

## ***Worcester Medical Center***

### ***A New Model for Integrated Healthcare Services***

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Worcester Medical Center, Worcester, Massachusetts, is a newly constructed, vertically integrated healthcare center, combining patient-focused care, physician/caregiver efficiency, integrated physician and hospital services, and first class amenities. The facility concept establishes a new model of preventative and prescriptive healthcare delivery, establishing a precedent for 21<sup>st</sup> century healthcare delivery.

The building's functions and layout are organized around the needs and convenience of the patient. Patients experience improved continuity of service, simplification of process activities and a significant reduction in movement from service-to-service.

The new Worcester Medical Center posed a unique architectural opportunity to develop a totally new, operationally and patient-efficient approach to the provision of healthcare services.

(Figure 1 – Worcester Medical Center – Aerial photo)

Integrated healthcare facilities offer major advantages for physicians, caregivers and patients. The proximity of clinical, diagnostic, treatment and inpatient facilities save time and provide convenience for all concerned. Therefore, why are there so few examples of fully integrated healthcare centers?

#### ***The Vision for Integrated Care***

The Worcester Medical Center is the result of the purchase of St. Vincent Hospital in Worcester, by the Worcester based Fallon Clinic and its associated HMO. When they purchased the Hospital in 1992, the vision was to create a vertically integrated facility organized around the needs of the patient, the caregiver and the physician. The programming and conceptual design was directed by a single owner with both clinical and hospital personnel and control. This allowed a single vision of integrated, physician directed care to develop – organized around the needs of both the patient and the caregivers.

Programming meetings brought together individuals from the Fallon Clinic and St. Vincent Hospital in project teams, organized by “product line” under the direction of physicians and team leaders with representatives of associated support services. The teams were responsible for programming and planning the needs of the group practice, the integration with diagnosis and treatment facilities and associated inpatient beds. Departmental and support services were analyzed based on projected volumes, length of stays, adjacency efficiencies, staffing levels, current and anticipated technology, turn around times, licensure requirements and patient focused care considerations to determine the degree to which services and equipment should be centralized or decentralized. The goal was to bring as many services to the patient as practical.

Ninety percent of all patient clinics and beds are on Levels Two and Three. Major diagnostic and treatment services are deployed on both floors. Primary patient and visitor access is on Level Three directly adjacent to the vehicular drop-off and parking area. (Figure 2 – Patient Drop-off photo) Initial views of the interior of the building look down into the spacious, garden-like atrium. Main circulation paths and clinical areas ring this central space. (Figure 3 – Atrium photo) Wayfinding is

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straightforward and comprehensible, with a clearly articulated order and progression. Ground floor access from the street entry passes through retail areas within the building and leads directly to the atrium and vertical circulation. ([Figure 4 – Worcester Center Boulevard Entry](#))

### ***Multiple Activities: The Basis for Integrated Care***

Let us look at Cardiology as a candidate for integrated care. The typical cardiology clinic, located in a medical office building, includes waiting and reception areas, exam rooms, offices, business areas, toilets and other support spaces. Some clinics may also include areas for minor in-office procedures. Non-invasive and invasive diagnostic and treatment facilities are typically located in a hospital, and include similar waiting and reception areas, exam rooms, gowning areas, as well as office, business and support areas. Both outpatients and inpatients make use of the diagnostic and treatment facilities. Physicians have appointments and patient visits scheduled for both areas each day. Nurses and other caregiver staff, often performing similar functions, work at each facility. Patients and doctors move back and forth between the clinic and treatment facilities, depending upon their appointments, needs and required levels of care. Within a single day, the physician may travel between the two places a number of times. After going to the hospital in the morning to visit hospitalized patients, the doctor returns to the clinic for office visits, and then often returns to the hospital to review the results of various tests and to once again follow up on more acute patients. Patients may also travel between the two facilities within the same day – to the clinic for an examination and then to the hospital for diagnostic testing or treatment.

The licensure regulations of most states assume, and in many cases, require this separation and duplication of space. The result is lengthy patient waiting and costly inefficiencies for physician / staff operations.

### ***Centralizing Services for Cost-Effectiveness and Ease of Access***

The organization and design of the Worcester Medical Center is predicated on integrating and combining functions into a single area. The result is the elimination of duplicate facilities and staffing, a reduction in distance and travel time for both caregivers and patients, and the creation of an environment focused on the well being of the patient and staff.

Each of the product lines, such as Cardiology, includes the group practice, diagnostic and treatment functions and inpatient beds. The specialty clinics and diagnostic and treatment waiting areas have direct access from the central landscaped atrium. ([Figure 5 – Atrium Flowers and Trees - photo](#)) To achieve the anticipated efficiencies of centralized services, adjacencies which permit the sharing of common facilities and areas are required. They must permit the separation of patient type (ambulatory vs. inpatient) and maintain the separation of public and staff circulation.

