PART ONE:

DESIGN GUIDELINES

DESIGN GUIDELINES FOR BIRTH FACILITIES
INTRODUCTION: THE CONTEXT

THE PAST

The traditional mode of delivering obstetric services was established in the post WWII era. Hospital obstetric units built in the 1940's through 1970's consisted of a series of specialized rooms for each stage of the birthing process. Nursing staff was trained as specialists in each stage of birthing.

The labor/delivery nurse worked with the mother in the labor room or labor ward, monitoring her progress from the early and middle stages of labor until just before the birth was imminent. At that time the mother was quickly transferred to a rolling cart and transported to a delivery room, not unlike an operating room. The mother was then transferred to the delivery table.

A hospital obstetric unit designed in the 1970's has separate labor, delivery, recovery, postpartum rooms and large nurseries. (L. Redstone, ed, Hospitals and Health Care Facilities, McGraw Hill, N.Y., 1978, 93)
The trend for birthing went from the 1950's and 60's when most women were asleep and completely confined to bed for the labor and birth, to the 1970's, when pain medications varied from twilight sleep to intravenous pain killers to an epidural spinal injection where the body is numbed from the waist down. More often hospital policy allowed husbands to enter the delivery room and attend the birth. Portable mirrors were brought into the delivery room and the delivery table could incline to offer the woman more flexibility, involvement and awareness of the birth.

From the delivery room, standard procedure was to transfer the woman to a ward-like recovery room to be monitored for one or two hours and then again transferred to her postpartum room. Over this period of time hospital policies regarding baby care evolved from almost total nursing care, in the nursery, to more and more flexibility in allowing the mother (and father) to care for their baby day and/or night. Length of stay in the hospital for postpartum recovery has been shortened from ten days in the early 1950's to five days in the 1970's and down to forty eight hours in the late 1980's and early 1990's. This has been mandated by shrinking insurance coverage.

Major changes in birthing attitudes in the last two decades have impacted on the physical environment provided for women and newborns in the birthing process. A variety of designs have proliferated reflecting the range of philosophical approaches to birthing.

The feminist movement of the 60's and 70's resulted in an offshoot movement promoting the use of midwives and natural childbirth methods, taking place in a home environment. The home birth setting gave way to the introduction of non-
hospital birth centers. The birth centers foster the concept of birth as a family event with control centered on the woman giving birth, aided by her spouse and midwife.

The initial response of hospital planners to the growing natural birth movement was to remodel part of the obstetric unit in order to offer the community one or two birthing rooms. A birthing room was a labor room expanded to include room for equipment to be rolled into position so that birth and subsequent recovery could all take place in the same room. The room was equipped with a bed that could be used for labor and break apart for delivery to take place.

Women who chose to use the birthing room had to make sure the physicians they selected were willing to do deliveries in the innovative rooms. Many older obstetricians resisted change and still preferred to work in the traditional delivery room setting. As the birthing room concept in hospitals became more common and more well known, demand for them by expectant mothers rose dramatically. In order to compete for patients, hospitals increasingly adapted their facilities to offer birthing rooms as an alternative to the traditional setting. New doctors who trained in the 1970's and 80's were exposed to the birthing rooms in their early training and accepted them as an established state of the art delivery environment.

New obstetric units designed in the 1980's and 90's responded to the demand for a home-like environment and single room maternity care by developing the concept of labor/delivery/recovery room, and labor/delivery/recovery/postpartum room in established maternity departments within the hospital. Since women can now select which environment best meets their needs, hospitals have to compete in the
Introduction: The Context

marketplace. Hospitals that provide these new facilities can and do boast that they offer the best of both worlds: the home-like warmth of the birthing room, with the latest technological provisions and medical expertise to ensure the best medical treatment for mother and newborn, should complications arise.

This example of an LDR (labor/delivery/recovery) illustrates how the room can convert to different modes for the different stages of the birth process. (Bajo, 1987)

Obstetrics, over the past decade, has achieved renewed status among hospital departments. The impetus for this development has been the advent of competition among hospitals as a result of changing health care economics and the acceptance of health care marketing as an ethical business activity.

Obstetrics is now considered to be the service leader in establishing patient loyalty to the institution. Innovative maternity programs can increase the
patient volume in other areas, through the women's influence. Since women tend to decide where the family will go for medical care (in 70% of families say some researchers), loyalty won through innovative obstetrics programs transfers to other patient areas. ("Innovations in Obstetric Design" Hospital Administration Currents, 1986, 30(3): 9-14.)

Single-room maternity care requires that hospitals not only make a major financial commitment to their facility but also plan to adopt a new method of care delivery by physicians and nursing staff.

Experts in health care facility planning, and specifically birth environments see the future as an unbundling of health care services. More and more procedures and treatments are conducted on an outpatient basis. Maternity care services of less than twenty-four hours is fast becoming a reality as standard insurance coverage continues to decrease. The future of health care services appears to be grouping of most women's health care needs in a separate ambulatory care center associated with a hospital, or a private woman's clinic with easy access to a hospital facility.

Twenty four states already have regulations in place that provide for licensing of freestanding birth centers. Four states license birth centers under other regulations and fifteen states are exploring such regulations from preliminary drafts. These freestanding birth centers, many of which also provide other women's health care services, provide a one stop, convenient, comfortable and economic alternative for women's health care. This is the forefront of women's health care and birthing facilities. Hospitals will adopt the best features of these outpatient clinics to develop satellite or
associated hospital sponsored facilities for obstetric units and women's health care.

A GUIDE FOR NEW BIRTH FACILITIES

A documentation of on-site case study evaluations of birthing facilities, together with the background research are integrated into a concise report of specific design guidelines for birthing facilities. This research and the resulting guidelines are intended to provide health planners and architects with research-based information to facilitate more informed design decisions regarding future birthing environments.
THE NATURE OF BIRTH

PERSPECTIVES:

THE FAMILY

What are the feelings of a woman about to give birth?

For nine months the birth has been anticipated with a mixture of excitement and fear. Regardless of the prospective parents' attitude toward the new child as a welcome addition or a burden to cope with, the birth event itself is a major life experience for all women and most fathers as well.

The greatest fear is the fear of the unknown. Every birth is different and an apparently normal pregnancy can end up with unforeseen complications and risk during labor and birth. The greatest concern and hope of all involved is a positive birth outcome. So, of course, the issues of health and safety are the top priority for everyone.

