



Potential Unlocked
Transforming
healthcare by
putting information
to work

Potential Unlocked: Transforming healthcare by putting information to work

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1

The prescription for healthcare transformation

It's no secret—healthcare is transforming. The transition to value-based care is well underway; everyone from healthcare delivery organizations to clinicians, payers, and patients feels the impact and has a role to play. Moving to a value-driven model demands agility from people, processes, and technology. Organizations that succeed in this transformation will be those where collaboration is commonplace, clinicians and business leaders wear new hats, and data is recognized as an enterprise asset.



Redefining the business and IT partnership

The time is now to foster a stronger relationship between business and IT. IT leaders must find ways to be more responsive to business needs, including the delivery of self-service tools that put the power to manage data into the hands of the people who understand the data. Line of business leaders who have expertise cannot hesitate or be turned off by “data”; you have to dig in and work with IT to improve access to and use of data. The value in working with IT is that you gain access to an enterprise vat of data that, when combined with yours, will reveal insights that can change healthcare delivery. After all, how can you ensure an unnecessary test isn’t ordered unless you know the test has already been completed?

Each day, technology and business leaders experience the ways that trustworthy data could improve outcomes, target chronically ill patients to participate in preventive treatments, accurately predict outcomes, and accelerate research to cure disease. Future success requires new roles.

The challenge

What’s the problem? Analytics, business intelligence, and clinical and financial decision making are all dependent on high-quality data. Yet poor data or a lack of visibility into data quality is cited as the No. 1 reason for overrunning costs on data-related projects.¹ While business intelligence and the proliferation of electronic health records have captured tremendous attention in the healthcare community, new investments and new thinking about the data itself is required. As with other assets that deliver value—like buildings and equipment—data requires a foundational investment in understanding its quality and allocating people and systems to manage it. Innovating care faster than your competition, gaining better insight into your business, and delivering differentiated results require treating data as an enterprise asset.

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¹ EPI, Calculating the ROI for Data Quality, February 2013



“Data is the secret sauce,” says George Halvorson, chairman and chief executive officer of Kaiser Foundation Health Plan, Inc. and Kaiser Foundation Hospitals, and author of the book ‘Healthcare Will Not Reform Itself.’ “It becomes very clear very quickly, on every single goal, that we need real data about care in order to make care better in each goal category. Data-free care will not improve.”

“The lack of mature information governance is a serious impediment to targeting cost and quality improvement efforts for settings and service lines,” says Terri Mikol, director of data governance for The University of Pittsburgh Medical Center (UPMC). “It’s a deal-breaker that will prevent a healthcare delivery organization from building a successful operation to meet the need for coordinated chronic care/population health management.”

Think about this: Valuable information about patients resides in multiple electronic medical records, and even more information about those patients exists in claims data. Even a seemingly simple question from a CEO like, “What percentage of patient referrals goes to out-of-network providers?” becomes nearly impossible to answer because information is disparate and data is duplicated, out of date, or even unnecessary. Improvements in care coordination, performance management, and population health lie in integrating this data and improving its quality and accuracy.



George Halvorson, chairman and chief executive officer of Kaiser Foundation Health Plan, Inc. and Kaiser Foundation Hospitals

Key trends driving healthcare transformation

Major economic, social, demographic, technological, and regulatory changes are profoundly reshaping the healthcare ecosystem while greatly elevating the importance of optimized data management.



Value-based care delivery

- Drive down costs, drive up quality
- Measurability and accountability
- In the past two years, payment reform initiatives have started in more than 30 states, reports consultant McKinsey



Convergence

- Mergers between payers and providers
- Increased payer influence on care plans
- Major employers such as Wal-Mart, Boeing, and Lowe's now contract directly with big-name health systems for costly, complicated procedures such as heart surgery



Personalized medicine

- Customized treatment based on patient history and best practices
- Tailored care delivery



Consumerism

- New focus on patient engagement, member retention, competitive differentiation, loyalty, and customer service
- Retailing of healthcare, including "minute clinics" and other alternative channels



Preventive care

- Growing priority to curb 75 percent of costs that come from chronically ill patients
- New focus on population education, self-monitoring, and proactive care

New advantages, new roles

Data is key for value-based care and other transformations. Clean, connected, and secure data—delivered rapidly across hallways, across networks—is vital for the entire healthcare ecosystem. Enterprise information management has become an important competitive advantage. It lets you move faster than your competition, provides better insight into your business, and delivers powerful agility not usually associated with healthcare, but one that will be, quite literally, do or die, in the coming transformation.

What does this mean for you? To become a transformed healthcare organization, all leaders—not just technologists—must focus on nimbly managing and harnessing key enterprise data. As chief medical information officer, clinician, data analyst, application owner, line of business leader, or marketer, you have a role to play. Success will require donning new hats, new thinking, new processes and procedures, and new relationships and roles, especially between business data owners and IT.

In this eBook, we'll look at...

