



Using Computers and Innovation to Redesign Addiction Treatment and Recovery

Center for Health Enhancement Support Systems

Dave Gustafson PhD Director

(608) 263 4882

chess.wisc.edu

Fiona McTavish MS, Deputy Director

Andre Quanbeck PhD, Systems

Andrew Isham MS, Design

Three Essential Ingredients of Change (CHESS Foundation)

Coping
Competence

Social
Relatedness

Autonomous
Motivation

**Quality
of Life**

Video

ACHESS

ACHESS



It is operating now!



- **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
 - ACHES use
- **Alerts**
 - Reminders
 - Risk alerts
 - Clinician alerts

Original Investigation

A Smartphone Application to Support Recovery From Alcoholism

A Randomized Clinical Trial

David H. Gustafson, PhD; Fiona M. McTavish, MS; Ming-Yuan Chih, PhD; Amy K. Atwood, PhD; Roberta A. Johnson, MA, MEd; Michael G. Boyle, MA; Michael S. Levy, PhD; Hilary Driscoll, MA; Steven M. Chisholm, MA; Lisa Dillenburg, MSW; Andrew Isham, MS; Dhavan 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 2-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 1.39 vs 2.75 days (mean difference, 1.37; 95% CI, 0.46-2.27; $P = .003$).

CONCLUSIONS AND RELEVANCE The findings suggest that a multifeatured smartphone application may have significant benefit to patients in continuing care for alcohol use disorders.

TRIAL REGISTRATION clinicaltrials.gov Identifier: NCT01003119

JAMA Psychiatry. doi:10.1001/jamapsychiatry.2013.4642
Published online March 26, 2014.

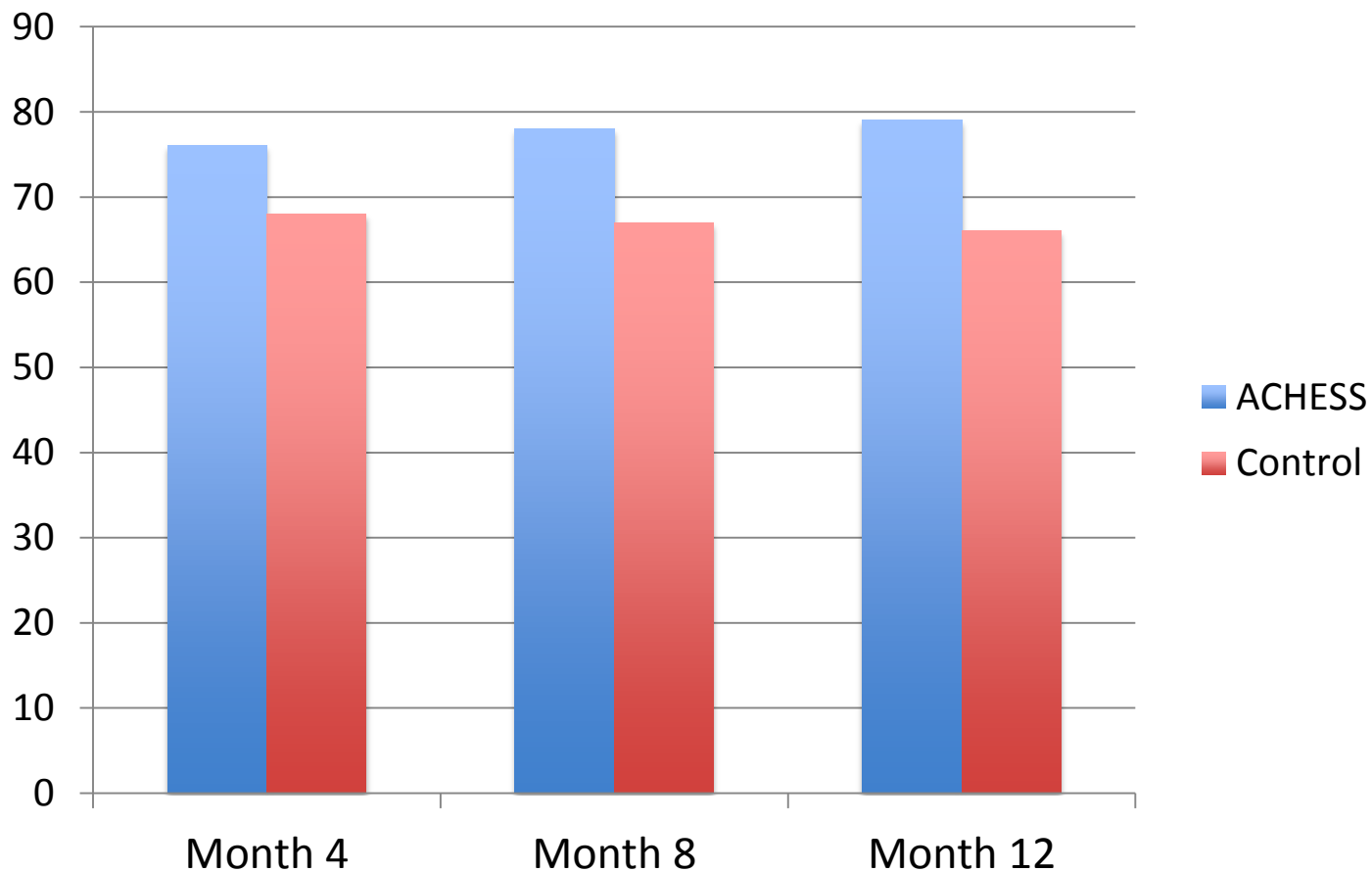
Supplemental content at
jamapsychiatry.com

Author Affiliations: Center for Health Enhancement Systems Studies, College of Engineering, University of Wisconsin–Madison (Gustafson, McTavish, Chih, Atwood, Johnson, Boyle, Dillenburg, Isham); North Shore Medical Center, Salem, Massachusetts (Levy); Fayette Companies, Peoria, Illinois (Driscoll); North Shore Community College, Lynn, Massachusetts (Chisholm); Mass Communications Research Center, School of Journalism and Mass Communication, University of Wisconsin–Madison (Shah).

Corresponding Author: David H. Gustafson, PhD, Center for Health Enhancement Systems Studies, College of Engineering, University of Wisconsin–Madison, 1513 University Ave, Madison, WI 53706 (dngustaf@wisc.edu).

