



Integration and Physician Structured Reporting Streamline Workflow, Improve Charge Capture and Enhance the Patient Record

CVIS Supports HIS and EHR Systems at UCSF Medical Center



UCSF Medical Center

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William Chu
Clinical Database Manager
Cardiology Services
UCSF Medical Center

Highlights

[Billing Interface Saves Time, Improves Charge Capture.](#)

Since the UCSF Heart and Vascular Center implemented the LUMEDX Billing Interface, the cardiovascular service line has been able to dispense with slow, manual systems for procedure billing and capture at least 90% of charges automatically.

[Convenience of Structured Reporting Accelerates Physician Reporting.](#)

Electrophysiologists can complete their reports at any convenient workstation—including right in the procedure room. This enhances reporting and accelerates report turnaround.

[Cardiology Results Exported Automatically to HIS and EHR Systems.](#)

The Apollo database is the repository for clinical, operational and financial data within cardiology. The LUMEDX Results Report interface sends results to IDX (called UCARE at UCSF) and STOR, UCSF's enterprise systems, making cardiovascular information available across the enterprise with minimal manual intervention and fewer delays.

The Heart and Vascular Center at the University of California San Francisco is a nexus of clinical expertise and advanced research, offering patients the full spectrum of cardiac and vascular treatments, from thoracic surgery to disease management. To better serve its large and diverse patient population, the Heart and Vascular Center has implemented an integrated cardiovascular information system (CVIS) that simultaneously streamlines workflow and makes clinical information accessible to caregivers enterprise-wide.

This paper examines how a few key components of the Heart and Vascular Center's CVIS—billing integration, physician structured reporting and integration with enterprise systems—aid operational efficiency and clinical quality.

Billing Interface Saves Time, Improves Charge Capture

Heart and Vascular Center clinicians and staff have been using the Apollo clinical data repository for nearly a decade. In 2002, they installed the Apollo Billing interface in their cath department. Because the interface significantly reduced manual data entry and streamlined the workflow, UCSF added it to the EKG (Stress and Holter), EP and echo departments.

Relevant data now flows from disparate clinical and enterprise systems into Apollo. Says Cardiology Services Clinical Database Manager William Chu, “The billing interface automatically picks up the criteria required from our hospital information system, IDX. It picks up all our Cardiology patients, the different CDM codes for different procedures and different uses for each department.”

To facilitate the automatic transmission of data, the Heart and Vascular Center IT team has assigned codes for each procedure performed.

The interface captures all technical feed for cath and EP, and all technical and pro feed for echo and EKG, significantly reducing manual data entry. Explains William, “We generally do between 200-300 EKGs and about 40 echos a day here, so if you were to enter all EKG and echo data manually it would take quite a long time. Now that we have the interface, we don’t have someone entering all the information we need for billing manually. We don’t have to send hard copies through intercampus mail. There’s no delay. So this really helps us.”

An additional benefit is improved charge capture: automating the billing process has enabled the Heart and Vascular Center to capture at least 90% of echo, EKG, EP and cath charges. “In the past we had the risk of information being entered incorrectly or the hard copy getting lost—those kinds of things that are typical with billing systems that rely heavily on manual data entry. The interface has eliminated those risks,” William says.

At-a-Glance: Key Components of the CVIS at UCSF

- **Apollo:** Data repository currently contains over 60% of CV data.
- **Billing interface:** Links data in Apollo with enterprise systems; reduces manual data entry; improves charge capture; accelerates the billing cycle.
- **Structured Reporting for EP:** Easy-to-use application enables timely completion of comprehensive physician reports.
- **Results Report interface:** Automatically exports procedural reports to the HIS and EHR.

Structured Reporting Accelerates Report Turnaround

UCSF recently introduced Structured Reporting to its EP department. Structured Reporting is software that produces structured patient procedural reports, and enables physicians to complete, sign and distribute comprehensive documentation electronically, right at case end. Before the introduction of Structured Reporting, EP physicians were using a FileMaker program to complete their reports. While the physician workflow hasn't changed, Structured Reporting affords the doctors far more flexibility and ease of use.

"Before Structured Reporting, our doctors had to go back to an office to find a workstation with FileMaker to do their reports after performing a procedure," says William. "The old system wasn't available at many workstations, so this really slowed down reporting. With Structured Reporting there's a workstation in the procedure room, and the physicians can start doing the report immediately after a case if they choose. Knowing that they can access the data they need and complete the report right there makes this system much more user-friendly for them."

Because Structured Reporting made reporting easier for physicians, the transition from an old, familiar system to a new, unfamiliar one was relatively smooth. In fact, the transition was so pain-free that UCSF is now planning to implement Structured Reporting in its Pediatric EP department.

CVIS Integrates with Enterprise Systems

The smooth flow of data is another crucial component of smooth transitions to new systems and workflows. At UCSF, connecting local cardiovascular information systems (CVIS) with enterprise systems supports seamless flow of data. Structured Reporting reports are exported via a LUMEDX Results Report interface to STOR, the UCSF Medical Center report repository, and IDX (known as UCARE at UCSF).

LUMEDX Solutions at UCSF

- Apollo Clinical Data Repository
- Structured Reporting for EP – Physician Structured Reporting
- Structured Reporting for Pediatric EP – Physician Structured Reporting
- CardioPACS – Image Management
- Analytics Manager – Performance Management Analytics
- ACC CathPCI Registry
- STS Cardiac Surgery Registry
- STS Thoracic Surgery Registry
- ADT Interface
- Billing Interface
- Orders Interface
- Results Report Interface

List not comprehensive.

“This is another big time-saver because as soon as the doctor confirms the report, it goes automatically to the hospital information system and our electronic medical record,” says William. “Right now our two key interfaces are Billing and Results. They’re both very important to patient care and the efficiency of our area.” The Heart and Vascular Center also uses interfaces to import and export Orders and ADT information.

Fuller integration is on the horizon: UCSF is in the process of integrating all cardiology services as IT simultaneously gears up to install a new, enterprise-wide EPIC EHR system. Once EPIC is implemented, all cardiology data will reside in Apollo and Apollo will send information to EPIC.

“When I first started working here, we had about ten different systems communicating. Our goal now is to use Apollo as our cardiology database and have a one-stop shop,” William says. “Currently we have at least 60% of our data going into Apollo—and we want to increase that. So in the future, for example, if we have a patient who comes in for a cath, and then an EKG, then an echo, and so on, all that data will be in Apollo. The goal is to be able to follow the patient from pediatric to adult with all the information in one database. This is something that will help cardiology services and the patient care we provide.”