

**THE CHICAGO DOULA PROJECT
EVALUATION**

FINAL REPORT

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The Chicago Doula Project would not have been possible without the vision and support of Irving Harris. The commitment and effort of Phyllis Glink of the Harris Foundation, Rachel Abramson and Chicago Health Connection, Nick Wechsler, Karen Freel and Claire Dunham of the Ounce of Prevention Fund, Ana Baro and Mary Somers of Alivio Medical Center and Maureen Hallagan of Marillac Social Center shaped both the direction of the project and its evaluation. Graduate student interns, Sarah Everson and Beth Isaacs, provided valuable assistance with focus groups and interviews. Participants generously shared their experiences and perceptions about pregnancy, birth, parenting and the doula program. Finally, this work would not have been possible without the dedication and hard work of the doulas of the Chicago Doula Project. In addition to their work with young families, they assisted with data collection and provided invaluable insights and feedback to facilitate the research.

CHICAGO DOULA PROJECT

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Despite recent declines in the number of births to teen mothers in the United States (Curtin & Martin, 2000), adolescent childbearing continues to be a significant social welfare and public health issue. In 1996, 18.4% of births in Chicago were to teen mothers. By 1999, that figure had dropped to 17.1% (Illinois Department of Public Health, 1997/2000). However, rates of teen childbearing are higher in the United States than in any other industrialized nation and adolescent motherhood has long been associated with a wide variety of negative social, economic and health outcomes for both parents and children (Ventura & Bachrach, 2000). Recent research suggests that much of the adverse effect ascribed to adolescent childbearing may have overestimated the effect of young maternal age and underestimated the importance of other correlates of teen pregnancy (e.g. Maynard, 1997; Geronimus & Korenman, 1993). For instance, adverse health outcomes associated with teen pregnancy are largely confined to the small proportion of teen pregnancies in mothers younger than fifteen (Morris, Warren, & Aral, 1993). Nevertheless, most research has found that there are negative outcomes of early childbearing even after controlling for background variables (Moore, Morrison & Greene, 1997; Goerge & Lee, 1997; Wolfe & Perozek, 1997). These background variables, such as low incomes, limited education, and preexisting health problems, are more prevalent among teen parents than among their peers who delay childbearing. The tasks of parenting are more difficult and complicated for all families who must cope with these factors.

The Chicago Doula Project began with collaboration between partners interested in finding ways to better support teen parents and their children. The purpose of the Chicago Doula Project was to integrate intensive prenatal, intrapartum and postpartum support into existing teen parent services through training and employing community women as doulas. The project was motivated by a growing body of research indicating the benefits of the doula's involvement in the birth experience (Chart I). Several research studies on the effect of doula support have demonstrated shorter duration of labor, fewer labor and delivery complications, fewer

medical interventions (including anesthesia and analgesia) and lower cesarean section rates (Sosa et al, 1980; Klaus et al, 1986; Kennell et al, 1991; Zhang et al, 1997).

Generally, doula research has focused on intrapartum events and medical outcome measures. Sosa and his colleagues (1980) found that new mothers who had had doula support during labor were more satisfied with their labor and delivery experience, less tired and interacted more with their newborns than mothers without such support. In a South African study, Hofmeyr and his colleagues (1991) reported that women who had doulas had less anxiety and reported less pain during labor and delivery than women in the control group. Also, six weeks post-partum, mothers in the group with doula support were less likely to be depressed and more likely to be breast-feeding exclusively (Wolman et. al., 1993).

Barron and her colleagues (Barron et. al., 1988), found that post-partum doula involvement increased the duration of breastfeeding among low-income primiparous women. Studies of intrapartum doula intervention have found that doula involvement during labor and delivery alone was associated with a higher frequency of exclusive breastfeeding at one month (Hofmeyr et. al., 1991) and six weeks post-partum (Langer et. al., 1998).

As Zhang et. al. (1997) note in their meta-analysis of these early studies, doula involvement had a clear, beneficial effect on intra-partum outcomes for young, disadvantaged, first-time mothers. These included: reduction in the cesarean section and forceps delivery rates by half, a reduction in use of oxytocin by almost half, and a shorter duration of labor by an average of 2.8 hours.

Studies have indicated that the time immediately following childbirth, during which a new mother experiences a heightened sensitivity, is an important period in the development of maternal-infant attachment. The doula assists the new mother in understanding her infant's cues and enhancing her ability to respond appropriately and sensitively (Klaus, Kennell & Klaus, 1993). This responsiveness is fundamental to establishing secure attachment, which in turn is vital for the successful long-term development of the child

(Erickson, Sroufe & Egeland, 1985). The evidence thus suggests that the use of doulas with an at-risk adolescent population may have a positive impact on the new mother's skills and ability to nurture her baby.

HISTORY AND OVERVIEW OF THE CHICAGO DOULA PROJECT

In August 1995, representatives from the Harris Foundation, Chicago Health Connection and the Ounce of Prevention Fund first met to discuss the possibility of working together to provide doula services to teen mothers and their infants in the Chicago area. Each partner came with different, but complementary, interests and resources. The Harris Foundation had supported earlier academic hospital-based projects on doula support and saw the potential of the doula to affect the mother-infant relationship. Chicago Health Connection had years of experience in maternal and child health promotion and considerable expertise in training community health workers. The Ounce of Prevention Fund had been working since 1982 to develop and administer Parents Too Soon (PTS) programs throughout Illinois, assisting these community-based programs in delivering home visiting and group services in order to promote healthy child and parent development. Thus, the Ounce of Prevention Fund brought existing relationships with a number of potential pilot sites for a new doula intervention. The Doula Project offered the Ounce of Prevention Fund an opportunity both to provide earlier and more intensive intervention focused on this critical period in the life of a young family and to nest it in established programs of long-term support. The Harris Foundation, the Chicago Health Connection and the Ounce of Prevention Fund were joined by three Parents Too Soon sites, Alivio Medical Center, Christopher House and Marillac Social Center, who elected to serve as pilot sites for the new doula intervention in their existing programs.

With funding from the Harris Foundation and the Robert Wood Johnson Foundation, the Doula Project officially began in July 1996. The first six months of the project were devoted to program planning, and recruitment and training of the first group of doulas. The evaluation component was added to the project in February 1997, just prior to the first project births.

Our project differed from Klaus and Kennell's work and other studies in the literature in that it was not restricted to first-time births or to participants with full-term, uncomplicated singleton pregnancies. Any pregnant participant at the three sites was eligible for doula program services. Because our project would demonstrate the benefits of doula services to teen mothers in actual rather than ideal controlled conditions, we did not expect to achieve the same level of benefit from the doula intervention as did the studies cited previously.

The intervention was initially designed to start in the beginning of the last trimester of pregnancy and end at twelve weeks post-partum. Chart II outlines both the program design and evaluation. At enrollment, participants were assigned a home visitor who would introduce the participant to the doula during a home visit in the sixth month of pregnancy. Prenatal classes were scheduled to begin in the last trimester. During the last trimester, the Doula accompanied the participant to at least one prenatal appointment and in the last month of pregnancy, the program plan called for weekly contacts between the participant and the doula. The doula would be available for labor and delivery, "helping the woman determine if she is actually in labor, supporting early labor at home if so desired, knowing when and how...(to) go to the hospital, and supporting her through labor, delivery and the first hours postpartum". In the following weeks, doulas would provide services and transition the new mother back to the PTS home visitor or, for teens not involved with PTS, to other support services in the agency or the community.

Both the Ounce of Prevention Fund and Chicago Health Connection felt strongly that the Doula Project should be nested in a program of ongoing support for teen parents. Within this context, Chicago Health Connection committed itself to "a partnership in which all participants had as much freedom as possible to make decisions affecting their own agencies" (Chicago Health Connection Doula Project, Annual Report to the Robert Wood Johnson Foundation, August, 1997). Some changes from the original model were adopted program-wide at all of the sites. For instance, neighborhood safety issues and related transportation problems made it difficult for the doulas to be with participants at home in early labor. Instead, doulas arranged to meet

participants in labor at the hospital. Other elements, such as the specific content of doula home visits, were not dictated in the Doula program plan and site directors coordinated doulas' activities with group and home visitors' agendas and curricula.

In the third year of the project, the Community based FANA was incorporated into the doula training. The Community-based FANA (Family Assisted Neonatal Activities) provides the doula with a wider repertoire of prenatal and post-natal activities that helps the participant relate to her developing fetus and her new baby. The Community-based FANA was integrated into each program as doulas were trained.

The flexibility of this approach helped agencies incorporate new services and allowed them to adapt the program in the way that worked best for the personnel and the site. However, it also allowed sites to omit program elements that seemed difficult or challenging. Program goals were very ambitious and the project required much more time and effort than anticipated in the planning stages. The adaptations made by each site also complicated the process of describing the intervention and measuring its effects in that the Doula Project was different at each site.

An additional administrative challenge that was not completely resolved during the project was the development of a well-functioning system to provide coverage when doulas were off-duty, on vacation or ill. Several of the women initially trained as backup doulas quit during training or were not available to work when needed. None of the community women who were not otherwise employed by the agency were retained, although two women who subsequently resigned their agency positions continued as backups. When funding for doula services was assumed by the State of Illinois Department of Human Services, the back-up system was changed. State regulations did not permit payment to back-up doulas in the same way as did the Chicago Doula Project grant. Therefore, agencies adjusted staff responsibilities to accommodate program needs; the full-time doulas at each site cover nights and weekends and request compensatory time off for hours they are called in to attend births.

SITE DESCRIPTIONS

Each site modified the doula program to suit its individual mix of population and services. Chart III show the adaptations made at each site.

Christopher House

Christopher House started as a settlement house and today serves residents of the Uptown area, a primarily low-income but racially and ethnically diverse section of Chicago. The Parents Too Soon program is one of many programs Christopher House offers including Head Start, services for seniors, GED classes, and help for the homeless. The Christopher House PTS program is contracted to serve 60 teen parents and their children.

The project anticipated that Christopher House would need to recruit Doula participants outside the PTS program because of their small caseload. These “doula-only” participants would not have a PTS home visitor. The primary source of outside referrals was the Healthy Families program at Howard Area Community Center via the prenatal clinic at St. Francis Hospital. Forty-six percent of the Doula Project participants from Christopher House were non-PTS/doula only participants.

At Christopher House, doulas were introduced to participants as early in the pregnancy as they entered the program. Doulas maintained regular phone contact with participants and began weekly home visits early in the third trimester of the pregnancy. Participants who were referred (or engaged) later in their pregnancies were also accepted. The home visitor was the primary worker until the last trimester. She remained involved throughout the pregnancy and early post-partum period to help the participant with issues not directly related to her pregnancy, birth and infant (e.g. housing, older children). Home visitors provided prenatal education and support early in the pregnancy. The doula assumed the role of primary worker in the seventh month of the pregnancy.

Christopher House included doula PTS participants in their on-going parenting groups led by PTS staff. Doula & home visitors worked to facilitate the participation of the doula PTS participants into these groups. Doula participants from the Howard Area Community Center did not participate in groups at Christopher House. The doula program at Christopher House did not develop its own prenatal group.

The doula provided information about fetal development, prenatal care, nutrition and labor and delivery during home visits but did not follow a set curriculum. Patients followed at the OB clinic at St. Francis Hospital attended childbirth classes there. Work during the post-partum period focused on the physical, psychological and emotional changes that accompany the initial weeks of parenthood. Infant care, feeding and the developing precursors of infant attachment were also addressed. The timing of the transition back to the home visitor was planned jointly by the workers and the participant.

The Christopher House doula instructed her participants to call her after labor started and just before they left for the hospital. The doula joined the participant at the hospital as soon as she could. Generally, a patient in labor was admitted to the hospital, even if she was in early labor, if she chose. The doula remained with her for the duration, although backups were brought in for exceptionally long births. The primary doula attempted to cover all her births but was able to call in backup when necessary. This was arranged on a case-by-case basis with her supervisor. If a doula attended a birth at night or on weekends, the program director allowed compensatory time off to be taken the next day if possible.

Considerable turnover occurred at Christopher House among the doulas. Christopher House experienced turnover in other PTS staff and other agency personnel as well, including two changes in site director during the project. Thus, the PTS program was not fully staffed for most of the project. The full-time doula position was filled for approximately half of the project months. Because of staffing issues, Christopher House was at times unable to accept new participants, either for home visiting or doula services. Active participants often went through transfers to a new worker, in addition to the transition from doula to home

visitor. These issues undoubtedly affected the frequency of contacts, length of stay in the program and the numbers of participants served, as well as the quality of the intervention.

The agency as a whole was also in the process of transition. The executive director position was vacant at the start of the Doula Project and remained unfilled for a number of months. Christopher House is located in a rapidly gentrifying neighborhood and much of its client base has been forced to relocate. New leadership at the agency has been exploring their mission in response to these changes. Difficulties experienced in implementing the Doula Project at Christopher House reflect the instability that accompanies change.

Alivio

Alivio's Parents Too Soon program is part of an array of health services at the Alivio Medical Center. The Alivio Medical Center is an outpatient clinic that caters to the uninsured and serves a primarily Mexican immigrant and Mexican-American population. The Center has a well-established midwifery program and midwives are responsible for all uncomplicated pregnancies, births and postpartum care. Thus, the majority of births at Alivio Medical Center, including the births of the Doula Project participants, were attended by midwives. In addition, doula services were already offered at the Medical Center with a different model of doula care. Medical Center doulas were involved only at the birth and worked under the direct supervision of the midwife, and included activities such as blood pressure checks in addition to emotional support. The Alivio PTS program is contracted to serve seventy-two teen parents and their children annually.

At Alivio, the overwhelming majority of participants were referred to the program by personnel from Alivio Medical Center. Most became involved early in their pregnancies. The home visitor introduced the participant to the doula who became the primary worker by the end of the eighth month of pregnancy. The Doula Project at Alivio did individualized prenatal education with the participant (and her partner and family if available) at home. They used videos and other curriculum materials selected with input from the midwifery program and wrote some original materials for use with participants.

Doula Project participants were invited to attend prenatal educational groups offered through the midwifery service at Alivio Medical Center. However, the doulas reported that the teens were generally not comfortable in these classes, which included older women and preferred the home-based approach given by the doulas. Because of a variety of administrative, logistical and cultural concerns, the PTS program at Alivio does not have ongoing prenatal or parenting group services.

