



AHRQ

January 25, 2012

Moderator:

Angela Lavanderos

**Agency for Healthcare Research and
Quality**

Presenters:

Peggy Wagner

Carl Stepnowsky

Lygeia Ricciardi



Moderator and Presenters Disclosures

A National Web Conference on
Evaluation of Personal Health Record
(PHR) Systems and Their Impact on
Chronic Disease

January 25, 2012

There are no financial, personal, or
professional conflicts of interest to
disclose for the speakers or myself.



Agency for Healthcare Research and Quality

Advancing Excellence in Health Care

www.ahrq.gov

Implementing PHRs for Patients with Chronic Disease: Lessons Learned

Peggy J. Wagner, Ph.D.

Department of Family and Preventive Medicine
Institute for the Advancement of Health Care
University of South Carolina, Columbia, SC
Greenville Hospital System University Medical
Center, Greenville, SC



Objectives

- Describe implementation barriers
- Summarize results of our trial of hypertensive patients
- Compare patient and provider perceptions of strengths and concerns about personal health record (PHR) systems
- Suggest strategies to overcome barriers and enable effective PHR use



Study Design

- Cluster randomized effectiveness trial
 - 24 physicians (11 control and 13 PHR)
- 443 of 1,646 approached patients consented (26.4%)
- Patient groups
 - 250 patients received the PHR
 - 207 remained at visit 4 (82.8%)
 - 193 patients received no PHR
 - 119 control patients remained at visit 4 (61.6%)



Outcome Measures

- Primary patient outcome was blood pressure
- Secondary patient outcomes
 - Health beliefs and activation
 - Evaluation of care
 - Medical utilization
- Adherence to treatment guidelines as documented in medical record
- Changes in patient, provider, and staff views of PHR potential



Before We Started We Got Reactions . . .

■ From providers

- Too much time
- Not secure
- Patients don't need information
- I'll get sued

■ From patients

- Don't know what anything means
- I'm not technologically savvy
- Good to have my doctor always checking on me



. . . and from Administration

- Information technology staff
 - More work
 - Not enough time to get ready
 - Interoperability
 - Security
- Leadership
 - Need to form committees
 - Cost
 - Legal risks and potential liability



Our PHR at Time of Trial

- Modified by two cycles of patient and expert PHR utilization and suggestions
- PHR elements
 - Messaging and scheduling
 - Blood pressure (BP) tracking
 - EMR tethered: lab and medications
 - Secure, patient-controlled access
 - Links to educational materials



My HealthLink

IQHealth - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites

Address <https://myhealthlink.iqhealth.com/loginFrameset.html> Go Links

My HealthLink

your care. your way. **MCGHealth**

cerner patient (Switch Account)

Home Connections Conditions My Health Reference Account **MCG Info** Help Logoff

Home Search For in Go

Inbox

Stay connected with my healthcare providers **New Message** | **Sent Messages**

You currently have no new messages in your inbox.

Health Record

My life, my health **Conversion Calculator** | **Print Record**

To view your health record, click a section.

- ▶ Allergies
- ▶ Clinical Results
- ▶ Health Issues
- ▶ Immunizations
- ▶ Medications
- ▶ Notes
- ▶ Surgeries/Procedures

Quick Links

Links important to me.

- Send Message To My Physician's Office
- Request a Medication Refill
- Manage My Health
- Upload Values to My Diabetes Diary
- Immunization Schedules
- Manage My Account
 - Change My Password
 - Update My Email Address
 - Add a Family Member to My Account
 - Grant My Physician Access

Health Information

10:21 AM

My HealthLink

My HealthLink

your care, your way. **MCGHealth**

cerner patient (Switch Account)

Home | Connections | Conditions | My Health | Reference | Account | MCG Info | Help | Logoff

Hypertension Center



My Hypertension Toolkit

- Track, Review, Share [Center Policy](#)
- My Diary
- Diary Summary
- My Plan
- Contact Your Care Coordinator

Resources

- Links important to me:
- [American Society of Hypertension](#)
- [About Hypertension](#)

Hypertension Center

Managing Made Easy.



Heart failure is usually a chronic disease. That means it's a long-term condition that tends to gradually become worse. By the time someone is diagnosed, chances are [Read more...](#)

Medication Schedule

[Add New](#) | [Print](#) | [Interactions](#)

The following medications cannot be included in your Medication Schedule because frequency and dosing are required.

warfarin

[Edit](#)

Time	Medication
7:00 AM	Topamax Valrelease
10:00 AM	warfarin Zocor
7:00 PM	Topamax



My HealthLink

IQHealth - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <https://myhealthlink.iqhealth.com/logonFrameset.html>

My HealthLink your care. your way. **MCGHealth**

cerner patient (Switch Account)

Home | Connections | Conditions | My Health | Reference | Account | MCG Info | Help | Logoff

Hypertension Center ?

My Plan ?

My progress goals. [Hypertension Home](#) | [My Diary](#) | [Diary Summary](#) | [Print](#)

Care Coordinator: [Mcgagamd1 Cerner](#)

Normal Measurements Last updated by: cerner patient on September 21, 2007 7:59 AM CDT

Dry Weight (lbs)	135
Pulse (b.p.m)	72
Blood Pressure	
Systolic	120
Diastolic	80

Medication Schedule ?

Manage my medication calendar [Add New](#) | [Print](#) | [Interactions](#)

The following medications cannot be included in your Medication Schedule because frequency and dosing are required.

warfarin [Edit](#)

7:00 AM	Topamax	100mg	1 tablet
---------	---------	-------	----------

Start | GroupWise Messe... | Gillian Housman - ... | Novell GroupWise ... | IQHealth - Micro... | diary summary - P... | 10:06 AM



Analysis

- Main analysis
 - Intraclass correlations were calculated with patients nested within physicians who were nested within clinic.
 - General linear mixed models were used to compare improvement with time (V1 to V4) with visit 1 data as a covariate.
 - Models were conducted for blood pressure, other biological markers, patient activation, patient assessment of chronic care, and satisfaction with care independently.



Secondary Analysis

- Within the PHR group only
 - Logistic regression of use vs. no-use groups to determine predictors of PHR utilization
 - Analysis of covariance models to compare frequency of use as related to patient change from V1 to V4
 - Adjusted for multiple comparisons



Results—Main Analysis

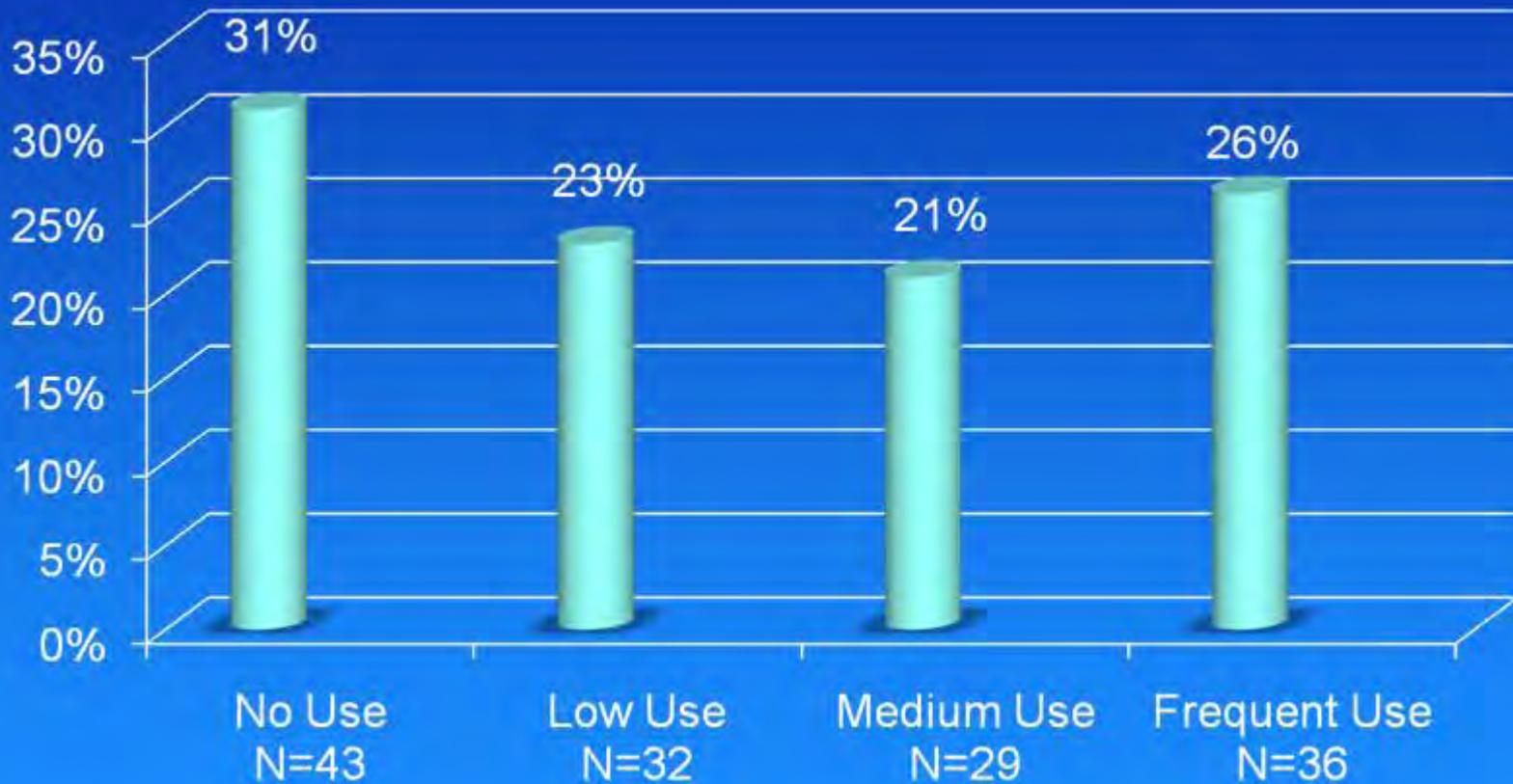
- Although there were statistical differences, we detected no clinically significant differences between the PHR and no-PHR groups in
 - Blood pressure
 - Patient activation
 - Patient perception of chronic care
 - Patient satisfaction with care



