The Changing Face of Personalized Healthcare: Here, There, Everywhere, Anywhere

Kevin Fickenscher, MD
Chief Strategic and Development Officer
Dell Healthcare Services
津波
The New Metaphor: Galaxy Formation ~ Information Organization
The New Metaphor…

- Move from homogenous mix of amorphous material that includes gases, matter and dark matter

- Primordial fluctuations ultimately create structure by creating the gravitational pull that integrates gases, dark matter and matter

- Galaxies eventually cluster across a web of filaments that can cause gravitational interaction which shifts the pace and breadth of expansion and formation

- Many galaxies in the universe are gravitationally bound to other galaxies, that is to say they will never escape the pull of the other galaxy
"The real voyage of discovery consists not of finding new lands but of seeing the territory with new eyes."

- Marcel Proust
Philip Tetlock, Ph.D. – a psychologist at the University of California has studied “pundits” and “opinion makers” for the last 25 years.

Focused on 284 prominent economists, foreign-policy specialists, and journalists and evaluated 82,000+ predictions

His finding? – the vast majority of experts perform “worse than random” with an accuracy rate of less than 50% and liberals, moderates and conservatives were “equally ineffective” in their predictions.

Conclusion: “Our political discourse is driven in large part by people whose opinions are less accurate than a coin toss.”
Global Forces…

- Constrained financial resources
- Shifting world economic power
- Global migration and virtualization
- Free market competition
- Cultural diversity

*Change is the price of survival.*

Sir Winston Churchill
Health Care Forces...

- Large scale consolidation
- Breakdown of traditional boundaries
- Cross-industry convergence
- Rising tide of technology
- Workforce globalization

"Change is the price of survival."

Sir Winston Churchill
Waves of Technology Innovation...
A Futurist Perspective…

Convergence

- The electric lightbulb was invented, reinvented, coinvented and “first invented” dozens of times
- 23 inventors of the lightbulb before Edison
- Differed substantially from filament to type of wires to strength of electricity to outward design
Five Drivers: Personalized Healthcare...
So, what are the elements impacting the direction of personalized healthcare?
Elements of Personalized Medicine…

- The Genome
- The Connectivity
- The Network
- The Diffusion
- And, Transparency
The Future of Healthcare...

The Genome
The Pace of Genomic Discovery…

Started in 1990 with the Human Genome completed in 2003

- Science will determine the essence of what it means to be human
- Gene therapy will cure disease
- The “junk DNA” will likely turn out to be regulator of the genome
- Discovery will extend beyond the confines of science
The Future of Healthcare...

The Connectivity
The Evolving Healthcare Platform…

Informatics / Predictive Knowledge Management

Health Information Exchange

Hospitals  Physicians  Health Insurers  State Government  Federal Government  Life Sciences

Adaptive Public Health Coaching
Crowd Sourced Research
Biologic Previews

Diagnosing the Pre-Sick
Therapeutic Health Information Patterns
Optimized Health Patterns
The Future of Healthcare…

The Network
The Network in Support of Personalized Medicine

- Best Practices
- Communities of Practice
- Precise Diagnostics
- Real-time Therapeutics
- Decision Support
- Knowledge Dispersion

The only sustainable competitive advantage is the ability to learn faster than the competition

Peter Senge
The Future of Healthcare...

The Diffusion
Information Technology Makes Healthcare Personal … Again
The Future of Healthcare...

Transparency
In May, 2010 *Lancet Neurology* published a study showing that the generic drug lithium did nothing to slow the course of *amyotrophic lateral sclerosis* (ALS). In December, 2008, PatientsLikeMe, a for-profit patient networking site and data aggregator based in Cambridge, MA, came to a similar conclusion, more quickly and at much less cost.
So, how does Personalized Medicine become a reality?
The Future of Healthcare…
Peripheral Management

The basis for success is not how much you know but how fast you can learn.

Jeffrey Immelt, CEO
General Electric
Making Small Smaller…

• Embedded Chips = Intel “Atom Chips”
  – @ $10B market with only $1B generated in 2009
  – Not as powerful as PC-based chips but economical
  – Examples
    › Nautilus – Embedded in treadmills to stream your favorite video when you show up at the gym
    › LG Electronics – Placing in signs that will recognize your age, gender and other characteristics as you pass by by creating customized messaging
    › India – banks are placing in handheld terminals that serve rural areas off the electricity grid so that when an itinerant teller visits a village, it allows locals access to loans and other banking services

• Consider the possibilities for healthcare…
Peripheral Management: Diabetes

HgbA1C = 7

7 = “high value”

Individuals with a HgbA1C of 7 or greater are at increased risk of AMI
Peripheral Management: CHF

- Remote monitoring of homebound heart failure reduces hospital admissions
- > 5 million people affected in the USA with incidence increasing
- CHF hospitalizations have tripled in the last three decades
- ~ $37+ billion in direct costs
- Non-pharma interventions can have a huge impact
- Signs and symptoms frequently start before ER admission
An Example: Animas One-Ping

- Wireless communications with a blood glucose meter
- Allows the individual to deliver wireless instructions to the pump without touching the device
- Allows the individual to download data from the pump to diabetes data management systems
The Future of Healthcare…

Consumer

Provider

Peripheral Management

Individual Feedback
Individual Feedback

Feedback is the breakfast of champions.

