

Connected Health Implementations:

Changing Roles for Providers and Patients

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About the Center for Connected Health



- Division of Partners IS organization
 - Research and evaluation
 - Program development and rollout
 - Operational systems and support
 - Commercialization
- Our interest is in the use of technology to deliver care remotely:
 - Heart failure monitoring
 - Diabetic monitoring and coaching
 - Blood pressure self-management employee health
- Benefits include:
 - Increased patient engagement
 - Improved health outcomes
 - Improved patient-provider communications

- Care is moving out of the hospital, into the home and onto the body
- Changing role of the provider
- Changing role of the patient
- Thoughts about the future

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The Connected Health Journey



Online Patient Provider Communication

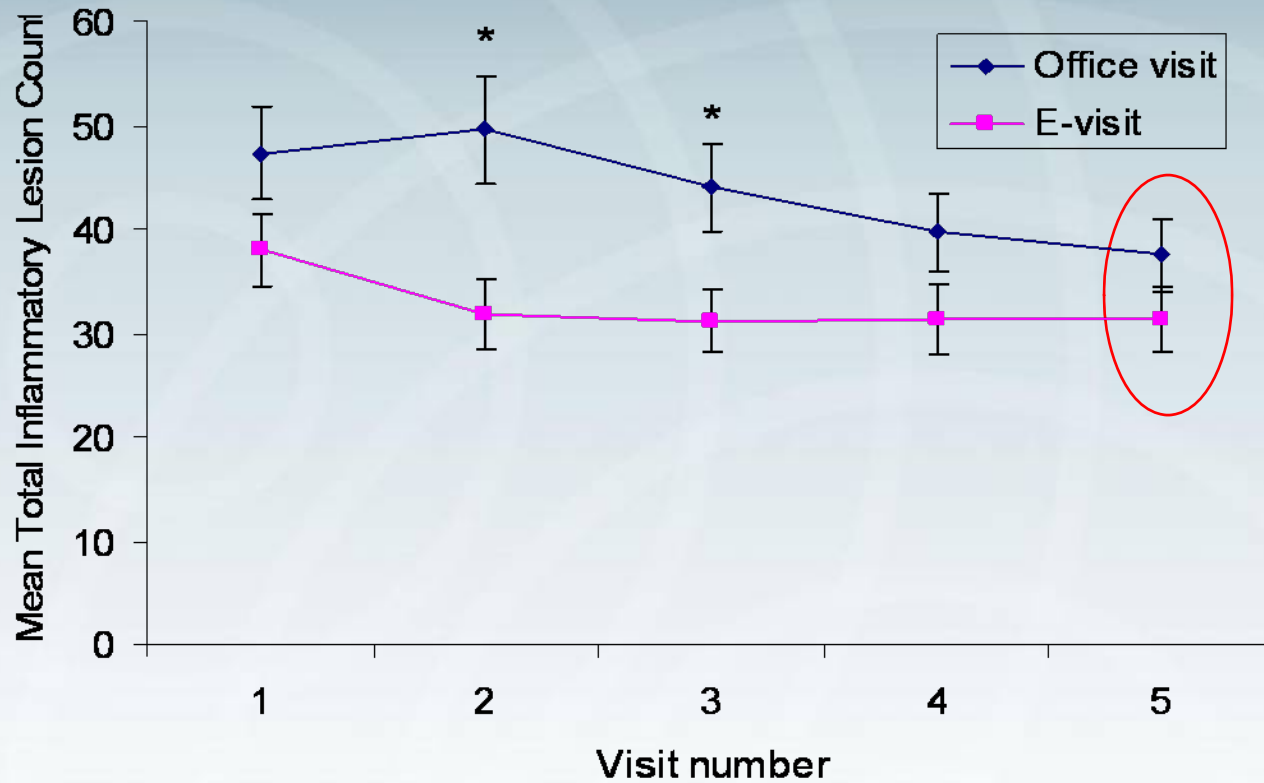


“I didn’t feel alone at all, which is surprising because you’re sitting at your desk alone...I was able to develop a nice rapport with my doctor.”

