



RUTGERS HEALTH

Ernest Mario School of Pharmacy

72nd Annual

Roy A. Bowers

Pharmaceutical Conference

Conference Summary Report

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I. Opening Remarks

On October 22, 2024 the 72nd Annual Roy A. Bowers Pharmaceutical Conference was held in Somerset, NJ. The title of this year's conference was "Emerging Technologies and the Future of Healthcare – The Impact of AI and Regenerative Medicine on Patients, Providers, Payers, and Life Sciences." With a focus on health disparities, healthcare management, and care delivery models the Bowers Conference connects an interprofessional audience of opinion leaders, learners and speakers to address key issues related to health disparities in order to bring about local and national practice change.

Key themes and learnings covered through the conference included:

- Use of artificial intelligence (AI) in healthcare
- Transforming the practice of medicine advances in regenerative medicine for treatment modalities
- Leveraging the power of AI for patients, providers, payors and life sciences
- Innovative models of health care delivery utilizing technology in health systems and retail pharmacy
- Innovative ways of identifying high-risk members and providers to address opioid epidemic

Critical to the conference's organizer, Dr. Saira Jan (Professor Emerita at Rutgers and VP and Chief Pharmacy Officer at Horizon BCBSNJ), are the collaborations, sub-committees and action plans that are formed as a result of the day's discussions. Designed to break silos in New Jersey healthcare, the Bowers Conference is an interdisciplinary call to action where speakers and attendees alike are called upon to bring thoughtful solutions to the most pressing issues of the day.

This year's conference pulled from all aspects of the healthcare industry. The cost of health care has been rising for years and affordability is becoming a challenge. Healthcare inequities and social determinants of health remain especially impactful on health care access and patient outcomes. Using actionable data to invest in prevention and develop strategies to target interventions in stratified populations is critical. Partnerships, new models of care, member engagement and technology are the drivers which will help define sustainable solutions.

Prior to the keynote address, the recipient of this year's Roy A. Bowers Award, given to one individual every year that signifies lifelong leadership, innovation, and advancement, was presented to Joseph Barone (Dean & Distinguished Professor, Ernest Mario School of Pharmacy, Rutgers University) in recognition of his achievements to the practice of pharmacy. Dean Barone expressed gratitude for the award and reflected on the legacy of Dr. Roy Bowers and Dr. Ernest Mario, underscoring the importance of innovation and healthcare access.

II. Keynote Address

- **John Sviokla, DBA, MBA**
 - Co-founder, GAI Insights
 - Executive Fellow, Harvard Business School

Dr. John Sviokla opened his keynote address on AI calling it a “revolution” while noting that we are still in the relatively early stage of the technology. He reflected on the historical foundations of AI, particularly since the release of GPT-3.5 in November 2022. ChatGPT, he explained, only took 3 months for the platform to reach 100 million monthly active users – significantly less time than other social media sites and websites.

He explained how this new technology allows for nearly an infinite number of use cases for interactive learning and teaching, highlighted by the ability to access sophisticated tutoring on mobile devices. His enthusiasm extended into the educational potential AI holds, indicating student's futures will continue to integrate with these AI systems. On the flip side, AI has introduced concerns in some sectors, for example local news and Hollywood, threatening to squeeze down those industries.

Dr. Sviokla described how the U.S healthcare system in current state has constraints and inefficiencies around increasing cost of care, declining productivity, and increasing utilization – all of which presents an opportunity for technology solutions. From a historical perspective, AI in medicine is not new going back to blood disease diagnosis in 1975. He outlined areas where AI already shows promise in healthcare: (1) diagnosing diseases faster and more accurately, (2) reducing administrative burdens, and (3) aiding in innovative drug discovery.

He cited the example of breast cancer detection with Google's DeepMind AI and work done within retinal disease as advances of AI in diagnosis. He discussed the implications of AI on administrative efficiency by reducing the time spent on documentation, which could enhance doctor-patient interactions. From an innovation perspective, there has been 950 AI devices approved by the FDA which will only continue to increase in the years ahead. Additionally, the

drug discovery process is entering a new era with AI, potentially shortening timelines from ten years to about three.

