EHDI program considerations for leveraging artificial intelligence/ machine learning

Initiatives to improve timeliness and reduce lost documentation

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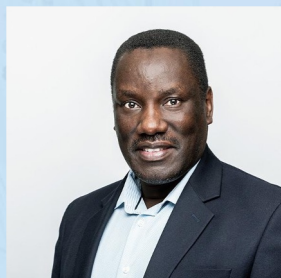
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Agenda

- Introductions
- Background
- Why AI/ML projects
- Results of Proof of Concept
- AI/ML considerations
- Questions

Presenters

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Problem statement

- EHDI programs rely on audiology providers to track and ensure deaf or hard-of-hearing infants receive diagnostic exams and are connected to early intervention services.

- Under-reporting occurs due to the manual and often duplicative data entry of reports into EHDI Information Systems.

- Jurisdictions seek innovative solutions to streamline this process.

Current state of audiology reporting

Why a solution?

- Reduce duplicative data entry
- Reduce audiologist burden
- Reduce time spent on reporting
- Decrease loss to documentation
- Improve data quality and standardize categorization of hearing status
- Compliance and coordination
- Reduce disparities

"The term 'artificial intelligence' means a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations or decisions influencing real or virtual environments."

National Artificial Intelligence Act of 2020

https://www.state.gov/artificial-intelligence/

"Machine learning (ML) is using computers to identify patterns in datasets and make predictions on what the computer learns from those patterns."

ML is a specific type of AI

https://www.energy.gov/science/doe-explainsmachine-learning

"A large language model (LLM) is a narrow artificial intelligence (AI) system that has been trained on a massive amount of text data to interpret natural language and generate human-like responses to text-based prompts or questions"

LLMs use logical rules to draw conclusions through reasoning engines

Why use AI/ML for EHDI?

Challenge	AI/ML Solution
Duplicative and time-intensive reporting	Automated data collection and streamlined data entry
Incomplete and inconsistent data	Threshold levels translated and standardized reporting
Clinical notes contain a lot of information on the patient's diagnosis and experience	Translate notes into data elements needed for EHDI reporting through data mining

Proof of Concept project partners

- The CDC EHDI Program
- Public Health Informatics Institute
- Amazon Web Services Cloud Innovation Center
  - Cal Poly Digital Transformation Hub
- Mass Eye and Ear
- Boston Children's Hospital Audiology Program
- Massachusetts Infant Hearing Program

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Automated Audiology Extraction Project status

- Partners secured and engaged

- Data use agreements in place

- Proof of Concept in development by students at Cal Poly

- Will be available on a GitHub page for moving into production

- Collaboration with the Association of Public Health Laboratories to explore scalability and hosting for more jurisdictions

What is needed for AI/ML project success?

- Project management & planning
- Data Sharing Agreements
- Partner engagement
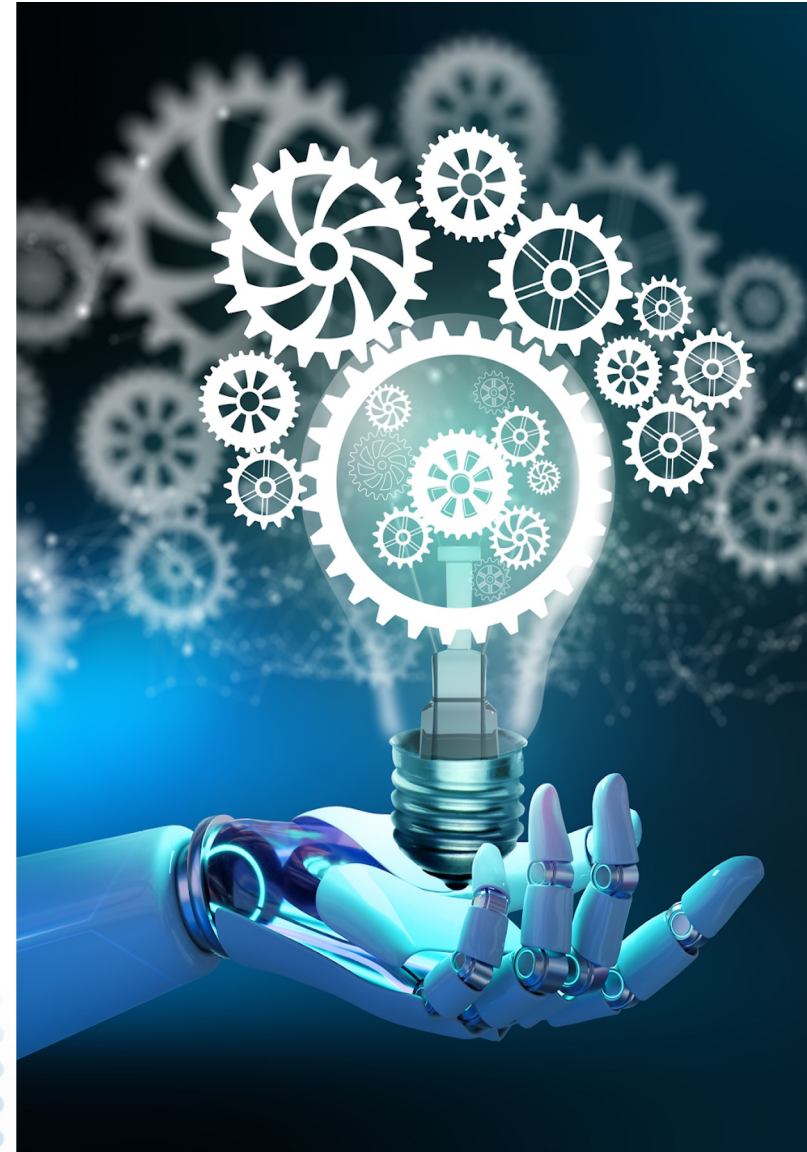
Tips for project management & planning