- Christine, E-Visits patient

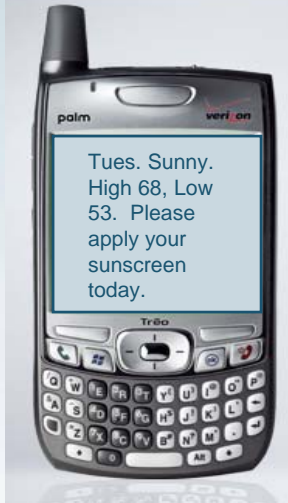
60% of patient communications outside of work hours

Outcomes for Serial Online Follow up Visits

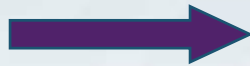


Text Message Reminders to Promote Sunscreen Adherence

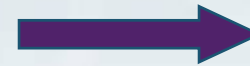
- Lack of adherence to topical medications – estimated 30% adherence rate.
- Clinical trial to assess the impact of an automated reminder system on adherence rates to sunscreen application.



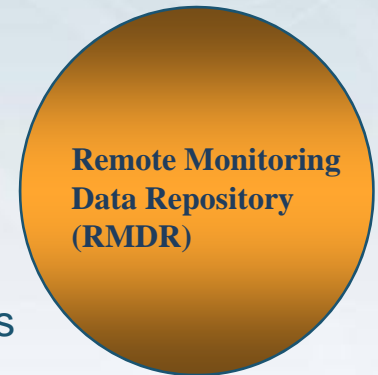
Text Message Reminder



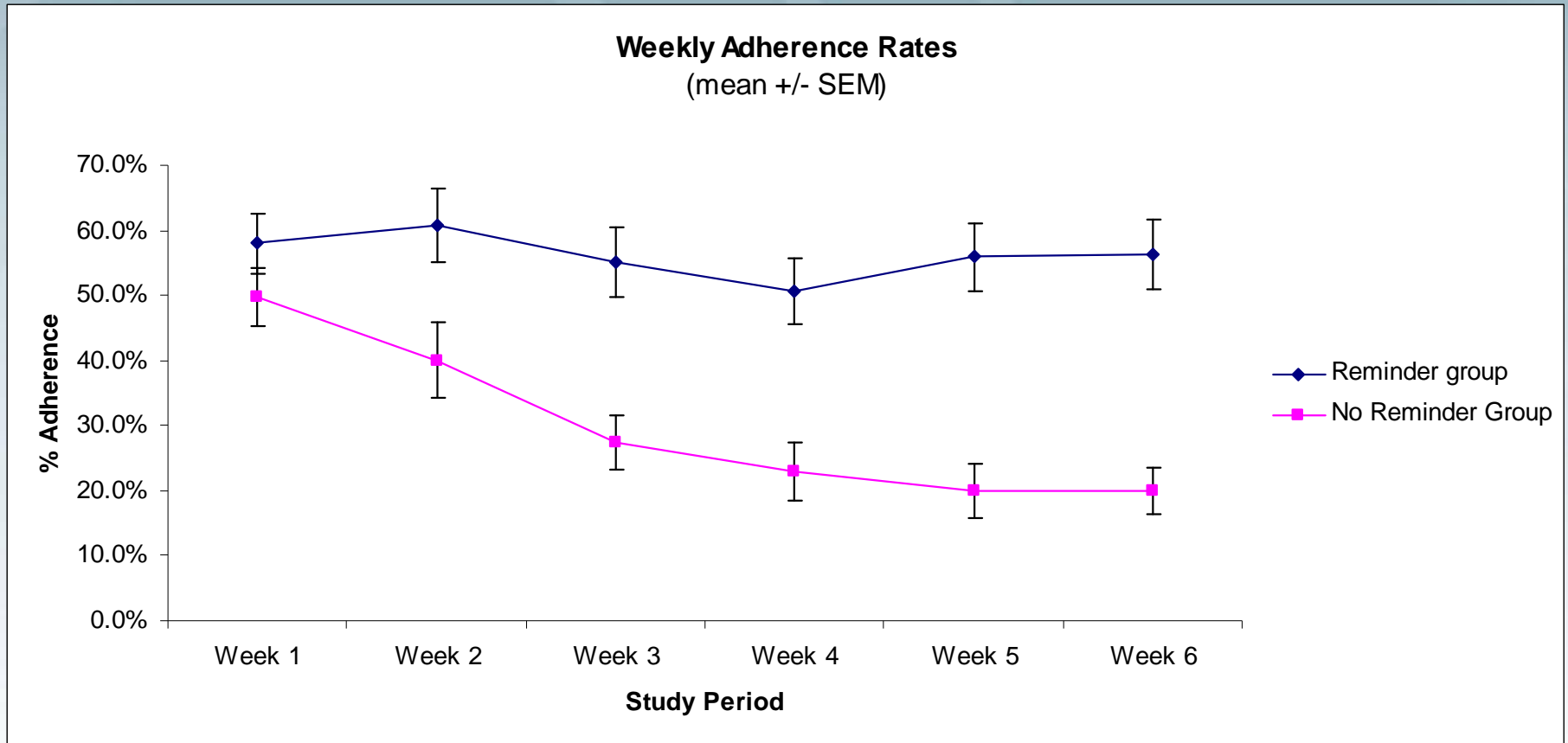
Participant reads message and applies sunscreen



