



# University of North Carolina

## *Enabling health informatics*

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### Overview

#### **The Need**

The University of North Carolina (UNC) Health Care System needed to create a consolidated view of patient information that could better serve the diverse needs of varied user groups.

#### **The Solution**

IBM worked with UNC to create a robust, closely governed data warehouse solution that unifies multiple data stores, making it possible to quickly and easily access data and transform it into useful information.

#### **What Makes it Smarter**

The ability to quickly and easily leverage health informatics to analyze and interrelate data in new ways improves patient outcomes, disease management, regulatory compliance and research.

#### **The Result**

"The ready availability of information changes the way people ask questions and think about the problem on a fundamental level."

— Dr. Donald Spencer, associate director of medical informatics, UNC Health Care System

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In the world of healthcare, data has always been of great importance. Today it is more essential and voluminous than ever—patient health histories have expanded to include encyclopedic lab results, radiological imagery and a host of other data. Compounding the challenge of managing all this data is an increasingly complex funding, insurance and regulatory landscape.

The wealth of available data offers great potential to take healthcare to a new level, using health informatics—the intersection of information science, computing science and healthcare. It allows researchers, clinicians and administrators to combine data in new ways, helping them understand complex, interrelated issues far more easily.

In addition to improving the quality of care, managing disease better and advancing medical science, improved data management has a practical, business-oriented side. It can help a healthcare institution rein in rising costs and become more sustainable by promoting efficiency and improving compliance with “pay for performance” insurance policies that tie reimbursement directly to patient health.

### **A need for better data management**

As one of America's leading healthcare institutions, the University of North Carolina's Health Care System was facing a considerable information management challenge in the form of a vast array of data repositories and demands. There are discrete clinical and administrative systems for physician noting, radiology, oncology, cardiology, lab results, admissions and much more.

The basic issue was that little or no cross-referencing or synchronization of these systems existed. Asking the same question of different systems could often yield different, yet equally valid, results. Further, some questions—those for which the answers require data to be retrieved from more than one source—could not be answered effectively because there was no way to look across multiple data silos.





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## Business Benefits

- Delivers complex search results spanning multiple information repositories in minutes instead of the weeks or even months required for manual searches
  - Provides a single view of data across the organization
  - Breaks down information silos to enable new lines of inquiry
  - Enables governance of user groups, storage and access to optimize user benefits and ROI
  - Establishes procedures to disseminate information throughout the organization
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UNC knew it needed to consolidate and aggregate the data, and began that process by creating two large data stores, one for clinical data and one for operational data. However, it was clear that this effort would only deliver some of the desired benefits. To achieve its goals, UNC would have to add both structure and capability to the picture.

### Rules that lay the groundwork

Making the data both accessible and useful was going to take more than technology. Strict governance was needed to establish processes, procedures and organizational boundaries that could serve UNC's diverse collection of user groups from the clinical, administrative and research arms of the organization fairly and productively.

IBM Global Business Services worked with the UNC team to create the robust governance structure that was the key prerequisite for development of a powerful data warehouse, using the IBM Healthlink Solutions Roadmap Methodology. "I can't overemphasize the importance of governance; I couldn't do my job without it," says Dr. Donald Spencer, associate director of medical informatics at UNC. The structure enables leadership to make critical initial and ongoing decisions, manage development issues and clearly communicate project status across the organization.

### Bringing it all together

With the governance structure in place, UNC looked to IBM to develop and deploy the data warehouse leveraging its Health Integration Framework. The centerpiece of the implementation is IBM InfoSphere™ Information Server, a scalable, integrated platform for decision support.

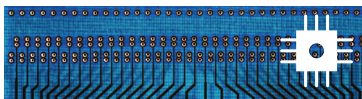
To leverage existing in-house IT skills and provide the highest capacity, the warehouse runs on the flagship IBM System z10™, using IBM DB2® for z/OS®. With the ability to run multiple operating

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## Smarter Healthcare:

## Changing the way data is used by researchers and administrators

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### Instrumented

Physicians, staff, administrators and researchers feed data ranging from patient records to X-ray images and more into a multitude of information management systems



### Interconnected

A robust data warehouse, developed and deployed by IBM, links the data systems and enables single-point access and sophisticated healthcare informatics for diverse user groups.



### Intelligent

Researchers, clinicians and administrators can analyze and interrelate data in new ways, which leads to improved patient outcomes, disease management, compliance and research.



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## Solution Components

### Software

- IBM DB2®
- IBM InfoSphere™ DataStage®
- IBM InfoSphere Information Server
- IBM WebSphere® Application Server
- IBM WebSphere Portal
- IBM WebSphere Portlet Factory
- IBM z/OS®
- Linux® on System z®

### Servers

- IBM System z10™

### Services

- IBM Global Business Services: Strategy and Change
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*“This is a great example of how information management and technology can actually drive important medical research.”*

— Dr. Donald Spencer

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systems, the System z10 enables UNC to optimize performance and utilization by shifting tasks to other environments. For example, the initial deployment uses the IBM InfoSphere DataStage® for Linux® on System z® to populate the warehouse. Going forward, the plan is to develop a hybrid environment that moves some of the data to a DB2 LUW (Linux, UNIX® and Windows®) environment for analytics.

Integrating seamlessly with UNC's existing analysis tools, the InfoSphere platform enables sophisticated data analytics to be delivered in real time—a new capability that enables true health informatics for the entire UNC Health Care System. Web-enabled access is provided via IBM WebSphere® Portal and WebSphere Application Server, with functionality built using IBM WebSphere Portlet Factory.

## Practical benefits

Today, healthcare funding and compliance have become major issues. The requirements for performance benchmarking (i.e., establishing that diseases are in fact being managed effectively) are becoming increasingly stringent, and are coming from both the government and health insurance companies.

The data warehouse is essential to meeting these requirements. It allows, for example, records for the entire patient population to be quickly examined for pertinent measures, such as blood pressure. Previously, this information was either difficult or impossible to derive due to multiple “versions of the truth” caused by lack of synchronization.

## Powerful scientific impact

The capabilities that the new data warehouse provides have been nothing short of revolutionary in their impact on UNC's researchers. In one compelling example, a researcher needed a specific set of “blinded” (anonymous) patient data in order to conduct a study of kidney disease. Prior to the existence of the data warehouse, it would have been necessary to go through hundreds of medical histories manually—a task so daunting that the study languished for months. Upon hearing of the new resource, a simple query was made and the results delivered in just minutes.

“This researcher now has the motivation to seek grant funding for her study, where she might have simply given up because of the difficulty of uncovering basic information,” says Dr. Spencer. “This is a great example of how information management and technology can actually drive important medical research.”

Dr. Spencer sees the data warehouse as much more than a way to find information faster. “You'd think this is a technical project, but it's not. The real success is the breaking down of barriers,” he says. “The ready availability of information changes the way people ask questions and think about the problem on a fundamental level.”

## The importance of expertise and teamwork

Dr. Spencer highlights the role of collaboration with IBM in the data warehouse project. “IBM brought us a structure that we didn’t have,” he says. “Knowledge transfer is one of the most important things that IBM has given us. We knew our challenges, we knew where we needed to go and we knew the data, but we needed IBM to bring us the structure to solve the problem.”

## For more information

To learn more about how IBM can help you transform your business, please contact your IBM sales representative or IBM Business Partner.

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