Beyond the requisite concern for safety are a myriad of factors and decisions that the expectant mother will face during the birth process. She will certainly have to cope with pain that intensifies as the birth becomes imminent, to the point of greatest frequency and intensity during the birth itself. The length of time and degree of pain for active labor, transition and birth varies so widely from one person to the next and one birth to the next for the same woman, that unpredictability adds to the anxiety of every birth experience.

A woman in childbirth must decide if she needs pain medications (with the possible risks and trade offs involved) to what extent she wishes to have her husband or other support person present during labor
and birth, and to what degree she will utilize the techniques learned in natural childbirth classes to cope with pain and help labor progress. She may be tied to an I.V. and a fetal monitor from the time she is admitted, or she may be walking around, sitting in a lounge or taking a shower or bath until the labor gets to the advanced stages. The expectant mother may think about these issues and make decisions in advance, but her plans are often modified to some degree because the circumstances of each birth are so unique.

The inherent uniqueness of each birth requires that the caregivers, as well as the physical environment be flexible and prepared for individual differences between women's attitudes and the different physical experiences of each birth.

The physical environment plays an important role in the woman's total birth experience. The ambiance can be intimidating and frightening, or it can be warm and comforting. The environment can accommodate her support person, making him/her feel like a welcome part of the birth process, or the environment can be an obstacle to thwart his/her involvement in the birth. The birth environment can offer every sophisticated medical technology available or it can be devoid of all but the very basic medical interventions and be the next step away from a home birth. Different facilities with a similar approach towards providing a birth environment that appears to be a home-like bedroom setting may be vastly different because of budget considerations. One may have the finishing materials of a luxury five star resort and the other may appear to be a basic roadside motel room version with all the same basic medical equipment just as accessible.
Part One: Design Guidelines

The hospital planner and architect who are responsible for designing birthing environments have a responsibility to the primary user group of the facility – the women who will be giving birth there. Although many crucial issues, such as a positive birth outcome and the degree of pain that will be suffered, are out of his control, the designer can make the birth experience more comfortable, more accommodating and relaxing, and less intimidating than obstetrical units were in the past. This contribution can have a significant positive impact on the total birth experience.

THE PHYSICIANS AND MIDWIVES

While the certified nurse midwife and the physician both have a positive birth outcome as their top priority in every case, they have other goals and interests that may be held in common or are divergent. Although some hospitals have no births attended by nurse midwives and therefore only need to accommodate the needs of physicians, other hospitals and alternative birthing centers have some or all births attended by midwives and must gear the environment to support the style and procedures of all the different kinds of birth attendants that utilize their facility.

All birth environments must provide for the physical needs of the birth attendants who service the facility in terms of call rooms, a lounge with accommodations for relaxation, socializing and refreshments, and a work area to write up reports and exchange information with other medical and support staff. These spaces must have adjacencies that are close enough to the labor/birthing rooms to allow for quick access to a patient in need of his or her attention.
The Nature of Birth

The single room maternity care obstetrical system that is family oriented affords the physician and midwife the opportunity for greater involvement with the family, the time saving convenience of having his/her patients clustered in one area, and positive family feedback regarding the total birth experience.

Physicians' needs for sophisticated medical equipment can be accommodated so that the home-like setting of the birthing rooms converts to a delivery room mode without the necessity of moving the mother.

Certified nurse midwives generally serve fewer mothers and expect to spend a great deal of time with the laboring woman to help her through labor and birth. The design of the facility should keep in mind the midwife's need for a comfortable place to stay many hours in the mother's room, in addition to one or more family members. Midwives generally offer a great deal of encouragement to the woman to use natural means to relax herself and cope with pain. The physical environment should accommodate and encourage these activities.

Often women who choose an alternative birth center and/or a midwife for their birth, intend to involve a greater number of family members, including other children in the birth event. This correlates with a philosophy subscribed to by certain midwives - that birth is a family event that should bring in the whole family. The designer must accommodate the greater number of people and their expected activities.

Labor and delivery nurses have a very exciting and rewarding, but highly stressful job. In a traditional hospital setting one nurse was a labor/delivery
nurse, one nurse performed newborn baby care, and a third nurse only worked in postpartum mother care. These highly specialized job slots allowed the nurse to develop a high degree of expertise in one area. However, the drawbacks are multiple transfers of patient and the related duplication of paperwork. This separation of duties necessitates a breakdown in continuous care of the mother over the short time she is in the hospital.

The LDR - labor/delivery/recovery, and LDRP - labor/delivery/recovery/postpartum systems both require cross training of nurses, so that one nurse can care for one mother from the beginning of the birth process through all or most of the time she is in the medical facility. Each nurse has less women to serve, but more time and responsibility for each one they do attend.

Nurses can work more efficiently if the facility is designed to economize on the steps she has to take to do her job. Running long distances between women's rooms, nurses station and storage and supply areas uses up a nurses valuable time and energy. Job satisfaction increases when the work place is designed to work in harmony with the style of service and policies under which the nursing staff operates.

The nursing staff must have relief from their highly stressful and physically demanding duties. The facility design should accommodate the nursing staffs' need for retreat to rest, take refreshments, take care of personal needs and to socialize.

THE HOSPITAL

The hospital's goals for an obstetrical unit are dictated by the realities of hospital economics. A typical hospital administration is concerned with
increasing staff productivity and efficiencies. At the same time, the administration seeks to increase job satisfaction and thereby lower staff turnover.

Single room maternity care helps achieve these goals. By cross training the nursing staff in perinatal areas, hospitals can achieve a more flexible utilization of their staffs.

Marketing of its facility is very important to the hospital. A facility that is designed to be inviting, comforting and attractive, as well as offering all maternity services in one room, will increase consumer response and improve its image and visibility in the community. Studies show that a positive hospital experience for maternity care leads to continued usage of that medical facility by the family consumer group.

