Developing a Healthy Aging System

Center for Health Enhancement Support Systems

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- Families
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Disciplines involved in Center

- Systems Engineering
- Communication Science
- Gerontology/Geriatrics
- Computer Science
- Educational Psychology
- Statistics
- Nursing
- Addiction Medicine
- Political Science
- Psychophysiology
- Neuroscience
- Social Work
- Population Health
My Job:

Components of an ICT that achieve health?

Describe a system focused on health.

Role of mobile and sensors?

Role of analytics?
What does a system need to get health?

Individuals, “Framilies”, Community.

LONG DURATION.
J Studies on Alcohol. 63, 551-.

ASSERTIVE OUTREACH.
Addictive Behaviors. 11, 105-.

MONITORING (sensors).
JAMA Psychiatry. 71(5):566-.

FAMILY.
Cancer. 119(9), 1744-.

PROMPTS AND REMINDERS.
IEE: Intel Transp Sys. 153(1). 51-.

DECISION TAKING
J Adol Subst Abuse. 16, 69-.

REINTERPRETATION.
Pain. 146(1-2):205-.

PERSON, FAMILY, CLINICIAN COMMUNICATION
J Cardiopulm Rehab. 23(5). 341-

SOCIAL SUPPORT.
J Hlth Psych. 76, 274-.

ANALYTICS.
Comp & Biomed Res, 10(2), 83-.
Elder Tree

Richland County
Rural

Milwaukee County
Urban

Waukesha County
Suburban
Elder Tree
The Customer is **Always** Right.

- Obsessively understand the customers.
  - Needs and assets.
  - Walk through
  - Time in the home

- Need support systems to build on assets and reduce needs.
Everyone is right

Elders
- Isolation & Loneliness
- Community events
- Transport there

Clinicians
- Falls
- Adherence
- Dementia
- Depression

Outcomes
- Stay in home
- Less admissions
- Quality of life
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 locater
  - Meeting locater
- Assessments
  - EMA
  - Scheduled assessment
  - ACHESS use
- Alerts
  - Reminders
  - Risk alerts
  - Clinician alerts

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Keep it simple
Conversations

- Private Messages
- Public Discussions
- Family and Friends
- Ask a Coach

Need Help with Elder Tree? Call 1-800-480-9223, Monday - Friday 9:00am to 5:00pm
Technology can’t do it alone

18 months before & 18 months after the bundle started

ACHESS + long lasting medication
Role of mobile and sensors

The surface is just scratched.

We are using:

ACCELEROMETERS.

CAMERA

GPS (video).

But:

BE CAREFUL OF SPYING

Avoid the mice!
Role of analytics

Approaches (Behavioral Economics, Machine Learning, Stochastic optimization)

Machine learning: becoming practical with big data.
(CHESS collects every key stroke).
Tremendous potential.

AND

Subjective Bayesian decision models also work.
1973 computer interview; Bayesian predictor re suicide risk.
Better than clinicians.

Both are learning systems.

*Computers & Biomedical Research* (1977), 10(2), 83- (+ 14 other articles).
That’s all folks!

Center for Health Enhancement Systems Studies
Monitoring and Feedback

Lung Cancer Survival:
CHESS patients lived 35% longer.

Result not anticipated

Days to death
P = .026

CHESS+CR Standard care

Median days different: 3.5 months.


Adult Children of Alcoholics
Group Psychotherapy vs CHESS

Less Nervous
Less Isolated
Less Depressed
Self Esteem
Support
Life Satisfaction

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

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