THE HIDDEN COSTS OF BAD HEALTHCARE DATA

And how using a smart data fabric can reduce them

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Executive summary

The Problem

Data underpins every decision that leaders at a healthcare organization (HCO) make today. But is it the right data? Is it accurate? Is it timely and meaningful? Can you rely on it to make effective decisions? Most HCOs suffer from an overload of disparate data from an array of internal and external sources that is managed via a hodgepodge of strategies and technology infrastructure. That decreases the data's reliability and accuracy, and negatively impacts the entire enterprise by contributing to poorer clinical and business decisions, higher costs, and lower efficiency, care quality, and revenues.

Five trends are compounding this issue of 'bad' data:

1. M&A and general industry consolidation
2. Proliferation of IT systems and vendors despite the move to a single EHR
3. More data sources, including external data such as genomics and consumer sentiment data
4. Performance-based payment and measurement
5. Rising expectations due to consumerism, AI/ML, and digital health apps

The Solution

An enterprise data partner that delivers a smart healthcare data fabric which includes embedded analytics, machine learning, and natural language processing can address these data and analytics issues by ingesting, harmonizing, and analyzing data across the entire health system to create a single source of truth. This data fabric must also make it possible to 'democratize' data, putting relevant insights into the hands of key decision makers so they can make better business and clinical decisions.

The Value

$42.1M

A typical large HCO with 2,000 beds and 100,000 discharges that uses a smart healthcare data fabric for just six initiatives can save $42.1M over the first three years (see Exhibit 2).

The High Cost of Bad Data

$3.1 trillion
annual cost of poor-quality data in the U.S.[1]

20%
the typical percent of duplicate patient records in U.S. health systems[2]

35%
of all denied claims result from inaccurate patient identification or information[3]

$12.9 million
average annual cost of poor data quality for organizations[4]

$2.5 million
the average annual cost to hospitals of denied claims due to inaccurate information[5]

30-40%
of user time is wasted searching for data from fragmented data repositories[6]

20%
of patients found errors in their providers' notes[7]

40%
of those errors are serious[8]

Data and Insights: Increasingly Essential but Costly

While data is essential for healthcare executives to do their jobs, they continue to be hampered by the number and complexity of data sources, and lack the accurate, timely, and synthesized data needed to gain a complete view of health needs for their populations. Despite advances in interoperability, HCOs still have mountains of 'dirty' and untimely data that too often cannot put actionable insights in the hands of administrators and clinicians to enable optimal clinical and business decisions.

Key Data and Analytics Issues

Our recent independent survey of 100 executives in large HCOs with at least 250 beds highlights the complexity of collecting, integrating and using enormous volumes of data from a growing array of sources. For more detailed information, read our market report, "Bad Data, Bad Analytics, Bad Decisions." Survey highlights include:

1. **85%** say real-time and harmonized data is very/extremely important for enabling leaders to make informed operational decisions.
2. **85%** also say data analytics is among their top strategic priorities or fundamental to achieving their goals.
3. **Only 20%** of organizations fully trust their data (64% say it is somewhat credible).
4. **80%** of HCOs say their top analytics priority over the next 12 months is creating and sharing high-quality data across the organization. That increases to **84%** over a three-year time horizon.
5. **More than half** say poor data quality has serious consequences, leading to ineffective or slow decision making (53%) and the inability to identify gaps in care (50%).
6. **51%** say data integration and interoperability challenges are the biggest barriers in achieving their strategic data analytics priorities over the next 12 months.

A Mounting Challenge

Five forces have exacerbated the challenges that HCOs face in collecting and using data to make good clinical and business decisions:

