The Future of Integrated Health Technology

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What you can expect from this workshop

• Why talk about data?
• History of data collection within a mental health setting
• The business model of the future – Outcomes Driven
• Integrated health indicators from across the country
• Embedding data as part of your EHR
• Care management models and types of partnerships
• Challenges of sharing data
• History of IT
• Future of consumer driven data collection
• Demonstration of devices currently on the market
• How to incorporate self management into an EHR and your workflow
Why is sharing data so important?

- Telling the story
  “Michigan has closed the doors to most of its state run psychiatric facility”

- Making the story real w/ data
  “In 2010, Michigan’s 46 Community Mental Health Boards provided services to 227,020 people”
The difference data makes:

- Incapable of learning

- Capable of learning
Health care billboards.....

- Waiting time at X Hospital ER is 16 minutes
- Success rate at X Hospital for hip replacement surgery is 95%
The difference accurate data makes:

“A recent study found that 10 percent of people who work on Wall Street are ‘clinical psychopaths’ and that they exhibit an ‘unparalleled capacity for lying, fabrication, and manipulation.’”
The actual study included this data:

“4 percent of a sample of 203 corporate professionals met a clinical threshold for being described as psychopaths”, not that 10 percent of people who work on Wall Street are clinical psychopaths.”
Early data from Michigan Department of Community Health

- The number of state run psychiatric hospitals
- The daily census numbers
- The number of people from a particular county (if known) residing in a state run facility
Early data from Community Mental Health Boards

- Billing / fee for service data
- Paper / calculations
- Self-tally data from case managers & therapists
- Census data from day programs and group homes
Soon, stakeholders began asking questions…

- How many children are being seen?
- How many people live in group homes?

So – we began to count…
Data becomes a tool for compliance

- How long does it take for someone to access services in a community mental health?

- How many people are re-admitted into a psychiatric hospital within 30 days of an initial admission?
As electronic medical records came into use, more data became available, but we still loved our narratives

“John Smith, a 50 yr old white male, presents with symptoms of depression”
Electronic Health Records became tools to help with compliance

Last: Smith  First: John  MI: E
DOB: 1/1/64  Sex: Male  Race: White
Request: 1/1/14
1st appt: 1/13/14
Our future......

Data driven
Outcomes driven
Paperless
Accountability
Stakeholders want to know…

- Who we provide services to and for what diagnosis?

- How much services do we provide to whom?

- Do we do a good job providing services?
If you had a choice....

- Provider A provides a service for $50

- Provider B provides a services for $100

As a customer, what would you chose?
If you had a choice….

- Provider A sells a product for $50
- Provider B sells a product for $100

As a customer, what would you chose?
Does higher cost = better product?

Does a lower cost = lower quality?

How do we know what is a “better” product?

When is it ok to have a lower cost, lower quality product?
Defining quality with data in terms of numbers, not just stories....

- How many people who want jobs, have a job within a year?

- How many people see a decrease in symptoms of depression within six months of care as evidenced by a drop in score from 30 or above to being within the 15-10 range.

- Less than 15% of people who have been hospitalized are re-admitted within 30 days of discharge
Moving towards integrated care……

- Who is our competition?
- What does their data show?

We need to have a focus on data right from the start…….
NASMHPD Integrated
Healthcare Vision Standard Set of Health Indicators

HEALTH INDICATORS

1. Personal History of Diabetes, HTN, CV disease
2. Family History of Diabetes, HTN, CV Disease
3. Weight/Height, Body Mass Index
4. Blood Pressure
5. Blood Glucose or HbA1c
6. Lipid Profile
7. Tobacco Use/History
8. Substance Use/History
9. Medication: History and Current
10. Social Supports

PROCESS INDICATORS

1. Screen/Monitor Risk and Health Conditions in MH
2. Access to and utilization of Primary Care Services
How do we collect this type of information?

- Get the information second hand (via PCP)
- Collect the information first hand

And then what?
- Transcribe / enter into an EHR?
Error Rates

Method 1
- Writing it down on paper & then transcribing it  16%

Method 2
- Taking the vitals and then entering it into a computer / tablet  15%

Method 3
- PC attached to a vitals monitor  2%
Gather the information and use it to:

• guide clinical decision making
• increase self management
• have good health & recovery outcomes
Desk top level data
The challenge of the future:

Collecting data that is meaningful…….

Collecting data that is accurate…….

