Harbison Clinic: Project Manuscript

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To Edward
And me.
Harbison Clinic
An Outpatient Medical, Surgical, Diagnostic and Health Services Facility for Harbison New Town, South Carolina

A terminal project submitted to the faculty of the College of Architecture, Clemson University, in partial fulfillment of the requirements for the degree of Master of Architecture.

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Project Introduction
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In the last fifteen years, ambulatory surgery has evolved as a viable option for patients who might otherwise have to stay overnight in a hospital to have minor or elective surgery performed. Hospitals first encouraged the development of outpatient surgery clinics as a means to free overnight beds and in-patient operating rooms for more critical patients and as a convenience for patients who really do not need to stay overnight in the hospital.

Another recent innovation in health care has been freestanding or satellite minor emergency care, or urgent care, centers. These facilities have been found to be more convenient and less expensive than emergency rooms in hospitals and their extended hours have enabled them to better serve dual income families when parents cannot find time during the day to take children to a doctor’s office.

Because of the convenience and popularity of both these health care options, there is a trend towards combining them and introducing a third component: medical offices. This grouping of health services provides a cooperative basis for regional outpatient care to which may be added a number of supportive health services including laboratories, radiology, physical therapy and cardiovascular services. As added conveniences, staff facilities, pharmacy, snack counter, gift shop and babysitting services are included, and to meet the educational needs of this group as well as those of the community, meeting rooms will play an important role as places for seminars and instruction.

This Master's Thesis project concerns the development of a clinic based on this approach to providing outpatient health care services in the suburban location of Harbison, a new town community in the Dutch Fork region northwest of Columbia, South Carolina.
The Dutch Fork Region
"The Dutch Fork" is the area within the "v" formed by the junction of the Broad and Saluda Rivers. The area extends to the north and west for about 30 miles. The name comes from the large migration of Germans who settled in the area from 1730 to 1770. ("Dutch" is derived from "Deutsch".) The first settlers were German Swiss; others later migrated from Baden and Wurtenburg, Germany. The isolation of the region, caused in part by the wide, bridgeless, and ferryless rivers, retarded the area's development.

In 1786, Columbia replaced Charleston as the capital of South Carolina and became a city, bringing increased communications closer to the Dutch Fork. In 1890, the Columbia, Newberry & Laurens Railway was built and runs through the heart of the fork. The automobile also increased communications with nearby communities. In the 1930's the South Carolina Highway Department began to pave the state's roads which ended the isolation of the Dutch Fork region.

In the 1940's South Carolina Electric & Gas dammed a large portion of the Dutch Fork to provide power for the region. The flooded portion became Lake Murray, and was an instant attraction for the residents of Columbia. Watersports enthusiasts flocked to the lake on weekends and many relocated closer to the lake to the undeveloped land of the Dutch Fork. Residential developers quickly jumped on the opportunity to fill this new need. During the early 1970's, scores of residential subdivisions sprang up with names such as Friarsgate, Coldstream, Challedon, and Whitehall. Many of these subdivisions fall under larger areas known by more general terms to describe larger communities such as Seven Oaks and St. Andrews. The new population in the Dutch Fork area was at first families who commuted
to Columbia for work. Since then more jobs have been created in the Dutch Fork region by the establishment of such industries as Allied Chemical and General Electric.

Population Trends for the Dutch Fork

Population statistics for the Dutch Fork are complex and it is difficult to determine the actual population size. However, statistics have been compiled on study areas which include Irmo and Seven Oaks (communities within the Dutch Fork). This data estimates that eighty percent of the population growth in these areas has occurred within the last fifteen years and growth will continue for another fifteen years before trickling off due to completion of development of available land.

The estimated population profile indicates a rapidly developing middle to upper middle income community which is ninety-two percent caucasian. Ninety percent over age twenty-five are high school graduates. Thirty-seven percent over age twenty-five have completed at least four years of college. Only two percent of families are below poverty level. In 1979, the median income of families was $26,000.

In brief, the average household is a young, well-educated, two-income middle to upper middle class family with young children.

Evidence suggests that more educated people tend to prefer outpatient services when they have the choice because they tend to be more concerned with convenience, efficiency, and not spending money unnecessarily.
Health Care for the Dutch Fork

The Dutch Fork area is bisected by the Richland/Lexington county line. There is no hospital within the Dutch Fork, but area hospitals include Lexington County Hospital south of the Saluda River as well as Columbia's hospitals which include Richland Memorial Hospital (county hospital), Baptist Medical Center, and Providence Hospital. Each of these hospitals provides emergency room services for trauma and non-trauma cases as well as outpatient surgery in conjunction with its inpatient operating rooms.

A short distance east of Providence Hospital, a group of physicians and surgeons have constructed The Columbia Surgery Centery (1984), the only freestanding outpatient surgery facility to date in the Columbia area. Three other freestanding day surgery facilities have been completed in South Carolina. They are in Florence, Greenville and Anderson. Others are being planned for Conway and Georgetown. A certificate of need (CON) must be submitted and approved by the South Carolina Department of Health and Environmental Control (SCDHEC) before an outpatient surgery facility may be constructed, but there are currently no accepted guidelines for determining how many of these facilities are appropriate for a given population.

Urgent care centers (or minor emergency care centers), like private medical offices, are not currently regulated on a need basis and these facilities have proliferated within the Dutch Fork and Columbia areas.