ACHESS has better 30 day abstinence

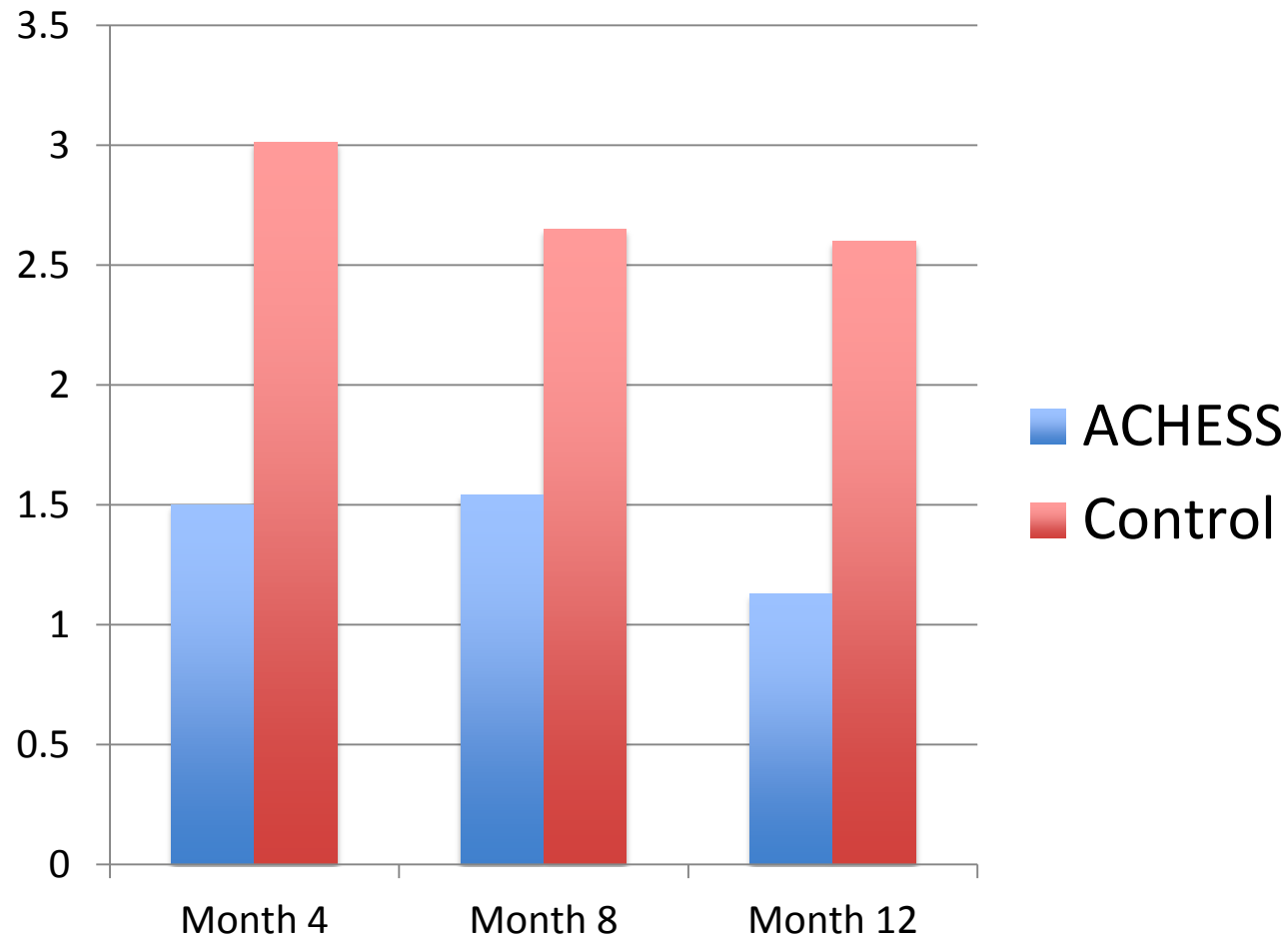
Differences significant at $p = .03$



N = 349

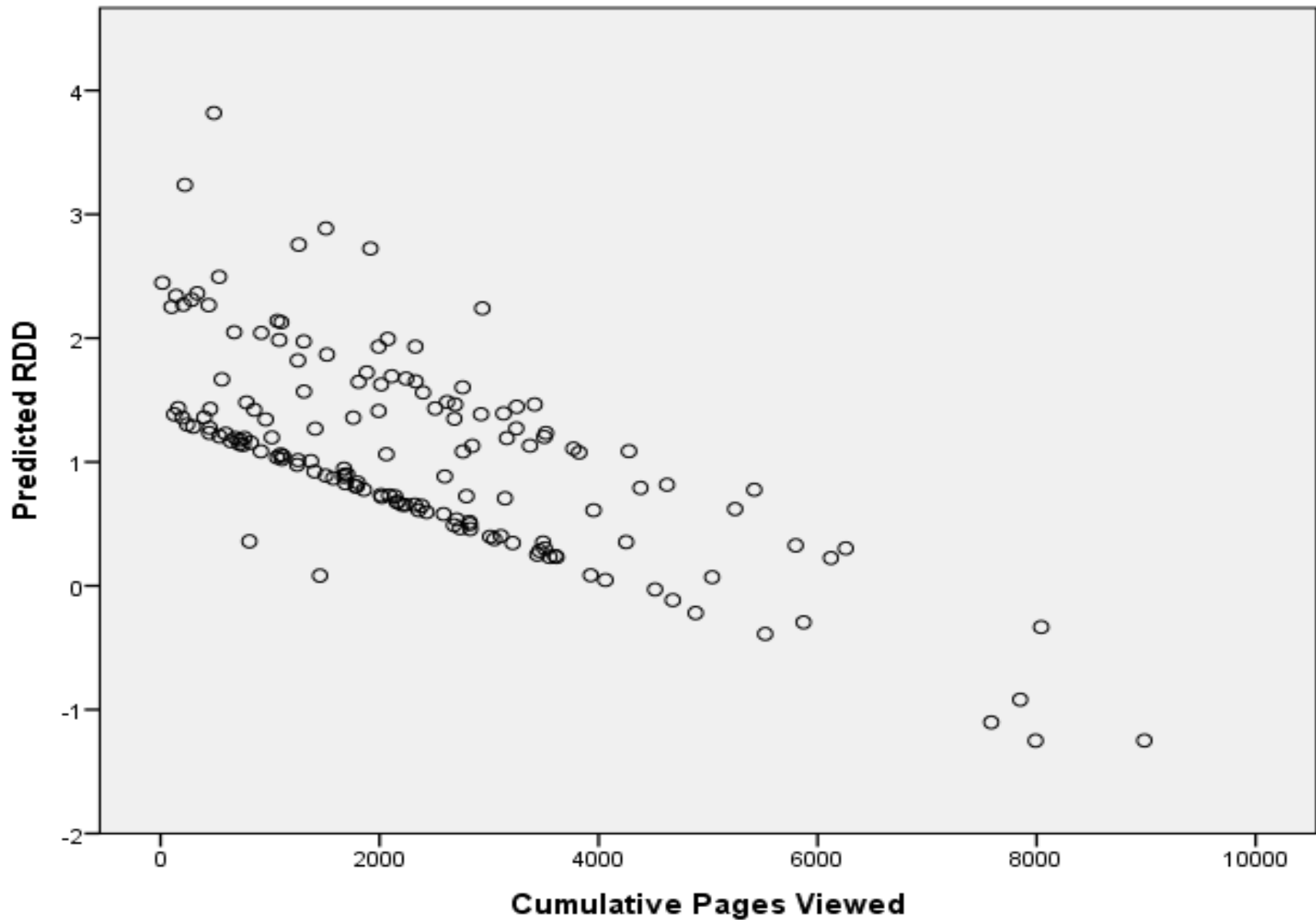
ACHESS had 57% fewer heavy drinking days