Results—Main Analysis

Outcome Measure	PHR	No PHR	P-value
SBP	129.7	129.3	0.62
DBP	77.3	75.6	0.288
Patient Activation Measure	71.4	69.1	0.49
Patient Empowerment Scale	41.2	40.1	0.02*
CAHPS Global Doctor Rating	9.39	9.43	0.001*
CAHPS Physician Communication Score	5.68	5.77	0.001*
CAHPS HIT Helpfulness Score (exploratory)	3.72	3.68	0.59
Patient Perception of Chronic Care	70.7	72.1	0.82

Results— Infrequent PHR Use





Changes Observed in Frequent Users

- Reduction in systolic blood pressure: 3.97 points
- Reduction in diastolic blood pressure: 5.25 points
- CAHPS global doctor rating and communication score: decreased slightly
- Patient perception of health IT helpfulness decreased slightly



What Predicts Frequent Use?

- Younger age: 4.7 years
- Access and technology skills: self-rated skill and access (83% no use vs. 91% high use)
- Salient clinical need: higher initial BP scores
- Patient activation: initially higher
- Patient-provider relationship: higher CAHPS scores
- System variables: continuity and technology experience evidenced in Family Medicine clinic



Post-Study Perceptions

- Patient Empowerment Scale (PES): effect on patients of provider sharing outpatient medical record
- Interviews and focus groups: based on Technology Acceptance Model



Results—Benefits Post-Study PES

Statement: Patients would . . .	Patients	Providers	P-value
Have an increased sense of control	81%	86%	0.52
Be better prepared for visits	78%	79%	0.89
Be reassured	78%	62%	0.06
Improve understanding of their medical condition	78%	59%	0.04*
Identify errors in the record	76%	83%	0.44
Improve adherence to provider recommendations	75%	72%	0.74
Be more satisfied with their care	72%	62%	0.29
Improve understanding of provider's instructions	71%	79%	0.38
Trust their providers more	70%	72%	0.78



Results—Risks Post-Study PES

Statement: Patients would . . .	Patients	Providers	P-value
Have more questions between visits	45%	72%	0.0080*
Be confused by test results	36%	93%	<0.0001*
Be confused by provider notes	26%	52%	0.0068*
Worry more	24%	83%	<0.0001*
Be offended by some things in their record	12%	69%	<0.0001*



Post-Study Interviews and Focus Groups

- 122 patients; 29 providers
- 80% of the patients (N=98) were from Family Medicine; 20% (N=24) from Internal Medicine
- 74% female and 25% male
- 55% white; 40% black; 5% other
- 79% had some college, a degree, or postgraduate work
- 45% physicians (N=13); 55% nursing staff (N=16)



Patient Perceptions of Outcomes

- “I think the ability to send messages directly to my health care team would probably be the most useful thing.”
- “It was just the ability to go back and review certain items, and to be observant—any discrepancies or anything, you make the changes.”
- “I used it with the blood pressure and with my diabetes so when I put my information in, I could always go back and refer to it in case I forgot or need to write it down for my doctor.”



Provider Perceptions of Outcomes

- “So I think it would give them the opportunity to review information and then know how to ask questions in the future.”
- “. . . if they can see their medicine list and allergies, I think they’re more aware of that and then likely to reduce medication errors.”
- “I think to a large degree knowledge is power. I think it empowers the patients to take more control of their health care. I think they become more invested in their health problems and it leads to more compliance.”



Outcomes Mentioned Only by Providers

- “Because the wording that’s used in the health care record can be very confusing and they can take it to mean something totally different. I think if you’re going to allow patients to have access, there’s got to be a place where someone puts it in layman’s terms.”
- “So I think there’s a time constraint issue that could overwhelm a physician. . . It’s going to create more time that’s going to have to be spent with the patient to educate them—to kind of bring them to cross that bridge. And I don’t know who’s going to do all that.”



Other Patient Beliefs about the PHR

- “I believe it keeps the doctor more informed. I could see if I was doing what the doctor said.”
- “I think that as a patient I have a right to know”
- “They should make it to where you can get into your whole . . . you should be able to gain access to all that stuff.”



Other Provider Beliefs about the PHR

- “It would be a help, and not a hindrance, to [establish] rapport between patient and physician.”
- “. . . there are medical and legal ramifications giving patients access to their charts . . . Security has to not only be external but it also has to be protected within the home itself.”
- “There’s the justice aspect . . . some patients aren’t able to access records. I don’t mean not having the capacity to do it but they just don’t have access to that technology and so you’re denying them this way of working . . . There’s already the disparity along socioeconomic lines so it further widens the gap.”



Other Beliefs Mentioned Only by Providers

- “Well I guess it’ll come back to time ... extra staff ... If every time you log into a chart, it takes an extra, even 2 minutes to get into the PHR, that’s a lot of time ... the time would be the most preventive piece.”
- “I think there would have to be guidelines on how fast a physician would get back to [patients] ... it would be an opportunity for them to just write an autobiography.”



Summary: Encouraging PHR Use in Patients

- We need
 - A philosophical shift that increases partnering in care delivery
 - Emphasis on longitudinal patient-physician relationships
 - Increased patient-centeredness in PHR design
 - Better PHR design and usability
 - To not disappoint patient expectations about health IT
 - Increased patient access to technology



Summary: Encouraging PHR Use in Providers

- We need
 - Clarity around ownership of personal health information (PHI)
 - Increased acceptance and use of existing interoperability between EMRs and PHRs
 - Young, tech-savvy providers to be the earliest adopters
 - Guidelines and research to establish best practices for incorporating PHRs into the office visit
 - Methods to manage workload
 - Professional and technical society support



Contact Information

- Contact:
 - wagnerpj@mailbox.sc.edu
 - (864) 455-9881



Agency for Healthcare Research and Quality

Advancing Excellence in Health Care

www.ahrq.gov

Effect of an Internet Intervention on CPAP Adherence

Carl J. Stepnowsky, Jr., Ph.D.

Health Services Research & Development Unit,
Veterans Affairs San Diego Healthcare System &
Department of Medicine,
University of California, San Diego

AHRQ Webinar, January 2012



Introduction to OSA

- OSA = obstructive sleep apnea
 - Repetitive cessations of breath during sleep
 - Consists of apneas and hypopneas
 - AHI = apneas + hypopneas/hour of sleep
- OSA is associated with serious cardiovascular and psychosocial comorbidities and with increased rates of mortality
- More than 80% of all sleep clinic diagnoses are OSA
- OSA is a prevalent chronic disease
 - 2–4% middle-aged adults; 30–40% older adults

Introduction to CPAP

- CPAP = continuous positive airway pressure therapy
- Consists of flow generator, hose, and mask
- Prescribed for use whenever asleep
- Gold-standard therapy





Background

- Obstructive sleep apnea historically has been underdiagnosed
- Large emphasis on diagnosis
 - Many factors (increased awareness, increased capacity) resulting in increased numbers of OSA patients
- Evolving emphasis on treatment initialization and follow-up
- Medicare 90-day rule has had large influence

Stepnowsky & Moore, 2004; Flemons et al., 2004



CPAP Adherence Rates

- Continuous positive airway pressure (CPAP) therapy adherence rates generally considered suboptimal
 - 75–80% of OSA patients give CPAP a try
 - About 50% continue to use at 1 year
 - Of those that continue to use, 50% use CPAP
- CPAP prescribed for use all night, every night, including naps
- Most patients engaging in partial use patterns



