Security and Privacy in mHealth systems
– David Kotz –
May 2012
The use of mobile computing and communications technology in the delivery of healthcare or collection of health information.
Personal wellness applications

Dashboard for James P

Monday, Jan 16, 2008
pick a day or see next day, previous day

<table>
<thead>
<tr>
<th>Actual</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steps</td>
<td>10,879</td>
</tr>
<tr>
<td>Calories burned</td>
<td>2,487</td>
</tr>
<tr>
<td>Calories eaten</td>
<td>1,974</td>
</tr>
</tbody>
</table>

How you did over the day
For the day, excluding sleep, you were

83.7% sedentary 10.2% lightly active 5.3% fairly active 0.8% very active

Calories burned every 15 minutes

Your sleeping pattern

Institute for Security, Technology, and Society (ISTS) at Dartmouth College
Remote patient monitoring to grow 26 percent

By: Brian Dolan | Jan 25, 2011 2:08pm EST
Tags: Kalorama Information | remote patient monitoring

According to a research report from Kalorama Information, the market for remote and wireless patient monitoring is set to grow about 26 percent annually through 2014.

"With increased waiting times at doctors' offices, some employees may have to take a sick or personal day to see the physician for what might be a routine visit and technology might help avoid that scenario," Kalorama stated in its release. "Kalorama said these tools will grow by over $6 billion this year.

Last summer Kalorama released a report on the market for handheld devices in healthcare, which included mobile phones, monitoring devices and everything in between. By the end of 2010, Kalorama expected the total market for handheld devices in healthcare to reach $8.8 billion. Sales for patient monitoring tools topped $5.3 billion in 2009, according to the company, while "administrative devices" like PDAs, smartphones, tablet PCs and handheld scanners generated about $3 billion in sales during 2009.
mHealth platforms: Smart phones

Smartphones have MANY sensors, even the radios and touch screen can be considered sensors. Internal sensor locations are approximate in this slide.
mHealth devices are emerging

- Smart phones
- Stella wearable sensors
- Philips emotion sensor
- TI sensor watch
- Garmin sports watch
- Corventis wearable medical sensors
- Fitbit Activity & Sleep Tracker

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Shared sensors, environmental sensors

Withings wireless body scale

Caliber III (temperature and humidity)

Wireless Heart Rate Monitor (ProForm AccuRate)

Blood Pressure Monitor (Omron M10)
mHealth – what’s different?

• Security
  – Immediate, personal impact
    • mHealth devices directly affect your health, or health decisions

• Privacy
  – Sensitivity of data:
    • mHealth data is inherently personal, literally about you
  – Volume of data:
    • mHealth collects far more medical data, over extended periods
  – Diversity of data:
    • mHealth collects a broader range of information, including lifestyle, activities, and context
  – Uses of data:
    • mHealth enables a broad range of apps, outside the doctor-patient relationship
“Health information privacy is an individual’s right to control the acquisition, uses, or disclosures of his or her identifiable health data.”

-National Committee for Vital and Health Statistics (NCVHS), 2008