Pre-NIDDK AI Workshop Questionnaire

The questionnaire will be closed by October 23rd.

1. Burden Disclosure Statement - OMB 0925-0648 Exp. 07/2027

Public reporting burden for this collection of information is estimated to average **30 minutes** per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. **An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.** Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: NIH, Project Clearance Branch, 6705 Rockledge Drive, MSC 7974, Bethesda, MD 20892-7974, ATTN: PRA (0925-0648). Do not return the completed form to this address.

All survey questions are optional, and participants may exit the survey at any time.

- ◯ Yes
- ◯ No

2. Personal Background

Name:

3. Personal Background

Organization/Institution:

4. Personal Background

Position/Title:

5. Personal Background

Email:

6. Experience with AI in Biomedicine

How familiar are you with the use of AI/ML in biomedicine, specifically in precision medicine for chronic diseases like diabetes?

- ◯ Very familiar
- ◯ Somewhat familiar
- ◯ Not familiar
- ◯ Other

7. Experience with AI in Biomedicine

Please briefly describe any specific projects or research you have been involved with that relate to AI/ML in precision medicine.

8. Challenges in AI-Based Precision Medicine

What do you consider to be the most significant challenges in applying AI/ML to precision medicine for diabetes and other chronic diseases?

Please select at most 3 options.

- ☐ Finding and Accessing existing datasets
- ☐ Interoperating and Reusing existing datasets
- ☐ Data integration across modalities
- ☐ Ensuring data quality and reliability, and inter-operability and integrability
- ☐ Ethical concerns, including bias and fairness
- ☐ Developing predictive models for disease progression
- ☐ Regulatory and policy barriers
- ☐ Interdisciplinary collaboration challenges
- ☐ Other

9. Challenges in AI-Based Precision Medicine

In your experience, what has been the most effective strategy for addressing one or more of these challenges?

10. Opportunities in AI and Precision Medicine

What recent advances in AI/ML (e.g., LLMs, generative AI) do you believe hold the most promise for revolutionizing precision medicine?

Please select at most 2 options.

- [ ] Large Language Models (LLMs) for text and image analysis
- [ ] Multimodal data integration/foundational model
- [ ] AI-driven biomarker discovery
- [ ] Real-Time Monitoring and Personalization
- [ ] Predictive Modeling
- [ ] Drug Discovery and Development
- [ ] Bias Reduction and Equity in Healthcare
- [ ] Enhanced Clinical Trials
- [ ] Other

11. Opportunities in AI and Precision Medicine

provide a brief justification for your choice(s)

12. Opportunities in AI and Precision Medicine

What best practices or frameworks can be developed to ensure high data quality and interoperability across different datasets?

Please select at most 3 options.

- [ ] Data Governance Framework
- [ ] Use of Interoperability Standards
- [ ] Data Quality Assessment
- [ ] Data Integration Solutions
- [ ] Metadata Management
- [ ] Collaboration and Partnerships
- [ ] Training and Education
- [ ] Data Privacy and Security
- [ ] Feedback Mechanisms
- [ ] Other

13. Opportunities in AI and Precision Medicine

How can AI/ML models be optimized to handle the diversity and complexity of biomedical data?

Please select at most 3 options.

- [ ] Data Preprocessing
- [ ] Feature Engineering
- [ ] Model Selection
- [ ] Addressing Class Imbalance
- [ ] Hyperparameter Tuning
- [ ] Handling Heterogeneous Data Types
- [ ] Interpretable Models
- [ ] Continuous Learning and Adaptation
- [ ] Robustness Testing
- [ ] Collaborative Research
- [ ] Other

14. Opportunities in AI and Precision Medicine

How can NIH/NIDDK better support the integration of AI/ML in precision medicine research?

Please select at most 3 options.

- [ ] Funding and Grants
- [ ] Data Infrastructure Development
- [ ] Training and Education
- [ ] Research Collaborations
- [ ] Ethics and Guidelines
- [ ] Pilot Programs and Case Studies
- [ ] Public Engagement and Outreach
- [ ] Regulatory Support
- [ ] Cross-Disciplinary Research Initiatives
- [ ] Other

15. Ethical and Social Considerations

What are your main concerns regarding the ethical implications of AI/ML in precision medicine?