From July 1998 through the end of the project, Alivio had two doulas. Participants met both full-time doulas in a home visit during the pregnancy. The two full-time doulas covered during the week. Backups rotated call during weekends. This meant that the doula for a participant who delivered on a weekend was usually a stranger to her. When participants delivered during the week, they usually, but not always, got the doula who had been working with them at home.

Almost all of the births were attended by the Alivio midwives, rather than physicians, a notable difference from the other two sites. The standard protocol at Alivio was to encourage women to remain at home in early labor. Women who were dilated less than four centimeters were sent home if they came to the hospital unless special circumstances related to the mother's health and well being suggested that admission was indicated. The midwife called the doula to come to the hospital when the participant was admitted. The doulas sometimes visited participants in early labor at home to check on them and help with comfort measures if the participant called, but due to scheduled home visits, they were unable to remain with them at home during this phase. The program director noted that she sometimes gave doulas compensatory time off for attending long births but their home visiting schedule made this difficult.

The post-partum contacts had much the same focus as the visits at Christopher House. The Alivio program director emphasized "mothering the mother" to provide the new mom the support necessary to effectively mother her infant. The transition back to the home visitor was made at six weeks post-partum.

Approximately twenty percent of the participants at Alivio were "non-PTS", that is they were enrolled for doula services only. The program director accepted additional referrals from the midwifery service at Alivio

Medical Center in order to fill the program quota set by Chicago Health Connection of five births per month. The program director reviewed referrals with her staff and offered PTS services based on worker caseloads and her assessment of participants' needs. There were no procedures to assure that participants not enrolled in PTS received ongoing home visiting or other services from outside agencies, but the program director did offer home visiting services to participants in need when there were openings in the program.

Marillac Social Center

Marillac Social Center, like Christopher House, started as a settlement house. Run by the Sisters of Charity, Marillac offers an array of services such as Head Start, emergency assistance with clothing, food and electrical bills, youth development programs and before and after school child care. Marillac House serves a population that is largely low-income and African-American. They contract with Parents Too Soon to serve 60 teen parents and their children annually.

All of the participants at this site were enrolled as ongoing PTS participants; there were no "doula only" mothers. A participant was accepted as soon as a pregnant teen identified herself to the agency and was willing to become involved. Marillac invited the participants to attend the weekly prenatal group. The group was led by the senior doula and a PTS group worker but all of the doulas (and backups) had responsibilities to the group. Thus, by the end of her pregnancy, every participant knew all of the Marillac doulas. The staff developed a curriculum that included traditional prenatal education materials as well as some innovative ideas that incorporated activities from doula training and community FANA concepts. These included taking photographs of participants each month during their pregnancies, encouraging mothers to talk to the baby in utero and having participants write letters to their fetuses to enhance the maternal-child relationship.

Home visits, usually with a pair of doulas or a doula and a home visitor were made weekly starting in the last trimester. Marillac used a group practice model to determine who would attend a birth. The program supervisor, with input from the staff, assigned a doula to the next birth, not to a specific participant. That is, if

doula A went to a birth today, doula B would be assigned to the next participant who went into labor. The program director had the flexibility to give doulas compensatory time off as she felt was appropriate. Doulas were permitted to make home visits during the day to participants in labor. The hospitals Marillac participants used generally accepted patients in early labor although hospital staff sometimes encouraged more medical interventions than the participant had originally planned. Doulas met their participants at the hospital, and worked with the participant and the hospital staff to fulfill her “birth plan”.

The doula continued with weekly visits until twelve weeks post-partum. The senior Marillac doula created and led “cord-cutting” ceremonies where participants cut a cord fastened to her belt and took their place beside the home visitor who then continued to work with them. Participants were also integrated into a Parenting Group at Marillac, led by a PTS group worker, as soon as they were interested in attending after the baby’s birth. With funding from the Prince Charitable Trust, Marillac was also able to add a second doula to their staff in 1998.

Marillac consistently had fewer births per month than originally expected. However, they adhered most closely to the program model and the PTS program director used the model flexibly to encourage professional responsibility and growth in her staff and to meet participants’ needs.

Overall, the doula component was integrated into each program to reflect the individual agency’s orientation and strengths. Alivio was quite comfortable with the health care issues and its program educated and prepared its participants well for childbirth. The doulas were very comfortable with the personnel and routines at Mercy Hospital and the Alivio midwives and Mercy Hospital personnel worked well with the doulas. Doula services became part of an array of programs for participants at Christopher House who were able to take advantage of a range of services from GED classes to child care to meet their needs. Marillac had a long tradition of advocacy for its participants and community and its doulas were able to extend the type of support Marillac was able to provide both within the agency and outside.

TRAINING

Chicago Health Connection designed and implemented the doula trainings. The Chicago Doula Project funded two trainings, one which began in the fall of 1996 and the other which took place during the winter and spring of 1998. Trainings were designed to last twenty weeks. One day per week was devoted to the formal doula class. The remaining time was utilized for activities such as agency orientation and training, home visiting training, and birth observations. Replacement doulas were trained for the project in CHC classes that included women being trained for doula positions at other organizations.

The project plans called for each site to do its own hiring to select the staff who would work best in that agency. Chicago Health Connection staff provided direction to PTS managers at each site in identifying and screening candidates. Recruitment, as well as retention, of doulas was challenging. Initially, the two sites without pre-existing doula services, Christopher House and Marillac, had difficulty identifying what characteristics to look for in prospective doulas. For a number of reasons, none of the women originally recruited into the full-time doula positions and who received the first training continued in the job. As noted earlier, Christopher House, in particular, had a difficult time recruiting and keeping doulas. The first doula resigned before completing training because her husband accepted a job in South America. The back-up doulas were not appropriate for the full-time position and one eventually resigned her position as backup. A full-time doula was subsequently hired but left after several months when it was clear she could not meet the demands of the position. As a result of these difficulties, the program at Christopher House was put “on hold” for several months until the next doula training.

The original doula at Marillac also left the agency before completing training. The original Alivio doula resigned her position because she found it difficult to work exclusively with adolescents and in the context of a long-term support program. Her replacement, a PTS home visitor, had trained previously with Alivio as a doula and did an excellent job as a PTS doula. She eventually left to accept a training position with Chicago Health Connection.

The second group of doula trainees was more successful. While there was some turnover early on in training, the agencies were better equipped to screen applicants. Chicago Health Connection provided input on applicants at the request of the sites although hiring decisions were made independently by each agency. Doulas were recruited from a variety of sources, including churches, former program participants, home visitors and other agency employees.

Doula trainees included women from a wide range of educational, ethnic and socioeconomic backgrounds. Demographic data was collected from the doulas in the two Chicago Doula project trainings as part of the evaluation. A total of fourteen women completed both the clinical and the classroom portions of the trainings designed for the Chicago Doula Project.¹ Most of the doulas (n=13) had graduated from high school or received a GED. Slightly more than one-third had either some college education (n=3) or had completed a B.A. (n=2). Almost eighty percent (n=11) had been teen mothers themselves. Four of the women were not in the work force prior to being hired for the doula position or back-up training.

Training Evaluations

The first training included the doulas and back-ups as well as the PTS supervisors from each site. Supervisors participated in this first training so that they could better understand the doula role and provide more effective supervision. In addition, some supervisors also served as back-up doulas. The great diversity of the first group of doula trainees was a significant challenge in developing the doula curriculum. There was a wide range of differences in education, literacy, interest in clinical and health care issues, expectations of the doula role and expectations of the training. Chicago Health Connection's training team spent considerable time in group process and evaluation to flexibly adjust the curriculum to meet the needs of the group.

Not unexpectedly, the second training went much more smoothly than the first. Both sites and the doula training team knew what to expect from the training and had a better understanding of the demands of the doula

position. Evaluations of the doula training were conducted with each class. Both confidential, written evaluations and group interviews were used to obtain data on satisfaction with content and methods, clinical and classroom experiences and areas in which further training was needed.

All participants in the classroom training, including the PTS supervisors and the Alivio Medical Center Midwifery Program Supervisor, completed the evaluations. There were nine participants who completed classroom training in each training group. The first section of the evaluation was the same for both classes. Trainees rated topics on a five point Likert-type scale (1=poor---5=excellent). The mean scores for each topic were:

	Training Evaluations		
	1997	1998	range
1. Prenatal care	4.3	4.9	4-5
2. Nutrition	3.9	3.9	2-5
3. Breast feeding	4.5	4.9	3-5
4. Labor and delivery (uncomplicated)	4.5	4.8	3-5
5. Comfort measures during labor	4.5	4.9	3-5
6. Medications and medical procedures in labor and delivery	4.0	4.7	3-5
7. Pregnancy loss	3.3	4.1	2-5
8. Domestic violence	3.4	3.8	2-5
9. Bonding and attachment	4.0	4.9	2-5
10. Post-partum assessment	4.3	4.8	3-5
11. Dealing with disabilities	2.8	4.1	4-5

In the second section, participants rated each session for which there was a guest speaker; topics ranged from adolescence to aromatherapy to grief and loss. Only one guest expert spoke to both training classes. Mean scores for the guest lecturers ranged from 3.7 to 4.8.

The final section of the written evaluation gave trainees the opportunity to comment anonymously on a number of different aspects of the training with either short responses or more detailed explanations. An open

¹ Women who started training but resigned are not included in these figures. Also excluded are the two agency supervisors who participated in the classroom, but not the clinical, portion of the training. An additional staff member did not complete birth observations and a mentored birth. She is, therefore, not able to provide doula services to participants.

group discussion of the items in this section followed the written evaluation. This gave trainees who were more comfortable expressing their thoughts verbally the opportunity to do so and participants were able to reflect and expand on the input of their peers. This information was used by the Chicago Health Connection to continuously refine the doula training. (All Training Evaluation Tools can be found in Appendix A.)

Generally, participants felt that the content was appropriate in scope and in detail. The first training group perceived many more gaps in their training than did the second class. They felt that they needed additional training and opportunities to meet for support. In response, Chicago Health Connection arranged for monthly doula classes. The second training group may have felt more comfortable with their training knowing that they would join this established group. The second training group noted a sense of accomplishment, and capability from the training. They also felt nurtured and thus able to give back to their participants. This group continued to feel that entry into hospitals is difficult and that they need to be prepared to explain their role when they enter a hospital for the first time. Questionnaires and additional data regarding the training evaluation outcomes are included in Appendix A.

The Chicago Health Connection training achieved certification by DONA (Doulas of North America). Training by a certified program is a necessary step for a doula to become a “DONA certified doula”. DONA is the primary doula professional organization, although other childbirth-related professional groups also provide doula training. All doulas trained by the project are eligible to pursue doula certification and some, but not all, have done so.

All of the doulas trained found the job to be both physically and emotionally difficult. Frequently the doulas serve to “buffer” the participants from any negative attitudes and behavior of health care professionals and others. Sometimes the doulas themselves were viewed as adversaries by hospital staff or participants’ family members. The stress inherent to this work was compounded by the unpredictable time demands of the job and problems such as dependable childcare, transportation and limited financial resources. A supportive personal network, as well as agency support, is critical to success as a doula.

Chicago Health Connection designed the project to train community women and has been most successful in training and retaining women who closely identified with the communities served. However, as Rachel Abramson noted in her Annual Report to the Robert Wood Johnson Foundation (August, 1997), "...the project has been confronted by the daily challenges facing the populations we are targeting", challenges such as poverty, racism, single parenting, domestic and neighborhood violence that affect both doulas and their clients.

METHODOLOGY

Project and Research Sample

From all three sites, a total of two hundred eighty-seven young women were involved in the doula project. Three of the women had subsequent births during the project that also involved a doula. These subsequent births raised the total number of doula involved pregnancies and births to two hundred ninety. The two hundred ninety pregnancies and births resulted in two hundred ninety-five babies because there were five sets of twins. Twenty-eight participants were not in the research sample. Twenty-one of these mothers were excluded from the research because they were twenty or older at the child's birth. Because our programs, both Doula and PTS Home Visiting and Group Services, are designed for teen parents, we needed to restrict the study to adolescents, generally defined as younger than age twenty. There were only seven younger participants who chose not to be included in the evaluation. Participants always had the option of not participating or withdrawing consent for the project evaluation without jeopardizing their right to receive services.

The final research sample of two hundred fifty-nine women with two hundred sixty-two doula-involved pregnancies resulted in two hundred sixty-seven births (includes five sets of twins). One premature stillbirth in one set of twins and another singleton stillbirth due to maternal eclampsia resulted in a total research sample of two hundred sixty-five babies. The project fetal death rate does not differ significantly from the City of Chicago fetal death rate of 8.0 per 1000 births (Illinois Department of Public Health, 1998). There were no

infant deaths. The infant mortality rate for Chicago ranged from 10.7 to 11.5 (deaths per 1000 live births) during the years of the project (Illinois Department of Public Health, 2000). With this sample size, the difference between the sample infant mortality rate and the population rate is not statistically significant at the .05 level. Table I shows the final Project and final research sample numbers.

Participant Demographics

More than seventy percent of the Doula Program participants were sixteen, seventeen or eighteen years of age when they gave birth. Seventeen percent were younger than sixteen years of age, and twelve percent were nineteen. The average age of participants was 16.8 years of age (see Table II).

The majority of the participants were Hispanic, although more than one-third were African American (see Table II). This reflects the participant population of the sites that were chosen to pilot the Doula Project. Only three percent of the participants were non-Hispanic white, multi-ethnic or of other ethnic origin.

DOULA PROJECT OUTCOMES

Place of Birth

Early in the planning stages for the project, the sites projected at which hospitals they anticipated the participants would choose to give birth. Mercy, Northwestern University Medical Center, Bethany, Mt. Sinai and Cook County Hospitals were the hospitals at which we expected the most births. These hospitals were contacted and meetings were held to facilitate the doula's work and exchange of information. The hospitals that were subsequently used turned out to be somewhat different from our projections. The largest number of births did take place at Mercy, Bethany, and Mt. Sinai. Only five births took place at Cook County, however, and there were no births at Northwestern.

Nearly half (49.6%) of the births took place at Mercy Hospital and Medical Center (Table III). All of the Alivio participants who received their prenatal care from Alivio and opted for a hospital birth gave birth at

Mercy, where Alivio Medical Center midwives and physicians have admitting privileges. Twenty-one participants (8.0%) delivered at Bethany and twenty (7.6%) were at Mt. Sinai. Eighteen participants (6.9%), who were enrolled in the Healthy Families program at Howard Area Community Center and received doula services through the program at Christopher House, delivered at St. Francis Hospital. Six participants had planned home births through Alivio. Four participants delivered precipitously at home or en route to the hospital. The remaining participants delivered at fifteen different hospitals. We did not anticipate that so many hospitals would be involved or that it would be so difficult to predict which hospitals would be utilized by our participants. Consequently, obtaining participants' medical records from these hospitals was a larger challenge than we anticipated.

