

Digital Health Sensors for Mental Healthcare:

Potential Benefits and Guidelines

Mobile sensors

- Smartphones and wearable devices have sensors that can be used to gather objective and passive data on patient behaviors^{1,2}
- These sensors can be used to detect a variety of patient information including activity/movement, vital signs, and blood chemistry²



Potential benefits

- Data can be used to evaluate and measure symptoms of schizophrenia, bipolar disorder, and depression³
- Data can aid the early detection of mental illness³:
 - For example, small changes in sleep behavior may be an early warning of a relapse in depression or bipolar disorder⁴
- Data can be collected and used to develop health reports and provide feedback for patients and their HCPs¹
- Wearable fitness trackers can help to promote physical activity and weight loss in patients with serious mental illnesses⁵

Guidelines

- A 3-stage framework has been proposed for integrating behavioral sensing into mental healthcare and this includes⁶:
 - Collecting a range of behavioral data over time, such as step counts, location, and patient self-assessments
 - Analyzing the raw data to infer behavioral patterns, such as measuring changes in mobility using step count and location data
 - Using the inferences about behavior to personalize clinical decisions and treatment

References

1. Ben-Zeev D et al. *Psychiatr Rehabil J*. 2015;38:218-226.
2. Dunn J et al. *Per Med*. 2018;15:429-448.
3. Seppälä J et al. *JMIR Ment Health*. 2019;6:e9819.
4. Hollis C et al. *Br J Psychiatry*. 2015;206:263-265.
5. Naslund JA et al. *Psychiatry Res*. 2016;244:139-144.
6. Aung MH et al. *Depress Anxiety*. 2017;34:603-609.

Abbreviations

HCP, healthcare provider.

Disclaimer

These resources are intended for informational purposes only and are intended for healthcare professionals who may choose to share them with their patients. They are not intended as, nor are they a substitute for, medical care, advice, or professional diagnosis. Healthcare professionals should use their independent medical judgement when considering these educational resources. Those seeking medical advice should consult with a healthcare professional. These resources are not intended as reimbursement or legal advice. Please seek independent advice from a qualified professional to ensure that your organization complies with the complex legal and regulatory requirements governing health care services, and that treatment decisions are consistent with the current applicable standards of care.