- key factors driving healthcare transformation
- what “transformed healthcare” means for your institution and you
- why enterprise information management is increasingly important
- how leading organizations are beginning the journey
- common barriers and best practices
- how to build an effective business case for data infrastructure

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2 "Poor Data Management Costs Healthcare Providers," Information Week, July 2012

40%



of healthcare executives gave their organizations a grade of D or F on their preparedness to manage the data deluge. None felt their organization deserved an A.²

“As with other organizational assets that deliver value—like buildings and equipment—data requires a foundational investment in people and systems to maximize return. In other words, institutions and individuals must start thinking about data in the same way they do with other mission-critical enterprise assets.”

Michelle Blackmer, Informatica’s Director of Healthcare Industry Solutions



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Envisioning transformed healthcare

Before delving into the “how’s,” let’s take a brief look at the new healthcare landscape. What exactly is “transformed healthcare”? For our purposes, it’s actually two things:

1. The transformed individual healthcare organization
2. How that organization enables and participates in the broader transformation of healthcare

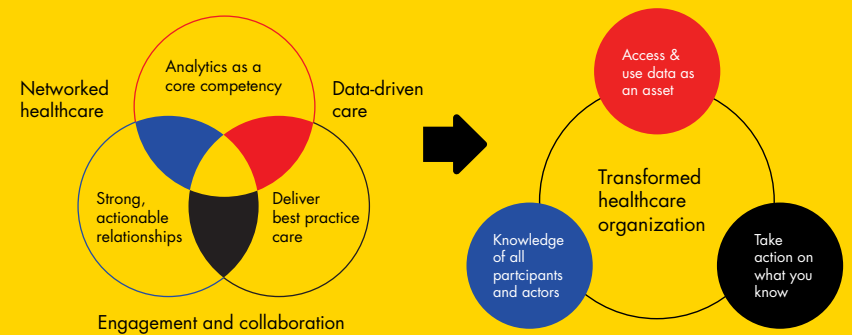


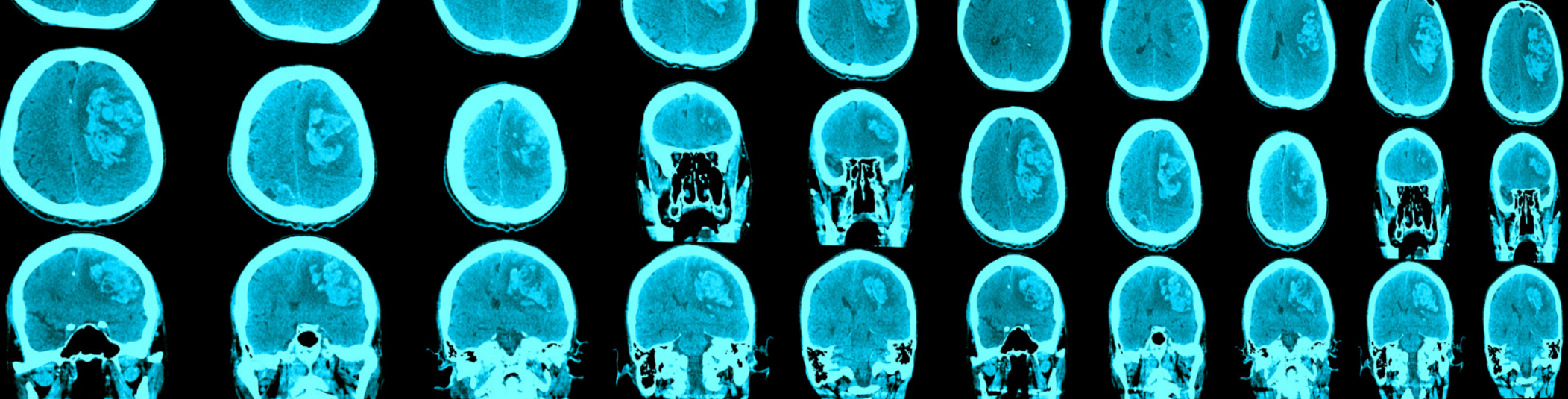
Think of the first case as your organization—but many times faster, more efficient, more effective, agile, better networked, more engaged, collaborative, and above all, data-driven.

This transformed healthcare organization knows how to harness the wild power in exponentially growing streams of healthcare data. It relies on data-driven analytics as a core competency, taking swift, effective action on what is not merely suspected, but known. It delivers best-practice care, engages patients, and fosters collaboration through strong, actionable relationships across the ecosystem. You might envision it like the charts at right.

The benefits of knowing and connecting vs. suspecting

Transformed healthcare organizations and ecosystems can make more sound decisions based on data, not hunches, across a wide ecosystem.





