

New Parkland Hospital CASE STUDY





Realizing a Vision of Connected Care

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*Joseph Longo
Vice President of
Information Technology
Parkland Hospital*

Located in Dallas, Texas, Parkland Hospital provides nearly all medical and surgical subspecialties, ranks among the largest teaching hospitals in the nation, and serves as the primary care center for Dallas County residents. The existing facility was nearing obsolescence at 55 years, and struggled to support patient needs. In November 2008, county voters overwhelmingly passed a bond measure to fund construction of a new Parkland Hospital.

The community wanted a civic landmark that would serve for the next 50 years. Hospital staff wanted to be able to welcome, stay connected with, and respond quickly to patients at every point in their healthcare journey. Technology was key to both visions.

TEECOM planned and designed the innovative integrated technology systems that enable the hospital’s model of connected care. The new 2,800,000 sf Parkland Memorial Hospital—the largest public healthcare project in the country to be built in one phase—opened its doors on August 20, 2015. The project, which encompasses 862 licensed beds, 96 NICU rooms, and a 120-bay emergency department, has been hailed as a model of digitally supported healthcare.

Healthcare as a Social Experience

Parkland’s technology approach is designed around the idea that technology can improve the quality of healthcare on a personal, social level through the use of multiple touchpoints from check-in through discharge. Patients want to know that they are seen as individuals, and to have their needs recognized. To provide personal, accurate service, healthcare providers must have patient information at their fingertips.

The integrated technology systems TEECOM designed for Parkland capture and record data, enhance security, and enable multiple touchpoints in a myriad of ways. A few examples:

Every high-tech, high-touch VoIP telephone has a camera and a screen. When a nurse answers a patient's call, the two can see and hear each other.

A digital energy-efficient power-over-ethernet sign outside each inpatient room identifies the patient, doctor, and nurse, along with individual care guides, such as when a patient is in isolation or can't eat.

Inpatient rooms feature footwall monitors that display customized meal plans and health information, and serve as the video and audio hub of the room. The audio system is integrated with language interpretation services.

In the lobby, visitors consult a digital kiosk to locate clinics or patient rooms. Patients can use the kiosk to check in, complete pre-appointment paperwork, and access the patient portal.

Inpatients being discharged watch a video that explains their treatment and follow-up care. The interactive screen tracks viewer eye movement to ensure that information is being watched and retained.



Newborns are identified and protected from abduction by monitors attached to their umbilical cords. Parkland has the distinction of delivering more infants under one roof than any other hospital in the nation, averaging 15–16,000 deliveries per year.

In the intensive care units, smart beds monitor 18 data points and notify caregivers when something's wrong.

Each of the hospital's 2,500 nurses works from a hand-held digital device. These devices alert them to patient needs, connect to medical and billing records, and enable them to communicate immediately with other caregivers. The devices can inform the nurses when, for example, an IV bag is empty or if a patient's blood pressure is rising. Alerts are tiered by level of urgency.

In Parkland's new Operating Suites, advanced video capability helps surgeons during operations and can be used as an educational tool with the patient's consent. Eight video screens track patient vitals.

"We have greatly expanded our capability so that biomedical devices, such as a patient's ventilator or heart rate monitor, will send the data it's producing right into the patient's record," said Joseph Longo, Parkland's vice president of information technology. "This lessens transcription errors and helps keep our patients safe."

These examples show how integrated technology not only supports the operational imperatives of today's large healthcare organization, but amplifies the healing power of human interaction.

TEECOM's Future-Proofing Solution

The social approach to healthcare practiced by Parkland Hospital is a complex balancing act involving management of electronic medical records, patient scheduling, remote patient monitoring, delivery of educational content, medication reminders, and more. Such a deployment requires a complex alignment of network, information technology infrastructure, telecom distribution, audiovisual systems, universal communications, security, nurse call, and control systems. In addition, the infrastructure for these systems must be able to handle the inevitable churn in end-point equipment, especially laptops and personal devices.

TEECOM future-proofed Parkland by designing built-in capacity for cabling pathways and equipment rooms, including oversized conduit and cable trays and higher floor-to-floor heights. TEECOM's design provides a cabling and wireless infrastructure capable of supporting the high bandwidth, real-time, interactive, and data-rich health management systems that are becoming commonplace today but were

not even envisioned when the hospital began design in 2009. It's an approach that hospitals across the world will need to adopt in order to address the demands of healthcare's digital future.

