

Cleaning up the Clutter in Disease Reporting

by Anita Slomski

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It's no secret why laboratories and physicians have had such an "abysmal" track record reporting diseases to the Los Angeles County Department of Health Services.

"It's been the shame of this department and many other health departments around the country that we have separate forms for various reportable diseases, each of which must be sent to different offices," says David Dassey, MD, deputy director of the county's Acute Communicable Disease Control, or ACDC, to which reports are sent.

The legendary bureaucracy at LA County's health department was created because tuberculosis, sexually transmitted diseases, AIDS, and communicable diseases receive individual federal funding, and the departments that track those diseases developed their own information and reporting systems. But health care providers, having had to use seven different forms, often failed to report the 83 diseases California law mandates. "Even for serious diseases such as hepatitis A and pertussis, the number of cases reported may be only 25 percent," Dr. Dassey says.

But clean up the internal bureaucracy and remove the human element in reporting, and the picture looks different. In February, Kaiser Permanente Regional Reference Laboratories became the first lab in the county to electronically transmit test results of suspected communicable diseases, eliminating the need to fax thousands of lab reports to ACDC each year. The link with Kaiser Permanente is the start of what LACounty is doing as part of a Centers for Disease Control and Prevention initiative.

In 1995, the CDC awarded grants to state and local governments to improve their surveillance of infectious diseases by upgrading information systems and using technology to shore up reporting. LA County used about \$200,000 of its CDC grant to develop and refine the required software.

Before building the interface with Kaiser, however, ACDC had to revamp its old communicable diseases reporting system, which was replete with errors and redundancies. In the past, reports of communicable diseases were mailed or faxed to 12 different sites, where clerks entered the data on terminals that couldn't alert them that a patient had already been entered into the system. Each time a patient with hepatitis B or C was retested, the public health department would register a new case of hepatitis, resulting in egregious overreporting of some chronic diseases, Dr. Dassey says. And because the old system didn't track the progress of staff as they investigated disease outbreaks, cases often lingered unresolved, or staff waited until cases were closed before even entering them.

ACDC contracted with Atlas Development Corp., of Woodland Hills, Calif., to create an electronic reporting system that allows health care providers to call in or fax disease reports to a central location. Called Visual CMR (for Confidential Morbidity Report), the system is on a wide-area network, so staff now has access to all the data in the system. This means that new test results for a patient can be attached to previous ones without a duplicate record being created. Supervisors can also now monitor the status of a disease investigation and be alerted to overdue work, making staff more accountable for their handling of cases. And, with a simple query, Visual CMR can generate epidemiological reports to help public health staff identify clusters or outbreaks of, for example, salmonella.

With the new system, says Dr. Dassey, "staff can quickly identify clusters of diseases so they can probe deeper into underlying causes and start preventive measures. Before, we only performed that kind of analysis annually because of the difficulty of extracting data from the old system."

Visual CMR also has a feature that provides outbreak alerts to staff at any time via e-mail, pager, cell phone, or wireless device. This feature, called ARNOLD (for Advanced Results Notification and Online Delivery), notifies staff, too, when key information is missing from a record and will automatically print a letter to be sent to the lab or physician requesting additional data.

Although it would appear that Visual CMR's return on investment would be significant, Dr. Dassey says he can't cite cost and labor savings because the data in the old system aren't reliable enough to make comparisons. "We did discover, however, that under the old system it took an average of 30 days from the time a disease was diagnosed to the time it was entered as a new record," Dr. Dassey says. "So things can only get better."

Kaiser Permanente, which reports 40 percent of LA County's communicable diseases, was the logical choice for the laboratory pilot project. Ann Vannier, MD, pathologist and director of microbiology at Kaiser Permanente Regional Reference Laboratories in Southern California, estimates that, with a yearly volume of 225,000 chlamydia tests and about 90,000 tests for hepatitis C, her department will save \$10,000 in staff costs each year by eliminating the manual handling of communicable disease and sexually transmitted disease reports to LACounty Public Health.