- Clarify roles and responsibilities clearly from the beginning

  - Draft a project RASCI chart

RASCI: sample					
#	Activity	Responsible	Accountable or approver	Supportive	Consulted	Informed
1	Review legal guidelines	Sally	Sally's supervisor	Legal team	PHII	Program Manager
2	Establish Data Use Agreements	Sally	Sally's supervisor	Tiffany	N/A	Program Manager
3	Test AI/ML application	Sally	Sally's supervisor	Fred	N/A	Program Manager

- Identify a project manager to coordinate communication and facilitate meetings

- Establish a regular cadence of meetings with partners

- Establish early the need for data use agreements and the processes needed

- Plan for partner conflicts and the competing priorities of IT resources

Tips for Data Sharing Agreements

- **Establish trust** which is critical to data-sharing which happens at the speed of trust
- **Establish a common language** to achieve common understanding and communicate
- **Identify who from the jurisdiction/clinic** needs to be involved to get the right signatures/approvals
  - Involve IT and legal early on in the process
- **Identify and discuss any concerns** the data-sharing partner has regarding this type of work
- **Transparency and consistency** must be maintained throughout the project to have a successful data-sharing project.
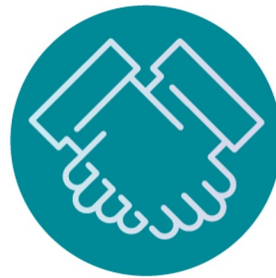
Health information sharing happens at the speed of trust.

Tips for partner engagement

- **Engage programmatic staff, leadership staff, and IT staff**—particularly in jurisdictions—**early**
    - IT staff are often the gatekeepers to services and data and they need to be on board early to garner support for the project for the work to be successful.
- **Document partner workflows** to ensure that you are meeting the programmatic needs
- **Fully understand all steps** that will be taken during the project's development and implementation
- **Consider the technical partner company headquarters**
    - Some jurisdictions require US-based partners

Resources for AI/ML projects in your jurisdiction

- ASTHO's AI-mapped state legislation:
  https://www.astho.org/advocacy/state-health-policy/public-health-legal-mapping-center/infrastructure/ai/

- Questionnaire to complete before talking with your state attorney:
  https://phii.org/wp-content/uploads/2021/10/CAMH_Fillable-PDF_FINAL_10-26-21.pdf

- Project governance: roles and responsibilities worksheet:
  https://phii.org/download/project-governance-roles-and-responsibilities-worksheet/

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Resources for AI/ML projects in your jurisdiction

- AWS Blogs:
  - https://aws.amazon.com/ai/responsible-ai/
  - https://aws.amazon.com/blogs/machine-learning/a-progress-update-on-our-commitment-to-safe-responsible-generative-ai/

- Network for Public Health Law resources:
https://www.networkforphl.org/
- Network for Public Health Law webinar: AI and Public Health: Opportunities and Challenges
  - https://www.networkforphl.org/resources/ai-and-public-health-opportunities-and-challenges/

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Resources for AI/ML projects in your jurisdiction

- Developing Artificial Intelligence (AI) Policies for Public Health Organizations: A Template and Guidance https://www.khi.org/articles/developing-artificial-intelligence-ai-policies-for-public-health-organizations-a-template-and-guidance/

Other considerations in case you can't use AI/ML

- DAR IG Standard for Trial Use: www.hl7.org/documentcenter/public/ballots/2021JAN/downloads/V2_IG_DIAGAUDIORPT_R1_D1_2021JAN.pdf
  - Session on March 11 at 3 pm, Electronic Diagnostic Audiology Reporting using HL7 Standards, Room 317/318

For more information on HL7

- Hl7.org

- Public Health Work Group https://confluence.hl7.org/display/PHWG/Public+Health+Work+Group

Future project updates

- Public Health Informatics Institute website PHII.org

- Cal Poly News: https://dxhub.calpoly.edu/news/

Questions

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