Differences significant at $p = .003$



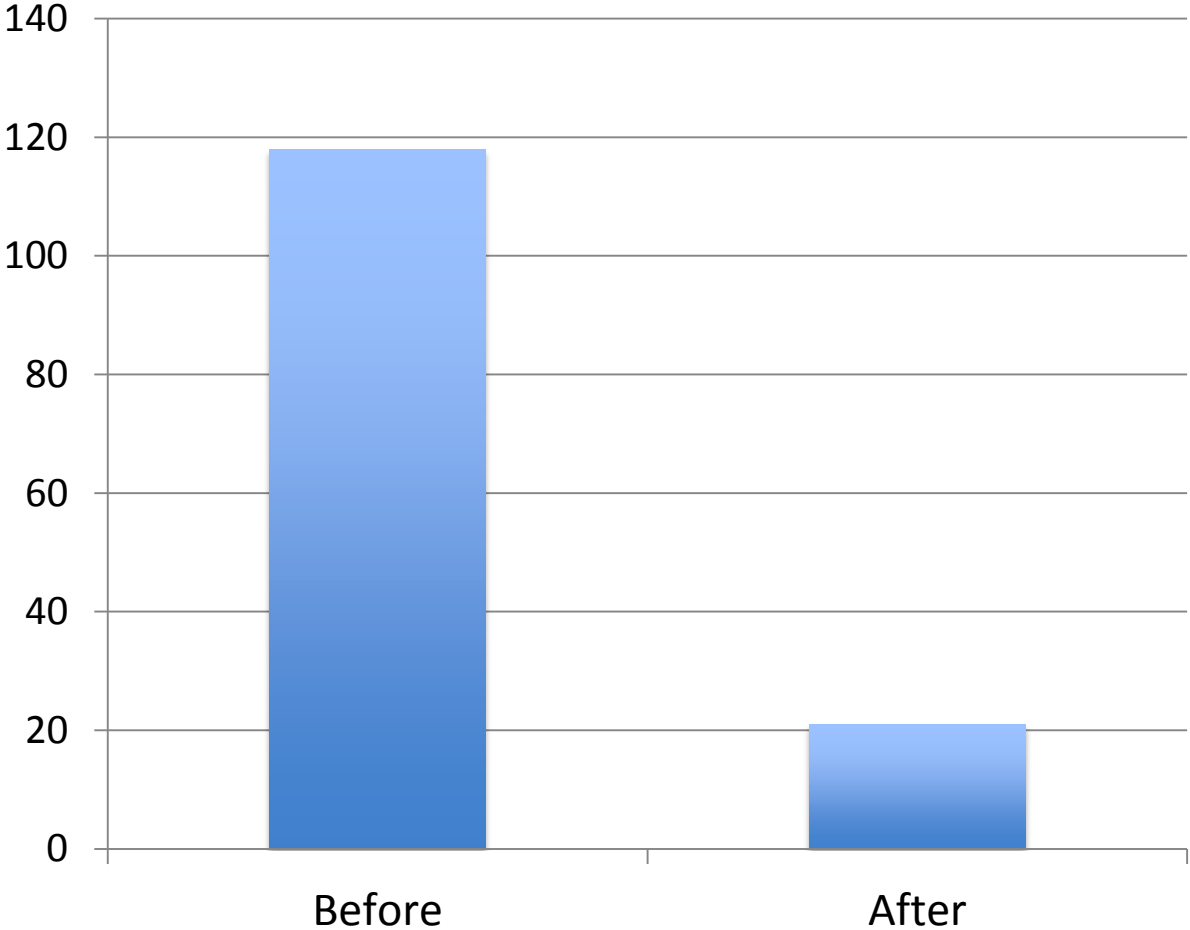
N = 349

The more they use, the better they get.



mPOWER reduced readmissions

18 months before & 18 months after mPower started



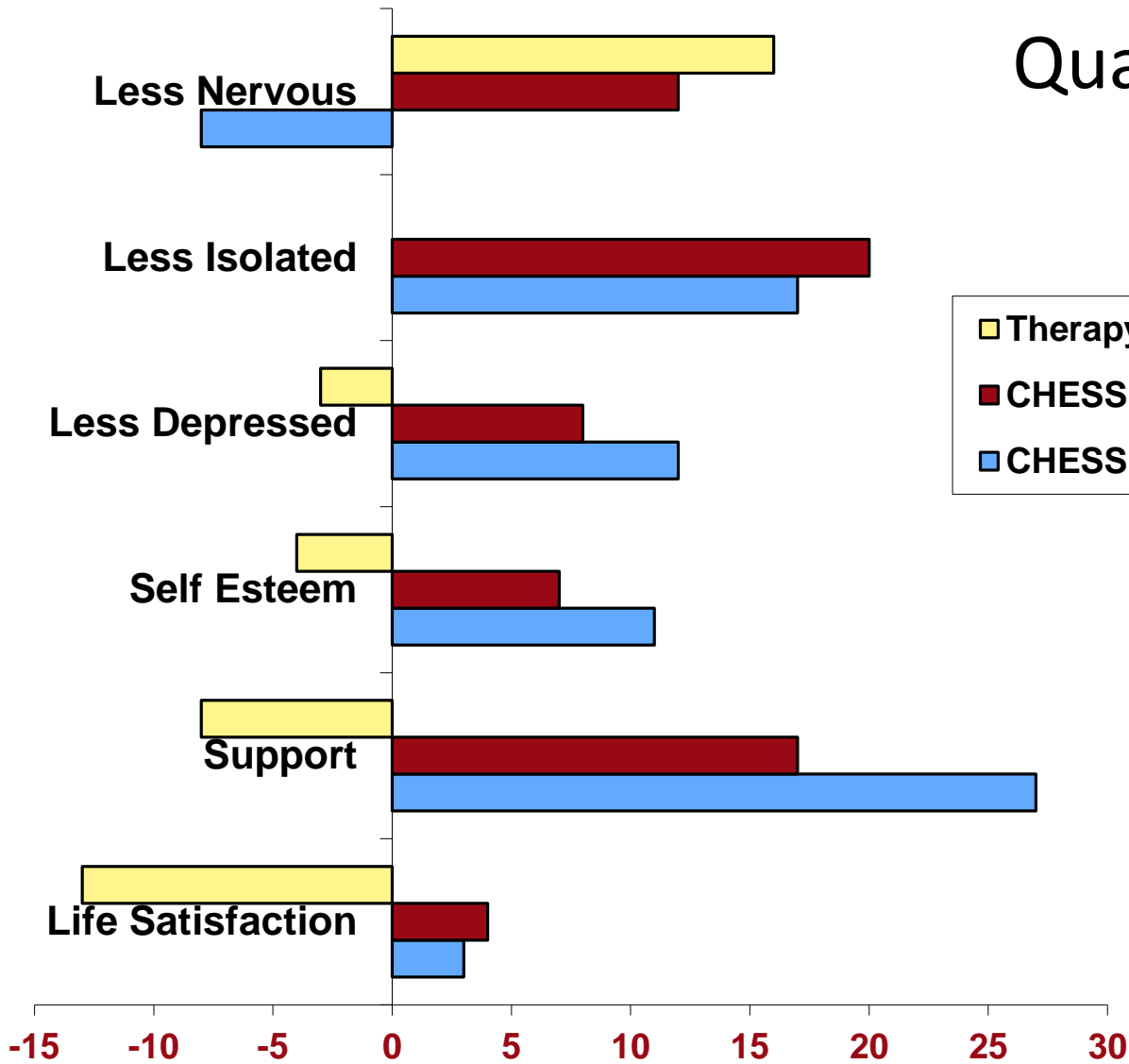
Distinguishing ACHES Features

- 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 ACHES at 8 mo.
- Rapid access to expert **advice** < 24 hours.
- **Security**: Information encrypted; not stored on phones.



