Corporate Partners/Affiliate Members

Spring Meeting Telehealth

June 4, 2013
U.S. Web vs. Mobile App vs. TV Consumption, Minutes per Day

<table>
<thead>
<tr>
<th></th>
<th>Dec 2010</th>
<th>Dec 2011</th>
<th>Dec 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web Browsing</td>
<td>70</td>
<td>72</td>
<td>70</td>
</tr>
<tr>
<td>Mobile Applications</td>
<td>66</td>
<td>94</td>
<td>127</td>
</tr>
<tr>
<td>Television</td>
<td>162</td>
<td>168</td>
<td>168</td>
</tr>
</tbody>
</table>

Sources: comScore, Alexa, U.S. Bureau of Labor Statistics, Flurry Analytics
Show of hands – who has a smartphone?
“The most valuable commodity I know of is information.”

1978

Mobile phones
1984

Macintosh / GUI
1994

Netscape Navigator
The World Wide Web
Growth of the App Store

A billion thanks. 25 times over.

The App Store has reached 25 billion downloads. Thanks for getting us there.
Classic case of market disruption

> Winners = Innovators

> Losers = Incumbents
35 years of innovation...
have built a ubiquitous “software canvas”
And software disrupts industries.

www.TTheNationalCouncil.org
Whither health care?
Using sensors to track health

- GPS
- Cameras
- Microphones
- 6-axis accelerometer
- Compass
- Light sensor
- Proximity sensor
- Wi-fi, 3G/4G
- Bluetooth
Consumer tracking
Consumer tracking

Input Type: GPS
Activity Type: Cycling
Route: Commute: JP-Back Bay
Playlist: None
Workout: None

Start Activity
Consumer tracking

If there is more than one mole in your photo, we will categorize only the one that appears to us as most in the center of the image. To center your mole, use the plus sign reference mark (+) that appears in your iPhone.

Your photo shows features that are generally regarded as atypical and should be examined by a dermatologist or your regular physician soon; please tap "Nearby dermatologists" below if you would like a list of dermatologists in your area.

More information

Nearby dermatologists
Tracking heart rate
Tracking weight
Tracking blood pressure

Withings

January 3, 2012, 8:46 PM

SYS mmHg
127

DIA mmHg
76

BPM
82

Tap to attach your comments
The "long tail"
Population health
Behavioral health

MoodKit ($4.99)

Summarize a situation that bothered or upset you:
My daughter fell down and cut her lip.

Thought: "I'm a terrible parent."

Which distortions can you identify in your thought?
All-or-Nothing Thinking
Blaming

Thought Checker
Situation: My daughter fell down and cut her lip.

How did you feel?
Ashamed
Sad

How strongly did you feel this way? (0-100%)
80%
70% 0%

Thought Distortions
Thought:
"It could happen to anybody. Kids fall all the time. It doesn't make me a bad parent."

You said you felt:
Ashamed

Journal
Activities
Thoughts
Mood
Journal
Extras

Journal Entries
Activities Notes
Thought Checker Sessions
Mood Tracker Notes

Accomplishing Goals
Asserting Yourself
Enhancing Motivation
Envisioning Success
Evaluating Predictions
Expressing Gratitude
Finding Wisdom
Living Your Values
Managing Time
Productive Worrying
Recognizing Strengths

All Entries

What are you hoping to accomplish?
What negative outcome are you predicting will occur?
What would be the best outcome?
What's a "good enough" outcome?
Goals

Patient Generated Data
Patients Part of the Team via Remote Monitoring

- Verify things happen as they should, medications, leave for work, reposition
- Reduce caregiver levels when intervention is not needed
- Maximize Active Intervention
- Minimize Passive Caregiver
- Verification and Reminders
- Maximum Self Dependence
- The less caregiver presence, the more self dependence
- Active caregiver time more productive, prevention vs. reaction