Successfully transformed healthcare in practice

A transformed healthcare organization knows how to harness the exponential streams of data and makes analytics a core competency. What's it look like in practice? Some examples:

- **Improved process quality.** A changed organizational culture infuses quality data into everyday care through data-derived best practices. So now, flu shots are given with the same quality and value metrics as heart surgery.
- **Increased engagement.** Transformed healthcare organizations engage patients through nontraditional channels, including clinics in retail settings, delivering information via direct mail and text messaging, buyer-reward programs, and social media.
- **Internet of healthy things.** Web-connected sensors mesh with social networks for health, including platforms such as PatientsLikeMe.com, CureTogether, and Twitter and Facebook for exchanging health information or organizing campaigns for health.
- **Enhanced collaboration.** Effective information management networks play a key role, linking providers to payer referral authorizations, eligibility checks, and the investigation of discrepancies and disputes.
- **Shared data.** Healthcare organizations establish consistent data definitions and parameters. Data governance and disciplined processes ensure transparency and reliability, improving adoption by clinicians and promoting data-driven delivery of care.
- **Shared risk.** Traditional walls between payers and providers fall, enabling improved quality of care and increased administrative efficiencies.
- **Empowered consumers.** Consumers gain knowledge from unprecedented access to information and options. The possibility of higher out-of-pocket costs prompts many to practice better self-care.



UPMC **LIFE CHANGING MEDICINE**

Empowering personalized medicine and better decisions

University of Pittsburgh Medical Center (UPMC) is a nonprofit system of 20 hospitals, 400 clinical locations, and 60,000 employees, and is at the forefront of data-centric, transformative healthcare.

The health enterprise is undertaking a \$105 million data management initiative aimed at improving research outcomes for cancer and other diseases, determining the true cost of providing care, and analyzing clinical practice variations to create best practices in disease management.

Meeting these goals required clean, secure, connected data. So UPMC implemented a management, integration, and event processing platform uniting data from more than 1,200 applications. The efforts are paying off.

UPMC Enterprise Analytics: Using Big Data Technology in Research.

Hear Adrian V. Lee, PhD., director of the Women's Cancer Research Center and Magee-Women's Research Institute and his team explain the significance of their research. (Opens in separate browser window and runs 2:15.)

UPMC's Data-driven missions

Business initiatives



- Improve research outcomes in search of cures for cancer and other diseases
- Determine true cost of providing care with longitudinal patient records
- Examine clinical practice variations to benchmark and improve future procedures

Technology strategy



- Integrate clinical, financial, administrative, genomics, and other information
- Create self-service environment, putting data in the hands of decision makers
- Strengthen information security, privacy, compliance

Researchers recently integrated electronic clinical and genomic information on 140 patients treated for breast cancer. Doing so let them uncover molecular differences in pre- and post-menopausal breast cancer—important findings that may help prescribe optimal, customized treatment paths.

“Every patient has a unique story,” says Steven D. Shapiro, M.D., UPMC chief medical and scientific officer. “This comprehensive analytics approach will enable us to treat each patient in a personalized way to produce the best possible results.”

Greater emphasis on quality data, adds Dennis Wickline, UPMC director of enterprise analytics, will promote use of descriptive, predictive, and prescriptive analytics. In this environment, clinical, strategic, and financial decisions are based on “data and analytics, not gut feelings. By providing data, information, and knowledge, you create a culture where people’s opinions have to be backed up with information. That really does change the way decisions are made.”

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Barriers to success

Financial, regulatory, and social pressures make data crucial for healthcare transformation. You might be saying: “I get it. But we’ve invested in a lot of new technology, and we’re just not seeing the payback or real transformation.”

Why is it so hard to get clean, safe, and connected data across the ecosystem? What’s preventing your success? Chances are, your technology, processes, and people all face individual obstacles and are not working together as they should. For a peek at why, see on page 15.



People and process barriers


Many individuals and groups don't want to share "their" data. And because enterprise information management is not as "sexy" as, say EHR, and the benefits less obvious, getting funding and buy-in often can be tough. Traditional ways of handling and communicating a myriad of functions also exacerbates this central problem.


Technology barriers

Electronic health records (EHR)

EHRs represent progress, but they aren't enough on their own. To realize the promise of value-driven healthcare, you need a more comprehensive view of the patient, including the ability to access data across applications. Worse, even EHR systems integrated successfully with other applications don't necessarily incorporate enterprise information management or data infrastructure.³



 **43%** say they aren't capturing enough or the right information

 **34%** of healthcare organizations say they're using EHRs extensively

³ "Challenges with Meaningful Use: EHR Satisfaction & Usability Diminishing," American College of Physicians and American EHR Partners, 2013

Business analytics (BA)

Analytics (and decisions) based on unreliable, inconsistent, duplicated data are not reliable or useful. If you can't trust the data, you can't trust the analysis.



Data warehouses

Enterprise data warehouses (DWs) and data marts are critical foundations for protecting and organizing large data volumes, providing quick access to aggregated data. DWs appear to manage data, but they're primarily storage devices. As such, they offer no easy way to improve data quality without painstaking manual intervention.