1. **M&A and general industry consolidation** – As health systems continue to become larger, accessing and using data across the enterprise and integrating workflows and tech systems has become more complex.
2. **Proliferation of IT systems and vendors** – Despite the trend toward a single EHR, HCOs still must coordinate data from numerous internal EHRs, affiliated physician EHRs, as well as a growing array of non-EHR IT systems and vendors.
3. **More data sources** – Consumerism and the rise of retail competitors like CVS and Amazon mean that HCOs must incorporate data from a widening number of external sources to remain competitive — including social determinants of health (SDOH) and patient satisfaction/consumer sentiment data. The growth of virtual care and remote patient monitoring further adds to the number of data sources and formats, such as the internet of things (IOT) and patient reported outcomes (PRO) data.
4. **Performance-based payment and measurement** – The assumption of greater risk and the proliferation of differing value-based care models has also accelerated the need for accurate metrics. HCOs must be able to identify high-risk patients and manage their care per each contract or cohort, as well as meet significant performance measurement and payer requirements like prior authorization. If the data is mismatched, error-ridden or siloed across the organization, it impairs the HCO's ability to predict risk and be reimbursed for the care delivered, which could spell disaster for the bottom line.
5. **Rising expectations** – As consumerism, AI/ML, digital health and predictive modeling become the norm, HCOs must combine more data in meaningful ways to manage risk and the patient experience. Gartner recommends that HCOs invest in data strategies that can deliver normalized consumer data accessible throughout all analytics and insight platforms.[9] They also recommend investment in analytics that deliver consumer insights beyond the typical population health and clinical outcomes data.[10]

"I want to automate data analyst roles, which currently require a lot of care and feeding, manipulating, and validating. It would be better if I could integrate all of our disparate data sources to a single platform."

— CIO of a major Southeastern payvider

A Smart Data Fabric with Embedded Analytics

In the face of these mounting challenges, how can HCOs ensure that accurate data gets translated into insights that get to the right people at the right time? Fortunately, today's leading enterprise data technology providers are adopting a new and fundamentally different approach to data and analytics — a data fabric that can unify, harmonize, and analyze all data across the entire enterprise using far less time and effort.

A data fabric is an architectural framework for analytics that supports a full set of capabilities and that enables centralized self-service business intelligence across the entire health system, as shown in Exhibit 1. This approach minimizes the demands on analysts and IT staff while ensuring that each decision maker can quickly access and use the information pertinent to their sphere of influence.

A 'smart' data fabric embeds a wide range of analytics capabilities directly within the fabric, including data exploration, business intelligence, natural language processing, and machine learning. This makes it faster and easier for organizations to gain new insights, power intelligent predictive services and applications, and link back to an HCO's transactional systems.

Smart data fabrics enable legacy applications to remain in place. By avoiding the expensive and time-consuming process of ripping and replacing IT systems and data silos you can complement and enhance existing investments. The HCO can standardize on a smaller set of vendors with broader capabilities — simplifying operations and reducing the time and cost of contracting with and managing multiple vendor relationships.

Innovative organizations can also use an enterprise smart data fabric for strategic initiatives such as delivering real-time insights to the care team. For example, the care management team can be alerted to frequent users of the ED or reduce no-shows by reminding patients of upcoming appointments. Such insights can reduce the risk of duplicate testing or adverse drug events during transitions of care and help organizations make more informed operational or clinical decisions with timely, accurate data from multiple sources.

