eClinicalWorks

Norman Regional Health System

Challenge

On May 20, 2013, the Moore Medical Center, part of the Norman Regional Health System, was hit by EF-5 tornado, destroying the entire hospital. Left were concerned patients, worried about whether or not their medical information remained accessible.

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.

Practice Overview

Norman Regional Health System is a multi-campus system comprised of three hospitals, 460 licensed beds, 21 clinics, 12 primary care clinics, and nine specialty clinics, situated in South Central Oklahoma. 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 ePrescribing and lab interface features to further automate physicians in an effort to foster better, more efficient care in both the inpatient and ambulatory settings.

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 systems 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 amongst us all."
– Audra Cook, MD.

Patient Engagement

Many patients at Norman Regional utilize the eClinicalWorks Patient Portal daily to communicate with their primary care 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 reports before a visit. Since communication is a key to preventative medicine, the Patient Portal is a valuable aspect of the eClinicalWorks comprehensive EHR solution. At first, patients were hesitant to log-in, however, they quickly realized the technology will improve their overall health and well-being. On average 8,000-10,000 messages are sent annually, communicating directly between the provider and patient for sending patient reminders, statements, patient education materials and lab results electronically.

"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 to me. I would like to be as paperless as possible."

Misty Hsieh, MD.

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 preventative 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, 60-70 patients were treated monthly for preventative 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 upmost 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 setup to synchronously and asynchronously replicate data at each location – 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 product 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 in their Personal Identification Number (PIN).

Monday, May 20, 2013

On May 20, 2013 a disastrous 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.

"You don't ever prepare for the entire source of your livelihood to simply go away." – Tammy Kriss, clinic manager.

"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." – continued Tammy.

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

Dr. Brian Yeaman, Chief Medical Informatics Officer.

Staff at Norman Regional immediately wondered how to pick up the pieces. Luckily, they knew their patient health records from their five owned clinics were safe and secure, not flying across the state of Oklahoma. Implementing eClinicalWorks comprehensive EHR in 2009 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 for staff to have 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. With the ability to get history or relevant information, such as medication list 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." – Dr. Brian Yeaman, Chief Medical Informatics Officer.
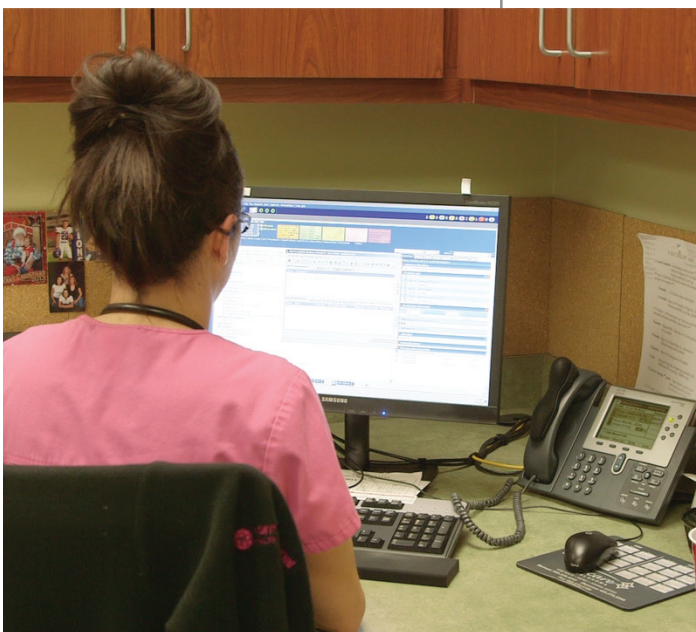
Thousands of Norman Regional patients were displaced, losing their primary access to medical care. A handful of women were scheduled to give birth the following day, and didn't know where to be admitted; unsure of whom their doctors would be. By harnessing the power of eClinicalMessenger, a care management tool that enhances communication between the physician office and the patient, staff immediately notified the women of their canceled appointments and where they were relocated. With the use of smart phones, eClinicalMobile, which provides real-time access to vital information when away from the office, proved to be a life saver 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." – Robin Yoder, a supervisor of the ambulatory EMR support and also a certified eCW trainer.

