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## Obesity Digital Measures and Use of Patient-Centric Obesity Digital Biomarkers in Science and Clinical Medicine

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**Objective:** With the rise of connected sensor technologies, there are seemingly endless possibilities for new ways to measure health. These technologies offer researchers and clinicians opportunities to go beyond brief snapshots of data captured by traditional in-clinic assessments, to redefine health and disease. Given the myriad opportunities for measurement, how do research or clinical teams know what they should be measuring? Patient engagement, early and often, is paramount to thoughtfully selecting what is most important. Regulators encourage stakeholders to have a patient focus but actionable steps for continuous engagement are not well defined. Without patient-focused measurement, stakeholders risk entrenching digital versions of poor traditional assessments and proliferating low-value tools that are ineffective and reduce both quality and efficiency in clinical care and research.

**Methods:** Patient-Centric Digital Biomarkers can diagnose, monitor and assist in the management of chronic diseases most evident in the diabetic, cardiovascular, Obesity and neurodegenerative diseases. The confluence of these drivers has thus become a dynamic environment and tangible progress has been made toward improved health-care outcomes. To fully realize the benefits of Digital Biomarkers in health care, holistic approaches to the patient's environment also need to be factored. This is exacerbated in the case of obesity, chronic and neuromuscular diseases, where in addition to the patient's physical environment, the interactions with caregivers, family members and social networks play a key role. Factors which impact patient quality of life include health maintenance, physical function, mental function and social networks and metrics has been developed for each in order to assess impact on disease.

**Results:** Selection of appropriate and meaningful Digital Biomarkers requires deep understanding of the disease state and its ecological relationship to the instrumental activities of daily living scale. Similar opportunities and challenges exist in a number of other chronic disease states including Parkinson's, Huntington's and Duchene's disease, multiple sclerosis and cardiovascular disease. This topic will highlight progress in device technology, the need for holistic approaches for data inputs and regulatory pathways for adoption. The abstract focuses on Digital Biomarkers for obesity and the work derived from the most widely used E\*Health Line Digital Biomarker Ecosystem.

**Conclusion:** This abstract synthesizes and defines a sequential framework of core principles for selecting and developing measurements in research and clinical care that are meaningful for patients. We propose next steps to drive forward the science of high-quality patient engagement in support of measures of health that matter in the era of digital medicine.