Interventional Studies

- Educational
 - Provision of pamphlets, group education
- Clinical support
 - Provision of additional telephone/clinic visits with focus on therapeutic changes/advice
- Behavioral change
 - Motivational enhancement, cognitive-behavioral therapy, self-management
- Health information technology
 - Telemedicine, telephone-linked care

Health Buddy

- Home telehealth device
- Intervention consisted of branching questions:
 - Symptom management
 - Health behavior
 - Knowledge
- No difference in adherence
 - 4.2 vs. 4.3 hours per night



Health Buddy Appliance, Health Hero Network, Palo Alto, CA

Video Teleconferencing (VTC)

- Sample: nonadherent patients over prior 3 months
- Randomized to VTC or control (vitamin placebo)
- VTC group had higher adherence (90% vs. 44%; $p=0.03$)
- >4hrs/night on >9 out of 14 nights



Video phone, 8x8, Inc, Santa Clara, CA



Interactive Voice Response: TLC-CPAP

- Full-scale study
 - Incorporation of motivational enhancement
 - RCT of Telephone-linked Care (TLC)-CPAP vs. attention control
 - n=100+ per group
 - Weekly phone calls in 1 month; monthly thereafter
 - 12-month study, with assessment at 6 mos.
 - 2.4 vs. 1.5 hrs/night at 6 mos
- Of concern: magnitude of use



Health IT—Telemonitoring

- Examined effect of CPAP telemonitoring
 - Provider had daily access to CPAP data
 - Could act proactively
 - No intervention on patient side
- 20 participants per group were followed for 2 months
- Adherence rates: 4.1 ± 1.8 vs. 2.8 ± 2.2
($p=0.07$; $d=0.65$)

Stepnowsky et al., 2007



Current Study Objective

- Develop and evaluate a CPAP adherence intervention using the Internet. Key features:
 - Telemonitoring of CPAP adherence and efficacy data
 - Feeding that data back to both patients and providers
 - Creating online resource for participants

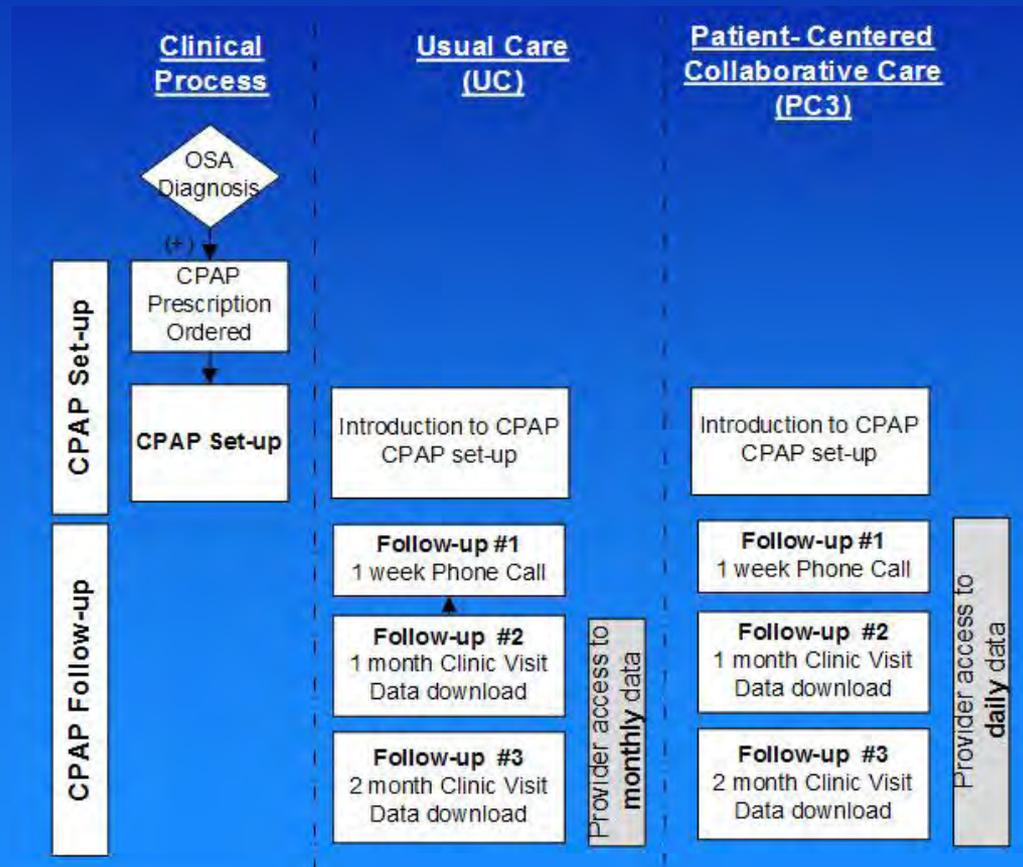


Methods

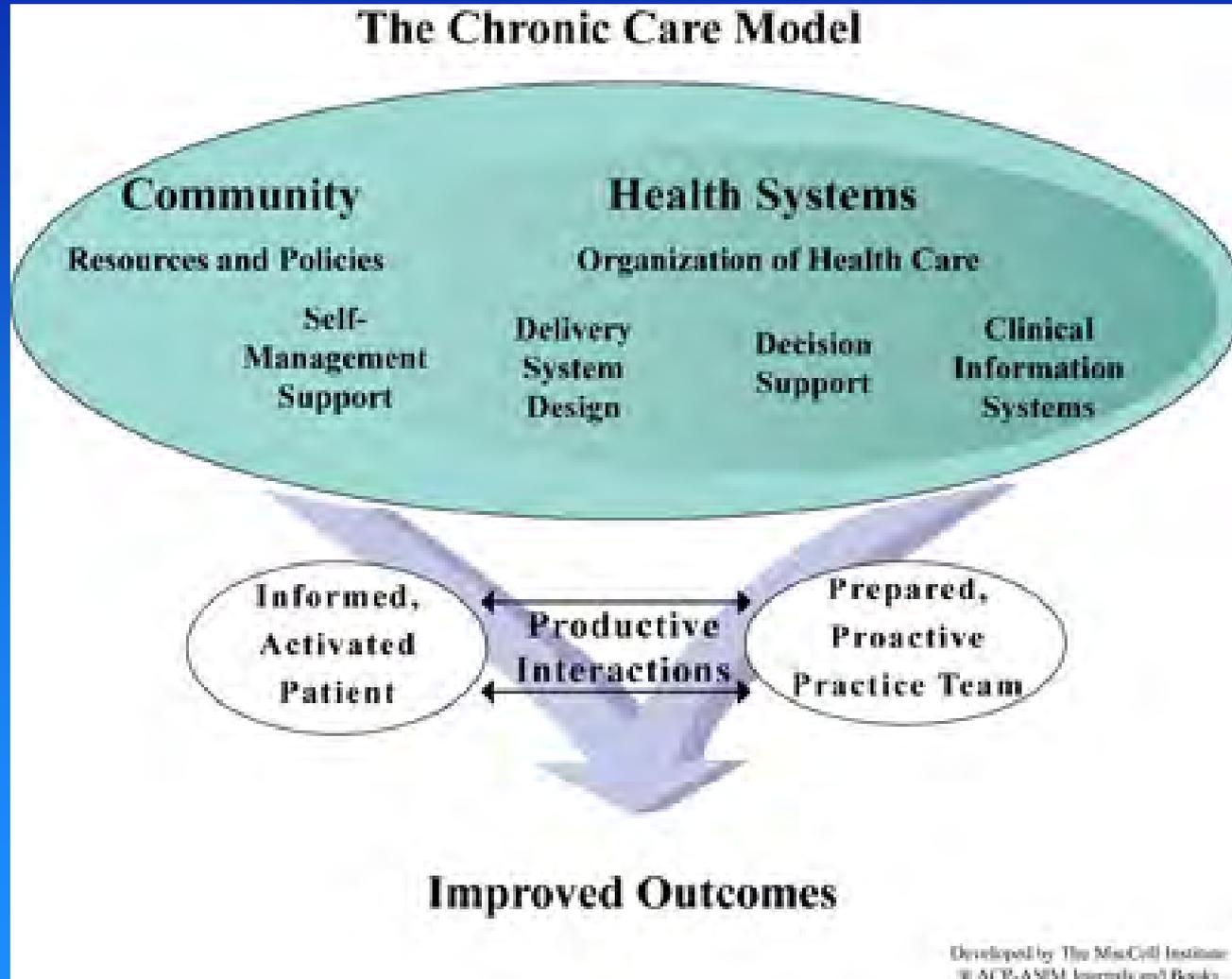
- Randomized, controlled trial comparing two groups:
 - Usual Care (UC)
 - Patient-Centered Collaborative Care (PC3)
- 120 patients per group
- Recruited from UCSD Sleep Clinic
 - Supplemented by word-of-mouth referrals
- Inclusion criteria: $AHI \geq 10$

