

Challenge

On May 20, 2013, the Moore Medical Center, part of the Norman Regional Health System, was hit by an EF-5 tornado, destroying the entire hospital. In the wake of the disaster, patients were concerned whether their medical information would remain accessible to them and their providers.

Solution

eClinicalWorks' comprehensive EHR delivered tools for managing Norman Regional's patient records during a crisis. By harnessing the power of eClinicalMessenger and eClinicalMobile, providers and staff had real-time updates and always maintained access to vital information.

Results

With the help of eClinicalWorks, patients, physicians, and staff members had continuous access to patient records even after the tornado destroyed the medical center. Being completely paperless aided Norman in remaining operational after this event. As a result, providers were addressing patient calls two days later and saw patients a week after the storm.

Norman Regional Health System

Practice Overview

Norman Regional Health System is a multi-campus system in South-Central Oklahoma comprising of three hospitals, 460 licensed beds, 21 clinics, 12 primary care clinics, and nine specialty clinics. Working with the hospital, the health system delivers a strong continuum of care, with 207,000 clinic visits in 2013. Services offered in the specialty clinics include:

- Cardiology
- Cardiovascular surgery
- Neurology
- Endocrinology
- Pulmonology
- OB/GYN
- General surgery
- Physiatry
- Rheumatology
- Infectious disease

The health system was established as Norman Regional in 1984 to better reflect the entire community it served. It has since experienced an era of unprecedented technology growth and specialization.

EHR Implementation

To further continue its technical growth, Norman Regional started a selection process in 2006 to identify an Electronic Health Record (EHR) with the ability to scale the multiple specialties within the community. Its long-term goal is to create a community health record for its patients. After several demonstrations, the eClinicalWorks comprehensive EHR solution was selected in 2007 because it best suited Norman's needs as a multi-campus system. Staff particularly enjoyed the e-Prescribing and lab interface features to further automate physicians in an effort to foster better, more efficient care in both the inpatient and ambulatory settings.

So as to not overwhelm staff, a phased implementation approach was established. Prior to the EHR, the health system had limited computer knowledge. As a result, the use of technology was an entirely new process; however, staff always maintained a positive outlook. The phased implementation and data migration progressed rapidly and smoothly. The system's intuitively designed layout and features helped staff and physicians quickly adapt and learn to use eClinicalWorks. Nine months later, all operations had returned to normal.

"It has greatly improved our efficiency. The beauty is we can all be individuals and also have a broad view of how it works."

– Audra Cook, M.D.

Patient Engagement

Many patients at Norman Regional use the eClinicalWorks Patient Portal to communicate daily with their primary care provider and access important information over the internet. Norman Regional can send patient reminders, statements, patient education materials, and lab results electronically. This allows patients to be proactive and save time by reviewing their lab results before a visit. Since communication is a key to preventive medicine, the Patient Portal is a valuable part of

"I would like more of my patients to use the Portal, thus we are encouraging them to join. I especially love the tool, because it allows me to send messages when it's convenient for me. I would like to be as paperless as possible."

Misty Hsieh, MD.

the comprehensive eClinicalWorks EHR solution. At first, patients were reluctant to log in. However, they quickly realized that the Patient Portal technology will improve their overall health and well-being. On average, between 8,000 and 10,000 messages are sent annually. Providers and patients communicate directly with reminders, statements, patient education materials, and lab results.

Health Information Exchange

In place for five years, the Health Information Exchange, which started as the Agency for Healthcare Research and Quality's (AHRQ) study, examined how well Norman Regional was coordinating preventive medicine. The exchange allows providers and staff to access and securely share a patient's vital medical information electronically. Utilizing eClinicalWorks' Electronic Health eXchange (eEHX®), which creates a holistic view of a patient's clinical record, 60 to 70 patients were treated monthly for preventive medicine. The community solution facilitates interoperability between clinical systems in community-wide projects. Overall, the goal is to create tighter integration between practices and easily send patient records from office to office. Norman Regional became the first group of physicians in a decade to be recognized by the government as being clinically integrated. A key part of the structure was eEHX, as it instituted a community standard

rolling out quality improvement programs, allowing the health system to operate as a single entity. The solution supplies the tools to deliver the highest quality care to its patients. For example, providers have the ability to better manage chronic conditions, and specialists are able to address problems faster. Typically, several patients may see three to four physicians annually, and with the eEHX, Norman Regional can coordinate care, exchange data and medication lists, laboratory results, specialty reports, and electronic referrals. Further advancing care, an HIE-to-HIE connection was established in 2010 to a larger health information exchange in Oklahoma City that accessed all of the metro area health systems.