Dr. Sviokla showcased existing AI applications, like the Jivi Platform, which is already improving healthcare access in India by offering differential diagnosis on smartphones. He predicted broader adoption of such tools in developing countries due to economic incentives and less stringent regulatory environments compared to the US. Dr. Sviokla pointed out that the US would remain a leader in AI adoption due to its economic and business environment, driving further technological advancements and attracting global migration towards the country. His predictions for 2025-2026 included continuing to see more AI in diagnostics, increased use of consumer wearables, administrative efficiencies to reduce professional burnout, and supply for emerging markets. He encouraged attendees to join his learning community for navigating this rapid AI wave and provided resources for continued engagement with AI developments.

III. Regenerative Medicine

- **Presenter:**
 - Muhammad M. Mohiuddin, MBBS, DSc (Hon), Professor of Surgery and Scientific/Program Director, Cardiac Xenotransplantation Program at the University of Maryland School of Medicine
- **Moderators:**
 - Partho P. Sengupta, MD, MBBS, FACC, FASE, Henry Rutgers Professor and the Chief of Division of Cardiology Rutgers Robert Wood Johnson Medical School and Robert Wood Johnson University Hospital
 - Maya Guglin, MD, PhD, Professor and Section Chief of Heart Failure in the Division of Cardiovascular Disease, Department of Medicine, Rutgers Robert Wood Johnson Medical School and Robert Wood Johnson University Hospital

Dr. Muhammad Mohiuddin began this session by discussing the challenges patients face with organ transplants. From inherent limitations on supply and capacity to long wait times, there are disparities that exist across all major organs which he emphasized by explaining that every 80 minutes someone dies in the U.S. due to a lack of organs. There is potential with IPS research and using a patient's own stem cells to grow organs but the technology is early and not yet clinically viable. Alternatively, Dr. Mohiuddin introduced the concept of xenotransplantation which is the process of transplanting cells, tissues or organs from one species to another. The concept is not new, going back many decades which historically resulted in short-lived results. Over time solutions emerged for use of genetic modifications of the recipient to knock out certain genes and growth hormone receptors following by targeted insertion of certain genes.

One of the most notable uses of xenotransplantation within modern medicine occurred in January 2022 where pig hearts were transplanted into two humans via the compassionate use program. Both men lived around two months with the hearts before dying of complications. Dr. Mohiuddin predicted that while there is still much to learn, use of xenotransplantation will increase in the future as research and outcomes progress.

Dr. Partho Sengupta moderated the panel discussion joined by Dr. Mary Guglin. The role and applicability of AI was discussed with Dr. Sengupta noting that while AI is important, knowing

how to use it is critical. He added that using AI to detect diseases has potential but is not easy by default knowing the complexity of human body and molecular biology. Dr. Mohiuddin noted that AI can help by predicting some of the issues that historically took longer to diagnosis, for example by looking at how to grow human hearts in other animals.

Dr. Guglin discussed options at end stage of disease and how technology can transform treatment. She explained differences between the two major options: traditional cardiac transplantation from brain dead donor or artificial pumps called left ventricular assist devices (LVAD). There have been significant advances in these devices over the years where outcomes are now similar (a donor heart has better long term outcomes but the gap is not as substantial as years prior). Dr. Mohiuddin opined that you won't see people with xenotransplants live for many years in current state and that it will take incremental advances to substantially improve outcomes.

The group wrapped up by talking about ethical considerations of xenotransplantation, funding constraints, and use in pediatric patients where there may be better survival outcomes because their immune system is not fully developed and can be trained to lessen risk of rejection. The role of AI was discussed as a means of addressing workforce shortages where Dr. Sengupta noted that we need to "bring back the joy in medicine" which can be done by teaching innovations and increased collaboration in the industry.