Comparison of UC Vs. PC3

UC vs. PC3



PC3 Based in Large Part on CCM



CPAP Telemonitoring System



Resmed
AutoSet Spirit

+



ResTraxx
wireless module

=



AutoSet +
ResTraxx

Data transmitted via pager/cell network next day
in store & forward manner

Provider Side: CPAP Telemonitoring Using ResTraxx Data Center (RDC):



- Demographics: background data
- Prescription: allows for setting of thresholds
- Monitoring: calendar format reporting of data
- Compliance
- All for provider access (i.e., no patient access)



ResTraxx Data Center— Compliance

Complete History ▾

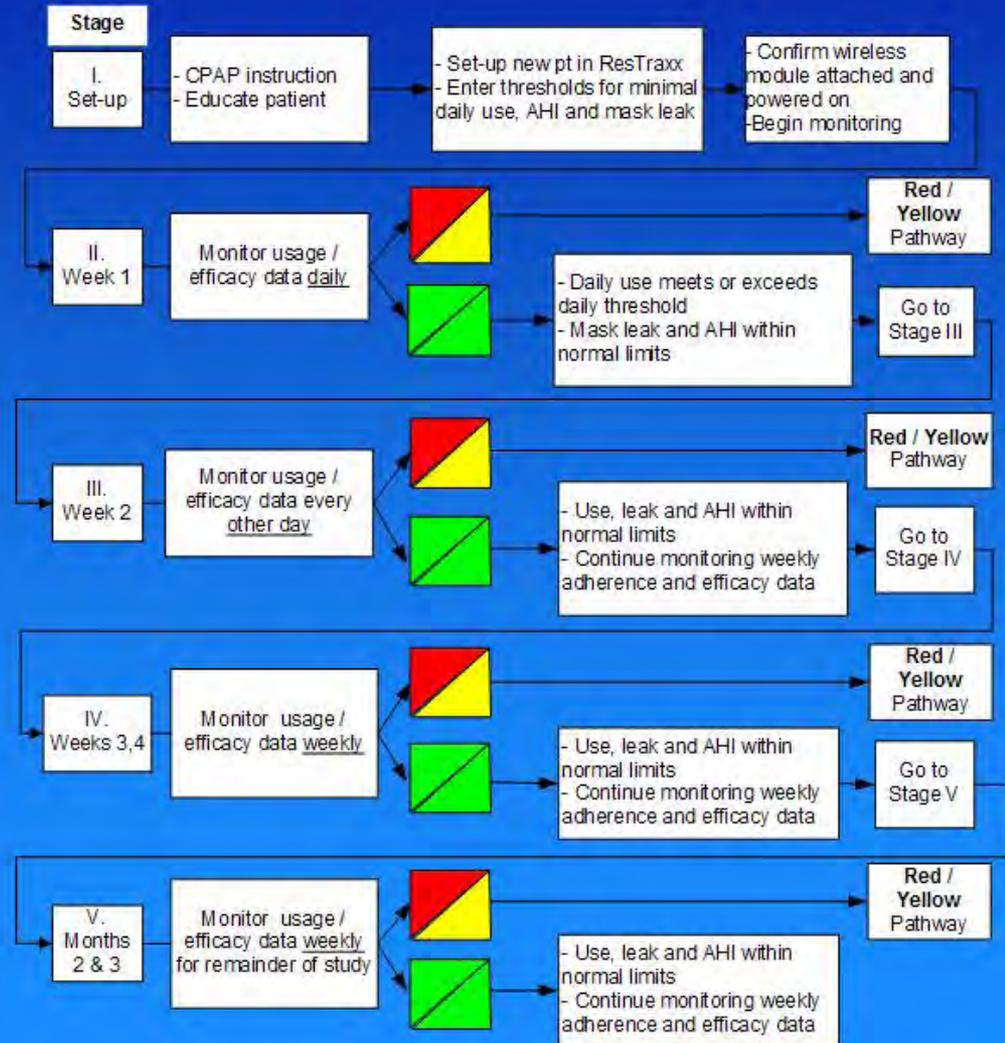
Report Date September 21, 2005 **Physician**
Patient Name **Date Of Birth**
Monitoring Start Date May 23, 2005 **Total Days Monitored** 63
Monitoring End Date July 25, 2005 **Compliance Percentage** 87.3 %

← June ▾, 2005 ▾ →

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Summary
22	23 Rx ■	24 ■	25 ■ 10:42 hrs 11.7 e/hr 0 l/sec	26 ■ 07:52 hrs 11.9 e/hr 0.1 l/sec	27 ■ 08:42 hrs 11.7 e/hr 0.1 l/sec	28 ■ 07:39 hrs 8.4 e/hr 0.2 l/sec	■ 66.7 % 11 e/hr 0.1 l/sec
29 ■ 07:53 hrs 10.6 e/hr 0.2 l/sec	30 ■ 08:19 hrs 8.7 e/hr 0.1 l/sec	31 ■ 10:14 hrs 10.7 e/hr 3.3 l/sec	1 ■ 08:17 hrs 15.3 e/hr 0.1 l/sec	2 ■ 08:48 hrs 10.7 e/hr 0.1 l/sec	3 ■ 09:15 hrs 8.9 e/hr 0.2 l/sec	4 ■ 07:55 hrs 13.6 e/hr 0.1 l/sec	■ 100 % 10.8 e/hr 0.2 l/sec
5 ■ 08:27 hrs 13.2 e/hr 0.1 l/sec	6 ■ 08:22 hrs 10.6 e/hr 0.1 l/sec	7 ■ 09:32 hrs 11.5 e/hr 3.1 l/sec	8 ■ 09:32 hrs 7.3 e/hr 0.1 l/sec	9 ■ 10:43 hrs 16.5 e/hr 0.2 l/sec	10 ■ 09:49 hrs 14.1 e/hr 0.1 l/sec	11 ■ 08:29 hrs 12.2 e/hr 0.1 l/sec	■ 100 % 12.3 e/hr 0.1 l/sec
12 ■ 07:11 hrs 7 e/hr 0.2 l/sec	13 ■ 09:10 hrs 22 e/hr 0.2 l/sec	14 ■ 08:36 hrs 10.3 e/hr 3.2 l/sec	15 ■ 09:30 hrs 10 e/hr 0.1 l/sec	16 ■ 10:27 hrs 8 e/hr 0.2 l/sec	17 ■ 08:47 hrs 7 e/hr 0.2 l/sec	18 ■ 00:00 hrs 0 e/hr 0 l/sec	■ 85.7 % 10.8 e/hr 0.2 l/sec
19 ■ 00:00 hrs 0 e/hr 0 l/sec	20 ■ 00:00 hrs 0 e/hr 0 l/sec	21 ■ 00:00 hrs 0 e/hr 0 l/sec	22 ■ 00:00 hrs 0 e/hr 0 l/sec	23 ■ 00:00 hrs 0 e/hr 0 l/sec	24 ■ 09:28 hrs 6.9 e/hr 0.1 l/sec	25 ■ 09:15 hrs 9 e/hr 0.1 l/sec	■ 28.6 % 7.9 e/hr 0.1 l/sec

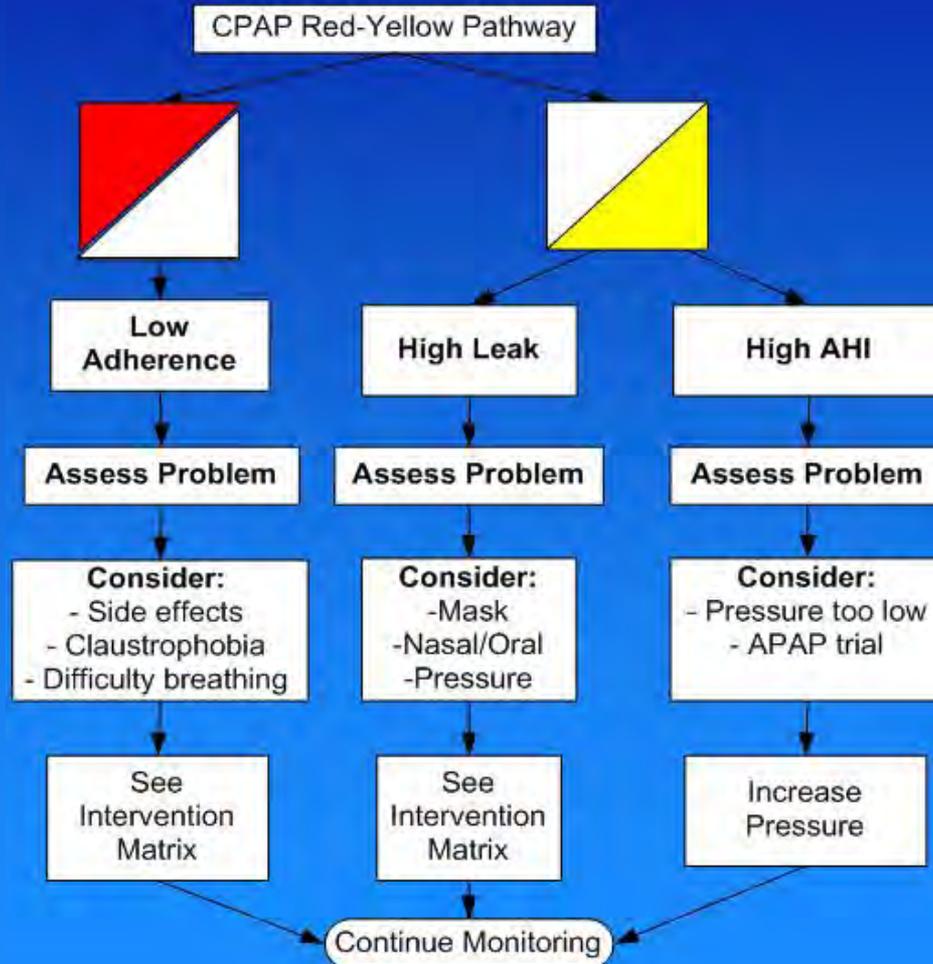
Provider Treatment Algorithm:

Green/green pathway



Provider Treatment Algorithm:

Red/yellow pathway





Patient Side: PC3 Website

- Interactive website designed to offload those tasks that tend to be repetitive to provider:
 - Learning Center – OSA and CPAP
 - Reference Manual
- Add interactive components:
 - My Charts
 - Troubleshooting Guide



PC3 Website Login

A screenshot of a Windows Internet Explorer browser window displaying the 'Virtual CPAP Clinic' website. The browser's address bar shows the URL 'http://mycpap.calit2.net/MyCPAP/'. The website header features a logo with a stylized blue line drawing of a person's head and neck, with the text 'Sleep Apnea CPAP VA Medical Research Foundation'. Below the header, the page title is 'Virtual CPAP Clinic Home'. The main content area begins with a 'Welcome!' heading, followed by a paragraph explaining that the site was developed by the University of California at San Diego's Department of Medicine and the California Institute for Telecommunications and Information Technology for sleep apnea sufferers. A second, identical paragraph follows. Below the text is a 'Please Sign In' form with fields for 'User Name:' and 'Password:', a 'Remember me next time.' checkbox, and a 'Sign in' button. At the bottom of the page, it is 'Sponsored by' the 'VA San Diego Medical Center' and 'The California Institute for Telecommunications and Information Technology', with a 'Contact Us' link. The browser's status bar at the bottom shows 'Internet' and '100%' zoom.



PC3 Website Homepage

The Virtual CPAP Clinic - Windows Internet Explorer

http://mycpap.calit2.net/MyCPAP/Welcome.aspx

File Edit View Favorites Tools Help

The Virtual CPAP Clinic

Virtual CPAP Clinic Home > Welcome [Manage User Accounts](#) [Logout](#)

Sleep Apnea CPAP VA Medical Research Foundation

Welcome carl!

Thank you for signing in today, Friday, June 10, 2011

It looks as though you have not yet completed your Baseline assessment. Please [click here](#) to begin your baseline assessment.

[Click here](#) to view your latest CPAP data. 



Sponsored by VA San Diego Medical Center

Done Internet 100%

Learning Center



The Virtual CPAP Clinic - Windows Internet Explorer

http://mycpap.calit2.net/MyCPAP/TheLearningCenter/TheLearningCenter.aspx

File Edit View Favorites Tools Help

The Virtual CPAP Clinic

Virtual CPAP Clinic Home > The Learning Center [Logout](#)

The Learning Center

Part 1: Obstructive Sleep Apnea	Part 2: CPAP
Lesson 1: What is Obstructive Sleep Apnea?	Lesson 1: CPAP
Lesson 2: Why Sleep Apnea is not just snoring	Lesson 2: What CPAP looks and feels like
Lesson 3: How you know you have Sleep Apnea	Lesson 3: How to use CPAP
Lesson 4: What Sleep Apnea feels like	Lesson 4: Adjusting to CPAP
Lesson 5: Sleep Apnea being a vicious cycle	Lesson 5: How CPAP benefits you
Lesson 6: How Sleep Apnea affects your body	
Lesson 7: Why you have Sleep Apnea	

Done Internet 100%

Charts Page

My Charts - Windows Internet Explorer

http://mycpap.calit2.net/MyCPAP/MyCharts/MyCharts.aspx

File Edit View Favorites Tools Help

My Charts



Virtual CPAP Clinic Home > My Charts [Logout](#)

The data on this page displays the average values of your CPAP data since the start of treatment. The average values are a general indication of how your treatment is progressing.

Nightly Average to Date

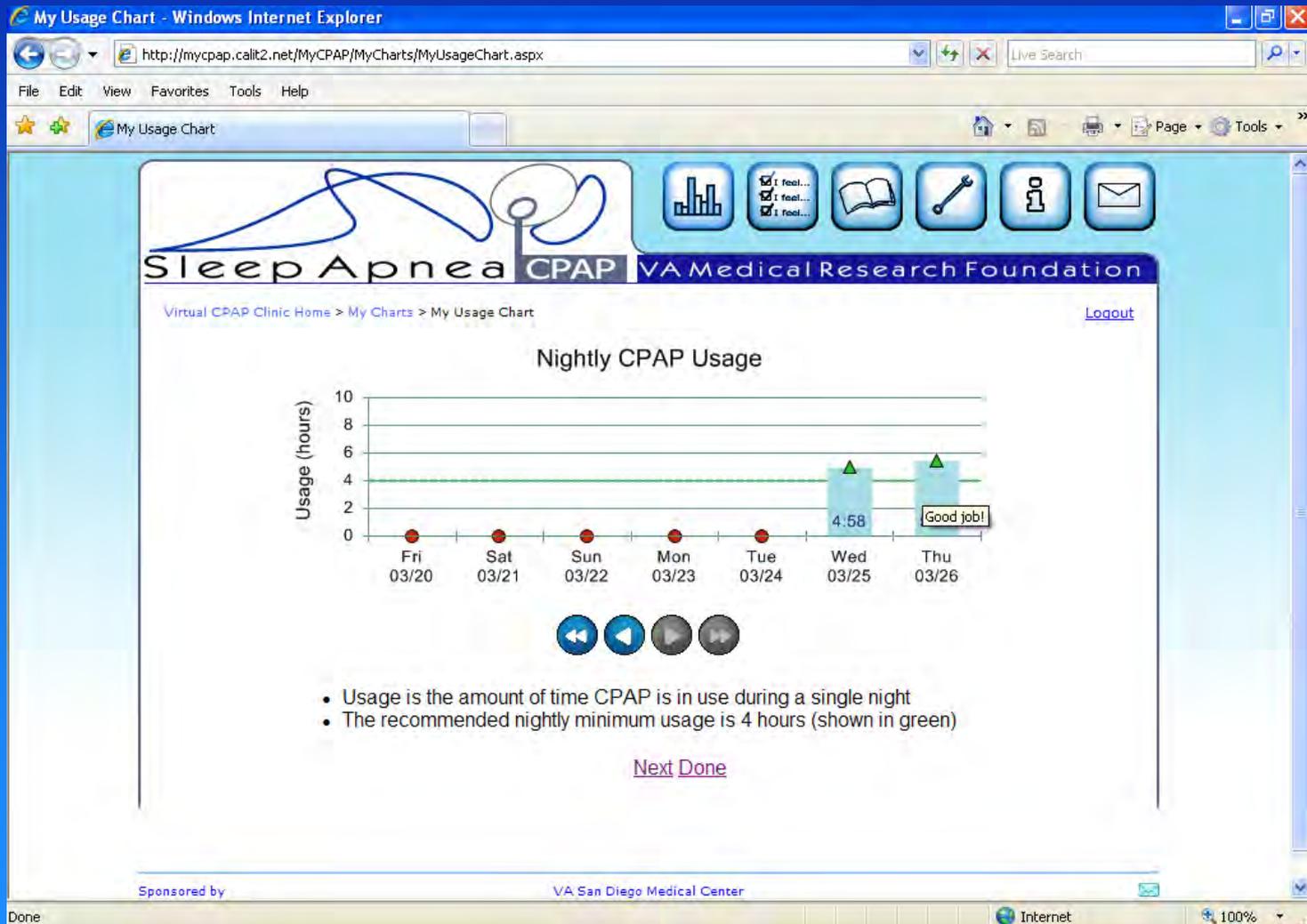
Usage (hours)	5:40	 My Usage Chart
AHI (events/hour)	4.37	 My AHI Chart
Leak (liters/sec)	.12	 My Leakage Chart

You may drill further into the data by selecting the links on the right.

