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Artificial Intelligence and Its Impact on the Commonwealth

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Good afternoon Chairwoman Muth and members of the Senate Democratic Policy Committee. Thank you for the opportunity to appear before you and offer testimony on the potential impact of generative Artificial Intelligence (A.I.) on the future of the Commonwealth of Pennsylvania. My name is Dajiang Liu. I am a Professor and Vice Chair for Research in the Penn State University College of Medicine. I am also the Director for Artificial Intelligence and Bioinformatics, leading the university's strategic initiatives in AI. I'm here today to share insights on the transformative role of artificial intelligence in healthcare, addressing both its remarkable opportunities and the vital need to mitigate potential risks.

Artificial intelligence stands at the forefront of a healthcare revolution. One of the most significant advancements is in diagnostics and treatment planning. AI algorithms, through their ability to analyze vast and complex datasets, can identify patterns and anomalies that may elude human analysis. This leads to quicker, more accurate diagnoses and highly personalized treatment plans, tailoring healthcare to individual patient needs in ways previously unimaginable.

Furthermore, AI's impact on drug development is revolutionary. It significantly reduces the time and cost associated with bringing new drugs to the market, which is crucial in the fight against emerging diseases and complex medical conditions. Take our own research as an example. We use AI algorithms and big genomic datasets. We identify dextromethorphan as a leading drug that we repurpose to treat smoking addiction. Dextromethorphan is a drug that was originally developed to treat cough. Yet, our AI algorithm and big genomic datasets reveal the drug that may reverse the effects of genes that

predispose people to addiction risks. As such, the drug can be used to treat people with smoking addictions. Given that smoking is a leading risk factors for diseases, and 14.9% of adults in Pennsylvania smoke, our AI-based work has significant public health benefits.

AI also plays a critical role in expanding healthcare access. Penn State College of Medicine is one of the few medical schools in rural area. Through telehealth and remote patient monitoring using geospatial information, our work in AI bridges the gap for those in rural or underserved areas, ensuring that quality care is more equitable and accessible.

Lastly, the administrative efficiency that AI brings cannot be overstated. By automating routine tasks, AI allows healthcare professionals to focus on what they do best – caring for patients, while also reducing operational costs.

However, with these opportunities come challenges. Paramount among them is the issue of data privacy and security. AI systems handle sensitive patient data, making them targets for cyber threats. It's crucial to enforce stringent data protection measures to maintain patient confidentiality and trust.

Another challenge is algorithmic bias. If AI systems are trained on non-representative datasets, they can perpetuate and even exacerbate healthcare disparities. It's imperative to ensure that AI algorithms are developed and tested on diverse data sets to provide equitable healthcare outcomes for all demographics. Investment in the development of AI for rural and under-served populations will be critical for mitigating this bias.

Regulatory and ethical considerations also demand our attention. Clear guidelines and standards are necessary to govern the use of AI in healthcare, ensuring that these technologies are safe, effective, and used in ways that align with our ethical values.

Lastly, we must consider the impact of AI on the healthcare workforce. While AI can augment healthcare services, it also necessitates a shift in skills and roles. Supporting education and training for healthcare professionals is essential to adapt to this evolving landscape."

In conclusion, the potential of AI in healthcare is immense. It promises enhanced patient care, improved efficiency, and groundbreaking advancements in treatment and drug development. However, realizing these benefits requires a balanced approach - one that embraces innovation while conscientiously addressing the associated risks. I urge this esteemed body to support policies, funding, and initiatives that promote the responsible integration of AI in healthcare. This will not only safeguard public health and wellbeing but also position Pennsylvania as a leader in healthcare innovation. Thank

you for your time and for the opportunity to contribute to this important discussion. I am open to any questions you may have.