

California Rural Health Information Technology Consortium

# Southern Inyo Hospital HIT Assessment



Critical Access Hospital Technical Assessment

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## Background

In March 2010, the Rural Health Information Technology Consortium (RHITC) set out to assess the readiness of five Critical Access Hospitals (CAH) to demonstrate Meaningful Use based on the Center for Medicare Services (CMS) proposed definition. Tim Weir, as an Independent Consultant was assigned to perform the evaluation of Southern Inyo Hospital which is part of Southern Inyo Healthcare District (SIHD) located in Lone Pine, CA.

Southern Inyo Healthcare District serves an area of almost 10,000 square miles, the largest Healthcare District in California. It is located in the Eastern Sierras, at the foot of Mt. Whitney and includes Death Valley. It was formed in 1949. The hospital has 4 acute beds and 33 skilled nursing beds. Services provided include a Rural Health Clinic, Skilled Nursing Facility, Clinical Laboratory, Radiology with Ultrasound and C.T., Physical Therapy, Emergency Room, and provides hospice services. The nearest hospitals are 60 miles north and 80 miles south. Both of the closest hospitals are also rural hospitals.

The District was surveyed in January 2001 and certified as a Critical Access Hospital as of April 1, 2001. The hospital is also designated as a Sole Community Provider and a Frontier Hospital.

Our latest volume statistics from FYE June 30, 2009 include 1,504 ER visits, 7,022 Rural Health Clinic visits, with 11,237 total hospital inpatient days.

For more information about Southern Inyo Hospital visit [www.sihd.org](http://www.sihd.org).

The assessment involves reviewing IT Strategic Plans as well as other documents, then surveying and interviewing key staff throughout the hospital. In preparation we developed a standardized set of questionnaires for the CEO, CFO, CNO, IT Director, Lab Director, Radiology Director and Pharmacy Director using web based survey tool, SurveyMonkey which was completed before interviewing each of these individuals to get a more in depth picture of the hospital's readiness or plans for demonstrating meaningful use.

## Observations

### Executive / Finance

Lee Barron is the CEO and CFO of the Southern Inyo Healthcare District. She is painfully aware of the challenges associated with obtaining meaningful use. She has been working with vendors to establish a technology plan that makes sense. While the technology plan is not complete much progress has been accomplished to date on the plan. With limited funding, managing aging Information Technology (IT) infrastructure and applications with limited capabilities serving the Hospital and remote clinic has been challenging.

Most of the work to accomplish is dependant on funding which is not guaranteed. The Skilled Nursing Facility (SNF) is the biggest revenue generator which has 33 beds and is dependant on California's budget and timely Medi-Cal reimbursement.

The network infrastructure needs to be upgraded due to reliability and availability issues which includes a network redesign, replacing the Internet service access, wireless bridges between the clinic and the hospital, and other basic infrastructure. Replacement Internet service access has been in negotiations as part of a grant for rural hospitals over the last two years and has still not been delivered. Availability date for new Internet Service access is still unknown.

The existing Hospital Information System (HIS) needs to be replaced due to its inability to support meaningful use criteria and automation requirements associated with Electronic Medical Records (EMR). They are currently looking at Claris and negotiating with Healthland for this new system. There are plans in place to purchase a new Pharmacy system (MDG Medical) in May 2010. The current Lab information system is being evaluated to determine whether it will be able to interface to the new HIS system or whether it should be replaced. The Radiology systems are expected to integrate well with the new HIS system.

SIHD has substantial reliability problems with their aging network, server, and workstation infrastructure as a whole. As a result they are uncomfortable installing a new HIS system using Electronic Medical Records without completing network upgrades and limited workstation upgrades first. There are a lot of up front costs which need to be carefully timed or they risk not having the funds to pay the bills. Reliability of the network could significantly hamper adoption of electronic medical records.

Lee has indicated that they expect to have 0-24% of the meaningful use criteria met by October 2011. Complete compliance with meaningful use criteria is not expected until month?, year? based on anticipated funding and available resources.

## Nursing

Denise Lauffer is the director of nursing. They currently do not use electronic medical records while administering care in the clinical areas. They have been relying on paper medical files to track patient information for years and their processes have been sufficient given their existing limitations and capabilities.