A data warehouse may retain its own set of master data, while departmental applications supporting claims management, customer service or inpatient documentation may have another set of master information. The results? Multiple patient records and lack of a single, trusted view of patient or provider information.

Data fragmentation

A quick review of technology innovations over the years reveals a harsh truth: From PCs to ecommerce, social media to the "Internet of Things," data integration has grown incredibly complex, far outstripping our ability to integrate data between apps and devices to reveal innovation.



Connecting the future

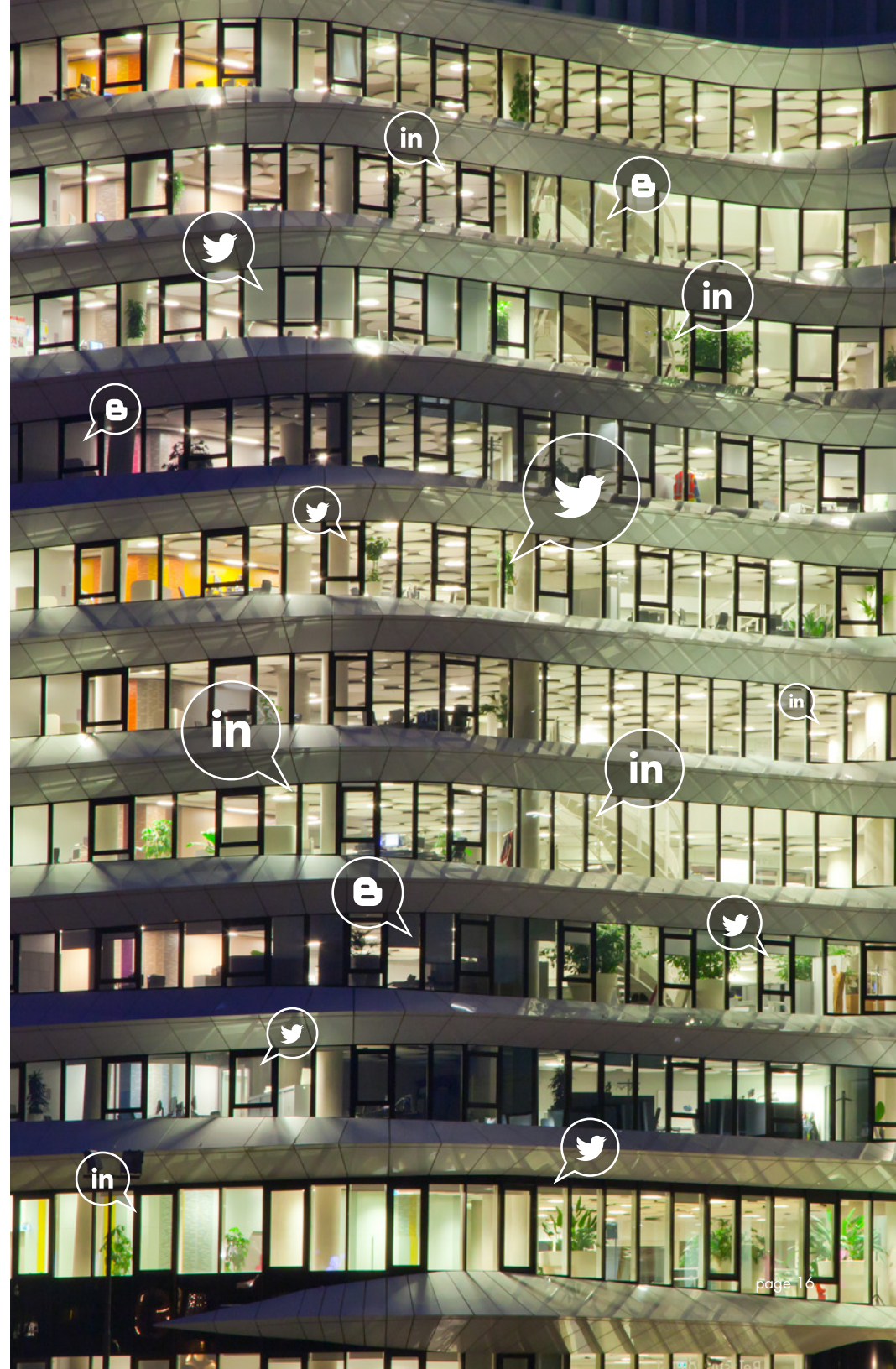
All too often in healthcare organizations today, trustworthy, authoritative information about patients, services, locations, referral networks, and relationships among entities remains elusive. The culprit: Data silos.

“Data fragmentation is the big constraint,” says Piet Loubser, vice president, platform product marketing, for Informatica. He recounts one healthcare organization that has 16 different people responsible for social data. In such an environment, he says, even multiple “random acts of integration” cannot provide an integrated view of the business. As a result, the technology investment—and invaluable data—remain stuck in applications.