IV. Artificial Intelligence- the myths, the reality, and the not-too-distant future?

- **Moderator:**
 - Heather Staples Lavoie, Senior Vice President of Enterprise Business and Technology Solutions Chief Information Officer Horizon Blue Cross Blue Shield of New Jersey
- **Panelists:**
 - Mostafa Kamal, President and Chief Executive Officer, Prime Therapeutics
 - Vicente Gracias, MD, FACS, FCCP, FCCM, Professor, Department of Surgery, Robert Wood Johnson Medical School, Senior Vice Chancellor for Clinical Affairs, Vice President for Health Affairs, Rutgers, The State University of New Jersey
 - Tanvi Patel, MBA, Director and General Manager of Partner Services, Amazon Pharmacy

Heather Staples Lavoie opened up the session talking about use cases and trends of AI within pharmacy today. These include use of AI on medication safety which has been shown to reduce prescription errors by up to 50% in some settings, greatly improving patient safety. Pharmaceutical companies historically have been ahead of the curve in use of AI technologies with 77% of organizations having plans to increase their AI investments over the next two years. Other applications of AI include use in personalized medicine, predictive analytics in population health, member engagement, claims processing, and fraud detection.

Tanvi Patel from Amazon Pharmacy shared her career journey that lead her to Amazon Pharmacy, highlighting the importance of passion and diverse experiences. Mostafa Kamal of Prime Therapeutics emphasized the role of curiosity, domain expertise, and partnerships in his career, illustrating the importance of holistic approaches in the corporate world. Dr. Vicente Gracias of Rutgers shared insights on the importance of mentorship and creating a supportive ecological environment for AI advancements in healthcare.

In discussing the journey to AI, Tanvi described how Amazon has been leveraging some form of AI and machine learning since the mid 90's (as simple as their recommendation engine). She described genAI as one of the most transformative advancements of our time but also

acknowledged we are still in the elementary stages. Effectiveness of this technology will need to start with the customer and work backwards, understanding where the pain points are, and how to deliver better products and services. Mostafa described AI as being at the peak of the hype cycle. He called it a transformative technology but highlighted the importance of ensuring it is applied safely and ethically. He described how AI is not 100% error proof which may be fine for businesses where being right most of the time is OK but this is not often the case with most uses in healthcare. Dr. Gracias highlighted how we need to think about equitable outcomes within AI. One of the things AI can do effectively is implementing change in organizations. Ethical and responsible deployment requires multiple stakeholders coming together.

AI impacts on training the workforce and accessing data were two additional topics that were discussed. Tanvi explained the importance of having guardrails to ensure AI is being used appropriately. She noted how Amazon is leading in this space by Amazon's "AI Ready," a new commitment designed to provide free AI skills training to 2 million people globally by 2025 and by their RefChecker which is designed to train AI models with accurate and validated information. Mostafa discussed how access to data is critical and specifically in doing the foundational work to getting data in a form that the AI models can use. He noted there are challenges to overcome because effective use in healthcare requires sharing data across platforms (e.g. collaborations between PBM and EMR data). Specifically, he noted "If you don't partner, you won't survive" in describing the importance of developing partnerships to drive value. Dr. Gracias noted the importance of continued research with trusting partners. He also discussed cybersecurity as being critical and then secondarily developing specific use cases with the data and how AI can help in the process of asking questions. Moreover, he encouraged attendees to think about the impact on energy usage, noting how Microsoft purchased Three Mile Island to run their AI systems.

Specific AI use cases were explored in detail from each of the three panelists. Tanvi described how Amazon Pharmacy achieved a 90% improvement in processing speeds using AI, enhanced inventory management to reduce wastage, and launched HealthScribe with One Medical to reduce administrative tasks for physicians by 40%. Mostafa discussed use of AI with automating prior authorizations, benefit design analysis, fraud waste and abuse detection, and formulary management to drive efficiency and improve the patient experience. Dr. Gracias illustrated innovative uses of AI in predicting surgical site infections and optimizing patient flow at Rutgers.

