

## **Neighborhood Medicine and Modular Pre-Fab Construction, a recipe for the future of healthcare.**

The design of new hospitals has been driven by recent trends towards smaller, more comprehensive medical facilities. Most of these facilities target one specific department around which to build their hospital, while minimizing other core department requirements. This has created multiple hospital concepts tailored to specific entities and locales.



*Neighborhood Hospital in the Rocky Mountains, UC Health Grandview, Colorado Springs, CO*

Futuristic technologies such as telemedicine, personal diagnostic services, and cloud based medical applications are gaining new focus in the delivery of healthcare. These new practices have the potential to shift treatments from larger, centralized medical facilities to outlying locations such as the local clinic, neighborhood hospital, and even directly into patient's homes. A facility that can keep up with these changes, integrate new technology, and adapt seamlessly to the future of medicine and healthcare delivery will be a key factor in meeting the advancing and changing needs of patients in the years to come.

At the heart of these smaller medical centers is one of their core concepts: the desire to bring higher acuity healthcare to the local neighborhoods and rural enclaves, thereby bringing medicine to the patient rather than the patient into the hospital. Medical advances that are already in use in outpatient facilities and clinics have started to make this treatment model a reality and allow multiple treatments to be done at home or a nearby facility, keeping it in the family, so to speak. The concept of the neighborhood hospital can take medicine to the next level by delivering traditional inpatient services with trained staff to a "corner store" location. Advances in design, materials, and technologies allow hospitals to appear as any building type; no longer simply large monolithic masses from the past. In today's healthcare environment, they can now have features and amenities desired by current healthcare consumers.

As the spread of internet and cell phone technology has taken place, physicians and care givers have been brought together from across the world. This allows for robust collaboration surrounding treatment plans and modalities in areas that were previously inaccessible. As our lives become more saturated with the internet and web-based media technology, it has never been more crucial to have reliable network infrastructure in modern healthcare.

In an expanding and rapidly changing technology environment, today's facilities must maintain an increasingly higher level of service with broad connectivity and easy upgrade accessibility. Without up to date technology, the hefty repository of online knowledge that is available for physician consultation and research can be lost. Indeed, the more connected medical caregivers are the better able they are to treat their patients.

Modern options in prefabrication techniques offer ways to accommodate this ever-changing technology component and allow for adaptation to ideas that have not yet been invented. Utilization of pre-fabricated headwalls, composite modular wall panels, vacuum plumbing systems and demountable partitions allow facilities to both allow for rapid incorporation and adaptation to new technologies as they are developed into both new and existing projects.



*Premanufactured ICU headwall from Hill-Rom, Texas Health Hospital, Carrollton TX*

When major utilities are installed above ceiling spaces, treatment spaces and patient rooms can be developed as a modular component. Prefab enclosures standardize room layouts and utility connections, and adjustments can be made as needed to create new spaces or connect new medical gas, power and plumbing systems.

The utilization of systems such as these allows a facility to quickly change the acuity of a treatments space or rapidly add to the functional program as needed to fit local conditions; all while expediting construction on renovations and limiting operational downtime. Limitations of space in smaller neighborhood hospitals previously required tradeoffs in facility programming and forced choices about which departments on which to focus limited resources. Conversely, the use of modular universal treatment spaces, designing key infrastructure for expansion, and utilization of premanufacturing technologies allows for facilities to adapt to multiple types of procedures, and create a chassis that can be instantaneously modernized or redeveloped as new treatments and techniques are created.

One example of this is the utilization of prefabricated custom wall panel systems in an Operating room, procedural room, pharmacy, lab or sterile instrument processing facility. These panels allow for the ultimate enhancement of flexibility in any environment, creating a clean, hygienic and durable wall surface that can accommodate a wide range of current technology and infrastructure needs, and adapt to future advancements seamlessly.

According to Jason Keith, Partner and Co-founder of mfPhD, provider of the FORTRESS wall system to health systems across the country, the ability to deliver new spaces (whether renovations or new construction) to facilities quickly, with lower overhead and cost of operations, all while allowing development of spaces to continue during and after completion of construction, makes a huge impact on how hospitals serve patients. Prefabricated, custom components such as the FORTRESS system have been widely regarded as an impactful, direct way to provide future flexibility with the lowest impact to service delivery interruptions, adaptability or service provision decisions. Whether a small community hospital, a large urban health system or a neighborhood microhospital; one thing is certain. Change is inevitable and unpredictable. Incorporation of building components that increase a facilities tolerance of these factors is essential.



*FORTRESS wall system Operating Room Installation at Houston Methodist*

Instead of building larger facilities with multiple specialty treatment areas and departments, creating a few more universal rooms in a smaller facility with infrastructure designed to adapt and expand as needed, and utilizing prefabrication technologies contributes to a hospital chassis that is well suited to all environments, current and future needs, and is eminently adaptable for whatever healthcare throws at it.

The incorporation of these concepts into smaller, neighborhood hospital programs allows for rapid prototyping of a building and for modifications to the specialties needed to serve a specific population. The creation of a typical chassis that can then be adapted during the phases of the design process to allow for anticipated demand and local factor needs can be scaled to fit any region, type of hospital or associated outpatient facilities. This roadmap would allow healthcare systems and government agencies to spend their development dollars in areas where they can be of greatest benefit, while providing visually pleasing spaces with warm, welcoming green environments that aid the healing process. This would work toward the creation of a new recipe for the future of a hospital concept that everyone in society could benefit from.

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