Poster

Using Artificial Intelligence to Measure and Optimize Adherence in Patients on Anticoagulation Therapy

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Abstract

Background: The introduction of direct oral anticoagulants (DOACs), while reducing the need for monitoring, have also placed pressure on patients to self-manage. Suboptimal adherence goes undetected as routine laboratory tests are not reliable indicators of adherence, placing patients at increased risk of stroke and bleeding.

Objective: To evaluate an artificial intelligence (AI) platform that visually confirms medication ingestion on smartphones in elderly stroke patients on anticoagulation therapy.

Methods: A randomized, parallel-group, 12-week study was conducted in adults (N=28) with a recently diagnosed ischemic stroke. Patients were randomized to daily monitoring by the AI platform (intervention) or to no daily monitoring (control). The AI app visually identified the patient and the medication and confirmed ingestion. Adherence was measured by pill counts and plasma sampling in both groups.

Results: For all patients (N=28), mean age was 57 (SD 13.2) years and 53.6% were female. Mean cumulative adherence based on the AI platform was 90.5% (SD 7.5%). Plasma drug concentration levels indicated that adherence was 100% (15 of 15) and 50% (6 of 12) in the intervention and control groups, respectively, and mean cumulative pill count adherence was 97.2% (SD 4.4%) and 90.6% (SD 5.8%), respectively.

Conclusions: Patients, some with little experience using a smartphone, successfully used the technology and demonstrated a 67% absolute improvement in adherence to DOACs based on plasma drug concentration levels. Real-time monitoring has the potential to increase adherence and change behavior, particularly in patients on DOAC therapy.

ClinicalTrial: Clinicaltrials.gov NCT02599259; https://clinicaltrials.gov/ct2/show/NCT02599259 (Archived by WebCite at http://www.webcitation.org/6n6GS3vQ3).

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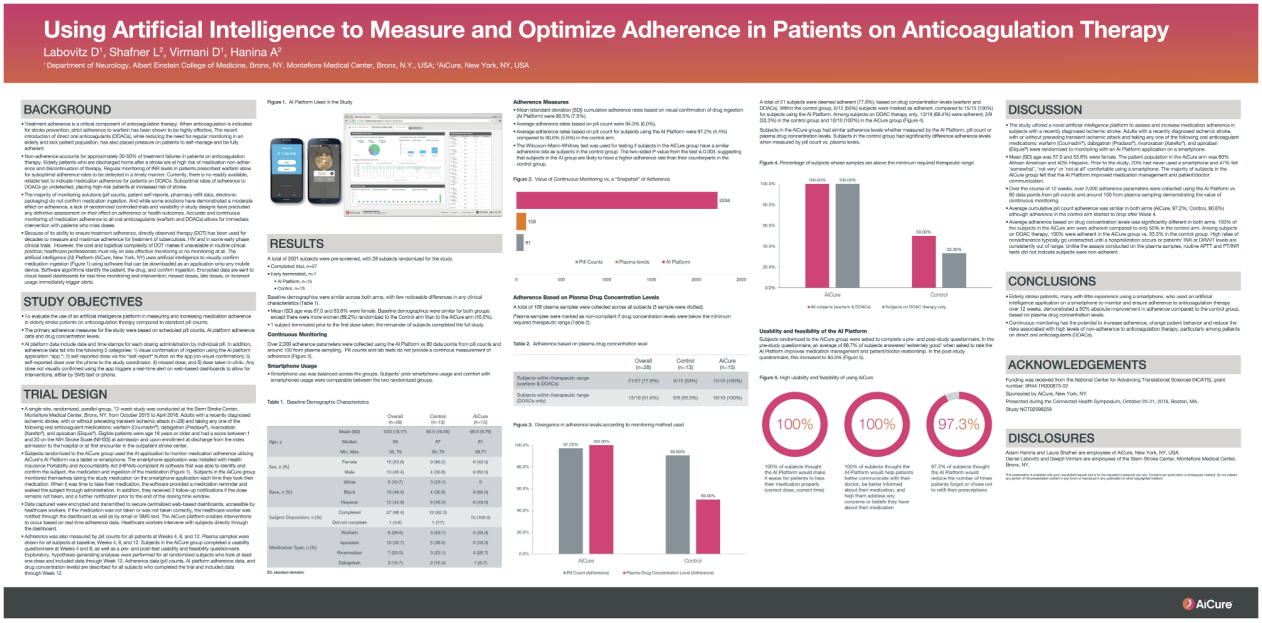
KEYWORDS

artificial intelligence; smartphone; adherence; stroke; medical informatics; mobile-phone app

This poster was presented at the Connected Health Symposium 2016, October 20-21, Boston, MA, United States. The poster is displayed as an image in Figure 1 and as a PDF in Multimedia Appendix 1.

Figure 1. Poster.



Multimedia Appendix 1

Poster.

[PDF File (Adobe PDF File), 1MB-Multimedia Appendix 1]

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