



## NetRelay Case Study Southwestern Vermont Medical Center

### INTRODUCTION

As part of its ongoing efforts to optimize the delivery of patient care, Southwestern Vermont Medical Center sought to implement a communications system that would help make the process of relaying important information from one clinician or staff member to another more efficient. With the help of on-staff IT experts, the hospital was able to build, from the ground up, a comprehensive, cross-facility communications platform that has created efficiencies, improved workflow and throughput and boosted overall effectiveness.

### THE CHALLENGES

#### **Improving Staff Communications and Workflow**

Southwestern Vermont Medical Center (SVMC) in Bennington, VT is Vermont's premier community hospital and the state's first Magnet Hospital for Nursing Excellence. SVMC is tops in patient satisfaction, garnering four Summit Awards from Press Ganey, an independent patient satisfaction surveyor. SVMC is a 99-bed hospital offering both outpatient and inpatient services to the more than 55,000 people in the towns and villages of Bennington County, western Windham County and Southern Rutland County in Vermont, eastern Rensselaer County in New York and Northern Berkshire County in Massachusetts.

Like all leading healthcare facilities, SVMC continuously strives to improve communications and workflow among its clinicians and other hospital staff with the goal of attaining the highest level of patient care. Until 2010, communications such as lab and radiology results, patient discharges, housekeeping needs, patient dietary needs and meal orders, and even code alerts, could involve numerous steps, repeated phone calls and multiple alerts – basically, a long and inefficient process.

#### **Speeding Lab Results to Physicians**

More importantly, when lab technicians needed to relay a critical lab value to a physician and receive an acknowledgment that they had seen it, the average time-to-acknowledgment would be around 45 minutes. That's because, in order to reach a patient's physician, the lab would typically have to contact the nurse in the department, who would then have to find, page or phone the physician, who would then have to acknowledge receipt of the lab value. The lab also has to record and keep an audit trail of critical lab value acknowledgements and acknowledgement times for maintaining accreditation with CAP (the College of American Pathologists) and reporting to TJC (The Joint Commission), adding another step to the process.

“We wanted a process that is automated and would make the lab communications more streamlined and efficient,” said Trey Dobson, Chief Medical Officer at Southwestern Vermont Medical Center. “We also needed to have automatically escalating notifications for the steps in the process, because when the lab had a critical value to report to the physician who ordered it, they would typically have to page the physician, and if there was no response, then they would have to go to the next step, which would be to call their office or even their home. The next step would be to call the covering physician. Keeping people on top of these steps until the completion of the process is crucial to speeding up physicians’ time-to-decision and time-to-treatment.”

Even when a physician would be looking for a lab result, there could be inefficiencies if they repeatedly had to go check on whether the results were ready in between seeing patients.

“I would keep checking the computers to see if a particular patient’s results were back yet, sometimes leaving a patient or keeping other patients waiting,” said Dobson. “Then I could be unavailable and unable to check for an hour because I’m involved with a critical patient. A great deal of time could be wasted --- anywhere from 20 minutes to two hours.”

In addition to interrupted workflow, there was interrupted patient care.

“I might not be able respond immediately to a critical or urgent lab result notification for a patient because I’m with another patient who may be critical,” explained Dobson. “Or, I would leave a patient to respond to the lab contacting me about another patient when, about 75% of the time, it wasn’t really that important but they had to tell me about the lab value. So, I have completely just left that patient, which is rude, and now have to go back to them and restart.”

### **Automating Critical Value Message Acknowledgement**

“In addition to replacing the process of manually phone calling with one that automatically sent the critical or urgent value to the physician, we wanted to be able to close the loop more easily and obtain that critical value acknowledgement with a time stamp,” said Karen Bond, Lab Director at Southwestern Vermont Medical Center. “Both The Joint Commission and CAP require us to track and report on critical value acknowledgements. The Joint Commission wants to know that we closed the loop and received the acknowledgment, while CAP wants to know that it was received in a timely manner.”

### **Managing Shared Waiting Area for Lab and Imaging Patients**

When SVMC opened a shared waiting area for lab and imaging patients, the plan was that after the patient came in and registered for their service, a call would be placed to the lab or imaging department to notify them. However, there wouldn’t always be someone available to pick up the phone or respond to a page.

“The situation could get crazy,” as one imaging technician reported. “The phone was constantly ringing and my pager would go off every four minutes.”

As a result, there were a couple instances in which a patient would be waiting to do their lab or x-ray for over an hour until someone noticed they had been sitting in the waiting area a long time. No one would know they were there or have called the appropriate department.

### Seeking a Unifying Communications Solution

SVMC had been using manual tools and processes to not only communicate lab and radiology results and patients' waiting room status, but to relay all information that needed be shared across departments --- the emergency department, patient admissions and discharges, housekeeping, the cafeteria, the lobby attendants, etc. The hospital surveyed its department managers to determine what communications capabilities they would like to have and then approached its IT team about implementing a more automated and efficient system.