Collecting data that enhances a clinician's ability to provide good service & not create a lot of work…….
THE FUTURE OF HIT
Traditional HIT

- Electronic Health Record
- Patient Portal
- MU / Health Information Exchange

- Process-oriented
- Back office-driven
- One-size-fits-all
- Inflexible, slow to change
Modern HIT

- Mobile applications
- Smart sensors
- Cloud services, big data

- Consumer-driven
- Predictive, smart
- Dynamic, agile
- Chaotic innovation
The Technology Equation for Integration

Engagement + Sensors + Big Data Cloud Svcs
(1) ENGAGEMENT
If only Bradley's arm was longer. Best photo ever. #oscars pic.twitter.com/C9U5N0tGap
What’s happening?
Show of hands – who has a smartphone?
1978

Mobile phones
1984

Macintosh / GUI
1994

Netscape Navigator
The World Wide Web
Growth of the PC

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2007: The iPhone
2008: App Store
Growth of the App Store

1 Billion

April 23, 2009
Growth of the App Store

4 Billion Apps Downloaded
The center of the app universe.

2010
Growth of the App Store

Thank you. Ten billion times.
The App Store has reached 10 billion downloads. Thanks for getting us there.

2011
Growth of the App Store

App Store Sales Top $10 Billion in 2013

Record-Breaking December with Over $1 Billion in Sales

CUPERTINO, California—January 7, 2014—Apple® today announced that customers spent over $10 billion on the App Store™ in 2013, including over $1 billion in December alone. App Store customers downloaded almost three billion apps in December making it the most successful month in App Store history. Apple’s incredible developers have now earned $15 billion on the App Store.

“We’d like to thank our customers for making 2013 the best year ever for the App Store,” said Eddy Cue, Apple’s senior vice president of Internet Software and Services. “The lineup of apps for the holiday season was astonishing and we look forward to seeing what developers create in 2014.”

With the introduction of iOS 7, developers were able to create stunning apps that took advantage of the redesigned user interface and the more than 200 new features and APIs. Developers such as Evernote, Yahoo!, AirBnB, OpenTable, Tumblr, Pinterest and American Airlines re-imagined the user experience, bringing content to the forefront while increasing the overall efficiency and performance of their apps.

2013 saw surprise hits like Ellen DeGeneres’ Heads Up, ProtoGeo’s Moves, Simon Filip’s Afterlight and Kevin Ng’s Impossible Road. Many of the year’s biggest successes like Candy Crush Saga, Puzzles & Dragons, Minecraft, QuizUp and Clumsy Ninja were created by international developers, while Duolingo (United States), Simogo (Sweden), Frogmind (UK), Plain Vanilla Corp (Iceland), Atypical Games (Romania), Lemonista (China), BASE (Japan) and Savage Interactive (Australia) emerged as developers to watch in 2014.
Growth of the App Store

MOBILE APP STORE DOWNLOADS WORLDWIDE
2012 - 2017 (In Billions)

Source: Gartner, September 2013

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Growth of the App Store

iTunes Download Totals (Billions of Units) Months after Launch

- Songs downloaded
- Apps downloaded
- asymco.com
Adoption is not slowing down

Number of new US smartphone users added per week (monthly resolution)

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Most rapid adoption of technology... ever?

Adoption Rates of Consumer Technologies in the US (10% to 90% penetration)
Growth of the PC
Traditional + iPad

© Copyright 2014 Afia Inc.
Traditional + iPad + Smartphone
35 years of innovation...
... plus unprecedented
distribution & adoption ...
... have built a ubiquitous “software canvas”
And software disrupts industries.
“Software is Eating the World”

Marc Andreessen
“Today every company is, in some form, a software company.”
What is engagement worth?
• 450 million users worldwide
• Adopted primarily outside of the U.S.
• More messages sent than SMS worldwide
• More photos sent than Facebook
$19,000,000,000

Acquisition price by Facebook
2/19/2014
Whither health care?
M-HEALTH

DOCTORS ❤ TABLETS

250% MORE LIKELY TO OWN A TABLET THAN ANY OTHER CONSUMERS

- 66% USE TABLETS FOR MEDICAL PURPOSES
- MORE THAN HALF FIND THEY EXPEDITE DECISION MAKING
- 40% REPORT MOBILE DEVICES DECREASE TIME SPENT ON ADMINISTRATION

U.S. PHYSICIAN SMARTPHONE ADOPTION IN 2012

85% OF U.S. PHYSICIANS OWNED OR USED ANY SMARTPHONE PROFESSIONALLY

ONLINE PATIENT–PHYSICIAN COMMUNICATION

39% of U.S. physicians communicate online with patients via email, secure messaging system, instant messaging, or online videoconferencing

- 86% of clinicians—doctors, nurses, and nurse practitioners—now use smartphones in their practice areas every day, up from 78 percent in 2012
- 53% of all clinicians use tablets daily, up from 34 percent in 2012

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Daily user login data

**DESKTOP**
**PEAK HOURS**
8:00AM - 3:00PM

**TABLET**
**PEAK HOURS**
12:00PM - 9:00PM
Doctors’ notes on mental health shared with patients
Policy shift at Beth Israel Deaconess

By Liz Kowalczyk  |  GLOBE STAFF  |  APRIL 08, 2014

At the end of every workday, psychiatrists, social workers, and other mental health providers write notes describing their patients’ visits. It is where they chronicle paranoid behavior, excessive drinking, or relationship problems. These candid comments often are available to other doctors, but they are rarely shared with patients themselves.