Intrapartum Outcomes

The primary data sources for intrapartum health outcomes are birth certificate data and the medical records for the mothers and their babies. Participants were asked by their doula to complete release of information consents for both medical records and birth certificate information. The following sections detail specifics about each data source and the outcomes derived from birth certificates and medical records.

Birth Certificate Data

The birth certificate data includes information reported by the hospital or health care professional attending every birth. This information goes well beyond the demographic data released to individuals requesting their own birth certificates and includes data on child's health, prenatal care and labor and delivery.

An application was made to the State of Illinois, Department of Public Health Division of Vital Records to obtain birth certificate data on our participants and the population of Chicago teen mothers for the project years. Permission was granted by the state for this data on our participants and sterilized data (i.e. without identifiers) on all Chicago teen births. The data was released through the Chicago Department of Public Health Office of Epidemiology.

Two hundred twenty-four participants completed consents for release of birth certificate data and successful matches were made for two hundred twenty-nine babies. Fifteen participants were lost to follow-up prior to signing the release of information forms. Consent forms were not obtained from 23 mothers either because the mother did not want to sign the release or because follow-up for signature did not occur.

Table IV shows the comparisons between doula and non-doula groups on birth certificate variables. Doula Project participants differed from other Chicago teen mothers on a number of demographic variables. Doula moms were slightly younger, had fewer years of education, were more likely to be first-time mothers and than were other Chicago teen mothers. Our mothers were more likely to be Hispanic and less likely to be African-American than the population of teen mothers in Chicago as a whole.

Birth Certificate Intrapartum Outcomes

Table V shows a comparison between birth certificate data from Doula Project participants and Chicago teens on prenatal care, birth-weight, prematurity, APGAR, cigarette and alcohol use, and delivery type.

Doula Project participants were less likely to have received inadequate prenatal care and were also less likely to have had a low birth weight baby or a preterm birth. Their babies also had higher APGAR scores at both one and five minutes. It is not clear whether these outcomes are effects of the doula intervention or if mothers who chose the support of the doula project were more likely to take better care of themselves and seek health care during their pregnancies.

Project participants were less likely than other Chicago teen mothers to smoke cigarettes during their pregnancies (3.0% vs. 7.0%, $p=.014$). No Doula Project mothers and only .2% of Chicago teen mothers reported drinking alcohol during pregnancy. Birth certificate data on these behaviors are based on maternal self-report (cigarettes per day and drinks per week).

The Cesarean section rate in the doula group was 9.6%, more than three percentage points lower than that found among Chicago teen mothers. This difference is not statistically significant ($p=.083$).

However, if we compare only those Doula Project participants who had a Doula attending the birth with Chicago teen mothers, there is a statistically significant difference between groups (8.1% vs. 12.9% $\chi^2 = 3.80$ $p = .028$) That is, project enrollment alone did not affect the Cesarean section rate; Doula support during labor and delivery was critical to reducing the c-section rate. Almost one-fifth (18.8%) of the participants who enrolled in the project did not have a doula attending their labor and delivery.

.As noted earlier, the Doula research sample differed from the overall population of Chicago adolescent mothers on some demographic variables. Because of the association between race and Cesarean section rate, it was important to control for race in exploring the relationship between Cesarean section rate and doula attendance at the birth. When we stratify by race (African-American and non-African American) we find a statistically significant relationship between doula births and Cesarean section rates for non-African-Americans; 10.9% for non-African-Americans without doulas and 4.2% for non-African Americans with doulas ($\chi^2 = 5.95$, $p = .018$). However, the C-section rates for African-Americans is 13.0% in the non-doula group and 12.9% for doula-attended births ($\chi^2 = .00$, $p = .989$). We included only single gestation (i.e. not twins or triplets) in these calculations since multiples are much more likely (approximately fifty percent) to be delivered by Cesarean section and there were five sets of twins in the project sample.

However, African-American participants in the doula project were more likely to have at least one medical risk factor during pregnancy than were other African-American teen mothers in Chicago. That is, African American mothers in the project were more likely (36.5% vs. 27.8%, $z = .048$) to have had a pre-existing condition, such as diabetes or hypertension, which increased their risk or the baby's risk for adverse outcomes than were other African-American teen mothers in Chicago. There is a strong relationship between risk factors and cesarean delivery (Odds Ratio=1.570, (1.465-1.683, 95% Confidence Interval).

If we examine the relationship between doula attendance during labor and delivery and cesarean section for women without medical risk factors, we find a statistically significant relationship between doula attendance and cesarean sections for both the African-American population and Chicago teen mothers as a whole. More

specifically, no African-American mothers without risk factors who had doula attended births had Cesarean sections compared with 12.6% of the African-American mothers without risks and without doulas. Overall, 11.5% of Chicago teen mothers without risks had Cesarean sections compared with 2.5% of those with doula-attended births. In both cases, these differences are statistically significant.

In addition, it is important to remember that we could not control for practice patterns and do not know if or what standards were used in determining the need for Cesarean section. Some doula reports suggest that physicians were responsive to family requests for Cesarean section on an elective basis or used somewhat arbitrary standards for progress in labor. The relatively small size of subsets of the population, i.e. African-American project participants with single gestation pregnancies and doula attendance at the birth, may also be a factor. Most of the non-African-American participants were from Alivio Medical Center and most of them had midwives rather than physicians attending their births. The midwifery practice at Alivio strives to minimize interventions, procedures, and medications during labor and delivery. They worked with doulas prior to our project and clearly have established effective collaborative relationships with the doulas trained for our project. These standards are reflected in their outcomes. It was not possible to control for all of the additional factors that might affect these associations in study design, sample selection or analysis.

Doula project participants (both enrolled (3.1%) and attended (2.2%) births) had lower rates of forceps/vacuum-assisted births than did non-participants (6.2%). Again, when stratified by race, these associations held for singleton births to non-African Americans ($\chi^2 = 7.59$, $p = .006$), but not for births to African-American mothers ($\chi^2 = .000$, $p = .984$).

Medical Record Data

Data from participants' hospital charts provided additional information that is not routinely collected for vital records. Two hundred thirty participants signed consents for hospital charts. Six participants had planned home births; their records were requested from the provider, Alivio Medical Center. Medical records were received on 223 of the 262 participants and their newborns. Providers were unable to locate seven sets of

charts. Frequently information was missing or incomplete. If data was missing, the provider was contacted and the specific information requested. However, it appeared that often the data was not recorded in the medical chart. For instance, data on cervical dilation, necessary to compute length of labor, was often missing, incomplete or not recorded at regular intervals. Telephone follow-up was done on incomplete charts to try to obtain additional information from the provider. As hospitals frequently contract with outside corporations to handle medical records requests, such follow-up was often frustrating and unproductive. Several consent forms were lost or never received by the provider. In such cases, copies of the consents were sent again to the providers. Medical record data was supplemented by doula report to Chicago Health Connection. Data regarding interventions was verified by the medical chart data. The charted data was used where there were discrepancies regarding medications, medical procedures and other interventions. There were no significant differences between participants with and without medical record data on major demographic variables. Table VI shows the demographic make-up of Project participants with medical chart information and additional delivery information.

Data of significance from the medical charts concerns the presence of the Doula during delivery. Table VI shows the percentage of Doula research participants that had a Doula attended birth. Doulas attended the births of 81.2% of the participants (n=181). Reasons doulas did not attend the birth included: precipitous births (i.e. the birth was very quick and the baby arrived before the doula, n=15), program related reasons (such as the doula was sick and a backup could not be located in time, n=8), participant related reasons (the participant did not call the doula when she went into labor, n=16) and physician or hospital related reasons (such as hospital personnel refused the doula access to the participant, n=4).

Medical Chart Intrapartum Outcomes

Table VII shows the intrapartum outcomes gleaned from the medical charts. Length of hospital stay for the mothers averaged 2.02 days (s.d.=1.3). The range was one to thirteen days. The Cesarean section rate according to medical chart data is 6.7% (15/223).

Two-thirds of the participants received no analgesia during labor and delivery. Fewer than one-fifth (17.3%) of our participants received anesthesia during labor and delivery. Epidural anesthesia was used for 12.5%. Other methods were used for 4.8% of the participants. All of the Cesarean deliveries were done under anesthesia. Epidural anesthesia was used for only 11.4% of the vaginal births.

There is only limited data in the literature on the prevalence of anesthesia use during labor and delivery. It is estimated that epidural anesthesia is used in at least 50% of vaginal births at urban hospitals (Thorp, 1999; Norris, 1999).

Thirteen babies (5.83%) had low birth weights, i.e. less than 2500 grams. Less than five percent (11) of the babies were born prematurely. Babies' lengths of stay ranged from 1 to forty nine days. The mean length of stay was 2.2 days (sd=3.73). Eighteen percent stayed longer than two days.

Breastfeeding

Breastfeeding was an important component of the Doula Project early in the planning process. The American Academy of Pediatrics (AAP Position Paper, December 1997) recognizes breastfeeding as “the optimal form of nutrition for infants” with “diverse and compelling advantages to infants”. In addition to promoting optimal physical health in the infant (Kovar et al, 1984; Beaudry, Dufour and Marcoux, 1995; Howie et al, 1990; Frank et al, 1982; Duncan et al, 1993;), breastfeeding has been associated with better long-term cognitive and health outcomes for children (Wright et al 1995; Johnson et al, 1996; Anderson, Johnstone, & Remley, 1999; Mortensen, Michaelson, Sanders, & Reinisch, 2002). Breastfeeding is advantageous for maternal health (Dewey, Heinig and Nommsen, 1993; Newcomb et al, 1994; Melton et al, 1993; Chua et al, 1994) and also confers cost savings (Montgomery and Splett, 1997; Tuttle and Dewey, 1996).

Yet decisions regarding newborn feeding are complicated, especially for adolescent mothers. As Musick notes, “Breastfeeding is only one of many domains where there is potential conflict between the needs of an adolescent mother and those of her child” (Musick, 1993). Many young mothers have no role models or

family support for breastfeeding. Privacy concerns, body image and sexuality issues are also involved. In addition, the need to return to school or work and dependence on others for childcare can make bottle-feeding the simpler alternative.

The Chicago Doula Project appreciated these concerns and emphasized the need for breastfeeding education and support. In addition to the health benefits for both infants and mothers, breastfeeding has psychosocial benefits that may be particularly important for teen mothers. As one doula stated, as soon as their pregnancies are obvious, teen mothers are “stereotyped and given the message that they can’t handle the responsibility.” She also noted that “often the mom (the baby’s grandmother) likes to take over ---and that’s a problem. The Mom becomes more like a sibling”. Breastfeeding allows a young mother to play a unique role in the life of her newborn. It gives her the opportunity for frequent, close contact with the baby and interaction that provides her with the experience to learn to read her baby’s cues. While there can never be too many loving individuals in a baby’s life, it is important for the baby’s mother to see herself as central, special and competent. Breastfeeding can be one way to reinforce this very early in the developing relationship between the teen mother and her new baby.

Chicago Health Connection was formerly the Chicago Breastfeeding Task Force. The agency’s original mission was breastfeeding promotion. The name change, in 1996, reflected the expansion of their role to a broad range of maternal and child health promotion issues with a special focus on peer counselor, community health advisor, training. Their approach to breastfeeding in the Doula Project emphasized training the doulas to be knowledgeable, trusted sources of advice and encouragement who present information and support participants in making the choices that are best for their individual situations.

Initiation of breastfeeding among Doula Project participants quickly reached and stabilized at a rate of 80%. There are no good pre-project data on breastfeeding. The program director at Marillac House estimates the pre-doula rate at around one percent. Alivio has always had a higher rate of breastfeeding. The midwifery service at the medical center has encouraged breastfeeding since its establishment. The director of the

midwifery service, however, believes that doula involvement has increased both initiation and duration of breastfeeding in their patients.

Table VIII shows the breastfeeding initiation by maternal age, ethnicity and number of previous births. There was no relationship between maternal age and breastfeeding. There was a significant relationship between ethnicity and breastfeeding initiation. African-American mothers were less likely to breastfeed than were Hispanic participants or those of other ethnic backgrounds. First-time mothers were more likely to breastfeed than were mothers of older children.

Table IX shows the duration of breastfeeding for project participants, ranging from 80.1% at birth to 21.8% at six months of age. The total column reflects the number of participants on whom we have breastfeeding data at that point in time. Nine participants, three from each site, were lost to follow-up by the time the baby was six weeks old. Alivio Medical Center did not collect data on breastfeeding after six weeks, when the doula ended her involvement with the participant. Thus, the sample size dropped to 113 by three months. Three additional participants were lost to follow-up by six months.

Graphs I and II show comparisons between doula project participants and national and state breastfeeding rates respectively. National data are taken from the Mothers' Survey, Ross Products (1998). This survey is an ongoing mail survey of a representative sample of new mothers. State data is provided from the Pregnancy Risk Assessment Monitoring System (PRAMS) for Illinois. PRAMS is a population-based survey on women's health, pregnancy and infant health issues under cooperative agreements between individual state public health departments and the Center for Disease Control's National Center for Chronic Disease Prevention and Health Promotion. (Rogers et al, 1998). Illinois began PRAMS participation in 1997. A mail survey is sent to a representative sample of new mothers when babies reach two months of age. Non-responders are followed up by telephone. The infant's age range at PRAMS survey was from three to seven months.

As the graphs illustrate, doula participants compare favorably with all other population groups on duration of breastfeeding. For example, almost twenty-two percent (21.8) of the teens on whom we have data

were still breastfeeding at six months compared with 12.2% of U.S. teens. Only 12.3% of Illinois teens were breastfeeding at the time they completed their PRAMS survey. The mean infant age at PRAMS survey in 1998 for Illinois was 4.7 months (s.d.=. 66).

Breastfeeding outcomes have been a major achievement of the Chicago Doula Project. Doulas were especially well trained in this area and were able to effectively assist participants. The doulas were able to provide the ongoing support that is a key element in establishing and maintaining breastfeeding among new mothers.

