The guiding principle for policy changes should be public health impact, including an emphasis on the equitable distribution of

benefits and risks across the population.

Thank you for this opportunity. I will be pleased to answer any questions you may have.

[The prepared statement of Dr. Newman-Toker follows:]

**********COMMITTEE INSERT**********

*Mr. Guthrie. Thank you. I thank you for your testimony. That concludes opening statements for all witnesses.

I was just going to say this generically because I know _ I think, Dr. Nguyen, you said this is your first trip to D.C. so I know you haven't testified before, so welcome to our Nation _ all of you, is that you guys have a lot of information and we have a lot of curiosity, so each of us are going to get five minutes, and so I know that it is going to be hard to answer some of your questions succinctly, but if one us say, I am sorry, I am going to move to the next question because we have things we want to get to, we are not being rude, we just want to make the best of our five minutes. I will say that moving forward.

And there _ some of my colleagues, some more than others, they will ask you a really detailed question with five seconds left in their time. So I will let you answer as much as we can, but if I gavel you down, it is not being rude, it is getting things done so we can appreciate your time as well.

So I will say that I will begin by _ the five minutes by

recognizing myself for five minutes for questions.

So, Dr. Nguyen, you mentioned in your testimony the various types of AI and how generative AI is often the focus. Can you walk us through how you might deploy the various forms of AI, supervised, unsupervised, reinforced? And if these aren't the main drivers of how you deploy AI, then please walk me through your approach.

*Dr. Nguyen. Absolutely. So I think it is very helpful to think about AI at a high level in two different categories. One is I will call it narrow AI, right, these are narrow, specialized AI tools. And they typically are built to do very specialized, very specific jobs, and they are very good at those if we train them well and train our bias, right?

Tools like this are things such as a predictor tool, right, to predict the risk of a cardiac event in a patient, right? Now that is a narrow type of AI, right? You want to apply those types of narrow AI systems when you have high-risk, right, highly important tasks, right, that you must get right. So things such as supporting diagnoses, right, making predictions on a patient's deterioration, right, those are

what you want those narrow systems for.

The other half, right, and this is a little newer, these kinds of systems are more in the news, are generative AI systems. These systems are much more flexible. They are not built for specific specialized tasks. You see them most often in technologies like the very well-known chatbot, ChatGPT. They are built to be very flexible, right, they are built to do things like take a language's input and output written language in response, right?

They are very good at flexible tasks, like assisting with administrative burden, right, generating educational content, right? These are tasks where you need the flexibility, right, rather than the specialized nature of the other systems. So those are the two ways.

*Mr. Guthrie. Okay, thank you, appreciate that.

And, Mr. Shen, I will move to you. For healthcare, especially ensuring that patients _ there are guardrails in place for AI, we want to make sure we protect patient safety while promoting better outcomes and safeguarding taxpayer dollars. So my question is how do you believe we can strike the proper regulatory balance on the front end to ensure

there are safeguards in place without stifling the innovation and the growth of AI?

*Mr. Shen. Yeah. Thank you very much for the question. For _ as it relates to our work with the FDA, our algorithms as _ go through a regulatory process with the FDA. We follow all the AI machine learning enabled medical device regulatory requirements for both pre-market review and post-market surveillance to make sure that those solutions are safe for patients and effective for them as well.

We also have regular dialogue with the FDA regarding AI and machine learning and provide feedbacks on ways that they can ensure continued safe and effective application of these technologies. I think also what is a great example is that we worked very closely with the FDA on the implementation of the predetermined change control plans for AI, and I thank this committee as well for their support in this particular effort. Those help us ensure that we can continue to innovate in this area while having the right regulatory components in place.

At the same time I think where the challenge is right now is around adoption of artificial intelligence and for

providers and physicians to take advantage of all the great benefits that myself and the other colleagues here have talked about here. Right now, again, CMS con _ really needs to create kind of a consistent and predictable approach for the payment of these AI solutions that are FDA approved rather than the current ad hoc approach that we have seen to date where certain technologies receive a separate payment based on manufactured supply costs, but other ones don't receive that payment.

That confusion leads to uncertainty for providers as to whether they should actually make an investment into artificial intelligence. And, unfortunately, because of that uncertainty, the patients get lost in terms of their ability to take advantage of these technologies.

*Mr. Guthrie. Okay, thank you.

And I want to move a question to Dr. Newman-Toker. Some of my concerns as we are looking at all the data that goes into AI, some of the _ what we need to be aware of and what could come out of _ so the regulatory and policy challenges that we need to consider. And I guess an example would be to make sure _ we have talked about quality adjusted life years

in _ on this subcommittee quite often, and we want to make sure that a data system isn't _ to factor that in to see if people are qualified for care.

So how do _ what are the _ kind of the unforeseen challenges that you think we need to be aware of moving forward, that being an example?

*Dr. Newman-Toker. There are significant data challenges for AI systems, particularly where _ when we look at clinical data. So, for example, there are great data in laboratory and imaging datasets that are digitized. The clinical data, which are in electronic notes, actually have lots of errors and problems in them, and I do think that to some extent that is a key focal point where we should be making sure that we are not over-relying on faulty data sources in order to _ as we try to move forward to AI systems that are helping us.

*Mr. Guthrie. Yeah, I didn't leave you much time to answer, so thanks for _ and we will _ hopefully we can explore that more to this hearing and/or through _ in writing as we move forward.

So I will yield back, and I will recognize the ranking

member for five minutes for her questions.

*Ms. Eshoo. Thank you, Mr. Chairman, and thank you to each one of you, our witnesses today.

As I was listening, I was listening hard, you know, to absorb what you were saying, and I have to admit that there were different parts of your testimony where I really didn't understand what you were talking about. That is not, you know, to be interpreted as you being less than perfect, I mean, that's is a _ it is a condition for the entire of humanity.

But I think that we are really very hungry to hear in pedestrian terms, if you will excuse that terminology, exactly how this is going to work and how you think it is working now. I recall the book written by John Doerr. I think all of you know who he is. If you don't on the committee, Google him because he is one of the great minds of our country.

But the title of the book was "Measure What Matters'', and that is what I am trying to extract from your testimony. I don't know if some of this is meant for administrators. I mean, we talk about administrative burden. What does that

mean? I mean, what is AI going to do about that? What does it mean in terms of patients at their bedside?

At their _ I mean, in real life. Not only important information that medical specialists can have access to to enlarge their understanding, as you said Dr. Longhurst, and so wonderful that you took everything _ all of your experience at Lucille Packard Children's Hospital to UC. They are first cousins, right? Stanford and University of California.

So my questions are really more about the practical, the real, practical advantages of AI. I mean, I would ask just the entire panel if you can answer this. Without any congressional statutes yet, how do you guarantee the _ all the positives that you presented to us today?

*Dr. Schlosser. I'll be happy to take a stab.

*Ms. Eshoo. Yeah, just briefly but _

*Dr. Schlosser. Yeah.

*Ms. Eshoo. Yeah.

*Dr. Schlosser. To address _

*Ms. Eshoo. I mean, because you are all saying that this is _ and I believe in the potential of this, but I think

that we need to think long and hard about how this is actually going to work.

*Dr. Schlosser. Yeah.

*Ms. Eshoo. So if you are doing it right now and _ with your systems _

*Dr. Schlosser. Let me see if I can briefly give you a very factual answer. So when we say administrative burden, we are talking about the anywhere between 25 and 50 percent of time during a day that a clinician, a doctor or a nurse, spends on activities that don't directly relate to patient care. They are entering data into a system, they are searching for data in multiple different systems, they are bringing all that information together, they are writing it down, they are organizing it, they are communicating with other physicians, with pharmacy, with the other departments in the hospital. All of that just so they can have the right information and be able to make good decisions for their patients.

That is a space that AI, in particular large language models, is almost custom built for where it became an _

*Ms. Eshoo. So is it _ are you using it today?

*Dr. Schlosser. Yeah.

*Ms. Eshoo. And having measured what matters, what is the outcome?

*Dr. Schlosser. Yeah.

*Ms. Eshoo. What are your doctors saying?

*Dr. Schlosser. So _

*Ms. Eshoo. Does it reduce their burdens by 50 percent, 20 percent, five percent? What are they saying?

*Dr. Schlosser. So for our _

*Ms. Eshoo. What are they telling you?

*Dr. Schlosser. For our ER doctors, for example, that are using this to help with their documentation, yeah, they are seeing, you know, upwards of 20, 30 percent of their time returned to them so that they can focus on patients, so they can spend more time with the patient and communicating with the patient and not having to do the documentation themselves.

*Ms. Eshoo. Mm-hmm. Anyone else?

*Dr. Newman-Toker. I think there is an important distinction to be made between the direct benefits of AI to patient health and the sort of indirect benefits. What we

have been discussing is sort of the indirect benefits _

*Ms. Eshoo. Indirect, right.

*Dr. Newman-Toker. _ of having _

*Ms. Eshoo. Mm-hmm.

*Dr. Newman-Toker. _ additional time with _ you know, less time for clinicians spent on unnecessary tasks and more time spent on the task at hand of taking care of the patient. I think the future of AI that we want to look towards is one where AI is actually helping improve health for patients directly through, for example, the prevention of medical errors _

*Ms. Eshoo. Absolutely. Uh-huh

*Dr. Newman-Toker. _ by improving the accuracy of diagnoses _

*Ms. Eshoo. Uh-huh.

*Dr. Newman-Toker. _ and the _ improving the accuracy of the application of correct treatments, avoiding adverse events from mistakes made in the delivery of healthcare. And I think those are the kinds of things that you are getting at when it _ you are talking about measures that matter. We want to improve patient health through AI.

*Ms. Eshoo. Is it happening now?

*Dr. Newman-Toker. I would say that it is not happening at that level as yet, but it is a place where we need to focus our attention.

*Ms. Eshoo. Mm-hmm. Well you all are going to get my specific other questions that I had planned to ask but went right off script. So thank you for your testimony today and for, you know, the expertise that you are bringing to this. We need it and I hope that you would all weigh in in some way, shape, or form about the CREATE Act. I would like to know where you are on that. I think it is important for us to pass it. Thank you again.

*Mr. Guthrie. Thank _ the gentlelady yields back. The chair recognizes Chair Rodgers for five minutes for her questions.

*The Chair. Dr. Schlosser, as you may know, this committee has worked on a national data privacy standard, and I believe that that is the first step that Congress should take as we think through the guardrails that are needed in regard to artificial intelligence. Your testimony states the importance of data privacy in using and developing AI in

healthcare.

Would you share any comments on this issue and the importance of privacy in artificial intelligence?

*Dr. Schlosser. Yeah. Privacy is critical to everything we do with patient data, even prior to the advent of artificial intelligence. And as a healthcare provider, we have been operating under the HIPAA standard now for decades, and I think that is actually given us a great roadmap to understand how to do a really good job in protecting our patients' data.

AI strategy is a data strategy. The two are intrinsically linked, and so we need good, quality data, diverse data sources, large datasets to train and fine-tune these models. And so we have to think about both sides of this, which is how we do we keep the data private and secure, which I a hundred percent agree we need to, but also do it in a way that enables us to use the data to train these models to get smarter, to get better. If we want to achieve the outcomes my colleagues and I have mentioned, the data is the fuel for that.

So we completely agree that a _ that data has to be kept

private and secure. We obviously would be happy to work with the committee and yourself on the approach to data privacy you mentioned in that act. But I would just add that I think as a provider, we have a lot of deep experience in how to do this and a lot of insight into how to do this well, and AI now is just another software application that we have to put under that umbrella of HIPAA so we make sure that we continue to protect our patients' data the way we have.

*The Chair. Thank you.

Mr. Shen, recognizing the growing interest in medical products that incorporate AI, it is critical that FDA keeps pace with how these innovative technologies are being utilized and the benefit and risk involved. FDA must ensure patients and providers have timely access to safe and effective products while facilitating innovation by providing industry with predictable, regulatory pathways and rules of the road.

Can you discuss how FDA's current regulatory process works for AI-enabled medical technologies, and are there any improvements in mind?

*Mr. Shen. Yeah.

*The Chair. Mm-hmm.

*Mr. Shen. Thank you for the question, Chairwoman. So for _ as it relates to the FDA, the FDA actually provides several different pathways for AI solutions to go get their _ their regulatory approval. And these pathways include different rigors that are available there to be able to prove _ for organizations to prove that they are both ethical, safe, and secure in terms of how they are treating the patient data, and then also how that application is going to be applied towards the patient population going forward. So, in fact, the way that the construct that the FDA has today actually provides good ways for how software can be updated and AI algorithms can be updated going forward.

Where we see some of the challenges as it relates to regulation is not in terms of the approval of FDA solutions, but as mentioned earlier, the adoption of these FDA solutions and leveraging things like CMS to be able to provide ways to encourage adoption of AI solutions amongst the different providers that are mentioned here.

*The Chair. Thank you.

I want to ask each of you in the time remaining to speak

to this question because AI is being used in different fields to improve healthcare for patients and _ and we hear the examples of improved diagnostics, better care for providers, and as we move forward and continue to incorporate AI in healthcare, it is going to be important to make sure that providers and patients are aware when decisions involve AI.

So just starting with Dr. Schlosser, would you just speak to what Congress should be thinking about in this regard as we _ to make sure that it isn't lost as AI technology continues to evolve?

*Dr. Schlosser. Well, I would comment that transparency is incredibly important when it comes to AI in general across all use cases that patients and providers deserve to be _ to understand exactly when AI is being used, what datasets were used to train it, what decisions it is being enabled to make. I think that is foundational to an AI strategy.

*The Chair. Thank you.

Dr. Nguyen?

