October 30, 2023

Senator Chuck Schumer
Majority Leader, U.S. Senate
322 Hart Senate Office Building
Washington, D.C. 20510

Submitted Electronically via AI_Insight_Forums@schumer.senate.gov.

Re: AI Insight Forum Written Statement for Seth Hain, Senior Vice President of R&D, Epic

Majority Leader Schumer; Senators Rounds, Heinrich, and Young; and distinguished Senators: thank you for the opportunity to speak with you today. My name is Seth Hain, and I am a Senior Vice President of Research & Development at Epic, a global healthcare technology company. Founded in 1979, Epic works with hospitals and clinics in every state across the nation providing an integrated software suite to manage both clinical care and back-office operations. We contribute to medical research through our work with the top-ranked academic hospitals in the country and improve health equity for patients at rural, critical access hospitals and federally qualified health centers. Our patient portal, MyChart, puts medical records in the pockets of patients, enhancing medical literacy, communication, and, most importantly, wellness. Over the years, we have been the founding member of multiple interoperability initiatives; we pursue the exchange of data to improve patient health because our software is designed with the patient at the heart.

As you are aware, the healthcare industry is facing many workforce challenges today. Health systems have experienced shortages for the last few years which are only continuing to grow. In one 2022 survey, 87% of nurses said they had felt burnt out in the past year;[1] in another, 52% said they were considering leaving their position.[2] These pressures will only increase in the coming years as more nurses reach retirement age; in 2020 the average age for an RN was 52 years.[3] Doctors face similar shortages, with the Health Resources & Services Administration concluding that the U.S. needs more than 17,000 more primary care practitioners.[4] These staffing shortages coincide with an aging population increasing the need for medical care around the country.

At Epic, we are addressing this challenge by incorporating generative artificial intelligence into high-reward, low-risk workflows to improve clinical efficiency. To maintain this important momentum, we propose a legislative framework that emphasizes two fundamental values in healthcare: (1) preserve and enhance the patient-physician relationship and (2) advance the health and wellbeing of our country while ensuring trust in the underlying technologies that help get us there.

Artificial intelligence in healthcare is not new to Epic; there are over one thousand AI models live across organizations using our software already. Epic has a robust review process, grounded in ethics and in collaboration with our customers, to ensure that our AI features are safe and trustworthy. 416 organizations in the Epic community use predictive models, with at least 49 using their own custom models built on our platform. For example, Stanford recently implemented a deterioration index AI model, a predictive algorithm to proactively identify patients at risk of significant declines in their clinical stability, that helped reduce deterioration events by 20%. For this work and more, they were awarded the prestigious HIMSS Davies Award of Excellence.[5]

[1] Gaines, K. (2022, January 26). What's Really Behind the Nursing Shortage? 1,500 Nurses Share Their Stories. Nurse.org.
[2] American Nurses Foundation. (2022, March 1). Pulse on the Nation's Nurses Survey Series: COVID-19 Two-Year Impact Assessment Survey.
[3] Rosseter, R. (2022, October). Fact Sheet: Nursing Shortage. American Association of Colleges of Nursing.
[4] Howard, J. (2023, May 16). Concern grows around US health-care workforce shortage: 'We don't have enough doctors'. CNN Health.
[5] Hendry, C. (2023, August 14). Stanford Medicine wins HIMSS Davies Award of Excellence. Stanford Medicine News.

Embedding generative AI into Epic software presents novel, effective opportunities for increasing the efficiency of the software, helping save time and money for clinicians while improving care delivery for patients and addressing the challenges faced by the healthcare industry. The integration of AI directly into existing workflows also reduces the cognitive burden on clinicians, helping them focus on the patient. This approach reduces the risk of generative AI by suggesting content for the clinician—for example, drafting text or creating a summary—directly in the context of the workflow, without any need for the user to interact directly with the underlying generative AI technology.

Our first use of generative AI was in the context of MyChart, which patients can use to send messages to their clinicians on an assortment of topics, a feature that has long been regarded as enhancing patient access to care and making communication more efficient. During the COVID-19 pandemic, healthcare organizations saw significant growth in the volume of patient messages providers were receiving, rising to 157% of the pre-pandemic average.[6] While our software empowers patients with better tools to communicate with physicians, providers need corresponding tools to keep up with the growing volume, which has remained elevated even as the pandemic has subsided.

Today when a clinician opens a message from a patient in our software, a draft response is included as well, written by generative AI. We ensure the provider remains ultimately responsible for the content by keeping them "in the loop" through design choices that require a clinician to always select whether to begin their editing on the suggested draft or start with a blank response. This feature, released earlier this year, has been rapidly adopted across the Epic community in the last few months and is proving to help clinicians significantly in three notable ways:

1. It saves them time by foraging the chart for relevant information and pre-fetching it for them to use in the response.
2. It combats writer's block. Over the course of a day, clinicians are constantly switching between different types of tasks and different patients needing care; having a message pre-drafted focuses the provider's attention on the case at hand, speeding up transition time and reducing cognitive load.
3. AI-drafted responses have been shown to include empathetic statements and provide additional context, drafting in a personal touch that clinicians have told us they appreciate but may not have prioritized on their own.[7]

For this feature, Epic did not train its own large language model, opting instead to partner across the industry to leverage one with established performance and safety characteristics. But we did deploy significant new development, building a secure, HIPAA-compliant framework around that model to carefully control what information was sent to it, how that information was used, and what types of drafts were displayed to the clinician. This allowed us to protect the privacy of our customers' patients while also eliminating the need for users to interact directly with an open-ended chatbot interface like ChatGPT. This approach enables rapid adoption and deployment, as well as easy upgrading or substitution of the generative AI components.