Infrastructure

Norman Regional's server infrastructure is designed around a paired redundant system, with the ability to migrate live from one location to another. This functionality has been made possible largely through VMware and Microsoft clustering. Norman's storage infrastructure is designed similarly with arrays set up to synchronously and asynchronously replicate data at each location, with 90% of the infrastructure virtualized.

Starting in the summer of 2012, Norman Regional made the decision to move forward with two new technologies. The first was the implementation of VMwares View for virtual desktops for all clinical patient-facing locations. The second update was Imprivata OneSign for two-factor, single sign-on authentication. Both technologies were designed around a NON-persistent pool structure. This allowed for every clinician to have the same look and feel, no matter their location. Physicians can roam from floor to floor, facility to facility, with their virtual desktop following them throughout the day. All that is necessary to log back in is to tap their Norman Regional ID badge and enter their Personal Identification Number (PIN).



Monday, May 20, 2013

On May 20, 2013, an EF-5 tornado hit Moore, Oklahoma, destroying everything in its path, including Norman Regional Health System's Moore Medical Center. The entire building was leveled, leaving the physicians, staff, and patients terrified and displaced. Luckily, staff managed to get everyone safely into the cafeteria, away from danger. However, no one was prepared for what was on the other side of the crumbling walls. Stepping through massive holes in the walls, survivors saw an unfamiliar world. The medical center had been turned into rubble, trees were ripped out of the ground, and cars tossed around like toys.

“The value of our partnership with eClinicalWorks was proven that night.”

Dr. Brian Yeaman, Chief Medical Informatics Officer

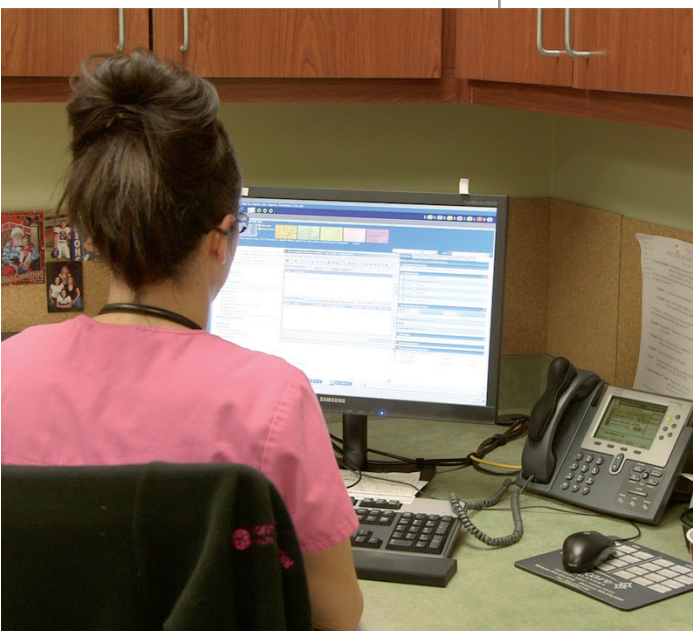
“You don't ever prepare for the entire source of your livelihood to simply go away,” said clinic manager Tammy Kriss. “I knew all of my physicians and staff were okay, but I didn't know anything outside of that. I couldn't get a call through, and all we could smell was gas.”

Staff at Norman Regional immediately wondered how to pick up the pieces. Luckily, they knew their patient health records from the five clinics they owned were safe and secure, not flying across the state of Oklahoma. Implementing eClinicalWorks' comprehensive EHR in 2009 had allowed Norman Regional to streamline practice operations electronically and store all data remotely. The two remote data centers, storing all patient information, were unharmed, allowing staff immediate access to the system.

