

Why are Organizations Looking to Analytics?

25% of acute-care patients experience preventable clinical errors. (IBM 2008)

- Medical errors were preventable if existing data was available at the right time to the right people.

3% of all healthcare spending—or \$68 billion annually—is lost to fraud. (National Health Care Anti-Fraud Association 2012)

- Most fraud investigation conducted manually is retroactive analysis rather than real time.

Analytics-driven organizations had 33% more revenue growth and 32% more ROI. (HIMSS CFO Study 2013)



Inefficiencies tied to ineffective data gathering, sharing and use.



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Breaking Through the Barriers

- Conducted an industry scan and analysis of who was 'doing' analytics.
- Investigated how they had introduced analytics to their organization.
- Questioned if there were any tangible benefits to report.
- Analytics is often the last priority in strategic plans and budgets.
- Found that most mature data-driven health organization examples are from the United States.
- This presentation is a synthesis of that investigation and analysis.



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Biggest Barriers to Analytics

Lack of clarity, understanding and many questions

COST	How do I achieve tangible ROI?
COMPLEXITY	What is involved and will I understand?
TRUST	Can I trust my data or analyses?
TIME	How much time do I need to initiate use of data?
RESOURCING AND SKILLS	Cross domain/technology skills are hard to find.
DATA MANAGEMENT AND ARCHITECTURE	How do I get data currently in silos to where it can be useful?
WHERE TO START	How do I get consensus on priority areas for analytics?



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Lessons Learned

WHO IS DOING THIS WELL, AND HOW?



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Where to Start?

- ▶ Case studies from mature analytics programs suggest a pragmatic approach.
- ▶ Quick wins help achieve buy-in for increased investment in health analytic programs.
- ▶ Early adopters are achieving almost immediate benefits that:
 - Reduce revenue leakage,
 - Identify and reduce healthcare fraud,
 - Increase resource utilization efficiency,
 - Identify and manage readmission risks.

“Though many organizations’ analytics projects are CIO-driven, the partners have seen more success when organizations “start in the middle” with a “real tangible business problem.”

— 2011 SLOAN MIT MANAGEMENT REVIEW



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Case Study: Community Health Systems

Community Health Services (formerly Health Management Associates) in Florida operates 71 healthcare organizations across 15 states with \$6B in annual net revenue.

- ▶ 2009 developed analytics model that identified billing outliers.
- ▶ Quickly resulted in the prevention of nearly \$1M of revenue leakage per month.
- ▶ Reduced reliance on external resources saving an additional service cost of \$3-5M per year.

Health Leaders Media (2013)



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Analytics for Financial Improvement



- ▶ Early adopters leverage existing data to solve specific business issues.
- ▶ Tools are developed to locate gaps, predict errors and correct issues.
- ▶ Can identify problems long before retrospective reporting could identify the issue.
- ▶ Early adopters in revenue cycle are reporting almost immediate results with:
 - Reduction in revenue leakage,
 - Incorrect or incomplete billing,
 - Overall cost of care,
 - Greater transparency,
 - Increased accountability.



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Case Study: MetroHealth

MetroHealth, a health system based in Cleveland with \$680 million in annual net patient revenue, developed a predictive model to examine trends and collection patterns and generate monthly revenue projections.

- ▶ The tool serves three analytic purposes:
 1. Real-time monitoring of daily input/adjustments to validate financial entries,
 2. Summary-level revenue reporting that compares projected revenue to budget forecasts, and
 3. Captures missing professional billing by cross-referencing clinician charting to coded billing entries.
- ▶ Resulted in 5.2% increase in inpatient professional charge capture per patient day between 2010 and 2012.
- ▶ Reduction in revenue leakage attributed directly to the use of the analytic model and tools.

Health Leaders Media (2013)



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Analytics for Fraud Reduction

- ▶ As fraudulent billing or claims detection is very difficult to identify, most fraud detection is conducted through manual sampling after the billing is complete.
- ▶ Some examples of healthcare fraud include:
 - Fraudulent billing or overbilling,
 - Performing unnecessary or up-coded procedures,
 - Fraudulent use of health cards/insurance.

“The National Health Care Anti-Fraud Association (NHCAA) estimates conservatively that 3 percent of all healthcare spending—or \$68 billion annually—is lost to fraud.”
— THE BIG DATA HUB (2012)



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Analytics for Operational Efficiency

- ▶ Early adopters have also targeted organizational improvements in the area of resource utilization and planning:
 - HMA identified 3-8 % Emergency Department nurse overstaffing,
 - HMA modified staffing to improve patient throughput, and
 - MHS increased efficiencies in outpatient services.
- ▶ Analytics have also helped early adopters improve operational effectiveness by reducing hospital readmissions.