*Dr. Nguyen. Absolutely. I think it is of the paramount _ the most paramount importance that patients always have the right to understand who is treating them and

if AI is involved, right?

*The Chair. Okay.

*Dr. Nguyen. There must be transparency around the use of those tools. Providers as well must understand the limitations of those tools.

*The Chair. Okay. Mr. Shen?

*Mr. Shen. Yeah, I would add to the transparency topic. It is not only transparency in terms of how the AI is created but also transparency in terms of understanding how the AI has derived its clinical decision. So being able to educate the users of the AI to understand how is the AI actually making this clinical decision or clinical recommendation.

*The Chair. Thank you. Thank you, everyone. Unfortunately, my time is expired, so I will have to look for another opportunity get the input from the rest you. Thanks.

I yield back.

*Mr. Guthrie. Thank you. The chair yields back, and the chair recognizes the ranking member for five minutes for opening _ for questions.

*Mr. Pallone. Thank you, Mr. Chairman.

My questions initially are Dr. Longhurst. I am

concerned that the rapid deployment of AI tools means that there is an enormous incentive to collect, use, and share vast quantities of patient and other consumers' health information to train AI models, and this raises serious privacy and data security concerns, particularly as it relates to data collected and transferred outside of the HIPAA related _ regulated environment.

So do you share my concerns in this respect and particularly potential sale of health data by third parties, including mobile applications, and that that is not sufficiently regulated under any federal privacy law, including HIPAA?

*Dr. Longhurst. Thank you, Ranking Member Pallone, for the great question. We absolutely share your concern. As. Dr. Schlosser just described in his points, commitment to transparency is key. Transparency requires privacy. Health systems and payors who have been subject to HIPAA for over two decades now understand what that means, but these third-party apps that are collecting health information directly from consumers are not today subject to HIPAA, and that is deeply concerning to us as a industry that there are growing

databases of patient data provided in my many cases by patients themselves that will be unwittingly and inadvertently used for other purposes.

*Mr. Pallone. All right. So let me ask you, in your testimony you mentioned several examples of AI tools used at the University of California at San Diego. Do you know what data was used to train those tools and was it all data protected by HIPAA?

*Dr. Longhurst. Yeah. Thank you again for another great question. The first two examples I gave about imaging and sepsis were absolutely tools created with our own datasets about the patients that we serve. They were created in the HIPAA-protected environment and our protected health information never left that environment.

The third example I shared was the generative AI using these tools to help respond to messages. This was a general tool that is not accessing our patients' protected health information, it is not being trained on our patients' data, and it does exist in our HIPAA-protected environment. So in all three cases, they are subject to HIPAA regulations.

But as you point out, these third-party consumer apps

which collect data directly from patients are building databases and creating algorithms without that level of transparency or data protection.

*Mr. Pallone. Well, thank you.

Let me go to Dr. (sic) Shen from Siemens. You have testified about the vast amounts of medical data needed to train the tools, the AI tools, that Siemens is creating. Is all the consumer data that you use to train those tools regulated under HIPAA?

*Mr. Shen. Yeah, thank you for the question, Ranking Member Pallone. So at Siemens Healthineers, we are deeply committed to safeguarding patient data and data privacy upon upholding the data protection standards that are set forth by HIPAA. I think it is essential to recognize that the data that is utilized to train these algorithms goes through a rigorous process of de-identification. So we actually use methods to remove all personal identifiable information, or PII, and any protected health information as well, and that is all done prior to doing any sort of AI algorithm training, and that ensures that all of that data security and privacy is respected for that patient.

*Mr. Pallone. Well, you mentioned the importance of strong data security, so elaborate a little bit on why it is important, particularly in the context of consumers' sensitive healthcare data, of you will.

*Mr. Shen. Yeah, absolutely. Another great follow-up question, Ranking Member Pallone. So what is very critical here is making sure that we want to _ we want to make sure that we have a healthy dataset that is utilized to train these algorithms, but at the same time we have to recognize and respect the data privacy and the patient confidentiality that has been established between the patient and the provider themselves. So when we work with our clinical partners to utilize data for algorithm training, we respect that _ those legal constricts that are already in place with the different providers that are there.

On top of that, what we do within Siemens Healthineers is we also make sure we double check that the data that we received that has been said to be de-identified, we double check that that data is truly de-identified. So we go through the extra rigor to make sure that that data has been removed of all _ any PII or PHI that is there.

*Mr. Pallone. Let me just _ thank you.

Just quickly, only 30 seconds, but, Dr. Newman-Toker, what do you recommend on how AI developers can proactively identify and mitigate potential biases to prevent unintentional perpetuation of racial disparities in healthcare algorithms?

*Dr. Newman-Toker. Sure.

*Mr. Pallone. 15 seconds.

*Dr. Newman-Toker. I will just that there _ you know, they are reasonable questions about how best to address genetic differences in human physiology that may correspond to macroscopic racial groups, but one this is clear, we should not be converting human racial biases into hard and fast AI-determined rules. I think that is a critical feature, and it is going to require that we adopt larger datasets that are represented _ representative of all the population with oversampling for minorities.

*Mr. Pallone. Thank you.

Thank you, Mr. Chairman.

*Mr. Guthrie. Thank you. The gentleman yields back, and I know we had a markup since _ and we were able to talk a

little bit, but Dr. Burgess also has announced he is not running for reelection, and I will say on our side of the aisle, probably in the entire Congress, there is nobody that has a more encyclopedic knowledge of healthcare policy. But more important of his just ability to absorb the facts and move forward is his passion for making sure that the healthcare system works the best and his compassion that it works for people that have the least ability to make it work for themselves, and someone who has become a dear friend of mine, and somebody I have a tremendous amount of respect for. And we have another year, but we are absolutely going to have an empty seat at this table next year from somebody who is so good at what he does.

So, Dr. Burgess, you are recognized for five minutes.

*Mr. Burgess. Thank you, Chairman, and thank you for those kind remarks. Probably kinder than I deserve.

When you look at AI in the context of the existing ecosystem, if I can use that word in healthcare, it is not new and it is not unique. We have all had some experience with it, and like anything in healthcare, there is rarely a day that goes by _ or there is never a day that occurs where

someone comes in to me and says, you know, I don't think we are regulated enough in healthcare. So I want to balance those two things, but we do need to be sensitive in finding a balance when we discuss improving the regulatory process and make sure that innovation is not clobbered in the process.

So let me ask Dr. Schlosser and Mr. Shen both this question. If you can discuss the importance of clarifying the role of AI as a support tool rather than a primary factor in decision making and sort of extrapolate on what makes this distinction so significant in practice.

*Dr. Schlosser. Yeah, thank you for the question. And I think this is an incredibly important distinction. The concept of human-in-the-loop, which I mentioned in my testimony, I think is a critical safeguard that we can use that will allow us to accelerate the use of AI and learn more about the capabilities of these tools, in particular these new versions of AI, the large language models, but do it in such a way that we still have a trusted physician or clinician between that AI model and the patient who ultimately is impacted.

So the tool becomes an assistant that can provide

decision support, advice, summarize data, bring new insights, but we rely on that physician or clinician to be the ultimate decision maker for that patient, and I think that gives us a level of safety that will allow us to continue to experiment and understand how to use AI going into the future.

*Mr. Burgess. Very good.

Mr. Shen?

*Mr. Shen. Yeah, thank you, Congressman Burgess. And just to echo what Dr. Schlosser said, we also believe that artificial intelligence is here to be a companion for the clinician. So we fully understand the value of the patient/clinician or the patient/doctor relationship there, and what we want the AI to do here for that clinician is to provide more information, more context for that clinician to make that more informed diagnostic decision or that more personalized treatment decision for the patient.

So we are not looking for AI to actually replace what that clinician is trying to do from a diagnosis or a therapeutic standpoint, but actually to help inform that clinician to be _ to make that more informed diagnostic decision or that more personalized treatment decision.

*Mr. Burgess. We don't have time to get into in this hearing, but I also hope, and I make ask this to respond in writing, where the technology will lead to long-term savings. Of course, we have to be concerned about the deficit and the healthcare spend is one of the primary drivers there.

But, Mr. Shen, staying with you, what is your experience been like, and I know Chairman Guthrie asked you this a little bit, but you got to work with Center for Medicare and Medicaid Services, and they make coverage determinations and reimbursement determinations, so how has that been working out for you?

*Mr. Shen. Yeah. We have been working very closely with CMS to try to determine again what is the appropriate reimbursement as it relates to artificial intelligence. And I think where we see the biggest concern again is around the adoption of these AI solutions, and what we are hearing from providers and physicians is that they are _ they have this strong desire to want to adopt these AI solutions because of all the great benefits that we have talked about here this morning.

The challenge again is that the uncertainty on whether

they _ if they make an investment in AI, the uncertainty on whether they will receive any reimbursement or not coming back for that investment. There is just inconsistency coming _

*Mr. Burgess. Yeah.

*Mr. Shen. _ from CMS today. Yeah.

*Mr. Burgess. This is a safe space. You can talk about CMS all you want. We won't tell a soul.

[Laughter.]

*Mr. Burgess. Dr. Nguyen, let me just ask you, Dr. Schlosser went into some detail in his written testimony about the large language model that he is using, and then you talked about a generative model for large language models, and I just wonder if it is possible to set down the patient interaction in iambic pentameter, which after all is the language of Shakespeare? That is what you referenced in your written testimony.

*Dr. Nguyen. Yes, just to clarify, are you asking if it is possible to set down the patient experience in iambic pentameter using these models?

*Mr. Burgess. Well, I was just intrigued by your

statement, using the language of Shakespeare. So let's focus a little bit on drug development. Is there a place where this can play a role in drug development?

*Dr. Nguyen. Yeah, absolutely. Drug development is a very complex process, right, involving many moving parts. There are many ways in which AI can be _

*Mr. Burgess. But some of those are predictable at the level of the FDA, so as far as collecting the data that you are going to need to submit, the timeliness of the submission _

*Dr. Nguyen. Absolutely.

*Mr. Burgess. _ it seems like that AI would be a place where that could be organized and _

*Dr. Nguyen. Exactly.

*Mr. Burgess. _ if something is going to fail, maybe it could fail a little earlier and save everyone some time and trouble.

*Dr. Nguyen. Exactly. Selection of population data, synthesis, administrating of the study, right, and the busy work around that are very clearly things that AI could assist in reducing the burden on.

*Mr. Burgess. Well, I thank you all for being here today. Very informative panel and we are not done with this discussion.

*Dr. Nguyen. Thank you.

*Mr. Burgess. Thank you.

*Mr. Guthrie. Thank you. The gentleman yields back. The chair now recognizes Mr. Cardenas _ the gentleman from California, Mr. Cardenas, for five minutes for questions.

*Mr. Cardenas. Thank you, Chair Guthrie and Ranking Member Eshoo, for holding this timely hearing, and thank you to our witnesses for sharing your expertise and your opinions.

Emerging AI technologies show an incredible promise to improve and plug gaps in our existing healthcare ecosystem. Many of you have already mentioned that these novel technologies have the potential to expand healthcare access, address outstanding disparities, and support the healthcare workforce. I have been clear in my support for advancing technologies that increase access and quality of care for all Americans, but there is also the potential for harm if we are not intentional about how to proceed forward.

AI should make healthcare systems more equitable not less equitable, and because AI is only as good as the data it trains on or _ I worry about the possibility that these technologies may perpetuate or even widen existing health disparities. We have a responsibility to ensure AI innovation in healthcare is developed carefully and reliably if we truly want to harness its full potential.

I have a question for Dr. Newman-Toker. Dr. Newman (sic), you mentioned in your testimony that those in rural or underserved communities or those with social determinants of health associated with generally worse health outcomes may be most susceptible to suffering adverse consequences of inadequately regulated AI systems. Can you expand on the kinds of consequences we have already seen?

*Dr. Newman-Toker. Yes. Obviously, we have populations that are at risk. These are individuals who do not necessarily have good access to healthcare in the first place, and on the positive side, we hope that AI will offer the opportunity to deliver higher quality care, greater access to expertise. On the downside, there are obviously concerns about whether AI systems will either be accessible

to those individuals at all, for example, there may be broadband access problems or other issues that constrain their ability to even access technologies even if they are broadly available.

And we have further issues about health literacy, the ability to use such tools, and beyond that, the issue of whether _ when AI systems do potentially fail or make errors, they may be less equipped to be able to deal with those problems.

*Mr. Cardenas. Thank you. What should Congress keep in mind as we look to AI to improve health equity and protect against worsening disparities? Yes, go ahead.

*Dr. Longhurst. I appreciate your question. We have talked on this panel about the importance of transparency and some of our vendor colleagues talked about submitting to the FDA the results of internal testing, but it is important for this subcommittee to recognize those are all self-reported tests, and so the Coalition for Health AI, or CHAI, has recently proposed a series of national labs that would serve as testing beds for vendor-supplied AI algorithms. I think that is something that should be reviewed in more detail

because having an external testing is the way that we are going to mitigate these health equity kind of issues that come up from algorithms developed on biased datasets.

*Mr. Cardenas. Thank you. One of the things that I am concerned about we have seen in the past with incredible innovations that make it easier for people to make conclusions. For example, back in the day when the term credit score didn't even exist. I was told at the time when I said, wait a minute, you are going to use this as the _ not the backdrop, but you are going to use this as a primary driver of who is going to get access to capital across America and now across the world.

And they said, no, no, no, no, it is just a side tool. No, it is now the main tool. The old days of having a big file and having a whole review before they make a decision is gone. But my point is this, there are proprietary algorithms. The government of the United States doesn't even have a clue what those algorithms are. Nobody does but the actual proprietor, and it is protected. And I respect that protection because they have done a lot and invested much into that.