Subsequent Births

We know that becoming a parent during the teen years is associated with a number of adverse social, health and economic outcomes for both parents and children. The birth of additional children shortly following the first puts the family at greater risk. Compared to teen mothers with one child, those with subsequent births during adolescence typically experience lower educational attainment, greater likelihood of poverty and child health problems (Kalmuss and Namerow, 1994; Furstenberg, Brooks-Gunn and Morgan SP, 1987). Slightly more than one out of every five births to teen mothers is a second or higher order birth (Ventura, 1995).

Because of the prevalence of subsequent births to teen mothers and the impact of rapid subsequent childbearing, we felt that it was important to get information on subsequent births to Doula Project participants. Some suggested that participants could be expected to have a higher subsequent birth rate than non-program teens because the doulas made pregnancy and birth positive experiences. Others felt that involvement in the Doula Project would make mothers more responsive to their children, enhance understanding of their children's needs and therefore delay subsequent pregnancy.

Analyses based on data from the National Longitudinal Survey of Youth (NLSY) found that 31% of young women who were 16 or younger at the birth of their first child gave birth to a subsequent child within twenty-four months (Kalmuss and Namerow, 1994). Twenty-four percent of 17-19 year olds had another birth

within two years of their first birth. Data from the Nurse Home Visitation Study revealed that 22% of the intervention group had a subsequent live birth within two years compared with 31% for the control group (Kitzman, Olds et al, 1997).

Data on subsequent births to Doula Project participants was obtained through staff reports, program data and birth certificate data through the State of Illinois. During the project, there were three subsequent births to teen mothers in the Doula Project. There were three more births to teen mothers who were not active in PTS at the birth of the subsequent child but who later resumed program involvement according to program data. An additional four participants had subsequent births at the age of twenty. Thus, according to program data, the subsequent birth rate is 5.26%.

Birth certificate records for the years 1997-2000 were matched on 247 maternal records from the State of Illinois. As of this report, birth certificate data is only available through the year 2000. Thus, we can follow some early participants for almost four years but others for only six months. Most of the subsequent births occurred when the first project baby was between 18 and 24 months old. According to birth certificate data from 1997-2000, 21.7% (31) of the 143 Doula Project participants who gave birth prior to January 1, 1999 had a subsequent birth within twenty-four months. The number of participants who had subsequent live births within eighteen months of the first birth was 15 (7.9% out of a total N of 190 participants whose first project born children were eighteen months or older by December 31, 2000). Only 1.6% of the participants had a live birth within a year of the first birth.

The likelihood of a rapid subsequent birth was associated with the age of the participant at the initial project birth. Only 18.2% (10/55) of the younger mothers (aged thirteen through sixteen) had a subsequent birth within two years. Almost twenty-four percent (21/88) of the mothers seventeen or older at their initial project birth had another child within two years. Younger mothers involved in the Doula Project were significantly less likely to have a subsequent birth within two years than were young mothers in the NLSY ($p = .028$). Older teens in our project did not differ from the older NLSY participants on the likelihood of a

subsequent birth within twenty-four months. Doula Project participation did not increase the likelihood of a subsequent birth and was associated with a lower likelihood of a rapid subsequent birth for younger teens.

Length of Stay in Program

The duration of participants' involvement in the Parents Too Soon Program (participant length of stay) was computed from data in the Ounce of Prevention Fund Stargate Management Information System. Length of stay was computed only on those teens who had first births through the project. Mothers of older children were generally involved in PTS prior to the second pregnancy and would not be possible to isolate the portion of the intervention directed toward the second pregnancy and baby. The length of stay queries also were restricted to those participants involved in the long-term home visiting program through PTS. Teens who were offered only short-term "doula only" services through the project at Alivio or those who received doula services through Christopher House and ongoing home visiting services through the Healthy Families Program at Howard Area Community Center were not included in these calculations. Length of stay was computed as the number of months in which a participant received at least one core service through December 2000. Core services are defined as home visits, groups and individual contacts.

The population was stratified into four groups: doula participants whose cases were closed, participants from non-doula sites whose cases were closed, non-closed doula participants and non-closed participants from non-doula sites. Enrollment status was based on data entered in Stargate by site personnel. The task of computing length of stay can become problematic as enrollment status changes from active to closed and then back again to active. However, participants who are "closed" are less likely to receive core services in the future than are participants whose status is "pending" or "active". While site staff do not follow strict guidelines for closing cases, participants who have not received core services for a number of months are generally closed. Stratification by enrollment status was indicated to avoid artificially truncating the length of stay for participants who were continuing to receive services.

Closed doula cases had a mean length of stay of 12.4 months. Closed participants from non-doula sites averaged a length of stay of 10.5 months. The difference between groups was statistically significant ($t = 2.63$, $P = .009$). Open doula participants averaged a length of stay of 19.9 months as of December 31, 2000; open participants from non-doula sites averaged 14.4 months. The difference between these groups also was statistically significant ($t = 2.77$, $p = .011$).

Immunizations

Stargate data was also used to calculate the proportion of Doula Project children who were up to date on their immunizations. Slightly more than half of the Doula Project children, 54.1%, were up to date on immunizations compared with 53.8% of children in the PTS Pregnant and Parent program overall. No major home visiting programs have found that home visiting resulted in improved rates of child immunization (Behrman, 1999). The Doula Project outcomes are not surprising given that there were not specific program activities regarding immunizations.

Maternal Depression

While not a part of the original evaluation plan for the Doula Project, we decided to explore the prevalence of depressive symptoms among participants because of the significance of maternal depression for both mothers and their children and evidence that doula support may prevent post-partum depression (Hofmeyr et al, 1991). This component was added to the evaluation in June 1998. The protocol called for the Center for Epidemiological Studies Depression Inventory (CES-D) to be administered to participants after their babies turned three months old. The CES-D is a well-validated twenty-item questionnaire of respondents' self reported symptoms during the week preceding administration of the instrument. It was developed for use in studies of the epidemiology of depressive symptomatology in the general population (Radloff, 1977). A Spanish language version of the CES-D has also been widely used. A child and adolescent version, the CES-DC, is available and

was considered. The CES-DC refers specifically to the respondent and peers as “kids”. We felt that the general wording of the CESD, e.g. “other people”, would be more appropriate for our population which ranged in age from thirteen to nineteen. The range of possible scores is zero to sixty, with higher scores reflecting the existence of more symptoms weighted by the frequency of occurrence. The CES-D does not measure clinical depression, but a score of sixteen or greater is used to indicate the presence of substantial depressive symptoms. The CES-D is appropriate for use as a screening instrument; diagnosis of depression requires professional evaluation.

Several studies have used the CES-D to explore the prevalence of depressive symptoms in young mothers. Colletta (1983) found that 59% of her sample of seventy-five adolescent mothers scored in the depressed range on the CES-D. Younger, single and less educated mothers were more likely to score in the depressed range. Reis (1987) examined the relationship between maternal age and depression in a sample of mothers involved in a family support program. She found that rates of depressive symptoms ranged from 67% in young adolescent mothers, age 16 years old and younger, to 53% in older adolescent mothers and 35% in adult mothers. Similarly, in a population-based study of primiparous women, Deal and Holt (1998) reported that the percentage of respondents with scores greater than sixteen ranged from 13.8% in White mothers aged twenty-five to thirty-four to 48.1% for Black women aged fifteen to seventeen. Hall’s (1990) study of mothers of five and six year old children found that almost half (49%) had scores greater or equal to 16 on the CES-D. A recent study, (Lanzi et. al, 1998) reported significant depressive symptoms in more than 40% of the mothers of Head Start children sampled. Barnett and her colleagues (1996) administered the CES-D to teens both during pregnancy and post-partum. They found that teens were more likely to have scores in the depressed range during pregnancy than after they became mothers. Scores ranged from 32% at four months post-partum to 42% in the last trimester of pregnancy.

Doula Project sites were responsible for administering the CES-D questionnaire to their participants. Forms with participants’ names were sent to each site at the end of the month preceding the twelve-week post-

partum date. Participants completed an informed consent document along with the questionnaire. Site staff were responsible for ensuring that participants received the CES-D and instructions and that the forms were returned to the Ounce of Prevention Fund. Participants were instructed to complete the form and put them in the stamped, envelopes addressed to OPF that were attached.

The informed consent included the information that identifying data would not be shared with staff outside of the project. PTS program directors were notified of participants whose scores were in the depressed range so that they would ensure that these participants received further assessment and treatment if needed. There were concerns that the limits on confidentiality would bias the results in the direction of identifying fewer depressed participants. We acknowledge this potential source of bias. However, the use of the Center for Epidemiological Studies Depression Scale (CES-D) with our participants revealed a high prevalence of depressive symptoms in these young mothers. More than half (50.4%) of the participants who completed this instrument (n=115) had scores of 16 or more, the cutoff point for the determination of significant symptomatology (Table X). The child's age at the time the CES-D was administered ranged from two to thirty months; seventy percent were five months old or younger when their mothers completed the CES-D. There were no statistically significant associations (as measured by χ^2) between maternal age, baby's age, or ethnicity and CES-D score (high vs. not high). Mothers with more than one child were not more likely to be depressed than mothers with only one child.

We had anticipated that scores might be inflated by items reflecting environmental conditions ("I felt fearful") or the realities of newborn care ("My sleep was restless"). This was not obvious in our data (Table XI). However, forty-three percent of the respondents agreed that they felt "Everything I did was an effort" between "occasionally" to "all of the time" in the preceding week. This item may reflect difficulties with adjustment to life with a new baby.

Based in part on our findings, the PTS program at Marillac House secured the services of a part-time psychologist who consults with home visitors and doulas, regularly attends staff meetings and is available to

provide psychological testing and psychotherapy to participants and their families. In an interview with Dr. Chambers, she reported that our CES-D data echoes her own findings. She has found that depression and anxiety are pervasive problems. She believes that the professional/paraprofessional team is effective for participants and provides needed support and perspective for staff as well.

Christopher House used the data we provided to apply for foundation funding for a masters-level social worker. They recently received a grant for a social worker to work exclusively with participants, families and staff of the PTS program.

The third doula site, Alivio Medical Center, has mental health services available through its clinics. Alivio had referral procedures in place that predated the Doula Project, but felt that the use of the CES-D heightened their awareness of the prevalence of depression and helped to focus their concern about particular young mothers in their program.

Overall, the CES-D scores obtained with this sample closely reflect findings from other surveys of young and low-income mothers. Increasingly, researchers, clinicians and public policy makers are becoming aware of the prevalence of maternal depression and concerned about its impact on both parents and their children. The CES-D results from the Doula Project evaluation highlighted this issue and led to a PTS training for experienced home visitors. The training was well received; staff from sites throughout Illinois felt that depression was a significant problem among their participants and found the training helpful. In addition, the Ounce of Prevention Fund is integrating this knowledge into program planning for Parents Too Soon and Child and Family Support Services sites. We hope to develop innovative interventions and research projects that will continue to address these needs and evaluate our efforts in addressing these issues.

Mother-Infant Interaction

As noted earlier, our original evaluation plan called for an evaluation of the health benefits of doula involvement, but encouraging reports from the sites led us to consider adding to this basic evaluation. We were particularly interested in psychosocial outcomes of doula support. Early doula research (Sosa et. al., 1980) had

found beneficial effects of doula intervention on mother-infant interaction in the immediate post-partum period. They hypothesized that this early enhancement of the mother-infant bond would have long-lasting effects. At the time the Doula Project started, there was no additional published research in this area. However, other researchers in partnership with Drs. Kennell and Klaus, were exploring the effect of doula involvement on mother-infant relationships. A major project in this area led by Dr. Kennell will be completed in 2002. After considerable discussion, such a component was added to our research in the spring of 1998.

A videotaped recording of a feeding was added to the research protocol to look at mother-child interaction. Videotaping was chosen both because it provides a portable record of interaction and because it is a familiar routine in the PTS developmental program. Doulas and home visitors collaborated to videotape the doula participant feeding her baby at the age of twelve weeks. The videotaping was scheduled for the end of the doula intervention, to coincide with the transfer back to the PTS home visitor as the primary worker. The NCAST (Nursing Child Assessment Satellite Training) Feeding Scale (Sumner and Spietz, 1994) was chosen as the assessment tool for parent-child interaction. It was important to have a normed instrument with established reliability and validity that was recognized in the field. The availability of trained personnel available for scoring the tapes was also a factor in the selection of the NCAST protocol. The NCAST assesses six domains of caregiver-child interaction: sensitivity to cues, response to child's distress, social-emotional growth fostering, cognitive growth fostering, clarity of cues, and responsiveness to caregiver. Many of the test items are contingent, assessing responsiveness between caregiver and child.

We also considered the NCAST Teaching Scale (NCATS) but, after much debate and discussion, decided against its use for three main reasons. Our primary reason for not utilizing this assessment was that the focus of the scale is on a kind of interaction that does not have much meaning at twelve weeks of age. It would be relevant as a longitudinal measure of change between time intervals, but not as a solitary measure. Mothers, especially first-time mothers, are not likely to have developed a teaching "style" by twelve weeks. In contrast, feeding is a familiar task by twelve weeks. Second, while the Teaching Scale is described as a parent-infant

interaction measure, both the NCAST manual and the literature (e.g. Gross et al, 1993) suggest that the Teaching Scale taps mother's knowledge of child development and teaching style more than the affective quality of the relationship. The doula intervention does not focus on teaching and therefore we would not expect significant gains on this scale. Third, administration of the Teaching Scale is complex and includes "teaching" the child to the point of stress, a concern of project partners.

The other alternative that we seriously considered was the PCOG (Parent Child Observation Guide). The PCOG was developed for the Ounce of Prevention Fund Developmental Training and Support Program by Victor Bernstein at the University of Chicago in conjunction with Ounce of Prevention Fund staff (Bernstein, Percansky and Wechsler, 1996). The PCOG had the advantage of being a familiar tool for sites even though site staff do not use the scoring tool and scoring is not addressed in PCOG training. In fact, during training, use of PCOG for any "evaluative" purpose is avoided and discouraged. Site staff expressed concern about changing the familiar PCOG program intervention instrument into a research tool. Also, no trained individuals were available to score PCOGs for the Doula Project and it was not possible to arrange for training with the time and resources available to us.