Acute inpatient services occupy the building pavilions along one side of the building. Organized around six to eight patient caregiver areas, the number of rooms per nursing unit can be adjusted based on patient mix and degree of acuity. All inpatient beds are accessed from a continuous circulation spine that runs the length of the building. ([Figure 6 – Inpatient Rooms look west to Worcester Center Boulevard](#))

Specialty clinical, treatment and diagnostic areas are interposed along the opposite side of the same inpatient circulation spine with access from both the inpatient areas and the main public areas of the facility. Patients, doctors and other caregivers move horizontally between exam rooms, treatment facilities and inpatient rooms. Only specialized radiology/nuclear medicine/MRI procedures require vertical patient movement. (Figure 7 – WMC Level 2)

Where appropriate, common functions within the specialty share facilities. There is one reception and waiting area, one suite of exam rooms, one group of offices and consultation rooms, ultimately one medical patient record, and one set of support spaces. A single set of caregivers serves the patient throughout the visit, regardless of length. Appointments are made at a centralized area for outpatient visits, diagnostic testing, and treatment or inpatient admission. Rather than being sent to another building or another floor, patients requiring diagnostic or treatment facilities move within a common area, often across the hall.

### ***The Localized Path of a Cardiology Patient***

In the case of Cardiology (Figure 8 – Cardiology Service Area Plan), a patient enters the waiting room from the atrium, checks in with the receptionist, and is then directed to a nearby exam room. After seeing the patient, the cardiologist may recommend a series of tests to be performed that day. The patient then moves from the exam rooms into the adjacent treatment and diagnostic area for testing. A variety of diagnostic and procedural areas are provided within the Cardiology service area. If, after conferring with the physician, a hospital stay is indicated, the patient moves to the adjacent inpatient unit. The doctor can respond to the needs of the clinical, diagnostic and treatment and the inpatient areas without the need to travel between clinic and hospital. It is a short walk down the hall. Patients know where to go for treatment and where to return for follow-up care. Travel time for both physician and patient is effectively eliminated.

### ***Obstacles to Integrated Care***

- ***Ownership Transition***

Despite the efficiency and operational logic to this type of vertically integrated care, there are many obstacles and issues to be addressed. During the development of the project, ownership of the Medical Center changed three times. The completed project is owned by Tenet Healthcare, with clinical areas leased by the Fallon Clinic. The change in ownership – from not-for-profit to for-profit – placed added strain on the integrated care model. The separation of ownership and control of the service line areas creates a series of operational, financial and reimbursement obstacles. It also creates issues as to “ownership” of the patient records, since only one record is developed and maintained. Cross-trained caregivers may work for different employers, and yet provide patient services in both a clinical and inpatient setting.

- ***Licensure Requirements***

Current licensure requirements in Massachusetts, as in many other states, stipulate the number and type of spaces required for each type of healthcare setting. Licensure requires each separate corporate entity to be physically separate from any other entity. It allows for no sharing or overlap of spaces or services. A reception area for a clinic cannot be used as a reception area for a hospital. A

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soiled utility room cannot be shared. Corridors, and other public areas must be separate, and physically within one corporate entity. With a single owner, this would not pose a significant problem. With multiple owners or tenants, this creates a major obstacle to an integrated facility. Combining these spaces within a single facility was achieved through a series of waivers and special approvals. Each exception required review by the licensing authority and explanation of how the intent of the requirements was met.

The licensure of the Worcester Medical Center benefited from the pre-existing financial relationship between St. Vincent Hospital, now owned by Tenet Healthcare and the Fallon Clinic. In presenting the project for licensing, the entire facility was considered to be part of the hospital. The Hospital then sought and ultimately received a series of waivers to allow Fallon to use or share certain portions of the building. Each area had to be specifically defined and documented. In like fashion, Fallon sought and ultimately received a series of waivers to share clinical space owned by the Hospital. This eliminated the separation and inherent duplication required by the licensure regulations. More than 100 waivers were required to achieve the design intent.

- *Building Code Requirements*

A project of this size and complexity requires a detailed knowledge of the myriad codes and approvals necessary for occupancy and active participation by the governing agencies.

Integration of service line functions posed additional unique problems of interpretation and understanding, as building and life safety codes stipulate the fire rating and construction type required for each type of occupancy. Clinical outpatient areas are often considered a “business” occupancy, whereas inpatient/hospital areas are an “institutional” occupancy. Each occupancy type has significantly different construction requirements. Additionally, the separations and construction requirements of the building code, based on occupancy type and layout, are different than those imposed by the licensing entities. In all, integrating the fire separation requirements of the different occupancy types with the intent to provide a seamless health-care environment posed a significant challenge. The design challenge, once solved, required close collaboration and coordination with the local building inspector, as well as with a variety of state and life safety agencies and requirements. Their participation, understanding of the design intent, and regular review of the developing contract documentation of the project assured timely issuance of permits.