Residents of the Dutch Fork do not identify themselves fully with one county, one regional name, one community or one health care facility. There is a need for a recognizable Health Care
Center that provides comprehensive services catered to the specific needs of residents in this region.

Given that in the Dutch Fork the average household is a young, well-educated, two-income middle to upper middle class family with young children, a health care center of an outpatient nature seems to be most fitting.

Evidence suggests that more educated people tend to prefer outpatient services when they have the choice because they tend to be more concerned with convenience, efficiency, and not spending money unnecessarily.

Increased responsibility for oneself, in exercise, nutrition, and various forms of meditation, may well be viewed as the most important trend in health care in the final quarter of this century. One effect of this social trend is a growing perception of hospitals as impersonal and alien. Ironically, when the same technology is removed from the context of acute illness and placed in a freestanding outpatient facility, it is perceived as friendly. Consequently, out-of-hospital services have been characterized as lower-keyed, less threatening, less austere, and more convenient. 1

The next section, "Trends in Ambulatory Health Care," describes the benefits of outpatient health care to clients (patients), medical personnel, hospitals and the community in general.
Trends in Ambulatory Health Care
In ancient times, the physician offered his services in an open market place or traveled from town to town in search of patients. At the end of the nineteenth century, many doctors tacked a shingle outside their homes and practiced medicine from there. This was particularly true in small towns. But in large cities physicians moved into commercial buildings, often above a bank or retail store. In the early part of this century, physicians in metropolitan areas occupied large multiuse general office buildings usually in the downtown core of a city. Before World War II many specialized buildings were erected exclusively for physicians, but after the war, doctors were among those attracted to the cheap land costs of the suburbs, and soon small owner-occupied medical office buildings sprouted as the forerunners of the large medical complexes now so familiar to us. The suburbs held other attractions: on-grade parking in a bucolic setting, the small scale, the residential character of the neighborhood, and the ability to bring medicine where the patient lived rather than make the patient endure the congestion of downtown traffic. Often physicians opened satellite offices in the suburbs while still maintaining the downtown location as their primary office. Specialists tended to remain in the urban setting in these early days of exodus to the suburbs, since they rely upon a large population and many referrals from primary physicians.

As land costs increased through the 1950’s, it became more economically feasible to build larger buildings designed specifically for a medical tenant population. Hence the numerous small owner-occupied buildings gave way to large complexes composed of solo practitioners of various medical specialties. In one building, primary care physicians and specialists, clinical labs and radiology support services complemented each other. The
proximity of these services amounted to great convenience for patients and physicians alike.

In the 1960's these buildings were increasingly located adjacent to hospitals so that physicians could shuttle back and forth between hospital and office without having to get into a car, thereby maximizing the time they could devote to patient care. Many hospitals even constructed medical office buildings on the hospital campus as an added incentive for their staff physicians.

Great changes have occurred in the field of health care in the past ten years. The emphasis has shifted from treatment of disease to keeping people healthy. The trend is to prevent disease; to keep people out of the hospital through health education programs and holistic ideology, making persons responsible for their own health. Raising the general public's knowledge about the importance of proper nutrition, exercise, and the risks associated with alcoholism, drug abuse, and smoking is perhaps the most effective weapon in the battle against disease. Health education centers as adjuncts to hospitals and other health service agencies have sprung up recently in store fronts and shopping centers, making sound information accessible to the community.

There is presently a great emphasis on ambulatory and outpatient facilities. Many hospitals, instead of adding patient beds, are remodeling and adding day surgery centers, diagnostic and treatment units, and enlarged radiology and laboratory departments. Rapid advances in medical technology are making outpatient diagnosis and treatment increasingly possible.

The trend of the 1970's for physicians to organize themselves in single or multispecialty groups will continue. Individual physicians can generally lower their overhead in a group practice where support staff, radiology and lab equipment, waiting room, and business office are shared by the group.
Outpatient Surgery

Ambulatory outpatient surgery, the concept of providing same-day surgery of an elective (non-urgent) nature to patients who are basically well, is not a new concept but one which has become more popular in recent years. The benefits to all parties concerned may be quickly identified.

From a hospital viewpoint, the establishment of a hospital-related free-standing ambulatory surgery facility frees hospital beds for use by more critical patients and also frees hospital operating rooms for more critical procedures. Hospitals are under pressure from competition to provide surgery on an outpatient basis. And by establishing a free-standing ambulatory facility at some distance from the main hospital, the hospital may extend its effective service area.

From the position of a medical doctor or a surgeon, a free-standing ambulatory surgery facility may be in a more convenient location and may make more efficient use of his or her time. Such a facility may allow greater scheduling flexibility of elective surgery and could easily reduce the numbers of delays caused by more complicated procedures that are performed in a hospital’s operating rooms.

From the patient’s viewpoint, same-day surgery encourages faster recuperation and return to normal daily routine. He or she is not subjected to the stress associated with being among the “sick and hospitalized.” The patient also avoids overtreatment and unnecessary costs which the patient either realizes directly through payment for surgery or indirectly through payment in the form of insurance premiums. Insurance companies recognize cost savings associated with ambulatory surgery and are taking actions to encourage it.
With technical advances through the years such as the development of anesthetics which metabolize rapidly and have fewer side effects, the development of the laparoscope, laser technology, fiber optics and other devices which reduce the chances of complications in surgery, more and more surgical procedures are considered minor procedures that may be performed on an outpatient basis allowing the patient to return to his or her home after surgery. It is estimated that currently up to forty percent of all surgery cases could be performed on an outpatient basis. With continued technological improvements, this percentage might be increased.