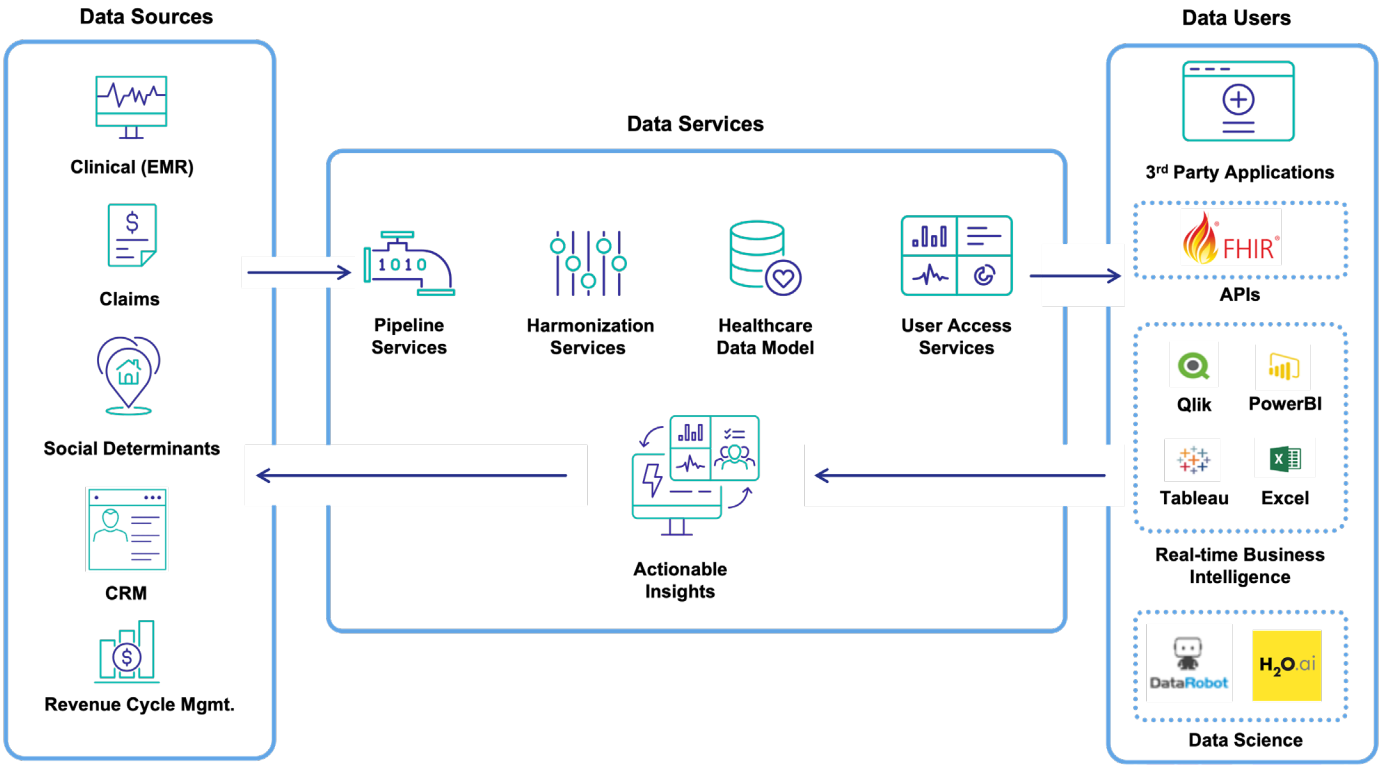
Finding the right partner to deliver your smart data fabric can pay off by saving millions of dollars, as described in the use cases that follow.

"A big part of what's been influencing our thinking about how to evolve our analytics programs is how we are going to connect this back into the transactional systems."

— CIO, major Midwestern university health system

EXHIBIT 1

A Sample Smart Data Fabric



The Value of a Smart Healthcare Data Fabric: Six Initiatives Could Yield $42.1M

To help HCOs determine the potential value a smart data fabric can have at the enterprise level, healthcare consultancy Sage Growth Partners worked with InterSystems, a global leader in innovative data systems, to create an Economic Impact Model (EIM). For this white paper, we have applied the EIM to a 'typical' large health system with 2,000 beds, 100,000 annual discharges, 1.9 million outpatient visits, 2,096 employed physicians (including 572 primary care physicians) and 10 analytics systems (see Exhibit 2).

The EIM takes a conservative approach to calculating economic value, describing six common use cases that represent only a portion of the potential cost-saving initiatives that can be realized when a health system deploys a smart data fabric across its enterprise. The EIM calculations were limited to initiatives whose value can be documented based on a mix of peer-reviewed journal articles, government databases, and credible healthcare research providers. The calculations shown in Exhibit 2 also reflect the conservative assumption that it can take several years to realize the full economic value of these initiatives.

...using a smart data fabric for six initiatives could save the typical HCO a total of $42.1M over three years.

An Added Benefit: Efficient Interface Conversion

HCOs investing in a smart data fabric strategy often also consider an integration engine update, which can reduce the number of interfaces needed and the time that IT staff must spend on each interface conversion. Based on the experience of an InterSystems customer, a typical HCO can reduce interface volume by 32% (from 8,800 to 6,000) and save 12.5 hours per each remaining interface conversion, potentially saving the IT department an additional $2,505,817 annually.

Each year, clinical and non-clinical staff spend an average of 785 hours per physician manually tracking and reporting quality measures; a smart data fabric can quickly harmonize data from a variety of disparate data sources to significantly reduce this time.