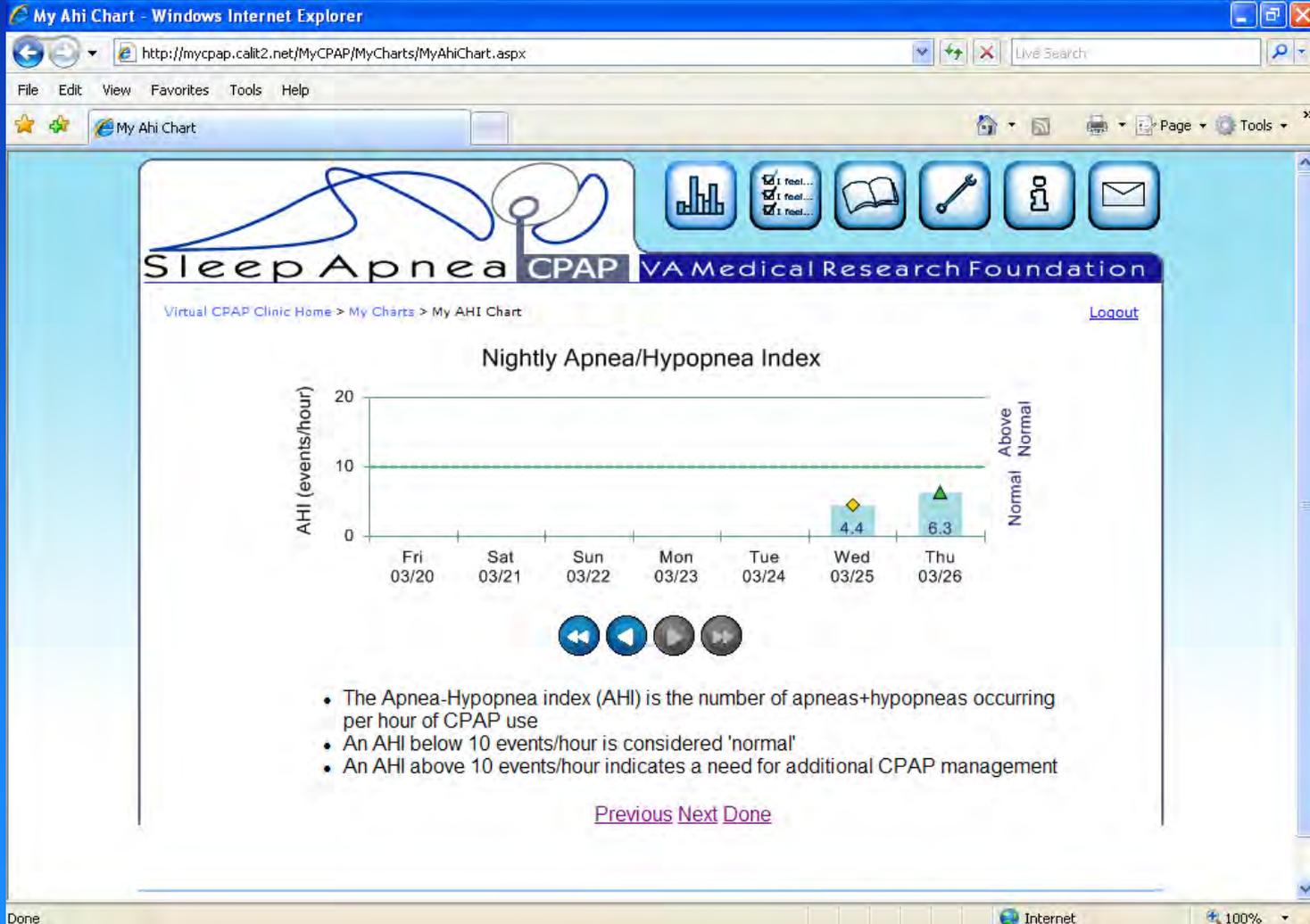
Sponsored by VA San Diego Medical Center

Internet 100%

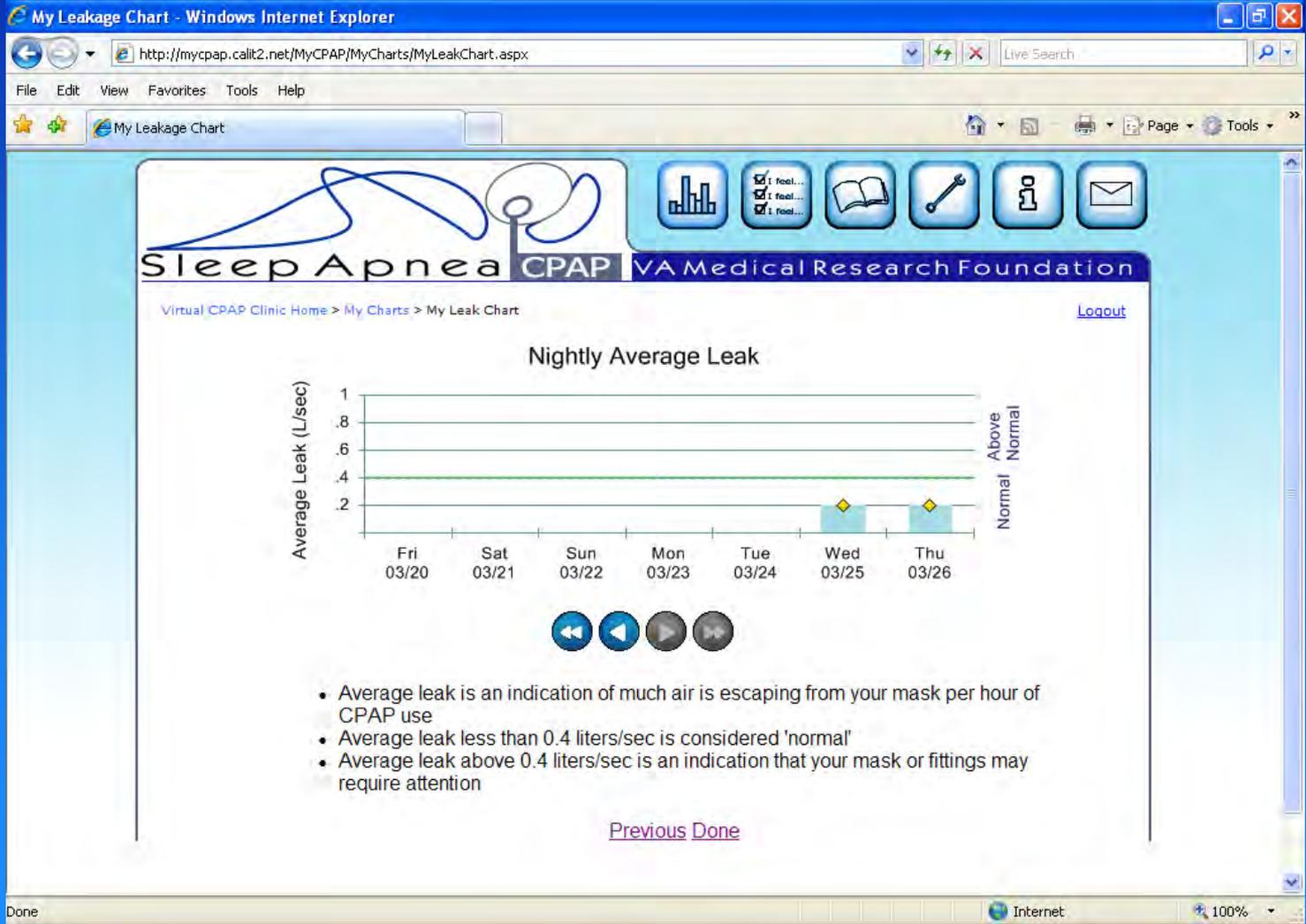
CPAP Adherence Data



CPAP Residual AHI Data



CPAP Leak Data



Troubleshooting & Manual

The Virtual CPAP Clinic - Windows Internet Explorer

http://mycpap.calit2.net/MyCPAP/Troubleshooting/Troubleshooting.aspx

File Edit View Favorites Tools Help

The Virtual CPAP Clinic

Home RSS Print Page Tools



Virtual CPAP Clinic Home > Troubleshooting [Logout](#)

We hope that you aren't experiencing any problems with your CPAP treatment, but in case you are, this is the part of the website where you can look up solutions for some commonly experienced problems. As you will see, most of the corrections can be done by you at home. Some, however, require that you contact your care provider. If contact is necessary we will help you do so.

*Note: If you would like to print out a complete list of problems and their possible corrections included in this section, simply click on the icon "Full List of Troubleshooting" below and print the page. You can post this list near where you sleep in case you experience some of these problems



[Click Here](#)
if you would like to
troubleshoot problems using your CPAP



[Click Here](#)
if you would like to view the
CPAP Machine Reference Guide

Internet 100%



Sample Baseline Characteristics

Variable	Both Groups Mean \pm SD	PC3 * (N=126) Mean \pm SD	Usual Care* (N=114) Mean \pm SD	P-value
Age	52.1 \pm 13.3	52.2 \pm 13.0	51.9 \pm 13.6	NS
Body Mass Index (kg/m ²)	32.4 \pm 8.0	32.1 \pm 8.3	32.8 \pm 7.8	NS
Apnea-Hypopnea Index (AHI)	36.5 \pm 25.9	36.3 \pm 24.9	36.6 \pm 27.0	NS
Epworth Sleepiness Scale	10.6 \pm 5.3	10.7 \pm 5.2	10.5 \pm 5.4	NS

* No significant differences between UC and PC3 groups.