Contact: Communications@TheNationalCouncil.org
In Use today

Minimize passive caregiver time
Enhance active caregiver time
Increase self-dependence
Verify important activities

Smoke
normal • alert •

Bed/Chair
occupied • unoccupied •

Motion
activity • inactivity •

Contact
open • closed •

Stove Guard
• person near
• stove off

Contact
• open
• closed

Toilet Flush
• frequency

Bed/Chair
• occupied
• unoccupied

SENS
Secure Environmental
Network Support

SENS
VISION
Active Monitoring
When eyes-on is also needed

24/7
Response Center
Advocate Monitoring
Use of Big Data
This gadget makes our health-care projections obsolete!!

World’s smallest blood monitoring implant tells your smartphone when you’re about to have a heart attack
Next Game Changer?
Next Game Changer
And it is coming Very Fast!!!!
Evidence Summary

Quantity

43 publications since 2001 to present

Analysis of over 20,000 patients

4 Publications in Development
5 abstracts

Diseases/Conditions

7 - Complex Chronic diseases (mostly CHF, COPD, and DM)
8 - COPD
11 - CHF
5 - Diabetes Mellitus
3 - Cancer
2 - Post-CABG
1 - ESRD
1 - Palliative Care
2 - Serious Mental Illness
1 - Influenza
1 - Rehabilitation
1 – Sleep Apnea

Delivery Systems

20 - VA
18 - Hospital Systems
1 - Managed Care Organizations
2 - Medicare
1 – Home Care
1 - Military beneficiaries and families

Geography

37 – United States
• Rural
• Urban
6 - Europe
• Netherlands
• Germany
40+ Publications Measuring the Impact of Bosch Telehealth

**Clinical benefits**

- **Mortality**
  - Reduction of mortality
  - 4-years-relative risk of mortality reduced by 32% in diabetic patients (*Chumbler 2009*)
  - 57% decreased risk of death for CHF patients after 3 years of using Health Buddy (*Page 2012*)

- **Quality of life**
  - Significant improvement of health-related quality of life
  - After just 12 weeks in patients with COPD (*Koff 2009*)

**Patient Empowerment**

- **Compliance**
  - Better adherence to treatment recommendations
  - Significantly improved with regards to fluid restrictions, weighing, physical exercising and alcohol restrictions (*Ramaekers 2009*)

- **Disease Knowledge**
  - Expansion of awareness
  - Significant increase of disease-specific knowledge in patients with CHF (*Ramaekers 2009*)

**Economic benefits**

- **Costs**
  - Significant cost saving
  - 7.7% – 13.3% per capita per quarter in Medicare’s high-cost beneficiaries (*Baker 2011*)

- **Resource Utilization**
  - Reduction of bed days of care
  - 25.31% in patients with multiple chronic conditions (*Darkins 2008*)

  - Reduction of re-admissions
  - 50% related to CHF after 90 days (*Weintraub 2010*)
Effort to Secure HCPCS code

Bosch Healthcare Leadership and Collaboration

Jan 2012
Applied for HCPCS code.

Spring 2012
Obtained support from insurers & Medicaid.

May 2012
Presented to CMS HCPCS Workgroup.

November 2012
HCPCS Workgroup grants request.

Jan 2013
HCPCS code available for use.
Compelling Benefits of Telehealth

Bosch worked with CMS to adopt an S code for telehealth that would:

- Provide standardization for payers operating in multiple states
- Promote physician adoption
- Allow management of multiple conditions, as defined by payers
- Address clinical coordination provided by a care manager and supported by a physician
- Emphasize the role of clinical content, behavior assessment and patient education
New S Code for Remote Monitoring

S9109 (Discontinued):
CHF
Telemonitoring Equipment Rental
Including Telescale
Computer System and Software
Telephone Connections
Maintenance

S9110 (New):
**Telemonitoring** of Patient in Their Home
Including all Necessary Equipment
Computer System
Connections and Software
Maintenance
**Patient Education** and Support