Other attempts at integrated care facilities have resulted in separate but connected buildings in which each corporate entity is physically separate. The clinics are contained within one building, diagnostic and treatment and inpatient facilities located in another building, and connections are made through a central spine or atrium/multipurpose space. Although this provides some operational efficiency, it does not tend to achieve the efficiencies possible with truly integrated service lines and facilities.

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As a result of careful planning and effective liaison with relevant regulatory agencies, the design of Worcester Medical Center successfully addresses these issues, culminating in an institution poised to become an exemplary standard in worldwide health-care delivery.

(Figure 9 – Worcester Medical Center – Night View from Interstate 290)

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*Worcester Medical Center      Aerial view from the Southwest*

• HOSKINS  
• SCOTT  
O, PARTNERS  
• INC.

Figure 1

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*Worcester Medical Center*

*Patient Drop-Off - porte cochère*

Figure 2



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*Worcester Medical Center  
Daylight fills the Atrium*

*Photo by R. Greg Hursley*

Figure 3



*Worcester Medical Center – A New Model for Integrated Healthcare Services*

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*Worcester Medical Center  
Worcester Center Boulevard entry*

Figure 4



*Worcester Medical Center  
Atrium flowers and trees* Photo by author

Figure 5

*Worcester Medical Center – A New Model for Integrated Healthcare Services*

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*Worcester Medical Center    Inpatient Rooms look west to Worcester Center Boulevard*