Other CHESS research

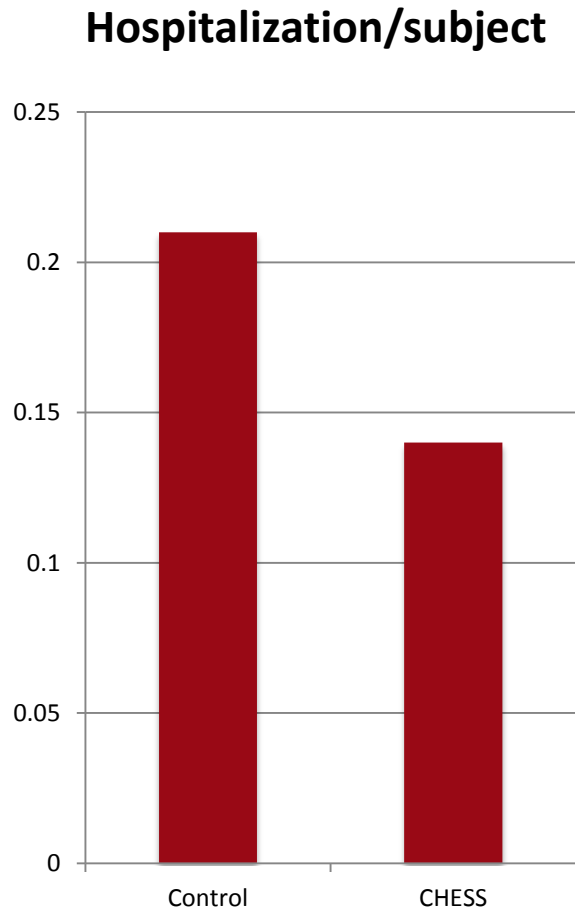
Quality of Life Effects ACOA



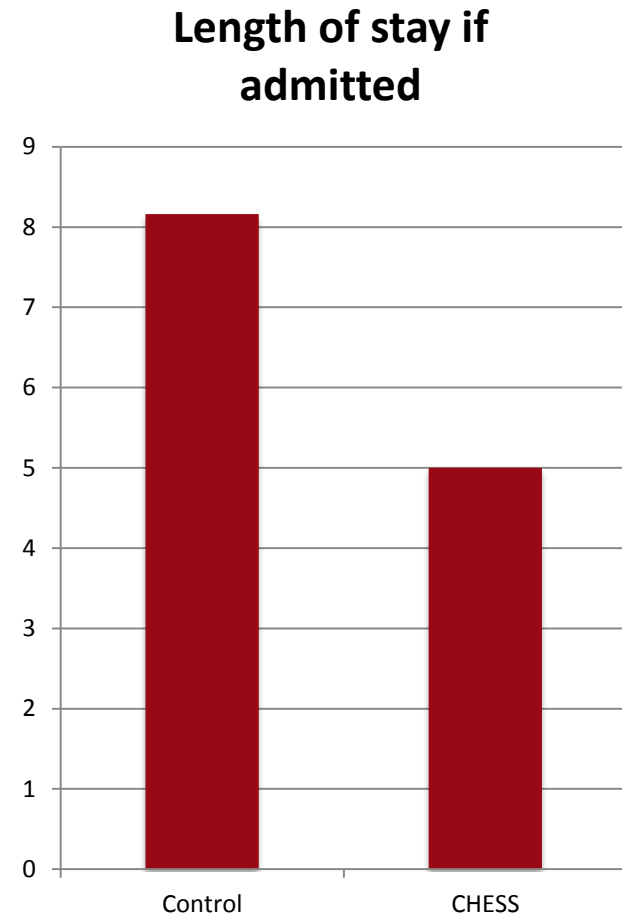
Percent Change in Outcomes, Pre-Test to Post-Test

Attendance:
Therapy = 37%
CHES + Therapy = 83%

CHES Cost effectiveness: HIV infected patients.

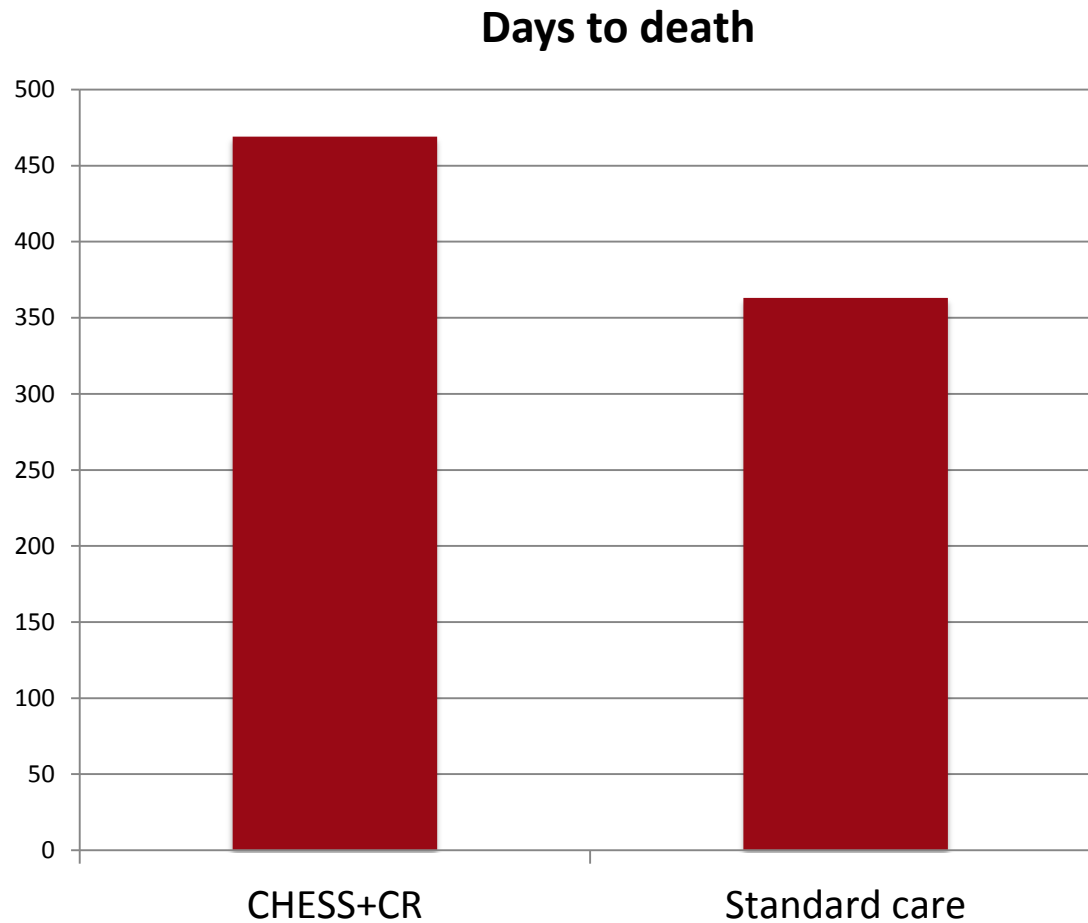


Tests significant
 $P < .025$



Gustafson, et al (1999). Am J of Preventive Medicine. 16(1). 1-9

Lung Cancer Survival: CHESS patients lived 35% longer.



