Using Computers and Innovation to Redesign Addiction Treatment and Recovery

Center for Health Enhancement Support Systems
Dave Gustafson PhD Director
(608) 263 4882
cchess.wisc.edu

Fiona McTavish MS, Deputy Director
Andre Quanbeck PhD, Systems
Andrew Isham MS, Design

Copyright; CHESS University of Wisconsin Madison 2013
Three Essential Ingredients of Change
(CHESS Foundation)

- Coping
- Competence
- Social Relatedness
- Autonomous Motivation

Quality of Life

Copyright; CHESS University of Wisconsin
Madison 2013
Video
ACHESS

• Social support
  – Discussion groups
  – Live Chat & text
  – Panic Button

• Virtual Counseling
  – Assertive outreach
  – Counselor contact
  – Video conferencing

• Education and training
  – Games and relaxation
  – Tailored information & stories
  – Healthy event newsletter

• Location tracking
  – Hi risk locator
  – Meeting locator

• Assessments
  – EMA
  – Scheduled assessment
  – ACHESS use

• Alerts
  – Reminders
  – Risk alerts
  – Clinician alerts

Copyright; CHESS University of Wisconsin Madison 2013
A Smartphone Application to Support Recovery From Alcoholism: A Randomized Clinical Trial

David H. Gustafson, PhD; Fiona M. McEvoy, MS; Ning Huan Chih, PhD; Amy K. Atwood, PhD; Robert A. Johnson, MA; NEIS Michael G. Edyve, MA; Michael J. Levey, PhD; Hilary Driscoll, MA; Steven M. Chisholm, MA; Lisa Dillenburg, MSW; Andrew Isham, MS; Dhvan Shah, PhD

**Importance** Patients leaving residential treatment for alcohol use disorders are not typically offered evidence-based continuing care, although research suggests that continuing care is associated with better outcomes. A smartphone-based application could provide effective continuing care.

**Objective** To determine whether patients leaving residential treatment for alcohol use disorders with a smartphone application to support recovery have fewer risky drinking days than control patients.

**Design, Setting, and Participants** An unmasked randomized clinical trial involving 3 residential programs operated by 1 nonprofit treatment organization in the Midwestern United States and 2 residential programs operated by 1 nonprofit organization in the Northeastern United States. In total, 349 patients who met the criteria for DSM-IV alcohol dependence when they entered residential treatment were randomized to treatment as usual (n = 179) or treatment as usual plus a smartphone (n = 170) with the Addiction-Comprehensive Health Enhancement Support System (A-CHESS), an application designed to improve continuing care for alcohol use disorders.

**Interventions** Treatment as usual varied across programs; none offered patients coordinated continuing care after discharge. A-CHESS provides monitoring, information, communication, and support services to patients, including ways for patients and counselors to stay in contact. The intervention and follow-up period lasted 8 and 4 months, respectively.

**Main Outcomes and Measures** Risky drinking days—the number of days during which a patient’s drinking in a 24-hour period exceeded 4 standard drinks for men and 3 standard drinks for women, with standard drink defined as one that contains roughly 14 g of pure alcohol (12 oz of regular beer, 5 oz of wine, or 1.5 oz of distilled spirits). Patients were asked to report their risky drinking days in the previous 30 days on surveys taken 4, 8, and 12 months after discharge from residential treatment.

**Results** For the 8 months of the intervention and 4 months of follow-up, patients in the A-CHESS group reported significantly fewer risky drinking days than did patients in the control group, with a mean of 3.9 vs 2.75 days (mean difference, 1.37; 95% CI, 0.46-2.27; P = .003).

**Conclusions and Relevance** The findings suggest that a multifaceted smartphone application may have significant benefit to patients in continuing care for alcohol use disorders.

**Trial Registration**: clinicaltrials.gov identifier: NCT01003819

Published online March 26, 2014.
ACHESS has better 30 day abstinence

Differences significant at p = .03

Month 4  Month 8  Month 12

N = 349

Copyright; CHESS University of Wisconsin
Madison 2013
ACHESS had 57% fewer heavy drinking days
Differences significant at p = .003

Copyright; CHESS University of Wisconsin
Madison 2013
The more they use, the better they get.
mPOWER reduced readmissions
18 months before & 18 months after mPower started
Distinguishing ACHESS Features

• Portal allows input directly into some **EHRs**.

• Uses smartphone **features**: location monitor/finder, Panic Button.

• Bayesian model **predicts** 7-day relapse; starts prevention.

• **Assertive** outreach contacts patients. Others: patient must login.

• Designed to **sustain** use. RCT: 60% were using ACHESS at 8 mo.

• Rapid access to expert **advice** < 24 hours.

• **Security**: Information encrypted; not stored on phones.
Other CHESS research
Quality of Life Effects
ACOA


Copyright; CHESS University of Wisconsin Madison 2013
CHESS Cost effectiveness: HIV infected patients.

Lung Cancer Survival: CHESS patients lived 35% longer.

Median days different: 3.5 months.  

Not an anticipated outcome


Copyright; CHESS University of Wisconsin Madison 2013
When CHESS shares patient status data with providers, patients improve.

If patient reports a health status level over threshold, & CHESS notifies the clinical team, Lung Cancer patients got better.

Incomplete List of eHealth Articles Published by the Center for Health Enhancement Systems Studie at the University of Wisconsin 9 21 2012.


Copyright; CHESS University of Wisconsin
Madison 2013


Thank you.