“I happened to be the hospitalist on call that night at one of our other two hospitals, admitting 10 patients. They were traumatized and in a lot of pain,” said Dr. Brian Yeaman, Chief Medical Informatics Officer. “With

the ability to get history or relevant information, such as medication lists and drug allergies, I was able to ultimately obtain information from the HIT exchange and manage their care faster. I had one patient in the ICU who had terrible trauma, and I kept giving him pain medication. With the HIE exchange, I could access his medical record and became aware he had reoccurring back pain, with medication prescribed. Thus, I knew I would have to provide additional medication to treat his injuries suffered during the tornado, as he had some degree of tolerance. The value of our partnership with eClinicalWorks was proven that night.”

Thousands of Norman Regional patients were displaced, losing their primary access to medical care. A handful of women were scheduled to give



birth the following day and didn't know where to be admitted, or who their doctors would be. Using eClinicalMessenger, a care management tool that enhances communication between the physician's office and the patient, staff immediately notified the women of their canceled appointments and where they were relocated. With the use of smartphones, eClinicalMobile — which provides real-time access to vital information when away from the office — proved to be a lifesaver for the providers as well. When a patient called, providers could access patient medications, medical history, and any other medical records needed.

“We were especially thankful that we always had access to our records. Our information was located in our data centers, unharmed, and we had immediate access,” said Robin Yoder, a supervisor of ambulatory EMR support and a certified eCW trainer.

Tuesday, May 21, 2013

Just 24 hours after the tornado, staff regrouped with two eClinicalWorks support individuals housed in Norman. Helping to set up a virtual physician's office, eClinicalWorks support had all telephone calls forwarded to Norman's IT building. Having nursing backgrounds, support personnel were able to answer the thousands of calls that came flooding into the center.

“I walked in, and my patient was on the phone. He had lost his home and was suffering from high blood pressure and high cholesterol, was a diabetic, and had lost all of his medications,” said Dr. Misty Hsieh. “He knew the number to call, and luckily we had immediate access to his medications and knew exactly what he was taking. He actually goes to the local medical base to pick up his prescriptions, and they do not accept electronic prescriptions, but they did accept electronic faxes. With eClinicalWorks, we had the ability to request refills for all of his medications.”

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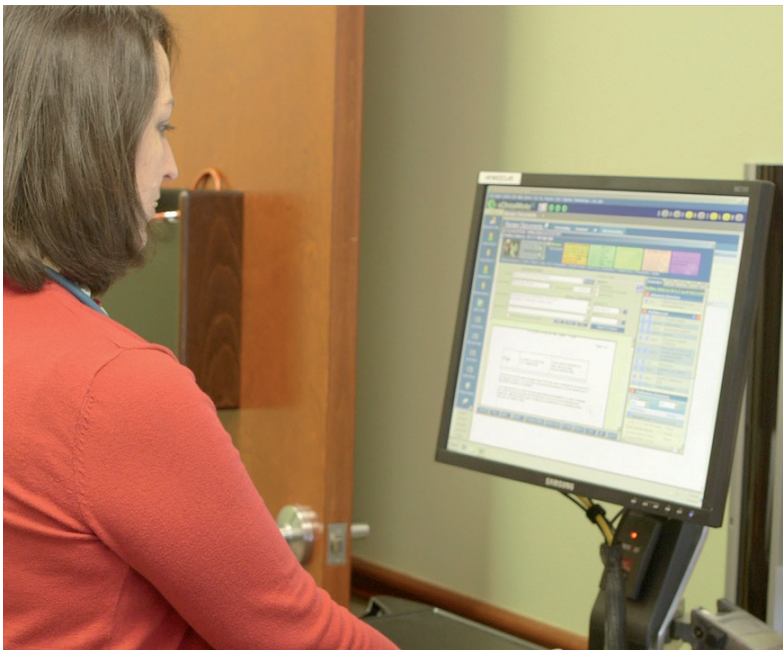
Robin Yoder, a supervisor of the ambulatory EMR support and also a certified eCW trainer

Most providers were forced to set up their offices remotely, wherever they could find internet and electricity, and used eClinicalWorks to access patient medical charts. All questions and information were communicated with the patients quickly. Meanwhile, staff searched for office space and signed a lease in Norman for one family medicine and internal medicine clinic. Space for the second family medicine clinic was soon located, as well as for pediatrics, OB/GYN, and general surgery clinics. Fortunately for Norman Regional, the rollout of the new desktop infrastructure was working throughout the organization. The second phase of the virtual desktop project was actually in the pilot phase at one clinic. Due to this, staff was able to set-up a virtual physician's office in the department on Tuesday morning. Overall, Norman Regional experienced only very minimal disruption to their business.

