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The Integrated Approach: Cardiac Care as a Separate, but Integral Hospital Department



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Cardiac services function more effectively and efficiently when they are integrated into a full-service hospital. Faced with the option of moving cardiac services to a freestanding facility or integrating them into a full-service hospital, health systems and facilities typically choose integration for a number of important reasons. These include continuity of care, cost-effective integration of support services, shared support spaces, and more integration in the delivery of healthcare services. At the same time, many cardiac specialists seek an environment that is exclusively designed to meet their needs. A heart hospital within a hospital often offers the best of both worlds-the separate identity physicians and hospitals often seek for a key service line, and the efficiencies of integrated clinical and administrative support services. The case studies presented in this article illustrate the benefits of an integrated approach to cardiac services and address some of the essential elements of designing facilities to deliver cardiac care. They include two major expansion and renovation projects that involved the design of designated cardiac centers at two large tertiary hospitals-Baptist Medical Center East in Memphis, Tenn., and Broward General Medical Center in Ft. Lauderdale, Fla.-as well as a third project at Centennial Medical Center in Nashville with a significant cardiac component.

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Introduction

A strong cardiovascular program is as essential to a hospital as the heart is to the human body. As a key service line, cardiac services account for an average of 13 percent to 17 percent of discharges at facilities that provide invasive diagnostics, and 20 percent to 25 percent of the volume at facilities that provide invasive cardiac diagnostics and open-heart surgical services.

However, as freestanding cardiac facilities proliferate, hospitals that offer cardiovascular services face the challenge of keeping those services within their facility.

The Case for an Integrated Facility

In the long-term, cardiac services function more effectively and efficiently when they are integrated into a full-service hospital. Faced with the option of moving cardiac services to a freestanding facility or integrating them into a full-service hospital, health systems and facilities typically choose integration, for the following reasons:

- Cardiac patients frequently suffer from co-morbidities-There are often other health conditions that make treatment at a full-service facility more desirable in terms of coordinated care. In many cases, patients require care from one or more physicians representing other specialties as well as their cardiac specialist, and treatment at a full-service facility-preferably one with a hospitalist who helps coordinate care
- Clinical and support services, including central sterile processing, diagnostics, laboratory, pharmacy, and administrative services do not have to be duplicated-This is not only more economical and efficient, but supports the availability of higher-level laboratory services at many facilities
- Surgery preparation and recovery areas can be shared-Again, a far more efficient set-up that extends capacity for all services. However, at some major tertiary centers, high volumes of cardiac patients or unique patient care needs may dictate a dedicated cardiac critical care unit
- The continued evolution of cardiac services, including the trend toward less invasive procedures whenever possible, makes maintenance of flexibility desirable-As the applications of angiography and cardiac catheterization increase, bed and other space requirements for cardiac services will change

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- Educational programs, which are becoming a more important component of cardiac services, can be offered within the context of all educational offerings provided by the facility-Many hospitals already offer extensive education regarding diet, including classes that teach healthy meal planning and cooking. As genetic research continues to progress, hospitals will face a growing need to develop educational programs that address the impact of an individual's genetic make-up on cardiac health

- Hospitals retain the synergy of a strong cardiac program, as cardiac services are typically a key service line

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At the same time, many cardiac specialists seek an environment that is exclusively designed to meet their needs. A heart hospital within a hospital often offers the best of both worlds-the separate identity physicians and hospitals frequently seek for a key service line, and the efficiencies of integrated clinical and administrative support services.

The case studies presented in this article illustrate the benefits of an integrated approach to cardiac services, and address some of the essential elements of designing facilities to deliver cardiac care. They include two major expansion and renovation projects that involved the design of designated cardiac centers at two hospitals-Baptist Medical Center East in Memphis, Tenn., and Broward General Medical Center in Ft. Lauderdale, Fla.-as well as a third project at Centennial Medical Center in Nashville with a significant cardiac component.

Case Study 1: Transplanting a Tertiary Cardiac Program
Between the 1970s and the 1990s, the Baptist Memorial Health Care Corporation, a five-hospital metropolitan healthcare system, operated two tertiary centers for cardiac services: Baptist Medical Center (BMC) and Baptist Medical Center East (Baptist East).

As the original flagship facility, BMC had served as a regional tertiary center for over 50 years, and its downtown patient tower, built in the 1950s, was a community landmark. At its peak during the 1970s, BMC had more than 2,000 beds and an average daily census of 1,800. However, during the 1990s BMC's census underwent a precipitous decline. By 1997, its average census was under 350 patients a day-approximately 15 percent of peak capacity.