Figure 6

## Worcester Medical Center – A New Model for Integrated Healthcare Services

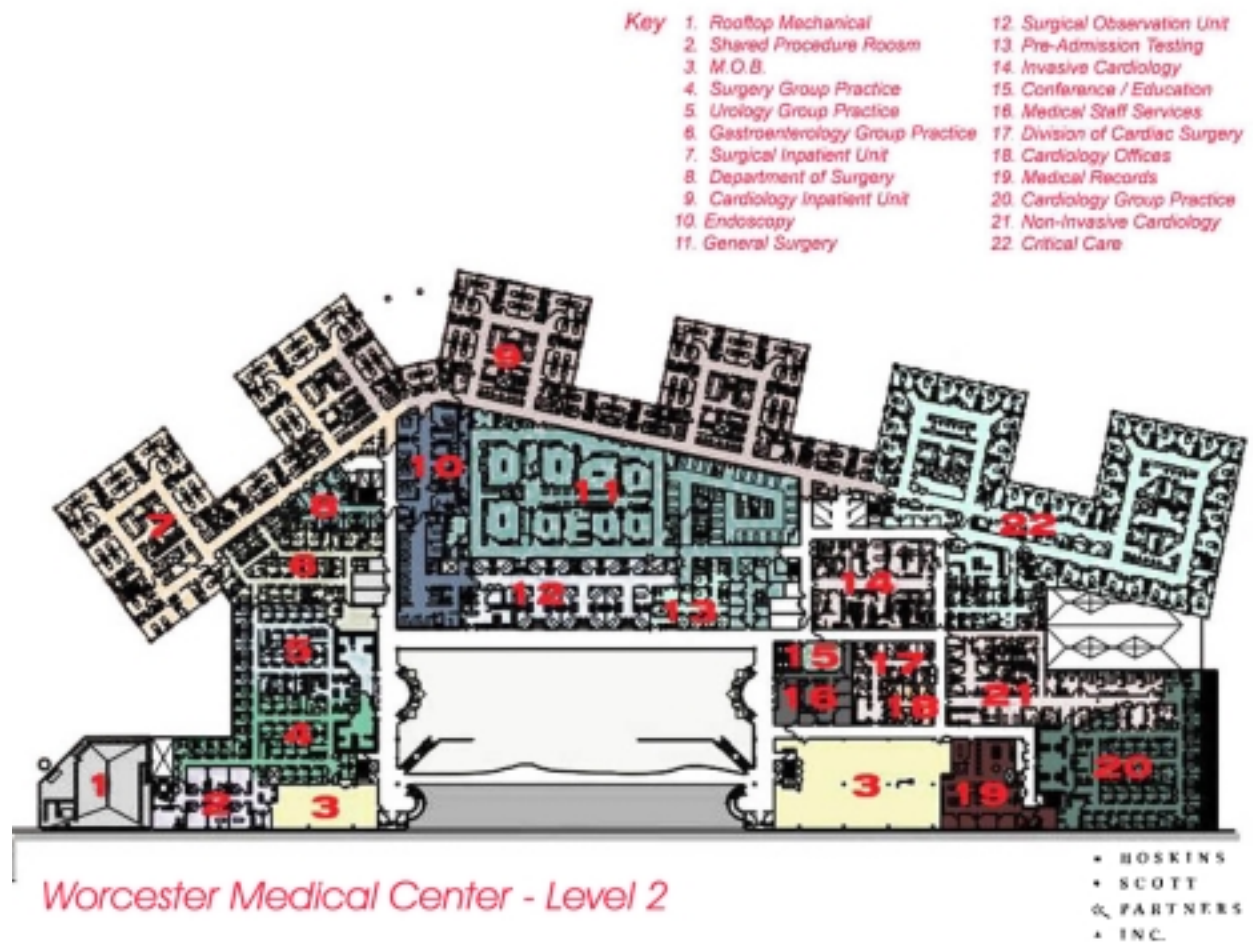


Figure 7



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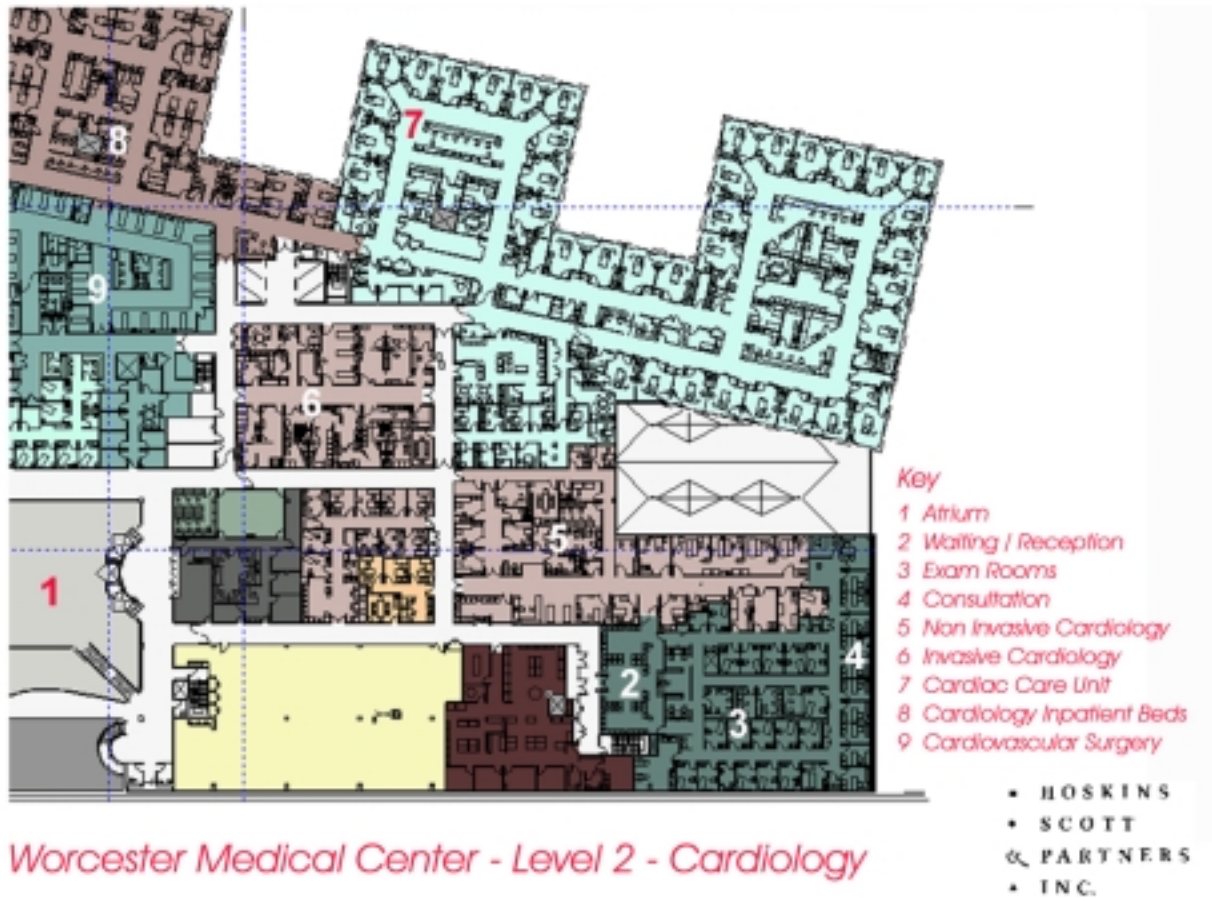


Figure 8

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Photo by R. Greg Hursley

*Worcester Medical Center View from Interstate 290 - Night view*

Figure 9

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