Sends SMS when the tube is opened



Adherence Rate



- Care is moving out of the hospital, into the home and onto the body

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Connected Cardiac Care Program

- Daily monitoring of weight, blood pressure, pulse, oximetry
- Tele-monitoring nurse at Partners Home Care monitors and intervenes when necessary



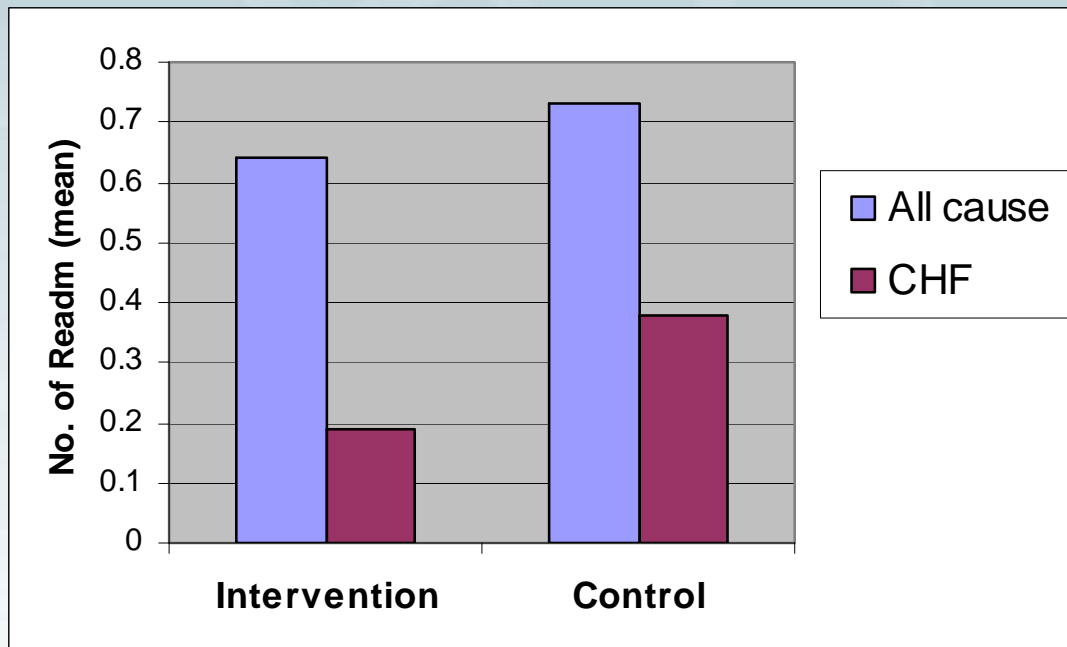
Goals:

- Provide intervention at the point of need
- Improve patient education and self-management abilities

Connected Cardiac Care Program

Results from pilot study at MGH

Intervention group had lower 6 month readmission rate



Physician Feedback

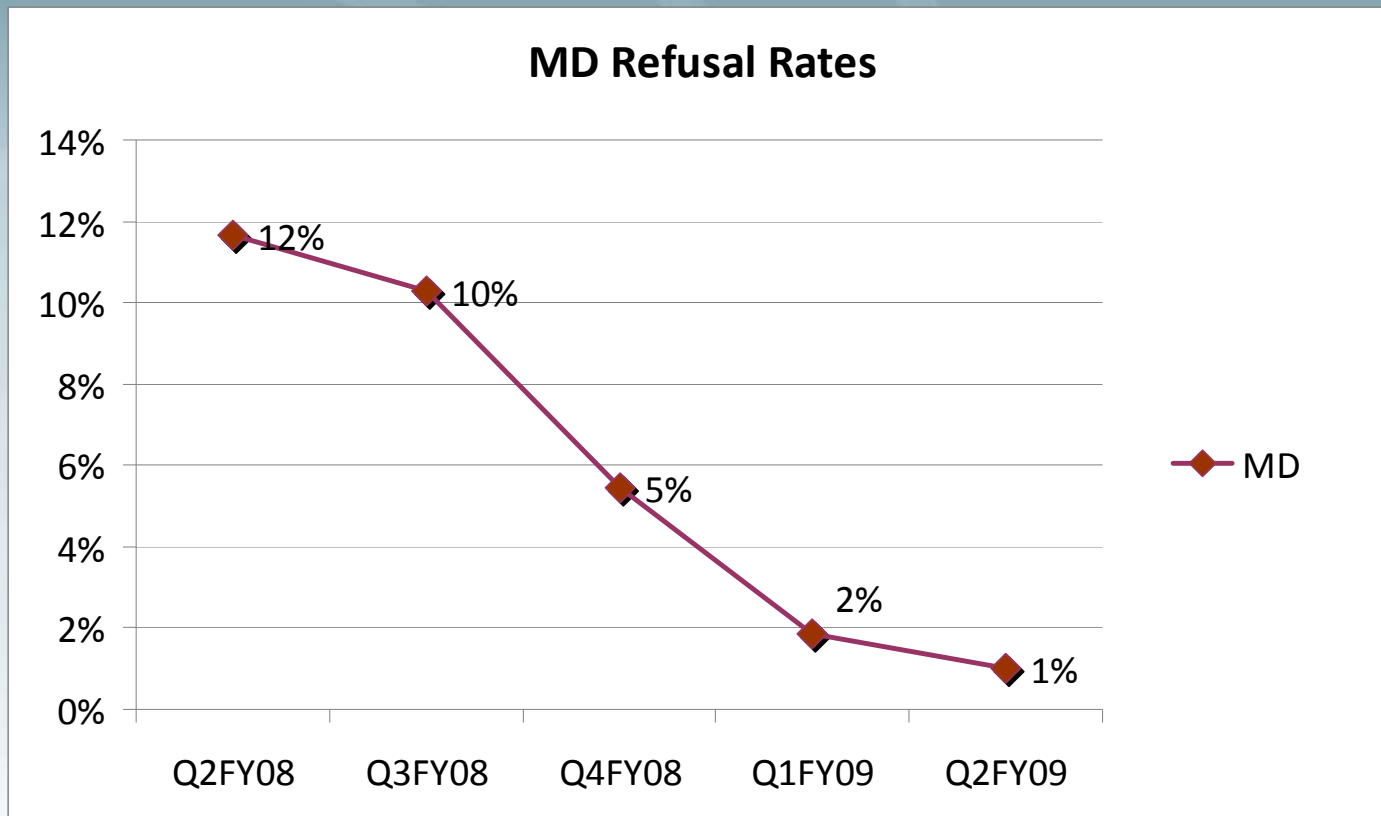
“This program has tremendous promise for improving the care for patients and potentially for improving access to office visits for new or other existing patients.

