

# NEHII Rises to the Challenge of COVID-19 with Cloud-Based Analytics and Robust Patient Matching Tools



## At a Glance

The Nebraska Health Information Initiative (NEHII) is a leading non-profit health information exchange (HIE) serving more than 4 million residents across 300 participating health care providers, payers and the State of Nebraska. Visit [www.nehii.org](http://www.nehii.org) to learn more.

### Challenge

- State designated HIE wants to enable precise patient ID matching across its network to support COVID-19 response efforts.
- Create a flexible, interoperable, and scalable infrastructure based on shared standards and futureproof foundations.

### Solution

- NextGate's EMPI on AWS enabled NEHII to quickly onboard new partners and sources of data across the care continuum.
- Automated patient matching capabilities of the EMPI allowed NEHII to accurately identify individuals and seamlessly match them to their data.
- High availability and flexibility of AWS helped NEHII to easily stand up new COVID-19 functionalities and adapt to changes on the fly

NEHII partnered with NextGate to accurately match and connect critical public health information across the state of Nebraska to support trusted data exchange and case reporting for COVID-19 using an Enterprise Master Patient Index on Amazon Web Services (AWS).

COVID-19 has affected nearly every community in the United States, creating a significant challenge for healthcare leaders looking to coordinate their actions at the local and regional level. Fortunately, in states like Nebraska, state-level health information exchanges (HIEs) are stepping up to use their infrastructure to support rapid, effective public health interventions.

With advanced cloud-based infrastructure from AWS and a reliable, secure enterprise master patient index (EMPI) from NextGate Solutions, Nebraska Health Information Initiative (NEHII) is providing critical insights to inform COVID response activities for those affected by the virus.

### Challenge

As of December 2020, Nebraska has seen over 157,103 cases of COVID-19 and more than 1530 deaths. Public health officials and healthcare organizations need to identify outbreak patterns and allocate resources across a varied landscape of big cities and expansive rural areas.

NEHII, one of the most mature and advanced HIEs in the country, found itself in the perfect position to use its data exchange and population health analytics capabilities to address the need. "Health information exchange is one of the core services we provide for our participants, but we also enable analytics and additional capabilities as we look toward creating an informed, coordinated environment for population health," said Kevin Conway, Data Integrity Manager at NEHII. "COVID is a perfect example of why we need to take on that role."

Like many HIEs, NEHII has had to carefully choose its partners to create a flexible, interoperable, and scalable infrastructure based on shared standards and futureproof foundations. Working with the right technology providers has allowed the organization to adapt to the new realities of the COVID-19 environment.

# Solution

Since 2009, NEHII has evolved from a state HIE with record location capabilities into a full-blown population health utility for Nebraskans, said Conway. "Before COVID, we already had analytics dashboards showing readmission rates, utilization statistics, chronic conditions, and similar data," he said. "When the pandemic started to flare up, we decided to use the clinical information we had, plus our state's prescription drug monitoring program (PDMP) data, to offer as much insight into the virus's impact as possible."

## With AWS' advanced cloud-based infrastructure and NextGate's reliable and robust EMPI, NEHII is providing critical insights to inform COVID response activities for those affected by the virus.

As NEHII began to collect information from additional sources, including bed utilization data and hospital capacity details, the HIE needed to develop new connections with partners across the care continuum.

"It's crucial to have the right clinical information matched with the right prescription dispensing information and the correct lab work, and so on, so that we can create accurate and up-to-date records for each person," Conway noted.

NEHII already used AWS and NextGate to support some of its central functions, so the COVID-specific dashboard was a natural opportunity to extend those partnerships, said Naresh Sundar Rajan, Chief Technology Officer at NEHII.

"The high availability and flexibility of AWS is important for us, as is using a reproducible, cloud-based environment," Rajan explained. "We can't afford to spin up a whole new infrastructure every time we need to develop something new. With AWS, the services provided can be loosely coupled, replicated and reused in very little time, which keeps us nimble and adaptable as we work to address time-sensitive public health issues."