Ken Blanchard
Twitter Example – Medication Reminders

Direct Message:  

```plaintext
d + username + message
```

Other ideas include discharge instructions, immunization reminders (on patient’s birthday), etc.
Twitter Example – Creating Allergy & Ozone Alerts

Data Providers

Allergy Patients

 Generic

#AllergyAlert #HighPollenCount - Los Angeles - May-2010

#NWS Inversion Alert #Ozone Level - Los Angeles

Specific Alerts

d JaneDoh #HighPollenCount Los Angeles - May-2010 take <med_name>
d JohnDoh #HighPollenCount Los Angeles - May-2010 wear mask outside
An Example: Biofeedback for Pain

- A Biofeedback treatment device for pain management

  A sensor generates a signal to the patient's skin with the return signal fed into a microprocessor that analyzes the patient's inflammation. The more inflamed the affected area, the less "damping" of the feedback impulse.

  A tied medication delivery device

http://www.faqs.org/patents/app/20090326612#ixzz16bWirXzh
The Future of Healthcare…

- Consumer
- Provider
- Peripheral Management
- Interactive Management
- Individual Feedback
Interactive Management
The New Social Media

*Human speech is the first social media. The new technologies simply extend our voice…*

- Social media are simply a new way of staying connected with those we want to be connected with – it’s just that the scope and breadth have changed.

- We don’t totally understand the impact of social media.

- Communications are about relationships not, technology.

- If you have nothing to say, it doesn’t make any difference what medium you use. It will still be irrelevant.

- The power of the simultaneity of conversations beyonds our grasp.

- Fear of the future never got us there…
Who seeks Health Information Online?

The majority are those who ....

Source: Pew Internet & American Life Project Survey, November-December 2008. N=2253. Interviews conducted in English or Spanish. Margin of error is ±2%.
Social Media Tools…

Communication
- Blogs
- Micro-Blogging
- Events
- Social Networking

Collaboration
- Wikis
- Social Bookmarking
- Social News

MultiMedia
- Video Sharing
- Photo Sharing
- Livecasting

Reviews/Opinions

Etc.

http://graphic-all-design.co.uk/design-blog/social-media-blogging
The power and widespread adoption of Social Media tools relates to the lack of infrastructure required to use them…

Simply sign on and share…
An Example: Joslin Clinic Diabetic Control

Joslin Clinic Online Diabetic Twitter Support:
- Top 10 tips for managing Thanksgiving = Planning on traveling for Thanksgiving next week? Here are 10 tips for traveling when you have #diabetes. [http://bit.ly/cIKBvB]

- Pregnancy and diabetes = In celebration of our latest book on pregnancy and diabetes, we just published our first guest post from @sixuntilme [http://bit.ly/aBAPf6]
Three Examples: The CDC

• Use “eCards” – send messages as a friendly reminder from a trusted source to get screenings (e.g. mammography, colonoscopy, etc.) + much more effective than a public service announcement

• Partnered successfully with Whyville (a virtual world) for youths aged 12-14 to present messages on seasonal flu
  – In 2007, some 41,000 visitors to the site had their avatars vaccinated against the fictitious Why flu in the virtual world
  – 1,800 seniors who play the game online with their grandchildren

• Pilot HIV/AIDs prevention campaign that uses videos made by college students sent via cell phones to friends…Smoking cessation next.
An Example: Logical Images

- Used by 1,300 health care sites nationwide & six state public health departments have licensed VisualDx for every hospital in their respective states
- 30+ medical schools have integrated VisualDx
- Integrates into telemedicine
An Example: Logical Images

- Search by patient factors
- Develop a *visual* differential diagnosis
- Desktop and Laptop
- Iphone, Ipad, Itouch
- Droid (Nov 2010)
The Future of Healthcare…
“I would rather entertain and hope that people learned something than educate people and hope they were entertained.”

Walt Disney
Education

- General Education
- Admitting/Discharge
- What to Expect during Surgery
- Experts

Example: According to UCLA's School of Public Health, an average teen spends over nine hours a week on social networking sites. The school is partnering up with Health Net of California to tap into social networking sites in order to inform teenage users how to effectively use health care.
The Case for Video

- “Pictures…trigger instinct, emotion and impulse” (Bergsma 2002, TV Goes to School)
- People remember:
  - 10% of what they read
  - 20% of what they hear
  - 30% of what they see
  - 50% of what they see and hear

“People generally remember about twice as much when they see and hear something, than when they only see or hear it.”

Created by EDC’s Center for Children and Technology - January 2004
The Case for Video

- Number of American users frequenting online video destinations climbed 339% from 2003-2009
- Time spent on video sites increased 2,000% over the same period
- From 2008-2009
  - number of video streams grew 41%
  - streams per user grew 27%
  - total minutes engaged with online video grew 71%
An Example: Unity Media
So, where does the current environment take us?
The Next Generation.

Repository of Educational And Community Health (REACH) Information
The Next Generation…

- **Centers for Disease Control** – national database
- **HealthVault** – personal health record
- **Unity Media** – video push on asthma
- **PatientsLikeMe.com** – network to asthmatics
- **Surveyor Health** – drug-drug interaction
- **Updodate.com** – decision support
- **VisualDx** – clinical support and guidance
- **Contagion Health** – social network for challenges
Personalized Medicine – More than Genes…

- The Genome
- The Connectivity
- The Network
- The Diffusion
- And, Transparency
**Satisfaction** – when I want it...
**Outcomes** – with the results I want...
**Value** – at the right cost
“Never forget that a small group of committed citizens can change the world. Indeed, it is the only thing that ever has.”

Margaret Mead
Thank You...

Kevin Fickenscher, MD
Strategy, Development and Thought Leadership

Dell Healthcare Services
Kevin_FickenscherMD@dell.com
(415) 307-7358

@MDKev

http://www.perotsystems.com/CountrySites/UnitedKingdom/MediaRoom/WashingtonUpdate/default