



Carolinan HealthCare System

Big Data and Analytics

NC Allied Health Regional Skills Summit
November 5, 2013

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Big Data experience

Dickson Advanced Analytics (DA²) Vision:

Dickson Advanced Analytics Group (DA²) of Carolinas HealthCare System will be an innovative leader in **advanced analytics and business intelligence** that **predicts health needs**, continually **elevates patient outcomes**, and **drives transformative research and solutions** to promote the health of our communities.

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AT-A-GLANCE

- **41 hospitals** and **900+ care locations** in North Carolina, South Carolina and Georgia
- More than **7,800** licensed beds
- **10.5 million** patient encounters in 2012
- **3,000+** system-employed physicians, **14,000+** nurses and more than **60,000** employees
- **\$1.25 billion** in community benefit in 2012
- More than **\$8 billion** in annual revenue
- More than **50 disease-specific certifications** from The Joint Commission – one of the highest totals in the country among comparable systems
- The region's only Level I trauma center
- **One** of five academic medical centers in North Carolina
- **One** of the largest HIT and EMR systems in the country

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“Big Data” is 12 years old: where are we in the
“hype cycle?”

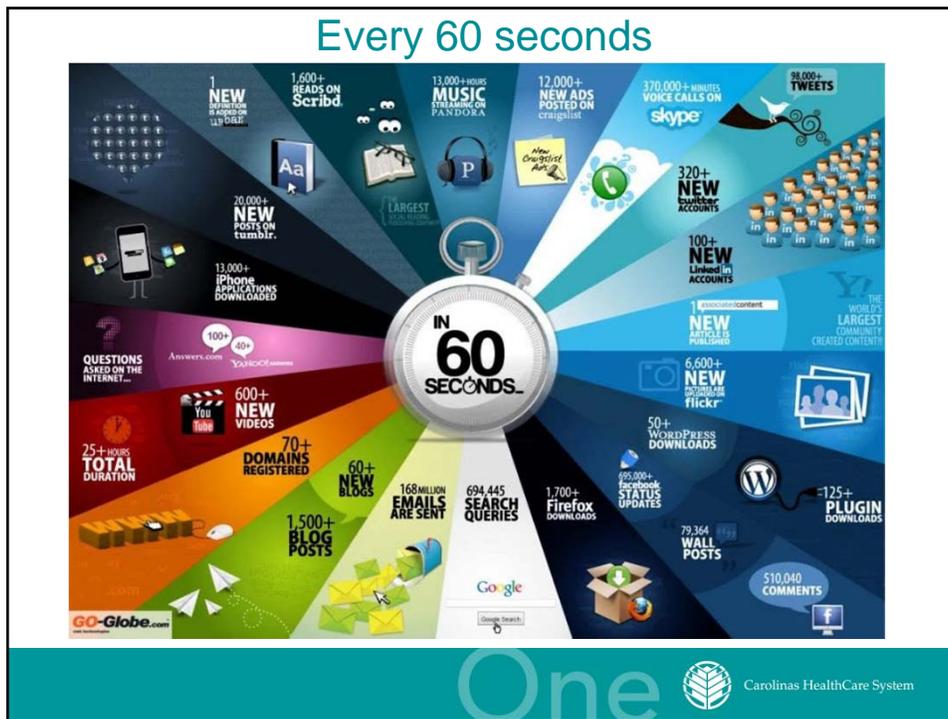
“E-commerce, in particular, has exploded data
management challenges along three dimensions:
volumes, velocity, and variety.”

Doug Laney, META Group
February 6, 2001

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What is your definition of Big Data?

“At a meeting of the Organization for Economic Co-operation and Development two months ago, about 150 delegates were asked to raise their hands if they had heard of the term—all had. How many felt comfortable giving a definition? Only about 10%.

And these were government officials who will be called upon to devise policies on supporting or regulating big data.”

www.economist.com

What about this definition?

“... a collection of data sets so large and complex that it becomes difficult to process using on-hand database management tools or traditional data processing applications...

...beyond the ability of commonly used software tools to capture, curate, manage and process the data within a tolerable elapsed time.”

Wikipedia

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Is this what you think of when you hear “Big Data?”

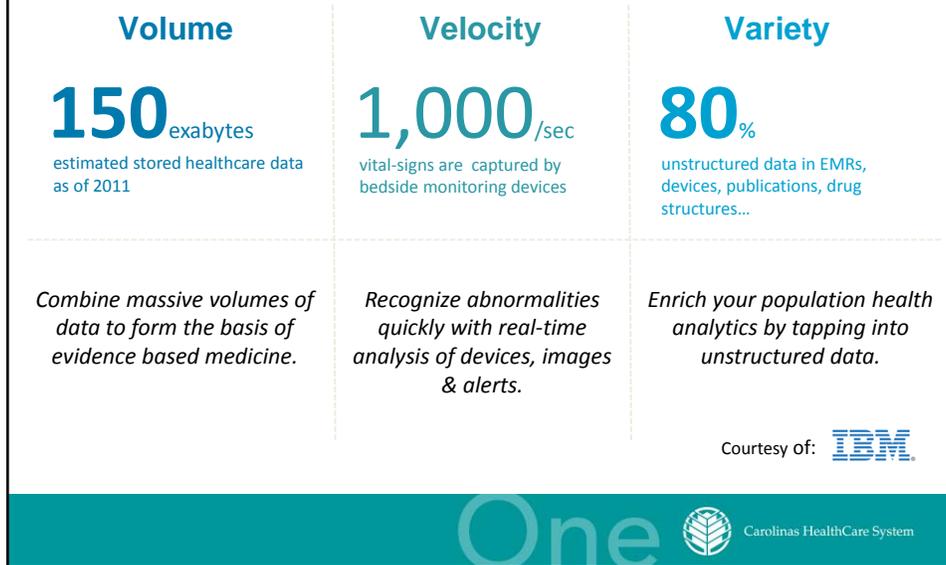


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Are we using Big Data?

