

T36. NEUROBLU®: A LONGITUDINAL REAL-WORLD EVIDENCE PLATFORM FOR BEHAVIORAL HEALTH RESEARCH

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Abstract

Introduction: Real-world data from Electronic Health Records (EHR) can be used to derive valuable insights for the healthcare and pharmaceutical industries. However, realworld data in behavioral health is typically free text, siloed, with limited connectivity and integration. Thus, turning raw data into an analytics-ready format for downstream use is an overwhelming endeavor for most research teams, hindering the development of a learning behavioral healthcare system (Stein 2016).

Methods: We developed NeuroBlu®, a real-world evidence (RWE) platform to drive insight generation in behavioral health. The current built-in database contains longitudinal behavioral health patient records from >25 hospitals that use the MindLinc EHR system across the U.S. (mindlinc.com). In addition, we have enhanced data quality and provide custom analytics tools and applications. Our pipelines cover: (1) data anonymization as per US regulations (2) data aggregation, cleaning, and quality control, (3) transformation of free-text notes into structured labels using proprietary deep-learning models of natural language processing (NLP), and (4) reformatting data into the industry standard for observational data.

Results: NeuroBlu is a web application that allows users to perform custom analyses on a built-in database and save the results for publications/reports. We provide interactive dashboards, in-built R libraries/templates, and guides to help users generate RWE. As of Q4 2020, users can access records of >500,000 patients with >14 million visits over the past 20 years. The dataset covers a wide range of mental disorders, including substance-related disorders, major depressive disorder (MDD), bipolar disorder, etc. Some unique advantages of using NeuroBlu for RWE include: (1) high availability of outcome measures (e.g., Clinical Global Impression Scores recorded at 77% of all patient visits); (2) linked inpatient and outpatient data records; (3) >500 NLP data labels developed and validated from free-text notes in psychiatric care (e.g., patient symptoms, functions, and stressors) (Mukherjee 2020).

Discussion: Currently, NeuroBlu is used by pharma and healthcare researchers to examine patient phenotypes, identify real-world treatment patterns, and build predictive models to enhance behavioral health care delivery. In the next 1-2 years, we will increase the size of the built-in database, add more NLP data labels using deep learning algorithms, and develop new tools and analytics libraries.

Conclusion: NeuroBlu is a subscription-based commercial product. Researchers can obtain a 14-day free trial before purchasing annual licenses as software-as-a-service contracts.