Median days different : 3.5 months.

Not an
anticipated
outcome

P = .026

Gustafson D, et al (2013). *Cancer* 119(9), 1744-.

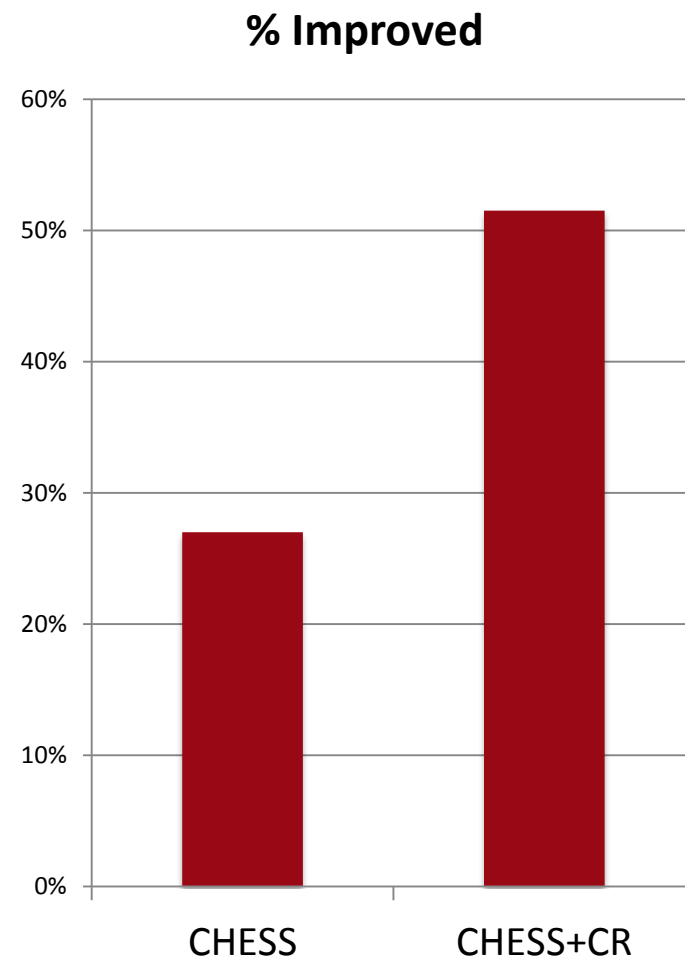
Copyright; CHESS University of Wisconsin
Madison 2013

When CHES shares patient status data with providers, patients improve.

If patient reports a health status level over threshold,

& CHES 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.

- Greist, J.H., Laughren, T.P., Gustafson, D.H., Stauss, F. F., Rowse, G.L., & Chiles, J.A. (1973). A computer interview for suicide-risk prediction. *The American Journal of Psychiatry*, 130(12), 1327-1332.
-
- Gustafson, D.H., Greist, J.H., Stauss, F.F., Erdman, H., & Laughren, T. (1977). A probabilistic system for identifying suicide attemptors. *Computers and Biomedical Research*, 10(2), 83-89.
-
- Friedman, R.B., & Gustafson, D.H. (1977). Computers in clinical medicine, a critical review. *Computers and Biomedical Research*, 10(3), 199-204.
-
- Bosworth, K., Chewning, B., Day, T., Hawkins, R., & Gustafson, D. (1981). BARNY: A computer based health information system for adolescents. *The Journal of Early Adolescence*, 1(3), 315-321.
- Gustafson, D.H., Tianen, B., & Greist, J.H. (1981). A computer-based system for identifying suicide attemptors. *Computers and Biomedical Research*, 14(2), 144-157.
-
- Bosworth, K., Gustafson, D. H., Hawkins, R. P., Chewning, B., & Day, T. (1983). Adolescents, health education, and computers: The Body Awareness Resource Network (BARN). *Health Education*, 14(6), 58-60.
-
- Kuhnen, K.K., Chewning, B., Day, T., Bosworth, K., Gustafson, D., Hawkins, R., & Janty, A. (1983). BARNY: A computer for teaching sex education. *The American Journal of Maternal/Child Nursing*, 8(5), 350-353.
-
- Day, T., Bosworth, K., Gustafson, D.H., Chewning, B., & Hawkins, R. (1985). A computer system to help family members talk to one another. *Marriage & Family Review*, 8(1-2), 111-120.
-
- Erdman, H.P., Greist, J.H., Gustafson, D.H., Taves, J.E., & Klein, M.H. (1987). Suicide risk prediction by computer interview: A prospective study. *Journal of Clinical Psychiatry*, 48(12), 464-467.
-
- Gustafson, D.H., Bosworth, K., Chewning, B., & Hawkins, R.P. (1987). Computer-based health promotion: Combining technological advances with problem-solving techniques to effect successful health behavior changes. *Annual Review of Public Health*, 8(1), 387-415.
-
- Hawkins, R., Gustafson, D.H., Chewning, B., Bosworth, K., & Day, P. (1987). Interactive computer programs as public information campaigns for hard-to-reach populations: The BARN Project example. *Journal of Communication*, 37(2), 8-28.
-
- Bosworth, K., & Gustafson, D. H. (1991). CHESS: Providing decision support for reducing health risk behavior and improving access to health services. *Interfaces*, 21(3), 93-104.
-
- Gustafson, D., Wise, M., McTavish, F., Taylor, J.O., Wolberg, W., Stewart, J., Smalley, R.V., & Bosworth, K. (1993). Development and pilot evaluation of a computer based support system for women with breast cancer. *Journal of Psychosocial Oncology*, 11(4), 69-93.
-
- Gustafson, D.H., Taylor, J.O., Thompson, S., & Chesney, P. (1993). Assessing the needs of breast cancer patients and their families. *Quality Management in Health Care*, 2(1), 6-17.
-
- Bosworth, K., Gustafson, D. H., & Hawkins, R. P. (1994). The BARN system: Use and impact of adolescent health promotion via computer. *Computers in Human Behavior*, 10(4), 467-482.
-
- Lu, H., & Gustafson, D. H. (1994). An empirical study of perceived usefulness and ease of use of a computerized support system over time. *International Journal of Information Management*, 14, 317-329.
-
- Han, J.Y., Shaw, B.R., Hawkins, R.P., Pingree, S., McTavish, F., & Gustafson, D.H. (2008). Expressing positive emotions within online support groups by women with breast cancer. *Journal of Health Psychology*, 13(8), 1002-1007.
-
- Han, J.Y., Hawkins, R.P., Shaw, B.R., Pingree, S., McTavish, F., & Gustafson, D.H. (2009). Unraveling uses and effects of an interactive health communication system. *Journal of Broadcasting & Electronic Media*, 53(1), 112-133. NIHMSID: NIHMS329694
-
-

