Leveraging Technology to **Achieve the Triple Aim**

Orion Health Case Study

NORTH DAKOTA HEALTH INFORMATION NETWORK (NDHIN)

	North Dakota, United States Newark, New Jersey www.nd.gov
Population	Over 1.2 million
Organization Type	Health Information Network
Products Implemented	Orion Health Amadeus, Orion Health Coordinate, Orion Health Discover
Key Benefits	• Better transitions of care across a wide range of healthcare practices • Significantly enhanced registries • Secure messaging cost savings • Combatting clinician disengagement and burnout

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SHILA BLEND,
Director,
North Dakota Health Information Technology

The Customer

North Dakota Health Information Network (NDHIN) has created a secure statewide medical record sharing network for providers and consumers. NDHIN's extensive exchange capabilities encompass ADT messages, medical documentation, lab results, immunizations and much more. It currently maintains 1.2 million patient IDs. In a typical month, over 1,700 users access 11,000 records. Among the wide spectrum of participating organizations are:

- Nearly all of the state's hospitals
- Specialty clinics and practices
- Pharmacies
- Dialysis centers
- Rehabilitation facilities

The Challenge

Following a strategic review several years ago, NDHIN has embraced advanced, interoperable technology to exchange information in service of care coordination, analytics, and population health management. "Harnessing technology to serve citizens throughout North Dakota's rural and urban communities is a major priority," said Shila Blend, Director of North Dakota Health Information Technology. "We are enhancing statewide data connectivity to more thoroughly understand patients' conditions, allowing for up-to-the-minute decisions and faster diagnoses." Like most HIEs, NDHIN is also pursuing sustainable growth.

NDHIN must navigate several challenges to achieve its goals:

Overcoming Data Sharing Barriers

Two substantial barriers need to be addressed. Without a current and comprehensive health provider directory effective communication is hindered, especially for referrals. participants are competitors as well as partners and sometimes wary of sharing data.

Communicating Securely

Secure communication of patient information is imperative, a growing challenge as NDHIN's reach expands. The organization is committed to adhering to Direct, the national standard protocol for secure messaging.

Facilitating Transitions of Care

Effective care transitions are "one of the biggest use cases for secure messaging," observed Eric Hieb, NDHIN Technology and Operations Manager. But the variety of participants and data requirements involved makes the collaboration equation complex.

Adapting to a Changing DataEnvironment

The industry's traditional problem with siloed and fragmented data is being exacerbated by the continuing shift of care delivery from inpatient to outpatient, the community, and the home. That trend is substantially boosting the volume of information that must be managed, creating entirely new data types to be captured, and introducing varied data usage demands.

The Solution

A robust platform was clearly needed. NDHIN considered reliance on EHRs. However, while these systems play an important role, the many EHR versions and limited interoperability make cross-system information sharing difficult if not sometimes impossible. Hieb offered the example of medication management. "Pharmacists want diagnostic test results in one place. Those typically reside in multiple EHR records." Likewise, not all EHRs incorporate Direct Trust provider directory updates in a timely manner. NDHIN concluded that it required a stronger data management backbone.

In 2013 NDHIN adopted Orion Health's core platform to meet its data management needs. The organization has grown with Orion as its requirements have developed. Recently, NDHIN implemented Orion's Amadeus platform. Its open, scalable architecture forms the right base for sharing rich patient information and facilitating electronic referrals. The Amadeus technology manages four data characteristics essential to today's – and tomorrow's – success:

- Curated from multiple sources
- High-volume and continuous
- In various formats that must be normalized
- Dynamic - including a growing set of social determinant of health (SDH) data