Culture shift needed

This is a culture shift as much as a technology one. Every member of your team must understand your company’s business strategy, goals, and initiatives for growth. They need to know key stakeholders—in business and IT—and their plans to drive the business forward. And they need to develop new ways of working together toward the same goals.

Fragmented information makes even simple tasks difficult. During the 2013 Colorado fires, one integrated delivery network couldn’t communicate with employees in affected areas—even to reroute their phone and fax numbers to a temporary location. “It’s very challenging if the data is not in one place and is not trustworthy,” explains a hospital executive.



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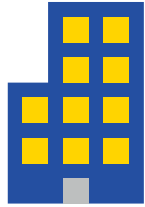
The key role of enterprise information management

Positioning for the future demands better leveraging and managing your data, on-premise, with partners, across networks, and in the cloud.

So how do you get more value from your enterprise data en route to transformed healthcare? Start with changing the way you look at your data, your relationships, and your response to change itself. It's worth spending a minute getting clear about terms.



Key definitions



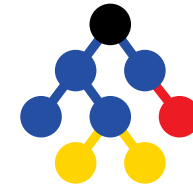
Enterprise information management

A commonly used term to describe the practice of optimally using information to support decision making and day-to-day operations.



Data infrastructure

The set of technologies and methodologies relating to managing your data across the ecosystem as a holistic asset, focused on integrating, cleansing, and securing that data, regardless of application or compute platform.



Architecting for change

A decision you make in expanding your data infrastructure—one that builds in agility and future-proofs your organization. You architect for change when you choose solutions that are easily extensible, flexible, and best of breed.

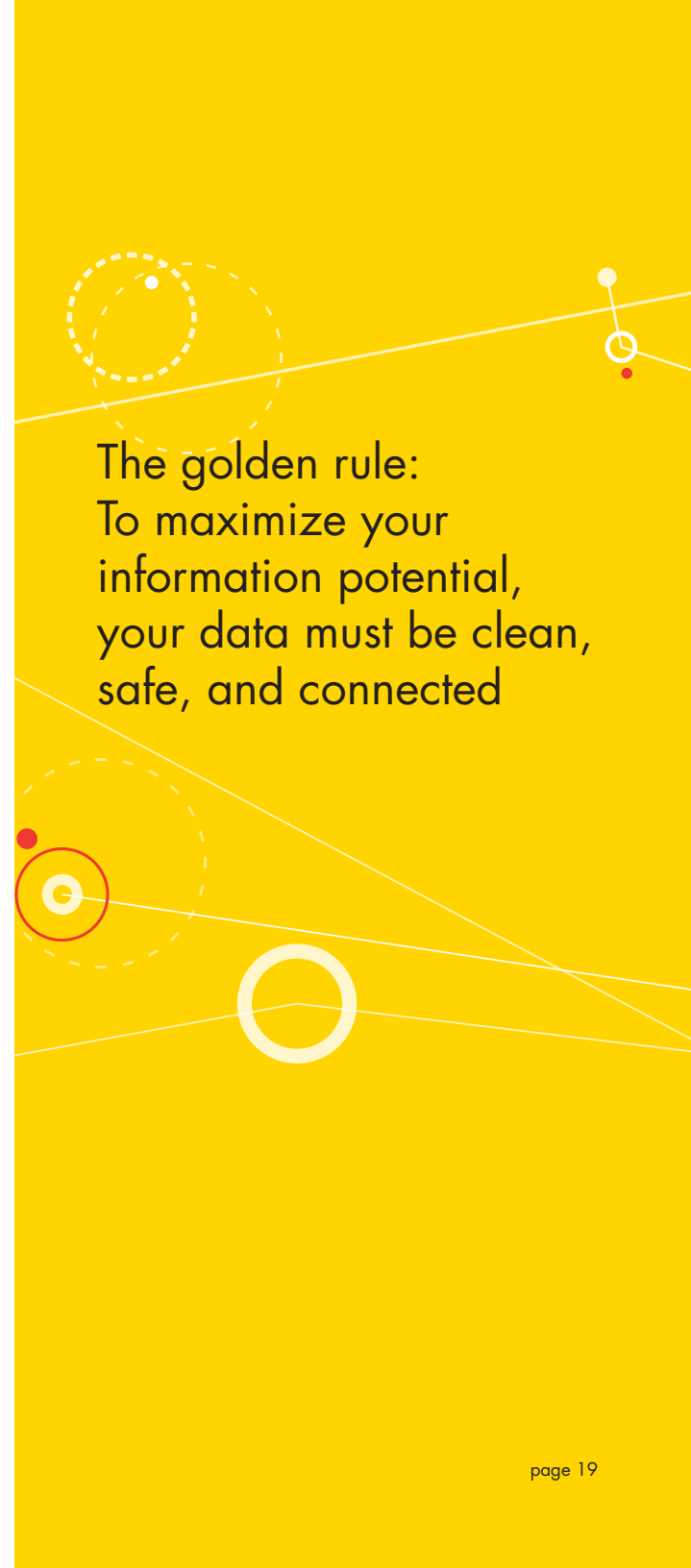
Basic rules for success

- **Look at the big picture.** Change your mindset from application-centric to data-centric. If you take away just one big idea from this eBook, it's this one.