### THE SOLUTION

“Since we are a Magnet Hospital, all clinicians and nurses are involved in the process of improving efficiencies, communications, and throughput, and reducing the number of FTEs,” said Charles Still, IS Project Manager at Southwestern Vermont Medical Center. “That makes a difference in how we deliver patient care, but it also facilitates a collaboration between IT and the clinicians, nurses and various departments to create a workflow that works across all those areas.”

Through working with Dobson, Bond and the directors of other departments, Software Developer Charles Wells developed NetRelay, a product that grew from serving as an automated system of alerts to becoming a comprehensive, HIPAA-compliant communications platform.

NetRelay provides improved message delivery and tracking when relaying information and activity statuses across an organization, enabling more effective staff communications and workflow. What NetRelay does is take any data in the Healthcare Information System (HCIS) and turns it into a secure message that is sent to mobile devices, NetRelay Messaging Consoles and/or through the Interbit Data NetDelivery hospital data exchange to email, fax, etc.

With NetRelay, hospitals can enable automatic message escalation for important messages such as critical lab values, along with the ability to define alternate contacts and/or contact methods. Physicians can determine the time intervals set between messages alerting or reminding them to respond and acknowledge a critical value. Message escalation can viewed via the NetRelay Messaging Console in the Lab or other appropriate department. The Message Consoles complement any message boards that may already be in use. Messages can be filtered based on importance, so only those messages a physician considers important are sent and escalated.



## Improving Physicians' Throughput and Response Times

“With NetRelay, I can be with a patient and get a critical lab value message on my Apple iPhone or Watch and acknowledge it right then and there without leaving the patient,” said Dobson. “I can then address the critical value as soon as I’m done with the patient I’m with currently. If it’s really critical, I may need to excuse myself, but most of the time, I can wait until I’m done with my current patient to address the critical value. There’s no longer the need to go to the computers constantly to check for a lab result; I know I’ll receive it directly as soon as it’s available.”

“NetRelay has helped significantly reduce physicians’ time-to-decision and time-to-treatment for patients with critical lab results,” added Dobson. “We have also reduced the number of interruptions to patient care, as we no longer have phone calls or pages constantly coming from the lab or an ED nurse. As a result, our responsiveness to patients has improved dramatically.”

## Enabling Image Capturing and Sharing

NetRelay’s ability to capture HIPAA-compliant photos aids in treating patients as quickly as possible and providing documentation. A photo of an EKG or imaging film can be helpful when one physician is consulting with or turning a patient over to another.

“I can be seeing a patient with something infectious and need to call another physician to admit them, so NetRelay allows me to take a picture real quick to show the other physician as I explain how I started the patient’s treatment,” explained Dobson.

More importantly, photos can serve as documentation of the patient’s condition and become part of the patient record in the HCIS, accessible only via an electronic patient record so they are secure and highly confidential. This feature will be of most benefit in patient cases resulting from violent crime.

## Improving Lab Workflow

NetRelay automatically picks up critical and urgent lab values entered into the HCIS and immediately sends them to the appropriate physician or other clinician for acknowledgment. The lab technicians don’t need to look at every lab result to find the critical or urgent values and then manually contact the clinicians and obtain the acknowledgement. This information can be provided on NetRelay Messaging Consoles as well as existing status boards.

“This is great for our lab technicians from a workflow standpoint because they don’t have to stop what they’re doing to go make a phone call. They know those results are getting to the physician and they are getting to them faster than if they had to make a phone call,” said Bond.



Patient	Location/Physician	Test	Wait Time
Do, John H	WEST 220A ROOFS, JEFF M.D.	TROPI 21	00:03
Queshi, Paul H	WEST 331D WELLS, TOM M.D.	SODIUM 104	00:07
Do, Jane P	EAST 324B JONES, MARK M.D.	GLUCOSE 131	00:10
Hamill, Mark H	WEST 220A KIMMACHEE, THOMAS M.D.	POTASSIUM 26	00:12

“With NetRelay, our lab technicians can focus on their work without missing any critical values,” added Bond. “Critical values are sent automatically to the physician as well as to the lab tech. The only time they need to pay attention is when the physician is not responding.”

### Reducing Critical Value Acknowledgement Times

“Looking at the critical values for just the Emergency Department and inpatients, the physicians’ response times are within the first 10 minutes --- eight and a half minutes on average --- which is really amazing. The outpatient values take longer because we do need to call out to the physician --- about 25 minutes on average,” said Bond.

When SVMC did a study on the times NetRelay recorded for critical lab value acknowledgements for the ED, inpatients and outpatients, the average time-to-acknowledgement was found to be 15 minutes, whereas the average time-to-acknowledgement before NetRelay was 45 minutes. SVMC is saving 30 minutes on average with its critical value acknowledgements.

“NetRelay is a great system,” said Bond. “It contacts the physician automatically, so there are a lot less phone calls now, which the people in the ED especially like. We’re getting the right person and not being put on hold. We’re no longer waiting for a verbal read-back.”

NetRelay also closes the loop on the critical lab value acknowledgement process by tracking all the steps in the process.



“It captures the acknowledgement and then documents what the physicians did,” explained Bond. “We don’t need to think about it at all. It just happens.”