After extensive study, careful exploration of its options and consultation with community leaders, the Baptist system made the decision to replace its downtown facility with a more current and more efficient 400-bed community hospital. After these plans were announced, another downtown tertiary facility approached the Baptist system to propose a plan for combining downtown services, which would avert the need for Baptist to construct a BMC replacement. Ultimately, this planning process resulted in a decision to close BMC, necessitating the transfer of all of BMC's tertiary programs-including cardiac services-to other Baptist facilities.

Cardiac services had also become a key tertiary service at another Baptist facility--Baptist East. Starting in the 1970s, Memphis experienced dramatic population growth to the east of the downtown area. The Baptist system responded to the corresponding shift in its cardiac patient volume by transferring cardiac beds from BMC to Baptist East. As the city's population continued to move east and patients became increasingly reluctant to travel downtown for cardiac care, Baptist East's cardiac services underwent steady growth. By the late 1990s, Baptist East operated at peak capacity on most days.

The Baptist system's decision to consolidate its cardiac tertiary programs at Baptist East was precipitated in part by the fact that Baptist East was

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already the facility of choice for many cardiac services. In addition, the BMC facility-much of which was constructed during the 1950s and 1960s-had become antiquated and costly to operate. Various cardiac services were scattered throughout the facility, which reduced staffing efficiency, made way-finding difficult, and reduced accessibility of outpatient services.

With the cost of the renovation required to meet current codes and standards of care prohibitive, Baptist's management made a logical decision to make Baptist East its primary tertiary center for cardiac services, which involved a major expansion of the cardiac services offered at Baptist East as well as the transfer to the system's heart transplantation program.

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Although the cardiac specialists practicing at BMC understood the need to improve the accessibility of their program by moving it to Baptist East, maintaining the strong regional identity of their program was a priority. The solution was a Heart Institute that is separate from the existing Baptist East facility yet fully integrated with it. The new three-story institute is directly connected to the hospital on each floor. A new cardiac catheterization area is located on the ground floor adjacent to the surgery department. Outpatient services are located on the second, main floor, and two dedicated cardiac intensive care units with a total of 42 beds on the third floor. However, patients will be transferred to beds in Baptist East's existing patient wings for step-down/telemetry care.

"The institute increases the visibility of our cardiac services, and it resolves a number of capacity issues," explains Tom Murphree, director of the Heart Institute. "We'll have more holding space, which means the emergency department will be able to increase the flow of patient admissions. The additional ICU beds extend our surgical capacity. The radiology and cardiac catheterization areas both have more space and capacity. And the new cardiac catheterization area will streamline our operations by allowing our physicians faster, easier access to diagnostic images, which they will be able to view on a personal computer."

Constructing a new Heart Institute also resolved the key issue of maintaining cardiac services without significant interruption throughout the transition. "We'll be able to shut down our existing cardiac catheterization department one day and open the new department the following day," Murphree says.

Baptist's transplantation program was relocated to Baptist East in October 2000, and Murphree says the move has increased community awareness of Baptist's cardiac services. As part of a campus master plan, Baptist East recently opened a new Women's Hospital, and the area within the existing facility that formerly housed women's services will become an outpatient clinic for transplantation and research patients.

Another priority established by the cardiac physicians-surgeons and cardiologists-was education for patients, physicians, and other healthcare providers. A separate educational facility, including a 300-seat auditorium, has been designed.

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Case Study 2: Heart Center of Excellence

Broward General Medical Center has a 60-year heritage of delivering tertiary care to a heavily populated county in the Sunbelt. With 550 staffed beds, 24,000 annual admissions, and 80,000 emergencies annually, the facility offers as one of its key services a Heart Center of Excellence, which features advanced techniques in diagnosis, catheterization, surgery, and intensive care. However, these cardiac services are currently scattered throughout the facility, as Broward General-the tertiary center of a four-hospital system, the North Broward Hospital District-has not completed a significant addition since the 1970s. Broward General provides a full continuum of services, including women's and children's services, a comprehensive diabetes outreach, education and treatment program, and a cancer center.