V. Opioid Epidemic and Impact in New Jersey: Partnerships and Innovations to Address Opioid Crisis

- **Moderator:**
 - Saira Jan, MS, PharmD, Professor Emerita, Rutgers University and Vice President & Chief Pharmacy Officer at Horizon Blue Cross Blue Shield of New Jersey
- **Panelists:**
 - Captain Jason Piotrowski, Captain, New Jersey State Police, Executive Officer in the Forensic and Technical Services Section, Bloomberg American Health Initiative Fellow
 - Angelo M. Valente, Executive Director, Partnership for a Drug-Free NJ
 - Jonathan Rivera, Senior Consultant, Principled Strategies, Inc
 - Jo Ann Karcic, MPA, Senior Director, Behavioral Health Operations, Program Management & Client Success, Horizon Blue Cross Blue Shield of New Jersey

Captain Jason Piotrowski kicked off the afternoon session discussing the impact of the opioid epidemic in New Jersey and some of the trends seen across the state. When looking at the top leading causes of death across all ages “accidents” is number three with data from the CDC showing drug overdose deaths has been increasing since 2015 with numbers only recently starting to dip since mid-2023. Captain Piotrowski explained how the epidemic originally started with oxycodone and heroin and over the past 10 years has shifted to fentanyl. He drove this home by stating that within New Jersey, 97% of suspected heroine submissions in 2022 contained fentanyl, compared to only 7% during 2015.

Captain Piotrowski continued by discussing other persistent and emerging threats including increased use of nitazenes which are highly potent synthetic opioids and use of xylazine which is a potent sedative. The Drug Enforcement Administration (DEA) recently issued a widespread threat of fentanyl mixed with xylazine which can lead to significant issues with wound healing. Within New Jersey, xyazline has been increasing in the drug supply from around 3% of tested submissions in 2019 to 59% in 2024. Other emerging threats include benzodiazepines which are increasingly seen mixed with cocaine and vaping. Captain Piotrowski noted that within the U.S. the leading route of drug use involved in overdose deaths has changed from injection to smoking.

Despite all of these emerging issues, data is showing that New Jersey drug-related deaths are trending in the right direction. Captain Piotrowski hypothesized that reasons for this include removing barriers to drug treatment, increased distribution of naloxone, law enforcement operations at US – Mexico border, cartel arrests and fentanyl shipment restrictions, xylazine reducing overdose severity, and legislative actions (e.g. 5 day opioid initial fill). He concluded by emphasizing the importance of having a plan and communicating with loved ones on dangers of drug use and using code words to signify problems with family members.

The following panel session was moderated by Saira Jan and featured Captain Piotrowski, Angelo Valente, Jonathan Rivera, and Jo Ann Karcic. Relating back to the theme of the conference, Jonathan pointed out the critical need for advanced AI models that can preemptively identify high-risk individuals by analyzing extensive, multi-source data. He described work Principled Strategies has been doing around provider risk reports which requires taking large amounts of data and synthesizing in a way that is easy for providers to understand.

Angelo emphasized the role of education and public awareness, detailing initiatives that Partnership for a Drug-Free NJ has been doing to bring groups together to reduce opioid misuse starting from the community. This includes developing the first Drug Takeback which has since been replicated across the country and the "One Pill Can Kill" campaign. Captain Piotrowski identified a major need for comprehensive data sharing across multiple sectors, including jail, EMS, and homelessness services, to address the complexities of substance use disorder effectively. Joanne highlighted the important integration of telehealth in mental health and substance misuse treatment, stressing its role in enhancing accessibility and patient convenience.

The discussion covered a range of other topics including identifying new initiatives targeting specific demographics, including youth athletes who are susceptible to opioid prescriptions due to sports injuries. In addition, the importance of access to mental health was highlighted, reducing stigma, monitoring of vaping-related overdoses, granting access of the prescription drug monitoring program (PDMP) to health plans, and looking more at non-opioid treatment alternatives. The group acknowledged that in order to optimize outcomes across all of these initiatives it will require a multi-faceted approach.