Outpatient surgery within the hospital setting is common in most hospitals today. But when outpatient surgery shares the inpatient operating rooms, the problems with scheduling continue and the patient may be paying for services that he does not receive. Many hospitals are choosing to provide separate outpatient surgery units adjacent to their hospitals. But these are often abused by surgeons who schedule procedures at the outpatient unit to avoid the hassle of the main hospital operating rooms. They often schedule patients for outpatient surgery knowing that the patients will be rescheduled as inpatients after surgery. This abuse is avoided in ambulatory surgery facilities removed from the hospital setting. This concept is becoming more popular and is encouraged except in cases that are considered to be too risky.

Freestanding surgery centers cater to a somewhat different patient mix than hospital-based outpatient surgery programs. They more frequently perform gynecological procedures as well as ear, nose and throat, orthopedic and plastic surgery. Almost any operation which does not require major intervention into the abdomen or thorax can be considered for an outpatient facility. The cost of surgery in a freestanding facility can range from about 42 percent to 65 percent below inpatient
costs for the same procedures. It is estimated that by 1990, 60 percent of surgical care may be provided on an outpatient basis.

The concept of ambulatory surgery is not new. In 1909, Dr. J. H. Nicoll reported to the British Medical Association that he had performed 8,988 surgical operations on ambulatory patients at the Royal Glasgow Hospital for Children.

In the United States the practice goes back at least to 1918, when an enterprising anesthesiologist founded the Downtown Anesthesia Clinic in Sioux City, Iowa.

The modern freestanding ambulatory surgical facility began as the private practitioner's response to the high cost of medical care. The first such facility was opened in 1968 in Providence, Rhode Island, followed in 1970 by the Surgicenter in Phoenix, Arizona which received wide acclaim.

In 1971 the American Medical Association finally approved and endorsed the safety of outpatient surgery when patients are carefully screened.

In 1983 there were 120 freestanding surgical centers in service in the United States. Currently there are approximately 250 such facilities in the country and it is estimated that by 1988 there will be 800.

![Graph showing the growth of freestanding U.S. Surgical Centers from 1968 to 1989.](image)
Urgent Care Facilities

Almost everyone is familiar with the hospital waiting room. All types of cases that must be treated immediately are treated in this department. But some cases are more urgent or more critical than others. The patient with a minor cut usually has to wait while more critical patients are treated. If a person is injured in a non-traumatic way during his or her doctor's regular office hours, the patient might try to be worked into the doctor's schedule rather than go to the hospital emergency room. If the doctor is available, the office visit is more convenient for the patient and usually much less expensive than the hospital visit. Some doctors have tried to convenience their patients by leaving time in their schedules to handle emergency cases that might come into their offices and by extending their office hours into the evening. With the concept that there is a need for providing convenient, reasonably priced medical care for minor emergencies, a new facility type has emerged.

An urgent care center is a minor emergency care facility that patients can visit without appointments to receive care with minimal waiting time. They feature more extended hours than doctors' offices, usually ranging from 16 to 24 hours a day, and their rates are generally 25 to 60 percent below those in hospital emergency rooms since overhead costs are much lower. Most are not practical as regular sources of care since while charging less than a hospital emergency room, they charge more than a private doctor for an office visit.

There has been some controversy over the use of the term "emergency" when applied to such facilities because it is considered by some to be deceiving to patients who may be in trauma. Recently the terms "urgent care," "urgicare," and
"Immediate care" have become more popular to refer to facilities that treat minor emergencies.

The first free-standing emergency center opened in 1975 in Providence, Rhode Island and several more quickly appeared elsewhere in Rhode Island and in Delaware. By 1984, approximately 2500 of these facilities were in existence and it has been estimated that by 1986, over 8000 will be in operation. Many of these are owned and operated by independent physicians.

It is estimated that eighty percent of the patients who are treated in a hospital emergency room could be treated at a freestanding urgent care facility. The other twenty percent include trauma victims and other victims who most likely will be admitted to the hospital as inpatients soon after their arrival. Patients in these categories are not encouraged to seek treatment at an urgent care facility, although these facilities should be equipped to administer temporary aid to trauma patients in rare cases until transportation to a hospital can be arranged.
Harbison and the Project Site
Harbison Masterplan
THE SUPERBLOCK: Open Spaces—Safety
—Green City.
Planned for peaceful living and privacy, houses face on quiet spaces and are oriented to receive the maximum amount of light, air, and sunshine. They are safe from the danger and annoyances of traffic because they are reached by specialized paths isolated from traffic highways.

Harbison Background and Organization

Planning for the community of Harbison was begun in 1972 by the Harbison Development Corporation, a non-profit development group which applied for federal government "bedroom community funds" to provide for a better planned community for the Dutch Fork which was rapidly becoming a mass of subdivisions for families who worked in Columbia. This organization obtained as much available land as possible and eventually produced a residential community plan based loosely on Clarence Stein and Henry Wright's New Town plan for the community of Radburn, New Jersey.