Historical data management schemes were application-centric. Today, we're seeing the cracks in that foundation. Instead of accessing the fragmented data that resides in applications supporting discrete business processes, you need access to all the data—you need the big picture.

Transforming clinical processes and delivering meaningful analytics requires integration of data across applications and across the complete ecosystem of healthcare stakeholders. That means thinking less about the application and more about data infrastructure.

- **Reframe the business-IT relationship.** For enterprise information management to work, you need to foster a new, collaborative relationship with IT. Your goal is to take a lead role in your use of data without circumventing IT or isolating your data. Business can no longer afford to relinquish data management to IT and must work to improve access and use. IT needs to step up responsiveness to business needs, including developing and delivering self-service tools. Just remember: Business owns the data, IT delivers it.
- **Think "connected."** Healthcare is decentralizing, so establish a data infrastructure that ensures data is clean, safe, and connected. People creating, sharing, and accessing data should be able to collaborate through the entire lifecycle using role-based/built-for-purpose tools to ensure maximum productivity. The key is to think beyond a single application and realize that information from all applications needs to come together.



The golden rule:
To maximize your
information potential,
your data must be clean,
safe, and connected

63% 

of healthcare executives say their organizations are implementing information systems that will support the delivery of care beyond the walls of their facility.⁴

What you do with data can be a competitive advantage. More specifically, how you architect your data infrastructure can produce that competitive advantage and true transformation. Don't think of a data and technical infrastructure, but of a constantly changing digital nervous system that will play a central role in transforming your organization.

For example, an enterprise data infrastructure would include information services like those described on page 21.

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⁴ "Poor Data Management Costs Healthcare Providers," Information Week, July 2012

Key information services in a data infrastructure

These building blocks are individually powerful, and they're even more transformative when deployed simultaneously.

Data integration

Solving business problems depends on data from more than one system. Integrating this data is often harder than you might think; each application has its own way of presenting the same information. Being able to respond to business problems with agility requires that you can rapidly and reliably integrate data.

To be successful, data integration tools need to support all types and volumes of data, provide transformation capabilities for connecting data across various applications, reveal transparency into the changes made to data as it's integrated, and offer self-service tools for business analysts.

Data quality

Data quality is a perception or an assessment of how fit data is for its intended purpose. Aspects of data quality include: accuracy, completeness, relevance, accessibility, and reliability.

Data quality is separate from and complementary to master data management. You can appreciate the importance of having reliable data quality from each source (application) before reconciling master data into a single governed view. Data quality is an important component of a master data management initiative. After all, garbage in will result in garbage out.

Master data management

Master data management is comprised of processes, governance, policies, standards, and tools that define and manage critical data and serve as a single point of reference. Master data includes reference information about key entities like patients, customers, providers, locations, and the relationships between them.

Master data management technologies provide services and tools to consolidate, cleanse, govern, and share data. MDM is not part of a data warehouse, business intelligence, or application, but it is required to make these projects successful. The need for master data management becomes most obvious as you integrate data across applications to transform business processes.

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Building the business case

Despite huge potential benefits, getting funding and internal support for data infrastructure can be tough. These projects lack the PR appeal of new diagnostic equipment, a remodeled children's wing, or even a new online patient gateway. Here are some approaches to help you start the conversation.



Opportunity cost

Ask your peers and your IT leaders: What's the opportunity cost of not having accurate data? Used correctly, this can be a powerful discussion starter.

Stress greater speed and agility

As you discuss options, make sure that agility and flexibility of data delivery is a top priority. How long does it take your organization now to add new functionality or adapt to changes in healthcare legislation?

At HealthNow, a New York claims processor with more than 13,000 customers, it typically took more than six months to deploy new functionality. Against a competitive and uncertain industry backdrop, the payor's lack of agility was a real concern, according to Rob Myers, former solution architect/manager at HealthNow and now technical delivery manager at Informatica.

"[We] were at a crossroads," he recalls. Customer and risk data was spread across 16 legacy systems and thousands of local databases, and it took around 1,700 hours to add a new product to the company portfolio.

"We needed to drastically speed delivery of data, enable better business involvement for claims processing, and minimize the impact of change." All of this needed to be achieved against a backdrop of lower operational costs and reduced complexity.

Today, thanks to a flexible data infrastructure, Myers says, "HealthNow can add new functionality in days and much more quickly adapt to evolving healthcare legislation and trends."