I have a patient who was enrolled in the program recently. She had been in my office or her cardiologist’s office just about weekly and now she is regularly monitored and managed from her home. As a result, I see her every six weeks and that has opened up appointment slots for other patients who need to get into see me.”

- Elizabeth Mort, MD, MGH



MD Refusal Rates



As MDs gain experience with the telemonitoring program, they are more likely to enroll their patients.

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SmartBeat at EMC



“Tracking my results on the website is very helpful and convenient. The ability to track readings and the feedback you receive with the website are really the keys to success for me. I know that when I eat certain foods, my blood pressure will rise. I’m able to control my blood pressure now through diet. The SmartBeat program is a great incentive for employees and I think it is one of the best benefits EMC offers to help make employees healthier.”

- Scott Cote, Software Engineer, EMC Corporation

SmartBeat: Hypertension Self-Management



- *Population:* Newly diagnosed or difficult to control hypertensives
- *Technology:* bp cuff, gateway, web interface
- *Coaching:* automated
- *Goal:* improved control
- *Business justification:*
 - Improved employee health
 - Decreased downstream complications

SmartBeat at EMC

Over 90% of employees screened had readings in the pre-hypertension or hypertension range:

Total number of employees screened at EMC:	532
- Number with pre-hypertension:	253 (48%)
- Number of employees with hypertension:	228 (43%)

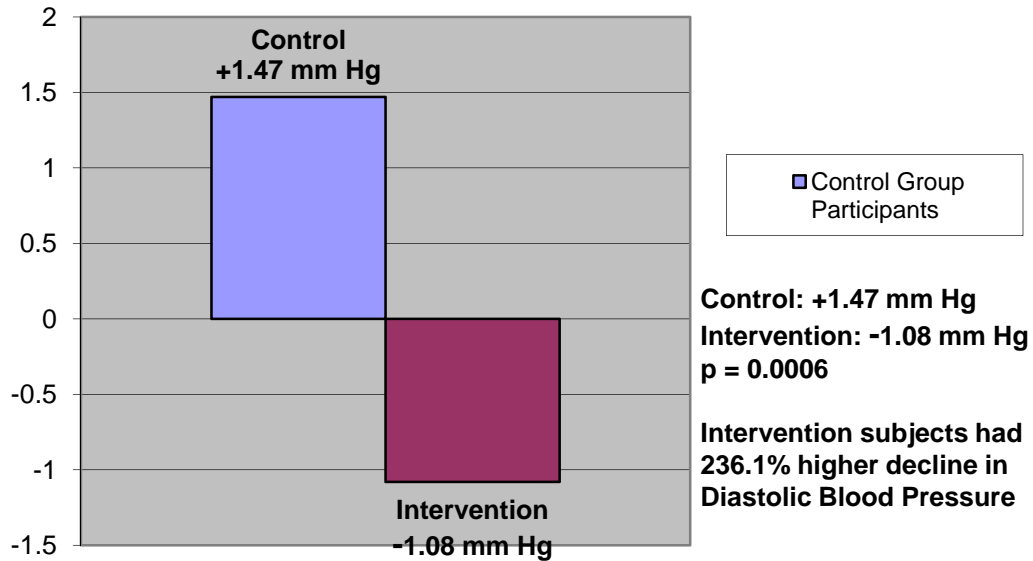
Enrolled employees were very engaged

Enrolled employees:	404
Employees who voluntarily withdrew:	3 (<1%)
Employees who dropped due to technology incompatibility reasons	5 (1.2%)