The economic effects for a hospital to convert to an LDRP system are shown here. (Bajo, 1987)
Part One: Design Guidelines

It is estimated by Ross Planning Association that 10% to 28% in operating costs can be saved with the LDRP system over the traditional design. The programs below show that LDRP units do not require more square footage than traditional programs. Initial equipment and construction costs can be offset by a decline in operating costs and an increase in revenues due to volume changes. (Hospital Administration, vol. 30, no. 3, 1986)

| Table 1. Functional Program Model for Labor-Delivery-Recovery/Pregnancy, 2 D.R.P. Units With 2,000 Births Annually |
|---|---|---|---|---|
| No. Units | LDRP Room Elements | Recommended Sq. Ft. | No. Units | LDRP Room Elements | Recommended Sq. Ft. |
| 1 | Early Labor Lounge w/Toilet & Shower | 130 | 1 | Staff Toilet | 40 |
| 20 | LDR/P Rooms w/Toilet & Shower | 6,000 | 2 | Office | 150 |
| 4 | High-Bill Labor/Antepartum Room w/Toilet & Shower | 800 | 3 | Dietary/Wheelchair Storage | 60 |
| 1 | Couples Birth Room | 400 | 4 | Janitors' Closet | 30 |
| 2 | Triage Room w/Toilet | 140 | 5 | Conference Room (10 persons/classroom level) | 450 |
| 1 | Recovery Room (1 bed) | 240 | 6 | Consultation Room | 120 |
| 1 | Central Station | 300 | 7 | Nutrition | 150 |
| 1 | Medicines Preparation Room | 60 | 8 | Salon/Procurement/Dressing Area | 330 |
| 2 | Pharmacy/Consumer & Dispensing | 60 | 9 | Nebulizer Therapy (1 bed) | 240 |
| 1 | Clean Supply | 300 | 10 | Dressing Room w/Toilet | 90 |
| 3 | Equipment Store | 440 | 11 | Holding Area for Infants (8 persons) | 240 |
| 1 | Supply Closet | 120 | 12 | Special Care Nursery (6 persons) | 600 |
| 1 | Sterile Supply | 60 | 13 | TOTAL NET SQUARE FEET | 11,670 |
| 1 | Labor/Recovery Room | 100 | 14 | Assisted: 1.5 days ALOS* Vaginal Birth | 4,308 |
| 1 | Obstetric Labor/Recovery Room | 100 | 15 | Assisted: 4 days ALOS Cesarean Birth (50% cesarean births)* | 4,008 |
| 1 | Female Lactation w/Toilet & Shower | 400 | 16 | TOTAL NET SQUARE FOOTAGE | 4,110 |
| 1 | Maternity w/Toilet & Shower | 210 | 17 | Nursery Room | 300 |
| 1 | On-Call Room(s) w/Toilet & Shower | 240 | 18 | Assisted: 3.5 days ALOS Vaginal Birth | 4,308 |

*ALOS = Average length of stay

| Table 2. Traditional Program for 2,000 Births Annually* |
|---|---|---|---|---|
| No. Units | Labor and Delivery Room Elements | Recommended Sq. Ft. | No. Units | Labor and Delivery Room Elements | Recommended Sq. Ft. |
| 1 | Early Labor Lounge w/Toilet & Shower | 130 | 1 | Medicines Preparation | 60 |
| 8 | Labor Room w/Toilet & Shower | 1,600 | 2 | Clean Supply | 300 |
| 3 | Delivery/Confusion Birth Rooms | 1,200 | 3 | Saline/Utility | 150 |
| 1 | Trauma Room w/Toilet | 180 | 4 | Peri | 100 |
| 1 | Recovery Room (4 beds) | 640 | 5 | Wheelchair/Wheelchair Storage | 60 |
| 1 | Central Station | 300 | 6 | Janitors' Closet | 30 |
| 1 | Medicines Preparation Room | 60 | 7 | Head Nurse's Office | 100 |
| 2 | Pre-Room w/Toilet & Shower | 400 | 8 | Special Care Nursery (6 persons) | 600 |
| 1 | Conference Room | 450 | 9 | TOTAL NET SQUARE FOOTAGE | 4,110 |
| 1 | Consultation Room | 120 | 10 | Nursery Room | 300 |
| 1 | Neonatal | 100 | 11 | Assisted: 3.5 days ALOS Vaginal Birth | 4,308 |
| 4 | Antepartum Rooms w/Toilet & Shower | 800 | 12 | Assisted: 4 days ALOS Cesarean Birth (50% cesarean births)* | 4,008 |
| 1 | Maternity Room | 140 | 13 | TOTAL NET SQUARE FOOTAGE | 4,110 |
| 1 | Delivery Room w/Toilet | 60 | 14 | Nursery Room | 300 |
| 1 | TOTAL NET SQUARE FOOTAGE | 4,110 | 15 | Assisted: 1.5 days ALOS Vaginal Birth | 4,308 |

*ALOS = Average length of stay

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DESIGN GUIDELINES FOR BIRTHING ENVIRONMENTS
Hospital administrators and planners of every kind of birth environment must make a conscious decision regarding their approach to birth. This decision will be based on philosophical, social, and economic factors. Input for the decision making process can involve all user groups - physicians, midwives, nurses, administrators, and the consumers of the services. In that way the essential users can feel invested in this basic policy decision.

This section of the Design Guidelines identifies for planners the various philosophical approaches to birth and the ramifications for the delivery of services by the medical and nursing staff, and for facility design concepts.

Birth facility planners will find that once a general policy decision is reached, there must be a plan regarding what degree of flexibility and deviation from that basic policy will be tolerated under the system adopted by the institution. This flexibility or lack of flexibility will also have major ramifications for the staff and the design of the physical environment.
FLEXIBILITY FOR DIFFERING APPROACHES TO BIRTH

POLICY PLANNING

There are a wide variety of philosophical approaches to birthing. The birthing facility administrators need to decide on a basic philosophical approach and determine how much variation will be allowed for deviation from its policies on the birth process.

Many woman today are primarily concerned with having the "perfect" baby rather than the perfect birth experience. This means they are willing to forego elements of personal control of the birth and a non-intervention attitude, in favor of whatever high tech medical interventions are utilized by the obstetrician who orchestrates the labor and delivery (Wertz, 1989).

Other women are very concerned with the concept of "owning the birth" and want to be responsible for the decision making during every stage of the birth. This natural approach to childbirth views the obstetrician or midwife as an "enabler", helping a woman give birth, rather than as a "deliverer" of a baby leaving the mother in a passive role. This approach encourages the use of many techniques for relaxation and mobility during labor, and alternative positions for giving birth, rather than lying horizontally on a bed.

The naturalist approach to birth includes an attitude that the most appropriate environment for birthing is the mother's home, since birth is a natural family event and not a sickness requiring hospitalization. The sterile environment
of the hospital is a negative factor for this group.