She wears many hats in the organization... Pharmacy manager, Pharmacy Dispensary, Emergency Room Manager, Quality Assurance Manager, Disaster Preparedness, Employee Health.

Denise is somewhat aware of changes being planned for meaningful use. The biggest concerns on her part is training, dealing with the struggle that comes with change, cultural changes related to new processes, and the fact that some people don't have computer skills.

## Information Technology

Doug Burkhardt is the Director of Information Technology. He was hired five months ago. Previously there was no permanent Information Technology (IT) staff at SIHD. Current IT staffing levels requires this position to be a jack of all trades. He provides support for desktops, servers, network, network security, and any other IT related need.

The network consists of cable modems connected to firewalls then to daisy chained switches. There are three distinct networks in the Hospital, one for general users (Internet access), one for HIS users (no Internet) and one for the radiology systems (Internet Access). The clinic has two networks, one for general Internet access, the other for HIS access. When users require both Internet access and HIS access, dual NIC cards are installed in the workstations. There is a wireless bridge which is the sole connection to the clinic which extends the HIS network. A dedicated firewall and Internet connection is used to segment the radiology systems so that GE has the capability to provide remote support via VPN for contracted equipment. The radiology department also has a web site being hosted where approved personnel can access radiology images and results remotely. The network as a whole is fragile and not sustainable from Doug's perspective. The bridges go down on average twice a month, which segments the clinic users from the HIS system hosted in the hospital anywhere from a couple hours to a day or two. The radiology systems cannot talk to the HIS system due to segmentation design. The cable plant and switches are problematic and difficult to support. DHCP is served from a cable modem firewalls which has limited functionality to troubleshoot and manage IP address allocations.

Workstations vary in age which can range upward of six or seven years old running Windows XP/Pro, XP/Home, or Vista. SIHD has no domain control to assist in the management and control of workstations/user rights or privileges. Each user has admin rights to a locally administered machine. Windows Updates and Anti-virus patches are maintained through auto-updates configured on the individual workstation. Typically out of 48 workstations, one workstation a week has some failure which can take up to a day to resolve. Malware and Viruses are common problems along with equipment failures.

Doug is making plans to replace the network infrastructure and a number of hospital systems in the next 18 months. These plans are all dependant upon funding.

- The IT support infrastructure includes the cable plant, switch infrastructure, links to the clinic, Internet access links, and replacing an aging phone system with Voice Over IP.
- New server infrastructure includes an Active Directory controller, replacement of the existing HIS system and a new Pharmacy system. It is undetermined at this time whether the Lab Information system (LIS) needs to be replaced for meaningful use purposes.
- The workstation infrastructure will begin a three year replacement program. At the same time some workstations will be rebuilt as they are joined to the domain controller.

Doug anticipates that IT staffing requirements will increase by up to three employees depending on how much care and feeding the new HIS system and associated interfaces require. One person for help desk or tech support. Two analyst positions for managing electronic workflow processes and generating reports for the clinical and finance side of the business.

Doug is aware of the changes being planned for meaningful use. The biggest concerns on his part is for upgrading the aging IT infrastructure, getting the system interfaces to talk, staffing, and training.

## Laboratory

George Lahey is the manager of the Laboratory (Lab). There are two other people on staff in the lab resulting in two people with clinical lab certifications and one assistant.

All Lab requests are received via paper today. The output results are returned to doctors via fax or printed output.

The laboratory has their own LIS from Schuyler House used for tracking in-house work. The system is digitally interfaced with hematology and immunoassay analyzers. The coagulation analyzer in use today has no digital interface resulting in manual efforts to capture results on the LIS. The Schuyler House LIS has no electronic interfaces activated for receiving orders. There is no interface to the current HIS system, as a result patient records have to be manually setup in the HIS and Schyler House LIS system.

The Lab utilizes two external labs. LabCorp in Reno, NV and Northern Inyo Hospital (NIH) in Bishop. LabCorp has a LIS system on site which allows them to generate orders, track and receive results electronically. Results are returned via an attached printer in the Lab. For NIH orders there is a dedicated workstation which is used to generate paper orders that are sent with the specimens for testing. The results from NIH are faxed back to the lab.