So it is, in fact, proprietary, but the problem is this, nobody knows what is happening in that black box. That is one of my concerns with AI, especially when it comes to not only quality of life but whether or not who lives or dies based on an algorithm's decision as to what is going to be the outcome or the cure or if someone is even going to get access to healthcare because they say, no, yours is not an emergency situation so therefore you are not going to get cared for.

*Dr. Longhurst. Yeah. We 100 percent agree with you, and we see the increasing rate of denials of payor claims and we know that that is being driven in part by AI processing these claims and very rapidly denying them in an inequitable way, and so we share your concerns.

*Mr. Cardenas. Well, we already have concerns, we already have examples, and I hope that we in Congress actually do our job and actually try to move hopefully as fast as AI has in order to make a better future for us.

Sorry that I went over my time, Mr. Chairman. I yield back.

*Mr. Guthrie. The gentleman yields back. The chair

recognizes the gentleman from Ohio, Mr. Latta, for five minutes.

*Mr. Latta. Well thanks, Mr. Chairman, and thanks to our panel for being witnesses today. I _ it is very, very important because AI is something that I applaud our chairwoman of the full committee through all of our subcommittees that we have been having hearings on AI and how important this issue is as we go forward, especially when we are talking about on the healthcare side because this is _ especially technology, that we do have to put those guardrails in place making sure that we protect the privacy of Americans and to also prevent other countries, especially countries like China, from abusing it.

Also in this subcommittee it has also been interesting through the years, and it has been brought up in your discussion today, again we were trying to help the providers out there being able to do what they are supposed to do. You know, we have a shortage of healthcare providers, the docs that we have had before us today when I have asked them questions, I remember one panel especially said _ I think it was about as many as is at this table today, I said, how many

of you spend _ how much time are you spending actually seeing your patients, and I don't think one of them said more than 50 percent. And so when you have a shortage of doctors out there, and nurses, and everyone else, it is important that they are doing that job that is actually essential to get it done.

Dr. Newman-Toker, in 2021 more than 100 drug and biologic applications included AI and machine learning components. Would you explain to the subcommittee if we continue to explore AI how this could lead to further breakthrough developments?

*Dr. Newman-Toker. Thank you, Congressman, for the question. What I would say is that as we look to the space of drug development, you can imagine in the same way as in general with healthcare that there are opportunities for AI to help both in the process itself, that is the mechanics of working your way through the regulatory process as well as through the identification process of actual treatments. So, for example, if we have large datasets that allow us to identify drug therapies that are available to us, then I think that that will give us an opportunity to break new

ground using existing data architectures.

*Mr. Latta. Oh, well thank you very much.

Dr. Schlosser, when I was reading your testimony, it was kind of interesting. I got a question because it _ I thought it was kind of interesting when you _ the technology uses the ambient speech models to transcribe the doctor/patient interactions and detects in emergency rooms. And because, you know, we all have the opportunity to visit our hospitals and especially because being on this subcommittee, I go through a lot of different emergency rooms and, you know, you _ the stress that happens there. How _ I am curious, because of the stress and everything that is there, how does the technology eliminate that stress to make sure you are getting the perfect absolutely a hundred percent of what you got to have to be transcribed for that patient?

*Dr. Schlosser. Yeah. Well _ and thank you for the question. And I will go back to a comment I have made several times now which is the human-in-the-loop, and that we always have the physician and their opportunity to review the note as that last step before it would ever become part of the electronic health record so that they can ensure that it

is a hundred percent accurate. The AI is not at the point yet where it can do that completely on its own.

We are using the data through data sharing agreements to continue to improve the quality of the AI and it continues to get better and better, which means it saves them more and more time, they have to do less editing at the end of the event. But right now we do need those physicians to still be vigilant.

As you identified, the emergency room is a chaotic and challenging environment. That is actually why we took that technology there in the first place. We feel like it has the most to offer in that space where precious time given back to the physicians so they can really tune into what is going on with that patient will actually yield meaningful quality results.

*Mr. Latta. Well, thank you very much.

Dr. Longhurst, you said something interesting in your testimony. You said that we have to have the ethical review of AI. Would you just delve into that ethical review of AI a little bit more, please?

*Dr. Longhurst. Yeah. So our health AI committee,

which has been around for some years, is staffed by legal, and compliance, and risk management, and clinicians. It is cochaired by several of our internal medicine physicians. It includes health equity researchers and bioethicists, and the reason for that is to look at things like what is the ethics of being transparent in this case, is that an ethically appropriate thing to do or are there ethically-challenged questions.

And so that actually helped to raise for us when we first implemented generative AI to help our clinicians respond to patient messages, that question was raised by our ethicists, should we be transparent with our patients, and that generated the conversation that resulted in full transparency to our patients about the fact that we are using generative AI to help with our responses, even though there is still a human in the loop, even though those messages are still edited by clinicians at the end of the day.

*Mr. Latta. Well, thank you very much.

Mr. Chairman, my time is expired, and I yield back.

*Mr. Bucshon. [Presiding.] The gentleman yields back. I now recognize Dr. Ruiz from California for five minutes.

*Mr. Ruiz. Thank you, Mr. Chairman. Our healthcare system is strained by widespread healthcare workforce shortages, burnout, and barriers to care for patients. As members of Congress, we must work together to create a healthcare system that is sustainable, fair, and always puts the patient first. It is important to now only support advancements that improve patient quality of care and strengthen the workforce but also ensure that we are addressing barriers to care that affect underserved communities, communities that need the care the most due to the disparities of health and the burden of those disparities on those communities.

As the witnesses here today have underscored, innovation in AI has the potential to address these concerns and improve patient care. However, these technologies also pose potential risks that we must carefully consider and mitigate as the technology continues to develop. As an emergency medicine physician, I am all too familiar with the administrative burden that physicians face and the negative impact that can have on patient care.

Dr. Schlosser, how is AI currently helping physicians

cut down on administrative burdens so they can focus their efforts on patient care, and how does this affect the quality of patient care?

*Dr. Schlosser. Thank you for the question, Mr. Ruiz. And I agree completely with your comments about the burnout and administrative burden that our clinicians are seeing. As I just mentioned and mentioned in my testimony, we focused in two areas. One is around documentation improvement. Documentation takes up an inordinate amount of our clinicians' time, and if we can return that time to them so they can focus on patients, on underserved patient populations, we believe we can actually create an expanded healthcare workforce using just the clinicians we already have by simply automating and removing some of those tasks.

We are also looking at AI as an assistant to our nurses. Our nurses are under the same kind of pressure our physicians are from shortage and burnout, and so giving them tools that helps them do their job, like the nurse handoff tool we talked about in the testimony where we can automate a piece of their workflow, making it easier for them to spend time at the bedside with patients, we think both of those will lead

to improved experience and bring some of the joy back into caring for patients.

*Mr. Ruiz. Thank you.

Dr. Nguyen, your testimony mentioned specifically how Transcarent uses generative AI in your virtual clinic. What safety mechanisms are in place to protect patient safety when using generative AI in health settings?

*Dr. Nguyen. Absolutely. Absolutely, yes. To clarify, generative AI is still being prototyped internally at Transcarent. We do use non-generative AI in our clinic. Safety mechanisms, though, to consider when you are building generative AI or any AI applications really involve safety at every layer, right, so when you are building these systems, you need to think about the data layer first, right, and ensure that you don't have a garbage in/garbage out system _ problem in your system.

You also need redundant safety mechanisms. I mentioned earlier the use of narrow versus general AI systems. You want to build redundant safety mechanisms that can detect things like patients asking questions that indicate they might have a medical emergency, right? You want those

specialized systems in place ensuring, right, that you have a high degree of likelihood that you are going to catch issues like that. And so, you know, you want those redundant layers in order to ensure the highest level of patient safety.

*Mr. Ruiz. Dr. Newman-Toker, what would be the ramifications of AI biases in healthcare if it is not addressed at this point in AI development, and what strategy should we be _ should be implemented to detect and mitigate biases in AI models used for healthcare?

*Dr. Newman-Toker. It is a great question. Thank you, Congressman. What I would say is that obviously we don't want to concretize the racial biases that we see in _ and other demographic biases that we see in human behavior today in the form of mathematical algorithms. To prevent that, we need to do work both on the side of developing the AI tools using appropriate datasets. We also need to deal with at the back-end monitoring for these kinds of problems, both using sophisticated tools to identify bias as has been done in a number of recent studies, and furthermore, to monitor for outcomes of healthcare associated with AI so that we can monitor for measures that matter for patients who are

underserved.

*Mr. Ruiz. Thank you, I appreciate that. Thank you all for your insight into the benefits and potential risks of using AI in healthcare. This insight is especially important to ensuring this innovative technology is used to improve patient care, improve access to care, reduce healthcare disparities, reduce the barriers in underserved communities, and improve equity by giving resources and healthcare attention to locations that need them the most, while mitigating biases and potential risks to patients.

And I yield back my time.

*Mr. Bucshon. The gentleman yields back. I now recognize Mr. Griffith for five minutes.

*Mr. Griffith. Thank you very much, Mr. Chairman. I appreciate it.

Dr. Longhurst, I am going to pick on you first because I loved this book, "The Perfect Predator,'' which is written by one of your colleagues. And so my question is _ and for those who don't know, it is about phage therapy and the saving of her husband's life, Thomas Patterson, who also is a UC San Diego individual, by finding the right virus to attack

the antibiotic-resistant bacteria that had attacked his body. It is a great story if anybody wants to read it.

The question is, are you all using AI to try to find more of those phage therapy-type viruses, and if not, do you see any potential in that?

*Dr. Longhurst. Great question, and thank you for referring to the book, "The Perfect Predator.'' It is an amazing story of a life saved by phage therapy.

Something that was actually explored prior to the advent of antibiotics and now we have gone back with antibiotic resistances to looking for solutions outside of that domain, and so it started a whole movement across the world.

We do have a center at UC San Diego pursuing expansion of phage therapy for treatment of serious bacterial infections. I am not aware that we are currently using AI to help with that center, but as previously mentioned, I think in general drug discovery will be augmented by the use of AI, and I am very optimistic that we are going to see large language model generated hypotheses about new ways of treating patients that we may not have previously examined hypothetically. So thank you.

*Mr. Griffith. And that was a little bit off script. I am going to go back to script, but it is the _ I am going to flip the coin over on the other side.

According to reporting, the use of artificial intelligence has the potential to allow for generative large language models like ChatGPT and other chatbots to revive old deadly pathogens. So we have talked about how it can help. It can also be used to revive old deadly pathogens or even create new deadlier ones. One example was done at MIT where students were able to get the large language models to suggest four potential pandemic pathogens within one hour by asking a series of questions to a generative large language model.

Further, researchers in Cambridge, Massachusetts used open-sourced language _ excuse me _ open-sourced large language model asking it how to revive the 1918 Spanish Flu. Several participants found obtaining the 1918 virus Spanish Flu would be feasible for someone with basic wet lab skills while one participant got "very close'' to learning all the steps needed to obtain the virus.

So I am going to go to you, Dr. Nguyen. I was

encouraged to see the White House put out an executive order to attempt to provide more oversight and security on this type of AI, but this still causes grave concern. Do you know if any AI technologies have security limits on what can be asked and what cannot be asked?

*Dr. Nguyen. Thank you, Congressman, that is a very good question. In a broader sense even outside of healthcare, right, these AI technologies have extremely broad and wide capabilities, many of which we don't fully understand yet. While this is outside the realm of the kind of AI Transcarent uses, AI in general, especially generative AI in a large language model sense, the _ in that field there is the world of alignment research, right?

The world of alignment research refers to the science of studying the malicious capabilities of these models and studying the ways in which we can defend against them. So in that world, right, it _ very, very important work is being done to find things such as what you are describing, right, which is vectors of malicious use. There is still a lot of work to be done in that world, and I think it is very important for us in the healthcare world to follow that,

acknowledge it, for this committee to support that kind of work.

*Mr. Griffith. So we want to look on the positive side, but one of the articles I was reading indicated that the proponent said maybe we need a _ some kind of a test ban treaty like we do with nuclear weapons. Do you think that we should be looking at some kind of a limitation on the test? I mean, we want the positives, but the negatives could also be very consequential.

*Dr. Nguyen. Yeah, that is a very good question as well. I think it is very difficult to truly limit the progress, you know, of testing these systems and making them safe without using them, right, and trying to push them to their limits, right? So I think it requires a measured approach. The other risks, though, of course of test banning is that countries other than the United States will also, right _

*Mr. Griffith. Right.

*Dr. Nguyen. _ make progress _

*Mr. Guthrie. Right. I am going to switch gears again. Back to you, Dr. Longhurst. You mentioned in your testimony

the AI-based messaging system was helpful for virtual care visits and allowing doctors to provide more care to patients. The question is, did the patients trust the system and find benefit from those automated responses?

*Dr. Longhurst. Thank you for your question. I know we are expired on time. I will say briefly that anecdotally we have gotten very positive feedback from patients, and we are submitting more quantitative data for publication.

*Mr. Griffith. Thank you very much, and I yield back.

*Mr. Bucshon. The gentleman yields back. I now recognize the gentlelady from Michigan, Mrs. Dingell, for five minutes.

*Mrs. Dingell. Thank you, Mr. Chairman. We are living in an increasingly technological world and the emergence of new technologies, like AI, has the ability to reshape _ or shape the way, as you all have been talking about, address public health and improve patient outcomes. And as we keep talking about, and I have got many concerns like others have expressed here, on the other hand, AI does pose serious risks that left uncheck can harm patients and quite frankly our national security.