Most people fall somewhere in between these two philosophies. Most expectant mothers want to try the techniques they learned in childbirth classes to cope with pain, relax and help the labor progress. But since the pain medications that are now available have much lower risk factors to the baby and still allow the mother to remain alert during the birth, this option is often accepted. Since a positive birth outcome is the ultimate priority, most women will trust their physician or midwife regarding any medical procedures he or she recommends.

If the birth facility has determined it is interested in adopting an LDR or LDRP system, or an alternative birth center approach, the following Design Guidelines will offer designers of birth facilities a variety of options to offer mothers and families experiencing the birth process.

SPACE FOR FAMILY OR OTHER SUPPORT PERSON

VARYING DEGREES OF SOCIAL AND PRIVATE SPACE

HOME BASE WITH A HOME-LIKE SETTING

RELAXATION AND COMFORT

ENCOURAGE MOBILITY DURING LABOR

PHYSICAL CONTACT BETWEEN PARENTS AND INFANT IMMEDIATELY FOLLOWING BIRTH

OPPORTUNITY FOR THE HIGH RISK MOTHER

BABY CARE BY MOTHER DURING POSTPARTUM STAY
PERSONAL CONTROL AND AWARENESS OF THE BIRTH

NEEDS AND GOALS

In choosing an alternative birth center most women are reacting against hospital care. One of the primary factors is a reaction against a lack of personal control in the hospital. (Annandale, 1987)

The data revealed that although many women chose a birth center because they wanted control of decision making in the birth process, the accounts of actual control were vague and unspecific. The author concludes that information exchanged by the midwives to the patients limited the patients actual control of the decisions during birth (Annandale, 1987) This research leads to the conclusion that the perception or feelings of personal control are more important to women than actual control. Ultimately, most women want to trust the judgment of their obstetrician or midwife. But resentment and dissatisfaction grow when there is disregard of the woman's ability to make decisions and help herself during the birth process.

The concept of "owning the birth", allows the mother to tell herself she worked hard and did a good job. These feelings have a positive psychological effect and start the mother off with confidence that she can manage her newborn (Interview of R. Willick).

Much of the success or failure in achieving a sense of personal control is dependant on the procedures at the
birthing facility as well as the style of care offered by nursing staff, doctors and midwives. Often, the laboring woman is hooked up to a fetal monitor shortly after arrival in her hospital room and the entire birth process is regulated by information from the machine.

The woman's body could provide much of the information necessary to make decisions concerning the birth. Once she is hooked up to the machine, she may give up thinking that her input is important and withdraw from active participation in the birthing process (Jordan, 1987).

It has been shown that the quality of a woman's birth experience not only is important for her own well being, but is increasingly recognized to be of importance for the marital relationship and parenting as well. One study has shown that the level of awareness has a direct and positive correlation in predicting the quality of the women's birth experience (Doering, 1980).

The environment can encourage active participation and awareness of the birth process. The design can reflect the idea that a mother's needs are natural, anticipated and important or that these needs are deviant and unimportant.

**DESIGN CONCEPTS**

Provide options for the woman to chose various techniques during labor and various positions for birth.
The modern birthing chair supports the mother in the upright position and could be offered to woman, recognizing individual choice and personal control as an important issue. (Dundes, 1987)

A separate room or alcove for admissions should be provided to indicate respect for the woman's right of privacy in disclosing personal information. The woman should not be expected to discuss financial or other personal information in the compromising and undignified hospital gown.

This portion of the plan for Prentice Women's Hospital, Chicago, Il. shows an alcove provided for admissions directly across from the nurse's station, offering a semi-private setting for admissions.
A triage room that is comfortable and private offers the woman a place to stay to determine if the time is right to be admitted into the hospital. Waiting to make the determination to stay in the hospital is a private decision between the woman and the medical staff and should not take place in a public setting.

The triage room at St. Margaret Hospital, Hammond, Ind., next to the entrance to the unit offers a comfortable, private space to determine if the woman is ready to be admitted and have her baby.
STAFF PLANNING DECISIONS

Administrators should recognize that their staff members' job satisfaction and productivity are related to a need for some periodic rest or break times so that professionals can retreat to behind the scenes relaxed behaviors. Some personal time for privacy or semi-privacy offers the professional a chance to become re-energized and refreshed.

In a hospital maternal care unit the professional staff consists of private physicians and sometimes midwives, residents, interns, and nursing staff. The administration should decide how much the hierarchy of status levels of these professionals will be emphasized or downplayed. Larger, more elaborate spaces just for physicians will tend to reinforce their higher status.

If the administration wants to encourage delivering maternal care services as a team effort, the environment can help to encourage communication between different professionals by providing spaces for their common use behind the scenes as well as in public view.

The same issue of professional hierarchy exists in an alternative birth center but on a small scale since these facilities have a much smaller birth and patient populations and a correspondingly reduced number of professional staff people.

Planners should analyze the patient and family flow, nurse flow, and flow of other professionals through the facility. Staff productivity and job satisfaction can be greatly effected by providing an efficient plan, from the macro level (room adjacencies) to the micro level (location of every medical tool, supplies, and equipment).
STAFF RETREATS AND WORK PLACES

NEEDS AND GOALS

Nurses in an obstetrics unit, as well as doctors and midwives, work in a very stressful environment. They need to perform quickly under pressure.

For nurses, the pace shifts from methodical and routine, to very intense as women progress through labor to birth. Often the work load changes dramatically if the beds fill up and women get close to giving birth at the same time. Sometimes the unit is understaffed because of the changing patient population and the nurse is taxed to the limit. She is in need of time to take rest breaks from her demanding duties.

Nurses need private time to rest, as well as some time to interact with her colleagues on a social and professional basis. Access to a source of refreshments and a comfortable place to eat is essential. Hospitals need to provide these amenities to their staffs to promote job satisfaction and minimize turnover.

Obstetricians and midwives often are on call for many hours straight through the night and the next day. Often the job includes great stress and pressure, since people are putting all their trust in the professional's ability to manage the birth process with a positive birth outcome. Doctors and midwives must be able to handle a schedule that shifts dramatically from a slow waiting game, periodically checking how labor progress, to periods of high intensity when the
Staff Planning Decisions

births of one or more babies are imminent.

During the break periods, doctors and midwives need easy access to call rooms where they can rest or sleep in privacy. Private bathrooms with showers for the different groups of medical staff is necessary because of the long hours on call. Doctors and midwives need to have meals and snacks to sustain themselves during their long hours at work.