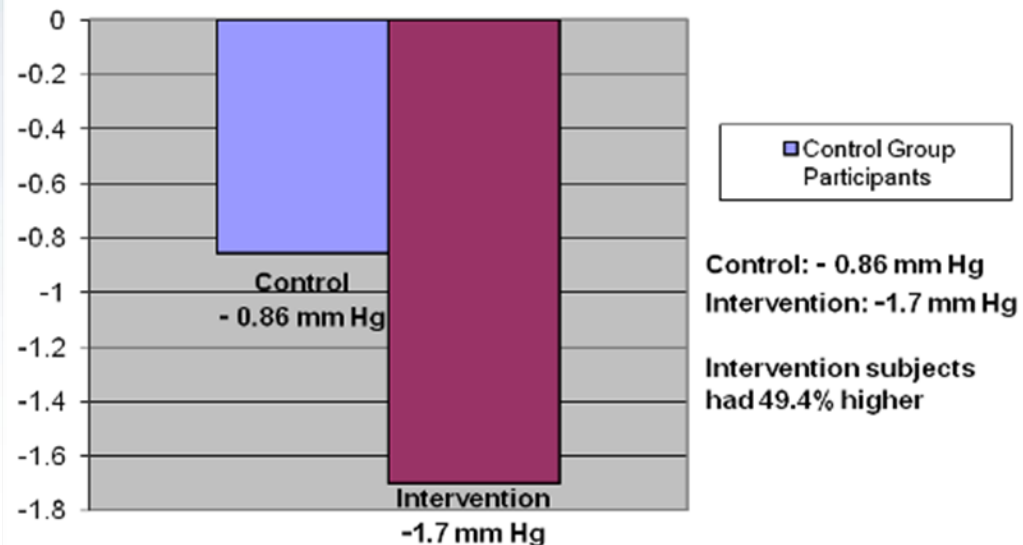
In a 6 month period, employees continued to send in on average 3 BP readings per week, and login to the website once per week.

Blood Pressure Trends – 6 months

Change in Average Diastolic Blood Pressure (mm Hg)



Change in Average Systolic Blood Pressure (mm Hg)

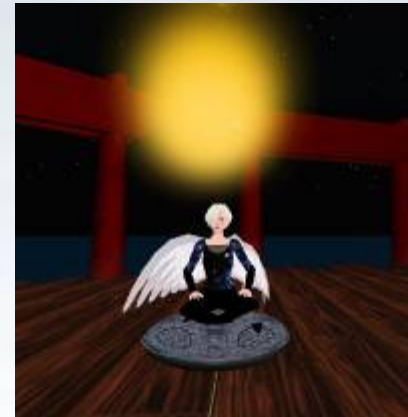


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Second Life Program: Relaxation Response

- Research study evaluated whether the Relaxation Response can be successfully taught via Second Life.
- 28 subjects underwent training to elicit the relaxation response in the 8 week program.

“Seeing more than one av glow [with a crown] was significant because we had been discussing feelings of compassion and it [the group crown experience] built a sense of other spiritual beings – the image was right there in front of us; [we were] a community of strangers all wanting the same thing- trying to achieve a sense of wholeness – I felt connected.”



Coaching - StepUp

1. Wearable monitor records subject's activity levels



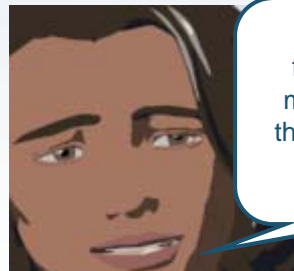
2. Activity data sent wirelessly to central server



