

HIT: Evaluation and Diffusion

Pamela Whitten, PhD
Michigan State University

Goals

- Introduce Telemedicine and Informatics
- Overview traditional performance indicators
- Assess how telemedicine/informatics stacks up through published research

Telemedicine/Telehealth/Ehealth

- "...the use of electronic information and telecommunications technologies to support long-distance clinical care, patient and professional health related education, public health and health administration." (*Office for the Advancement of Telehealth – OAT*)



Communication Technologies

- Telemedicine/Telehealth
 - Use of communication technologies to deliver health-related services, education/information
 - Synchronous
 - Asynchronous (e.g., remote monitoring, store and forward)
- Informatics
 - Data driven for disease management
 - EMRs, Public Health Databases

Evaluation and Performance Indicators

Current Performance Indicators

- Health Outcomes
- Quality
 - "getting the right care"
 - "coordinated care"
 - "safe care"
 - "patient-centered / timely care"
- Access
 - Universal participation, affordability, coverage
- Efficiency
 - Overuse versus Waste
- Equity

Evaluation Categories

- Clinical
 - Effectiveness
 - Patient Satisfaction
 - Diagnostic Accuracy
 - Cost
- Non-Clinical
 - Technical Issues
 - Management Issues
- Institutional - “Organizational Effectiveness”
- Societal - “Distribution of Resources”
- Traditional Methods
 - Needs Assessments, Process Evaluations, Impact Evaluations

Telemedicine Research

- Clinical and Cost Outcomes
 - Effectiveness in teleradiology, telepsychiatry, transmission of echos, consultations between primary and secondary docs (Roine et al., 2001)
 - Telemed is feasible, inconclusive results about clinical benefits and outcomes (Currell et al., 2000)
 - Gaps between where telemed is used and where it is supported by high quality evidence (Hersh et al., 2006)
 - No conclusive evidence that telemed is or is not cost effective (Whitten et al., 2002)

Looking at a specific application...

- Telehome care

TeleHome Health Care

- Patient flexibility in scheduling visits, convenient access to care, less time spent in clinics (Artinian, 2007).
- Better clinical outcomes, mortality reduction, lower health services utilization (Garcia-Lizana et al., 2007).
- Reduction in hospitalizations; increase in quality of life, reduce costs of managing CHF patients (Scalvini et al., 2005a, 2005b; Schofield et al., 2005).
- Introduction of new technologies, including mobile phones & wireless Internet technology (Scherr et al., 2006).

CHF Telehome Evaluation Project in Indy

- A variety of data collection strategies employed:
- First visit - a subsection of relevant OASIS survey questions, the SF-12, and the Minnesota Living with Heart Failure Questionnaire (MLHFQ)
 - Semi-structured interview data collected via telephone
 - On day 57 of enrollment, patients given the SF-12 and MLHFQ again (if patient was discharged before this date, post-data collected at that time), OASIS post data also employed
 - Chart Information analyzed
 - Cost frame employed
 - Survey to managing physicians
 - Interview of home health providers

Sampling of Results to date

- Demographics (n = 50)
 - Mean Age = 75.33 years
 - Race
 - 21.7% Black
 - 78.3% White
 - Gender
 - 65.2% Female
 - 34.8% Male

Results to date

- Health Status
 - Average stay in program = 47.83 days
 - Average Total Telemedicine visits = 38.33
 - Average Total In-Home Visits = 12.98
- Life Expectancy
 - greater than six months (only one respondent indicated 6 months or less)
- Risk Factors
 - No major risk factors identified; however 30% admitted to being obese

Significant Findings

- OASIS
 - Significant results indicate a difference in pre and post-test scores

Item	Significant Difference in pre and posttest *p <.05 Level
Frequency of Pain	*
Shortness of Breath	*
Management of Oral Medications	*

Significant Findings

- SF-12

Item	Significant Difference in pre and posttests *p<.05
Is the patient limited in moderate activities? • Yes, limited a lot • Yes, limited a little • No, not limited at all	*
Has the patient had a lot of energy in past four weeks? • All of the time • Most of the time • Some of the time • A little of the time • None of the time	*

Significant Findings

- MLHFQ

- “Did your heart failure prevent you from living as you wanted during the past month by”-

Item	Significant difference in pre and posttests *p<.05
*...Causing swelling in ankles/legs?”	*
*...Making you sit or lie down to rest during the day?”	P = .058
*...Making you short of breath?”	*
*...Making you tired, fatigued, or low on energy?”	*
*...Making you stay in a hospital?”	*
*...Giving you side effects from treatments?”	*
*...Making you worry?”	*

- Despite a small sample size, preliminary results indicate significant changes occurring among respondents
- Our unique lens
 - Physical
 - Behavioral
 - Emotional

Other Indicators

- Patient Satisfaction versus Provider Satisfaction
- Non-Clinical
 - Technical Issues
 - Management Issues
- Institutional - “Organizational Effectiveness”
- Societal - “Distribution of Resources”

Reality Check

EMR Study in Michigan

(Whitten, Buis, & Mackert, 2007)

- Lengthy Survey (n=41)
- Attitudes toward system neutral/worse after use
 - Usability fine
 - Support inadequate
 - Pre-project attitudes important predictor of post project use
 - Implications for HIT

Methodological Challenges with Telemedicine Research Publications

- Review of 1,615 published telemed studies (Whitten et al., 2007)
 - 11% reported hypotheses or research questions
 - 11% of studies were randomized
 - 26% did not state # of subjects
 - 26% stated time frame of study

Santa Barbara County Care Data Exchange

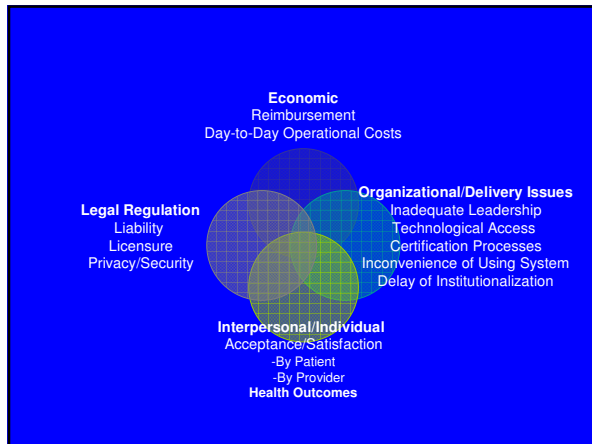
- What happened?
 - Foundation grant money/demo projects
 - Lack of leadership
 - Lack of momentum
 - Vendor limitations
 - Participants found no compelling value proposition

And yet...

- 100 Most Wired Hospitals vs non most wired hospitals (Whitten et al., in press)
- Patients reported:
 - Higher global satisfaction
 - Higher overall rating of care
 - Higher satisfaction with admission process
 - Higher likelihood of recommending
 - Higher rating on coordination of care
 - More satisfied with physicians in general
 - Higher rating of physician concern, friendliness/courtesy
 - Higher satisfaction with nurses' attitudes and skill
 - Higher satisfaction with personal issues (e.g., pain control)

Future Communication Technology Evaluation

- We are not yet able to make broad generalizations due to the specificity of field
- Must consider disparate health services, technological configurations, and settings



- ### Interdisciplinary Approach Facilitates True Understanding
- Why certain clinical services work...even unanticipated ones
 - Identify policy needs to increase and improve care
 - Understand why patients “love” health technologies and many providers don’t
 - Identify delivery issues that must be addressed for HITs to work

Discussion