Besides direct patient care, physicians and midwives have the responsibility to write up reports and communicate with other staff members regarding their patients.

DESIGN CONCEPTS

The nurses lounge needs to be a place that offers some privacy for resting as well as a common area for comfortable social interaction. A kitchen facility in the nurses lounge with an eating area will allow the nursing staff the opportunity to bring in food or make simple preparations for their own refreshments. Social time during eating offers another form of relaxation from job stresses.

At St. Margaret Hospital, the nurse's lounge offers a central monitor to keep in touch with patient's status, T.V., kitchenette, eating area, large windows, outdoor terrace, and comfortable furnishings.
At St. Margaret Hospital, Hammond, Ind., the nurses' lounge has a comfortable place to prepare snacks, dine and socialize.

The doctor's and/or midwives lounge must be an area for doctors to socialize and relax in a quiet, non-medical atmosphere. Access to food and drinks is also essential.

At St. Francis Hospital in Evanston, Ill., where space was limited, the physicians' social retreat space takes the form of an informal conference room.
Call rooms and doctors' bathrooms provided the medical staff with much needed privacy and secluded sleep. Male and female medical staff must be provided with separate facilities sized in proportion to their numbers.

Easy access from these retreat spaces to the patient rooms is very important. Lounges should be equipped with central monitoring and quick communication to the main nurse's station.

The physicians' lounge at St. Margaret Hospital, Hammond, Ind., provides a combination of elegance, comfort and refreshments for physicians to relax or socialize.
SPATIAL ORGANIZATION FOR MAXIMUM EFFICIENCY

NEEDS AND GOALS

Nurses can work more efficiently, quickly and save energy if unnecessary steps are saved. If one nurse can be assigned to patients in the same cluster or group of rooms she can avoid running back and forth down a long hall to attend to two patients. Medical and patient care supplies sources are accessed frequently, and the extra time and energy it takes to get distant supplies can be spent more productively.

Nurses need to know where to find the medical supplies that are routinely kept in each patient room, to avoid wasting time searching for them. The staff needs to determine which supplies and what quantity of supplies should be maintained in each patient room or in a central supply location.

DESIGN CONCEPTS

Adjacencies: The designer must consider the configuration of the patient rooms and their relationship and distance to the nurse's station. One alternative is to provide nurse substations close to each group of patient rooms. A cluster arrangement can be very successful in saving steps for nurses.
At Prentice Women's Hospital, Chicago, Ill., the entry to each LDR unit has an alcove for a nurse charting and preparation center. LDR units are grouped in pairs where feasible.

At St. Margaret Hospital, Hammond, Ind., nurses' modules, or substations are scattered around the unit so that each room is just a few steps away from the nurses' station.
Medical Supplies: Each group of rooms needs easy access to medical supplies, so storage space could be broken down into several smaller rooms spaced out in the unit. Some LDR and LDRP systems have provided each unit with a large storage alcove, (hidden by folding partitions), that houses the rolling carts with the fetal monitor, delivery table, and newborn isolette which are needed at the time of birth. Other units store the rolling carts in central or decentralized storage areas that require the staff to retrieve them as they become necessary.

At Prentice Women's Hospital, Chicago, each LDR unit is fully equipped with the delivery table, lights, mirror, infant warmer and fetal monitor all located in an alcove in the unit, behind folding doors.

LDR and LDRP Units in all obstetric units need to be configured the exact same way if at all possible. Every cabinet and every drawer should be in the same place with the same supplies and equipment in each one. This greatly helps the nursing staff work efficiently, from one room to the next.
As the primary users of the birthing facility, the mother and her family are the prime target of the facility planner and designer. From a humanitarian and an economic marketing viewpoint, the facility must provide a setting that allows the birth experience to flow as smoothly and enjoyably as possible. The birth event leaves a very lasting impression on those who experience it and influence future health care decisions.

The design guidelines that follow address general issues of setting an image and atmosphere for the facility and very practical issues of providing for the comfort and physical ease in accommodating the birth process. Issues of baby care and childbirth education are presented to provide the planner and designer with all relevant features that the birth facility should offer its users.
IMAGE AND MEANING - NONINSTITUTIONAL BUT PROFESSIONAL

NEEDS AND GOALS

The image that a building exterior and interior portrays has become increasingly important as the health care industry strives to market its services to the public.

Women in today's society are increasingly aware and sensitive to the fact that they compose a significant group of health care users. Medical facilities are competing for a greater market share of women consumers. There is evidence that once a woman has a positive experience in the hospital she chooses for maternity care, she and her family will usually return to the same hospital for future medical needs.

An image that portrays the hospital's commitment specifically to women's health care services offers the woman a feeling that she is being treated with honor and respect, and not just an afterthought.

A significant segment of women giving birth perceive the home as the most appropriate setting for birth to take place. They are reluctantly using the medical facility because of factors such as being in a high risk group or need the peace of mind of having medical equipment and staff available, just in case. It is important to dispel the image of a hospital as male dominated, institutional and threatening so that many women can feel comfortable, relaxed and confident that the services offered will be competent, professional and caring.
Planning For the Mother and Family

Building image can have a big impact on the consumer's perceptions.

DESIGN CONCEPTS

The image expressed by the interior and exterior design should reflect the hospital's intent to offer the latest in professional medical services with warmth, respect and special sensitivity to women's needs.

The Martin County Women's Center, Stuart, Fla, presents an image that is residential in scale and style that invites women inside.

A separate women's health care facility is the optimal setting for obstetric care. This gives a woman a sense of importance and dignity as she faces the medical establishment. A distinct women's medical center could be connected to the main hospital by physical proximity and/or a sheltered bridge or tunnel for
easy access to centralized labs or common services.

Boulder Women's Center is a free standing birth center. The design is professional, but much smaller in scale than a large hospital, and is located a block away from the hospital it uses as an emergency backup.

A separate women's entrance should be designed as a direct approach to the obstetrics unit, even within a larger hospital setting.

Periodic updates should be planned into the initial design of a birth environment so that the facility always has a fresh, new updated look.
HOME BASE WITH A HOME-LIKE SETTING

NEEDS AND GOALS

One of the worst features of the traditional hospital obstetric unit is the need to transfer the mother from one room to the next as she advances from labor to delivery to recovery to postpartum.

