

Denver Health: Taking Laboratory Integration to New Heights

The Denver public health laboratory can't possibly become more integrated with the major clinical laboratory in its neighborhood: they are both part and parcel of the former Denver General Hospital, now Denver Health.

The evolution of Denver General Hospital to Denver Health began in 1997, when the hospital—then owned by the city—split off to become a non-profit entity as a separate political subdivision of the state. At that time, the Denver Public Health Department was split, with the hospital assuming responsibility for public health functions and the health department retaining regulatory and environmental oversight functions. Today, Denver Health's mission is part classic public health, part HMO and part academic research and training. It operates the city's primary indigent care hospital, a network of 10 neighborhood health clinics, all of Denver's school-based clinics for middle and high school students, a national poison and drug center, a Level I trauma center, an HMO and a disaster preparedness center.

Such an arrangement offers several advantages. Michael Wilson, director of Denver Health's Department of Pathology and Laboratory Services, said "Public health labs were chronically under-funded for many years, but as part of a larger entity you have a little bit more clout to gain resources." Plus, integration allows clinical and public health laboratories to harmonize their standards better "so they're on the same page on a lot of quality issues." And last, but not least, integration has allowed the Denver public health laboratory to upgrade to state-of-the-art information technology.

Director

Michael Wilson took over laboratory operations for Denver General Hospital in 1994. An anatomic and clinical pathologist by training, Wilson was born in Colorado and has only relocated from the state once: to pursue a micro-



photo courtesy of Denver Public Health Laboratory

The Denver public health laboratory is located in a multi-building campus of Denver Health, on the edge of downtown.

biology fellowship at Duke University, following medical training and a residency program in Denver. His long-time position with Denver Health, he said, is "the only job I've had since leaving the faculty at Duke."

Location

Colorado is among the most urbanized states in the union, based on the percentage of its population living in cities of 50,000 or more. "Most of the traditional Western agriculture and mining industries are gone," said Wilson. Instead, what drives the economy today are large-scale corporate agriculture, tourism, telecommunications and high-tech manufacturing.

Although Denver has a population of a half million or so, Denver Health draws its clients from the greater metropolitan area of roughly 2.5 million. More than a third of Denver County children, for example, receive healthcare through Denver Health.

The main portion of the institution itself is situated on a multi-building campus on the edge of downtown Denver. "I don't have a window," said

Wilson, "but from our hospital you can see the front range of the Rocky Mountains and the skyline of downtown Denver." The campus is strategically located within walking distance of the state capitol buildings and the city police headquarters. The area surrounding Denver Health is among the hottest real estate in the region.

Facility

The main laboratory is located in the Denver Health Medical Center building. This 15,000-square-foot facility handles about 1.3 million tests per year in support of clinical care for hospital and off-site clinic patients. The 80-year-old public health building down the street houses a 1,000-square-foot STD laboratory and a facility for bioterrorism and tuberculosis testing with between 1,500 and 2,000 square feet of BSL-3 space. In addition, off-campus neighborhood and school-based clinics have laboratories of varying complexity, ranging from waived testing to hematology work. "We're always looking for opportunities to expand our space," said Wilson. "That (public health) building is part of a master plan and will be rebuilt in 5, 10 or 15 years."

Staff

About 125 full-time equivalents, with “at most three or four vacancies.” Wilson attributes his low vacancy rate to several factors. “We’ve always had good supervisors and people who are able to recruit well,” he said. In addition, the whole Denver area is “building like mad” with four of the city’s largest hospitals moving to bigger, better quarters in the suburbs. “That helps us,” said Wilson, because many of the other hospitals’ staff members don’t want to relocate or commute far from the city. Denver Health is also helped by its position as a teaching hospital for the University of Colorado Health Sciences Campus. Finally, said Wilson, “Denver Health has a good reputation, and people like the mission of Denver Health. That does attract a fair number of applicants.”

Revenue

Denver Health is almost totally self-sufficient, with limited state funding for indigent care. Its income comes mainly from HMO, Medicare and Medicaid patients, supplemented by federal “disproportionate share” hospital funding. A top-notch trauma care unit also generates significant revenue, along with special services including a nationally known center for complex fractures, medical complications of eating disorders, minimally invasive urological surgery and atrial fibrillation ablation.

Distinguishing Characteristics

- Because Denver Health is a teaching hospital for the University of Colorado Health Sciences Center, all of its physicians—including Wilson—are full faculty members at the University of Colorado School of Medicine. “Our work is very heavily integrated with the university. All of the residents rotate down here. We all teach.”
- Denver Health’s strong emergency response focus takes many forms. It has its own emergency medicine training program and paramedic school. It owns all the city ambu-

lances and owns and operates the Denver County 911 system. And it runs the Rocky Mountain Poison and Drug Center and the Rocky Mountain Center for Medical Response to Terrorism and Mass Casualties.

- Denver Health provides all the correctional care for a number of local counties and for some of the state prison population.

Highest Volume Testing

STD tests are “by far” the most common, followed by TB tests (in the public health laboratories). Denver Health performs no regulatory testing and no environmental testing, both of which are handled by the city.

Notable Success Stories

- Going from four independent laboratory systems—hospital, public health, community health centers and school-based clinics—to one fully integrated system in seven years. “This is something that is very unusual in the US, but I think people are beginning to see this as a model.”
- Integrating the public health laboratories with the main hospital laboratory. “They’ve each kept their own unique identity and mission, but we’re moving personnel back and forth now, integrating information systems and harmonizing standards.”
- The first local laboratory in Colorado—and only the second laboratory in the state—to start a bioterrorism testing program.
- Implementing a state-of-the-art information system. Denver Health was recently featured in Newsweek magazine as one of the more computerized healthcare systems in America. “Using my computer, I can look at someone’s chart—even someone who came in last night—and look up x-rays, vaccination records, lab results and pathology reports.”

Biggest Challenges

- Recognition: “I think that the single biggest challenge for public health laboratories in general is that there is not enough recognition for what public health is and does. The public doesn’t recognize that and politicians don’t recognize it. Every city needs a good public health department, and you can’t have a good public health department unless you have good public health laboratories.”
- Workforce: “Pick any high school in America and ask 20 seniors and I’ll wager that none have heard of medical technology or epidemiology. Public health and laboratory medicine are something that most Americans aren’t aware of. Without that recognition it will be difficult to maintain a viable workforce.”
- Funding: “There’s always a chronic challenge for operational funding, but what I mean by funding is the long-term investment in infrastructure, training, recruitment and retention. In the last 30 to 40 years in America that investment has not been there.”

Goals

- “Expand the functionality of our public health laboratories to be a resource for the public.”
- Work on all the common challenges facing public health laboratories, including public recognition, workforce maintenance and funding. “We need to improve our informatics systems and our ability to communicate electronically with our state health department and the CDC. This is something we should all be working on. The LRN (Laboratory Response Network) has made some pretty good initial steps in that direction, but there’s still a long way to go.”