We initially overestimated staff's ability to transition from their regular PCOG videotaping to taping an NCAST feeding situation. We did not anticipate the intensity of the concern shown by site staff regarding scoring of the tapes. The concern and anxiety around taping an interaction for "evaluation" which was seen as "grading" mothers and "grading" staff, appeared to result in misunderstanding the NCAST feeding task. As an example, some staff focused on the mechanics of feeding rather than on the interaction between mother and baby. As another, the instruction for staff to not talk to the participant during taping was interpreted as the mother should also not talk during the feeding. In other instances, the taped interaction was too short and could not be scored. PTS and Research staff provided additional training to doulas and home visitors to address these issues and concerns.

Although we continued to hear concerns about how to add taping into a busy worker schedule, many staff members involved were able to appreciate the importance of objective measures of the impact of the doulas on the participants' relationships with their babies. Site staff members were also assured that the tapes would not be used to compare them with other individual doulas, to compare specific mothers with each other or to criticize sites. They were told that we would compare the participants as a group with other teen mothers (the NCAST database) and use demographic variables as a basis of comparison (e.g. "The African-American participants scored higher on this subscale than did the Caucasian mothers" or "older mothers compared with younger mothers"). However, there were enduring concerns about the NCAST. These included concerns about bias toward a more verbal mother which site staff felt conflicted with cultural norms around infant feeding. In particular, staff at one site characterized infant feeding in the Mexican culture as a quiet time and they expressed concerns that this behavior would result in lower scores for their participants. Similar conflicts are found in any intervention that challenges familiar patterns. Links between higher NCAST scores, child IQ and other outcomes suggest that stimulation responsive to infant cues lays the foundation for optimal child development (Sumner and Spietz, 1994).

We contracted with an outside consultant to orient sites regarding the NCAST and to coordinate the process of evaluating and coding videotapes. She had extensive experience as well as certification as an NCAST reviewer and trainer. Tapes were reviewed and coded by a small group of reviewers with whom she contracted. Ten percent of the tapes were recoded by a second reviewer to ensure reliability. Inter-rater agreement ranged from 90-97%.

Completed videos were received from eighty-eight participants, 60.3% of the 146 participants who gave birth after December 1, 1998 and were not lost to follow-up by twelve weeks post-partum. Seventeen of the tapes received could not be scored because of inadequate duration of the interaction recorded, no feeding recorded and poor quality of the tape which did not permit accurate coding.

Table XII shows the demographics on participants on whom we have NCAST coded videotapes. The demographics of the NCAST sample are similar to those of the project participants overall. For instance, 36.6% of the NCAST respondents are African-American compared with 33.2% of the project participants; mean age of the mother was 16.89 for the NCAST sample and 16.9 for the total project sample.

NCAST scores ranged from 39 to 69. The mean NCAST Total Feeding Score was 55.15 (s.d.= 8.50). We followed the NCAST recommendation to utilize a cutoff score for program evaluation (Sumner & Spietz, 1994). The cut-off score is determined for each ethnic/racial group as the lowest ten percent for mothers aged twenty or older with at least twelve years of education. This is also categorized as a “clinically worrisome score”, reflecting that such families are at risk for problems in parent-child interaction. NCAST recommends that families who score in this range receive further evaluation and/or services. The cutoff score for Hispanic and African-American families is 49. Almost three-quarters (73.2%) of the Doula Project mother-infant dyads scored 49 or higher; 26.8% scored below this cut-off. Given that the Doula Project targeted at-risk, adolescent families, it is noteworthy that the majority scored above this “clinically worrisome” range. Table XIII shows this information for the subscale scores.

Mean Doula Project scores were lower than the mean NCAST database scores on the Total NCAST Feeding score (62.64 $t=7.42$ $p<.001$) as well as on the subscale scores. However, there were no significant differences between the Doula Project sample and the NCAST database teen sample (56.91 $t=1.33$ $p=.19$) on Total Feeding Score.

We found considerable variation in NCAST scores within the Doula Project sample (Table XIII). Any conclusions regarding mother-infant relationships based on the Doula NCAST sample are very tentative given the Doula NCAST sample is relatively small and not random. Although the demographics between the project and NCAST sample are similar, the NCAST sample may not accurately reflect the Doula Project population on some other dimension. Nevertheless, there are some intriguing findings.

As expected, there is a significant positive relationship between maternal age and total NCAST score, that is older mothers scored slightly higher than younger mothers ($f=5.50$ $p=.022$) (Table XIV). The mean Total NCAST Score for African-American participants was higher than that of Hispanic participants, 57.42 and 53.26 respectively ($t=2.05$, $p=.045$). However, mean NCAST scores also differed between program types, which is confounded by ethnicity. That is, sites were given the flexibility to adjust length of the Doula intervention. As noted earlier, one site elected a shorter model with doula involvement starting about six weeks before the participant's due date and ending at six weeks post-partum. The other sites ("extended model") began earlier in the pregnancy, extended doula involvement to twelve weeks post-partum and included parent group services. Mean NCAST scores were 52.41 for the shorter model and 58.15 for the extended model ($t=3.03$ $p=.003$). Because there was a significant association between program type and participant ethnicity, a multiple regression model was developed to control for this relationship. After controlling for the effect of program type, there was no significant relationship between ethnicity and NCAST scores. We did not have more detailed information regarding participant ethnicity within the Hispanic group which might help explain these findings further. Given the small size of these sub-samples, it is unlikely that we would have found significant differences or even likely trends.

Cognitive growth fostering is the subscale most dependent on maternal verbalization. The difference between non-Hispanic and Hispanic as well as extended and short groups are largest on this subscale. However, there is a consistent trend across subscales for higher scores among non-Hispanic participants and for participants from sites using the extended model. PTS has utilized the knowledge gained from the NCAST in their work with both Doula sites and in PTS training. A training series, "From Coo to Conversation", has been developed to stress the importance of language in child development. In addition, PTS training and program development staff members have been highlighting how to effectively communicate this information and facilitate new ways of interacting with infants when this may counter traditional cultural practices.

There was no association between CES-D scores and NCAST scores although the small sample size and missing data made it less likely to detect statistically significant relationships. Scores on the NCAST subscales were explored to better understand the disparity in NCAST scores according to program type. The majority of the subscales are based on maternal behavior toward the infant: sensitivity to cues, response to distress, social-emotional growth fostering, and cognitive growth fostering. Clarity of cues and responsiveness to parent categorize the infant's behavior toward the caregiver. Scores on the cognitive growth fostering subscale were significantly higher for the extended model group (mean=5.85) than for the shorter model participants (mean=3.57, $t=4.40$, $p<.001$). The means on the remaining subscales were also consistently higher for the extended model group, but these differences were not statistically significant. The findings suggest that an extended model, with more doula contacts and more opportunities to focus on perinatal potential as well as opportunities to learn from other teen parents, facilitates optimal mother-child interaction. Specific activities, such as the FANA and similar interventions, both during pregnancy and in the early days and weeks of life may be especially beneficial in encouraging cognitive growth fostering. These promising interventions should be replicated and studied more closely to refine the intervention and improve program efficacy for young families.

COSTS

Program and Training Costs

Doula program costs are \$80,000 per site per year (FY 2001). This includes salaries and benefits for two full-time doulas and other costs related to the addition of this component to a PTS program. Among these are ten percent of the program director's salary to compensate for added responsibilities, clinical consultation/supervision from a registered nurse or midwife, program materials and travel. Doula salaries are set by each site at the home visitor salary plus ten percent. The higher salary was justified by the twenty-four hour on-call requirements of the position.

Training costs ranged between \$3,200 and \$3,500 per trainee. Thus, training costs for a new site, two doulas and a program director, are, on average, about \$10,000. Adding program and training costs together, the cost per participant is \$2,500 if sites meet the targeted goal of 18 births per Doula in the first program year with no staff turnover. Per participant costs would drop to \$2,222.22 in succeeding years if there was no staff turnover.

The doulas at Alivio Medical Center and Marillac Social Center exceeded the goal of 18 births per Doula per year. The two centers served a total of 242 participants during the project period. This total includes both research and non-research participants who received doula services. Christopher House was excluded from these analyses because they had a working doula on staff for only half of the project, twenty of the forty project months during which doulas attended births.

Each site had one doula until July 1, 1998 when a second doula position was added. The projected number of births for this staffing pattern would be 198; (18 x 1.5 years plus 36 x 2 years x 2 sites). This projection is based on the start of service date of January 1, 1997; the first project birth was March 1, 1997. This also assumes no gaps in service due to vacant positions. In fact, there was a staff vacancy of several months duration at Alivio. A total of 147 participants received doula services at Alivio and 95 were served at Marillac. As noted earlier, Alivio is able to serve more participants by starting services later in pregnancy and ending at six weeks post-partum. Marillac doulas continue to follow participants until twelve weeks post-partum. Marillac doulas also are responsible for prenatal groups at this site.

HealthCare Costs

Charges and reimbursement data for 1999 were used to explore health care savings related to doula involvement. Potential savings in health care charges are estimated based on the difference between the numbers observed in the doula project compared with data from Illinois Health Care Cost Containment Council on births to Chicago teens (C-sections and length of stay) and estimated data from the literature on epidurals [(expected - observed) x cost] (Graph III). The average hospital charge per vaginal delivery was \$6,524. The

average hospital charge per Cesarean section delivery was \$13,963. The difference was \$7,439 per Cesarean section averted. Utilizing the adolescent population rate Cesarean rate of 12.9% from Illinois birth certificate data, 12 Cesarean sections were averted by involvement in the Chicago Doula Project for a savings of \$89,268.² It is difficult to obtain reliable data on anesthesia for vaginal birth. Conservative estimates are \$1,000 in charges associated with epidural anesthesia and in at least 50% of vaginal births at urban hospitals (Thorp, 1999; Norris, 1999). Only 11.4% of the Chicago Doula Project participants with vaginal births received epidural anesthesia (Graph IV). For hospitals, the potential total charges saved due to decreased epidurals is \$92,000.

Charges associated with reduced length of stay totaled \$259,603. However, the analyses found reduced length of stay in Alivio participants only. A large proportion of these participants had no coverage for their hospital stays, thus increasing the incentive for early discharge. Thus, savings due to shortened length of stay are likely independent of Doula presence in this research sample.

In 1999, average Medicaid reimbursement to Chicago hospitals was \$2,247 for vaginal deliveries and \$3,514 for Cesarean section deliveries. The cost savings due to doula involvement for twelve C-sections averted would be \$15,204. It was not possible to obtain data on average physician reimbursement from the private sector. In 1999, the Illinois Department of Public Aid paid an average of \$944 to attending physicians for vaginal deliveries in Chicago. The average reimbursement for Cesarean sections was \$1008. The Medicaid cost savings for 12 C-sections averted total \$768.

Anesthesiologists were reimbursed an average of \$197 for their services at Cesarean section deliveries. There was no payment for anesthesiology services at vaginal births in 1999. Public Aid will pay anesthesiologists for their services at vaginal births if the physician is not paid by the hospital and these services are not included in the capitated payment to the hospital. However, no anesthesiologists billed Medicaid for services at vaginal deliveries. In contrast to some states, Medicaid in Illinois will pay for epidural anesthesia for

² In 1999, Illinois Health Care Cost Containment Council reported a Cesarean Section rate of 13.65% for teen mothers; Illinois

vaginal deliveries if the physician indicates that it is medically necessary. There is no additional reimbursement to the hospital if anesthesia is administered during labor and delivery. Medicaid savings associated with doula services are much less than the charges due to capitated hospital payment, low reimbursement rates and small differentials in physician payment between vaginal and Cesarean Section deliveries.

QUALITATIVE OUTCOMES

In addition to the quantitative data collected and analyzed for this evaluation, the qualitative data are essential to understanding the Chicago Doula Project. Focus groups and interviews were conducted with participants, doulas, program directors, and trainers. This information helps us to understand both the strengths and the limitations of the project. Qualitative data can clarify some of the quantitative outcomes. It also reflects some of the subtle benefits of the program that may not be obvious from the quantitative analyses.

An important component of the project was the relationships between the doulas and the professionals who provided health care services to the participants. The quality of these relationships varied widely. As noted earlier, the Alivio midwives had a doula service that predated our collaboration. We expected that the project doulas would be well-accepted by the midwives once the slight differences in responsibilities between the Alivio Medical Center doulas and the Chicago Doula Project doulas were understood. This proved to be the case. Project doulas were also welcomed by midwives at other hospitals (e.g. Cook County and University of Illinois Medical Center). As one doula reported, “The midwife told the other staff to just let us do our thing and it worked out real well. They couldn’t believe how well the girl did. It was a real good experience”.

Frequently the doulas serve to “buffer” the participants from the negative attitudes and behavior of health care professionals and others. Sometimes the doulas themselves were viewed as adversaries by hospital staff or participants’ family members. Some physicians were very helpful and accepting; others were not. In

only one case was the doula prohibited by the physician from attending the birth. At times, the attending or resident physician was rude to the doula, refused to answer her questions about the care of the patient or seemed to resent her involvement. The support of the nursing staff was also variable; some nurses were more flexible than others who presented barriers to doula involvement. This commonly took the form of rigidly enforcing hospital rules, such as counting the doula as a “visitor” and invoking the two-visitor rule. In such cases, the participant had to choose between, for instance, having the doula, her mother and the baby’s father present. Though they could compromise by taking turns in the patient’s room, this interrupted the continuity of doula support, which research has shown is related to improved birth outcomes and was stressful for participants, family members and the doula. At times, the small size of patient rooms made this regulation understandable.

Problems with hospital security were encountered frequently. “I had never been to that hospital before. On my way over, I was just praying that security wouldn’t give me any trouble”, reported one doula in her narrative report on a birth. Doulas were often stopped, questioned and delayed by security guards. Sometimes they were prohibited from going to patient care floors because they were not relatives. “I knew he wouldn’t let me upstairs, so I let him believe I was the participant’s sister”, admitted one doula.

These issues were not always successfully resolved by the end of the project. Although outreach to hospitals was viewed as important, it was difficult. In a group interview at the end of the project, doulas noted this remained a problem with which they felt their agencies needed help. Surprisingly, the Alivio doulas seemed more comfortable dealing with hospitals and physicians than did other agencies. Perhaps because they had fewer negative encounters with health professionals and were more confident in their role because of the close collaborative relationship with midwifery, they took the initiative in working with other hospitals. In one complex case, an Alivio doula took the initiative to intervene on her participant’s behalf. Fetal anomalies were diagnosed and the patient was referred to a tertiary care hospital for prenatal care and delivery in anticipation of complex neonatal needs. The doula accompanied the participant to a prenatal visit, established a relationship with the physician who allowed her access to the hospital and facilitated her involvement with the patient and

newborn. Because of her medical condition, the infant was unable to feed. The doula supported the participant's decision to breastfeed and taught her to pump so the infant could eventually use her breast milk. The doula joined the participant in visiting the baby at the hospital to facilitate bonding with the baby and as well as in translating and negotiating the medical center system.