“It was amazing how many patients called in the days following the tornado,” said Adam Lewis, manager of technology telecommunications for Norman Regional Health System. “Having the ability to access all the data on a particular patient was invaluable during this crisis, and I think was very reassuring to our patients and physicians.”

Typically, it takes up to 60 days to set up a clinic. Norman had only a week. While clinicians were manning the virtual office, tech teams pulled together and rapidly began preparing for an expedited rollout of several new physician offices. The infrastructure to support the clinics was increased, and a new master image was enhanced and ready to go. Norman deployed just over 100 new virtual desktops in the span of a couple days.

Wednesday, May 22, 2013



By Wednesday morning, providers and staff moved into the new office, answering phones. A fair number of calls continued to be patients simply asking what to do. Even a local specialist, unaffiliated with Norman, was unsure of the health system’s status.

“A local radiologist called me because I had a patient who was supposed to have a CT scan at Moore Medical Center on Tuesday,” said Dr. Dean Hinz. “He was rescheduled to another location, and the results showed an abnormality which had to be addressed immediately. The radiologist called my cellphone not knowing what to do and where to send the files. Because we still had access to all the charts, we were able to address the patient’s condition and treat it immediately. We were able to seamlessly connect and treat patients.”

Providers and staff quickly realized how vital the eClinicalWorks technology was to continuous delivery of care. Not only had the system ensured that records weren’t physically scattered across the state; there was no need to piece five years’ worth of medical histories back together. Instead, everyone could essentially pick up where they left off as if nothing had ever happened. Patients were also extremely relieved to discover their medical records were stored and saved from the effects of the storm.

“After the tornado, it was gratifying to see how concerned patients were,” Kriss said. “We had total continuity of our practice.”

Dr. Hinz, a physician for Norman Regional Health Center since 2008, was especially grateful for Norman Regional’s IT team during this time of crisis. “I have to give a shoutout to our IT people. I did not realize how many we had until the tornado hit,” he said. “You assume there’s one or two guys because that’s all you see in your office, and then an army of 20 or 30 people descended, and in a few hours everything was hooked up and running.”

Exactly a week later, on Monday, May 27, 2013, Norman Regional was back to normal operations, treating patients. Additional locations were deployed in the following weeks as space became available.

Personal Experience

For each individual at Norman Regional, the storm became a traumatic situation, and for one staff member, the line between personal and work life quickly blurred. “You never think it is going to be you,” Kriss said. “We experienced an F5 back in 1999, and we thought it could never happen again.”

While Kriss knew her staff were all OK, she didn’t know much else. It was dark, cellphones began to run out of power, and there was a stench of gasoline. Kriss received a call that her youngest child was all right, but she was not entirely sure about her teenage daughter. Uncertain whether to go find her daughter or stick with her staff, she decided it was best to seek her daughters. She found them unharmed. Kriss and her family moved into a hotel temporarily, and sent a text message to all her staff the next morning, assuring them everything was going to be OK.

Moving Forward

One year after the tornado, staff at Norman Regional are continuing to move forward and rebuild. By the end of June 2014, the health system will have upgraded to eClinicalWorks Version 10, a quicker and more intuitive EHR. V10 will deliver additional Progress Note tabs, quicker orders, and a built-in ICD-10 search. Norman Regional will also take advantage of eClinicalWorks Scribe to turn free text and voice dictation into structured data, eClinicalTouch for an iPad-based EHR, and eClinicalMobile for charge capture, schedules, and other mobile features. As a result, Norman is planning to expand and grow, adding new providers and increasing collaboration.