- Gustafson, D. H., Boberg, E., Bricker E., & Hawkins, R. (1994). Using of quality management to develop and test a computer-based system to help AIDS patients improve their quality of life and reduce costs of care. *AHSR & FHSR Annual Meeting Abstract Book, 11*, 106.
- Boberg, E. W., Gustafson, D. H., Hawkins, R. P., Chan, C. L., Bricker, E., Pingree, S., & Berhe, H. (1995). Development, acceptance, and use patterns of a computer-based education and social support system for people living with AIDS/HIV infection. *Computers in Human Behavior, 11*(2), 289-311.
-
- McTavish, F.M., Gustafson, D.H., Owens, B.H., Hawkins, R.P., Pingree, S., Wise, M., Taylor, J.O., & Apantaku, F.M. (1995). CHES: An interactive computer system for women with breast cancer piloted with an underserved population. *Journal of Ambulatory Health Care, 18*(3), 35-41.
-
- Eng, T., Gustafson, D. H., Henderson, J., Jimison, H., & Patrick, K. (1999). Introduction to evaluation of interactive health communication applications. *American Journal of Preventive Medicine, 16*(1), 10-15.
-
- Gustafson, D.H., McTavish, F.M., Boberg, E., Owens, B.H., Sherbeck, C., Wise M., Pingree, S., & Hawkins, R.P. (1999). Empowering patients using computer-based support systems. *Quality in Health Care, 8*, 49-56.
-
- Gustafson, D.H., Robinson, T., Ansley, D., Adler, L., & Brennan, P.F. (1999). Consumers and the evaluation of interactive health communication applications. *American Journal of Preventive Medicine, 16*(1), 23-29. Republished in *Health Communication, (2009)*, Sage.
-
- Lu, H., & Gustafson, D. H. (1999). Cognitive style and medical computerized support system use. *International Journal of Healthcare Technology and Management, 1*(3-4), 317-327.
-
- Rolnick, S., Owens, B.H., Botta, R., Sathe, L., Hawkins, R.P., Cooper, R., Kelley, M., & Gustafson, D.H. (1999). Computerized information and support for patients with breast cancer or HIV infection. *Nursing Outlook, 47*(2), 78-83.
-
- Shaw, B.R., McTavish, F., Hawkins, R., Gustafson, D.H., & Pingree, S. (2000). Experiences of women with breast cancer: Exchanging social support over the CHES computer network. *Journal of Health Communication, 5*(2), 135-159.
-
- Gustafson, D.H., Hawkins, R., Pingree, S., McTavish, F., Arora, N.K., Mendenhall, J., Cella, D.F., Serlin, R.C., Apantaku, F.M., Stewart, J., & Salner, A. (2001). Effect of computer support on younger women with breast cancer. *Journal of General Internal Medicine, 16*(7), 435-445. PMID: PMC1495237
-
- Stewart, J.A., Hawkins, R.P., & Gustafson, D.H. (2001). Internet technology-based patient education: The CHES program. *Oncology Issues, 16*(6), 10-14.
-
- Gustafson, D.H., Julesberg, K., Stengle, W., McTavish, F.M., & Hawkins, R.P. (2001). Assessing costs and outcomes of providing computer support to underserved women with breast cancer: A work in progress. *Electronic Journal of Communication, 11*(3-4).
-
- Gustafson, D.H., Hawkins, R.P., Boberg, E.W., McTavish, F., Owens, B., Wise, M., Berhe, H., & Pingree, S. (2002). CHES: Ten years of research and development in consumer health informatics for populations, including the underserved. *International Journal of Medical Informatics, 65*(3), 169-177.
-
- Meis, T.M., Gaie, M.J., Pingree, S., Boberg, E.W., Patten, C.A., Offord, K.P., Berry, K.L., & Gustafson, D.H. (2002). Development of a tailored, internet-based smoking cessation intervention for adolescents. *Journal of Computer-Mediated Communication, 7*(3), 1-7.
-
- Boberg, E.W., Gustafson, D.H., Hawkins, R.P., Offord, K.P., Koch, C., Wen, K.Y., Kreutz, K., & Salner, A. (2003). Assessing the unmet information, support and care delivery needs of men with prostate cancer. *Patient Education and Counseling, 49*(3), 233-242.
-
- McTavish, F.M., Pingree, S., Hawkins, R., & Gustafson, D. (2003). Cultural differences in use of an electronic discussion group. *Journal of Health Psychology, 8*(1), 105-117.
-
- Patten, C.A., Offord, K.P., Ames, S.C., Decker, P.A., Croghan, I.T., Dornelas, E.A., Pingree, S., Boberg, E.W., Gustafson, D.H., Ahluwalia, J.S., Wolter, T.D., & Hurt, R.D. (2003). Differences in adolescent smoker and nonsmoker perceptions of strategies that would help an adolescent quit smoking. *Annals of Behavioral Medicine, 26*(2), 123-133.
-
- Lieberman, M.A., Golant, M., Winzelberg, A., McTavish, F., & Gustafson, D.H. (2003). Comparisons: Professionally-directed and self-directed internet groups for women with breast cancer. *International Journal of Self Help & Self Care, 2*(3), 219-235.
-
- Pingree, S., Boberg, E. W., Patten, C., Offord, K., Gaie, M., Schensky, A., Gustafson, D. H., Dornelas, E., & Ahluwalia, J. (2004). Helping adolescents quit smoking: A needs assessment of current and former teen smokers. *Health Communication, 16*(2), 185-194.