At the time of greatest pain and emotional stress, the mother is required to move her body off the labor bed, onto a rolling cart, move through a public hall to the delivery room and then transfer her body to the delivery table. After delivery, her time of joy and release from emotional and physical stress are interrupted by a required move from the delivery room, through the public hall to the recovery room for an hour or two and then another transfer to her postpartum room.

Each time the mother has to come into a strange setting and get used to the new space. Knowing that she will be transferred around leaves the mother feeling that she is always a transient until she finally gets to her postpartum room.

All this can be avoided if the obstetric unit is designed to keep the laboring mother in one place and convert that space as the need arises.

Most women come into the hospital in the beginning or middle stages of labor, when she primarily needs rest and to be observed or monitored on an intermittent
Part One: Design Guidelines

basis. At this stage the LDR or LDRP unit could enforce positive feelings of comfort and familiarity by resembling a home bedroom/sitting room without a sterile institutional atmosphere.

DESIGN CONCEPTS

One room should be provided that accommodates all the stages in the birthing process. This room could appear as a comfortable bedroom with a sitting area, then convert to a delivery mode, and later accommodate a newborn who will stay in the room with the mother until discharge.

This plan shows how the LDRP units at St. Margaret Hospital, Hammond, Ind. changes for the three different modes of operation.
A home-like environment can be achieved through the use of finishing materials that appear residential, warm and comfortable. Each room can have a large alcove with folding doors or partitions to house all the high-tech medical equipment necessary at the time of birth. If this isn't feasible, rolling carts with the equipment can be moved into the room from holding points in the obstetrics unit.

The birthing room at the Boulder Women's Center is designed as a residential bedroom. This design compliments the low-tech natural birth philosophy to which this birth center ascribes.
The head wall, which is behind the bed, offers access to medical equipment. The head wall has a high-tech medical appearance, and can be kept hidden from view until its use is necessary. The use of cabinet doors which slide or swing open can be integrated with the cabinetry or woodwork in the whole room.

The LDRP units at St. Margaret Hospital, Hammond, Ind., have mahogany built-in cabinetry concealing a high tech medical head wall. After the birth these features are hidden by the sliding panels.
VARYING DEGREES OF PRIVATE AND SOCIAL SPACE

NEEDS AND GOALS

As labor progresses the woman who may have begun her hospital stay feeling sociable and trying to keep active, will gradually become more inward and center her attention on her own body. The facility should offer a continuum of public to private spaces so that the entire spectrum of social to private behaviors can occur comfortably in the environment.

The woman in the birthing process needs the emotional and physical support of her husband or other coach. There are times when she needs total privacy from even these people, such as when she is undergoing certain medical procedures. Women's attitudes toward modesty at these times vary widely, but the option of privacy should be available.

There are times when the support person also is in need of privacy to change clothes or take care of other personal needs.

Postpartum is a time when a private room is greatly appreciated. The postpartum period is a time for the new mother to get rest, allow her body to start to recover from the birth and to get to know the new baby. Especially now that the length of stay in the hospital is only one to two days, the postpartum time must be spent achieving these goals, leaving little time to socialize with other mothers. If socializing is desired the mother may spend some time in a lounge area. In older obstetric facilities most postpartum rooms were shared; two mothers
in each room with a curtain on a track in between the beds. It is a matter of luck if the two roommates are compatible and under the best of circumstances the situation is less than optimal. Just sharing a bathroom at this time may be objectionable.

DESIGN CONCEPTS

Private rooms should be provided for all the stages of birth - labor, delivery, recovery and postpartum. The LDRP system, or single room maternity care concept, provides for one mother in each room during the entire hospital stay. The LDR system provides a private room equipped for labor, delivery and recovery, and then a transfer to a postpartum room. This room should also be a private room.

Privacy within the room would allow an exam to take place in privacy without forcing the husband or companion to have to leave the room or look away. This privacy could be achieved by designing an alcove for the support person away from the mother's bed, or shielding the bed from view with a movable curtain or partition.

A semi-private sitting room accessed between two LDRP units provides a quick retreat for a support person to leave the mother's room when she needs privacy for an exam. (At St. Margaret Hospital, Hammond, Ind.)
Semi-privacy could be achieved in a lounge with a configuration that allows furnishings to offer a space which is away from general public view and socializing. The mother would seek this space if she desires passive involvement through observation of others or a quiet talk with one or two friends or family members. A very small lounge or nook could be provided that can function as a semi-private space for small groups or an individual.

At Prentice Women's Hospital, Chicago, at each end of the main corridor of LDR units, there is a small and intimate lounge, which provides semi-privacy for quiet conversation.
Public areas should be defined spaces that clearly invite anyone to socialize. Lounges should offer high levels of stimulation, views to the outside, and conversation groups of an appropriate scale to encourage interaction.

The large Atrium at Evanston Hospital, Evanston, Ill., serves as an entry court to the women's hospital and obstetric unit. It also offers lounge areas in the corners of the atrium in a public but quiet setting.
Not too long ago most fathers waited for the birth of their children in a father's lounge and didn't see mother or child until after the birth. Over the last 20 years the trend has been for the father to stay with his wife through labor and birth. Hospital policies have changed to meet the demands of families who want to be together and share this major event in their lives.

Studies have shown that a woman in labor is more emotionally and physically relaxed and able to cope with the intense pain when she has the support and companionship of her husband or a chosen support person. She is more likely to think of the birth as a positive experience, despite the pain, if she has the emotional support of a loved one or companion present.

At natural childbirth classes, there is an assumption that the mother will be accompanied at the labor and birth by a support person. The classes include training the support person, so that he/she will be prepared with techniques to help relax and comfort the laboring woman. A professional birth attendant, (often a childbirth educator), is available to join the husband and wife for the birthing process. She offers caring professional services to help the woman through labor and relieve the father for rest periods during a long and difficult labor.

Some women approach birth as a family event and want to have siblings and/or other family members participate in the
birth. Alternative birthing centers usually are family oriented and some hospitals have policies that allow for family involvement.

These additional participants in the birth need a supportive and welcoming physical environment to make them feel wanted and comfortable.

**DESIGN CONCEPTS**

**Space requirements** in the LDR or LDRP unit must anticipate the growing number of people who may be present at the birth. As many as three medical and professional staff and often two or three personal support companions may be present in the room. Six people, in addition to the mother, can get in each other's way or feel pushed out of the main event if the room is too crowded to accommodate everyone. The average size of an LDRP unit should be 350 sq. ft. of useable space.

