Case study

DATACC by DiMe

Multimodal Digital Phenotyping for Whole-Person Mental Health Monitoring

About Healthesphere

Healthesphere is a digital health platform focused on combining interoperability, digital phenotyping, and patient-centered care to support more personalized and longitudinal approaches to mental health monitoring.

HealthEsphere

The opportunity

- Traditional mental health assessments often rely on episodic symptom reporting and may not fully capture variability between visits.
- There is increasing interest in multimodal digital phenotyping approaches that combine behavioral, physiological, contextual, and patient-generated data to better understand patient trajectories.

The challenge

- Single-concept approaches (e.g., sleep or activity alone) may lack sufficient context to explain changes in mental health state or treatment response.
- Multimodal data introduces challenges around normalization, interpretation, workflow integration, and clinical validation.

The approach

- A multimodal data workflow was designed to integrate ecological momentary assessment (EMA), passive sensing inputs (e.g., sleep/activity trends, smartphone behavioral signals), and clinical/contextual data into longitudinal patient monitoring models.
- Incoming behavioral, physiological, patient-generated, and clinical data streams were normalized and mapped into standardized interoperable structures to support consistent longitudinal representation and cross-system integration.
- Longitudinal trend analysis approaches were applied to support contextual interpretation of symptom variability and treatment response between visits, with emphasis on clinically interpretable summaries, interoperability, and responsible implementation practices.

The impact

- ✔ Demonstrated the potential value of combining behavioral, physiological, patient-generated, and clinical data into longitudinal monitoring models designed to support more contextual understanding of symptom variability and patient outcomes. Related implementation concepts and proof-of-concept work have been presented and discussed with organizations and professional audiences including NCQA, the American Psychiatric Association (APA), the American Telemedicine Association (ATA), and the One Mind Lived Experience Advisory Network.
- ✔ Highlighted the importance of validation frameworks, interoperability standards, and workflow integration when implementing multimodal mental health monitoring approaches. Related work in this area was recently accepted for presentation at the Orchard OCD Conference in London, reflecting growing interest in interoperable and clinically actionable approaches to digital mental health monitoring.

> "Multimodal digital phenotyping has the potential to provide a more contextual and longitudinal understanding of mental health, but meaningful adoption depends on interoperability, validation, and responsible clinical integration."
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> **— Ozair Bajwa**
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> *CEO, Healthesphere*