Becoming a doula was a significant accomplishment. Many of the women who became doulas through the project found this to be a meaningful role for them, both personally and professionally.

“I found out this is hard work. But it has its many rewards... (including) healthier babies.... happy, more supportive moms and dads.”

“...this is what I was put on this earth to do... In life you need certain things to be successful! Time, will, opportunity, skills, determination, patience. All these things and more, have to be in place. Now when I say my prayers I can truly say “thank you God”. I'm finally giving something back to my community which has been so giving to me. We have learned many things that we can share with others that need help...”

“I feel a sense of satisfaction. I never finished anything before”.

“We are grateful to have Doulas in a few of our communities who are able to teach young moms that birth should be a normal, natural and healthy process for all women giving birth regardless of age or race. It is very important for a pregnant teen to have someone who is supportive, understanding, can spend time and even meet the challenge of assisting the mom at birth.”

Doulas frequently mentioned the stresses involved in the job. All of the doulas have found the job to be both physically and emotionally difficult. The stress inherent to this work is compounded by the unpredictable time demands of the job and problems such as dependable childcare, transportation and limited financial resources. A supportive personal network, as well as agency support, is critical.

“To meet this challenge of birth assistance you must have skills....You need strength: strength for your own mental health, strength to encourage the teen to meet the challenge of a new life experience... A good doula is ... armed with a full range of information regarding pregnancy, nutrition, prenatal care, birth, nurturing your baby and postpartum. A good doula recognizes birth as a key life experience and wants to hold onto the main points of labor and delivery. A doula understands the emotional needs of the laboring woman. For this reason, she stays beside the laboring woman throughout the labor with no change in shift. You see this job is not a 9-5 by no means. If you think that you have an ending and beginning job, you are in the wrong profession.”

“I couldn't do this without my husband...You have to have an understanding family”.

“Family support is important but also good supervision is needed. The doula supervisor at the PTS site needs to understand the role and the pressures. The supervisor needs to go through the doula training herself to appreciate this”.

“I had two births on Mothers’ Day. I spent part of the day with my kids and my mom and a lot of it at the hospital with two of my participants. This work can be really hard on my family.”

Assessments of impact on staff, program, and participants by PTS program directors

Interviews with program directors were conducted at all three sites. Each site director felt that the Doula Project has been a very positive complement to their Pregnant and Parenting Programs. All of the directors believe that the Doula Project has improved their PTS programs, as these quotes illustrate:

“It’s been a great addition to our program. There is a stronger focus on the pregnancy and the birth now.... “

“I think that it has enhanced our program. We did provide some birth support previously, but the training was not as extensive, especially on issues specific to teen parents. Integrating the doula program has changed the approach to the work by the home visitors. It has definitely enhanced the quality of the service. The community-based FANA is one thing that has been very valuable.”

“(We are) more aware of issues of labor and delivery and more sensitive to participant needs and experiences.”

“The Doula Project ...enhances our program in that we are able to provide services to participants from early in their pregnancy....We always did prenatal work....This gives us tools to do that work. A lot of our previous work on pregnancy and childbirth was done on the basis of the worker’s own experience, or that of friends and relatives and now we have a lot more knowledge.... I would say that the program feels richer now, more complete...”

They also believe that the Doula Project has had important effects on program participants’ birth experiences and the interaction between mother and baby:

“The moms are more sweet with their babies. They seem happier. They are talking about breastfeeding. They have a glow. They are more positive during pregnancy, too. Also they are telling their birth stories more and sharing their stories with each other.”

“We’re getting the girls in a lot earlier in their pregnancies than we used to and they are now better prepared for labor and delivery and motherhood. And I think that the relationship with a person, the doula, who treats birth as special is meaningful to the participants. There is a stronger focus on the pregnancy and the birth now in our program....They (the participants) definitely have more knowledge and understanding about baby’s development, more aware of the importance of talking to the baby, eye contact, and breastfeeding. They’re not grossed out by it. And they understand the importance of physical contact with the baby. And we’re seeing a lot of girls ...earlier in pregnancy when we often didn’t see them until the baby was a couple of months old.”

However, the site directors also identified problems involved in implementing the Doula Project. They noted that it was initially very time-consuming. Record-keeping, safety and liability issues were also concerns. All of them expressed that, at times, they felt frustrated with having to be accountable to three different agencies, i.e. their employers, Ounce of Prevention Fund and Chicago Health Connection, whose demands were sometimes in conflict. There were also difficulties regarding staff supervision:

“Supervision by CHC has turned out to be positive. But in the beginning CHC didn’t clarify the roles enough. There were times when (the doula) may not have been sure who was the boss. There are a lot of personalities involved and complicated dynamics. Sometimes there is rivalry between home visitors and doulas and the agency really needs to work out those issues.”

Participant Interviews and Focus Groups

Interviews and focus groups were conducted with participants from all three sites. Participant feedback has been very positive. The excerpts below illustrate major themes that emerged from analyses of the transcripts.

Doulas were seen as reliable sources of information and support:

“I learned a lot of things (from my doula). I learned about breast-feeding,...she taught me everything: diapers, giving baths, to know baby cries, she told me about that too. She taught me a lot.”

“She taught me a lot of stuff about how to take care of your baby.”

“I felt supported. I learned things I didn’t know. She also told me about all the wives’ tales people believe but aren’t true.”

(Participant talking about her uncle’s pregnant wife)“I told her she should get... (a doula) actually know what we’re going to go through. We don’t know. Once we’re a little bit older we’ll understand more. Now we’re young.” I think that the younger you are the more risks you have of having babies like that. And I told her she should go, and why she should be preparing, ‘cause her and my uncle are on their own. I told her, “You’re going to do it all on your own. There’s going to be no one there to help you the way they helped me.” I told her she should just get a doula. “You’ll have someone to talk to beside Ramon. You’ll have a woman to talk to beside your husband about stuff. And they speak Spanish and everything.” She said, “Ok, I’ll try it.”

“Well I liked having the doula ‘cause ...it helped me out a lot....it’s a good program for inexperienced mothers like teens.....”

Participants saw the doulas as “friends” in whom they had trust:

“I thought they were just going to come and teach, that’s it.... I never thought I was going to be able to trust them to talk about my problems ... when I was pregnant and they told me about this Doula Program, at first I didn’t think it was so important....I was like, “ yeah I want to do it”, but just to say it. I don’t know, I never thought it was so important. But then when she called me she told me she was going to come, she came and she made me feel like I had a friend with her. I felt I was getting more into it. I was getting more into it, and I knew it was important then. Because I thought I could trust her, I felt that she could be my friend, she could listen to me....(It was) a great experience.... I’m just really thankful with Wandy.”

They’re strangers to me but I love these people but they help you out a lot. They were strange but I loved my doula. They were nice as soon as you come in here you were welcome. It’s like you want to shine. As far as I came, like I didn’t know none of these girls but I’d be looking’ . . . I was kind of scared with all these ... people looking at me and then when I came, everybody was so nice, we all get along and we don’t be arguing or nothing.

“She was really someone I could trust, you know. She would talk a lot. She makes me feel like, you know, I have a friend.”

“She understands, you know what I’m saying. I could communicate with her.

“Whenever I was having a problem or I thought something was wrong I would ask either the home visitor or my Doula... She was like a friend. She was like a really close friend.”

Participants felt that the doulas were the ones who helped them carry through with their birth plan.

During the third trimester, each participant and her doula develop a plan of the participant’s preferences and options (e.g. analgesia, massage, and music) for labor and delivery. Doulas were seen as more reliable supports than partners and mothers, because they were experienced at attending births and were not overwhelmed at seeing the participant in pain during labor.

“The doula program helped me lot because during my labor I would have lost my mind if Loretha would not have been there. I probably really would have lost it because my momma was there just looking at me like I was strange, but I had a lot of help from my doula and they helped with a lot of needs.”

“Lovie read us something (during prenatal class) like we imagined something. It made us relax and we sat there for a half hour with our eyes closed and sitting any way we were comfortable. They find ways for us to relax out there. Even though most of us enjoy being pregnant they still remind us it’s painful having a baby. I was real happy while I was pregnant.”

“...they’re so dedicated to their jobs. I ain’t ever seen no people so dedicated to some girls and it ain’t even their grandkids.”

“You got somebody to comfort you... right by your side...through the whole, whole thing...they’re not going to get mad at you, no matter what.... However bad you acting, they not going to leave They just there.... They love us. “

Overall, participants were enthusiastic about the project and its benefits.

“This program, it’s, I’m telling you, it’s a blessing for teen parents.”

CONCLUSIONS AND RECOMMENDATIONS

The Chicago Doula Project has attracted considerable interest from maternal and child health, child development, family support and others interested in improving outcomes for young children and their parents. The project was an ambitious one. Much was accomplished in a relatively brief period of time. Our success in implementing a community-based model and the potential of an extended intervention for the mother-child relationship has captured the attention of both clinicians and researchers. By building on the successes, and learning from the challenges faced during this pilot project, the Doula Project will be poised to grow and adapt to better meet the needs of young children and families. These findings should be used to guide future expansion and replication efforts.

The doulas and their supervisors provided much assistance with the project evaluation. In many cases, the home visitors were also involved. They were responsible for doing the NCAST feeding videotapes of mothers and babies and making sure participants completed consent forms and questionnaires. They recruited participants for focus groups and interviews and arranged rooms and refreshments. They offered assistance with translations and distributed thank you gifts. They shared their views of the program and provided feedback on our efforts. We are very grateful for their help and generosity, and recommend that future evaluations build in additional supports for evaluation efforts.

Programs should be functioning well and nested in agencies that are relatively stable. It was much more difficult to provide consistent, high quality services at the site that was undergoing fundamental change in both the agency overall and its program for pregnant and parenting teens.

Doula selection is key to the success of the program. The process of identifying and hiring women who will be successful in this role is complicated and time-consuming. Site supervisors should be responsible for the hiring of their doulas but should include input from the training team and others with experience in this area. Retention of doulas is an additional challenge. Salaries, working conditions and personal satisfaction are important elements in retention. However, losing a doula to personal or professional advancement can also be a positive reflection of the benefits to the doula of this work experience and of the quality of the supervision provided that nurtured her growth.

A community-based doula project for adolescents can be effective in reducing rates of Cesarean sections, anesthesia and other medical interventions. Breastfeeding outcomes were also impressive. More than eighty percent of the participants initiated breastfeeding and almost twenty-two percent of them were still breastfeeding at six months.

The variation in the intervention across programs was reflected in the outcomes. An emphasis on labor and delivery yielded impressive intra-partum health outcomes. Similarly, programs that devoted more time and attention prenatally and post-partum to mother-infant relationships had better outcomes in that area. The effect of the length of the intervention on mother-child interaction should be studied further. The effect of prenatal and parenting groups on outcomes such as mother-baby interaction also merits further study.

A high rate of depressive symptoms, echoing the findings of other studies, was found among Doula Project participants. The Ounce of Prevention Fund has already provided trainings on identification of depression among participants and funded a PTS site with a mental health component. Because of the prevalence of depression and other mental health issues among participants, particular attention should be devoted to this area in order to develop more targeted interventions.

The Chicago Doula Project was clearly successful in implementing a community-based doula model of support during this critical time in the life of a young family. The dedication, vision and hard work of all of those involved with this project were impressive. Their efforts yielded a novel intervention that has benefited

hundreds of teen parents and their children. We hope that this evaluation adds helpful information and perspective so that the Doula Program can more effectively support adolescents and their families.

Appendix A Chicago Doula Project

Doula Training Evaluation

July, 1997

To help improve future training sessions, please complete these questions. Please **do not** put your name on the form. Thank you for your ideas.

Please circle the number that best corresponds to your answer:

	Poor	fair	good	very good	excellent
The first group of questions concerns areas or topics: How well do you think these topics were covered:					
1. Prenatal care	1	2	3	4	5
2. Nutrition	1	2	3	4	5
3. Breast feeding	1	2	3	4	5
4. Labor and delivery (uncomplicated)	1	2	3	4	5
5. Comfort measures during labor	1	2	3	4	5
6. Medications and medical procedures in labor and delivery	1	2	3	4	5
7. Pregnancy loss	1	2	3	4	5
8. Domestic violence	1	2	3	4	5
9. Bonding and attachment	1	2	3	4	5
10. Post-partum assessment	1	2	3	4	5
11. Dealing with disabilities	1	2	3	4	5

please go on to the next page

The next set of items deal with particular sessions or speakers:

	poor	fair	good	very good	excellent	
1. Judith Musick (adolescent development, pregnancy & parenting)	1	2	3	4	5	
2. Flora Calabrese (doula support- labor & delivery)	1	2	3	4	5	
3. Kathy Puls (labor & delivery)	1	2	3	4	5	
4. Liz Feldman (medical interventions)		1	2	3	4	5
5. Mary Somers (labor & delivery)	1	2	3	4	5	
6. Linda Gilkerson (infant development)	1	2	3	4	5	
7. Ida Cardone (post-partum depression)	1	2	3	4	5	
8. Gaylene Kimball (domestic violence)		1	2	3	4	5
9. Angie Shansky (aromatherapy)	1	2	3	4	5	
10. Laura Thompson (massage)	1	2	3	4	5	

please go on to the next page

Please write your thoughts about the following (continue on the back if necessary)

1. What was most useful about the training?

2. What has not been useful?

3. What else would have been useful? (Has anything come up that was not covered in class that you want to know more about?)

4. Did we spend too much time, not enough time or about the right amount of time on the clinical content (medical/nursing facts and info)?

5. Was there too much medical detail, too little or about the right amount?

6. How much of this clinical information have you used (a lot, a little, a moderate amount)?

7. What would you recommend to us to make certain we cover for the next training for new doulas?

8. Next time we teach the course, what should be done differently?

9. I recommend that you spend more time on _____

10. I recommend that you spend less time on _____

11. What must a new doula trainee have before the first birth observation?

please go on to the next page

The next set of questions is about your background:

- Were you employed before you started doula training? Full-time or part-time? Job description/title?
- What was the highest grade or level of education you completed?
- Do you have volunteer experience? (Including church, school, HeadStart) Please describe.
- Do you have children? How old were you when your first child was born?
- How old is your youngest child?