Forging a strong relationship with the public health department is also to Kaiser's advantage, says Dr. Vannier. "When the health department detected an outbreak of Legionella in 1998, they asked if we had seen an increase in the isolation of the organism. Such an alert guides us in looking for various organisms in our patients." Kaiser's staff also helps the county in its work. "When there was an outbreak of *Alcaligenes* this year in LACounty, we were able to send some of our previous isolates to the health department for use in molecular fingerprint comparison." Kaiser's collaboration with local and state public health departments was especially helpful in dealing with the threat of anthrax and other potential bioterrorist agents in California.

Complying with HIPAA regulations and satisfying Kaiser's conservative confidentiality committee were among Dr. Vannier's primary concerns in establishing an electronic interface with ACDC. To maintain the security of the lab data, ACDC installed at Kaiser an Atlas LabWorks workstation and a DES3 Cryptocom modem that allows a one-way transfer of Kaiser's lab data directly into the county's Visual CMR.

"We never have to touch Kaiser Permanente's network," says Irene Culver, project manager for the Enhanced Surveillance Project. "And the modem provides great security with 168-bit encryption." The "beauty" of the Visual CMR software, she says, is that "an interface can be built to link to any information system that a lab uses."

ACDC funded the eight-month project with \$27,000, which included the cost of the hardware, and Kaiser spent an estimated additional \$10,000 to develop and deploy the interface. Because Kaiser's lab information system didn't include all of the patient demographic data ACDC requires, the HMO's IT staff had to integrate it with other Kaiser patient information systems. The lab also had to configure its data so files could be downloaded using HL7 transmission standards. (The conversion to HL7 benefited Kaiser internally by making it easier for the lab to communicate with other Kaiser Permanente groups throughout the country.)

Kaiser wanted to ensure that physicians have the opportunity to be in touch with the patient before the public health department might contact the patient, so the lab delays downloading test results to ACDC by 23 hours. "This is in compliance with the 24-hour reporting requirement for most communicable diseases, more efficient for the health department, and in effect faster than the manual method of reporting," Dr. Vannier says. The laboratory transmits about 300 lab results of communicable diseases to ACDC each week.

So successful has been the electronic transfer of lab results that Kaiser asked to download sexually transmitted disease reports also—about 100 per week—which ACDC for now transmits internally to the STD department. "Ultimately, we want all the LA County public health departments to have one face with the laboratory via one electronic form with separate modules for the different diseases," Dr. Dassey says.

That shouldn't be a tough sell to the other disease-tracking departments. Electronic interfaces with labs lead not only to better reporting but also to streamlining staff. Kaiser's electronic transmission of hepatitis B and C results alone has eliminated the work of at least 1.5 clerical full-time equivalent employees, according to Dr. Dassey.

LA County Health Department's dozen hospital laboratories and the Public Health Laboratory are next to receive electronic interfaces. Dr. Dassey has also received inquiries from Unilab and other commercial labs interested in electronic reporting. Now that the laboratory interface has been field-tested at Kaiser, Stephen Atlas of Atlas Development Corp. estimates it will take other labs a maximum of six weeks to configure their data and software to report electronically to ACDC.

"All they have to do is filter out nonreportable diseases and modify their HL7 messaging format to meet the specifications set by the Centers for Disease Control," Atlas says.

ACDC has allocated \$10,000 to \$15,000 to assist each lab with the development cost and will pay the minimal cost for the hardware. "In the next two to three years, we hope to add three to four more labs," says project manager Culver.

Although Atlas' LabWorks can translate labs' internal test result codes into LOINC and SNOMED, Dr. Dassey is looking for laboratory partners that have already mapped their codes to the universal identifiers. "As long as labs keep current with these standards, they should be able to send their data anywhere without making changes to it," Dr. Dassey says.

To get more health care providers to report their patients' communicable diseases, ACDC will pilot Internet reporting for 10 infection control practitioners this month. If physicians are receptive to Web-based reporting, ACDC plans to offer the option to the more than 30,000 physicians in the county, provided the physicians have Internet access in their offices and the measures to secure the Web site aren't too costly for the county or too onerous for the users.

For now, however, Dr. Dassey would be happy with better reporting by labs. "At least if I get the lab report, I can call the doctor and ask for her impressions," he says.

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