

## Future leadersEDGE Webinars

September 2015

### Disruptive Technology and Medication Use

Featuring conversation with thought leaders at the forefront of strategies for health systems' transformation.

## The BIG DATA Challenge

STEVE CANO, MS

BONNIE KIRSCHENBAUM MS, FASHP, FCSHP

## Today's Expert Panel



Steven Cano  
Chief Pharmacy Officer  
Cambridge Health Alliance



Bonnie Kirschenbaum  
Health Care Consultant

## A Fair Representation of BIG DATA Importance



## BIG DATA – Big Issues & Impact



## Shifting Payment & Delivery Models



- Value-based payment
- Bundled payments
- Risk-based arrangements
- Population health
- Accountable care
- Next generation ACOs
- Patient-centered medical home
- Episode of care

"Technology is not the main force driving healthcare improvements, we have one opportunity to leverage technology to improve care. That opportunity is data."

Data is healthcare's only tool to start correcting this complex and complicated healthcare mess.

Atul Gawande

## What's the Pharmacy Interest & Impact



- Medication is one of the fastest growing expense lines
- Primary treatment modality
- Major safety/risk point
- We produce a lot of data
- History of big data experience

### What Constitutes Big Data

#### Big Data in Healthcare

**Data at Rest**  
Terabytes to exabytes of existing data to process

Volume

**Data in Motion**  
Streaming data, milliseconds to seconds to respond

Velocity

**Data in Many Forms**  
Structured, unstructured, text, multimedia

Variety

**Data in Doubt**  
Uncertainty due to data inconsistency & incompleteness, ambiguities, latency, deception, model approximations

Veracity

### Veracity is a Healthcare Conundrum

### Data Accuracy is an Issue

- Silos of structured & unstructured data
- Range of sources
  - EHR
  - Clinical trials
  - Insurance claims
  - Patient sources from mobile apps

### BIG DATA Challenges Silos & Fragmentation

- Single repository systems
- Limited or no integration
- Need data normalization
- Legacy system issues
- Data governance turf
- Data ownership & use issues
- Security

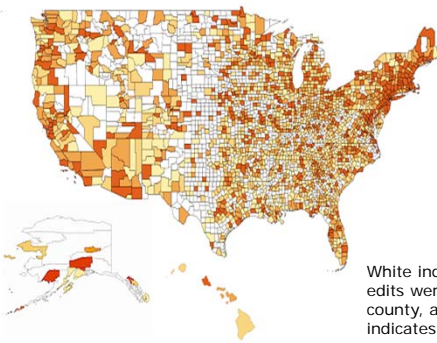
### BIG DATA Challenges Privacy & Transparency



### BIG DATA Challenges Sources & Accuracy



### America's Data Deserts



White indicates that no edits were recorded for that county, and darker color indicates higher edit rates.

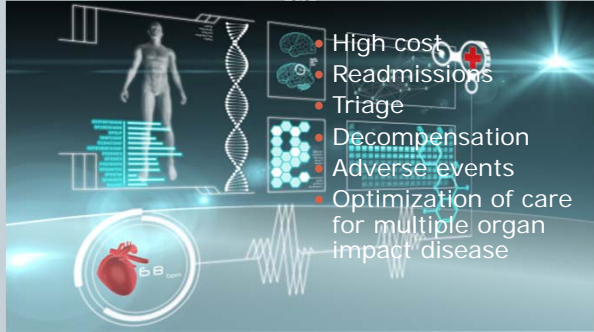
<http://www.datainnovation.org/wp-content/uploads/2013/07/headerCDIgood1.jpg>

### Opportunity



- Predictive modeling
- Quality measurement & reporting
- Valuing care
- Drug efficacy studies
- Criteria: personalized care plans
- Pattern recognition
- Longitudinal disease progression


### Examples for Likely Opportunity



- High cost
- Readmissions
- Triage
- Decompensation
- Adverse events
- Optimization of care for multiple organ impact disease

Bates, et al. Big data in HC: using analytics to identify and manage high risk & high cost patients. Health Affairs. Feb 2015

### Individual & Population Health



- CDS for personalized care
- Pattern recognition for better practice guidelines
- Defining optimal interventions & lifestyle modification
- Engaged & resourceful patients & families

### Reducing Variation



- Comparative effectiveness research
- Improved metrics & tracking
- Wide-spread informatic/analytics competency development

### Data Integrity & Trustworthiness



- Unstructured formats
- Reliance on claims & administrative data
- Current record-keeping
  - Medicolegal
  - Reimbursement
  - Accreditation
  - Regulatory
- Not clinically focused

### Industry Readiness

Unprepared for the deluge

85% more data than 2 years ago

No "A" grades for preparedness

Cultural reliance on paper

Attitude adjustment needed

Translating knowledge to practice is still a challenge for healthcare

Are you ready?  
We are.

### Health Catalyst's Analytics Adoption Model

Level 8	Cost per Unit of Health Reimbursement & Prescriptive Analytics	Contracting for & managing health
Level 7	Cost per Capita Reimbursement & Predictive Analytics	Targeting more financial risk & managing proactively
Level 6	Cost per Case Reimbursement & Data Driven Culture	Taking financial risk & preparing the culture for the next level of analytics
Level 5	Clinical Effectiveness & Population Management	Measuring & managing evidence-based care
Level 4	Automated External Reporting	Efficient, consistent production & agility
Level 3	Automated Internal Reporting	Efficient, consistent production
Level 2	Standardized Vocabulary & Patient Registries	Relating & organizing core data
Level 1	Data Integration - Enterprise Data Warehouse	Foundation of data & technology
Level 0	Fragmented Point Solutions	Inefficient, inconsistent versions of truth

(borrows lessons learned from the HIMSS EMR Adoption Model)

### Telling the Patient's Story Accurately

An illustration showing a doctor's profile in profile, wearing a stethoscope. The doctor is looking at a laptop. A hand is typing on the laptop keyboard. Above the laptop, there are speech bubbles, one of which contains a target symbol, suggesting data analysis or patient story accuracy.

### What's Next?

A dark screen with the text "WHAT'S NEXT?" in large, blue, sans-serif font. The text is centered on the screen.

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