

## **Case Study: Healthcare System**

### **Better Communication Equals Better Patient Care and Helps Meet Quality Goals**

Since its inception more than 50 years ago, this healthcare system has been a leader in providing high-quality healthcare services to their region. Today, it is one of the largest public healthcare systems in the nation with over 80,000 admissions and greater than 1,000,000 outpatient and ER visits each year. This system is highly regarded for its exceptional patient- and family-centered care. Their patient, physician and employee satisfaction rates are some of the most admired in the country, and the system is recognized as a national leader in quality care surpassing national, and local averages in providing quality care in overall quality of care and overall patient satisfaction

#### **The Situation:**

The system's Information Technology Department is responsible for the information technology infrastructure for all six hospitals in the enterprise and is continually looking for process improvement opportunities as well as problems that may occur because of diverse and siloed systems. In 2007, a system wide problem was identified that would require focus and resolution. One or more departmental systems were in use in the laboratory, pathology, radiology, adult and pediatrics cardiology and admissions areas of the hospitals. Among the departments reviewed nine different information systems were in use and 8 different fax server technologies. The use of several different Fax server technologies was cause for concern as faxes were not being tracked and audited, thousands of faxes were not being picked up and when a fax number was changed, if the change was picked up by the credentialing department, the process of updating each of the fax systems was manual and time consuming. The use of fax is still important to to the system, however, without clear management, more problems were being created than were being solved.

Within the delivery system approximately 9,000 faxes are sent each day. While the implementation of the EPIC system across the enterprise is expected to decrease the volume somewhat, particularly within the four walls of the hospitals, the use of written, scanned, faxed and e-mailed communications with the admitting, attending and personal physicians is not going away anytime soon.

In the admitting areas, it is the policy of the system to notify a patient primary care and/or admitting physician when one of their patients is admitted or discharged. In addition, weekly census reports are sent to the physicians with a summary of their patient's activity. In the ER and the other admission areas, admitting face sheet and discharge summaries are sent to the patients primary care physician and to their admitting physician if different from the primary care physician and courtesy letters are sent to patient's physicians that are out-of-network to keep them informed about their patient's care.

In the Radiology areas, radiology reports are sent to the ordering physicians as soon as they are available. The same goes for lab, pathology and cardiology reports. With over 1,000 physicians with admitting privileges and nearly 30,000 physicians currently in our data base that we may need to correspond with, IT must be able to deliver information to the physicians according to their preferences. With so many different delivery methods, this was impossible.

**The Solution:**

After researching several competitive companies and their solutions, Holon's Process Adaptive Interoperability Framework was selected.

"In a nutshell, we worked with Holon to implement a system to get the information needed by the physicians to them when, how and where they want it, said the CIO. We are now comfortable that our communications with the physicians are being tracked, picked up, and are being delivered in a HIPAA compliant process. Keeping our physicians informed and happy and giving comfort to physicians outside of our network helps us maintain and build our physician relationships. We have been very impressed with Holon's flexibility and willingness to work with us to develop a cost effective manageable process of communicating with physician outside of our four walls."

The system contracted with Holon about two years ago to develop a single comprehensive communication framework that would allow them to track physician delivery preferences and information, maintain audit trails of sending and receipt of transmissions, and assure physicians are getting the information they need when, where and how they need it. Holon takes in scanned images, faxes, print streams and HL7 data feeds and routes the information to the physicians according to their preferences. That is, they can chose not to receive certain information, to have information faxed to them in their location based on the day of the week, to have information sent to them by e-mail to the address of their choice or if they prefer, they can access the originating systems to look up the needed information. The Medical Staff office and Information Technology (IT) share responsibility for maintaining physician contact information. IT monitors the system reports to track how many fax communications were sent and how many failed by physician and by type for each of the communication types defined. If the report indicates failed communications, IT can easily go into the fax utility and change the number and automatically resend the fax or delete the fax.

Emails are encrypted when they leave the systems network and can be received by any physician that is part of the physician data base.

In the physician office, staff with access to their physician portal can also access the easy to update physician preference screen as seen below to update their own profiles any time. This allows them to change preferences if their technology, environment or workflow changes.