As a stipulation to the federal funding for the Harbison project, the development corporation was required to donate a percentage of the land to public or non-profit uses. As a way of complying with this requirement, and as a means of utilizing land in drainage zones that were unfit for construction, public greenways were planned behind residences with paths for pedestrians and cyclists. Through-streets were avoided as much as possible and overpasses and underpasses separate vehicular traffic from cycling and pedestrian traffic.

Also within the planning framework for the Harbison community are zones for recreational and educational functions, an area set aside for religious buildings, and zones for institutional/office construction as well as a commercial core. The community of Harbison extends to both sides of interstate 26 and is divided between Lexington and Richland counties. The community is not intended to be self-contained, although it is possible that the community will eventually draft a town charter.
THE NEIGHBORHOOD is the natural basic planning unit which permits the greatest economy and freedom in the layout of blocks, streets, shopping centers, schools, recreation spaces, houses. It centers around communal interests, whose focal point is the elementary school. Ultimate size of each neighborhood may be measured by the number of families whose children will fill an efficiently-run school. Each neighborhood requires well-defined borders to preserve and protect its unity and special character. Topographical limits or planted areas may determine these.

THE COMMUNITY is composed of one or more neighborhoods separated by open green spaces, but bound together by secondary roads. The development of a community requires common interests vital to residents. Size depends primarily on dominating interest or need—usually high school community center—and on the most workable and economical organization for that function.
When the first residential neighborhoods in the Harbison Community plan were constructed, Harbison Boulevard was a minor two lane road. In recent years, however, nearby Piney Grove Road, a two lane road which runs parallel to Harbison Boulevard, has served an increasingly heavy traffic load since it intersects with Interstate 26. It is physically impossible to increase the width of Piney Grove Road, so the South Carolina Department of Highways and Public Transportation chose to increase the width of Harbison Boulevard to four lanes and to provide intersection ramps with Interstate 26 in an effort to equalize the traffic load.

In 1981, Lexington County completed construction of a county services complex at the southeast corner of Harbison Boulevard and St. Andrews Road. This complex houses the community fire department, the emergency medical services ambulance, a branch of the county library, and offices for the sheriff and magistrate who serve the area. Located adjacent to this complex is an oral surgeon's private office. Across St. Andrews Road from the county complex is Irmo High School to the north and a church to the south. A train line runs adjacent and parallel to the east of St. Andrews Road. A series of power lines runs in a line from the church through a point south of the county services complex to an intersection with Harbison Boulevard midway between St. Andrews Road and Interstate 26. A road leading to a Harbison residential neighborhood is located across Harbison Boulevard to the north at this point. To the south at this location is a newly completed medical office.

The site is located within a planned community on property that the Harbison Development Corporation has zoned for industrial/office development. Across Harbison Boulevard from the
selected site is property which is currently undeveloped but which is zoned by community planners for commercial use. The planners have expressed a desire that a shopping complex of an undetermined scale be considered at that location.

The project site is that area south of Harbison Boulevard and west of Frontage Road. This location provides convenient access for the community and high visibility of the facility to attract the client market. Also of importance in the selection of this site is the location of the emergency medical services ambulance on Harbison Boulevard and the proximity of the site to Interstate 26 which makes it ideal for transporting life-threatening cases quickly to Lexington County Hospital or to any of the hospitals in Columbia. Access to these hospitals is also important to staff and physicians who shuttle from this facility to major hospitals.

The site slopes in a curving fashion toward the south to a low point which is the location for a future pond. The soil in this area is red clay and has made Lake Murray feasible as well as the many smaller lakes and ponds which dot the region. The formation of a pond at this point also reinforces the Harbison Community’s concept of green public areas and provides an activity center for future office development in this zone.

The Lexington County Department of Planning and Development has adopted the recommended zoning plan presented by Harbison Development Corporation and offers only restrictions that are applicable statewide concerning building codes. The Harbison Community has an elected review board whose members must approve any architectural designs within the community’s boundaries before construction may begin.
Architectural Program
Overall Relationships

The primary activity blocks in the program pertain to medical offices, outpatient surgery, minor emergency care, and support services. The concept of designing these activities as a unit stems from the fact that all of these activities are becoming popular as outpatient activities removed from the hospital setting.

Since up to 40% of all surgical cases may currently be performed on an outpatient basis, then it follows that some physicians and surgeons may perform a majority of their surgical cases in this manner and may rarely utilize hospital facilities. Such physicians and surgeons may prefer to relocate their offices closer to freestanding outpatient facilities and, if possible, closer to their patients' homes. It is becoming quite common for physicians and surgeons to share ownership in outpatient surgery facilities.

It is also becoming popular for physicians to extend their office hours for the convenience of their patients and to maintain flexible schedules to allow for emergency office visits. Groups of physicians find it easier to rotate shifts to cover minor emergency cases.

Physicians and surgeons prefer to be located relatively close to such support services as laboratory, radiology, cardiovascular, and physical therapy facilities for their own and their patients’ convenience. Physicians, surgeons, and individual specialists in these service areas as owners may also share financial profits which they might not otherwise enjoy.

The proposed facility provides the opportunity for physicians and surgeons to relocate conveniently and profitably with the services that they are tending to use most often and in close proximity to their patients.
There are five major functional component groups in ambulatory care:

Group 1 - Basic Medical Services provide primary general care and are generally divided into adult and pediatric modules as well as OB/GYN services. These modules are usually a client's first point of contact with the facility, and form the base for the organization's distribution of health care services. Here the client receives basic diagnoses and treatment, and from here the client may be directed to any required medical specialty.