An additional aspect of Amadeus valued by NDHIN is its incorporation of cloud infrastructure and services from Amazon Web Services (AWS). That creates major advantages such as rapid, controlled software updates as the NDHIN platform evolves and operational insights to support proactive capacity management and infrastructure optimization. Amadeus has received the AWS "Well Architected" designation across all five of that framework's pillars: operational excellence, security, reliability, performance efficiency, and cost optimization.
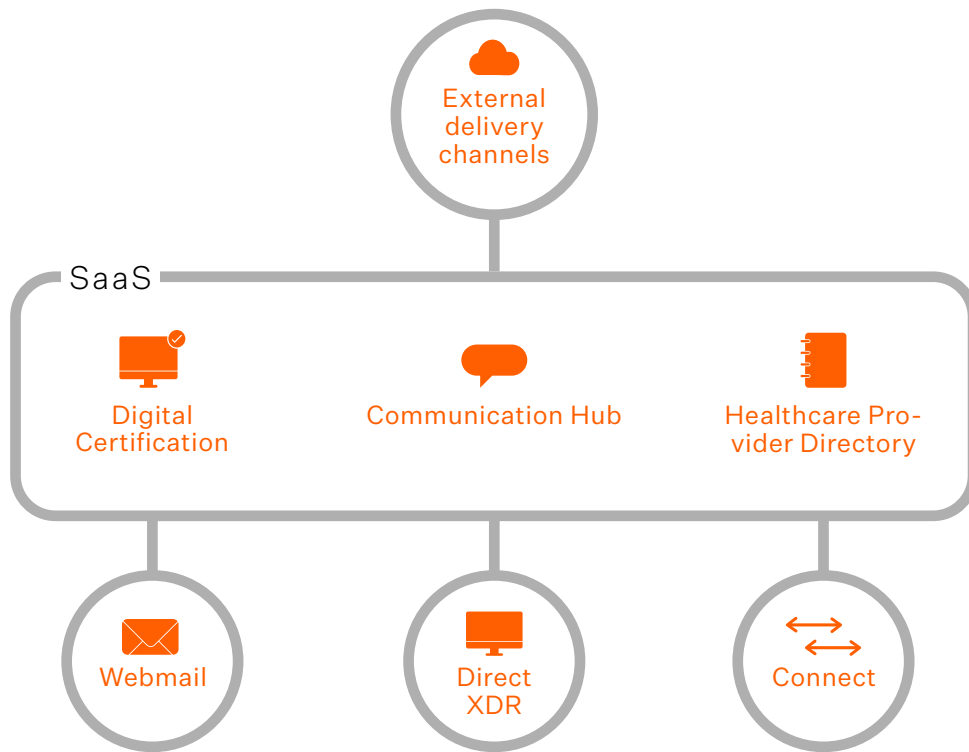
Powering Multiple Uses

Beyond daily exchange activity, several high priority initiatives are being powered by Orion Health:

- Automatic population of an Autism Registry. NDHIN is encouraging institutions to ramp up data feeds to this important registry via ADT messages triggered by ICD-10 codes. Future expansion is expected to include vital information such as an autistic child's teachers to further care coordination efforts. Orion's Coordinate software is able to use this circle of care data to connect caregivers with valuable context.

- An innovative Smoking Cessation program. "We believe we are the only HIE nationwide undertaking a formal program in this area," noted Blend.

- A state Advance Directives Repository. Directives are frequently scattered across different locations, even in other states. NDHIN has constructed a central repository for all documents. Consumers update or add documents via an advance directives appli- cation. Providers can easily view all documents through NDHIN's clinical portal. "This use case is optimal for an HIE," noted Hieb.

- Lab Test Ordering Network. Statewide integration lets providers order lab tests from within their EHRs. The HIN delivers the electronic order to the appropriate reference lab and returns results to the EHR. This process eliminates manual ordering and rekeying data while removing an organization's need for multiple system interfaces.

COMMUNICATE OVERVIEW

Basic Messaging
- Desktop web-based access
- Built in CCD A Viewer
- Notification to standard email
- Support for Outlook

Direct Messaging
- EHR system integration
- XDR access
- Notification and alerts
- Multiple payloads supported

Managed Secure Messaging
- Client site deployed Hardware device
- Monitored by Orion Health Managed Services

Communicate

NDHIN relies heavily on Orion's Com- muni-cate option, a central component of the Amadeus suite. Functioning like email but with point-to-point encryption, Communicate enables secure direct messaging between providers, patients and payers. Support for the Direct protocol is built into Communicate. Orion is a founding member of Direct Trust and a sig-nificant partner, currently representing nearly 12% of nationwide Direct traffic generated by over 600 healthcare organizations.

Orion offers three modes of secure commu-nications, as described in Figure 1. NDHIN has deployed the integrated, document-agnostic XDR approach. Usage has steadily grown: 750 active users now send about 9,000 XDR mes-sages monthly and receive over 11,000.