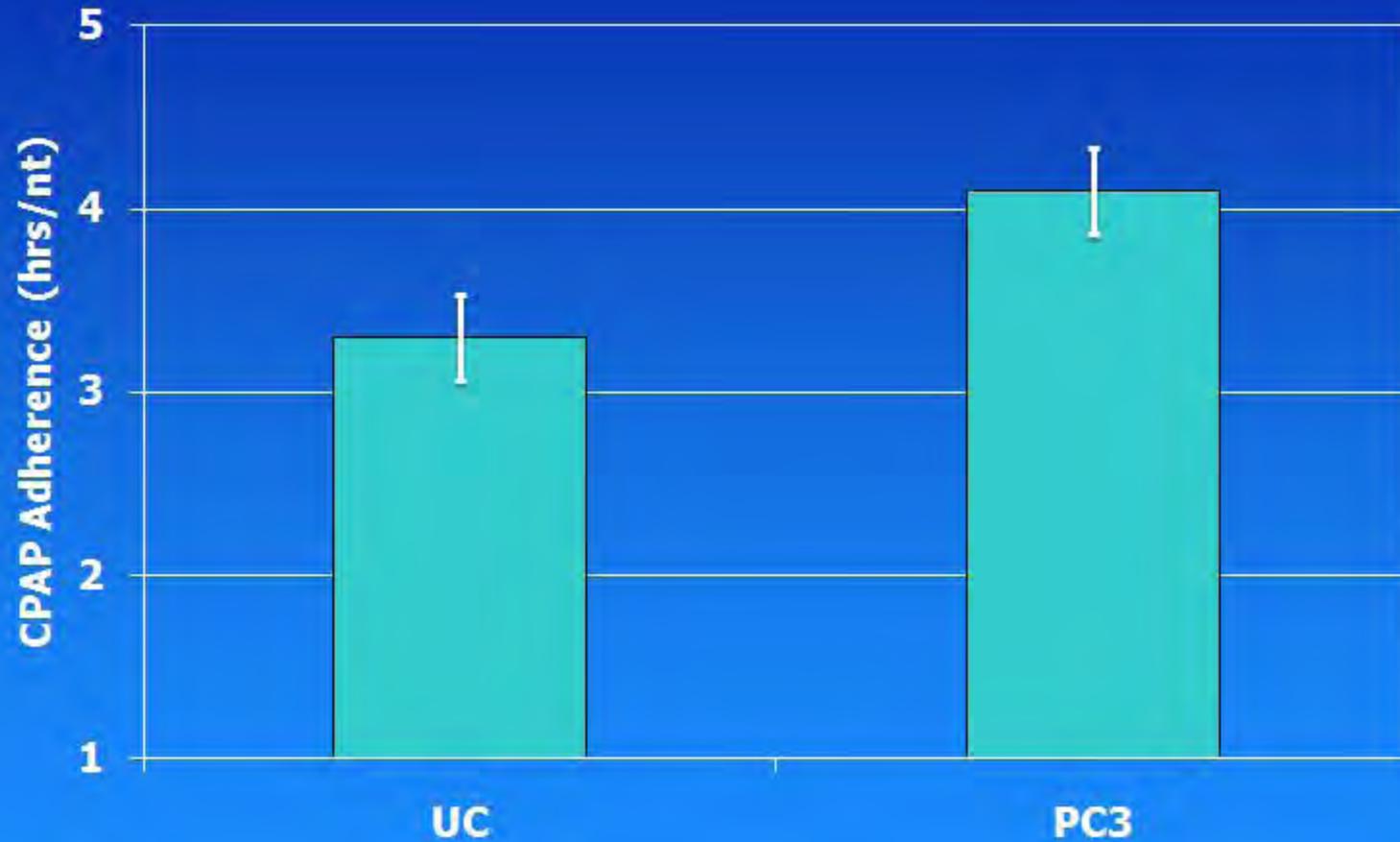


CPAP Adherence Level (in hrs/nt) Between UC and PC3 at 2 Months



p-value=.016; d-index = 0.34

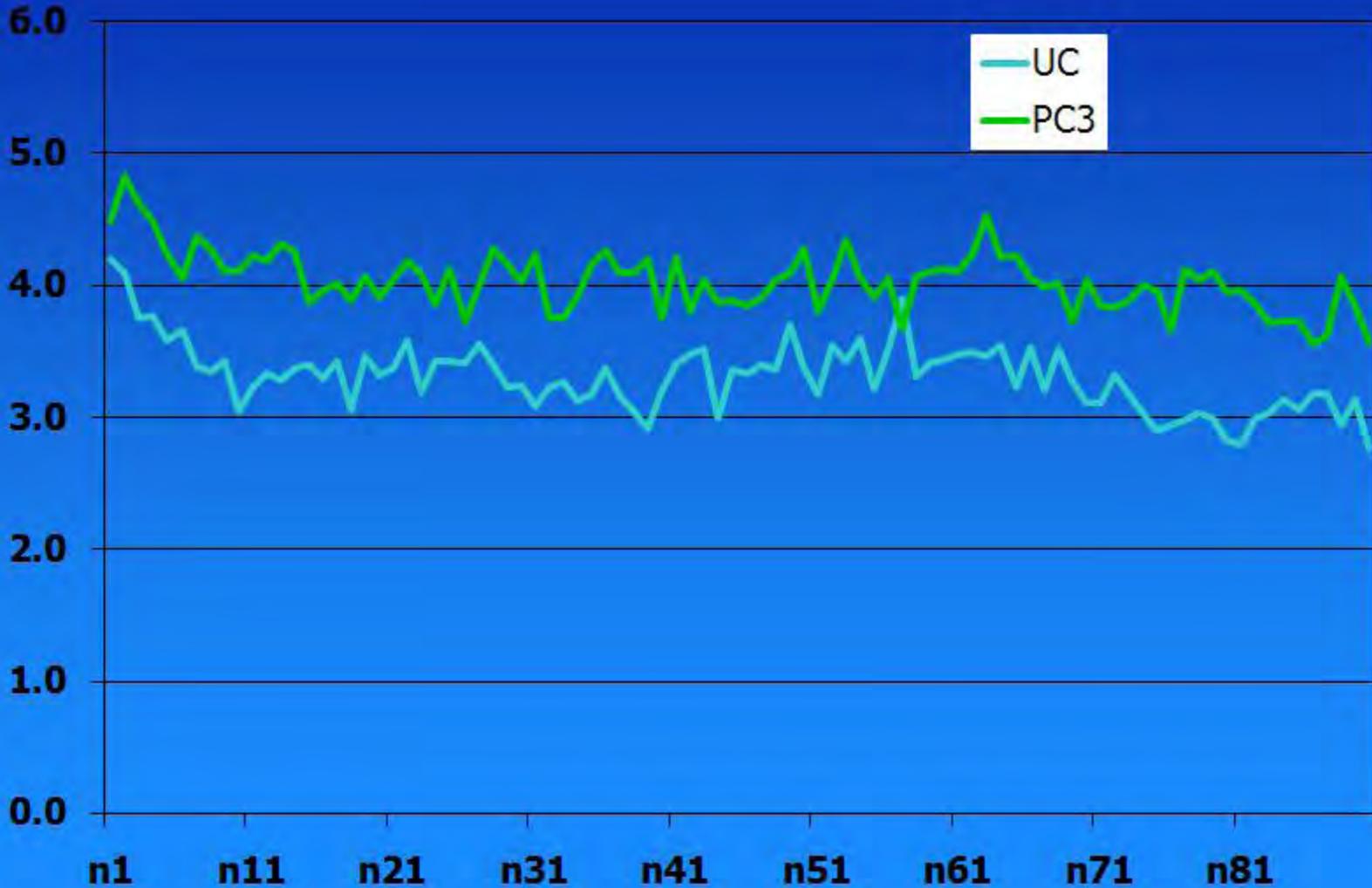
CPAP Adherence Level (in hrs/nt) Between UC and PC3 at 4 Months



p-value=.016; d-index = 0.34



Nightly Use Rates over First 90 Days





Outcome Measures: 2 Months

Variable	Both Groups Mean \pm SD	PC3 (N=126) Mean \pm SD	Usual Care (N=114) Mean \pm SD	P-value
Epworth Sleepiness Scale	8.5 \pm 5.4	8.9 \pm 5.3	8.1 \pm 5.5	NS
Sleep Apnea Quality of Life	2.4 \pm 1.1	2.5 \pm 1.0	2.4 \pm 1.2	NS
CES-D	8.5 \pm 5.4	8.9 \pm 5.3	8.1 \pm 5.5	NS
Patient Satisfaction	1.7 \pm 1.2	1.7 \pm 1.1	1.8 \pm 1.3	NS

CES-D=Center for Epidemiological Studies-Depression; PACIC = Patient Assessment of Chronic Illness Care



Outcome Measures: 4 Months

Variable	Both Groups Mean ± SD	PC3 (N=126) Mean ± SD	Usual Care (N=114) Mean ± SD	P-value
Epworth Sleepiness Scale	6.5 ± 4.2	7.1 ± 4.5	5.7 ± 3.6	NS
Sleep Apnea Quality of Life	2.3 ± 1.1	2.4 ± 1.1	2.2 ± 1.2	NS
CES-D	7.9 ± 5.2	8.6 ± 5.5	7.1 ± 4.9	NS
Patient Satisfaction	1.8 ± 1.2	1.7 ± 1.1	1.9 ± 1.3	NS

CES-D=Center for Epidemiological Studies-Depression; PACIC = Patient Assessment of Chronic Illness Care



Conclusions

- The PC3 intervention has the potential to help improve CPAP adherence in clinical settings.
- The 1-hour-per-night difference held at both 2-month and 4-month time points.
- No differences were seen between the groups on outcome measures at 2 or 4 months.