Group 2 - Supporting Medical Services encompass current medical specialties such as: urgent visit, pharmacy, radiology, laboratory, general surgical treatment, orthopedics, eye care, testing and screening.

Group 3 - Administrative Services include those services required to administrate the daily functioning of the facility: secretarial, administrative, financial, medical records, and conference rooms.

Group 4 - Support and Service Facilities consist of: staff and employee facilities (lounges, locker rooms, toilets, eating facilities and on-call suite), central supply, storage, service pickup and delivery, and maintenance and mechanical equipment.

Group 5 - Community Facilities and Secondary Support Facilities: Many facilities encourage community participation and awareness by providing multipurpose areas, also accessible to the staff.
A well-organized circulation system is essential to efficient operation. Since the purpose of any ambulatory care facility is to effectively bring together the providers of medical services and the clients of health care, the patterns of movements of both groups must be synchronized to work together constructively rather than divisively. The circulation system must deal with sometimes conflicting goals: requirements for efficiency and flexibility may encourage large groupings of examination and treatment areas with long, uninterrupted corridors, to the confusion of the client.

Division of the circulation system into two major units, one for clients and the other for providers and services, should be considered. Such a separation of functions aids in simplifying the clients' system, helping their perception of the facility. It also enables the staff to communicate with each other and to circulate within the plan without being interrupted by clients. The circulation system for services and supplies should not disrupt client circulation and can be combined with the provider circulation system.

Since medical services vary in amount of utilization and length of visit, consideration should be given to locating those services with large volume and limited length of visit near the entrance or reception station in order to reduce traffic and disruption to the other medical services. For the typical ambulatory facility, pediatrics, internal medicine, OB/GYN, eye care, laboratory and urgent care constitute the main grouping and should have primary accessibility. Locating any highly utilized area near the main entrance is an obvious goal, but one that is subject to modifications. Pediatrics may not have the highest use, but due to noise of children, spread of contagion and large numbers of family groupings, it might well be located near the front. Internal
Certain medical services tend to have strong interrelationships. Primary adult and pediatric care are good examples; the medical staffs often benefit from close contact, and in some plans there is no physical separation of these two units. The lab, radiology, surgical and urgent care units also have interrelated functions. There is also a relationship between orthopedics, radiology and physical therapy, as there is between internal medicine and the labs and radiology.

Concourse

In some cases, attempting to bring the client directly into the middle of the facility (around an interior, naturally lighted courtyard) is desirable as each one can then fan out to all the services. In such a concourse surrounded by a ring of medical service elements, clients would circulate outwards from their concourse and its waiting area; and providers would circulate inwards from an exterior ring of offices, both coming together in a layer of spaces where examination and treatment would occur. The outer corridor provides for perimeter offices with a potential exposure to the outside and constitutes provider and service access to all program elements. The client-provider interface can occur between the two circulation systems as required by the program.

The "main waiting room" is functionally only a corridor to the small waiting areas for each service. Yet, there is an opportunity for it to become a space that can entertain the patient and/or family, can provide secondary services ranging from pharmacy to eyeglasses to entertainment or art, or can even provide health information such as preventative medicine movies and exhibits. Natural light, warmth and clarity of medicine is usually the other intensely utilized area, and it usually should come next. OB/GYN is better off separated and away from pediatrics.
"where to go" are essential. The concourse could have, in varying degrees, some or all of the following facilities:

- Main reception and control
- Public toilets and telephones
- Pharmacy
- Optometry and eyeglasses
- Gift Shop
- Snack shop or vending machine area
- Well child play area
- Access to controlled outdoor waiting or play area
- Basic meeting area for evening or nonbusy hours
- Access to all smaller waiting areas or functions
- Overflow waiting space at high volume periods

These facilities are not dissimilar to those often provided in a well-designed shopping mall. The important concepts of intimacy and friendliness can be obtained if attention is paid to patient flow, colors and graphics, planting smaller seating areas and the general ambiance of the ambulatory care facility. The staff can also impact upon this sense of place by encouraging various revolving exhibits of art shows or other displays.

The people receiving care and those dispensing it have separate, and sometimes conflicting, psychological needs. Those receiving care require a sense of encouragement when they use the facility. Concepts of "warmth" and "friendliness" are vital, as well as a sense of concern for the individual's dignity. Both the client circulation system and waiting areas should have easily recognizable features and be designed to encourage a "sense of place."
Use of outpatient surgery by surgical specialty indicates proportions of types of surgery cases related to gynecology, orthopedic surgery, general surgery, ear, nose and throat, plastic surgery, eye, and other types of cases as shown here in the diagram.

Use of urgent care facilities by medical specialty indicates urgent cases related to internal medicine, orthopedics, general cases, gynecology, ear, nose and throat, ophthalmology, and cardiology in proportions as shown here.

This information tells us what patient complaints are about and the specialties of knowledge required by physicians and surgeons using these facilities. However, some gynecological surgery can be performed by general surgeons as well as gynecologists, and some plastic surgery can be performed by EENT specialists as well as plastic surgeons. In urgent care, a general practitioner would probably feel competent in setting broken bones, performing all specialties of exams, and handling most internal complaints. An emergency medicine practitioner is trained to handle all types of urgent cases including life-threatening cases that many medical specialists would not be trained to handle. Since there are such overlaps in specialties, responsibilities, training and capabilities, it is difficult to determine the proportions of medical and surgical practice required in relation to outpatient surgery and urgent care facilities. It is clear that the unknown proportions would fluctuate, so the facility must be designed with flexibility in mind. The sizes and types of practices used for this design are theoretical though reasonable representations of realistic proportions.
Medical Offices
(Activities and requirements)

The administrative functions of a medical suite include waiting and reception, medical records, and business (appointments, bookkeeping, insurance and clerical functions).