[Figure 1:](#)
[The design of the new Heart Institute, directly connected to Baptist East, maintains a strong separate identity.](#)

Broward General plans the addition of a dedicated Heart Center of Excellence, where cardiac services will be consolidated and integrated with rehabilitation services. The Heart Center of Excellence will be constructed in conjunction with a new emergency department that will double the hospital's emergency capacity; a new surgery/outpatient surgery department, which will include dedicated cardiac surgery suites; and new critical care departments, including two dedicated cardiac units-for coronary and cardiovascular patients-as well as separate medical and surgical critical care units.

Although the infrastructure and support services will be thoroughly integrated, the Heart Center of Excellence will offer a dedicated entrance and registration area, along with a separate drop-off point that affords easy access to an outpatient cardiac services center that offers diagnostic, therapeutic, and rehabilitative services.

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While the cardiologists and cardiac surgeons who support Broward General's Heart Center of Excellence supported the department's integration into the hospital, they also sought to establish a separate identity for the Heart Center that would underscore the program's importance as a key tertiary service and its status as a regional referral center. Broward General's Heart Center of Excellence illustrates how design can accommodate two seemingly incongruent goals-the physicians' goal to have their Center of Excellence recognized as a distinct service with its own identity, and the hospital's need to gain the inherent advantages of integrated support systems.



[Figure 2: Broward General's Heart Center of Excellence provides an entrance with a separate drop-off point.](#)

Based on the design for the new Heart Center at Broward General, these advantages include:

- Ready access to the cardiac inpatient, surgical, and diagnostic units from the Emergency department and a trauma center that admits approximately 60 percent of the hospital's patients
- Wayfinding from the Heart Center's dedicated entrance designed to guide patients to the appropriate service area with the minimum number of turns
- Integration of the cardiac center's information and communications systems and infrastructure, technology, and highly trained technical support staff with those of the hospital
- Integrated support services, including equipment-intensive areas such as the imaging, laboratory, pharmacy and central sterile processing areas, as well as respiratory therapy
- A new bed tower dedicated to cardiac patients, with patient rooms sized to allow the heart center to convert telemetry-monitored beds to support more intensive monitoring and more acute patients when required
- Built-in expansion capability in all areas to preserve the integrated work and patient flow, and extend the useful life span of the center's inpatient and outpatient care departments

Following the lead of Dr. Michael Chisner, Broward General's chief medical director of cardiology, physicians developed a clear vision of "what heart care services in Broward County should be," according to Broward's director of Strategic Planning, Joan McCabe. "Dr. Chisner helped define the vision, and the cardiologists, cardiovascular surgeons, and staff worked together to ensure that the Heart Center of Excellence we designed achieved it." The physicians' clear vision of the future of cardiac services at Broward General attracted financial support from the community, and supporters formed an organization to provide the financial resources needed to construct the Heart Center of Excellence. Construction is slated to begin in summer 2002.

The Heart Center of Excellence's design offers physicians the distinct identity they sought and consolidates cardiac services in a dedicated area.

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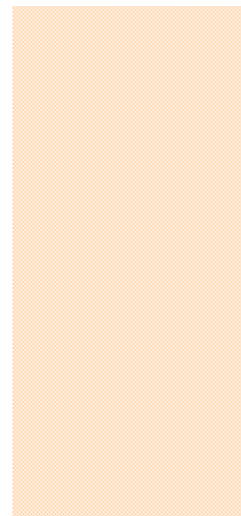
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It affords the flexibility the Heart Center needs to grow in place and to adapt as technology changes and cardiac treatments evolve, and the design efficiencies required to make the center cost-effective to staff and operate. The center's design reflects another key trend-the need to accommodate patients' relatives or friends, who will help with their care during and after hospitalization. Patient rooms in the Heart Center are designed to allow a companion to remain with the patient overnight, and waiting and restroom areas offer appropriate facilities for visitors and family members who must remain in the unit with the patient for an extended period of time. As hospital stays grow shorter and the need to train relatives and friends to help with patient care after discharge intensifies, healthcare facilities will be required to accommodate overnight visitors and recognize their role in achieving positive patient outcomes.

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Case Study 3: Regional Hub Hospital with Integrated Cardiac Services

Completed in 1994, the 688-bed Centennial Medical Center integrated the flagship hospital of the HCA system-Park View Medical Center, the original hospital the company constructed in 1968-with West Side Medical Center, a newer community hospital acquired by HCA in the 1980s. As an integrated facility, Centennial functions as HCA's regional tertiary hub.