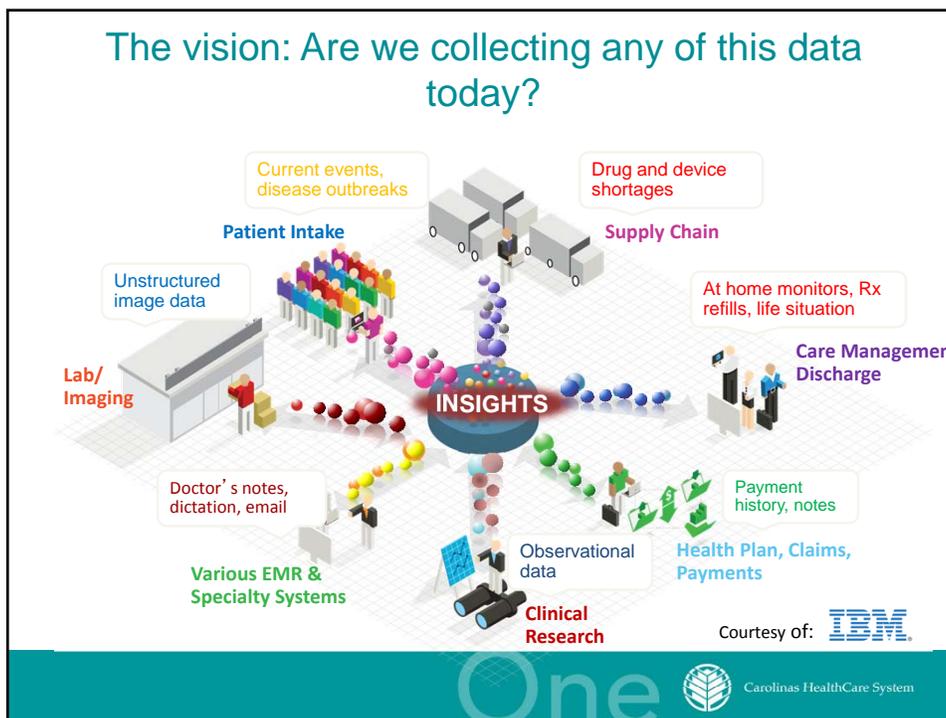


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The vision: Are we collecting any of this data today?

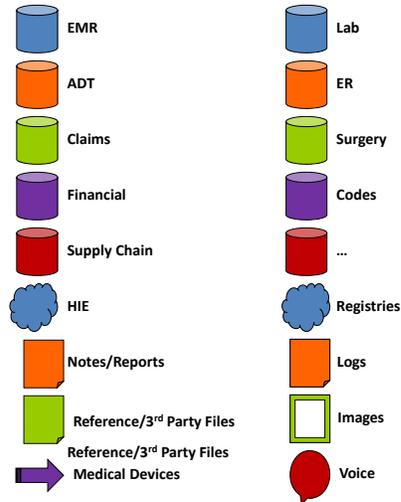


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Is all this stuff “Big Data?”



- ▷ Batch, real time, streaming
- ▷ Files, messages, transactions
- ▷ Standards based (e.g., HL7), proprietary
- ▷ Structured, unstructured
- ▷ Text, images, sound
- ▷ Complete, incomplete
- ▷ Clean, dirty
- ▷ ...

Let's not call it “Big Data”...

Let's just call it data...

... and it's not “data” that we're really after: it's usable *information* from which we can develop actionable insight.

Aren't these the problems we are trying to solve?

Systemic challenges

- Fragmented care delivery
- Misaligned relationships with physicians, payers
- 30% of undefined waste
- Lack of transparency and information sharing

Economic and regulatory challenges

- Government, commercial and consumer pricing pressure
- Mix degradation
- Flat/declining utilization

Transformative challenges

- Movement toward risk-based payments
- Value-based purchasing
- Readmissions/HAC penalties
- Bundled payments

Imperative to manage population health, impact outcomes, and provide higher quality at lower cost

Where are we on the technology journey?



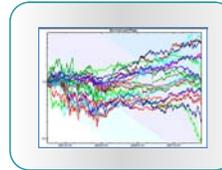
- What happened?
- When and where?
- How much?

Advanced, Predictive



- What will happen?
- What will be the impact?

Prescriptive



- What are potential scenarios?
- What is the best course?
- How can we pre-empt and mitigate the crisis?

Transaction reporting

- Basic reporting
- Spreadsheets

Data integration Data warehouse

- Dashboards
- Clinical data repositories
- Departmental data marts

Decision support analytics

- Enterprise analytics
- Evidence-based medicine
- Outcomes analytics

Predictive analytics

- Personalized healthcare
- Consumer engagement
- Patient/population behavior