



Written Testimony of Dr. Michael J. Schlosser

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The Use of Artificial Intelligence in Healthcare - Perspectives from HCA Healthcare

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Introduction

Thank you subcommittee Chairman Guthrie and Ranking Member Eshoo, as well as Chairwoman McMorris Rodgers, Ranking Member Pallone, and esteemed members of the health Subcommittee for inviting me to testify today. I am Dr. Michael Schlosser, Senior Vice President for Care Transformation and Innovation at HCA Healthcare. With a background in neurosurgery, hospital operations, and a deep involvement in healthcare technology, I am privileged to provide insights into the integration and impact of artificial intelligence (AI) in healthcare, reflecting on HCA Healthcare's experiences and initiatives. AI has the potential to transform healthcare delivery, creating a system that is more efficient and effective, and a better experience for care teams and their patients if deployed in a responsible and targeted manner.

HCA Healthcare's AI Journey

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 largely focused 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 an 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 effectiveness and safety. The stated goal of this program is to both govern and enable the use of AI across our organization – ensuring we use the technology responsibly, but also ensure we take full advantage of these innovations and the benefits they can provide to our care teams and patients.

Upholding Privacy and Security

Several decades of experience in protecting patient data has positioned us well to meet the challenge of deploying AI in a secure and private manner. In the realm of AI, our commitment to patient privacy and data security is paramount. Building on our extensive experience in managing patient data under HIPAA, we ensure that our AI applications adhere to these stringent standards. Patient data, and the output of any AI models that could include protected health information (PHI) about our patients, as well as the models themselves, are all protected in the same way. “Private and secure” are also key features of our Responsible AI program, ensuring each AI use case is rigorously evaluated for any risks it could create prior to development or deployment. Finally, we are deploying a new data architecture to support our AI agenda which focused on deidentified data sets as the primary source of training data. This allows for use of large data sets to develop models and advanced analytics without having to expose individual patient PHI.

A Human-Centric Approach to AI

In all our AI applications, we emphasize a human-in-the-loop approach. This ensures that while we leverage AI for efficiency and accuracy, we do not compromise on safety and responsibility. Human-in-the-loop models also allow for ongoing model improvement through direct feedback provided in workflow – the more the models are used, the better they become. An example of human-in-the-loop workflows is detailed below in the description of the nurse handoff tool, where the output of the tool is reviewed by the nurses caring for the patients before it is used as part of the handoff process. The review process allows for feedback to be provided directly in the nurse’s workflow so any errors would be caught and the process improved.

AI-Driven Clinical Decision Support

While we believe that using AI to aide clinical decision making in the form of intelligent decision support tools will be a powerful way to use these technologies, those use cases will require significant research and testing before they are safe to scale and thus we are not prioritizing these types of use cases currently and instead are focusing on using technology to support efficient and effective care delivery. Focusing on supporting clinicians in doing their jobs will also help us build trust in the technology which is critical for broad adoption. Below are three examples of AI technologies in development and use across HCA Healthcare today.

Key AI Initiatives at HCA Healthcare

1. **Enhancing Clinical Documentation:** In partnership with Augmedix, we have implemented an AI-driven system to assist with provider documentation in emergency rooms. This technology, operational in four of our hospitals, uses ambient speech models to transcribe the doctor-patient interactions into text. Then, using natural language processing and large language models (LLMs), turns the transcript into structured documentation of the emergency room visit reducing the documentation burden on

clinicians. Through transparent data sharing agreements, the use of the system by our providers drives continuous learning by the AI allowing it to become progressively more autonomous while incorporating safeguards like a scribe in the loop and final physician review and signoff. In early 2024 we will expand the pilot to additional providers as we work to move documentation from the current state to an AI assisted workflow. An AI platform in which providers can complete documentation opens up opportunities for enhanced documentation support (sometimes called nudges) to create more complete, thorough, and accurate documentation of a patient's condition.

2. **Streamlining Nurse Handoff Processes:** Utilizing Google's PALM LLM, we have developed an AI model to automate the nurse handoff process. Nurse handoffs, which occur when one shift is completed and a new care team has to take over the management of inpatients, occurs 400,000 times a week across HCA's 183 hospitals. Currently, this process is done manually by the nurses and is highly variable from nurse to nurse and unit to unit. We have taught an LLM to "read" the electronic health record by organizing the data in a structure that the model can understand (a data ontology). Through a series of prompts we then guide the model in creating a structured shift report that includes a history of what happened to the patient over the past shift, major changes in condition, and critical results. The nurses then, after reviewing for accuracy, can use this summary to drive the conversation with the oncoming shift. Our tool is in a pilot phase in two hospitals where nurses are giving us feedback daily that is used to improve the model's performance. The goal is to improve the efficiency and accuracy of the thousands of handoffs that occur weekly across our network, making a critical step in care delivery more standardized, safe, and efficient. There is still work to be done on "factualizing" the output – ensuring the model only reports facts found in the electronic healthcare record. This is a critical step before such a product can be used at scale.
3. **Optimizing Staffing and Scheduling:** Clinical labor is our most crucial and valuable asset. These are the care teams that deliver care to the 30,000 plus patients in our hospitals daily. Ensuring that we have the right team, in the right place at the right time on every unit is critical to our success. To improve this process, we have developed an AI-driven staffing solution that aligns nurse preferences and proficiencies with patient care demands, thereby enhancing care delivery efficiency and quality. The AI "solver" takes multiple data inputs and trying billions of possible schedules to arrive at the best possible solution. The AI is creating schedules for our care teams that are more balanced, fair and equitable, and cost effective than possible with a manual process. Building the initial schedule is only the first step, the system also includes an AI staffing capability, assisting in making schedule adjustments in real time. We created this model by teaching it to read multiple schedules across a hospital and solving complex problems like balancing hard-to-schedule shifts (how can we balance Friday nights?). This AI powered digital platform is in use in nine hospitals, comprising 157 nursing units and a business case is funded to implement this solution at 80 additional hospitals in 2024.

Partnerships with Technology sector

AI, and particularly Large Language Models (LLMs), have shown great potential in reducing provider burden. By automating tasks like documentation, we allow clinicians to focus more on direct patient care. To achieve these outcomes, we are partnered with many of the large technology companies, with Google acting as our primary partner. Google's approach to empowering an enterprise to use LLM's includes providing us with pre-trained base models, such as Palm and Med-Palm, in a custom HCA specific environment. With this approach, patient data is never used to train base models, and never shared with Google, but can be used within our own systems (in manner consistent with our agreement with our patients) to fine tune model behavior. That tuning occurs only within our own, private cloud-based systems which are protected by our rigorous privacy standards. Our partnership with Google and other cutting-edge technology companies allows us to leverage their knowledge and capabilities and safely and privately combine them with our operational knowledge and innovation and transformation processes. It is through these deep, multi-year partnerships that we believe transformation in healthcare will occur.

Conclusion

Looking forward, HCA Healthcare is enthusiastic about the future possibilities and challenges of AI in healthcare. We are committed to ongoing dialogue and collaboration with the Subcommittee.

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 believe that AI, when used responsibly and ethically, can be a transformative force in healthcare delivery.

I appreciate the opportunity to share these insights with the Subcommittee and am eager to contribute further to this vital discussion.

Respectfully,

Dr. Michael Schlosser Senior Vice President for Care Transformation and Innovation HCA Healthcare