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5 Ponemon Institute

The cost of bad data⁵

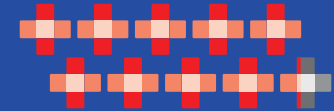
15% - 20%

of revenue; the cost of bad data for an individual business



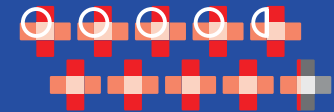
94%

of hospitals have suffered data breaches



45%

of hospitals have suffered 5 or more data breaches



\$5.5 million

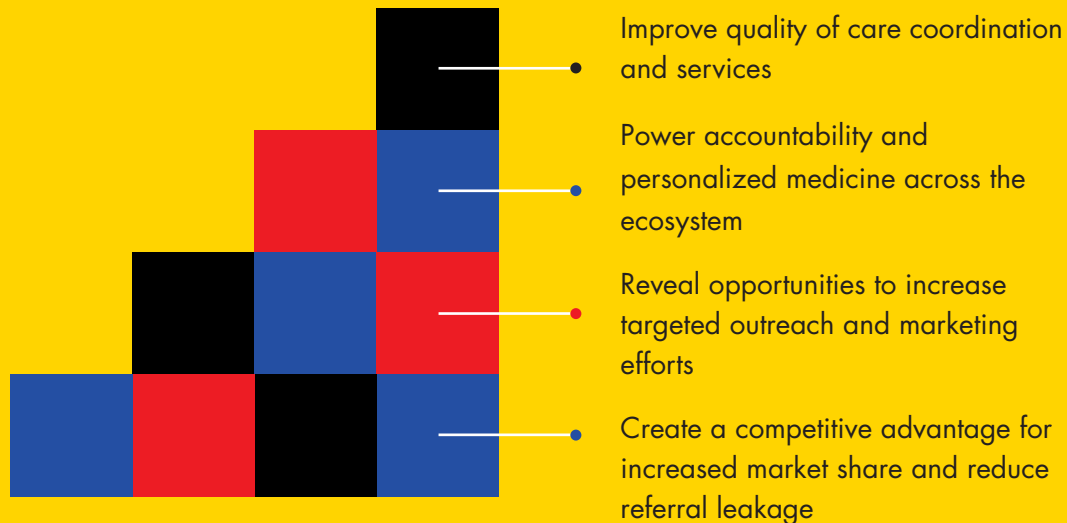
average cost of data breach, per organization



Benefits of a data infrastructure

Build an ROI case by quantifying the most common benefits of enterprise information management using figures from your own organizations.

Ask yourself: What benefits will uniform, accessible data bring to our organization? Some potential answers:



“The [big] issue will be how organizations control their data and analysis, and ensure that individual users make decisions on correct analysis and assumptions.”

“Competing on Analytics: The New Science of Winning,” by Thomas H. Davenport and Jeanne G. Harris

Link benefits to key goals, especially compliance

Contributing to goals such as improving analytics initiatives or reducing the cost of care can be powerful motivators for getting an initiative off the ground. This is Internal Selling 101, but for good reason: It works. If you need to get buy-in, start small, adds Maury DePalo, director, healthcare practice, Edgewater Technology. Pick a single project for improvement, but choose one that could have a big impact on high-priority stakeholder goals. Pressing regulatory or legal demands are a great place to start.

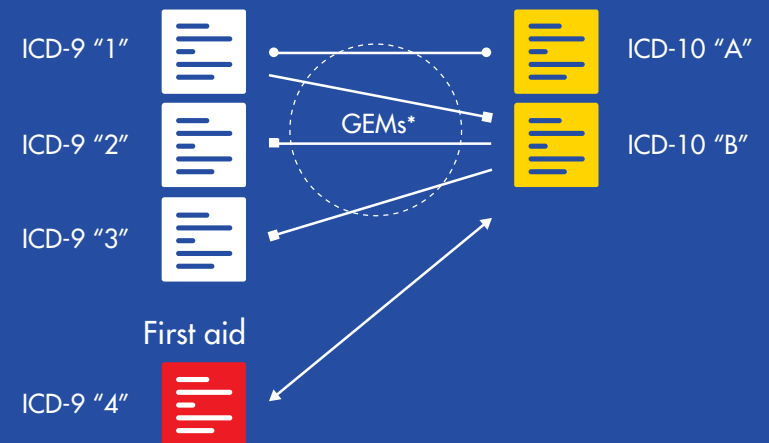
At Blue Cross Blue Shield (BCBS) of Michigan, the looming federal ICD-10 mandate requiring updated codes for diseases and conditions was the ideal impetus. "The ICD-10 transition is a large, complex change for everyone involved and impacts nearly all areas of the business," explains Dennis Winkler, IT director and head of the ICD-10 program team. "Disruption in the system could affect cash flow and member and patient benefits."

To comply and ensure that patient benefits are handled expeditiously and claims paid with minimal paperwork, the organization built a single, centralized hub of diagnosis and procedure data, populated by "an encyclopedia" of ICD-9 and ICD-10 codes. Master Data Management (MDM) enabled creation of a single, enterprise-wide repository that will become "the sole source of truth" for the organization.