Generally, patient care functions include examination, treatment and consultation. The patient enters the waiting room and checks in with the receptionist. When called to the examination area by a nurse or aide, the patient may be weighed, checked for blood pressure, asked for urine sample, and/or checked for body temperature. The patient is prepared for examination and the nurse or aide arranges the instruments that the physician will need and leaves the patient's chart for the physician. When the doctor enters, he or she will wash up, inquire about symptoms while making notes on the patient's chart, and examine the patient (in many cases with the nurse or aide present). The patient may then be directed to dress or have additional lab work done before meeting again with the physician (in the same exam room or in a separate consultation room or office) to discuss diagnosis and treatment. The patient leaves his or her chart at the appointment desk on the way out and arranges for payment for services and sets up any future appointment.

Support services include nurses' station, laboratory, x-ray, darkroom, storage and staff lounge. Depending on the type of medical office, specialized support services such as radiology and laboratory would be better close by. Also, depending on the specialty of practice, consideration should be given to shortening the distance of travel for physicians, nurses and staff who perform work in several departments and rotate between office, surgery suite and/or urgent care, or who commute between the facility and nearby hospitals.
Family Practice

Family Practice is a practice with a high volume of steady patients. It is necessary to provide a very large business office and plenty of storage space for medical records. There should be three or four exam rooms per physician consultation/office. The nurses's station also should be of a relatively large size, and a nurse's office should be provided. A wide variety of procedures are performed within this suite, so there should be a central supply area. A cast room should also be included.

Pediatrics

Pediatrics is a high volume practice with frequent visits of short duration in the exam room. There is often a longer waiting time than in many other practices with several people accompanying a sick child, so the waiting room should be as large as possible. It is necessary to provide a small, isolated waiting room for sick children. Three or four infant exam rooms should be provided per physician consultation/office. These exam rooms may be as small as six feet by seven feet in plan. A large nurses' station is required for injections.
Obstetrics and Gynecology (OB/GYN)

This is a high volume practice which requires the high ratio of one or two nurses per physician in addition to clerical staff. Three or four exam rooms should be provided per physician consultation/office, and each exam room should have access to a toilet. A large nurses' station should be located toward the reception point of the suite and should include provisions for sterilization of equipment and urinalysis as well as preparation of Pap smears for the cytology laboratory. A very large percentage of outpatient surgery procedures are related to gynecology, so staff convenience should be considered. There is a need for a large waiting area and a business office with a large medical records storage area as most of these patients receive continuing care.

Internal Medicine

Internal Medicine is a medium volume practice that requires long history-taking interviews by the internist and sometimes a battery of tests. This department makes extensive use of laboratory, cardiovascular, and radiology facilities. The internist spends a good deal of time with the patient on the initial visit, but follow-up visits may be shorter. Two or three exam rooms should be provided for every physician consultation/office. A special exam room for proctoscopy should be provided with an adjacent toilet. A room for x-ray film storage and viewing is needed.
Eye, Ear, Nose and Throat

Optometry, ophthalmology and prescription glasses dispensing require highly specialized rooms for various procedures. Refracting rooms may be designed as elongated rooms for chart viewing or as more standard size rooms with chart viewing controlled by the use of mirrors. It is crucial that these rooms be sealed from light sources. A minor procedures room should be provided as should a fields room and an area for patients to rest away from direct light after receiving eye drops. An eyeglass dispensary should be accessible to the browsing public.

Ear exam rooms should be separate from eye exam rooms. A sound insulated audio room should be located as far from noisy areas as possible. It is often a prefabricated unit installed during construction of the facility.

Many outpatient surgery cases are of the eye, ear, nose and throat variety, so convenience to the staff should be considered. Ear, nose and throat patients often are referred to radiology.

Orthopedics

This is a medium volume practice which makes frequent use of radiology services. Many orthopedic patients are referred to the physical therapy department. No lab tests are performed on these patients, so the nurses' station requirements are minimal. There is also little need for designated storage areas since supplies for exam and casting rooms are stored in their respective rooms. The ratio of exam rooms to orthopedist office/consultation is two to one. Provisions should be made for x-ray film storage, filing and viewing.
Surgical Specialties Practice

The needs of a general surgery practice are rather simple. The patient volume is comparatively low and two exam rooms should be ample for each surgeon consultation/office. Patients probably spend more of the office visit in consultation with the surgeon than in examination. Most patients are referred to surgeons by primary care physicians so only a small records holding area is necessary.

Plastic surgery patients also spend a good proportion of office visits in consultation with the surgeon. Two or three exam rooms per surgeon consultation/office is recommended.

Some surgery patients, especially plastic surgery patients, prefer to enter and exit the surgeon's office discreetly, so access separate from the clinic's main entrance should be provided.