George is aware of tighter integration requirements between the lab information systems and the replacement HIS system that is being planned. At this point they are still looking at options. They are evaluating whether it will be easier to migrate to a new LIS that Healthland will support in addition to the new HIS system or work with Healthland to interface with the Schulyer House LIS.

## Radiology

Sharon Cummings is the Manager of Radiology. She currently has five people reporting to her.

All Radiology requests are received via paper today. Radiology images and results are viewable from the Novarad PACS system via a website for authorized users which can be accessed from the clinic, doctor offices, or Emergency rooms using the in-house network or the Internet.

Their imaging systems today have digital interfaces to the PACS with the exception of a portable XRay unit, that will have a digital interface in the future. They has been testing a Novarad RIS system which is expected to go live in September 2010. The PACS will interface to the Novarad RIS and to the Heathland HIS system when it is available.

There is no automated link to billing from Radiology to the HIS.

Sharon seems to have a very good grasp of what integration can be done in the Radiology department and is planning for future integration to the HIS.

## Pharmacy

Denise Lauffer, director of Nursing and is also the Manager of the Pharmacy. The Pharmacy is technically a Drug Room.

Pharmacy medications are used for patients while in the hospital. There are no retail sales of medications. She has a narrow group of medicines to maintain. She manually maintains the formulary on her computer and orders medications as needed from suppliers.

They have previously looked at MDG Medical Rx dispensing systems to increase control and improve integration into hospital information systems. They are currently planning to implement a solution by May 2010.

Denise is somewhat aware of changes being planned for meaningful use. The biggest concerns on her part is training, dealing with the struggle that comes with change, cultural changes related to new processes, and the fact that some people don't have computer skills.

## Recommendations

There are many things that must happen to achieve meaningful use today for Southern Inyo Hospital. It is not likely that they will meet meaningful use requirements to take advantage of October 2011 stimulus payments. At a high-level Lee Barron knows what needs to be done, she is working with the USDA Rural Development to obtain the necessary funding to support this project.

They are planning to get all SIHD stake holders together in the next couple weeks to talk about possible approaches for system and infrastructure implementations. At a high level the following tasks need to be accomplished to achieve meaningful use.

- Complete activation of Radiology RIS system
- Install Pharmacy MDG Rx system
- Install replacement HIS system which includes EMR capability
- Upgrade or replace Schuyler House LIS system
- Upgrade Network Infrastructure
- Install Windows Active Directory system
- Install new desktop systems as required and replace aging desktop systems according to three year rotation strategy
- Interfaces between systems need to be tested, activated, and existing processes modified to accommodate new methods for receiving orders, sending results, maintaining electronic

medical records and automating electronic information exchange as needed to support meaningful use and any other hospital priorities.

- Training and communications throughout this effort will be critical. At the same time managers will be required to conduct business as usual.
- Cash flow interruptions need to be minimized during all implementations

The timing of these efforts are obviously critical. Once the high level project approach is agreed to by critical stakeholders, a comprehensive project plan needs to be developed to give a clear understanding of when resources need to be available to meet milestones. This plan should identify what activities can be overlapped and validate critical path activities are based on the Hospitals priorities.

Vendors will be utilized to minimize impact to staff. However, department managers and some staff are expected to have an increased work load during the transitions where they are testing and proving out the new system and processes prior to migrations. Considering this is a small facility with limited staff who are wearing many hats, this does present a considerable risk to meeting timeline goals. Training will also be a critical component of the project. A dedicated project manager should be assigned to organize the projects, work with team members to meet their deliverables and report progress to management on a regular basis.

It is still not clearly understood what funding will be available to SIHD from the ARRA incentive payments, the confusion lies between the reimbursement between the Rural Health Clinic (RHC) and the hospital as part of the District. If they meet meaningful use, the Hospital qualifies for the Medicare portion of the reimbursement. The unanswered or vague part in the definitions for CAHs is the Medicaid formula for reimbursement to the RHC, since it is part of the District and the EMR essentially will be implemented at the hospital and supplied to the RHC, then they may not qualify for the Medicaid portion (practitioner specific), which would seem like "double dipping".