Physician Preference ✖

<b>Demographics</b>		<b>Fax Number/Email Address</b>	
Provider ID	<input type="text" value="55555555"/>	Fax 1 (Primary)	<input type="text" value="404-555-2222"/>
First Name	<input type="text" value="Doctor"/>	Fax 2	<input type="text" value="770-555-3333"/>
Last Name	<input type="text" value="Test"/>	Fax 3	<input type="text" value="404-555-9584"/>
Address	<input type="text" value="1234 Anywhere"/>	Fax 4	<input type="text"/>
City/State	<input type="text" value="Someplace"/> <input type="text" value="CA"/>	Email	<input type="text" value="mail@someplace.com"/> <small>Note: Confidential patient results may be sent to this address.</small>
Zip	<input type="text" value="30047"/>		
Office Phone	<input type="text" value="404-555-1111"/>		
Comments	<input type="text"/>		
Results After Discharge	<input type="text" value="Y"/>		

  

Report Type	Inpatient	Outpatient	Report Type	Yes
Cardiovascular	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	ER Visit List	<input checked="" type="checkbox"/>
Laboratory	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Discharge Facesheet	<input checked="" type="checkbox"/>
Pathology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Patient Census	<input checked="" type="checkbox"/>
Mainframe Reports	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Admitting Facesheet	<input type="checkbox"/>
Transcriptions	<input type="checkbox"/>	<input type="checkbox"/>	Observation Facesheet	<input type="checkbox"/>
Radiology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Outpatient Facesheet	<input checked="" type="checkbox"/>
Lumedx	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Emergency Room Facesheet	<input checked="" type="checkbox"/>
			Primary Care Member List	<input checked="" type="checkbox"/>
			ER Visit Letter	<input checked="" type="checkbox"/>
			Inpatient Stay Letter	<input checked="" type="checkbox"/>

  

Fax Distribution Destinations		
Day	Primary	Secondary
Monday	<input type="text" value="404-555-222"/>	<input type="text" value="770-555-333"/>
Tuesday	<input type="text" value="404-555-958"/>	<input type="text" value="770-555-333"/>
Wednesday	<input type="text" value="404-555-222"/>	<input type="text" value="770-555-333"/>
Thursday	<input type="text" value="404-555-958"/>	<input type="text" value="770-555-333"/>
Friday	<input type="text" value="404-555-222"/>	<input type="text" value="770-555-333"/>
Saturday	<input type="text" value="myemail@son"/>	<input type="text" value="None"/>
Sunday	<input type="text" value="myemail@son"/>	<input type="text" value="None"/>

### The Result:

At a one-year checkpoint, the system realized the following results:

- Over 9,000 faxes or e-mails are being sent through the system each day and the number is growing.
- They used to have 8 systems that needed to be maintained. Often, when one or more systems were over looked in the update process it would cause a failed communications. Now they have a single point of failure and a single point of correction. Eight analysts used to investigate failed faxes and update the fax server systems, each spending as much as 10 hours per week. Now one person updates one system. The analysts are freed up to up to support and trouble shoot applications for which they are responsible.
- Physician satisfaction in the area of patient communications has improved. Most physicians like getting e-mails rather than paper faxes. E-mails can be directly uploaded into the EMRs. IT rarely receives complaints about the system – less than one per week.
- The implementation of the Holon Framework allowed the system to sunset a fax server system that was antiquated and failing.

- They now have the ability to report on how many communications were sent and how many failed by physician and by communication type and have access to a comprehensive audit trail of all information delivered to the physicians.
- They are now also using the system for all in bound out bound desktop faxing – people no longer have to get up to go to the fax machine.
- Outbound – The pilot physician in this case had his own EMR. He often received faxes sent to his fax machine. He then had to scan and up load the faxes into his EMR. Now anyone can send a TIF or PDF using the Holon Framework server and a dedicated user mailbox and line. Electronic messages can be sent from any one that he chooses to give his number to and inbound communications can be easily saved and uploaded to the EMR. The plan is to expand this delivery mechanism to other physician offices that may already have an EMR or that do not opt to use the hospital endorsed EMR.

Documents that originate as faxes and are converted to e-mails can easily be routed where ever needed without re-faxing and degrading the quality of the images. For example, in each of the five hospitals, the pathology departments have elected to receive inbound faxes using the Holon framework allowing the faxes to be converted to e-mail PDFs. Each pathology department has a dedicated inbound line with their own Outlook mail boxes. Other departments such as Clinical Resource Managers, their insurance carrier for their employees, Patient Financial Services and HIM all send and receive messages and documents securely and reliably using the Holon Framework.

The analyst responsible for the Holon Solutions sums it up by saying “For me Holon is great. Holon solutions really have made my position into a whole new problem solving job. As people find out that we have desk top communication ability they want it. We are always coming up with new ways to use the framework and designing new ways to help people communicate better, to save time and of course to save paper.”