Chicago Doula Project

Doula Training Evaluation

June 18, 1998

To help improve future training sessions, please complete these questions. Please **do not** put your name on the form. Thank you for your ideas.

Please circle the number that best corresponds to your answer:

Poor fair good very good excellent

The first group of questions concerns areas or topics:
How well do you think these topics were covered:

1. Prenatal care	1	2	3	4	5
2. Nutrition	1	2	3	4	5
3. Breast feeding	1	2	3	4	5
4. Labor and delivery (uncomplicated)	1	2	3	4	5
5. Comfort measures during labor	1	2	3	4	5
6. Medications and medical procedures in labor and delivery	1	2	3	4	5
7. Pregnancy loss	1	2	3	4	5
8. Domestic violence	1	2	3	4	5
9. Bonding and attachment	1	2	3	4	5
10. Post-partum assessment	1	2	3	4	5
11. Dealing with disabilities	1	2	3	4	5

please go on to the next page

The next set of items deal with particular sessions or speakers:

	poor	fair	good	very good	excellent
1. Kathy Puls (medical interventions)	1	2	3	4	5
2. Linda Gilkerson (infant development)	1	2	3	4	5
3. Sara Brandes (labor and delivery)	1	2	3	4	5
4. Corinne Peterson (massage)	1	2	3	4	5
5. Beth Isaacs (breastfeeding)	1	2	3	4	5
6. Charlotte Johnson (post-partum)	1	2	3	4	5
7. Laya Frischer (grief and loss)	1	2	3	4	5

Please write your thoughts about the following (continue on the back if necessary)

1. What was the best part of the training?
2. What didn't you like or think could be done differently?
3. What else would have been useful? (Has anything come up that was not covered in class that you want to know more about?)
4. Did we spend too much time, not enough time or about the right amount of time on the clinical content (medical/nursing facts and info)?
5. Was there too much medical detail, too little or about the right amount?
6. How much of this clinical information have you used (a lot, a little, a moderate amount)?
7. What would you recommend to us to make certain we cover for the next training for new doulas?
8. Next time we teach the course, what should be done differently?
9. I recommend that you spend more time on _____
10. I recommend that you spend less time on _____
11. What must a new doula trainee have (or know or do) before the first birth observation?
12. Are there any topics you would like to learn more about?
13. If we had to make training less expensive, how should we do it? (shorter?, fewer trainers?, bigger class?)

please go on to the next page

The next set of questions is about your background:

- Were you employed before you started the Chicago Health Connection doula training? Full-time or part-time? Job description/title?
- What was the highest grade or level of education you completed?
- Do you have volunteer experience? (Including church, school, HeadStart) Please describe.
- Do you have children? How old were you when your first child was born?
- How old is your youngest child?

Training Evaluation Results – 1998

The first group of questions concerns areas or topics:

How well do you think these topics were covered?

	Poor 1	fair 2	good 3	very good 4	excellent 5
N=9	mean score		range		
1. Prenatal care					
2. Nutrition					
3. Breast feeding					
4. Labor and delivery (uncomplicated)					
5. Comfort measures during labor					
7. Medications and medical procedures in labor and delivery					
7. Pregnancy loss					
8. Domestic violence					
9. Bonding and attachment					
10. Post-partum assessment					
11. Dealing with disabilities					

The next set of items deal with particular sessions or speaker

1. Kathy Puls (medical interventions)	4.1		3-5		
2. Linda Gilkerson (infant development)	4.4		4-5		
3. Sara Brandes (labor and delivery)	3.7		1-5		
4. Corinne Peterson (massage)	4.7		3-5		
5. Beth Isaacs (breastfeeding)	4.8		4-5		
6. Charlotte Johnson (post-partum)	4.5		4-5		
7. Laya Frischer (grief and loss)	4.6		4-5		

Please write your thoughts about the following (continue on the back if necessary)

1. What was the best part of the training?
 - Everyone was very welcoming, the support
 - To bond, share feelings, role play
 - Everything--- was tough, but interesting
 - Attending the birth
 - Trainers were well-informed and supportive
 - Being with everyone in class
 - Lectures, the education provided
 - Infant development, labor and delivery, the trainers
 - Pam's dramatic reading of teen mom's poem

2. What didn't you like or think could be done differently?
 - All trainees should go to a number of hospitals for birth observations
 - Communication between coordinators and agencies re: work hours and work load
 - I think you should be mentored at first birth
 - nothing
 - lack of communication between _____ Hospital and program
 - everything was great!
 - Everything was perfectly done!

3. What else would have been useful? (Has anything come up that was not covered in class that you want to know more about?)
 - access to hospital---"getting in the door"

4. Did we spend too much time, not enough time or about the right amount of time on the clinical content (medical/nursing facts and info)?
 - Enough time, right amount of time x8

5. Was there too much medical detail, too little or about the right amount?
 - Right amount x9, great slides

6. How much of this clinical information have you used (a lot, a little, a moderate amount)?
 - A lot x8
 - A little for 3 clinical (backup doula)

8. What would you recommend to us to make certain we cover for the next training for new doulas?
 - Comfort measures
 - Burn out prevention
 - Keep the training the same
 - Labor & delivery, breastfeeding and anything that has to do with mom and doula

- Make trainees aware of the 24 hour/day demands of the job
- Breastfeeding, labor & delivery
- Keep the same training
- More on rape/domestic violence---impact on birth experience

8. Next time we teach the course, what should be done differently?

- Nothing
- More on C-section
- Make trainees aware of the need to educate hospitals re: doula role
- Fewer guest speakers
- Less “reflection”
- Inform hospitals of client/doula obligations
- Everything was great
- Nothing

9. I recommend that you spend more time on _____

- nothing
- C-section
- Doula job and limits
- Sharing personal ideas and issues
- Mentoring

10. I recommend that you spend less time on _____

- speakers x2
- grief and loss
- homework

11. What must a new doula trainee have (or know or do) before the first birth observation?

- Comfort measures Labor and Delivery
- Limits of what a doula can do
- Know the doula role and have an open mind
- A strong heart and be understanding
- Labor & delivery, comfort measures
- Breastfeeding and massage
- Mentoring
- Massage

12. Are there any topics you would like to learn more about?

- massage therapy, aroma therapy
- medications
- bonding with mom and baby, breastfeeding
- rape and violence
- pressure points, good massage

13. If we had to make training less expensive, how should we do it? (shorter?, fewer trainers?, bigger class?)

- cut some speakers, cut down food x2

- fewer or shorter sessions
- fewer trainers
- bigger class x2
- shorter

Doula Demographics

The next set of questions is about your background:

Were you employed before you started the Chicago Health Connection doula training? Full-time or part-time? Job description/title?

- full-time = 7, not employed =2
- home visitor =4
- full-time child-care provider
- full-time, Head Start director
- full-time, childcare provider, group worker
-

What was the highest grade or level of education you completed?

- High school graduate/GED (x6)
- Some college (x2)
- B.A.
-
- range = less than high school to college graduate
- most were high school graduates

Do you have volunteer experience? (Including church, school, Head Start)
Please describe.

- No x2
- AIDS peer counselor,
- Head Start
- Yes, child care
- Teacher's assistant
- Church/school volunteer
- Volunteer catechism teaching assistant

Do you have children? How old were you when your first child was born?

- Yes, teen mother (x7)
- Older mother (x1)
- not a mother (x1)

How old is your youngest child?

Range 21 months – 14years 3yo, 21mo, 2years (x2) 7, 8, 13, 14

- 5 youngest child is toddler/preschool age
- 4 youngest child is school-aged

Group Interview – Training Evaluation 1998

Method:

- Participants liked interaction, variety of ways in which material was presented. Role-playing helped people open up gave opportunity to practice skills, and get feedback.
- Good training team worked well together. Trainers made information easy to follow, fun. Very supportive.
- Good pace and content, slides, other visuals helpful,
- A lot of homework, but useful. Especially hard for single working moms to find time to do homework.

Outcomes:

- Sense of accomplishment
- A new road to go down, opportunity
- Feel capable, putting learning into practice , “I know what to say and do”
- Felt nurtured by team and can give back to girls
- Everyone got close
- Learned a lot about pregnancy, labor and delivery, breastfeeding, infant development
- “It was great!”
- Sense of empowerment

Problem areas:

- Quality of birth observation experiences at hospitals varied widely. Hospitals need to be better prepared more knowledge about doula role and trainees. Two recommendations: 1)Doulas need to be prepared to explain role and 2)Chicago Health Connection needs to communicate more effectively with hospitals so that staff are aware of the Doula Project and understand the role when the doula arrives
- Better communication needed between training team and supervisors re doula trainee workload and hours
- Uneven quality of guest speakers, some presentations were repetitive

Doula Project Group Interview – 2000

- **A major success I have had as doula is:**
- **Something that I am proud of in my work as a doula is:**
- **A big problem in my work as a doula is:**
- **People who are planning doula programs should know that:**
- **The best part of my job is:**
- **The worst part of my job is:**

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**CHART I
CHICAGO DOULA PROJECT**

DOULA RESEARCH

PROJECT	SUBJECTS	INTERVENTION	RESEARCH/EVALUATION
Kennell, Klaus et al (Houston) 1991	women in labor (1st births) n=212 doula n=200 observed n=204 controls	intrapartum support hospital based trained bilingual community women	random assignment decreased C-sections, length of labor, anesthesia use
Sosa, Kennell, Klaus et al (Guatemala) 1980	women in labor (1st births) n=20 doula n=20 control	intrapartum support hospital based untrained lay doulas	random assignment decreased length of labor, increased some mother-infant interactions
Klaus, Kennell et al (Guatemala) 1986	women in labor (1st births) n=186 doula n=279 controls	intrapartum support hospital based, untrained lay doulas	random assignment decreased complications, c-sections, oxytocin
Wolman, Chalmers, Hofmeyr et al (South Africa) 1993	women in labor (1st births) n=74 doula n=75 control	intrapartum support, hospital based untrained community volunteers, daytime only	random assignment, little effect on intrapartum outcomes, decreased pain, increased breastfeeding, decreased maternal depression
Zhang et al (New York) 1997	meta-analysis	meta-analysis of published studies	reduction in length of labor, oxytocin use, c-sections and forceps deliveries
Manning-Orenstein (California) 1998	n=14 doula n=19 Lamaze	mothers recruited from doula practice and Lamaze classes	doula group less rejecting and helpless, less emotionally distressed and higher self esteem
Kennell and Landry (Houston)	random assignment doula vs. narcotic vs. epidural n=33 doula n=71 narcotic or epidural	intrapartum intervention, hospital based, professional doulas trained by program	(abstract) doula supported mothers had better interaction with infants at 2 months, no differences in breast- feeding, no differences in Bayley
Kennell and Landry (Houston)	random assignment, part of larger study, induced labor n=22 doula n=20 control	intrapartum intervention hospital based	(abstract) doula supported group had higher epidural use but lower c-section rate
Scott, Berkowitz and Klaus (Berkeley)	meta-analysis of 11 clinical trials	intermittent vs. continuous support and length of labor, c-section, augmentation of labor, forceps, analgesia	continuous support has a positive impact on all 5 outcomes. intermittent support does not
Campero et al (Mexico City)	qualitative study n=8 doula n=8 control	1 st time mothers, hospital- based, intrapartum intervention perceptions of childbirth	doula supported women had a more positive childbirth experience
Gordon et al (Oakland)	random assignment, women >17, low risk HMO patients, partner at birth n=149 doula, n=165 usual care	hospital based, 1 st time mothers, intrapartum intervention, intrapartum outcomes, breastfeeding, depression, self-esteem, perceptions of birth	decreased epidural use and positive effect on perceptions but no other differences between doula and no doula groups

TABLE I
CHICAGO DOULA PROJECT

DOULA PROJECT & RESEARCH SAMPLE

Doula Project Sample

Participants	287
Doula Assisted Pregnancies (3 repeat of pregnancies)	290
Doula Assisted Births (5 sets of twins)	295

Doula Research Sample

Participants	259
Doula Involved Pregnancies (3 repeat pregnancies)	262
Doula Involved Births (5 sets of twins)	267
Infant Deaths (premature still birth & maternal eclampsia)	2

TABLE II
CHICAGO DOULA PROJECT

RESEARCH PARTICIPANT DEMOGRAPHICS
(n=262)

	Frequency	Percent
Age		
13	1	.4
14	15	5.7
15	28	10.7
16	59	22.5
17	67	25.6
18	62	23.7
19	30	11.5
 Age		
(mean)	16.8 years (s.d.=1.4)	
 Ethnicity		
African-American	88	33.6
Hispanic	166	63.4
Caucasian	3	1.1
Multi-ethnic/other	5	1.9
 Number of children		
(mean)		
(n=261)	1.21 (s.d.=.56)	
 More than one child		
(n=261)		
first birth	225	86.2
subsequent birth	36	13.8
 Twin births		
(includes one stillborn twin)	5	1.9
(n=261)		
 Breastfeeding initiation		
(N=261)	209	80.1

TABLE III
CHICAGO DOULA PROJECT
BIRTH SITES

	Frequency	Percent	Valid Percent	Cumulative Percent
Mercy	130	49.6	49.6	49.6
Bethany	21	8.0	8.0	57.6
Mt Sinai	20	7.6	7.6	65.3
St. Francis	18	6.9	6.9	72.1
University of Illinois	13	5.0	5.0	77.1
Norwegian	8	3.1	3.1	80.2
West Sub	7	2.7	2.7	82.8
Ill Masonic	7	2.7	2.7	85.5
home	6	2.3	2.3	87.8
Cook County	5	1.9	1.9	89.7
Rush	5	1.9	1.9	91.6
St Joseph	5	1.9	1.9	93.5
enroute to hosp	4	1.5	1.5	95.0
St Anthony	3	1.1	1.1	96.2
Ravenswood	3	1.1	1.1	97.3
Holy Cross	2	.8	.8	98.1
St. Elizabeth	1	.4	.4	98.5
University of Chicago	1	.4	.4	98.9
Swedish Covenant	1	.4	.4	99.2
Michael Reese	1	.4	.4	99.6
Little Co of Mary	1	.4	.4	100.0
Total	262	100.0	100.0	

TABLE IV
CHICAGO DOULA PROJECT

BIRTH CERTIFICATE DATA DEMOGRAPHICS
(n=34218)