Using the smart data fabric to consolidate technical infrastructure and deliver higher quality, more unified data can significantly reduce IT costs and staff time spent chasing and cleaning data. It can also lower the number of duplicate records that may delay tests and impact patient care.

1. Reduce time spent extracting and harmonizing data

The smart data fabric significantly streamlines an organization's ability to extract and harmonize data from the growing number of sources by cutting the time staff spend manually identifying and fixing data errors. Based on data from the Sage 2021 survey of 100 executives, a typical HCO could have 26 FTEs dedicated to these activities. Another survey estimates 43% of IT staff time is spent on data extraction and harmonization.[11] Cutting this time in half could save our example HCO a total of $1,568,992 over three years.

2. Reduce duplicate medical records' impact on care

Identifying and resolving errors such as duplicate medical records up front gives clinicians and support staff a single source of truth as they make care decisions. It also ensures higher-quality data for analytics.

In a typical HCO, some 20% of records are duplicates;[12] 4% of these negatively impact clinical care by delaying ED or surgical treatment or leading to duplicate tests.[13] Those duplicate records have been shown to increase costs by an average of $1,100 per patient and nearly 11% of duplicates are associated with bad debt.[14] Based on general industry experience, a smart data fabric can conservatively reduce duplicates to 8% of all records, saving our typical HCO a total of $20,298,859 in associated care delivery costs over three years.

3. Decrease the cost of tracking and reporting quality metrics

With the growth of performance-based payment, the number of quality measures providers must report on has increased significantly over the past decade. Each year, clinical and non-clinical staff spend an average of 785 hours per physician manually tracking and reporting quality measures;[15] a smart data fabric can quickly harmonize data from a variety of disparate data sources to significantly reduce this time. Conservatively estimating that non-clinical staff in primary care offices could cut the time spent on these tasks in half, our HCO with 572 primary care physicians could save $6,460,522 over three years.

4. Decrease redundant data and analytics platforms

The average health system has multiple data and analytics platforms within its enterprise, resulting in redundant efforts to manage, maintain, and integrate data. Using a smart data fabric helps organizations consolidate overlapping infrastructure and decrease

the time needed to integrate data and maintain these platforms. That enables our typical HCO to cut the number of its analytics platforms from 10 to 5. Assuming that its IT staff spend 20% of their time maintaining these platforms, the HCO could save $2,479,880 over three years.

5. Reduce the number of shadow IT systems

With a smart data fabric, an HCO can also cut the number of 'shadow' IT systems (any hardware, software, or program that is not supported by the central IT department, and that accesses protected health information on third-party applications or personal devices). Shadow IT projects can consume 40% of the total IT capital budget;[16] reducing them by half could save the HCO in our example a total of $10,354,668 over three years.

"We had an amnesty period, where you turned in 'shadow IT' and we'd replace it with higher-end tools."

— CIO, major Southeastern health system

Shadow IT projects can consume 40% of the total IT capital budget; reducing them by half could save the typical HCO a total of $10,354,668 over three years.

6. Reduce prior authorization denials/missing data

The prior authorization burden is significant, and many organizations are calling for an improved workflow.[17,18,19] According to a physician survey published by the American Medical Association, 90% of respondents said prior authorizations sometimes/often/always cause delays in care,[20] and it's estimated that 28% of first-time prior authorization requests are rejected by payers.[21]

A smart data fabric makes it easier for HCO staff to access data and information needed for prior authorization completion. The EIM assumes that the smart data fabric could reduce prior authorization denials due to missing data from 5% to 2.5%. It also assumes that decreasing the time both clinical and non-clinical staff spend managing these denials for the HCO's 2,096 physicians could save $958,577 over three years.

Total Savings from these Six Initiatives

As shown in Exhibit 2, using a smart data fabric for six initiatives could save the HCO in our example a total of $42.1M over three years.