**Resting spaces** are needed by the support person, especially during a long and wearing labor.

*In the LDRP units at St. Francis Hospital, Evanston, Ill., the support person is provided with space for a comfortable reclining lounge chair in the mother's room.*
A family lounge with free and easy access to the mother's room should be provided for times that family members or other support people relieve each other on the job or wish to socialize.

The Boulder Women's Center provides a comfortable and casual family room for laboring women and their families.

A Play Room for siblings could be planned into the design of a birth facility. Alternative birth centers that are geared to family involvement in the birth should provide for a play area for siblings of the newborn, since they may be present at the labor and birth. This play space should be within close range of the birthing rooms where parents and other supervisors will be near by.
A food preparation center should be designed with places to store, prepare and eat refreshments. Food and drinks are vital to the strength and positive attitude of the support person. The location of this food center should be in the obstetric unit with free access to the mother's room.

The kitchen at the Boulder Women's Center offers all the necessities for preparing, storing and serving refreshments for families of the expectant mother.

The floor plan of the Birth House wing of the Martin County Women's Center, Stuart, Fla., demonstrates how the center is family oriented, with a family lounge, playroom, kitchen and gardens.
RELAXATION AND COMFORT

NEEDS AND GOALS

The ability to totally relax one's mind and body during labor and birth is a technique that not only enables the woman to cope with intensifying pain, but also helps the labor to advance more quickly.

Some women have the goal of not using any pain medications that may lessen her awareness of bodily sensations and the ability to relax is extremely important for her.

From an emotional point of view, the woman who is made as comfortable and relaxed as possible will generally enjoy the birth experience despite the pain involved. She may also be more willing to try out alternative methods of coping with pain and encouraging labor to progress, if her environment is comfortable and accommodating.

DESIGN CONCEPTS

Sensory stimulation can be used effectively to induce relaxation. The following are examples of relaxing forms of sensory stimulation:

Soft music, or the music of her choice, will encourage relaxation. Acoustical control is important to keep out the unwanted sounds from the hall or the room next door.

Water therapy is often used to relax muscles. Labor/delivery nurses, midwives and birth attendants all promote the use
of water to relax and soothe painful muscle contractions and thereby speed up labor. Designs for birth environments should include a private shower and/or bath for each room. Whirlpool tubs have been very effective in LDRP units.

**Views to the outside** should be planned for each birthing room that offer privacy as well as views of either outdoor activities or natural pleasant surroundings.

**Visual focal points** strategically placed in the birthing room for the patient to focus on, such as a wall mural, T.V. or cabinetry, offer the patient a diversion on which to focus to cope with pain.

The birthing room at the Boulder Women's Center offers many forms of comfort and visual stimulation.

The lower level floor plan of the Birth Center at the Boulder Women's Center shows each birthing room has views and access to a private garden and bathrooms with soaking tubs, all meant to provide relaxing sensory stimulation.
ENCOURAGE MOBILITY DURING LABOR

NEEDS AND GOALS

Most childbirth professionals encourage mobility during the early stages of labor. There is no danger to the mother or baby, as long as the bag of water hasn't broken, and there can be several advantages.

Mobility, by walking with intermittent sitting and standing, can help the labor to progress to a more active stage. There is no medical reason that a woman in early labor must remain in bed unless she has certain high risk factors or it has been shown with fetal monitoring that the baby is under stress.

Some hospitals and birth attendants encourage or at least allow mobility even in the middle stages of labor, if the mother so desires. Anticipating that eventually the mother will have to stay in bed when the labor gets more intense, the advice to move around in the early stages will minimize the number of hours she will have to remain stationary.

While the patient is not required to be in bed, she may bathe or shower, stretch or do relaxation exercises. All these activities can help the woman cope with pain, relax and promote the advancement of the labor. The expectant mother may be comfortable walking the halls of the obstetric unit and socialize with her family and friends or other laboring women. She needs to be in an atmosphere that offers sensory stimulation without stress, and spaces that offer the options
of socialization or seclusion. A woman in labor will feel encouraged to be more mobile in a setting that is discreet and intimate rather than large and public. At the time of birth, there are a great variety of positions that can be chosen by the mother. The traditional delivery table, with the mother in a horizontal position with her legs up in stirrups has been shown to thwart and lengthen the birth process. The mother can be encouraged to try different positions and find the one that is most beneficial to her.

A path or circuit around the obstetrics unit offers a mother a natural route to follow. If the unit design is a long race track or long halls, there should be cross halls to provide short cuts, so that the woman is never too far from her room.

At Prentice the main corridor of the obstetric unit is a wide path, lit by skylights and terminating at each end with a small lounge. Women can walk there during labor and use the lounge as a resting point.
Visual diversions along the way in the hospital halls will help make the activity more pleasant and interesting for the mother. Art work, photos, murals, and informative displays should be presented on the walls and in wall mounted showcases.

Stopping points along the route will encourage the mother to continue to be mobile because her trip from her room will be less overwhelming if she knows she can rest along the way. Stopping points can be just a comfortable chair or loveseat or a small alcove with furnishings.

A Social lounge at one point in the obstetric unit gives the mother an opportunity to relax with other people, or observe other people from a secluded corner. She can use this as another activity to pass the time, or as a stopping point or goal during her walk. The lounge could contain entertainment, such as music or T.V., refreshments and telephones. All these accommodations will make the laboring mother more comfortable and relaxed.

A bar secured to the wall for the woman to grasp during a contraction would allow her to assume different positions during contractions that may help her labor.

Furnishings, (and enough space for furnishings), such as a rocking chair, would offer a woman a choice of places to rest and spend the time rather than just in bed. She would still have the privacy of her room, if that's what she desires.
Part One: Design Guidelines

A birthing bed, which is a hospital bed that breaks apart and offers many different positions for birth, should be provided in each LDR or LDRP unit. Access to both sides of the bed is important.

![Labor bed](image)

![OB table](image)

![Birth chair](image)

![Birth bed](image)

![Critical care transport surgery](image)

![Post partum](image)

The modern multipurpose birthing bed has many uses in today's LDR unit. (Dundes, 1987)
PHYSICAL CONTACT BETWEEN PARENTS AND INFANT IMMEDIATELY FOLLOWING BIRTH

NEEDS AND GOALS

Breast feeding immediately after birth is important to many women who want to establish early attachment between mother and child. The newborn learns to recognize its mother very early by her scent and the scent of her milk. The bonding between mother and child is very meaningful and enjoyable for the new mother and offers her an immediate reward for all her pain and suffering.