But as this subcommittee has discussed, and COVID-19 pandemic has taught us a lot about the fragility of our healthcare supply chains and how vulnerable they are to disruptions. It is really a national security issue, and we have learned that during COVID. How can we keep our Nation safe if we can't access the medicines, the devices, and protective equipment we need to protect communities from public threats?

Earlier this month I joined a panel for a discussion on healthcare supply chains and what we think these supply chains will look like in the future. In addition to identifying ways to reduce our reliance on overseas manufacturers and bring these supply chains home, we all agreed we need to find ways to strengthen our existing supply chains to improve transparency and increased efficiency.

Mr. Shen, I think AI has a role to play in all of this. How does AI support healthcare supply chain management?

*Mr. Shen. Yeah. Thank you for the question, Congresswoman. I think for artificial intelligence here, artificial intelligence has the ability to be able to drive efficiencies as it relates to the supply chain here. So

being able to leverage computing power to be able to simplify some of the processes that today are dependent on other components, maybe some of those that are outside the U.S. here, but being able to leverage artificial intelligence to be able to accelerate the ability to drive delivery and efficiency of supplies that are needed.

We see this directly within the solutions that we make here at Siemens Healthineers that we try to leverage to computing power here to be less reliant on certain components that might not be accessible here, and we saw the success of that during the pandemic itself by being able to deliver still diagnostic equipment and therapeutic technologies to patients and providers during that time.

*Mrs. Dingell. Drug shortages _ thank you for that _ are a persisting challenge that threaten patient's health and wellbeing. This summer was really _ we saw very real shortages. We are still seeing them now. I don't know why I saw this summer.

We continue to see shortage of critical cancer drugs, like cisplatin and carboplatin, but during last year's flu and RSV season, parents across the country had difficulty

finding common over-the-counter pain relievers such as Tylenol and Advil for their kids as well as the antibiotic amoxycillin which is used to treat common infections.

Mr. Shen, how are suppliers already using AI to address these drug shortages?

*Mr. Shen. Yeah, again, thanks for the question again.

*Mrs. Dingell. And it is real, serious.

*Mr. Shen. Yes. Yes, it is. It is a challenge, but I think that is what is the exciting part about artificial intelligence and its ability here to be able to drive efficiencies within the processes that are established. Within Siemens Healthineers, we leverage artificial intelligence both _ not only to provide solutions to take care of patients, but we also use that to improve the processes that we have internally within our organization that allows us to be able to deliver diagnostic and therapeutic imaging solutions to our _ to providers, to physicians in a timely fashion and making sure that patients receive the latest technology available _ medical technology available to help them with their diagnosis.

*Mrs. Dingell. Thank you. We got to keep working on

it, though.

During the pandemic we also saw tremendous need to ensure limited resources were strategically going to the communities and patients that needed them the most. Dr. Newman-Toker, how can AI help us determine how to best allocate our resources?

*Dr. Newman-Toker. Thank you for the question, Congresswoman. Obviously, we have heard a little bit from Mr. Shen about the architecture of AI allowing us to improve the allocation of resources. I think one of the critical issues in this space is about having the right data architectures to be able to get to the point where AI can actually help us in those ways.

So often the key problem is that we don't have the right kinds of information about where the shortages exist and how _ and where the mismatch is between supply and demand. So I think that is one of the critical pieces of the puzzle. If we want AI to work properly, we are going to have to create datasets that are digestible by AI for real-time use.

*Mrs. Dingell. I am out of time. So, Mr. Chairman, I have more questions for the record and ask _ thank the

witnesses for being here.

*Mr. Bucshon. The gentlelady yields back. I now recognize the gentleman from Florida, Mr. Bilirakis, five minutes.

*Mr. Bilirakis. Thank you, I appreciate it, Doctor.

Mr. Shen, can you tell us about the role of generative AI, what it is and what its potential can be within the healthcare sector? I know it is a general question but _ and I know others have asked this question, but it is so very important. Please.

*Mr. Shen. No, I appreciate that, Congressman.

*Mr. Bilirakis. Yeah.

*Mr. Shen. So certainly my colleagues have also talked about generative AI, so perhaps maybe I will talk about it as it relates to medical imaging and where we see the impact _

*Mr. Bilirakis. Sounds good.

*Mr. Shen. _ for patients. So with generative AI here, where we see the greatest potential is the ability for the AI to consume more information about the patient themselves. So when a patient actually goes to get an exam done to get a diagnosis, for example, leveraging generative AI gives them

the ability to know exactly what precise diagnosis should we be looking for. Yeah. So not just doing a test just for the sake of doing a test on that patient but actually doing a test because we are seeking a particular diagnosis that is happening there.

So that actually, if you think about it, helps the patient not go through _ avoid going through multiple exams just trying to look for what the issue is here. So that is potentially one area.

The other area where generative AI has some benefit from a medical imaging standpoint is actually the interpretation of the images themselves. So the ability to be able to take all this complicated medical language and convey the diagnosis to layman's terms for the patient themselves so the patient gets a better understanding of what is going on and the test results that they have had from that exam.

*Mr. Bilirakis. Oh, that is great stuff. We appreciate _ very exciting.

Mr. Shen, I appreciate that your testimony mentions the use of predetermined change control plans. And I was proud to lead the effort in the House last Congress to authorize

the use of the PCCPs through my bill that got enacted into law last year. Can you describe the PCCP pathway and explain to us how this can allow for a more efficient regulatory framework and why it is so important to ensure that FDA implements this bill effectively.

*Mr. Shen. Yeah. Thank you. Thank you, Congressman. And again, thank you very much for the PCC effort. Yeah, so enactment of the Predetermined Change Control Plan allows organizations like Siemens Healthineers to include in our initial FDA product application a description of how the software will be updated rapidly based on new data as it comes about. So without the need to have to resubmit back to the FDA any sort of application or supplement every single time an update happens. So this really helps accelerate and go in conjunction with all the rapid development around a technology like artificial intelligence.

The PCC itself, we have to include a description of the modifications, the methodology that we are using so we provide that transparency that is needed, that we have talked about here today, as it relates to that technology here. And again, we are very, very pleased that the _ with your help

there that we were able to _ that we are able to move forward and make sure that PCCP is part of the FDA process going forward.

*Mr. Bilirakis. Thank you. Excellent.

One question for Dr. Schlosser. Can you elaborate on the potential that large language models have in reducing provider burden within the hospital settings, please?

*Dr. Schlosser. Yeah, absolutely. Thank you for the question, Congressman. So as I mentioned in my testimony, I think there are numerous opportunities where our current healthcare system has created what we refer to as administrative burden, added tasks to physicians, nurses, pharmacists, other healthcare providers that don't directly add value to the patient where they are acting as data entry analysts or transferring information between different providers or different systems.

And large language models are actually really good at those types of tasks. If we can train them to understand the data, which is part of the challenge, they can search for information, read complex medical charts, find information from multiple disparate sources, synthesize and understand

it, and then serve it up to the healthcare providers in their workflow. And then because they are language models, you can actually interact with them in a natural language way. You can ask questions and get feedback.

And so it is a really powerful tool to make the universe of healthcare information around a patient simple and easy to access.

*Mr. Bilirakis. Very good. Good stuff.

I yield back the rest of my time, Mr. Chairman. Appreciate it.

*Mr. Bucshon. The gentleman yields back. I now recognize the gentlelady from Illinois, Ms. Kelly, for five minutes.

*Ms. Kelly. Thank you, Chair Guthrie and Ranking Member Eshoo, for holding today's critically important hearing.

The integrating of AI in the healthcare system offers a potential to be a transformative solution to address long-term disparities in access issues. Many in both the healthcare and technology fields have promoted AI as a means to create a more accessible and equitable healthcare landscape, particularly in minority, underserved, and rural

communities.

Dr. Newman-Toker, I am hopeful about the potential synergy of AI's ability to improve clinical trial diversity by scanning multiple databases for clinical site placement and patient populations with the hopes that diverse patient populations can be matched with clinical trials, thus resulting in a more efficient and diverse recruitment process.

What incentives or regulations need to be considered regarding AI's use to improve clinical trial diversity?

*Dr. Newman-Toker. Thank you for the excellent question, Congresswoman. Clearly diversity in clinical trials is an essential component of eliminating health disparities. We have seen that a large number of treatments that we have studied over the course of time have only been studied in white men or very restricted populations with minorities, and I do think that the potential of AI to identify locations and places where patients can be recruited is a strong one.

In terms of the regulatory framework, I do think that some of the existing architectures around clinical trial

requirements for diversity are _ I think are important. I think we are going to have to make sure that we further bolster that as we get deeper into the AI space in order to make sure that we are having overrepresented groups of minorities so that we can do proper subgroup analysis across demographic groups.

*Ms. Kelly. Thank you. Additionally, this body has worked in a bipartisan manner to decrease the length of time for prior authorization to Medicare populations, so while I am supportive of the use of AI to improve the timeliness of prior authorizations, I am concerned about multiple recent articles on the use of AI in prior authorizations and the association with high rates of claim denials.

So, again, Dr. Newman-Toker, the reliance on AI for crucial medical decisions introduces the risk of patient harm. Rigorous testing and validation are imperative to ensure the safety and efficacy of these technologies preventing errors or misinterpretations that could have severe consequences for patient wellbeing. In your review of these AI systems embedded in prior authorizations, can you explain why we are currently seeing such disappointing

outcomes and what can we do to help mitigate these troublesome findings?

*Dr. Newman-Toker. Thank you for the excellent question, Congresswoman. I do think part of the problem here is that this is _ there is a preexisting arms race in the space around claims with insurers generally trying to find ways to reduce their expenditures and deny more claims and providers trying to increase their claims and the revenue that is generated associated with this, and now we are seeing that escalate into the AI space.

I think when we think more broadly about the issue of regulation here, what _ we have been talking a little bit about AI used in the context of healthcare with patients. I think what you are alluding to is all of the AI that may exist out in the periphery, around the problem, and that is a totally unregulated space, and that is a potentially dangerous area because we have no idea even what systems are being used for controlling the process of healthcare or access to healthcare, or even direct to patients in the form of symptom checkers and otherwise. All of these things exist outside of our regulatory frameworks, and I do think we need

to start bringing some of those into the regulatory framework.

*Ms. Kelly. Thank you.

Dr. Longhurst, I have to give you a chance to comment because you are shaking your head.

*Dr. Longhurst. Well, your questions I think are incredibly pertinent and not only do we need to think about the diversity of clinical trial participants and ensuring equity in how this is impacting the healthcare system and care of patients, we also need to think about our workforce and ensuring that we are creating diversity in the AI workforce. Previous comments suggested we need to train our medical students and other young professionals in these new technologies, and I think that is absolutely correct, and I think we are at risk of making these technologies only available to those who can afford them.

And so I want to use this opportunity to express my strong support for the bipartisan proposed legislation Create AI, creating resources for every American to experiment with Artificial Intelligence Act of 2023 which would establish the National Artificial Intelligence Research Resource or NAIRR.

Both UC San Diego and the University of California Office of the President strongly endorse this Create AI proposal because it would provide the opportunity for academic researchers to develop better methods and knowledge on the systems. But it is not just for academics, right, it is for small businesses, nonprofits, and other organizations.

So thank you for that proposed legislation.

*Ms. Kelly. Thank you, and I yield back. Thank you.

*Mr. Bucshon. The gentlelady yields back. I now recognize Mr. Johnson from Ohio, five minutes.

*Mr. Johnson. Thank you, Mr. Chairman, and thanks to our panelists for being here today. You know, artificial intelligence or AI is creating quite a buzz around Capitol Hill. That is to say the least. Even across the country. It has been met with both excitement and concern. Whether the American people realize it or not, AI is already prevalent in many sectors, particularly in the healthcare space.

I have always been an advocate for innovation and development of new technologies, and AI is no different in this regard. I worked with AI when AI literally was just a

buzz word back in the early 1980s when I was in graduate school at Georgia Tech, so I am very familiar with the technology. But simply put, AI is a tool that our medical professionals and scientists can use to not only further the development of care and therapeutics resulting in better outcomes for patients but hopefully lower cost to families and the taxpayer.

Unlike the vast majority of Congress, I _ as I mentioned, I actually have a tech background, and in my time in the military as well as the time spent in the private sector. I worked in information technology, and I understand the benefits and challenges of AI. It has been around for decades.

Take electronic health records, for example. As Congress continues to incentivize adoption, and rightfully so, we are saddling healthcare systems with an immense amount of data. From patient notes to imaging, doctors and nurses are expected to utilize all this information to best treat their patients. That is a lot easier said than done. It is a lot of information.

This is a perfect example of how AI can be utilized in

reading and deciphering all this data. They can make these health records more digestible and ultimately increase outcomes for everyone. Not to mention lessening the administrative burden for physicians, nurses, and healthcare systems nationwide.

Generative AI has gotten a lot of attention, a result of ChatGPT, and Claude, and other public-facing technologies that have been widely used over the last year. However, generative AI has been used in healthcare for years through patient engagement technologies and clinical decision support models.

So my first question. Dr. Schlosser, do I have that right? Am I saying that right?

*Dr. Schlosser. That is right.

*Mr. Johnson. Thank you. What are some of the other promising ways you see generative AI integrating into the healthcare system?

*Dr. Schlosser. Yeah, thank you for the question, Mr. Johnson. And there is numerous opportunities. I think the one you highlighted around making the vast universe of data that clinicians and physicians have to access more easy to

access is one we are incredibly excited about.