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The Results

The NDHIN - Orion Health partnership is yielding several important benefits for the organization's various constituencies:
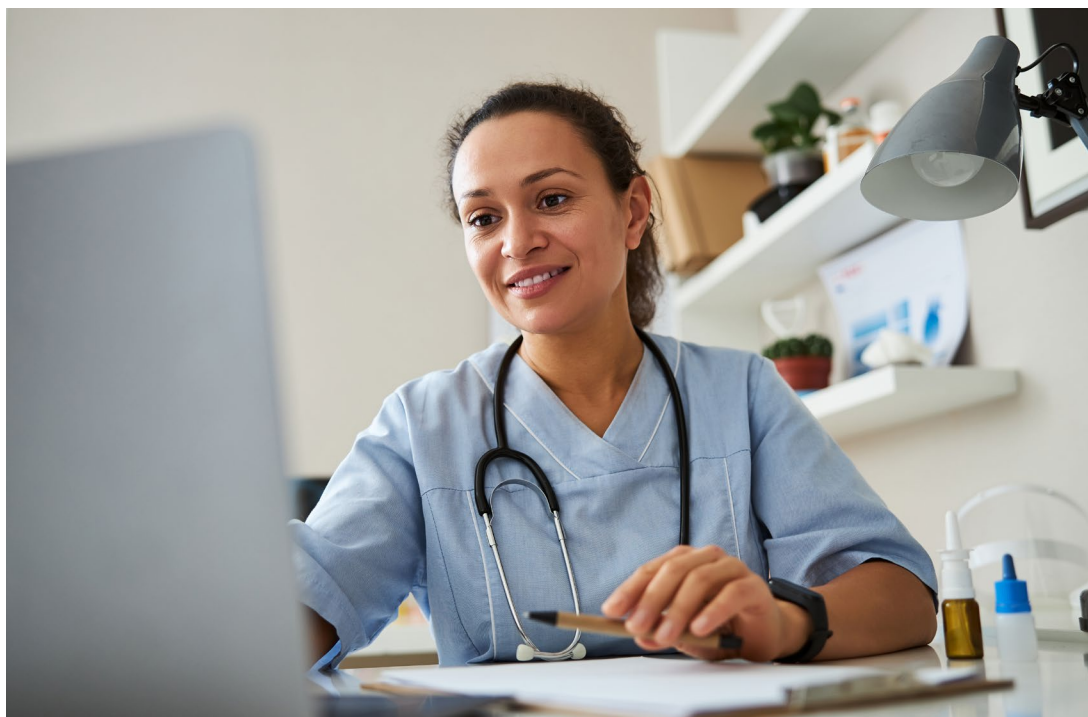
- Better transitions of care. Several major health systems with Epic EHRs anchor the program. Equally important, small hospitals and practices are involved, including chiropractors, optometrists and other specialists not often part of the HIE environment. Explained Hieb, "Communicate allows smaller organizations to participate fully in the care transitions coordination network on an equal footing with the large systems. It's an economical, secure and convenient solution for them."

- Significantly enhanced registries. Automating data entry has generated a large increase in identified autism cases. This comprehensiveness mitigates the underreporting problem that plagues registries. As Blend notes, "The state is seeing more complete and reliable data through this technology. Better health outcomes will result, as we are not leaving anyone behind." She also cited a meaningful financial impact. "Available CDC funds are tied directly to reported cases. Undercounting can mean real dollars lost."

- Secure messaging cost savings. Direct protocol support built into Communicate alleviates costs associated with many messaging options that frequently cost upwards of $.70 per message.

- Combatting clinician disengagement and burnout. Fast, intuitive access to complete data reduces documentation, freeing clinician time for greater patient interaction. "If you can reduce a clinician's process by even one or two steps, it has a measurable impact on engagement," said Hieb.

Discover

NDHIN also recently went live with Discover. NDHIN is now able to visualize their Clinical Portal audit events and trend user activity, such as successful logins, break seal events and screens viewed by organization, role, group, user and globally. North Dakota can now analyze their population by zip codes and local identifiers.

Future Directions

NDHIN's forward plans include using the Amadeus platform's robust data management and secure messaging to support:

- Inclusion of data from EHRs in Corrections, veterans' homes, DOD and other sources.
- Expanded provider directory data covering services such as transportation providers.
- Incorporation of non-traditional data, especially on reportable conditions such as suicides and drug overdoses that now carry ICD-10 codes to aid in structuring the data.

AWS Cloud Capabilities

AWS is a strategic partner providing infrastructure and hosting services underpinning the ND platform. The platform architecture has undergone AWS Well Architected peer review with AWS (across multiple pillars of interest) and passed as 'Well Architected'. Our deployment, update and management tooling use Cloud capabilities within AWS platform to enable rapid and controlled updates as the ND platform evolves. The Amadeus AWS platform provides low level operational insights, logging and monitoring tooling to support proactive capacity management and optimization of the infrastructure.

Orion Health

At Orion Health, we are building thinking software for life. Our new generation health software provides an open platform that seamlessly integrates local, regional, and national data, making it more readily available to doctors, pharmacists, nurses, specialists and patients themselves. We believe that our software, built on new generation technology, will give everyone healthier, happier and longer lives.

Find out more at: orionhealth.com

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