Other specialists who might make frequent use of the outpatient surgery department could also share a practice with general and plastic surgeons and have similar requirements. These might include oral surgeons or urologists.
Outpatient Surgery

A patient is generally referred to the outpatient surgery facility by his or her physician or surgeon after an office visit and diagnostic tests indicate that outpatient surgery is desirable. The physician or surgeon contacts the outpatient surgery facility and schedules the operation. The patient is notified and is scheduled for any necessary pre-operation lab work that is necessary.

On the day of surgery the patient arrives with a family member or friend at the appointed time and is registered as a patient. The accompanying friend or relative joins the patient in the gowing and preparation area where the patient may receive preparatory medication or otherwise be prepared for surgery. The patient either walks to the operating room or is taken by stretcher, depending on the patient’s condition, and the friend or relative is escorted to a waiting area to read or watch television until the operation is over.

When the surgery has been completed, the patient is wheeled by stretcher to a recovery area for observation until the effects of the anesthetic have worn off and the patient regains consciousness. At that point the patient may be moved to a separate area to be rejoined by the friend or family member until the patient has recovered enough to be escorted home. The patient is examined and then discharged with instructions for follow-up care. The average length of stay for a patient is 3.5 hours from entry to exit on the day of surgery. The patient returns home and is contacted periodically by medical personnel to monitor the patient’s recuperation.

Upon entering the facility staff members should have immediate access to scrub and gown areas. They should be able to circulate in non-public
areas as much as possible. Special consideration in surgical facilities is the concept of segregating dirty, clean and sterile areas. Public areas are considered dirty. Clean areas include patient treatment areas and service areas with restricted access. The operating suite is a sterile area that is highly restricted. Only staff and patients who are garbed from head to toe in sterile drapes or who have been fully scrubbed may enter this zone. All equipment and supplies used in the sterile zone are supplied in sterile packaging or are heat sterilized at the facility. The selection of building materials and finishes requires thought on ease of maintenance. Patient areas must be designed to be quickly and easily cleaned and prepared for future patients. Operating rooms must be thoroughly cleaned and sterilized between procedures. Pre-op and recovery areas are sometimes dirtied by spills and leaks.

The patient entrance to the outpatient surgery unit should be easily recognizable. The reception area should be immediately accessible and should afford privacy for the patient and family members to discuss medical, personal, or financial matters. The reception area should be centrally located to handle arrival, oversee waiting areas, maintain patient flow and monitor discharge of patients.

Following are estimated space requirements for the Ambulatory Surgical Center:

• Sterile Operating Room Support
  Three general operating rooms
  Nurses' Station/Control/Charting
  Scrub-up
  Equipment Storage
  Cast Room
  Sterile Storage
  Clean Receiving
  Clean Workroom
  Decontamination
  Soiled Holding
  Portable X-ray Storage
  Darkroom/Film Viewing
• Anesthesiologist Observation Support
  Anesthesia Workroom/Gas Storage
  Anesthesiologist's Office
  Pre-operation Holding and Preparation
  Patient Toilet
  Stretcher/Wheelchair Holding/Storage
  Anesthesia Recovery Beds
  Nurses' Station
  Equipment Storage
  Clean Supply
  Soiled Holding
  Janitor

• Patient - Family Areas
  Patient and Family Waiting
  Patient Lockers/Dressing/Toilets/Showers
  Patient Recovery/Family Beds
  Nurses' Station/Charting
  Medicine Preparation
  Nourishment
  Clean Supply
  Soiled Holding
  Janitor

• Administrative Areas
  Business Office/Reception
  Director's Office
  Conference
  Patient Discharge
  Head Nurse's Office
  Surgeons' Dictation/Conference
  Staff Lounge
  Staff/Lockers/Showers/Toilets/Sterile Gowning
concept: OUTPATIENT SURGERY

1. MD RECOMMENDS PROCEDURE; PATIENT AGrees; DRIVES HOME.
   MD ORDERS PROCEDURE TO BE SCHEDULED.

2. STAFF REQUESTS SCHEDULE DATE FOR PROCEDURE.
   DATE & PROCEDURE SET FOR MD & PATIENT.
   OPD SURG DEPT.

3. CURRENT SURGERY OR MD OFFICE CONTACTS PATIENT TO SCHEDULE PRE-OP VISIT & OP APPOINTMENT.

4. PRE-OP VISIT, ONE DAY PRIOR TO OUTPATIENT SURGERY PROCEDURE.
   INSURANCE LAB WORK RADIOLOGY INSTRUCTIONS.
   OPD SURG DEPT.

5. PATIENT RETURNS HOME.

6. FAMILY BRINGS PATIENT TO OUTPATIENT SURGERY UNIT.

7. PROCEDURE:
   DR. PREP.
   SURGICAL PROC.
   RECOVERY.
   POST-OP.
   FAMILY WAITING.

8. PATIENT RETURNS HOME.
   (FOLLOW UP IN M.D.'S OFFICE.)
Urgent Care Unit

The urgent care unit is a separate exam/treatment area that accepts walk-in patients, and avoids disrupting the scheduled appointments sequence. This unit should either be adjacent to the main facility entrance or may even have its own entrance.

It is necessary for the urgent care unit to have a fairly strong physical image, both for advertising the existence of the facility and for signaling directions to anyone seeking immediate care. Advertisement is crucial for this type of medical service since many first time patients will come to the Harbison Clinic through this department. Two types of public entrances must exist: one for non-trauma cases and one for trauma cases. A patient in a bloody or extremely sick condition should be ushered into the facility at a point away from normal patient traffic.