The following two pages outline an inventory of systems, and some budgetary financial information related to obtain meaningful use. The financials are still in a state of flux and are changing frequently as the planning effort evolves.



## Financial Estimates

System	Estimated Capital	Estimated One time Expense	Estimated Annual Expense / Maint 2nd year
New HIS/EMR Software & Hardware (First Year)	\$1,000,000.00		\$30,000.00
First year Service Support HIS/EMR	\$89,000.00		\$89,000.00
Additional on/off site applications training for HIS/EMR First year estimated module implementation	\$87,000.00		\$45,000.00
New PC's W/Software to support the deployment of HIS/EMR	\$18,000.00		\$7,500.00
New hand held devices to deploy the HIS/EMR 4 each	\$8,000.00		\$1,800.00
Antivirus Software/Wan Accelerator 50 users	\$7,500.00		\$7,500.00
MDG Rx dispensing system equipment	\$224,730.00		\$12,772.00
New Broadband service (Room Readiness) includes wiring for backup power to new server room/future AC.	\$3,800.00		\$1,500.00
New Broadband service Monthly (first year) Annual	\$6,000.00		\$6,000.00
New Innerwireless (Wireless) Infrastructure (option)	\$490,000.00	\$86,100.00	\$96,000.00
Google - E-mail, Archiving & Security Services			\$5,000.00
New Kronos "type" Time & Attendance Inc.			
New or Upgraded surveillance system	\$6,000.00		
New supporting software programs: Craneware	\$49,530.00		\$49,530.00
New Traditional Wired & Wireless Infrastructure w/VOIP		\$272,088.46	\$5,897.00
New VOIP Phone System Mitel/ShoreTel	\$65,000.00		\$4,246.81
Ongoing Consulting Support IT	\$15,000.00		\$5,000.00
Ongoing Consulting Support RRC	\$30,000.00		\$15,000.00
Operational PACS & RIS System (Interfaces)	\$45,000.00		\$45,000.00
Point to Point Wireless solution to Community Clinic	\$3,500.00		
Relocate PACS & RIS system to the Broadband (labor)		\$2,500.00	
Upgrade telemedicine to support Cardiology	\$0.00		Grant Funded
<b>Total</b>	<b>\$2,148,060.00</b>	<b>\$360,688.46</b>	<b>\$426,745.81</b>

## System Inventory

System Type	System Name and Version	Vendor Name	Year Operational	Year To Be Replaced*
Hospital Information System				
ADT				
Billing				
CPOE	N/A	*Healthland		2010/2011
Finance System		*Healthland		2010/2011
General Ledger		*Healthland		2010/2011
Budgeting		*Healthland		2010/2011
Cost Accounting		*Healthland		2010/2011
Quality Management		*Healthland		2010/2011
Nursing Information System	N/A	*Healthland		2010/2011
Operating Room System	N/A			
Emergency Room System	N/A, T-Sheets / Manual	*Healthland		2010/2011
Laboratory System	Schuyler House LIS	Undecided		
Radiology System	Novarad RIS & PACS			
Imaging System	Novarad RIS & PACS			
Pharmacy System		*MDGMedical		2010/2011
Interface Engine	N/A	*Healthland		2010/2011
Translator	N/A	*Healthland		2010/2011
Data Repository	N/A	*Healthland		2010/2011
Credentialing System		*Healthland		2010/2011
Secure eMail System	Google			
Physician Portal	Only for PACS	*Healthland		2010/2011
Patient Portal	N/A	*Healthland		2010/2011
Practice Management System	N/A	*Healthland		2010/2011
Electronic Health Record	N/A	*Healthland		2010/2011
Fax Inbound / Outbound System	N/A	-Cisco		2010/2011
Authorization / Referral Management	?	? Pre-auth of Payments?		2010/2011
Wireless Infrastructure	N/A	- Cisco or Innerwireless		2010/2011
Time & Attendance System	N/A	*Healthland		2010/2011
Backup System	Partial	*Healthland		2010/2011
Forms Automation	N/A	*Healthland		2010/2011

\*scheduled to be replaced