Now, as part of an ongoing effort to make care more transparent, clinicians at Beth Israel Deaconess Medical Center have begun posting the mental health notes in patients’ electronic medical records, allowing the patients immediate access to the summaries at home.
Who has rolled out smart devices?
Engagement

Increasingly driven by unprecedented adoption of mobile devices

Impacts both Providers and Patients
(2) SENSORS
Using sensors to track health

GPS
Cameras
Microphones
6-axis accelerometer
Compass
Light sensor
Proximity sensor
Wi-Fi, 3G/4G
Bluetooth
CONNECTED SMART SENSORS

“The Internet of Things”
WIFI SCALE WITH BMI
TRACK CONSUMER PROGRESS
PULSE & ACTIVITY TRACKING

• Activity tracking steps, and calories burned
• Instant Heart Rate
• Sleep quality monitoring
MONITOR BLOOD PRESSURE
“THE BEST CAMERA IS THE ONE YOU HAVE WITH YOU”

Photographer Chase Jarvis
Sunday Hike
April 27, 2014 - 12:43 PM

MILES
4.11

DURATION
3:12:49

PACE PER MI
46:54

CALORIES
775

NOTES
There are no notes for this activity

5TH FASTEST (3-5 mi) 29:40 from best

Go Cycling
“Passive Tracking”
• Uses M7 Coprocessor
• No battery drain
• Totally automatic
Your heart rate monitor, reinvented.

Simply hold your phone in front of you and get your heart rate accurately measured in seconds.

Now FREE for limited time!

Download Now

Available on the App Store
Health Care Apps Offer Patients an Active Role

By ANN CARRNS  APRIL 25, 2014

IF you have young children, you’ve most likely endured caring for an ear infection or two. Or perhaps you’ve experienced a mysterious rash. Those situations generally mean a trip to the doctor’s office and time away from your job, if you work outside the home.

But what if you could snap a photo of your rash, or your child’s ear canal, and send it to your doctor? That’s the idea behind a new breed of apps and devices that increasingly put medical tools in the hands of consumers.

CellScope Oto, for instance, combines an app with an attachment that lets you examine and photograph an ear canal with your iPhone.

The Cellscope Oto combines an app with an attachment that lets you examine and photograph an ear canal with your iPhone.
Who is using a smart sensor personally?
Who has deployed smart sensors to consumers?
(3) BIG DATA
Big Data

- Using the cloud to analyze hundreds of millions (or more) discreet sensor events
- Surfacing information in actionable ways
- Benchmarking and comparing data between users
Breeze now
You’re on a roll! Whoa, 1 day of making your goal! You rock!

try again

Activity Profile

192,631 STEPS TAKEN
50h 8m TIME MOVING

HISTORY

MAY 2014

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APR 2014

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SPIRIT ANIMAL

Habitual Fox

You’re not just Sly, you’re also steady, especially in the middle of the day!

Active during MIDDAY
You move in SHORT BURSTS
Active mostly on WEEKEND

Share what you are!
Who is using “big data”?
The Technology Equation for Integration

Engagement
+ Sensors
+ Big Data
  Cloud Svcs
A New Breed of Cloud Services

Engages users through intuitive, accessible apps

Tracks data using sensors (as passively as possible)

Leverages big data and analytics for accountable care

Creative payment mechanisms
TYING IT ALL TOGETHER
CURRENT STATE OF HIE

Michigan HIE Community

- eHealth Exchange
- State of Michigan
- Federal Use Case
- Public Health
- Transitions of Care
- Health Plans
- More to Come...

- UPHIE
- Upper Peninsula Health Information Exchange
- MICHIGAN HEALTH CONNECT
- INGENIUM
- Southeast Michigan BEACON Community
- GREAT LAKES Health Information Exchange
- Jackson Community Medical Record
Hi there! I saw that I should visit the dentist sometime soon but I don't know of any near me.

Hi Laura!

I'm Lauren, a PHA here at Better and happy to help find you a new
PROPELLER HEALTH – ASTHMA & COPD
PROPELLER HEALTH – ASTHMA & COPD
PRE-DIABETES PREVENTION
Sign up for Prevent today.

Here's what you can look forward to during our 16-week online program:

- Personal attention from a dedicated health coach
- Guidance from an evidence-based curriculum
- Support from a small online group of peers
- State-of-the-art technology to track your progress

$130 PER MONTH FOR 4 MONTHS

Then just $12 per month for ongoing access

Is your employer or health plan covering the cost of Prevent? Click here

GET STARTED  2-Week Risk-Free Trial
OMADA HEALTH GRABS A NEW $23M TO ‘DELIVER WEIGHT LOSS OVER AN INTERNET CONNECTION’
Who is using cloud-based systems to engage consumers?
The Technology Equation for Integration

Engagement
+ Sensors
+ Big Data
Cloud Svcs

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Q&A

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