While the facility features dedicated women's and cancer centers, its well-known cardiac program is fully integrated with Centennial's tertiary and acute services. Centennial's cardiac program is one of the strongest in the region, offering comprehensive diagnostics, open-heart surgery and rehabilitation services. However, at the time of the consolidation of the Park View and West Side facilities, only two of the surgical suites at Park View were sized for cardiac procedures, ICU space was limited and not exclusive to cardiac services, and cardiac services were fragmented. In addition, the Emergency department did not have adequate capacity to support the higher acuity volume generated by the active cardiac program.

As HCA explored its options for the consolidation of Park View and West Side, natural locations for key services suggested themselves. West Side, which was noted for women's services and had opened the first LDRP unit in the region, became the location for a dedicated women's center. And, although Park View's patient rooms and patient care facilities were undersized, some support areas could be expanded, and inpatient areas converted to skilled nursing and rehabilitation units.

Cardiac services were integrated into a new patient tower in a design that met the needs of the growing cardiac program while achieving the staffing and other efficiencies of a fully integrated approach. Centennial has a dedicated cardiac intensive care unit, a priority identified by physicians and cardiac nurses. However, other cardiac beds are integrated into the single patient tower that supports all inpatient programs. And, with the exception of the cardiac catheterization unit, surgical preparatory and recovery areas are shared with the facility's other surgical programs. Separate preparatory and recovery spaces are provided for cardiac catheterization patients, another priority identified by the unit's nurses, who requested separate facilities to meet the unique needs of these patients.

"The architectural design of the cardiac service components of Centennial



Figure 3:
[The Heart Center of Excellence consolidates cardiac services in dedicated areas.](#)

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tower has contributed a great deal to the operating efficiencies of the hospital," said Centennial president and CEO Larry Kloess. "Centennial is clearly the most efficient tertiary hospital in Nashville, due in part to its outstanding architectural design."

The design of the surgical department offers a particularly good example of how cardiac services can be fully integrated into a full-service surgery department, but still afforded dedicated space. The suites are arranged in three separate pods, one of which can function separately as a cardiac surgical unit while sharing support spaces with the surgery department. The cardiac surgical pod features a direct connection with the dedicated cardiac intensive care unit, enabling the same nursing staff who assisted the patient during the surgical procedure to accompany him during transport and assist in the transition to critical care. Medical staff identified this continuity of care as a key advantage they wanted to achieve through the unit's design and functional adjacencies.

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Implications for Design

Based on current trends in cardiac care delivery, future design considerations may include:

- Changes in care delivery, such as MRI suites located between cardiac surgical suites to allow for imaging during a surgical procedure. Changes such as these necessitate maximum flexibility in design, to allow for changes in the methods used to perform various procedures as well as technological advances
- Universal patient rooms that allow for conversion to step-down or intensive care rooms, with adequate space to adapt to changes in patient care and to accommodate family caretakers, who may stay with the patient
- A greater emphasis on patient and family comfort, with more amenities in patient rooms and waiting areas
- More emphasis on traffic management, with functional adjacencies that help increase staffing efficiencies
- More emphasis on space for education, as patients and the institutions that pay for healthcare services strive to reduce their costs by teaching people how to reduce their risk of cardiac and cardiopulmonary diseases

Conclusions

Just as the heart's healthy function is essential to a full, normal life, a strong, healthy cardiovascular program is a sign of a healthy, growing hospital system. Because of the primary importance of cardiovascular health, cardiovascular and cardiopulmonary services are often a core service at regional tertiary hospitals. At the same time, cardiac specialists often seek a distinct identity for their programs.

Cardiovascular services can be integrated into tertiary and community hospitals in a way that provides a separate identity along with the economies of combined clinical support and administrative services. The rapid evolution of all types of healthcare services, including cardiac services, dictates an integrated approach as the best way to maintain maximum flexibility to accommodate future changes in the delivery of cardiac services and in healthcare delivery itself.



Figure 4:
[Centennial Medical Center's well-known cardiac program is fully integrated with Centennial's tertiary and acute services. Photo by Norman McGrath.](#)

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[Figure 1](#)



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Figure 1: The design of the new Heart Institute, directly connected to Baptist East, maintains a strong separate identity.

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Figure 2: Broward General's Heart Center of Excellence provides an entrance with a separate drop-off point.