Tuesday, May 21, 2013
24 hours after the tornado, staff regrouped with two eClinicalWorks support individuals who were housed in Norman. Helping to set-up a virtual physician office, eClinicalWorks support had all telephone calls forwarded to Norman's IT building. With nursing backgrounds, support answered 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. 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." – Misty Hsieh, MD. Most providers were forced to set up their offices remotely, wherever they could find internet and electricity, using eClinicalWorks to access patient medical charts. All questions and information were communicated with the patients quickly. All the while, staff searched, located and signed a lease for an office located in Norman for one of the family medicine and internal medicine clinics, which a cardiologist practice had recently vacated. Other space was also quickly located for the second family medicine clinic,as well as the 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

office" in the department Tuesday morning. Overall, Norman Regional experienced only a very minimal disruption in the business aspect.

"It was amazing how many patients called in the days following the tornado. 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." – Adam Lewis, manager of technology telecommunications for Norman Regional Health System.

Typically, it takes upwards of 60 days to set-up a clinic and 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 C.T. scan at Moore Medical Center on Tuesday. He called and was rescheduled to another location and the results showed an abnormality which had to be addressed immediately. The radiologist called my cell phone 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." – Dean Hinz, MD.
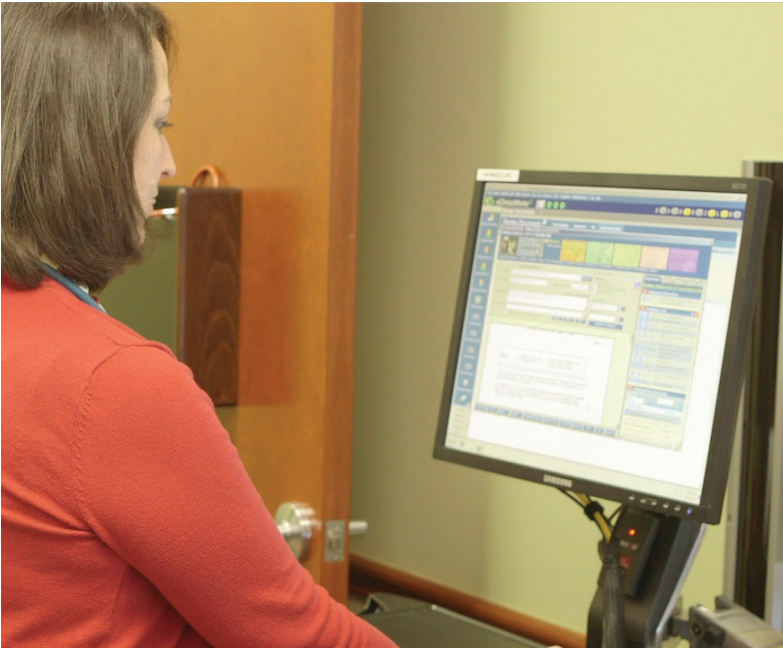
Quickly, providers and staff realized how vital the eClinicalWorks technology was to continuous delivery of care. Not only were everyone's records not spread across the state, but also five years' worth of medical history didn't have to be pieced back together. Instead, everyone could essentially pick up where they left off, like 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. We had total continuity of our practice." – Tammy Kriss, clinic manager.

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 shout out to our IT people. I did not realize how many we had until the tornado hit. 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 , Norman Regional was back to normal operations treating patients. Additional locations were deployed in the following weeks as real estate was made 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. The Clinic Manager Tammy admitted, "You never think it is going to be you. We experienced a F5 back in 1999 and we

thought it could never happen again."

Luckily, she knew all of her staff was okay, but she didn't know anything additional. It was very dark, cell phones began to die, and there had been a stench of gasoline. Tammy received a call that her youngest child was alright, but she was not entirely sure about her teenage daughter. Uncertain about whether to go find her daughter or stick with her staff, Tammy was stuck in a sticky situation; she came to the conclusion it was best to seek out her daughters, and found them unharmed. Tammy and her family were forced to temporarily move into a hotel. The following morning, she sent a mass text message to everyone in her staff, communicating everything was going to be okay.

Moving Forward

Marking the one year anniversary of the tornado, staff at Norman Regional is 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, built-in ICD-10 search, along with multiple more enhancements. 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. According to Dr. Hinz, collaboration with eClinicalWorks will assist Norman Regional in staying technologically savvy.