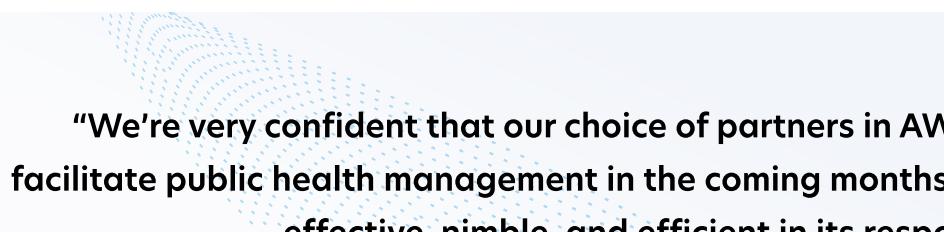
Conway added that the existing collaboration between NextGate and AWS made the integration even quicker and easier.

"It only took about a week and a half to stand up our COVID dashboard, and that's largely due to how well we have been able to identify individuals and match their data," he said. "Our robust matching system from NextGate was key for standing up the dashboard quickly and making sure it keeps running smoothly as long as we need it to."

Adopting an approach that relies on innovative application programming interfaces (APIs) is also contributing to NEHII's success.

"API connectivity is something that we are leveraging heavily for our systems," Rajan noted. "As we think about the national movement toward creating API-based ecosystems, NextGate's EMPI fits very well within that roadmap. We were able to easily scale our EMPI by using the API connections."

NEHII is using the same standards-based strategy to support its other clinical data offerings, as well as implementing a social determinants of health (SDOH) platform. The SDOH platform includes novel data that can be difficult to standardize and exchange using legacy methods, enhancing the importance of being able to ingest and match the data to the right individuals in a reliable manner.



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- Naresh Rajan  
Chief Technology Officer  
NEHII

The HIE has been able to act quickly and decisively to stand up new COVID-19 functionalities because of its history of strong data governance, a committed executive board, and an unwavering focus on privacy and security.

"NEHII has always prioritized privacy and security," Conway stated. "We feel we have set the standard for privacy and security, and we vet our partners extensively to make sure they can help us further that leadership role among healthcare organizations across the country."

"Especially in times of crisis when everything has to happen very quickly, it's so important to be able to trust that privacy and security are fundamental tenets of what we do as healthcare facilitators."

## Results

NEHII is providing a variety of real-time data to entities across the state, including COVID-19 test results from private laboratories, detailed reports on hospital bed capacity, and information about the availability of personal protective equipment (PPE) for healthcare providers.

The Nebraska Department of Health and Human Services (DHHS) views NEHII's contributions as so essential that DHHS wasted no time urging all healthcare organizations in the state to connect to the HIE.

"The partnership with NEHII has been invaluable, especially in light of the current pandemic that we are all dealing with," said Dannette R. Smith, CEO, Nebraska DHHS. "The need to produce data that is consistent when time very much is of the essence, continues to be a primary goal of the Department. We are truly appreciative of the ability to do this with the help of NEHII."

Ashley Newmyer, Chief Data Strategist at Nebraska DHHS, said, "Having NEHII as a strategic partner has allowed the Department to have greater bandwidth. Our capacity to support local health departments and hospital reporting to ensure that data systems are able to sync up accurately has allowed for improved public reporting."

"It's not easy to do anything in a week-and-a-half in healthcare, let alone stand up a dashboard and share so much information with many different organizations," said Conway. "We're very proud of the infrastructure we've built that is allowing us to take on such an important task."

Organizations like NEHII are in the "perfect position to spearhead efforts to combat COVID-19," agreed Rajan.

"Cloud-based, serverless architecture and APIs are going to be crucial for speeding up the necessary processes, including reporting and patient matching," he said. "These strategies are what have allowed us to see such success in a short period of time."

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## About NextGate

NextGate is the global leader in identity modernization and data transformation in healthcare. With over 100 customers in nine countries, NextGate is revolutionizing the consumer care journey by resolving isolated, unstructured health and lifestyle data and establishing a trusted, single identity across the continuum. Our identity and data integrity solutions connect the digital ecosystem at scale to deliver a unified experience for care providers and their patients. NextGate's market-leading, HITRUST-certified Enterprise Master Person Index (EMPI) is deployed by the world's most progressive health systems, state and government agencies, and health information exchanges for meaningful, data-driven improvements in care quality, safety and delivery.