Early and close contact between the father and the newborn has been shown to benefit some father-infant relationships. Evidence suggests that father involvement in birth attendance, early contact, and extended contact with the newborn enhances the marital relationship, as long as the experience is viewed positively by the couple. (Palkovitz, 1985)

The new parents need time alone with their newborn shortly after birth to feel comfortable handling the baby and begin to establish new family bonds. Even immediately after birth, while the nurse is checking the newborn's vital signs and general health, the mother can be holding the baby.
DESIGN CONCEPTS

Single room maternity care and LDR units allow the mother to stay in the same room, in which she gave birth, with her baby during the recovery period. It is not necessary to remove the baby from the mother's care as long as the baby is well. LDRP units should accommodate the baby in the room. The LDR system should also provide postpartum rooms that accommodate mothers fully caring for their newborns. This keeps separation of mother and baby to a minimum.

The LDRP units at St. Francis Hospital are equipped with movable infant warmers and a built in head wall for the baby in order to facilitate keeping the newborn in the room with the parents after birth.

Recovery rooms for women who have c-section births should be large enough and equipped to have newborns in the room with mothers who are well enough to want their babies with them.

Temperature controls in each room would allow for additional warmth to help the new infant maintain its temperature. Usually body warmth from the mother is
sufficient to warm the baby, but a warmer unit that is flexible to move over the birthing bed can help the baby keep warm as well.

**Warmer/bassinets**, designed with sophisticated medical equipment for infants in need of medical aid at birth should be concealed during labor, and accessible in the LDR unit at the time of birth. Many techniques, especially providing oxygen for breathing problems, can be administered in the room with the mother present, if this equipment is immediately accessible. The designer should configure the space so that the infant head wall is located close enough to the mother's bed so she can at least see what's happening to her baby.
OPPORTUNITY FOR THE HIGH RISK MOTHER

NEEDS AND GOALS

Many women are placed in a high risk category because of age, problematic birth histories, or other health problems. Some know in advance that they will be having a c-section. Others are labeled high risk from a cautionary point of view because they need to be carefully monitored but intend to try to have a vaginal delivery.

Women in these high risk groups will be screened out of midwife programs and alternative childbirth centers that are geared to low risk, low-tech births. These women have no choice but to be in the hospital because they may need high-tech medical equipment and expertise. Often the physical comfort and emotional needs of these high risk mothers is ignored or placed as a very low priority by the medical and nursing staff.

Women in the high risk group, who have added anxiety, stress and physical problems, are especially in need of a comfortable and relaxing environment for giving birth.

DESIGN CONCEPTS

Adjacency: An LDR or LDRP unit can be designed to be adjacent to the c-section operating suite, and even open onto the operating suite for very quick transfer for an emergency c-section.
Additional space: Since the high risk LDR or LDRP unit will have additional sophisticated medical equipment, it may be necessary to allow some additional square footage to accommodate the same features that are present in the other LDR or LDRP rooms.

The floor plan at Prentice Women's Hospital shows the high risk LDR room, which is specially equipped, located so that it opens directly to the c-section room. A four bed recovery room allows room for newborns.
BABY CARE BY MOTHER DURING THE POSTPARTUM STAY

NEEDS AND GOALS

A high percentage of expectant mothers are having their first child. Nursing staffs in obstetric units recognize their responsibility to teach new mothers basic baby care skills. Techniques for holding the baby, breast feeding, bottle feeding, bathing, taking a temperature and recognizing illness are skills that must be taught to new mothers.

The reality of insurance coverage almost always limits the length of stay to 24 to 48 hours after birth. This leaves very little time for nurses to teach these skills and for problems with the baby to manifest themselves. Because of the time limitations, it has been found that most of the baby care should be done by the mothers in their rooms, rather than by nurses in a well baby nursery.

After experiencing hours of labor and birth most women need a chance to recover before going back to household and childcare responsibilities. One or two nights of sleep in the hospital may be vital to her recovery. The obstetric facility must recognize the mother's need for sleep and offer at least night nursing care for the well newborn to those who need it.

DESIGN CONCEPTS

Home base for the newborn: The mother's postpartum room or LDRP unit should be designed to accommodate the extra space needed for the infant bassinet and infant supplies. A comfortable space for a
rocking chair for feedings should be provided in the design.

The LDRP units at St. Margaret Hospital is spacious enough to accommodate room for a baby bassinet and comfortable furnishings.

A sitting room or alcove adjacent to the mother's room should be designed as a space for the mother to socialize with her baby, the father and other visitors.

A well baby nursery or holding area connected to the nurses station should be designed into the facility. This would allow mothers an option to rest, confident that their infants are well supervised.
CHILDBIRTH EDUCATION CENTER

NEEDS AND GOALS

Obstetricians, midwives, nurses and childbirth attendants agree that preparation for childbirth is extremely important for the quality of the birth experience. A woman who is totally unprepared for the birth and has no expectations of what will happen to her body will most likely be shocked and terrified by the experience. (Interviews of Dr. Fagan, Ms. C. Schroeder, Ms. C. Seigel, Ms. R. Willick)

LaMaze childbirth preparation tries to equip the woman with a variety of tools to help her cope with the intensity of the pain and emotional anxiety. The classes also give expectant fathers training to help their wives through the birthing experience.

Childbirth education classes include a great deal of informational material regarding the physical changes that will occur during the birth process. This makes the woman intellectually aware of the variety of sensations she will feel as she goes through the stages of birth.

DESIGN CONCEPTS

A childbirth education center located at the birthing facility will be very beneficial to the expectant parents and the facility. By providing classes in the center where the birth will take place, many new parents will have the opportunity to become familiar with the facility. In many cases, the first time the expectant parents enter the medical
facility is when they go there to have the baby. Familiarity dispels the feelings of being intimidated by a strange place.

In a large hospital, every effort should be made to design space in the obstetrics unit for the childbirth classes so finding the way to the unit also becomes familiar.

Seminar style classrooms should be designed to encourage interaction and informality during the sessions. An adjacent large space for learning the relaxation and breathing exercises should be provided.

A staff conference room at the Boulder Women's Center doubles as a seminar style classroom for childbirth education classes.
At St. Margaret Hospital the partitioned classroom is located right at the entry to the maternal care center, drawing women to the center for repeated classes before the birth.