Poor adherence

Good adherence

3. Personalized coaching to improve adherence to activity regime

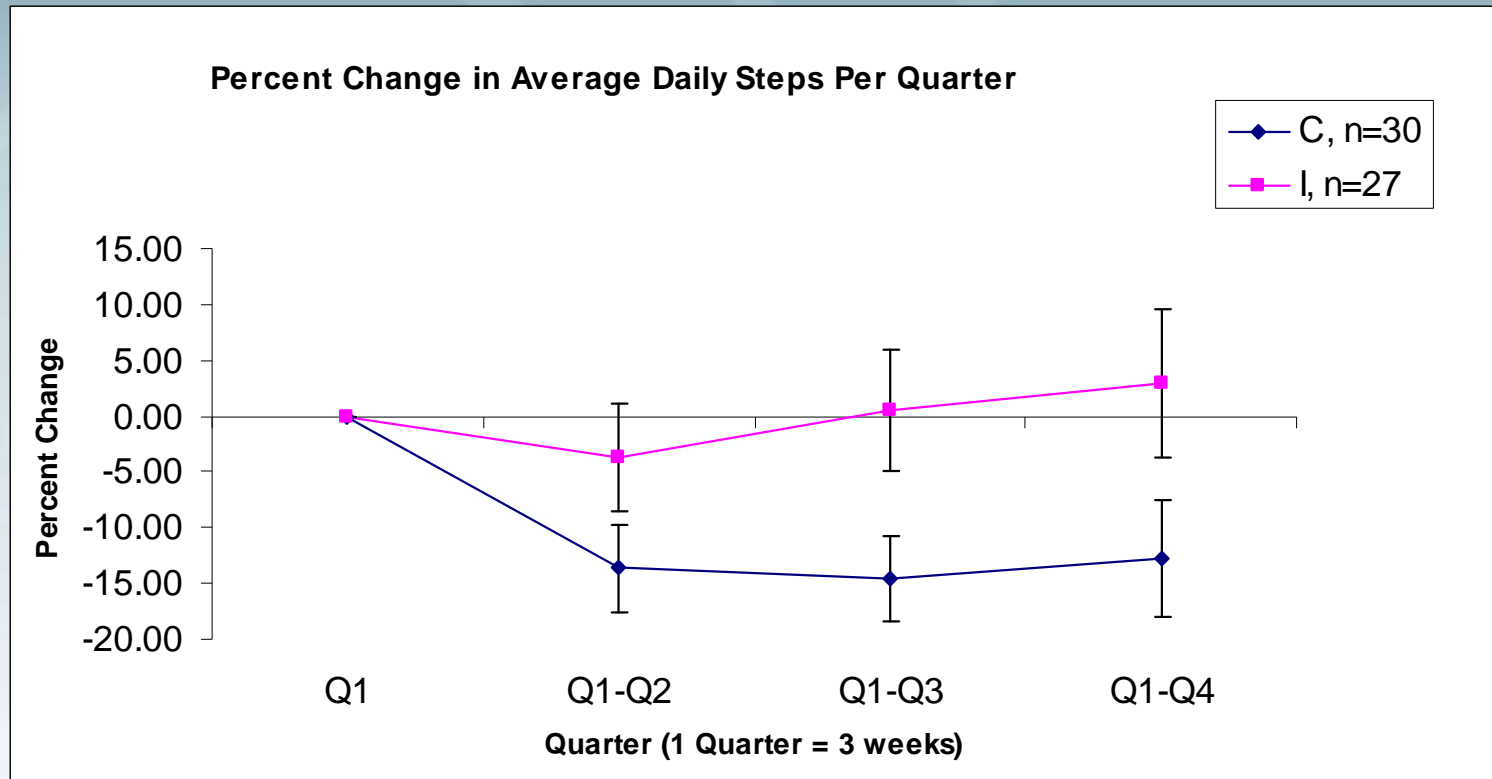


I'm sorry you've found it tough to meet your targets this week. Let's try and work out a solution



You've done a great job this week! Let's review the calories you've burned.

Step Counts



Connected Health is Patient Centered Care

Four Cornerstones of Connected Health



- **Harness** accurate physiologic and behavioral data
- **Engage** patients to view and understand their health information
- **Achieve** care goals via data driven coaching
- **Leverage** providers when needed

What should the NIH do?

Fund studies to define the role of technology in population health management

- Ways to use technology to promote behavior change
- The role of automated coaching
- How to engage non-compliant individuals
- Better population segmentation tools

Conclusions



- Connected Health is transforming health care and changing the roles of providers and patients.
- We're moving to a decentralized care process
- The NIH can add value by aiding in the research that provides the evidence base for this inevitable trend.
- Learn more:
www.connected-health.org
- LinkedIn group – Connected Health Community
- The 6th annual Connected Health Symposium is Oct 21 & 22, 2009.