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Case Study: Health.mil (Military Health System)

The US Military Health System (MHS) operates 59 military hospitals and more than 600 medical, dental, and behavioral health facilities worldwide. MSH uses big data analytics to reduce fraudulent claims.

- ▶ Manages high volume of data from multiple sources:
 - More than 24 highly secure information systems, and over 1 billion healthcare records annually
- ▶ Impacts of analytics implementation:
 - Cost reduction,
 - Early detection of potential health issues, and
 - Improved care processes/clinical outcomes.
- ▶ Saved \$809M in FY2011 by realigning outpatient services reimbursements.
- ▶ Identified \$100M in fraudulent claims.
- ▶ Saved \$12 M per year in duplicate billing.



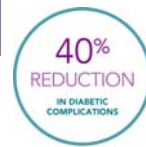
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Case Study: NHS Choices

Scottish bioinformatics firm Aridhia is working with the United Kingdom's National Health System to reduce readmissions.

- ▶ Uses near real-time data from primary care physician's notes, imaging data, demographic data, social welfare data, lab work and other NHS databases.
- ▶ Compiles large volumes to determine readmission triggers.
- ▶ Model resulted in a 40% reduction in diabetic-related amputations and blindness for the participating institutions.



Aridhia Informatics



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Case Study: El Camino Hospital

A 2013 CHIME case study on the use and benefits of health analytics at El Camino Hospital in the California Silicon Valley suggested that nearly 2 million U.S. Medicare beneficiaries are readmitted within 30 days of discharge annually, costing Medicare \$17.5B for additional care.



- Model predicts readmissions and informs development of a preventative care program
- Saw a 1.5% reduction of readmissions for target patient population in first year.

CHIME Case Study (2013)

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Analytics to Drive Clinical Decisions

- Little tangible evidence to support the use of analytics to improve the quality of clinical decision-making – but all report that it is increasing:
 - Clinical data analytics predicted to grow at a compound annual growth rate (CAGR) of 37.9%,
 - Anticipate adoption growth from 10% in 2011 to 50% by 2016. (Frost and Sullivan 2012).
- The projected increase in clinical analytics is driven by the understanding that while data is available, it is not always accessible, which creates safety risks.
- Medical errors may be preventable – if the existing, available data is organized and accessible to support clinicians making diagnostic or treatment decisions.

“The Institute of Medicine has estimated that up to 98,000 US residents die each year as the result of preventable medical errors.”

– BRITISH MEDICAL JOURNAL (2005)

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Next Steps

IMPROVING THE QUALITY OF CARE

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One Use Case: Chronic Disease Management

Chronic disease management is an early focus area for achieving clinical analytic benefits:

- Based on an analysis of medical claims of 5.5 million patients, 69% were related to treatment of chronic conditions and 60% of the costs were related to ambulatory care delivery. (Becker's Hospital Review 2013)
- The Centers for Disease Control and Prevention (CDC) states that chronic disease accounts for approximately 75% of U.S. aggregate healthcare spending. (Analytic Magazine 2012)
- The detection and identification of chronic disease patients and subsequent use of a telehealth system reduced spending by 7.7% to 13.3%, or \$312 to \$542 per person, each quarter. (Stanford University 2011)
- CIHI and many Canadian jurisdictions are currently approaching this with the use of EMR Data Content Standards, Clinical Value and Practice Efficiency Metrics.



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In Summary

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The Risk of Inaction

- ▶ The key to an effective analytics strategy is finding the balance between IT sophistication and user apprehension. (2013 HIMSS Task Force)
- ▶ A successful analytics strategy leverages the quick wins but also focuses on long-term organizational vision.
- ▶ By addressing quick wins organizations gain greater buy-in for increased investment in analytics.
- ▶ Expanding analytic programs to improve health care delivery is in the strategic plan for many high-performing health systems.

“A 2013 CFO study suggests that analytics-driven organizations had 33% more revenue growth and 32% more ROI than organizations not using analytics to support organizational decisions.”

— HIMSS (2013)

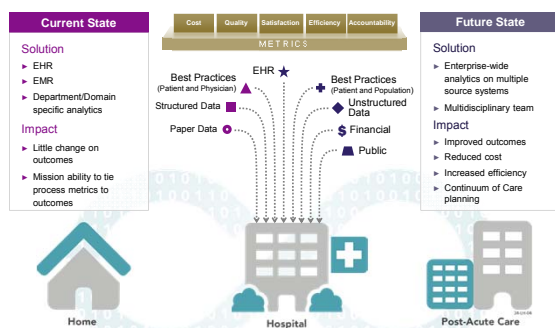
As we better understand how to leverage our huge volumes of medical data, health analytics will become the key to improving the end-to-end performance of the health sector as well as patients' health and quality of life.

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Analytics is Coming – Unprecedented Pressure to Perform



Questions?

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