- Gustafson, D. H., & Wyatt, J. (2004). Evaluation of e-health systems and services -- How much is enough? (Editorial). *British Medical Journal*, 328(1150). PMID: PMC411080
- Shaw, B.R., Hawkins, R., McTavish, F., Pingree, S., & Gustafson, D.H. (2006). Effects of insightful disclosure within computer mediated support groups on women with breast cancer. *Health Communication*, 19(2), 133-142.
-
- Wen, K.Y., & Gustafson, D.H. (2004). Needs assessment for cancer patients and their families. *Health and Quality of Life Outcomes*, 2, 11. PMID: PMC394345
-
- Gustafson, D.H., McTavish, F.M., Stengle, W., Ballard, D., Hawkins, R., Shaw, B.R., Jones, E., Julesberg, K., McDowell, H., Chen, W.C., Volrathongchai, K., & Landucci, G. (2005). Use and impact of eHealth system by low-income women with breast cancer. *Journal of Health Communication*, 10(Suppl. 1), 195-218.
-
- Gustafson, D.H., McTavish, F.M., Stengle, W., Ballard, D., Jones, E., Julesberg, K., McDowell, H., Landucci, G., & Hawkins, R. (2005). Reducing the digital divide for low-income women with breast cancer: A feasibility study of a population-based intervention. *Journal of Health Communication*, 10(Suppl. 1), 173-193.
-
- Shaw, B.R., Hawkins, R., Arora, N., McTavish, F., Pingree, S., & Gustafson, D.H. (2006). An exploratory study of predictors of participation in a computer support group for women with breast cancer. *CIN: Computers, Informatics, Nursing*, 24(1), 18-27.
-
- Shaw, B., Gustafson, D., Hawkins, R., McTavish, F., McDowell, H., Pingree, S., & Ballard, D. (2006). How underserved breast cancer patients use and benefit from eHealth programs: Implications for closing the digital divide. *American Behavioral Scientist*, 49(6), 823-834.
-
- Japuntich S.J., Zehner, M.E., Smith, S.S., Jorenby, D.E., Valdez, J.A., Fiore, M.C., Baker, T.B., & Gustafson, D.H. (2006). Smoking cessation via the Internet: A randomized clinical trial of an Internet intervention as adjuvant treatment in a smoking cessation intervention. *Nicotine & Tobacco Research*, 8(Suppl. 1), S59-S67.
-
- Patten C.A., Croghan, I.T., Meis, T.M., Decker, P.A., Pingree, S., Colligan, R.C., Dornelas, E.A., Offord, K.P., Boberg E.W., Baumberger, R.K., Hurt, R.D., & Gustafson, D.H. (2006). Randomized clinical trial of an internet-based versus brief office intervention for adolescent smoking cessation. *Patient Education and Counseling*, 64(1-3), 249-258.
-
- Yun, G.W., Ford, J., Hawkins, R.P., Pingree, S., McTavish, F., Gustafson, D., & Berhe, H. (2006). On the validity of client-side vs server-side web log data analysis. *Internet Research*, 16(5), 537-552. Highly Commended Winner at the Emerald Literati Network Awards for Excellence 2007.
-
- Shaw, B., Han, J.Y., Kim, E., Gustafson, D., Hawkins, R., Cleary, J., McTavish, F., Pingree, S., Eliason, P., & Lumpkins, C. (2007). Effects of prayer and religious expression within computer support groups on women with breast cancer. *Psycho-Oncology*, 16(7), 676-687.
- Wise M., Gustafson, D.H., Sorkness, C.A., Molfenter, T., Staresinic, A., Meis, T., Hawkings, R.P., Shanovich, K.K., & Walker, N.P. (2007). Internet telehealth for pediatric asthma case management: Developing integrated computerized and case manager features for tailoring a web-based asthma education program. *Health Promotion Practice*, 8(3), 282-291. PMID: PMC2366971
- Shaw, B.R., Han, J.Y., Baker, T., Witherly, J., Hawkins, R.P., McTavish, F., & Gustafson, D.H. (2007). How women with breast cancer learn using interactive cancer communication systems. *Health Education Research*, 22(1), 108-119.
- Shaw, B.R., Han, J. Y., Hawkins, R.P., Stewart, J. McTavish, F., & Gustafson, D.H. (2007). Doctor-patient relationship as motivation and outcome: Examining uses of an interactive cancer communication system. *International Journal of Medical Informatics*, 76(4), 274-282.
-
- Saver, B.G., Gustafson, D., Taylor, T.R., Hawkins, R.P., Woods, N.F., Dinauer, S., Casey, S., MacLaren-Loranger, A. (2007). A tale of two studies: The importance of setting, subjects and context in two randomized, controlled trials of a web-based decision support for perimenopausal and postmenopausal health decisions. *Patient Education and Counseling*, 66(2), 211-222.
-
- Kreps, G.L., Gustafson, D., Salovey, P., Perocchia, R.S., Wilbright, W., Bright, M.A., & Muha, C. (2007). The NCI Digital Divide Pilot Projects: Implications for cancer education. *Journal of Cancer Education*, 22(Suppl. 1), S56-S60.
-
- Patten, C.A., Rock, E., Meis, T.M., Decker, P.A., Colligan, R.C., Pingree, S., Dornelas, E., Offord, K.P., Boberg, E.W., & Gustafson, D.H. (2007). Frequency and type of use of a home-based, internet intervention for adolescent smoking cessation. *Journal of Adolescent Health*, 41(5), 437-443. PMID: PMC2063436
-
- Shaw, B.R., Han, J.Y., Hawkins, R.P., McTavish, F.M., & Gustafson, D.H. (2008). Communicating about self and others within an online support group for women with breast cancer and subsequent outcomes. *Journal of Health Psychology*, 13(7), 930-939.
-
- Gustafson, D.H., Hawkins, R., McTavish, F., Pingree, S., Chen, W.C., Volrathongchai, K., Stengle, W., Stewart, J.A., & Serlin, R.C., (2008). Internet-based interactive support for cancer patients: Are integrated systems better? *Journal of Communication*, 58(2), 238-257. PMID: PMC3144782
-
- Shaw, B.R., DuBenske, L.L., Han, J.Y., Cofta-Woerpel, L., Bush, N., Gustafson, D.H., & McTavish, F. (2008). Antecedent characteristics of online cancer information seeking among rural breast cancer patients: An application of the Cognitive-Social Health Information Processing (C-SHIP) model. *Journal of Health Communication*, 13(4), 389-408.
-
-