The program was a big success, Winkler says, noting that when ICD-11 eventually arrives, the Blues will be uniquely positioned to add the latest codes quickly, cost-effectively, and transparently with no impact to patient safety, care delivery, or provider reimbursements.

BCBS of Michigan will focus data mapping efforts on discrepancies between ICD-9 and ICD-10

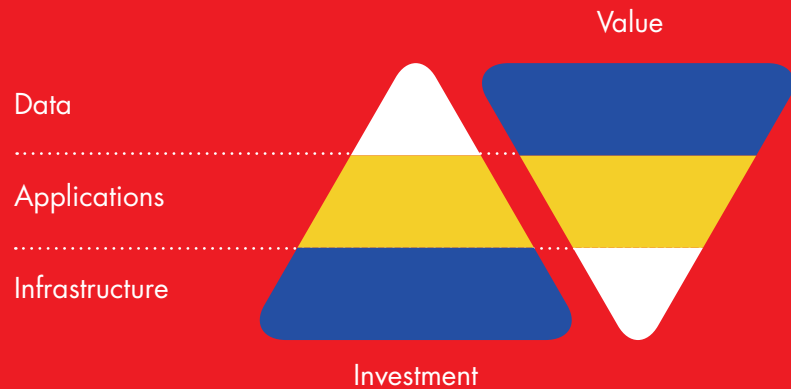
Medical emergency



*GEMs: General Equivalent Mappings

The data dividend

Invest in data to derive the value that's available.



Highlight the value of unlocking IT

Most healthcare organizations spend far more on IT infrastructure and apps than data and its management. As we've discussed, you are probably not yet realizing the full value of the sizable investment you have made.

This chart shows that investments in enterprise information management and data infrastructure yield much higher value at lower cost because they unlock the value trapped in fragmented applications by enabling valuable information to flow freely.

Learn from other industries

Retail, financial services, media, and other industries have had great results with implementing data infrastructures for enterprise information management. Many of their proven best practices map nicely to healthcare.

That's exactly the approach taken by Mavis Girlinghouse, director of business intelligence at Christus Health, an international, not-for-profit Catholic health system comprising more than 60 hospitals and long-term care facilities and 175 clinics and outpatient centers.

“We architected our strategy by learning from the industries that have been successful in deploying data analytics—like manufacturing, gaming, and finance,” she explains. The team learned that none of the successful organizations had tried creating a giant, monolithic system. So Christus began with a modular, tiered configuration using best-in-class individual components starting with electronic physician order entry.



Information exchange

What it does:

Connects data between entities like providers and payers through industry-standard communication protocols

Data integration

What it does:

Aggregates data from different sources (e.g., applications) and provides a unified view so you can respond to business problems with agility

Understanding the foundations of enterprise information management

Data masking and archiving

What it does:

Ensures data is current, masked as appropriate, and retired or archived at the right time

Master data management

What it does:

Processes, governance, policies, standards, and tools that define and manage critical data and serve as a single point of reference

Data quality

What it does:

Services that increase the value of data by efficiently diagnosing and ensuring that data is complete, accurate, properly related, and usable

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The future of data

By now it should be clear: A data-centric view is crucial for finding cures for diseases such as cancer, delivering preventive treatments to chronically ill patients, targeting known therapies to patients most likely to respond, and improving clinical outcomes. And pretty much everything else important to the present and future of healthcare.

It's not overly dramatic to call data management a do-or-die for reducing complexity and unleashing potential. "Bad data stymies analytics and big data," warns Thomas C. Redman, president of Navesink Consulting Group and author of "Data Driven: Profiting from Your Most Important Business Asset." "In the military and health care, bad data kill people."





Next steps

If you're interested in finding out more about how to execute on a data-centric view of healthcare, we recommend three resources:

1. [Take this 10-question data quality quick check assessment.](#) It'll give you an early indicator for the quality of your data as well as recommended next steps.
2. Review Informatica's "[Solutions for Healthcare,](#)" where you'll find additional resources, customer stories, blog posts, and events.
3. [Sign up for our Potential at Work community,](#) where technology's top leaders discuss their opinions and insight into the ever-changing world of information.

About Informatica

Informatica is powering healthcare transformation by ensuring data is clean, safe, and connected. By connecting fragmented data across cultural and physical boundaries, healthcare organizations are poised to deliver best practice care. Forward-thinking executives at leading healthcare organizations rely on Informatica as a foundation to improve quality of care, support clinical innovation, and drive operational efficiencies

[Informatica Corporation](#) (NASDAQ:INFA) is the world's number one independent provider of data infrastructure software. Organizations around the world rely on Informatica for maximizing return on data to drive their top imperatives. Healthcare organizations work with Informatica to make the transformation to personalized medicine a reality. Informatica's all-inclusive data infrastructure accelerates analytics and enables care coordination. Worldwide, nearly 5,000 enterprises including 84 of the Fortune 100 depend on Informatica to fully leverage their information assets residing on premise, in the Cloud, and across social networks.