VI. Impact of AI on Real-World Evidence Used to Inform Innovation, Drug Development, and Patient Journey

- **Moderator:**
 - Laura Pizzi, PharmD, MPH, Chief Science Officer, ISPOR—The Professional Society for Health Economics and Outcomes Research, Research Professor, Rutgers, Ernest Mario School of Pharmacy
- **Panelists:**
 - Ramesh Durvasula, PhD, Senior Vice President – Information Officer, Research and Development, Eli Lilly and Company
 - Subha Madhavan, PhD, Vice President & Head of AI/ML, Quantitative & Digital Sciences, Research and Development, Pfizer
 - Xinyu Wei, PhD, Data Scientific Head for Oncology and Immunology, Novartis
 - Faisal Khan, PhD, Corporate Vice President of AI and Analytics, Novo Nordisk
 - Andrea Fong, MPH, Vice President, Pharmacy Personalization and Growth, CVS Health

Laura Pizzi began the final session of the day on the impact of AI and innovation on the patient care journey. She described how there has been a movement with real-world evidence (RWE) over the past 20 years to supplement randomized clinical trials (RCTs) and connected aspects of RWE that also applies to AI including data transparency, quality, standardization, privacy, reproducibility, and validity. She explained that although there are many uses of RWE (both within drug development and payer management) it has the potential to benefit from use of AI to find patterns and dive deeper into the data. She highlighted reasons for leveraging RWE and AI including increasing research efficiency, addressing global expansion of health technology assessments (HTAs), and to keep up with the increased volume and rapid pace of evidence that often changes our understanding of safety and effectiveness over time.

The discussion with the panel centered around the transformative role of AI in patient care, especially pertinent to clinical trials and RWE. Major pieces of legislation, like the U.S. Inflation Reduction Act and the European health technology assessment regulation, were highlighted as pivotal frameworks shaping the future of pharmaceutical pricing and reimbursement. The consolidation of evidence generation processes in the EU was noted, intending to streamline how new drugs are assessed scientifically. In talking about how AI is increasing connectivity to

patients Dr. Durvasula highlighted the importance of bringing technology to patients in a way that is not burdensome and easy to understand. He used the example of bringing mobile RVs to patients during COVID as an opportunity to address clinical trial deserts. Dr. Madhavan noted work Pfizer is doing in this space including PfizerLink which is a research registry that helps match patients to clinical trials using specific patient characteristics.

Dr. Wei discussed the importance of machine learning to understand where patients are in their journey and for monitoring after trial. This can also be used to produce artificial cohorts via real world data which would have huge potential for rare diseases. Dr. Khan explained that AI is used across the board from preclinical discovery up to marketing and sales. He noted that AI can help to discover drugs that align with how people want to be treated but also cautioned that regulatory oversight and pressure on the pharmaceutical industry can hinder AI vs other tech giants. Andrea drew on her experience at how CVS is using AI to prioritize data to guide Pharmacists in their patient interactions to use their Pharmacists at the top of their licenses. They are also looking at how AI can play a role with the closures of retail pharmacies possibly creating pharmacy deserts. She explained how CVS will be piloting apothecary models in 2025 where the data suggests a pharmacy-only model would work.

The panelists noted that AI is seen as a potent tool to leverage diverse data types—from electronic health records (EHR) and medical claims to social media and wearables. These data sources are critical for complementing traditional clinical trial data, particularly for more comprehensive decision-making about patient care and drug efficiency. AI's role in processing this data includes improving protocol transparency, ensuring data quality, and standardizing data formats, which are essential for efficient evidence generation. The panelists noted the increasing convergence of regulatory and payor guidelines, emphasizing the need for AI to enhance research efficiency and meet these guidelines.

Ethical considerations, privacy concerns, and the importance of human oversight were persistent themes covered as well. The general consensus was that strict governance boards and ethical review processes must underpin all AI projects to assure compliance and trust. The closing discussions emphasized practical elements like engaging regulators early, as seen in recent FDA decentralized trial guidelines, and utilizing AI to offer patient-tailored healthcare solutions. The still-evolving nature of AI governance was compared with historical developments in patient-reported outcomes, suggesting a cautious but optimistic path forward.