Today, 64 health systems are using at least one of our features that incorporates generative AI. Additional ways we are using generative AI to enhance clinical efficiency include:

- **Empowering patients with understandable information.** Our "translation" features will enable providers, with the click of a button, to simplify text filled with medical jargon to instead use patient-friendly terminology, and then further adjust the reading level to meet the needs of any specific patient. Especially for patients with lower education levels or a primary language other than English, an inability to adhere to recommended protocols and treatment plans can be a significant barrier to health equity. These features empower clinicians to better serve their patients without taking on significant extra workload in the process.

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[6] Holmgren, A. J., Downing, N. L., Tang, M., Sharp, C., Longhurst, C., & Huckman, R. S. (2022). Assessing the impact of the COVID-19 pandemic on clinician ambulatory electronic health record use. Journal of the American Medical Informatics Association, 29(3), 453–460.

[7] Ayers, J.W., Poliak, A., Dredze, M., Leas, E.C., Zhu, Z., Kelley, J.B., Faix, D.J., Goodman, A.M., Longhurst, C.A., Hogarth, M., Smith, D.M. (2023). Comparing Physician and Artificial Intelligence Chatbot Responses to Patient Questions Posted to a Public Social Media Forum. JAMA Internal Medicine, 183(6), 589-596.

- **Decreasing clinician documentation time.** In addition to the draft message responses described above, our “ambient listening” feature allows the provider to spend more time interacting with the patient and less time interacting with their computer. This feature enables the provider to record, with patient consent, the audio of an office visit and focus their full attention on the patient, knowing that artificial intelligence will generate a draft note summarizing the salient details. Over 30 of Epic’s customers already take advantage of this feature.
- **Decreasing clinician reading time.** An electronic health record (EHR) makes a lifetime of patient data available at a physician’s fingertips. Our “summarization” features use generative AI to distill the content of the EHR so a provider can get an at-a-glance understanding of what has changed with a patient since they were last seen. These summaries keep the clinician ultimately responsible for decision-making and “in the loop” by citing their sources in the chart and allowing the clinician to hover over a citation to see the full context from the medical record. While scientists don’t yet know whether it is possible to completely prevent large language models from occasionally generating fabrications—government-led fundamental research into these so-called “hallucinations” would help—there are things we can be and are doing now to be transparent with users when they are using AI, empower them to verify facts efficiently, and thus—whether they doubt a claim or simply want additional context—build trust with novel AI features.

As the Senate considers the foundational policy framework for AI use in healthcare, we recommend keeping two key considerations top of mind.

1. *The patient-physician relationship must be preserved and enhanced.* The current lack of regulatory clarity, including unclear lines of jurisdiction, is slowing the development, adoption, and use of AI in an industry that could significantly benefit from it. Existing regulatory agencies, feeling a responsibility to fulfill their mandates, risk issuing overlapping, contradictory requirements. For example, within HHS, recent final guidance from FDA and a proposed rule from ONC both address predictive models and rules-based clinical decision support. Such overlap can lead to confusion that stifles innovation. If the incorporation of generative AI into healthcare software is limited while increasingly powerful applications like ChatGPT and Bard become generally available to the public, patients may end up with better access to generative AI for healthcare than their clinicians have. Regulators could unintentionally disrupt the physician-patient relationship if clinician use cases are limited but patient use cases are not.
2. *We must advance the health and wellbeing of our country, while ensuring trust in the underlying technologies that help get us there.* Healthcare is different than other industries, so it deserves sector-specific regulation of AI. Any developer whose AI products may be used in healthcare should be subject to these same rules. Regulation also should be narrowly tailored to specific AI technologies and specific use case risk. Generative AI is a fundamentally different technology than predictive modeling, so characteristics of interest for one may not be relevant or useful for understanding the other. For example, training data for predictive models is narrow and often carefully curated, while training data for large language models must be extremely broad; transparency of training data may be useful for a predictive model but not for ChatGPT. This points to a need for a precise definition of AI but also sub-definitions for distinct technologies. Similarly, healthcare is a high-impact sector, but not all uses of AI within healthcare are high risk, and low-risk use cases should be regulated differently than high-risk ones. The government can help develop systematic measures of risk through fundamental research and consensus building.

The advent of generative AI has understandably raised questions about workforce displacement in the coming decades. In the healthcare industry, however, there is little risk of that. Rather, our industry needs AI and other technologies to help address the significant staffing shortages and continue to provide excellent care to our nation’s population. Thank you for your time and attention. I look forward to our discussion today and an ongoing dialogue.