Mobile healthcare and its challenges to Interaction Design

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8th July 2010
Introductions
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- What does Orion Do
- What do I do
What do we mean when we refer to Mobile Healthcare?
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Where does mHealth sit in Healthcare
“mhealth can be broadly defined as Healthcare engagements enabled by portable devices with wireless connectivity”
mHealth for Physician Support

- Providing healthcare information to practitioners, researchers, and patients
- Real-time monitoring of patient vitals
- Direct notification of a patient's test results the moment they become available
- Quicker Transfer of Care
- Med (drug) support
- Diagnostic support, treatment support, communication and training for healthcare workers
- Reducing errors by tracking clinician encounters and outcomes (Transparency of medical input and frequency of good/bad outcomes)
- Drug interactions, order conflicts (double ordering warning)
- Patient record and encounter transparency
- Tracking of clinician input
- Aggregation of symptoms/encounters
- Drug interaction warnings
mHealth for Patient Support

- Providing healthcare information to patients
- Real-time monitoring of patient vitals
- Direct notification of a patient's test results the moment they become available
- Giving anyone access to their Personal Health Record
- Real-time patient monitoring tools
- Treatment support and medication compliance for patients, including chronic disease management (such as diabetes)
mHealth for Government Support

- Collecting Community health data,
- Recording data on epidemics
- Tracking risks in populations
- Automatic Chronic Disease management
- Pre diagnosis and notification of at-risk populations
How eHealth and mHealth fit together

**eHealth system**

- Patient Communications
- Access to resources
- Point of Care Documentation
- Disease Management (Chronic)
- Education Programmes
- Professional Communication
- Administration Applications
- Financial
- Labs Tests
- Outbreak recording
- Orders
- Drug, Aillevy & Diagnostic support

**AUTHENTICATION AND ROLE BASED ACCESS**
Right data at the right time
Right data at the right time

### Alex Holmes (3320)

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### KEIR, Samantha (Mrs)

**Female / 66y DOB: 16 June 1946**

#### Laboratory

**Complete Blood Count (47)**

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**Lipid Profile (3)**

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**Chem 7 (5)**

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**Blood Workup**

- **CBCWD**
- **Basophils**
- **Eosinophils**
- **HCT**
- **HGB**
- **Lymphocytes**
- **MCH**
- **MCHC**
Is the Medical Community ready for mHealth?
Definitions, Definitions
Usability

“the ease with which a user can accomplish their goals”
User Experience

“a joy to use” = an excellent User Experience
Components of User Experience

Four Elements of the User Experience

- Branding
- Usability
- Functionality
- Content

The User Experience is made up of four interdependent elements.

Mobile device and OS Enthusiasts

Palm Pre

Blackberry Storm

Zune
An example of excellent UX
There is a learning curve in mHealth
Solving the input problem in mHealth
Visual Decision Support

- Visually shows images of dermatological condition to offer the physician a way to confirm their diagnosis.

The physician must have an idea of what they are looking at for a confirmed diagnosis.

Offers a checklist for confirmation.

See variations in disease presentation including ages, skin types, or even passage of time.

Closeup of disease.
Epocrates Essentials is a database of drugs, diseases, diagnosis, and treatment for medical professionals.

The Interaction Design is about as good as it gets

However we are just looking at the drug interaction...interactions

Drug interactions are common to any patient who is on more than one drug, knowing the possible problems caused by prescribing one more drug reduces the risk to the patient and the physician. Having this information available in a mobile device at all times is desirable, especially in a hospital environment.

Is available on all most common devices

The vertical subject class of the app is selected first, getting to the smallest parts of the right data, now
Available on most mobile operating systems
Uses completely different Interaction Design for each handset
Relies on user being comfortable with how patterns of apps work in their native environment
Pill ID Support

- Simple and Usable
- Is a pattern that would make Visual Decision support more usable
Collaboration

- Getting the right people involved with a case is essential to a holistic view of care and mHealth is providing hospitals with the ability to coordinate the collaboration of care between clinicians, specialists, allied health staff. Voalte has one of the first integrated chat and alerting applications in mHealth.
Epidemics

- Epidemics are now tracked in developing countries using good old SMS
- In developed countries this tends to be automatic messages from lab results for confirmed infections
- A confirmed infected is sent to the centre for disease control that tracks outbreaks
- A heat map is produced which can be distributed to various portable devices
The Challenge

- William D. Richard, Ph.D
- Invented a smartphone-compatible USB ultrasound probe. This can be plugged into a standard Microsoft Windows mobile-based smartphone and the operator can immediately image the kidney, the liver, the bladder and the eyes using the screen on the smartphone.
The Challenge

- From the pictures below, what major principle has been broken that makes this a poor example of interaction design?