### Simplifying Reporting

As far as reporting for CAP and TJC, the data on acknowledgements and acknowledgement times is all in the NetRelay database, automatically recorded when the critical value is sent, received and acknowledged.

“There’s no playing around with data, or looking around for a piece of information, because it’s right in front of you,” said Bond. “Also, there’s no more forgetting to enter information because it’s done automatically. People are taken out of the equation.”

“I can also just go in and immediately see how we did for our monthly internal quality reports,” added Bond. “I could see if we missed a critical value, but we don’t miss them now with NetRelay. I can drill down to seeing the whole process, not just that the physician was contacted. I can see that the Emergency Department is acknowledging critical values within five minutes. If my staff had to manually intervene, they can easily enter that into NetRelay and I would be able to see that level of detail and not have to go into the HCIS and pull the value.”

Whenever they need to run a report for CAP or TJC, SVMC lab staff can do so with just one click, whereas previously they had to spend hours pulling together the required data.

The reporting data also helps with improving staff accountability. For example, Bond and Dobson can see if there is a particular physician who is not responding to and acknowledging values and use that data to provide feedback and proof to that employee.

### **Tracking Patients Efficiently in the Lab and Imaging Waiting Room**

With NetRelay, patients registering in the shared waiting room for the Lab and Imaging departments are assigned a number and, via a NetRelay Messaging Console in the respective departments, the Lab and Imaging are notified the patient is there and ready to be taken for their service. With the number assigned to the patient, the Lab and Imaging can pull up their scan requisition and then order it in the HCIS.

The Lab and Imaging no longer have instances where a patient is sitting and waiting without anyone knowing it, because the process of registering the patient automatically places them on the list of waiting patients on the NetRelay Messaging Console. The Console indicates the service the patient is waiting for and tracks how long they've been waiting.

“The process can’t fail as long as someone is looking at that Console,” said Still.

### **Increasing Nursing Staff Efficiency and Productivity**

NetRelay Messaging Consoles are set up in numerous important areas across the hospital --- nurses' station, the Emergency Department, the Intensive Care Unit (ICU), the cafeteria, housekeeping, and the lobby (for handling patient discharges), as well as the lab and radiology/imaging.

The Messaging Consoles serve as status boards in conjunction with existing status boards and benefit no one more than the nurses who are on their shift and working with the patients. With the Messaging Consoles, nurses can quickly and easily see which physicians and other nurses are assigned to each patient, any patient allergy confirmations, whether medication lists are needed, any pain reassessments needed, each patient's dietary needs (whether a meal has been ordered or delivered), and any order acknowledgements needed.

“Our nurses are very happy having the Messaging Consoles to provide them with patient statuses,” said a Clinical Nursing Specialist at Southwestern Vermont Medical Center. “The nurses have increased efficiencies and improved their workflow and overall productivity.”

From using NetRelay and the Messaging Consoles, Southwestern Vermont Medical Center was also able to improve nursing pain reassessment documentation from 78% to 96% through the implementation of automated reminders.



## **Finding NetRelay Applications Across the Organization**

Once the physicians, nurses, lab and radiology were up and running with NetRelay, Southwestern Vermont Medical Center looked at other areas in the facility that could benefit from improved communications and workflow.

Lobby – Patient Discharges – The volunteers who staff the lobby desk are responsible for retrieving discharged patients from their rooms and transporting them in a wheelchair to the pick-up area. Instead of being called on the phone every time there's a patient discharge, they receive the discharge information on a NetRelay Messaging Console in their area.

Housekeeping – Southwestern Vermont Medical Center is planning to use NetRelay to notify housekeeping staff when a discharged patient's room is ready for cleaning. When the Lobby staff records in NetRelay that a discharged patient has been picked up from their room, this will notify Housekeeping the room is ready via a NetRelay Messaging Console in their department.

Food Service – Nurses no longer have to call the cafeteria to see if a patient's meal has been ordered or delivered, as they can see the meal status on the Messaging Console in their nurses' station. The cafeteria benefits from not receiving calls throughout the day from nurses checking on the status of patients' meals.

## **CONCLUSION**

Whenever outside parties such as CAP auditors and The Joint Commission have come in to inspect the facilities at Southwestern Vermont Medical Center, they have noticed and commented on the NetRelay communications system.

“The CAP auditors are lab personnel from other facilities who are coming to inspect our lab standards and they tell us they have not seen anything like this,” said Bond. “The last time the Joint Commission was here, they were impressed and said they hadn't seen an internally-built communications system this sophisticated.”

“There are several different software applications out there that give clinicians the ability to have HIPAA-compliant communications with one another, but NetRelay is all of them rolled up into one, so you're using one application and not five,” said Dobson. “NetRelay makes it easy to receive and respond to a message. I'll get a beep on my phone or watch and if I'm in a meeting or with a patient, I can just glance down and see what it's about, then step out to address it when I can. I no longer have to worry about having a pager go off repeatedly and feeling compelled to leave a patient and go find out what it's about. There are no longer all the interruptions to our workflow and to patient care.”