We are working right now with one of our partners on what is essentially an AI assistant in your pocket so that you can interact with the electronic health record as well as the entire information health exchange through a natural language interface allowing you to search for and look for information that otherwise it would take a long time and it is very burdensome. If you ever have seen a CCD, which is the output of the HIE, it is this giant list of data that is the way that information is provided, it is incredibly difficult to use.

But these models actually are capable of doing more than just read and understand information. We have taught a model to look at our staffing schedules across an entire hospital and are able to ask it questions like how do we better balance Friday nights. And so we can deploy our labor workforce in a much more efficient and effective way by harvesting the intelligence contained within these large deep learning models to solve complex problems that previously were put on nurse leaders or others that just struggle to have the information and to deliver the outcomes we are

looking for.

*Mr. Johnson. Let me get to a second question. What about rural and underserved populations like Eastern Ohio and Appalachia where I live? What can Congress do to facilitate more adoption of these technologies across smaller and rural practices to make our healthcare system more personalized and ensure every patient and provider has access to the highest quality healthcare technology?

*Dr. Schlosser. Yeah, that is another great question. And so we learned through the pandemic that there is basically a one-to-one relationship between having enough healthcare providers and the patients that you need to take care of, that ultimately providers deliver care. And so the way we see AI helping solve this problem is by literally freeing them up from tasks that are not focused on caring for those populations so that we can in a sense increase the size of our healthcare workforce without actually needing more bodies, but just through AI.

*Mr. Johnson. Yeah. Can _ one final question before my time expires here. Can you _ and you can answer this for the record if you would get back to me because my time has

expired. How can we facilitate _ what can Congress do to facilitate more private investment into these technologies to make them more useful to the healthcare system?

*Dr. Schlosser. Yeah, thank you for the question.

*Mr. Johnson. If you would get back to me, I would appreciate it.

*Dr. Schlosser. I will.

*Mr. Johnson. I yield back, Mr. Chairman.

*Mr. Bucshon. The gentleman yields back. I now recognize the gentlelady from Washington, Dr. Schrier, for five minutes.

*Ms. Schrier. Thank you, Mr. Chairman. Thank you to all of our witnesses today for this interesting conversation.

Artificial intelligence and machine learning are already transforming how we study and practice medicine, and as we continue to grow these capabilities and to make further breakthroughs, it is really important that Congress keeps up, and I thank you for this education.

Last spring, Mr. Shen, I loved visiting Siemens Ultrasound Research and Development Center headquarters located in my hometown of Issaquah, Washington. And during

my visit, I learned about and got to see pretty incredible innovations being done. One of them was the ability to diagnose non-alcoholic fatty liver disease in an ultrasound scan that took less than a minute, and to be able to catch this early. And the implications for morbidity, mortality are incredible.

But, you know, every time we have a new advance, there is this question of cost, and as we integrate artificial intelligence and these more advanced algorithms and new technology, there are impacts on cost. There is development impacts, but there is also potential cost savings down the line if you are avoiding liver transplants.

I was wondering if you could _ I have two questions, so just kind of partition your time _ kind of comment a little bit on AI development and cost.

*Mr. Shen. Yeah. Thank you for the question, Congresswoman. And of course we were very happy to host you at our Issaquah facility.

As it relates to artificial intelligence, as you correctly noted, we are trying to integrate AI tools directly into the types of exams or devices that are touching patients

here. So here in this case for ultrasound, being able to integrate the AI and not have it as _ be a separate type of solution there. So doing that in itself reduces some of the costs. So rather than having _ trying to have a separate AI solution that has to be maintained, has to be procured or whatnot, we actually integrate those solutions directly into the medical devices that are treating the patient. So that is one aspect of it.

And then as we looked at AI overall, we do want to look at not just the cost of procuring that AI but what is that downstream cost, what is that benefit, not just to the patient in terms of maybe fewer days that they have to spend at the hospital or maybe shorter time to diagnosis or to treatment, but also cost savings that could be realized by the provider themselves as well, so the _ that the provider by deploying this type of technology, is able to be more efficient, is able to be able to make that diagnosis faster, is able to see more patients because they now have more time to be able to take care of one patient and move quickly to the next patient.

So these are all things that we think about as we

develop AI algorithms.

*Ms. Schrier. Thank you. I appreciate that.

My next question, I want to talk to _ pivot to Dr. Longhurst, and this is really about the impact of AI on the physician/patient experience. Ranking member Eshoo talked about the patient experience. I would like to talk about _ a little bit about the doctor experience.

And I can understand how nice it would be to have the latest research pop up as a suggested pathway for a given patient who I am seeing, who has maybe already filled out their whole history for me, but doctors are already burnt out. We are _ we have been compared in an OpEd to cogs in a wheel, to line workers after almost a decade of training post-university, and we are being asked to see more patients faster, do more things in a visit, and people _ they are _ we are burning out.

And so I wanted to talk with you about kind of the physician/patient relationship, the trust that is there, how physicians feel when, you know, perhaps they are just becoming a check on a system where AI makes patient management decisions for them after that kind of training.

Can you speak about that?

*Dr. Longhurst. Yeah. Thank you, Dr. Schrier, and it is a real privilege to speak with a fellow pediatric graduate from Stanford.

When I was at Lucille Packard Children's Hospital, we were in the process of implementing electronic health record, and as well all know, the electronic health record, if not the primary cause, has become a primary symptom of burnout. The many hours that our pediatricians, physicians in general spend documenting electronic health record is contributing to a national epidemic of what we call pajama time or after-hours work. We know that for every day spent in clinic, the average physician spends about two hours documenting electronic health record to ensure regulatory compliance, billing, and other things.

And so where the electronic health record was a really important digital infrastructure for collecting data, for quality and population purposes, it has introduced these unintended consequences. I am incredibly optimistic about AI, particularly the AI scribes that Dr. Schlosser described as being a solution to help decrease the burden that was

introduced by electronic health record. So we are seeing just incredibly positive results from pilots using these scribes.

Unfortunately, the technologies are still quite expensive, but as they become commoditized and continue to demonstrate outcomes in privacy, I think this is going to help us to remediate some of the burnout that has happened over the last decade.

*Ms. Schrier. Thank you. I appreciate that.

And I yield back.

*Mr. Bucshon. The gentlelady yields back. I now recognize myself for five minutes.

While I am only just beginning to learn about how AI can contribute to healthcare, I recognize it has great potential. I was a cardiothoracic surgeon before I was in Congress. And I do believe that ultimately technology used properly will help us control cost. I really believe that.

As an example, a top priority of mine is legislation that would allow real-time prior authorization decisions by Medicare Advantage plans and ultimately by all health plans. I recognize that AI would make real-time decision making far

more feasible and expect that it would be used for this purpose.

At the same time, we are hearing allegations that health plans are making coverage determinations using AI-powered tools that are ultimately shown to have high rates of errors, as was mentioned by Ms. Eshoo, the ranking member in her opening statement, resulting in patients paying more for healthcare or perhaps foregoing necessary medical interventions. Basically, these are improperly denied claims. Recent media articles have outlined the situation, which is unacceptable, and I would argue that this should be investigated by Congress.

I say all of this to remind my colleagues that our approach needs to be balanced and to remind the companies using AI to do so responsibly. This is a statement, Mr. Schlosser. As long as the AI can properly populate the record to obtain appropriate reimbursement for the providers involved in the case, you will see wide acceptance of it if there are _ if _ even if their record is there, but it doesn’t properly reimburse the provider for their care, then it will be a struggle, and I am assuming they will probably

do that.

That is a major issue for providers, the documentation that is required by the Federal Government for reimbursement. And honestly, in my view, it has been a problem for a long time. Another issue in our healthcare system will _ we will need to think about is using more AI in how we train and educate medical professionals to use it appropriately.

I am going to address this Dr. Nguyen. Your testimony mentions using AI to train and educate medical professionals. There may be a risk that our future providers will become overly dependent on technology, resulting in less well-trained providers in the art of clinical decision making.

I will give you an example. Google Maps. It is not direct, but any _ I have adult children who are in their 20s. I mean, they can't navigate anywhere without Google Maps. I mean, they literally don't know what direction they are going.

[Laughter.]

*Mr. Bucshon. And to go around the block, they map it. That _ I would call that an over-reliance on technology. It is not a direct correlation, but kind of.

So how do we begin to train these professionals on the uses of AI and increase of the awareness of the pros and cons, and is that something that medical schools are beginning to think about, and if not, should we be?

*Dr. Nguyen. Thank you, Dr. Bucshon. That is a very prescient example. I too have a lot of trouble navigating without Google Maps, so I fully understand that.

I think that, you know, our institutions very rightfully so focus on the art and science of medicine, right? At the same time, I think it is very, very important that institutions leverage these new AI technologies to create learning experiences, first, to enhance the learning experiences and make them more efficient, enabling students to really hone in on the most important concepts that they need to know in the _ in an efficient amount of time.

Second, I think it is very, very important that these institutions train and educate their students on the nuances of these technologies. It will be unavoidable that doctors of the future use these technologies, whether or not they are trained in them, and so the most important way to prevent overreliance is to educate them on the limitations of that

technology.

*Mr. Bucshon. I would agree with that. Don't get me wrong, I am a big supporter of technology and innovation in the healthcare space.

I guess, Mr. Shen, you can talk about maybe, you know, real time, what is _ are we seeing medical professionals real time over-relying on AI as it relates to the evaluation of, for example, CT scans, MRIs, x-rays? Is there _ are the people coming up being properly trained I would say I guess on the positives and negatives of this situation? I mean, that is going to be really important, right?

*Mr. Shen. Yeah. No, this is a great question, Vice Chair Bucshon. I think to echo what Dr. Nguyen was talking about, I _ what is critical here is transparency around the artificial intelligence. Not in terms of how you actually use the AI but how _ again, how is the AI making that clinical determination and educating these upcoming physicians on what _ how the AI is actually making that clinical determination.

*Mr. Bucshon. Thank you both for the answer to that question. It is really important.

Now I recognize Ms. Kuster from New Hampshire for five minutes.

*Ms. Kuster. Thank you so much, Mr. Chairman, and thank you to all of you for sticking with us. We appreciate it.

Today's hearing is an opportunity to understand how artificial intelligence can help patients, providers, and researchers. To fully realize this potential, we need to ensure that AI tools are safe and equitable. I want to use this hearing to discuss one opportunity and two concerns I have with AI health.

For the opportunity, I will look to Dr. Newman-Toker. In your testimony, you described one potential benefit to AI is that it can improve patient outcomes through more accurate diagnosis. Could you give us some examples of how AI tools could benefit public health?

*Dr. Newman-Toker. Yes. So as _ thank you very much, Congresswoman, for the excellent question. As I noted in my testimony, we have recently estimated that about 800,000 Americans die or are permanently disabled each year from diagnostic error with serious medical illnesses like stroke, heart attack, pneumonia, sepsis, et cetera.

There is an enormous potential public health impact of being able to close that gap, that quality gap with AI-based detection of using laboratory data and vital signs for things like sepsis, using video-based interpretation of eye movements for stroke diagnosis is some of the work that we have been doing, so I think there is tremendous potential in that space.

And at the same time, to deal with some of the concerns raised earlier about costs, because when you realign _ when you actually improve diagnosis, what you do is you cut down on both false positives and false negatives at the same time, and by doing that you save lives by catching the cases you had missed and you cut costs by not over-investigating the patients that didn't need that investigation. So I think it is a tremendous public health opportunity.

*Ms. Kuster. Good. Thank you. Two concerns. I am worried about bias in the data. Continuing with Dr. Newman-Toker, you also state in your testimony, for AI tools to be maximally beneficial, they must be properly validated and utilize gold standard datasets. What steps can companies and researchers take to ensure that the data that is being used

to train AI systems is accurate and without bias?

*Dr. Newman-Toker. Thank you for the wonderful question. I do believe that this is the foundational challenge that faces this whole area of AI in healthcare. The issue of creating gold standard datasets is not a _ there is not a simple solution to that problem. We actually have to do things in healthcare that we don't normally do, such as, for example, determine what actually happens to our patients downstream after an encounter.

So we say, for example, that a patient leaves our care and they have X diagnosis, but we don't actually know if that is true. We often don't get that follow-up. They may go somewhere else, they may end up in a different health system. So we have to start coordinating data architectures and we have to start developing and curating good datasets that can be used at a large scale to train these AI models.

So I do think that that is going to take a big effort and one that would be best coordinated federally.

*Ms. Kuster. Helpful, thank you.

And my final concern is about protecting patient data when we are developing AI tools. Dr. (sic) Shen, I

appreciate Siemens Healthineers' commitment to protecting patient data. Unfortunately, we have seen an increase in healthcare cyberattacks, which have more than doubled from 2016 to 2021. What steps does your team take to ensure patient data being used to train AI tools is protected from cyber criminals and just plain bad actors?

*Mr. Shen. Yes, very, very timely question and I really appreciate that, Congresswoman. So here at Siemens Healthineers, we take data privacy and patient data privacy as a core component to how we approach the development of artificial intelligence. And to that respects as it relates to securing the data, once of the important aspects that we do is that any of the data that we utilize to train our AI algorithms is fully protected in our big data office that is there in Princeton, New Jersey. So there are physical limitations that are set already in place, the physical barriers that don't allow individuals or bad actors to gain access to that data center there.

And then from a cyber standpoint, what our big data office does is that they actually control who has access to the data itself. And in terms of controlling internally the

audit that is needed in terms of who are the users that can access that clinical data to do the algorithm training. So they have the ability to audit the user access and restrict the user access to only the individuals who need to be accessing that data.

*Ms. Kuster. Great, thank you.

I am all set. I will yield back.