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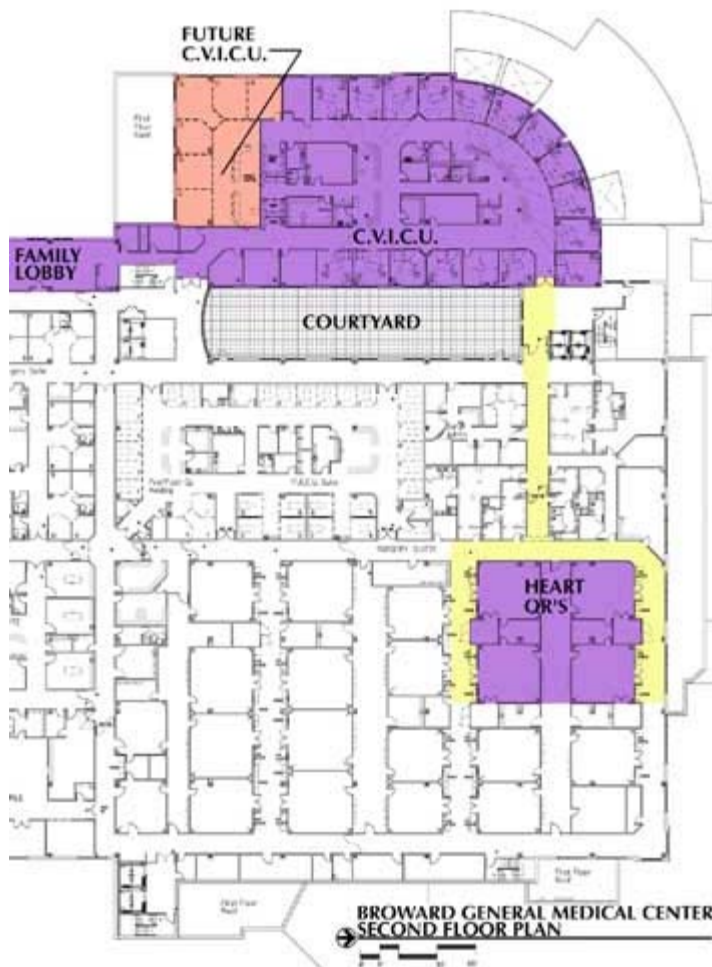


Figure 3:
The Heart Center of Excellence consolidates cardiac services in dedicated areas.

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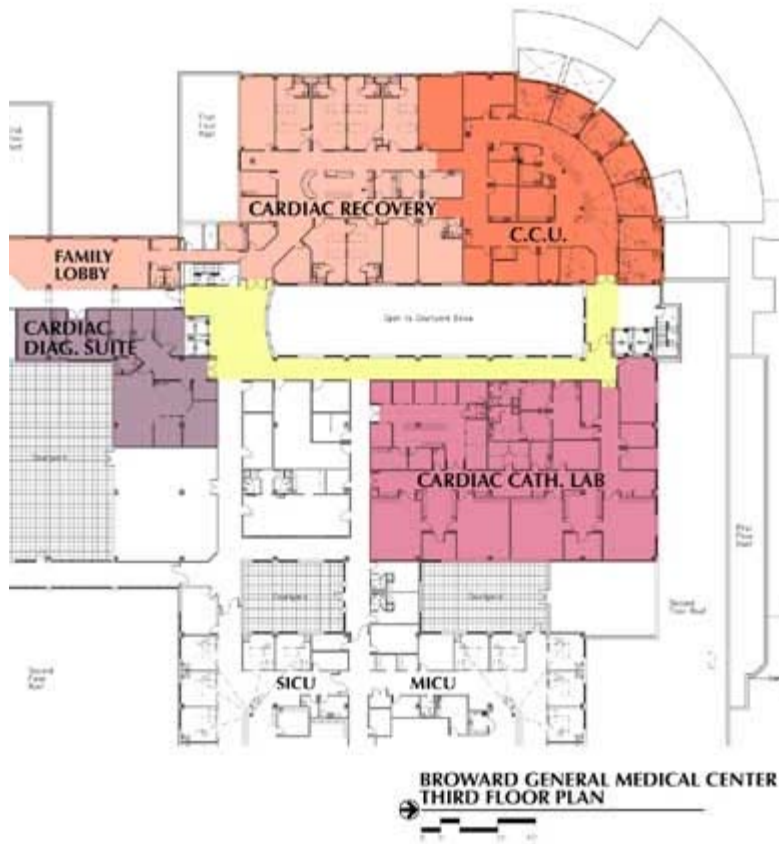
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