- DuBenske, L.L., Chih, M.Y., Dinauer, S., Gustafson, D.H., & Cleary, J.F. (2008). Development and implementation of a clinician reporting system for advanced stage cancer: Initial lessons learned. *Journal of the American Medical Informatics Association*, 15(5), 679-686. PMID: PMC2528046
- Dubenske, L.L., Burke Beckjord, E., Hawkins, R.P., & Gustafson, D.H. (2009). Psychometric evaluation of the Health Information Orientation Scale: A brief measure for assessing health information engagement and apprehension. *Journal of Health Psychology*, 14(6), 721-730. PMID: PMC2729509
- Kim, J., Han, J. Y., Shaw, B., McTavish, F., & Gustafson, D. (2010). The roles of social support and coping strategies in predicting breast cancer patients' emotional well-being: Testing mediation and moderation models. *Journal of Health Psychology*, 15(4), 543-552. PMID: PMC3145334
- Atienza, A. A., Hesse, B. W., Gustafson, D. H., & Croyle, R. T. (2010). E-health research and patient-centered care examining theory, methods, and application. *American Journal of Preventive Medicine*, 38(1), 85-88.
- Pingree, S., Hawkins, R., Baker, T., DuBenske, L., Roberts, L.J., & Gustafson, D.H. (2010). The value of theory for enhancing and understanding eHealth interventions. *American Journal of Preventive Medicine*, 38(1), 103-109. PMID: PMC2826889
- Nambisan, P. Gustafson, D., Pingree, S., & Hawkins, R. (2010). Patients' sociability and usability experience in online health communities: Impact on attitudes towards the healthcare organization and its services. *International Journal of Web Based Communities*, 6(4), 395-409. (Special October issue on Web-based Communities and Healthcare)
- DuBenske, L.L., Gustafson, D.H., Namkoong, K., Hawkins, R.P., Brown, R.L., McTavish, F., Carmack, C.L., Buss, M., Govindan, R., & Cleary, J.F. (2010). Effects of an interactive cancer communication system on lung cancer caregivers' quality of life and negative mood: A randomized clinical trial. *Psycho-Oncology*, 19(Suppl. 2), 100. (Conference abstract)
- Baker, T.B., Gustafson, D.H., Shaw, B., Hawkins, R., Pingree, S., Roberts, L., & Strecher, V. (2010). Relevance of CONSORT reporting criteria for research on eHealth interventions. *Patient Education and Counseling*, 81(Suppl. 1), S77-S86. PMID: PMC2993846
- Mayer, D.K., Ratichek, S., Berhe, H., Stewart, S., McTavish, F. Gustafson, D., & Parsons, S.K. (2010). Development of a health-related website for parents of children receiving hematopoietic stem cell transplant: HSCT-CHESS. *Journal of Cancer Survivorship*, 4(1), 67-73. PMID: PMC3049177
- DuBenske, L.L., Chih, M.Y, Gustafson, D.H., Dinauer, S., & Cleary, J.F. (2010). Caregivers' participation in the oncology clinic visit mediates the relationship between their information competence and their need fulfillment and clinic visit satisfaction. *Patient Education and Counseling*, 81(1), S94-S99. PMID: PMC2993845
- Wise, M., Pulvermacher, A., Shanovich, K.K., Gustafson, D.H., Sorkness, C., & Bhattacharya, A. (2010). Using action research to implement an integrated pediatric asthma case management and eHealth intervention for low-income families. *Health Promotion Practice*, 11(6), 798-806.
- Han, J.Y., Wise, M., Kim, E., Pingree, R., Hawkins, R., Pingree, S., McTavish, F., & Gustafson, D. (2010). Factors associated with use of interactive cancer communication system: An application of the Comprehensive Model of Information Seeking (CMIS). *Journal of Computer-Mediated Communication*, 15(3), 367-388. PMID: PMC3133670 (Lead article)
- Namkoong, K., Shah, D.V., Han, J.Y., Kim, S.C., Yoo, W., Fan, D., McTavish, F.M., & Gustafson, D.H. (2010). Expression and reception of treatment information in breast cancer support groups: How health self-efficacy moderates effects on emotional well-being. *Patient Education and Counseling*, 81(1), S41-S47. PMID: PMC2993816
- DuBenske, L. L., Gustafson, D. H., Shaw, B. R., & Cleary, J. F. (2010). Web-based cancer communication and decision making systems: Connecting patients, caregivers, and clinicians for improved health outcomes. *Medical Decision Making*, 30(6), 732-744. PMID: PMC3085247
- Gustafson, D.H., Shaw, B.R., Isham, A., Baker, T., Boyle, M.G., & Levy, M. (2011). Explicating an evidence-based, theoretically informed, mobile technology-based system to improve outcomes for people in recovery for alcohol dependence. *Substance Use and Misuse*, 46(1), 96-111. PMID: PMC3179272
- Gustafson, D.H., Boyle, M.G., Shaw, B.R., Isham, A., McTavish, F., Richards, S., Schubert, C., Levy, M., & Johnson, K. (2011). An e-Health solution for people with alcohol problems. *Alcohol Research & Health*, 33(4), 327-337. NIHMSID: NIHMS316851
- Han, J.Y., Shah, D.V., Kim, E., Namkoong, K., Lee, S.Y., Moon, T.J., Cleland, R., Bu, Q.L, McTavish, F.M., & Gustafson, D.H. (2011). Empathic exchanges in online cancer support groups: Distinguishing message expression and reception effects. *Health Communication*, 26(2), 185-197.

- Baker, T.B., Hawkins, R., Pingree, S., Roberts, L.J., McDowell, H.E., Shaw, B.R., Serlin, R., Dillenburg, L., Swoboda, C.M., Han, J.Y., Stewart, J.A., Carmack-Taylor, C.L., Salner, A., Schlam, T.R., McTavish, F., & Gustafson, D.H. (2011). Optimizing eHealth breast cancer interventions: Which types of eHealth services are effective? *Translational Behavioral Medicine: Practice, Policy, Research*, 1(1), 134-145. PMID: PMC3119549
-
- Namkoong, K., DuBenske, L.L., Shaw, B.R., Gustafson, D.H., Hawkins, R.P., Shah, D.V., McTavish, F.M., & Cleary, J.F. (2011). Creating a bond between caregivers online: Effect on caregivers' coping strategies. *Journal of Health Communication*. Available online: October 17, 2011. doi:10.1080/10810730.2011.585687
-
- Corn, M., Gustafson, D.H., Harris, L.M., Kutner, J.S., McFarren, A.E., & Shad, A.T. (2011). Survey of consumer informatics for palliation and hospice care. *American Journal of Preventive Medicine*, 40(5, Suppl. 2), S173-S178. NIHMSID: NIHMS285545
-
- Hawkins, R. P., Pingree, S., Baker, T. B., Roberts, L. J., Shaw, B. R., McDowell, H., Serlin, R. C., Dillenburg, L., Swoboda, C. M., Han, J. Y., Stewart, J. A., Carmack, C. L., Salner, A., Schlam, T. R., McTavish, F., &
- Gustafson, D. H. (2011). Integrating eHealth with human services for breast cancer patients. *Translational Behavioral Medicine*, 1(1), 146-154. NIHMSID: NIHMS32982
- Kim, E., Han, J.Y., Moon, T.J., Shaw, B., Shah, D.V., McTavish, F.M., & Gustafson, D.H. (2011). The process and effect of supportive message expression and reception in online breast cancer support groups. *Psycho-Oncology*. 20; 531-540.
-
- Lu, H.Y., Shaw, B.R., & Gustafson, D.H. (2011). Online health consultation: Examining uses of an interactive cancer communication tool by low-income women with breast cancer. *International Journal of Medical Informatics*, (80)7, 518-528.
-
- Han, J.Y., Kim, J.H., Yoon, H.J., Shim, M., McTavish, F.M., & Gustafson, D.H. (2011). Social and psychological determinants of levels of engagement with an online breast cancer support group: Posters, lurkers, and non-users. *Journal of Health Communication*. doi:10.1080/10810730.2011.585696 [November 15, 2011, Epub ahead of print]
-
- Kim, E., Han, J. Y., Shah, D., Shaw, B., McTavish, F., Gustafson, D. H., & Fan, D. (2011). Predictors of supportive message expression and reception in an interactive cancer communication system. *Journal of Health Communication*, 16(10), 1106-1121.
-
- Kim, E., Han, J. Y., Moon, T.J., Shaw, B., Shah, D., McTavish, F., & Gustafson, D. (2012). The process and effect of supportive message expression and reception in online cancer support groups. *Psycho-oncology*, 21, 531-540.
-
- Gustafson, D., McTavish, F., Schubert, C., & Johnson, R.A. (2012). The effect of a computer-based intervention on adult children of alcoholics. *Journal of Addiction Medicine*. 6(1); 24-28. doi: 10.1097/ADM.0b013e31822b80ca
-
- Gustafson D, Wise, M, Bharracharya A, et al. (2012). The Effects of Combining Web-based eHealth with Nurse Case Management for Pediatric Asthma Control: A Randomized Trial. *Journal of Medical Internet Research*. 14(4):e101.
-
-



Thank you.