*Mr. Guthrie. [Presiding.] The gentlelady yields back, and the chair will recognize Dr. Dunn for five minutes for questions.

*Mr. Dunn. Thank you very much, Mr. Chairman. I appreciate all the insights from our witnesses regarding the role of AI in the clinical setting. I believe there is an important debate to be had about the value add versus the risks of AI in the doctor's office and the hospital, and I agree with our witnesses about the promises of this technology in medicine. I also echo Dr. Nguyen's caution and careful consideration when AI is utilized for clinical decision making without close physician oversight.

It is clear from the advances in AI from narrow AI to the generative and large language models that there are

sweeping implications for the delivery of healthcare, and it presents clear opportunities and challenges. I am encouraged by the efforts to explore the role of AI in interpreting radiology and pathology. And although I think the current evidence demonstrates that this is not quite ready for primetime, I am certain that that will become more sophisticated over time.

I am especially optimistic about the ability of AI platforms to reduce administrative burdens and simplify clerical tasks. I appreciate the questions that Dr. Schrier asked about _ on that _ in that Q, and that is a real problem as we all address burnout. Physicians are spending a quarter of their time or more on administrative tasks, so that is a huge _ I would have loved to have had that when I was practicing, quite honestly.

I do have some concerns that the private practices may struggle with the upfront cost of adopting AI technology, and I urge the industry to think creatively about ways to provide access to that technology to the full spectrum of provider settings. And to echo Mr. Johnson's concerns with our rural communities, rural providers who will be further

disadvantaged if they don't have access to that. If those technologies are only accessible to those with the resources, we may have an even worse shortage in rural medicine.

So, Dr. Nguyen, can you briefly comment on any specific challenges that rural or private practices may face when trying to adopt something like Transcarent?

*Dr. Nguyen. So _ yes, Congressman. So to address your question, I think there are always going to be challenges with rural and private practices who _ which are just simply smaller in size, smaller in staff, smaller in budget, right? The challenges come in many ways, shapes, and forms for any technology adoption, AI included, and that is the capacity to assess, right, the right tools to adopt and the budget to adopt them.

I think it is very, very important, right, to continue to support the development of AI tools amongst the private industry in a safe and non-biased way because that is actually in my opinion the fastest way that ultimately a lot of these practices will experience and be able to use these generative AI tools is when the vendors and the tools that they use begin to incorporate those, right?

When we began adopting EHRs, right, most of these private practices had access to EHRs once vendors began to build it for those practices specifically.

*Mr. Dunn. You know, what I would like to do, I would like to, offline out of this hearing, have somebody from your company come tell me what is your pricing mechanism, you know, for different practices and how they can, you know, adopt that in their office, so that would be something we could do separately.

Dr. Schlosser, briefly, what are some of the ways you have seen AI improve efficiencies for patients improve their experience?

*Dr. Schlosser. Well, one thing that all the clinicians and probably everyone in the room will acknowledge is that we ask patients the same questions over and over again. We are constantly burdening them with delivering their entire health history and each interaction along a healthcare jury, and then if you change systems or go to a different physician, you start that entire process over.

So I think the ability of AI to help us wrangle this entire universe of healthcare data that exists across

multiple disparate EHRs into a longitudinal record of the patient that clinicians and patients can easily access _

*Mr. Dunn. Just to access, you are right. So I spent more time as a patient than a doctor the last few years up here in Congress, and I have to tell you, I filled out my history probably a thousand times.

*Dr. Schlosser. Yep.

*Mr. Dunn. Just _ it just _ amazing experience to me.

Dr. Longhurst, in your testimony you made reference to a study, I believe you were a coauthor on that study actually in which you said algorithm was rapidly deployed to analyze chest x-rays in COVID-19 patients. Every clinician I know has been reading chest x-rays for 40 years. What specific advantages did you confer to these physicians?

*Dr. Longhurst. Yeah, great question, thank you. I can tell you the day that we rolled this algorithm out that I walked through the emergency department and asked if our attending physicians had used it, and one of them said, yeah, last night we got a chest x-ray on this woman who was in for cardiac symptoms. We didn't see a sign of pneumonia, the radiologist didn't call any pneumonia, but the AI showed some

color and because of that we ordered a test. And I said, well what did the test show? And the answer was, well it takes 24 hours to come back.

*Mr. Dunn. [Laughter.]

*Dr. Longhurst. It turns out that test was positive. That patient was diagnosed with COVID early before symptoms, patient was proactively hospitalized, did not need critical care, went home safely. And to me that was a really great example of the AI finding a signal that we would not have found otherwise as a human, and that is the kind of promise I think the technology holds when deployed appropriately.

*Mr. Dunn. Thank you, Dr. Longhurst.

Thank you, Mr. Chairman, for your forbearance. I yield back.

*Mr. Guthrie. The gentleman yields back. The chair now recognizes Ms. _ the gentlelady from Massachusetts, Mrs. Trahan, for five minutes for questions.

*Mrs. Trahan. Well, thank you, Mr. Chair, for holding this hearing, and to all the witnesses here today.

AI in healthcare has the potential to transform various aspects of the industry by offering new solutions, improving

efficiency, and enhancing patient outcomes. However, Congress does have the responsibility to make sure that we establish appropriate guardrails around AI in healthcare in a way that works best for consumers and maintains patient and provider trust.

According to a new Qualtrics survey of more than 28,000 consumers across the globe, consumers are more hesitant about using AI to get advice about medical problems than they are for other uses like billing and customer service. As the use of AI in medicine becomes more commonplace, patients have raised logical comments around privacy, transparency, ethical considerations, human oversight, errors and misdiagnoses, and access issues.

With this in mind, I just welcome the opportunity to discuss some of those issues today. Many of my colleagues have already brought up valid ethical considerations around AI, including biases in algorithms, potential discrimination, and AI's impact on vulnerable populations. As AI advances into healthcare and begins to play a role in making medical decisions, I am curious if there are differences among various patient demographics in their willingness to consent

to AI decision making and whether those preferences may unintentionally skew algorithms.

So, Dr. Newman-Toker, I am wondering how important is it to understand if there are patterns of patients who would or would not consent to use of AI in healthcare based on race, education level, geographic area, et cetera.

*Dr. Newman-Toker. Thank you, Congresswoman, that is a fabulous question. I think _ I don't have any specific data about the demographic variability in trust with respect to AI specifically, but we have seen over and over again that trust issues are un _ inequitably distributed. So, for example, in Baltimore, there is a strong strain of lack of trust of the healthcare system in the black community, and this is a major problem for getting equitably distributed data from patients. So I do believe that you have pointed to a critical concern that trust gaps are a major issue and they may not be evenly distributed.

*Mrs. Trahan. Thank you. The rapid _ I am going to switch gears, but we will definitely probe that further as we progress.

The rapid evolution of AI in healthcare has exposed the

need for federal coverage and payment policies that promote innovation and protect patients' interests. While the FDA has moved forward to regulate software as a medical device, CMS has yet to establish consistent methods for the coverage and payment of these technologies. Mr. Shen, what _ are our federal agencies like the FDA and CMS well-positioned to keep up with the rapid increase in innovative technologies such as software, algorithms, and AI, and if not, what additional capability or resources do those agencies need?

*Mr. Shen. Yeah, thank you for the question, Congresswoman. I think as you correctly pointed out, you know, we work very closely with the FDA and CMS to try to bring forth these new and emerging technologies and make sure that they get into the hands of providers and the patients themselves. Where we are seeing the challenge here is unfortunately specifically around CMS and the reimbursement associated with artificial intelligence.

Today, unfortunately, there is inconsistency and _ in terms of how this technology is being reimbursed, and that inconsistency and uncertainty translates to providers being unsure whether they should make the investment in artificial

intelligence, not knowing whether they will actually get reimbursement or not for this. So we see this as actually inhibiting and creating a bit of an adoption problem and preventing the patients from ultimately benefitting from this technology.

So we would love to see opportunities where working with this committee here, trying to figure out a better way to work with CMS to maybe establish some sort of payment that allows the different providers to move forward with investing in artificial intelligence and helping everybody understand what the true value of this technology is.

*Mrs. Trahan. Great, thank you. I couldn't agree more.

And while there is warranted skepticism around the use of AI in healthcare, you know, we are all excited for increased applications of AI and how they will positively impact patient outcomes. Dr. Longhurst, how are we already seeing AI used to enhance progress to treat diseases with no known cure like Alzheimer's and MS? Oh, I looked up. Where did he go? Did _ can anyone else answer that?

*Dr. Newman-Toker. Dr. Longhurst had to step away. I will _ as the neurologist on the panel, I will take _ I will

field that one.

I think there is tremendous potential for AI to do early detection of disease, chronic disease in particular such as Alzheimer's disease. You can imagine if we can make diagnoses 10 years in advance through information coming out of wearables or eye movement analysis, we will be able to then apply early preventative therapy. So I think there is a lot of potential there.

*Mrs. Trahan. Well, thank you, Dr. Newman-Toker. We appreciate _ Mr. Chair, I yield back.

*Mr. Guthrie. The gentlelady yields back. The chair recognizes the gentleman from Georgia, Mr. Carter, for five minutes.

*Mr. Carter. Thank you, Mr. Chairman, and thank all of you for being here. This is obviously a very hot subject on Capitol Hill, artificial intelligence, and particularly in the healthcare world. We are very concerned about it.

And look, I am a big believer in telehealth. I represent a rural area and I have seen how it has benefited us in the rural areas. As you know _ all of you know that we have got a doctor shortage here in America, particularly in

our rural areas. Telehealth has been a great savior for us.

I have always said that there is a big difference between knowing something and realizing something, and during the pandemic I think we realized just how important telehealth can be. I think there was a article in the paper, in the New York Times, that said that telehealth had advanced more in one day than it had in the last 10 years, and it probably has. So I want to kind of focus on telehealth here.

Dr. Nguyen, can you talk about how Transcarent is using AI within your telehealth solution and how that is allowing your doctors to be more efficient with their time so that they can see more patients?

*Dr. Nguyen. Certainly, Congressman. Thank you for the question. I think it has been repeated on this panel, a common refrain you will hear is that a very important benefit of AI is enabling the doctors and nurses to do the doctoring and the nursing. What Transcarent does, right, is we really believe in freeing up the time of the doctor to spend with the patient and reducing the time required for administrative burden.

So the way we use AI is in our clinic when a patient

comes to the clinic, an AI assistant gathers information from them and synthesizes that information for the doctors. That enables the doctors to come into the visit and see all the information organized and spend time on that diagnosis and that treatment and really creating the plan with the patient, right? That frees up time and that frees up capacity to see more patients, including patients in rural areas, since we serve 4.4 million Americans across the entire United States.

*Mr. Carter. Right. Good.

Mr. Shen, let me ask you, I have heard that sometimes there is bias in AI and that that can actually be good. That is somewhat baffling to me, but nevertheless, can you explain to me how that might be and how bias can sometimes help improve the utility of AI in healthcare?

*Mr. Shen. Yeah, that is an interesting question, Congressman. So I think what is very important here to make sure that we all emphasize is that as we train these AI algorithms, these algorithms have to be trained with data that is respective of the patient population that they are going to be serving, so it is important that we work with our different clinical collaborators to find the right type of

patient data to train these AI algorithms, again, that are going to be applied towards that patient population and making sure that that patient population is reflected in the data that is actually training those algorithms themselves.

*Mr. Carter. Okay. All right, I have got one last question, and I _ and it is kind of for all of you or any of you, if you will, and that is we have a Doctor's Caucus here in Congress, and I am a healthcare professional, a pharmacist by profession, and I have served in the state legislature on healthcare, and one of the things that I notice is that a lot of our healthcare costs have increased because of defensive medicine and doctors running unnecessary lab tests just really to protect themselves from litigious patients or situations.

But how is that going to impact the practice of medicine if a physician doesn't use AI and then something happens and then, you know, all of the sudden they are sued because you didn't use something that was available that you should have used? It seems to me like this could potentially increase healthcare costs as well. I see the savings, yes, but I have also seen and tried to deal with it on a state level and now

on the federal level. And I will open it up, whoever wants to comment, go ahead.

*Dr. Schlosser. I will take a stab. So I think that we need to remind ourselves that healthcare decisions are made by physicians and practitioners, right? They should be the ultimate decider when it comes to coverage, when it comes to do you need to be admitted to the hospital, what treatment do you need. These need to be made by our trained healthcare physicians. AI is _

*Mr. Carter. But you are a healthcare professional.

*Dr. Schlosser. I am.

*Mr. Carter. You are not a lawyer.

*Dr. Schlosser. I am.

*Mr. Carter. And I am _ you know, I got to feel like from a lawyer's perspective, they are going to take a different approach.

*Dr. Schlosser. Well, but that is why I think it is important that we understand that as a community, as an industry that we are not turning over decision making. These are tools. These are tools in their toolbelt that _ and we need to view them as such, not as an authoritative decision

that, you know, that someone should be held accountable to.

*Mr. Carter. Anyone else quickly?

*Dr. Newman-Toker. I will just say that if we can prove that AI systems save lives, then people should be using them, and if we can't, then we should be relying on clinician judgment. And I think that ultimately _

*Mr. Carter. I don't know that we will ever get away from relying on clinician judgment, though.

*Dr. Newman-Toker. I agree with you. I think that it is unlikely, certainly in my lifetime.

*Mr. Carter. Right. Good. Okay, thank you.

And I yield back, Mr. Chairman.

*Mr. Guthrie. The gentleman yields back. The chair recognizes the gentleman from Indiana, Mr. Pence, for five minutes.

*Mr. Pence. Thank you, Chair Guthrie and Ranking Member Eshoo, and thank you to the panel for being here today.