EXHIBIT 2

The Value of a Smart Data Fabric for a Typical Large Health System*

	Yr. 1	Yr. 2	Yr. 3	
Initiative	**Savings**	**Savings**	**Savings**	**Total Savings**
Decrease data extraction, harmonization effort	$247,736	$495,471	$825,785	**$1,568,992**
Decrease duplicate records and tests	$3,205,083	$6,410,166	$10,683,610	**$20,298,859**
Decrease time spent chasing quality metric data	$1,020,082	$2,040,165	$3,400,275	**$6,460,522**
Decrease redundant analytics platforms	$391,560	$783,120	$1,305,200	**$2,479,880**
Decrease shadow IT systems	$1,634,948	$3,269,895	$5,449,825	**$10,354,668**
Decrease missing data in prior authorizations	$151,354	$302,709	$504,514	**$958,577**
Total	**$6,650,763**	**$13,301,526**	**$22,169,209**	**$42,121,498**

*The health system in this example has 2,000 beds, 100,000 annual discharges, 1.9 million outpatient visits, 2,096 physicians (including 572 primary care physicians), and 10 analytics systems.

Key Attributes for a Smart Healthcare Data Fabric Partner

- Proven results in large health systems
- Enterprise-wide, open analytics platform
- Embedded AI/ML and analytics
- Integration with any data source
- EHR neutral
- Self-service business intelligence
- Public and private cloud-enabled
- Secure

"The art is in the integration and if someone could figure out how to increase the speed of integration of all these different data sources, that would be an area ripe for disruption."

— CQO, major Southeastern health system

Accelerate Speed to Value with Smart Data Fabrics

As the recent survey of health system executives makes clear, many HCOs continue to struggle to integrate and use high quality data across their enterprise. Using a smart healthcare data fabric with embedded analytics capabilities can help to solve these persistent issues and deliver more accurate, complete, connected, and actionable insights. The smart data fabric makes it far easier to collect, harmonize, and democratize data from multiple sources and systems by using a comprehensive data model that supports all major healthcare messaging standards. The ideal model spans data management, interoperability, transaction processing, data normalization, and analytics, and is built to accelerate speed to value.

The EIM documents that a typical HCO with 2,000 beds and 100,000 annual discharges could potentially save $42.1M over the first three years of deploying a smart data fabric for the six initiatives described here.

Cleaner, more integrated data delivers other benefits as well, including:

Less frustration and stress for staff who create, analyze, or use the data

Greater access to and trust in the data by users throughout the enterprise

The ability to make timelier clinical and business decisions, potentially improving care and increasing revenues

For more information on the executive survey, read the Sage Growth Partners market report. Learn more about smart healthcare data fabrics at InterSystems.

Resources

1. https://hbr.org/2016/09/bad-data-costs-the-u-s-3-trillion-per-year
2. https://bok.ahima.org/doc?oid=302567#.YXMB8i2cbu3
3. https://www.blackbookmarketresearch.com/blog/improving-the-patient-identification-process-and-interoperability-to-decrease-patient-record-error-rates
4. https://www.gartner.com/smarterwithgartner/how-to-improve-your-data-quality
5. https://www.blackbookmarketresearch.com/blog/improving-the-patient-identification-process-and-interoperability-to-decrease-patient-record-error-rates
6. https://www.mckinsey.com/~/media/mckinsey/business%20functions/mckinsey%20digital/our%20insights/reducing%20data%20costs%20without%20jeopardizing%20growth/reducing-data-costs-not-jeopardizing-growth.pdf?shouldIndex=false
7. https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2766834
8. IBID
9. Gartner, Inc. | 3992150, "Healthcare CIOs Must Turn Retailers' Care Delivery From Liability to Asset," 23 October 2020 - ID G00735222, Kate McCarthy.
10. IBID
11. https://www.kaggle.com/kaggle/kaggle-survey-2018
12. https://bok.ahima.org/doc?oid=302567#.YXlHvS2cYUv
13. https://perspectives.ahima.org/wp-content/uploads/2016/03/WhyPatient.pdf
14. IBID
15. https://www.healthaffairs.org/doi/10.1377/hlthaff.2015.1258
16. https://www.wandera.com/how-much-is-shadow-it-costing-you/
17. https://www.ama-assn.org/sites/ama-assn.org/files/corp/media-browser/public/arc-public/prior-authorization-consensus-statement.pdf
18. https://www.hfma.org/topics/news/2018/08/61486.html
19. https://www.caqh.org/sites/default/files/core/caqh-core-board-prior-auth-response.pdf
20. https://www.ama-assn.org/sites/ama-assn.org/files/corp/media-browser/public/government/advocacy/2016-pa-survey-results.pdf
21. IBID

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