

Setting up an Eldercare Field Study: *So What?*

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Motivation

- **Many technology solutions have had successful field trials**

- Celler et al, I.L.S.A. (Haigh et al), Noel et al, Sixsmith,

So why are we all still trying to prove that monitoring solutions improve quality of care and reduce the overall cost of care?

Existing studies are not Useful

- “Of 1000 articles surveyed, most were reports about the feasibility” [Roine, Ohinmaa & Hailey, 2001]

Our goal

- **To provide a checklist of questions to consider when designing your trial**
- **Help researchers avoid audience say “*So what*”?**

Framework for designing Eldercare studies

- **POEMs: Patient Oriented Evidence That Matters** (Slawson & Shaughnessy, 94)
- **Moves outcomes focus from *disease* to *patient***

$$Usefulness = \frac{Relevance \times Validity}{Work}$$

- **Useful studies must be relevant, valid and easy to understand and adopt.**

Impactability

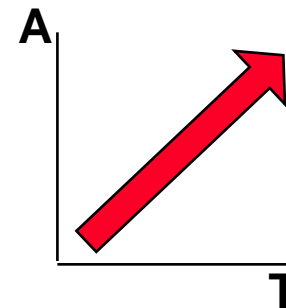
- **Relevance**
 - Make sure your audience cares about the problem you've identified
 - Make sure you understand *why* they care
 - Meet *all* users' expectations
- **Validity**
 - Must show the *right* kinds of results *for that audience*
 - ◆ Health outcomes, Cost savings, Improved productivity, etc.
 - Compare with the alternatives
- **Work**
 - Your audience doesn't have time to decipher how your study applies to them
 - Adoption requires that you
 - ◆ Communicate how your approach is different from current practice
 - ◆ Make it easy to assess and adopt
 - ◆ Make it broadly applicable
 - *What proofs will compel your audience to act on your results?*

Actionable Data

- **The POEM model can be used to measure the usefulness of data** (not just usefulness of the study)
- **Relevance**
 - Who is the consumer of the data?
 - Can we measure the right things? (What information makes the data actionable?)
 - Can we make the data actionable?
- **Validity**
 - What information will support validity, how can we measure what we missed?
 - ◆ Timeliness, Detail, Accuracy.
 - Protect the data
- **Work**
 - How much work is needed to understand the information; how much effort is spent to filter the information?
 - ◆ Present the data well

Special Considerations for Data

- **Timeliness:**
 - What is timely depends largely on what is actionable.
- **Detail:**
 - **Where is the point of diminishing returns?**
 - ◆ Too much detail may mask the important conclusions
 - **What is the lowest granularity of information that is *both* actionable and accurate?**
- **Accuracy:**
 - **Consider sensitivity, specificity and predictiveness of each sensor**
 - ◆ You can spend more to become more accurate
 - **Use filtering & aggregation to improve accuracy**
 - ◆ With redundant information
- **Accuracy & Timeliness are correlated:**
 - The more immediate the response must be, the more accurate the assessment must be. False positives are more costly if they cause EMS to be called to the home.



Selecting & Recruiting Subjects

- **Subjects are the dominant factor determining validity**
- **Usual questions:**
 - Is your population representative? Are there enough people? Comparison group?
- **But elders are much more challenging**
 - Trust
 - Impact on the family
 - Time
 - Personal Contact
 - Provision of Information
 - Confidentiality
 - Safety

Recruiting Elders

- **Communicate. A lot.**
 - *Trusting the researchers* is key
 - About the study, and other subjects too. Plan for more time than necessary for each communication.
- **Involve the family at every step**
- **Frankly address fears**
 - Privacy, Safety
- **Reward the elders**
 - Show how are they benefiting society
 - Teach them something new

- **Consider starting with a caregiver**

Run a Pilot study first

- **Pilot will help calibrate system & give you an opportunity to redesign**
- **Questions to ask:**
 - Did you get all the data you needed?
 - Did you draw the right conclusions from the data?
 - Did you reach the right responder?
 - How did the responder react?

eFrame family pictures

- **Stakeholders: elder and their family**
- **Relevance:**
 - Does it improve the elder's quality of life? Socialization & Contact with the family?
- **Validity:**
 - Did you have enough elders & family to draw solid generalizations?
 - Is it vulnerable to data tampering?
- **Work:**
 - How often will Mom ask the family how to use it?
 - Where do you store the photos?
 - Can the family upload pictures remotely or do they need to connect to the device?
 - How easy is it to reboot?
 - Can you see the screen at a distance?

Remote telehealth system

- **Stakeholders:** elder, nurses/doctors, payors (insurance / family)
- **Relevance:**
 - Does it improve the elder's medical condition? Does it increase nurse/doctor productivity? Does it improve family peace of mind? Does it save money?
- **Validity:**
 - Did you have enough elders to draw solid conclusions?
 - ◆ Was it the system, or was it a better nurse/doctor/patient?
 - ◆ Regression to the mean
 - Is the collected data accurate?
 - Are questions objective?
 - Is it effective over time?
- **Work:**
 - How hard/expensive is it to install (at home and at doctor's office)?
 - How hard is it to use?
 - How does the doctor get the information? How easy is it to understand the data?

Summary

- **Relevance is in the eye of the beholders**
- **Validity will be different for each care setting and desired effect**
- **Work is a barrier: Remove it**
- **Usefulness requires that you pay close attention to the needs the stakeholders**

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