Incorporating AI technologies into healthcare systems may improve and streamline diagnosis and treatment options in addition to easing the administration burden at healthcare facilities. Patients' personal medical data and background

information, however, is typically the foundation of AI delivery in healthcare. The trust and safeguarding of personal information between patients and their providers is critical for people receiving the highest quality of care.

In the ecosystem of electronic apps and wearables, there are areas where healthcare data is not clearly protected. I had a hospital in my district in Hancock County that was on 60 Minutes a number of years ago. That is why this committee needs to consider a federal data policy law to set the foundation of protections on how such data is collected, used, and shared. We should do that before we can look at regulating AI in healthcare and find the balance in simultaneously encouraging private innovation.

Our increasingly digital world leaves Hoosiers and all Americans in the dark about who has access to their information. It is alarming to me how little consumers and patients know about how personal details of their lives are collected, shared with third parties, and monetized without their informed consent, monetized no _ with no recompense to the provider of the information. Patient trust in those responsible for safeguarding personal data is paramount in

the use of emerging technologies in healthcare.

Dr. Schlosser, as we introduce new AI technologies in healthcare, patients deserve to have control over when their information is collected, who has access to their data, the right to remove their data, and where their data might be shared. Here is the question. Should healthcare organizations that collect protected medical information be transparent with patients on how their data is stored, who has access to their data, and for today's hearing, identifying that AI is part of the process?

*Dr. Schlosser. Yes. So I would agree with everything that you just said. I think we fully support the idea that we should be transparent with our patients, and we currently are through a rigorous consent process as to how the data is being used, how it is being protected, and how it may be stored and shared. And I think as the use of AI expands, that will become increasingly important so patients can know where that data is going and how it might be used.

I will just add that AI is entirely dependent on the data, and so if we want the benefits of AI, we also have to do this in a way that enables us to use that data to train

and finetune algorithms. So there is a really important balance we need to strike here ensuring that we are transparent and we keep the patient's data private but we don't create too many barriers to actually using that data to train algorithms to achieve all these wonderful outcomes we have been talking about.

*Mr. Pence. Yeah. And, you know, the _ it comes to mind back in a previous life of mine, you know, it is garbage in and garbage out, right?

*Dr. Schlosser. Mm-hmm.

*Mr. Pence. I mean, the wrong algorithm or the wrong collection point of the data can skew the outcome in a big way. In finance, we used to say you can pay off the national debt with the wrong numbers.

Would anyone else like to answer that? Yes, sir.

*Dr. Longhurst. Yeah, I appreciate your question very much. I think that as Dr. Schlosser has said, your AI strategy is your data strategy. I would point out that within the ecosystem of treatment, payment, and operations, all of us, health systems, providers, insurance companies are covered by HIPAA laws around data privacy. And where I think

the greater risk lies is with these consumer health apps and others that are accessing data either directly from patients, from health systems with patient consent via the 21st Century Cares Act, and other mechanisms.

And I think you are absolutely right, there is a lot of healthcare data floating around that is not subject to HIPAA today because of these mechanisms, and so I think it is a risk and something that should be looked at legislatively.

*Mr. Pence. And your concern is that that would go into AI computation, is that what you are referring to?

*Dr. Longhurst. I think there is a number of risks to those datasets being used either to generate algorithms without transparency or to target for advertising other types of uses to patients without their awareness.

*Mr. Pence. Yeah. I go to the doctor, and I Googled all the answers, right? So, yeah. Okay, thank you very much.

Mr. Chair, I yield back.

*Mr. Guthrie. The gentleman yields. Dr. Joyce is recognized for five minutes for questions.

*Mr. Joyce. Thank you, Chairman Guthrie and Ranking

Member Eshoo, for holding today's hearing, and to the witnesses being with us today, we appreciate both your time and your testimony.

Artificial intelligence has made a significant impact on our day-to-day lives and the benefits that industries and individuals derive through its use are very, very numerous. As this technology continues to explode onto the scene, it has become especially prevalent in healthcare. But like many industries where AI is seeing a dramatic increase in usage, there are and there will be certain risks associated with it that we must contend with as policymakers.

While that should not demean the potential efficacy of its day-to-day uses, applications, and functions, AI remains a tool, a tool that utilizes vast amounts of data, and with its integration into healthcare space, we must be vigilant to ensure that sensitive patient information is safe, is secure, and is protected. As we move forward, Congress must have that unique task of analyzing and further understanding AI's evolution and applicability when it comes to healthcare.

While President Biden's executive order on artificial intelligence might lay out the administration's policy

initiatives, it is still the responsibility of Congress to legislate. It is paramount that Congress has a firm grasp and a clear comprehension on how AI interacts with existing regulations so that we can ensure AI first does no harm but instead continues to positively reshape the healthcare industry.

Dr. Nguyen, patients that live in rural areas, like the district that I represent in Pennsylvania, often face barriers that impeded their access to healthcare. Do you believe that AI has the potential to quash those impediments, and if so, how can we incentivize further adoption of AI technologies?

*Dr. Nguyen. Thank you for the question, Congressman. Absolutely. You know, the distribution of care to rural areas and the barriers to access are well-known and great. AI can quash those barriers and really close those gaps in a few different ways.

First, you know, there is always a supply and demand problem when you think about distribution of resources across rural areas. Making clinicians more efficient, right, making clinicians more available means that there are more

clinicians available to see those patients in rural areas.

Two, many of the barriers come also from a lack of health literacy, a lack of access, right, to the healthcare system. AI also can help patients in rural areas level the playing field, right, by assisting them in better understanding their care, better navigating the care system, and better understanding how to find the best care for themselves.

The incentives, right, that Congress can encourage, right, include the development and education of AI skillsets across the healthcare system but specifically in the clinicians who are going to practice in rural areas and the healthcare leaders who are going to lead systems in rural areas. That education is very, very important, as I mentioned in my statement, it doesn't come naturally to many of our institutions, but it is _

*Mr. Joyce. Thank you.

Dr. Schlosser, welcome to another Johns Hopkins-trained physician. I took that to Congress; you took that another direction.

The FDA has been regulating some forms of AI under

existing authorities for drugs and biologics as well as medical devices. Do you think that the current regulatory structure is sufficient to keep up with the innovation in AI's uses in healthcare?

*Dr. Schlosser. Yes, and thank you for the question. I actually have some experience, I was a medical officer for the FDA a number of years ago, and I would say that the rate at which AI is changing healthcare is likely going to require us to think a little bit differently about how we regulate medical devices. The current approach, which really is based on laws from 1974, I think never really anticipated the kind of technology we are talking about. So dealing with models that can learn over time is something that we are going to have to work together I think to figure out what that regulatory pathway looks like.

This is _ there is incredible potential here, but I feel the movement and the progress of AI is a little bit outpacing the current regulatory approach.

*Mr. Joyce. Thank you.

And, Chairman Guthrie, briefly before I yield, I ask unanimous consent to enter into the record a letter of

support from the American College of Surgeons.

*Mr. Guthrie. Seeing no objection, so ordered.

[The information follows:]

**********COMMITTEE INSERT**********

*Mr. Joyce. Thank you. And again thank you to the witnesses for being here, and I yield.

*Mr. Guthrie. Thank you. The gentleman yields back. The chair recognizes the gentlelady from Tennessee, Mrs. Harshbarger, for five minutes for questions.

*Mrs. Harshbarger. Thank you, Mr. Chairman. Thank you all for being here. I have heard a couple of you speak before. This is really interesting stuff.

And I will start with you, Dr. Schlosser, since you are from Tennessee or HCA. Let's just talk about the pharmaceutical supply chain, and it can be very difficult and complex to trace, and as a pharmacist I am responsible for knowing every step in that process from the _ in the supply chain from the manufacturer to the dispensing of the drug because of the pedigree. How can AI be used to help pharmacists in their role optimizing medication used in patient health outcomes and improve _ providing patient care, how can we use that and hopefully we can be reimbursed for that?

*Dr. Schlosser. Yeah. Well, thank you, Congresswoman, for the question. And I think there is tremendous

opportunity. We actually already use varieties of artificial intelligence in our pharmacy processes, and we have actually done this for years. We have heuristic models, which are basically rules-based models that are constantly surveilling patient charts looking for opportunities that they can serve up to the pharmacist, be they drug interactions, or substitutions, or places where we can be more efficient or provide more effective treatment. And so I think those models are only going to improve and get better with the advent of these more advanced artificial intelligent algorithms.

I think the same is true for our pharmacy supply chains. And we have mentioned this already today, but the ability to get predictive in understanding the demands and needs of our patients on a hospital or even unit basis and then be able to go back up upstream and ensure that we have the adequate supply to meet those demands, and if we don't, can we make kind of preemptive steps to ensure that we can maintain adequate supplies is another area that we are already working on and I think there will be great benefit.

*Mrs. Harshbarger. Very good. You have already told us

about how HCA, the hospital system, sees value in the adoption of AI technologies without even additional payment in that, and you have talked to us about removing the administrative burden, and it is reduction of time spent that does not involve direct patient care. So this is my question, and this is your chance to tell me what to do.

What recommendations do you have for this committee in creating payment models in AI for healthcare services, application, and add-ons?

*Dr. Schlosser. Yeah. And some of my panelists have had a chance to weigh on this already today. I do think as this technology advances and it becomes more _ a meaningful and central part of healthcare delivery that CMS is going to have to fund an approach to reimburse for this technology. And in my personal opinion, it is not that different than the initial approaches they tried to take around chronic disease management of how do you reimburse for sort of the ongoing work that in this case an algorithm would do to help prevent complications, to help reduce costs.

The last comment I want to make here is that I think we have a great opportunity with AI since we are at the

beginning is to take a really a business case minded approach to how we _

*Mrs. Harshbarger. Yeah.

*Dr. Schlosser. _ deploy this technology and not have it just be another technology that we deploy that adds more cost and then we try to add more reimbursement and therefore drive up the cost of the healthcare system, but instead be really thoughtful about how can these technologies make us more efficient and more effective and decrease the overall cost of the healthcare system as we deploy them.

*Mrs. Harshbarger. Well, we are going to have to. So you will continue to exist.

Dr. Longhurst, how do you think AI and medical liability intersect?

*Dr. Longhurst. Fantastic question, thank you.

*Mrs. Harshbarger. Mm-hmm.

*Dr. Longhurst. As was previously mentioned on this, AI is a tool, whether it is being used for diagnosis, or treatment options, or others, ultimately the liability for treatment of the patient rests with the treating physician.

*Mrs. Harshbarger. Yeah.

*Dr. Longhurst. And so we have had perhaps not AI tools for a long time, but we have certainly had clinical decision support tools for a long time that suggest potential drug/drug interactions, or dose range errors and other things, and the liability has always rested with the treating clinician to see these alerts, manage them, but make the best decision for the patient. So I think the real question about liability in AI comes if you take the human out of the loop.

*Mrs. Harshbarger. Right.

*Dr. Longhurst. If there is a step that is taken towards making diagnoses without clinicians, then it begs all sorts of other questions about licensing these tools.

*Mrs. Harshbarger. Yeah, exactly. Do you see a scenario where litigation might increase if doctors don't utilize AI?

*Dr. Longhurst. That is a fantastic question as well. In fact, a recent Boston Globe survey of patients asked would you see a doctor that was not using AI, and the _

*Mrs. Harshbarger. Really?

*Dr. Longhurst. _ predominant answer from patients was I would be concerned if my doctors was not using the latest

tools.

*Mrs. Harshbarger. Okay.

*Dr. Longhurst. So I think as was recently described by Dr. Newman-Toker, if these tools are shown to be best practice, if they can decrease mortality, if they can increase survivorship, then they will become a best practice that should be used in every case.

*Mrs. Harshbarger. Okay. Thank you, sir.

And I think I am out of time, so I yield back.

*Mr. Guthrie. Thank you. The gentlelady yields back. The chair recognizes the gentlelady from Iowa, Dr. Miller-Meeks, for five minutes for questions.

*Mrs. Miller-Meeks. Well, thank you very much, and I just want to add in my own personal experience with electronic health records as a doctor, and it is much more than two hours of my time after seeing 30 to _ 35 to 40 patients in a day. Just as an example, on a global post-op no charge, after I finish completing my medical record, it took an additional six clicks to put in no charge. Now it takes me 10 seconds to write N-C. It took two minutes to six clicks to no charge, so it certainly does lead to burnout.

I would also like to follow-up on something Dr. Longhurst said and then also Dr. Schlosser. And certainly the FDA has not kept up with medical devices utilizing artificial intelligence, not only generative but repetitive machine learning, and at the University of Iowa, Dr. Michael Abramoff, MD, PhD, has one of those first medical devices that is approved by the FDA.

And then I would like to submit for the record an article on "Effectiveness of Artificial Intelligence Screening in Preventing Vision Loss from Diabetes, a Policy Model.'' And then that would lead to reimbursement. And what is great about this is that it increases access by having a device that can be put into any person's office, whether it is an eye care provider or family practitioner.

And then the second letter is a letter of support from Johnson & Johnson that does talk about privacy, equity, bias, and transparency in the system since those things have been brought up.

*Mr. Guthrie. Thank you. We will _ we are going to accept a documents list at the end. We will make sure those are included and give the _ my friend here a chance to

review. Thanks.

*Mrs. Miller-Meeks. I know I did it first because I am older, and I forget things.

So, Mr. Shen, we have heard a lot about AI over the past few years and the potential risks attributed to unregulated AI integration. However, the FDA has been regulating software-based medical products since the 1970s and we know that AI integration into healthcare has already raised the status quo of care. We have seen it in digital pathology, drug optimization, integration in patient engagement, personalized risk prediction. Can you give examples where gaps exist in current regulation that Congress can address to ensure continued innovation that will drive better, more personalized care for patients without burdensome overregulation?