"There are all sorts of exciting ways to involve technology in a hospital that go beyond medical records," said Chantal Worzala, director of policy for the American Hospital Association. "The ultimate goal is having the highest-quality care. And as we learn how these technology systems can support that, hospitals will be adopting them across the board."

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Project Team Integration

Successful delivery of a project of Parkland's magnitude and complexity requires the project team to work as a cohesive unit from the start. The project was considered ideal for Integrated Project Delivery (IPD), but Texas state law at the time prevented this type of contract. The management team therefore decided to follow a Collaborative Project Delivery (CPD) model of execution, using an integrated team with several key components:

- Primary design consultants were engaged simultaneously, with a construction manager at risk (CMAR) in a design-assist mode.
- All key consultant team members were co-located full-time on site, including TEECOM's telecom and security project manager.
- Aligned/coordinated contracts between the key consultants captured the scope of early involvement.
- An integrated project management system was put in place for document control, accounting, BIM, scheduling, cost control, and team communication.



- An owner-controlled insurance program (OCIP) alleviated lost time and cost from potential claims between individual firms and the owner.

Clinical Liaisons Save More Than \$25M

In addition to the technical design team, the CPD model incorporated a team of full-time clinical liaisons. The liaisons functioned as a bridge between the original hospital and the replacement campus. This team helped maintain project momentum, keeping the project on schedule during organizational changes and public scrutiny.

Three clinical liaison positions were created for the project covering medicine and surgery, women's services, and clinical support services. All liaisons

were Registered Nurses with decades of experience in hospital operations at Parkland.

With more than 900 stakeholders involved in the project process, having this team of high-level user/decision-makers was critical for communication. The clinical liaison team was involved in critical path areas including:

- Testing and evaluation of mock-up and simulation spaces.
- Evaluation of change requests.
- Training of staff on new equipment and procedures.

The clinical liaison team's direct involvement in the project is credited with more than \$25M in cost savings or cost avoidances.

Expert Project Management Leads to a \$20M Surplus

There were many possible roadblocks involved in the delivery of Parkland Hospital as a publicly funded project in a political environment. The County Commissioners replaced the hospital's Board of Managers immediately after the approval of the Guaranteed Maximum Price. The project was also subject to oversight by the Center for Medicare and Medicaid Services during design and construction, requiring a great deal of administrative coordination. Client leadership experienced churn during the five-and-a-half-year project timeline, including turnovers at the C-suite and director levels throughout the institution.

Despite all of this, the project was completed on time and with a \$20 million surplus. TEECOM's project management skills in conjunction with the CPD team played an important role in keeping the project on track and on schedule. Innovative management techniques included:

4-D schedule comparison:

To coordinate construction activities, the team co-created a 4-D BIM model. The model



allowed the team to anticipate schedule hold-ups and perform side-by-side solution comparisons.

Pull scheduling: Several items had the potential to impact the project schedule, including relocation of public power lines and roads. To work around these obstacles, a “pull date” schedule was instituted that allowed phased construction on parts of the project as they became accessible.

Pull planning: The co-located team collaborated on regular pull planning work sessions during which they prioritized activities in real-time. This

created a natural environment for discovery of efficiencies. A low-tech schedule board that used Post-It notes allowed immediate resequencing of activities.

“The collaborative process and the resultant environment are truly beautiful.”

Jerry Nickerson, Jr.

Vice President Facilities and Development

Parkland Hospital Health System

Project Details

Project Team	
Owner	Parkland Health & Hospital System
General Contractor	BARA (Balfour Beatty Construction, Austin Commercial, H.J. Russell & Company, and Azteca-Omega Group joint venture)
Architect	HDR + Corgan, a joint venture
Structural	AG&E Structural Engenuity
MEP	HDR
Photography	
Photographer	©Dan Schwalm/HDR
Project Dates	
Design Start Date	May 2009
TEECOM Start Date	May 2009
Construction Start Date	May 2010
Construction Completion	October 2014
Total Project Duration	5 years, 5 months
Project Statistics	
Construction Cost	\$1.271,000,000
Project Size	2,800,000 sf
Number of Buildings	1
Sustainability	Certified LEED Gold
Project Awards	2015 Honor Award, Built category - American Institute of Architects (AIA) Dallas 2015 Design Award - Texas Society of Architects/AIA Texas 2015 Gold Award - Building Design+Construction Building Team Awards 2015 National Award of Excellence - Post-Tensioning Institute 2011 Honor Award, Unbuilt category - American Institute of Architects (AIA) Dallas



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