Conclusions

- CPAP adherence interventions based on health IT have potential to be cost effective relative to more labor-intensive interventions.
- May be useful as part of stepped care plan.
- Patient engagement with health IT tools is variable; consideration of incentives/rewards.
- Future studies would do well to include forums and other peer support, as well as electronic communication with provider.



Acknowledgements

- Project team and colleagues:
 - Christine Edwards, B.A.
 - Tania Zamora, B.A.
 - Zia Agha, M.D.
 - Sonia Ancoli-Israel, Ph.D.
 - Jose Loreda, M.D.
 - Matt Marler, Ph.D.
 - Phil Rios, B.S.
 - Karen Bartku
- UCSD Sleep Clinic Staff
- AHRQ 1R18HS017426-01; VA San Diego Research Service; Veterans Medical Research Foundation.



Contact Information

- Contact:
 - cstepnowsky@ucsd.edu
 - 858-642-1240



Agency for Healthcare Research and Quality

Advancing Excellence in Health Care

www.ahrq.gov

ONC's Consumer E-Health Program Strategy

Lygeia Ricciardi

Senior Advisor

Consumer e-Health

Office of the National Coordinator for Health IT (ONC)



Program Mission



To empower individuals to be partners in their health through information technology.



ONC's Consumer E-Health Program

Some highlights from program launch in September 2011:

- Participation by 1,400 people including HHS Secretary and Surgeon General
- 30 public and private sector organizations pledged their support for consumer engagement in health via IT
- Release of proposed rules giving consumers direct access to lab data
- Release of extensive online consumer content about health IT at www.healthit.gov
- Released PHR comparison tool for consumers



Group picture of leaders from some participating organizations with Secretary of Health and Human Services and the Surgeon General



Underlying Assumptions

About consumer engagement in health:

- Health engagement includes finding care resources, making good treatment decisions, participating in care regimens, communicating with providers, promoting good health, and other behaviors.
- Actionable information (right info, right place, right time) contributes to individuals' ability to effectively engage in their health.
- Actionable information for individuals can contribute to the following health outcomes:
 - Increased ability to coordinate care among multiple providers
 - Stronger partnerships with providers in patient-centered care
 - Better self-management



Underlying Assumptions

About consumer engagement in health:

- The goal is *effective* engagement... not necessarily *more* engagement.
- Provider and patient attitudes—not just technical and financial considerations—impact individuals' ability to use information to engage effectively in their health.
- Cultural diversity, the digital divide, and a wide range of literacy levels all need to be addressed to support consumer engagement.



Underlying Assumptions

Powerful “megatrends” support consumer engagement in health:

- Communication technology is getting cheaper and more ubiquitous (e.g., cell phones, smart phones, tablets).
- Online communities are growing and proliferating (e.g., Facebook, Twitter).
- Technology for information collection and analysis is getting cheaper and ubiquitous (e.g., sensors, more powerful computers).
- Trends are toward opportunities for greater consumer engagement in most (other!) aspects of our lives.
- Meaningful Use and other factors are bringing health information held by providers online.
- Market forces are requiring consumers to take greater responsibility for their health and health care.

About roles:

The federal government’s role is to catalyze the change led by other stakeholders and “megatrends.”



Strategic Approach

Access

- Give consumers secure, timely access to their personal health information.

Action

- Support the development of tools and services that help consumers and providers to take action using their electronic health information.

Attitude

- Support the evolution in expectations regarding access to and use of health information to engage more fully in health.



Where AHRQ Fits

Access

- Give consumers secure, timely access to their personal health information.

Action

- Support the development of tools and services that help consumers **and providers** to take action using their electronic health information.

Attitude

- Support the evolution in expectations regarding access to and use of health information to engage more fully in health.



Example ONC Initiative: Increasing Access

Putting the **I** in Health **IT**
www.healthit.gov

PLEDGE

to Empower Individuals to be Partners in Their Health Care

Who is Pledging IT?

Who is pledging? AARP, Aetna, Allscripts, American Academy of Family Physicians, Blue Cross Blue Shield, Intel Corp., Johnson & Johnson, Microsoft, Nike Corp., Pepsi, WebMD, Yelp.

Take the Pledge

PLEDGE NOW

Goal: To recruit and cultivate organizations that touch large numbers of people.

Two types of pledges:

1. **Data holders:** Make it easier for individuals to get secure electronic access to their health info (through Blue Button or Direct), and encourage them to do it.
2. **Non-data holders:** Spread the word about the importance of getting access to health information, and develop tools to make that information actionable.

For more information:

<http://www.healthit.gov/pledge/>

Pledge Program

More than **250** organizations have taken the Pledge. Collectively, they will provide access to personal health information to **100 million** Americans.





Benefits of Pledge Program

- Public recognition of consumer access to/use of information efforts
- Opportunities to network and partner with other organizations who share a similar goal of greater consumer engagement in health
- A forum to elevate issues and provide input on policy barriers/challenges for the federal government to address
- Input into the development of and access to materials/tools to spread the word
- Opportunities to exchange best practices and learn from leaders in consumer engagement



Example ONC Initiative: Supporting Action

- Healthy Apps Challenge
 - Jointly issued by the Surgeon General and ONC
- Foster development of applications that:
 - Provide users tailored health information
 - Empower users to engage in and enjoy healthy behavior
- Categories:
 - Fitness/exercise
 - Nutrition
 - Integrated health

For more information:

<http://sghealthyapps.challenge.gov>

Example ONC Initiative: Changing Attitudes



HealthIT.gov | Office of the National Coordinator (ONC)

HealthIT.gov
Advancing America's Health Care

“I am the future of health care.”

Putting the I in HealthIT

Providers & Professionals

- Learn why adopting electronic health records (EHRs) matters
- Find out how to start your own transition to EHRs
- Get EHR implementation support
- Learn about financial incentives
- Find resources to help you select an EHR system

Patients & Families

- What is health IT?
- Learn how health IT can lead to safer, better, and more efficient health care
- Take control of your health with e-health tools
- Get tips on protecting your health information privacy
- Learn how to be more involved in your own health care

October is **National Breast Cancer Awareness Month**

Find out how Health Information Technology can help coordinate care for breast cancer patients and survivors.

October 1 - October 31

The Office of the National Coordinator for Health Information Technology

ONC is at the forefront of the administration's health information technology (health IT) efforts.

HealthIT.gov supports this mission, and is part of ONC's nationwide campaign designed to explain how individuals are Putting the I in Health IT™. The campaign is designed to



Example ONC Initiative: Changing Attitudes

- Healthy New Year video challenge
- Developing health IT animation
- Goals:
 - Explain value of health IT to general public
 - Foster greater consumer engagement in health
 - Invite public to tell their own stories related to health IT through video.
- Enter the challenge at <http://healthynewyear.challenge.gov/>



Preparing for the Future: “Frontier Issues”

Better understand (and act on!) policy, technical, and other dimensions of the following areas:

- Integrating “patient-generated data” into EHRs/clinical care
- Using social media for health
- Enabling proxy access to personal data
- Integrating information about costs/quality of care with clinical info to help consumers understand context
- Showing how health IT can best support behavior change





Contact Information

- Contact:
 - Lygeia.Ricciardi@hhs.gov
 - 202-690-3885
 - Twitter: @Lygeia



CME/CNE Credits

To obtain CME or CNE credits:

Log onto www.dspesg.com/aphaRegional to evaluate this Webinar.

Please wait 48 hours after this event before logging on to ensure your name has been registered in the system.

CE certificates will not be generated without completed evaluations.

This link will also be e-mailed to those who indicated they were planning to obtain CE credit when registering for this Webinar.