Please select at most 2 options.

- [ ] Bias in available datasets used to train AI/ML models
- [ ] Bias in design of AI algorithms
- [ ] Data privacy and security
- [ ] Inequitable access to AI-driven healthcare
- [ ] Transparency and explainability of AI models
- [ ] Impact on Clinical Judgment
- [ ] Regulatory and Compliance Challenges
- [ ] Research Ethics
- [ ] Other

16. Ethical and Social Considerations

How should these ethical concerns be addressed at both the research and policy levels?

17. Ethical and Social Considerations

How can AI models be designed to minimize bias and ensure fairness across diverse populations?

Please select at most 3 options.

- [ ] Diverse and Representative Datasets
- [ ] Bias Detection and Mitigation
- [ ] Fairness Metrics
- [ ] Explainability and Transparency
- [ ] Stakeholder Engagement
- [ ] Continuous Monitoring and Feedback
- [ ] Ethical Guidelines and Training
- [ ] Robustness Testing
- [ ] Cross-Disciplinary Collaboration
- [ ] Regulatory Compliance
- [ ] Other

18. Ethical and Social Considerations

What policies or regulations should be in place to protect patient data privacy and security while promoting innovation?

Please select at most 3 options.

- [ ] Clear Data Protection Regulations
- [ ] Informed Consent Frameworks
- [ ] Data Anonymization Standards
- [ ] Interoperability Requirements
- [ ] Security Standards and Best Practices
- [ ] Accountability and Liability
- [ ] Promoting Ethical AI Use
- [ ] Patient Empowerment Initiatives
- [ ] Other

19. What are the key challenges in developing accurate predictive models for disease progression and prevention?

Please select at most 2 options.

- [ ] Data Quality and Availability
- [ ] Complexity of Biological Systems
- [ ] Heterogeneity of Populations
- [ ] Longitudinal Data
- [ ] Model Interpretability
- [ ] Ethical Considerations
- [ ] Other

20. How can AI/ML help with the key challenges in developing accurate predictive models for disease progression and prevention?

21. What are the key challenges in discovering new disease subtypes and improving precision in diagnosis and treatment?

Please select at most 3 options.

- [ ] Heterogeneity of Diseases
- [ ] Multi-Omics Data Integration
- [ ] Data Quality and Availability
- [ ] Evolving Understanding of Diseases
- [ ] Technological Limitations
- [ ] Clinical Validation
- [ ] Patient Diversity
- [ ] Regulatory and Ethical Challenges
- [ ] Collaboration and Resource Allocation
- [ ] Translational Gaps
- [ ] Education and Training
- [ ] Other

22. How can AI/ML help with the key challenges in discovering new disease subtypes and improving precision in diagnosis and treatment?

23. What/where are the AI-ready datasets that would help with the model design in discovering new disease subtypes and improving precision in diagnosis and treatment?

Please select at most 3 options.

- [ ] Public Repositories
- [ ] Clinical Databases
- [ ] Imaging Datasets
- [ ] Genomic and Transcriptomic Datasets
- [ ] Social Determinants of Health Datasets
- [ ] Health Records and Clinical Trials
- [ ] Collaborative Platforms
- [ ] Government and International Databases
- [ ] Patient-Relevant Datasets
- [ ] Specific Disease Databases
- [ ] Other

24. What are the common challenges in collaboration between biomedical researchers and AI/ML specialists?

Please select at most 3 options.

- [ ] Communication Barriers
- [ ] Data Compatibility Issues
- [ ] Differing Goals and Priorities
- [ ] Resource Allocation
- [ ] Understanding of Each Other's Fields
- [ ] Ethical and Regulatory Considerations
- [ ] Model Interpretability and Validation
- [ ] Cultural Differences
- [ ] Intellectual Property Issues
- [ ] Sustainability of Collaboration
- [ ] Other

25. How can institutions or NIH/NIDDK facilitate and catalyze better communication, identify AI ready datasets and recourses, joint research initiatives Between Biomedical Researchers and AI/ML Experts?

Please select at most 3 options.