Once a patient enters the urgent care unit, he is registered and is questioned about his complaint. The patient would most likely be required to arrange for payment for services before seeing a doctor. At peak times, not all urgent patients can be seen at once. At these times, triage is implemented and very crucial cases are seen immediately. Otherwise the service is first come, first served. When the patient is called, he is directed to an examination room to meet with a doctor on duty.
Upon examining the patient the doctor may order x-rays or lab tests on the patient before setting a broken bone or completing diagnosis. For this reason such support services should be located close to the urgent care examination area.

The staff may be full time, stable or rotating shifts, but more likely, physicians within the Harbison Clinic would take turns on urgent care shift. Other specialists would be on call and might sleep or stay at the facility or would remain within a short distance of it. Consideration should be given to the ease of staff changing shifts or otherwise entering or leaving inconspicuously.
Supporting Medical Services

Laboratory

Basic lab services include the following analyses:

- Blood: cell counts, hemoglobin, blood gases, etc.
- Urine samples
- Stool and sputum samples
- Cultures

Also included are a blood drawing area and toilet facilities for obtaining urine samples (with a sample pass-through from the toilet to the lab). Both normal and stress EKG testing are usual lab functions, as often it is the lab personnel who are trained to assist in the tests.

Estimated space requirements are as follows:

Lab Technician's Office
Specimen Toilets
Venipuncture Area
Storage
General Laboratory
Conference
Business Office
Cardiologist's Office
Stress Testing
EKG Testing
Treatment
Clean-up and Supply
Patient Dressing

Radiology

Radiological procedures are normally limited to diagnostic services to include films for chests, orthopedics, gastrointestinal series, etc. The
services performed will require patient dressing and gowned waiting areas, and toilets directly accessible to procedure rooms, as well as radiologist office and film reading space, film file storage and administrative areas, staff services, and the control and film processing spaces for the procedure rooms. An ultrasound room should be included as well as radiographic and fluoroscopy rooms. Storage for supplies and linen must be provided.

Physical Therapy

The physical therapy program requires specialized areas for hydrotherapy, heat packs, exercise equipment, etc. Areas must be provided for patient dressing and toilets. Physical therapy has conflicting requirements of privacy yet ease of therapist supervision and access.

Pharmacy

The pharmacy should accommodate the following conditions:

• Adequate prescription receiving and dispensing areas to accommodate large peak traffic volumes.
• Adequate acoustic privacy at dispensing areas so that privacy of communication is maintained concerning prescription dosage or usage.
• Adequate storage space to allow bulk purchase cost savings.

Because of the high volume of traffic, the pharmacy should be located very near the main entrance.
Harbison Clinic
A Medical, Surgical, Diagnostic and Health Services Facility
for Harbison New Town, South Carolina

A Terminal Project submitted to the faculty of the College of Architecture, Clemson University
in partial fulfillment of the requirements for the degree of Master of Architecture, Spring 1985
Concepts
Building Sections

Section D

Section E
NOTES ON TEXT


3 "The Surgical Center: Concept, Care, Cost in Freestanding Facility," by B. L. Crouch, J. L. Ford, and Wallace A. Reed, _Hospital Topics_, December 1971, p. 69.


Ibid., All functional interrelationships information, pp. 25-26.

Ibid., All concourse information, pp. 26-28.
NOTES ON DIAGRAMS AND ILLUSTRATIONS

Page 19 diagram data collected from
1 "Providers Preparing for Major Battle Over Market," Modern Healthcare, September 1984, pp. 82 and 88, and
2 "Ambulatory Care Centers: Off and Running," by Brenda L. Becker, Medical Laboratory Observer, January 1983, p. 42, and

Page 20 graphics are from Medical Group Management, May-June 1984, p. 48.

Page 21 diagram data collected from

Pages 24 and 25 diagrams are from "City Patterns...Past and Future," by Clarence S. Stein, New Pencil Points, June 1942, pp. 55 and 56.


Page 34 diagram data collected from Ambulatory Surgical Centers Development and Management, by Thomas R. O'Donovan, 1976, p. 75.

Page 43 diagram is a creation of Robert L. Chartier.
Books


**Reports**


**Guidelines**


The Harbison Group, *Harbison Development Guidelines.*

Articles

"Advice from the Pros: Tips for your Same-day Unit," *Same-Day Surgery*, October 1978.


Crouch, B. L., Ford, M. D., and Reed, W. A., "The Surgical Center: Concept, Care, Cost in Freestanding Facility," *Hospital Topics*, December 1971.


Pace, John, "Freestanding Ambulatory Surgery," a technical paper on the Salt Lake Surgical Center presented to the AIA Committee on Architecture for Health October 30, 1981 in Vancouver, B. C.


Putnam, Larry P., and Landeen, Fred H., "Outpatient Anesthesia at the Ambulatory Surgery Center, Tucson Medical Center, Contemporary Anesthesia Practice, 1978."


Stetson, Patricia Ann, "Hospital-affiliated or freestanding units: Which are best?", *Association of Operating Room Nurses Journal (AORN Journal)*, December 1983.


"Surgicenter claims higher utilization rate than OPD's," (Phoenix), *Modern Hospital*, December 1972.


"Two Medical Clinics enhance efficiency and access to care," *Hospitals*, November 16, 1980.


