Digital Health and the Evolving Healthcare Landscape

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Precision Medicine

• Giant leap past personalized medicine and reliance upon basic genomics
• Proposes a new ontology that describes diseases based on their molecular mechanisms rather than tissue of origin
• Application of pan-omic analysis and systems biology to analyze the cause of an individual patient's disease at the molecular level
• Using very large data sets
  - makes individualized disease progression and outcome predictions
  - Highly targeted treatments
Digital technologies, mobility, and Social Media have fundamentally transformed how we communicate

- **121 billion** minutes on social media sites in one month *(July 2012)*
- **230,060 person-years** spent on-line
- **39 hours on-line per month**

We are social creatures and we expect to be connected and mobile!
Incredible connected digital health devices
The context: Interest in digital health is growing
The Fairy Tale
The Reality – the “Last Mile”
Focus

**Innovate**
We provide UCSF faculty, students, and staff with the essential support and resources to create transformative technologies.

**Validate**
We leverage UCSF’s clinical trial resources to test, validate, and iterate on novel technologies.

**Integrate**
We focus on the integration of new technologies in real clinical environments to ensure that technologies can be used by patients and providers.

**Educate**
We design digital health education for the next generation of digital health leaders. We bring together leaders across healthcare and digital health, to create an ecosystem for learning.
Team

CMIOs
Engineers
Researchers
Security experts
Medical Educators
Licensing Officers
Project managers
Innovation: Inaugural Portfolio

[Logos of careweb, TIDEPOOL, and Health eHeart]

Center for Digital Health Innovation at UCSF
• External collaboration
  • Demo days
    • 100 start-ups evaluated
    • 3 active projects
  • Partnerships
Accelerate validation and commercialization of an ecosystem of new sensors, algorithms, and digital health technologies for preventive health and chronic disease management solutions
So, what’s it all mean?
1. Reality Sets In

- Quantified self fades out
  - Nike Fuel cancelled
  - Fitbit not making money
  - Disconnected devices have $t_{50} < 3\text{mos}$
  - Push for social connected devices, too little too late

- Results are demanded by investors
2. More Sophisticated Wellness Devices

- Platforms
- EcoSystems
- Multi-parameter sensing
- Advanced analytics
- Payer driven
3. Chronic Disease Management

- HTN
- DM
- Asthma, COPD
- Behavioral health
4. Telehealth Pervasive

- At risk organizations
- CMS broadens opportunities
- Unavoidable to address rural access issues
5. Finally, Integrated Systems

- Integration with EHRs
- Scale at ACO level
- Workflow driven to get data and information to the right person on the care team at the right time
- Data is aggregated at organizations and used for clinical care and research
Discussion