- [ ] Interdisciplinary Workshops and Training
- [ ] Creating Collaborative Platforms
- [ ] Identifying and Curating AI-Ready Datasets
- [ ] Funding and Support for Joint Initiatives
- [ ] Establishing Research Consortia
- [ ] Promoting Open Science Practices
- [ ] Providing Access to Technology and Infrastructure
- [ ] Developing Guidelines and Best Practices
- [ ] Encouraging Public Engagement
- [ ] Feedback Mechanisms
- [ ] Other

26. What training or educational programs are needed to bridge the knowledge gap Between Biomedical Researchers and AI/ML Experts?

Please select at most 3 options.

- [ ] Interdisciplinary Workshops
- [ ] Cross-Disciplinary Courses
- [ ] Online Learning Platforms
- [ ] Collaborative Research Training Programs
- [ ] Data Challenges and Competitions
- [ ] Certification Programs
- [ ] Mentorship Programs
- [ ] Conferences and Symposiums
- [ ] Ethics and Responsible AI Training
- [ ] Customized Training for Institutions
- [ ] Other

27. Panel Discussion Inputs

What key topics or questions would you like to see addressed during the panel discussions?

- [ ] opportunities and challenges in AI
- [ ] Challenges and opportunities in precision medicine of T2D
- [ ] NIH/NIDDK data science programs
- [ ] Workforce development.
- [ ] Other

28. Panel Discussion Inputs

Are there any specific insights or experiences you would be willing to share during the discussions?

29. Additional Comments

Is there anything else you would like to add or suggest for the upcoming workshop?

30. Additional Comments

Any other topics for future NIDDK AI workshops series?

Please select at most 3 options.

- [ ] Integration of Multi-Omics Data: Discuss methodologies for integrating genomic, proteomic, and metabolomic data using AI to uncover new disease insights.
- [ ] Real-World Evidence and AI: Focus on how AI can analyze real-world data (e.g., electronic health records) to inform clinical decisions and health policies.
- [ ] Patient Stratification and Personalized Medicine: Examine AI techniques for stratifying patients based on risk profiles and tailoring personalized treatment plans.
- [ ] Natural Language Processing (NLP) in Healthcare: Investigate the applications of NLP for analyzing clinical notes, extracting meaningful data from unstructured text, and improving patient outcomes.
- [ ] AI for Health Disparities Research: Address how AI can help identify and mitigate health disparities among different populations, promoting equitable healthcare solutions.
- [ ] Ethics and Governance of AI in Medicine: Discuss ethical considerations, governance frameworks, and regulatory compliance related to AI applications in healthcare.
- [ ] Predictive Modeling for Disease Progression: Explore AI-driven predictive models that can forecast disease progression and outcomes, enhancing clinical decision-making.
- [ ] AI in Drug Discovery and Development: Cover AI applications in drug discovery, including compound screening, predicting drug interactions, and optimizing clinical trial designs.
- [ ] Wearable Technologies and AI: Investigate how AI can analyze data from wearable devices to monitor patient health and provide real-time interventions.
- [ ] AI for Imaging and Diagnostics: Focus on advances in AI for medical imaging, including automated analysis, pattern recognition, and decision support systems.
- [ ] Collaborative Research Models: Discuss successful interdisciplinary collaboration models between AI/ML experts and biomedical researchers, highlighting best practices and case studies.
- [ ] Data Privacy and Security in AI Applications: Explore strategies for ensuring data privacy and security in AI-driven healthcare applications while promoting innovation.
- [ ] Sustainability of AI Models in Healthcare: Address the challenges of maintaining and updating AI models in clinical practice, including performance monitoring and retraining.
- [ ] AI in Patient Engagement and Education: Discuss how AI can enhance patient engagement, education, and self-management, improving adherence to treatment protocols.
- [ ] Other

31. Additional Comments

Any suggestion on how NIH/NIDDK's website can better support data science programs in precision medicine?

Please select at most 3 options.

- [ ] Centralized Resource Hub
- [ ] Educational Resources and Training
- [ ] Collaboration Opportunities
- [ ] Success Stories and Case Studies
- [ ] Interactive Tools and Visualizations
- [ ] Forums and Discussion Boards
- [ ] Guidelines for Ethical Use
- [ ] News and Updates
- [ ] Engagement with Patient Communities
- [ ] Feedback Mechanism
- [ ] Other