*Mr. Shen. Yeah. Thank you for the question, Congresswoman. I think what we are seeing with the FDA, and we continue to work very closely with the FDA to try to make sure that they stay current with the rapidly changing technologies that are there. I think the challenge that we are seeing is that, and it was acknowledged here on this

panel today, is really how artificial intelligence continues to change, and what becomes an AI algorithm today might be a different AI algorithm tomorrow or might need to be adjusted or increased in terms of accuracy or whatnot after it is being used in the clinical setting.

So I think this is where areas like PCCP that we had worked on here with this committee previously, these are all important aspects that the FDA needs to consider and actually not _ and not water it down in terms of its ability because that actually then will inhibit us from being able to continue to develop and innovate in this particular area.

*Mrs. Miller-Meeks. Thank you.

Dr. Schlosser, many hospitals and hospital systems are facing significant staff shortages. We are seeing AI as a meaningful tool to help alleviate some of the administrative burdens that are driving providers away from the medical profession. A recent report from Goldman Sachs notes that shifts in workflows triggered by these advances could expose the equivalent of 300 million full-time jobs to automation.

What steps can Congress take to facilitate better AI integration to health systems to streamline processes that

will allow healthcare professionals to focus more on patients and less on billing, coding, et cetera?

*Dr. Schlosser. That is a great question, Congresswoman, thank you. And I think this is incredibly important that we do streamline our ability to use AI to tackle this serious workforce problem that we have that is only going to continue to get bigger. We think the gap between supply and demand for nurses alone is going to continue to increase over the next decade.

And so I would say the easy answer is let's not put too many burdensome regulations between us and our ability to deploy AI to support our healthcare workforce. We are not talking about AI directly influencing patients or providing diagnoses, we are talking about it removing administrative burden. That is an area with the right responsible AI platforms, we should be able to move quickly to adopt those technologies and free up that workforce to handle this increasing demand.

*Mrs. Miller-Meeks. Well, thank you. And I saw Dr. Nguyen and Dr. Longhurst shaking their heads, so I think that you are in agreement. And since I am running out of time, I

have got another question I will submit for the record.

And with that, I yield back my time. Thank you so much.

*Mr. Guthrie. Thank you. The gentlelady yields back. And if you will give us those documents you submitted for the record so we can review those, I would appreciate it.

The chair now recognizes the gentleman from California, Mr. Obernolte, for five minutes.

*Mr. Obernolte. Thank you, Mr. Chair. Thank you to our witnesses. It has been a really interesting hearing.

Mr. Shen, I wanted to ask you about some of your interactions with the FDA because we are really at a crossroads when it comes to devising a regulatory framework for artificial intelligence. We can either follow the lead of entities like the European Union who believe that AI is its own kind of unique discipline and that there needs to be a separate bureaucracy spun up to issue licenses with respect to the use of AI or we can follow the lead of countries like the UK who has pointed out that because the risk of AI is so contextual that the existing sectoral authorities are best equipped to regulate within their sectoral spaces with a bunch of technical help and resource.

So I was curious, I mean, we are _ we have to choose, right? That is _ we are at a crossroads. We have _ we can go one way or the other way, there is really no middle ground. Which of those two paths do you think we should follow? Is it easier to teach the FDA what it doesn't know about AI or is it easier to teach a brand new agency everything the FDA already knows about ensuring patient safety?

*Mr. Shen. Yeah. Very good question, Congressman. I think certainly this is a tricky topic, but I think what we have to remember is that at least in our industry from a vendor perspective, we have been working closely with the FDA for many, many years here, and we work _ at Siemens Healthineers, we have direct dialogues with them around this topic on a weekly basis.

I think the other thing that is important to remind ourselves here, especially in the context of artificial intelligence is that AI is not _ can't not just be considered as a separate type of technology, but this technology is also being embedded into the medical devices themselves as well. So, for instance, you know, CT scanners or MRI scanners, they

have AI that is built in there into that system that allows for better image quality or faster exams for the patients. So a lot of benefits to the patient are happening already with the AI technology built into the medical devices themselves.

So we have to consider that, especially when we consider how we want to move forward with the FDA.

*Mr. Obernolte. Right. I think that is a good point. I also am heartened by your comment that you feel the existing regulatory relationship with the FDA is doing a good job at both ensuring patient safety and catalyzing innovation and so, I mean, I think that is a pretty powerful argument, you know, for maintaining that relationship and empowering the FDA to regulate in that space.

Dr. Newman-Toker, thank you very much for your testimony. You said something that I found incredibly interesting. You said that the best that we can expect from AI is that it repeat the existing human biases that exist in the data it was trained with. And I found that a fascinating statement.

I mean, I don't like the use of the word bias because it

is a very human word and when you apply it to a machine learning algorithm, and there is no such thing as bias, they are all biased. I mean, machine learning is all about bias because you are training it to generalize, you know, and we call that bias when we talk about kind of maintaining our social standards, you know, when we say, for example, it would be wrong to consider someone's race when making a hiring decision. We can all agree that that is true, but that also means scrubbing the data that we use to train AI that makes those recommendation for things that can be used as proxies for race, and that is the difficulty that we have had so far.

So you were talking about how important it is in the medical context of maintaining high quality datasets to avoid those kinds of biases. How do we ethically navigate this space of patient consent? You know, if you have a chest x-ray, and I think it was Dr. Longhurst that was talking about detecting COVID pneumonia from a chest x-ray, you know, if you were a patient, you come in, you get a chest x-ray, you have not consented for the use of that x-ray to be used to train a machine learning algorithm.

You know, do you do have the rate to say, no, I don't want my data used? And if you do, I mean, the problem is that is introducing bias into the algorithm because, you know, from a statistical sense, you are biasing the outcome of the algorithm because who knows what else the group of people who would withhold consent have in common, right? So a statistician would say that is a serious problem, so how do we navigate that space, how do we protect the patient data and at the same time avoid biasing these algorithms?

*Dr. Newman-Toker. Thank you, Congressman, that is a great question. So, you know, I come from the world of clinical research where there is always the opportunity to refuse to participate, and I am generally of the mind that that should always be the case, that if patients wish to opt out, they do. It does create a certain bias, there is a volunteer bias, of those who want to participate, but I think that is a bias we can accept.

As far as the issue of the replicating the sort of human biases, as I mentioned in my testimony, I believe that we have _ they exist at two different levels, but the most important piece is where our biases are causing us to behave

differently as clinicians. So if I don't order the same test in a black patient that I order in a white patient for the same circumstance and the same condition and the same appropriateness, that is the kind of bias that I don't want to replicate in my AI systems, and I think that is why well-curated gold standard datasets are so critical.

*Mr. Obernolte. Yeah. Well, I would agree. And I am an AI optimist, so I would actually argue against your statement, you know, that the best we can expect is the replication of existing biases. I think it is a golden opportunity to remove the biases.

Well, I see I am out of time, but thank you very much for your testimony.

*Mr. Guthrie. Thank you.

*Mr. Obernolte. I yield back, Mr. Chairman.

*Mr. Guthrie. Thank you. The gentleman yields back. We now have a vote on the floor, but we only have one member left to ask questions, so we are going to hopefully be able to complete this now. But _ now _ so we will get started on that.

The next member to speak is the gentleman from Texas,

Mr. Crenshaw, for five minutes.

*Mr. Crenshaw. Thank you, Mr. Chairman. I am glad we are doing this hearing. I think we need a lot more hearings on AI on multiple subjects, I think, and healthcare _ the utilization of AI in healthcare might be the least of our worries.

I also worry that we are not always talking about this in a accurate way. We are not properly differentiating between advanced algorithms and AI. We are just saying AI. And that is not from our witnesses, that is just for every _ that is for Congress, that is for America. If we are going to properly regulate it, and I am going to ask you what you guys mean by that, a few of you have said we need to properly regulate it, I am genuinely curious how and what we do.

But we have to talk about it accurately first. We mean machine learning. And we mean machine learning that you can't actually look under the hood and change. That is where it gets scary. If we are talking about advanced algorithms, look, people call _ Facebook and Instagram listen and watch my actions and they make predictive analysis based on that. I have heard that used in _ like today and called it AI. It

is not AI.

You can change that algorithm. You can change how that works. Programmers can go in there and change it. AI you cannot change. You cannot look under the hood. And so I think we just need to be really accurate about what we mean by AI.

AI is meant to mimic a person, and that can be really amazing, especially for healthcare. And so I think things we have to talk about is well what data inputs go into that machine learning. Is it everything? That is how you get ChatGPT. And what kind of person is it mimicking, a good person or a bad person? This stuff gets really scary really fast.

When we are talking about healthcare, it seems kind of obvious that you are going to limit the data inputs. Does that need to be a law? Is that one of the regulations that you all are talking about?

So actually I am going to stop there and ask you, a couple of you said that we need to regulate it, but I am curious what you mean by that. Dr. Newman-Toker, maybe you can start because I know you said that.

*Dr. Newman-Toker. Sure. Thanks very much. I think your question is very pertinent, Congressman. In terms of regulatory oversight, I do think that there are certain gaps with respect in particular to diagnosis in this AI space. So I believe that, for example, if we think about direct to patient symptom checkers for diagnosis where there is a legal disclaimer at the bottom that says this is not medical advice, but patients are taking it as medical advice, that it is really incumbent upon us to pay more attention to that consumer health space, as has been brought up previously.

*Mr. Crenshaw. So kind of like a digital watermark almost? Like I have talked about that before with respect to AI, like it should be known that whatever this output is is from AI and not a person.

*Dr. Newman-Toker. Right. Not just that, but when people are making decisions about how to _ how and when to access the healthcare system, and it is based upon some kind of algorithmic decision making that is behind the scenes, there should be an accountability if _ in that framework, and right now there isn't any accountability to everything that exists outside the proper confines of say the hospital

setting or a clinic. Before you get to the healthcare system, there is a lot going on that is _ that we need to regulate better.

*Mr. Crenshaw. Can you give me an example of what you mean by that?

*Dr. Newman-Toker. Yeah. So let's say that somebody types into their symptom checker that they are dizzy, and the symptom checker says, don't worry, it is nothing, it is little rock crystals in your ear and _

*Mr. Crenshaw. Okay.

*Dr. Newman-Toker. _ you can stay home.

*Mr. Crenshaw. This is hypothetical, by the way, or is it not hypothetical? Is there something _

*Dr. Newman-Toker. No, it is not hypothetical actually.

*Mr. Crenshaw. Okay.

*Dr. Newman-Toker. There are a lot of symptom checkers that are out there, they have been studied _

*Mr. Crenshaw. Got it, okay.

*Dr. Newman-Toker. _ pretty significantly, and they have been looked at, and their accuracy is often quite low.

*Mr. Crenshaw. And these are just websites I can go to?

*Dr. Newman-Toker. Yes.

*Mr. Crenshaw. They are not FDA regulated?

*Dr. Newman-Toker. Correct.

*Mr. Crenshaw. Okay.

*Dr. Newman-Toker. And what essential happens is that at the bottom there is a legal disclaimer that essentially says _

*Mr. Crenshaw. Yeah.

*Dr. Newman-Toker. _ this is just a toy.

*Mr. Crenshaw. Yeah.

*Dr. Newman-Toker. If you want real medical advice, ask your medical professional. But that is not how patients are dealing with that. And I do think that some of those decision making, you may have a stroke that is causing your dizziness, and if you need to be sent to the emergency department but this system, this AI system that is out there unregulated, is saying to you, don't worry, just say home, that is a real risk to the public health.

*Mr. Crenshaw. I think there is broad agreement here that we would never want AI to operate independently _ maybe not never, right, we might be in Star Trek mode at some point

but like for _ definitely for foreseeable future that you would always have a doctor's blessing, even _ because there is amazing things that can happen. We are seeing this technology coming out of China, unfortunately, and this gets to a competition problem, too, if we are going to over-regulate things, but it is apparently diagnosing pancreatic cancer at 99 percent success rates. Like, whoa, that is amazing.

Now a doctor should still look at that after the fact and be like, yeah, that is pancreatic cancer, but there are just amazing things that we can do with this technology. There is also amazing risks that can happen, especially when we are talking about that more generalized, you know, generative AI, which is basically mimicking a person.

And again, the question we _ Congress has to ask itself, whether it is healthcare or any other conversation about AI, is what kind of person is it mimicking. We don't know the answers to that, and we have not talked about it enough in this Congress, so I am glad we are doing this hearing. And I yield back.

*Mr. Guthrie. Thank you. The gentleman yields back.

And that concludes all members present for questions, and we thank our witnesses for being here.

But before we gavel out, I want _ we have a _ the documents for the record that some members have asked for and some others that have been submitted. And I ask unanimous consent to insert in the record the documents included on the staff hearing documents list.

*Ms. Eshoo. No objection.

*Mr. Guthrie. Without objection, that will be an order.

[The information follows:]

**********COMMITTEE INSERT**********

*Mr. Guthrie. And I will remind members that some said they were going to submit questions to you. They have 10 business days to submit questions for the record, and we ask that the witnesses respond to the questions promptly. And members should submit their question by the close of business on December the 13th.

And again, we appreciate every one of you being here and your time. This is something we are still _ as you _ very curious and a lot _ very engaged members and want to understand it and working to understand it so we can act appropriately without _ to protect but without impinging the great things that could come from this. So that is what we are focused on, and again I appreciate it.

And without objection, the subcommittee is adjourned.

[Whereupon, at 1:36 p.m., the subcommittee was adjourned.]