DiME

Ask me anything

Virtual Journal club

JMIR Publications
Advancing Digital Health & Open Science

Sensor Data Integration:

A New Cross-Industry Collaboration to Articulate Value, Define Needs, and Advance a Framework for Best Practices

February 2nd, 2022 11a ET

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But first, housekeeping

- Please note today's session is being recorded
- To ask a question for discussion during Q&A, please:
    - Either 'raise your hand' in the participant window and moderator will unmute you to ask your question live, or
    - Type your question into the chat box
- Slides and recording will be available after today's session

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JMIR Viewpoint on sensor data integration

Clay et al

Viewpoint

Sensor Data Integration: A New Cross-Industry Collaboration to Articulate Value, Define Needs, and Advance a Framework for Best Practices

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➢ We described the **current state of sensor data integration** in health care.

➢ We identified **current challenges with sensor data integration**, such as lack of widely adopted data standards and cultural adoption hurdles.

➢ We examined the **importance of sensor data integration in achieving the promise of digital health** to improve clinical research and patient care at scale.
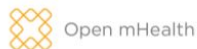
➢ We **offered a vision** of what overcoming these challenges and continuing progress will enable.

Sensor Data Integrations

A DiMe Tour of Duty

Advancing the effective and efficient use of digital health products in clinical research and patient care by establishing best practices for all stakeholders engaged in scoping, selecting, and/or implementing the integration of sensor data and algorithms to a cloud platform

Project Partners

IEEE — Advancing Technology for Humanity

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HumanFirst

MEDABLE

ORACLE

Open mHealth

Takeda

savvy COOPERATIVE

VA — U.S. Department of Veterans Affairs

Real Life Example - Oncology

- Electronically provided informal caregiver (eObsROs) and patient-reported outcomes (ePROs) plus wearable sensor activity measures can provide important information for clinical teams.

- Determine essential information to monitor during a trial.

- Patient-reported outcomes plus wearable sensor activity measures may provide key data to improve clinical outcomes.

Findings from Kaiser (n=100, 50 dyads)

- **Encourage patients and caregivers to take better care of themselves**
  - Emotional wellbeing
  - Physical activity
  - Awareness of patient's symptoms and treatment side effects.

- **Communication with clinical teams**
  - Doctors may act earlier to mitigate symptoms or side effect development during treatment.
  - Help predict AEs
  - Clinical decision making - Summary and timely longitudinal physical function and symptom data

- ***Implementation of mobile/wearable technologies to track symptoms and function in cancer patients holds promise and should be explored.***

Why is Sensor Data Integration Important?

- Sensors include: wearables, mobile phones, clinical devices

- Sensors & wearables continue to become more widely used
  - COVID-19 pandemic has increased need for sensor data integration as more interactions occurring virtually

- Integration of sensors key to:
  - Combining data across sensors for research & clinical care
  - Modeling & understanding complex disease systems
  - Share data seamlessly between patients & healthcare providers
  - Aids the translation of observations from clinical development to market

Key Challenges in Sensor Integration

- Cultural adoption
  - Need activation energy to change the status quo

- Effective incentivization to share data
  - Companies not incentivized to make data interoperable

- Other issues
  - Need widely adopted data standards for sensor data specifically
  - Permissioning, consent, data rights, data governance

Simona Carini - Programmer & Analyst at UCSF

Data Integration to Maximize Data Use

Physiological and behavioral measures collected by means of digital devices characterize, influence or predict health-related outcomes

- e.g., number of steps, total sleep time, heart rate variability

Separate silos of data flow do not serve well person, caregiver, health provider, researcher, payer

- Data flow to multiple actors for multiple purposes

Stakeholders wish for actionable data

- Combining output from multiple sensors/sources
- Variable presentation and granularity

Standards developed by stakeholders' community facilitate integration & data exchange

Sensor Data and Metadata Standards

Example: Total Sleep Time
- Definition
- Name, data type, unit of measure
- Relevant context
- Metadata

Standardizing sensor data and metadata
- Makes data integration, aggregation, analysis, visualization across multiple sources easier and more accurate
- Makes data exchange and reuse predictable and consistent → development of generalizable solutions
- Facilitates development and validation of digital biomarkers
- Reduces costs of using sensor data for care and research (across the spectrum)

Advancing digital health applications

Priorities for innovation in real-world evidence generation

Tuesday, March 8 at 11am-12pm ET

Ariel Dora Stern, Ph.D.
Associate Professor, Visiting scholar
Harvard University, Germany's Hasso Plattner Institute Digital Health Center

Jennifer Goldsack
CEO
Digital Medicine Society

THANK YOU

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