	Project Participants (229)	Chicago Teens (33989)	X ² or t-test	p
Age (mean)	16.97	17.56	6.49	<.001***
Ethnicity				
African-American	36.7% (84)	60.8% (19979)	85.14	<.001***
Hispanic	61.6% (141)	33.1% (10861)		
Caucasian	1.3% (3)	5.7% (1867)		
Multi-ethnic/other	.4% (1)	.5% (152)		
Education (mean years)	9.83	10.49	5.59	<.001***
Parity				
First child	83.4% (191)	72.3% (23851)	14.031	<.001***
Older Children	16.6% (38)	27.7% (9138)		
Martial Status (married)	14.0% (32)	10.3% (3410)	3.28	.19

* P<.05
** P<.01
*** P<.001

TABLE V
CHICAGO DOULA PROJECT

BIRTH CERTIFICATE DATA-INTRAPARTUM OUTCOMES
(n=34218)

	Project Participants (229)	Chicago Teens (33989)	X ² or t-test	p
Prenatal Care				
Adequate	47.8% (109)	48.7% (15921)	10.47	.005**
Intermediate	41.7% (95)	33.8% (11065)		
Inadequate	10.5% (24)	17.5% (5728)		
Birth weight				
Low Birth weight (<2500 grams)	6.6% (15)	11.5% (3809)	5.58	.018*
Prematurely				
Preterm Birth (<37 completed weeks)	7.0% (16)	12.7% (4124)	6.51	.011*
APGAR				
1 minute	8.47	8.17	3.23	.001**
5 minute	9.00	8.17	5.86	<.001***
Cigarette and Alcohol Use During Pregnancy				
Cigarette Use	3.0%	7.0%		.014*
Alcohol Use	0.0%	.2%		
Cesarean section				
	9.6% (22)	12.8% (4239)	2.14	.083 ^a
Doula at birth	8.1% (15)	12.8% (4239)	3.80	.024 ^{*a}
Forceps/vacuum delivery				
	3.1% (7)	6.2% (2059)	3.96	.028 ^{*a}
Doula at birth	2.2% (4)	6.2% (2062)	5.31	.009 ^{***a}

a one-sided
* p<.05
** p<.01
*** p<.001

TABLE VI
CHICAGO DOULA PROJECT
MEDICAL CHART BIRTH DATA
DEMOGRAPHIC INFORMATION
(n=223)

Age (mean)	17.00 (s.d=1.38)	range 13-19
-------------------	------------------	-------------

Ethnicity

African-American	77	34.5%
Hispanic	142	63.7%
Caucasian	2	.9%
Multi-ethnic/other	1	.4%
Missing	1	.4%

Parity

First child (inc. twins)	192	86.1%
Second child	19	8.5%
Third child	9	4.0%
Fourth child	3	1.3%

Multiple Births

Singleton birth	217	97.3%
Twins	6	2.7%

TABLE VII
CHICAGO DOULA PROJECT
MEDICAL CHART INTRAPARTUM OUTCOMES
(n=223)

Gestational Age (mean) 39.20 (s.d.=1.63) range 30-42

Prematurity

Premature	11	4.9%
Full-term	212	95.1%

Maternal Length of Hospital Stay (mean)

2.02 days (range 1-13 days) sd=1.34

dilation at admission (mean)

3.94 cm (range 0-10) sd=2.52

Delivery Type

Normal Spontaneous Vaginal	189	84.8%
Cesarean-primary	15	6.7%
Repeat CS	2	.9
Vaginal birth after Cesarean	1	.4
Forceps	2	.9
Vacuum	12	5.4
Vacuum and vbac	1	.4
Forceps & Csection	1	.4

Analgesia

None	149	66.8%
Any analgesia	70	31.5%
Missing data	4	1.8%

Anesthesia

None	177	79.4%
Yes	39	17.3%
Epidural	28	12.5%
Other	11	4.8%
Missing	7	3.1%

Episiotomies

No	185	83.02%
Yes	32	14.3%
Missing	5	2.7%

Rupture of Membranes

Spontaneous	123	55.2%
Artificial	84	37.7%
Missing data	16	7.2%

Length of Stage One (n=152)	12.62 hours
Length of Stage Two (n=173)	.90 hours
Length of Stage Three (n=173)	.18 hours

Induction of Labor

No	186	83.4%
Yes	33	14.8%
Missing	4	1.8%

Augmentation Labor

No	161	72.2%
Yes	57	25.6%
Missing	5	2.2%

TABLE VIII
CHICAGO DOULA PROJECT
BREASTFEEDING
(n=261)

	Bottlefed	Breastfed	χ^2 or t-test	p
Age (mean)	52 (19.9%) 16.7 (sd=1.7)	209 (80.1%) 16.9 (sd=1.3)	.97	.33
Ethnicity				
African-American	36 (41.4%)	51 (58.6%)	37.7	<.001***
Hispanic	15 (9.0%)	151 (91.0%)		
Other	1 (12.5%)	7 (87.5%)		
Parity				
First birth (inc. twins)	39 (17.3%)	186 (82.7%)	6.9	.009**
Has older child	13 (36.1%)	23 (63.9%)		

* p<.05
** p<.01
*** p<.001

**TABLE IX
CHICAGO DOULA PROJECT
DURATION OF BREASTFEEDING**

Total	Bottle feeding	Breastfeeding	
Birth	52 (19.9%)	209 (80.1%)	261
6 Weeks	95 (37.7%)	157 (62.3%)	252
3 Months	75 (66.4%)	38 (33.6%)	113
6 Months	86 (78.2%)	24 (21.8%)	110

TABLE X
CHICAGO DOULA PROJECT

CES-D - DEMOGRAPHICS
(n=115)

	range=0-43	mean=17.5	s.d.=10.8		
	CES-D <16	CES-D ≥16		χ ² or t-test	p
Age (mean)	16.84	16.83		.05	.96
Ethnicity					
African-American	28 (46.7%)	32(53.3%)			
Hispanic	28 (54.9%)	23 (45.1%)			
Caucasian	0	2 (100%)			
Multi-ethnic/other	1 (50%)	1 (50%)			
African-American	28 (46.7%)	32 (53.3%)		.42	.52
All others	29 (52.7%)	26 (47.2%)			
Number of children (mean)	1.32	1.28		.32	.74
Baby's age at CES-D (in months)	6.23	6.36		.13	.90
Parity					
Mother has one child	44 (48.4%)	47 (51.6%)			
Mother has more than one child	13 (54.2%)	11 (45.8%)		.26	.61
Breastfeeding					
No	15 (40%)	10 (60%)		1.4	.24
Yes	42 (46.7%)	48 (53.3%)			

TABLE XI
CHICAGO DOULA PROJECT
CES-D
(n=115)

	Rarely or None of the Time	Some or a Little of the Time	Occasionally or a Moderate Amount of Time	Most or All of the Time
1. I was bothered by things that usually don't bother me..	59 (51.3%)	41 (35.7%)	10 (8.7%)	5 (4.3%)
2. I did not feel like eating; my appetite was poor.....	59 (51.3%)	28 (24.3%)	16 (13.9%)	12 (10.4%)
3. I felt that I could not shake off the blues even with help from family or friends.....	62 (53.9%)	29 (25.2%)	11 (9.6%)	12 (10.4%)
4. I felt that I was just as good as other people.....	19 (16.5%)	20 (17.4%)	16 (13.9%)	59 (51.3%)
5. I had trouble keeping my mind on what I was doing...	49 (42.6%)	30 (26.1%)	20 (17.4%)	16 (13.9%)
6. I felt depressed.....	51 (44.3%)	28 (24.3%)	14 (12.2%)	22 (19.1%)
7. I felt that everything I did was an effort.....	39 (33.9%)	26 (22.6%)	23 (20.0%)	27 (23.5%)
8. I felt hopeful about the future.....	18 (15.7%)	20 (17.4%)	21 (18.3%)	56 (48.7%)
9. I thought my life had been a failure.....	79 (68.7%)	14 (12.2%)	12 (10.4%)	12 (10.4%)
10. I felt fearful.....	69 (60.0%)	22 (19.1%)	12 (10.4%)	12(10.4%)
11. My sleep was restless.....	44 (38.3%)	26 (22.6%)	25 (21.7%)	20 (17.4%)
12. I was happy	10 (8.7%)	22 (19.1%)	15 (13.0%)	67 (58.3%)
13. I talked less than usual.....	57 (49.6%)	25 (21.7%)	18 (15.7%)	14 (12.2%)
14. I felt lonely.....	58 (50.4%)	27 (23.5%)	15 (13.0%)	15 (13.0%)
15. People were unfriendly.....	77 (67.0%)	25 (21.7%)	8 (7.0%)	5 (4.3%)
16. I enjoyed life.....	14 (12.2%)	9 (7.9%)	30 (26.1%)	60 (52.2%)
17. I had crying spells.....	50 (43.5%)	29 (25.2%)	18 (15.7%)	17 (14.8%)
18. I felt sad.....	46 (40.0%)	41 (35.7%)	14 (12.2%)	14 (12.2%)
19. I felt that people disliked me	71 (61.7%)	25 (21.7%)	10 (8.7%)	8 (7.0%)
20. I could not get "going".....	55 (47.8%)	31 (27.0%)	20 (17.4%)	9 (7.8%)

TABLE XII
CHICAGO DOULA PROJECT

NCAST DEMOGRAPHICS
(n=71)

Mother's Age (mean)	16.89 years (s.d.=1.21)	range=14-19
Child's age in months (mean)	3.04 (s.d.=.68)	range=1-4
NCAST score (mean)	55.15 (s.d.=8.50)	range=39-69
Ethnicity		
African-American	26	36.6%
Hispanic	43	60.6%
Caucasian	1	1.4%
Multi-ethnic/other	1	1.4%
Parity		
First child (inc. twins)	59	83.1%
More than one child	12	16.9%

TABLE XIII
CHICAGO DOULA PROJECTS

NCAST SUBSCALES
(n=71)

NCAST Subscales	% worrisome	mean	standard deviation
Sensitivity to cues	28.2%	11.87	2.06
Response to distress	11.3%	9.37	1.46
Social-emotional growth fostering	28.2%	10.10	2.66
Cognitive growth fostering	22.5%	4.66	2.45
Clarity of cues	7.0%	12.41	1.83
Responsiveness to parent	7.0%	6.80	2.19
Parent total score	29.6%	36.01	6.17
Child total score	9.9%	19.13	3.44
Total feeding score	26.8%	55.15	8.50
Parent's contingency score	38.0%	9.24	2.54
Child's contingency score	4.2%	1.70	.80

**TABLE XIV
CHICAGO DOULA PROJECT**

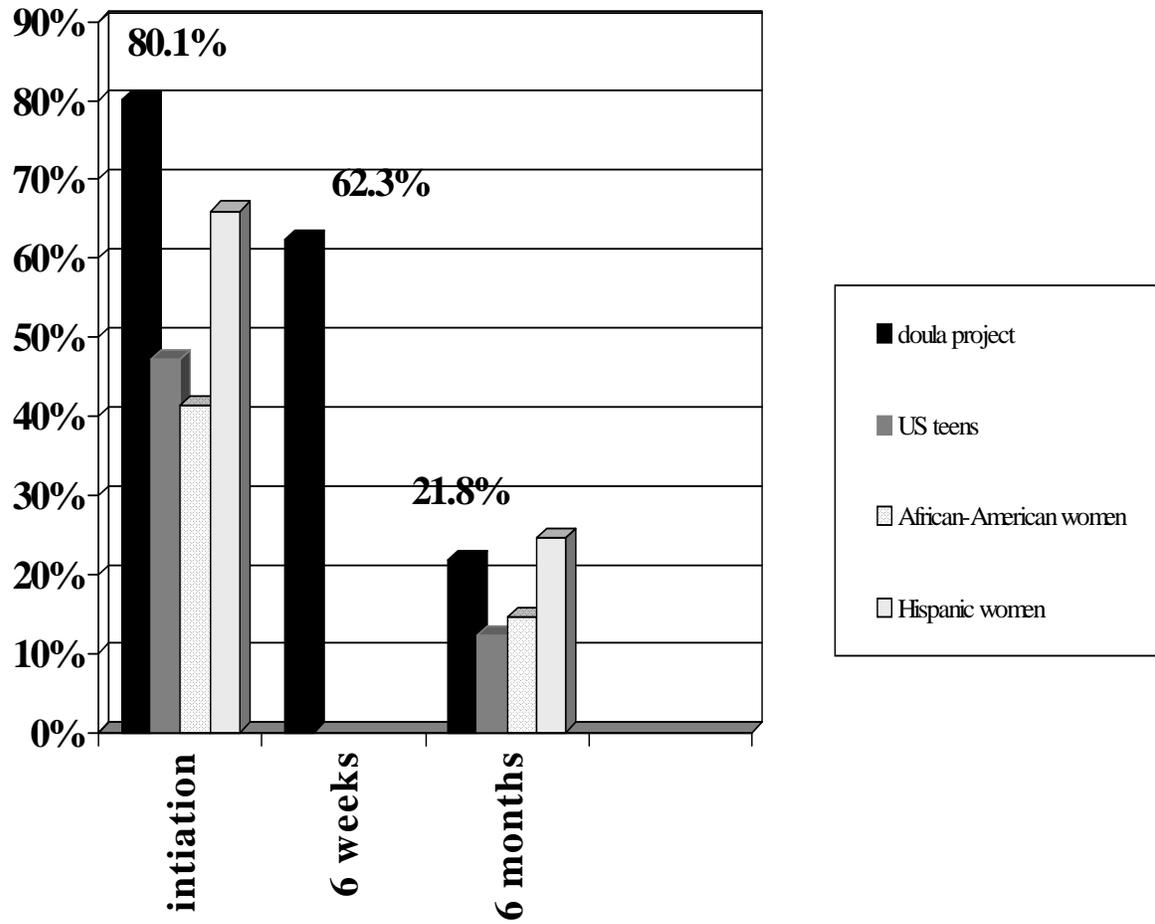
**NCAST OUTCOMES
(n=71)**

	Mean NCAST score	χ^2 or t-test	p
Mother's Age			
14-16	52.60		
17-19	57.02	2.23	.029*
Ethnicity			
African-American	57.42		
Hispanic	53.26	2.05	.045*
Parity			
First child (inc. twins)	54.34	1.82	.073
More than one child	59.17		
Breastfeeding			
Bottlefeeding	54.64		
Breastfeeding	55.28	0.25	.803
Program Type			
shorter	52.41		
extended	58.15	3.03	.003

* p<.05
** p<.01
*** p<.001

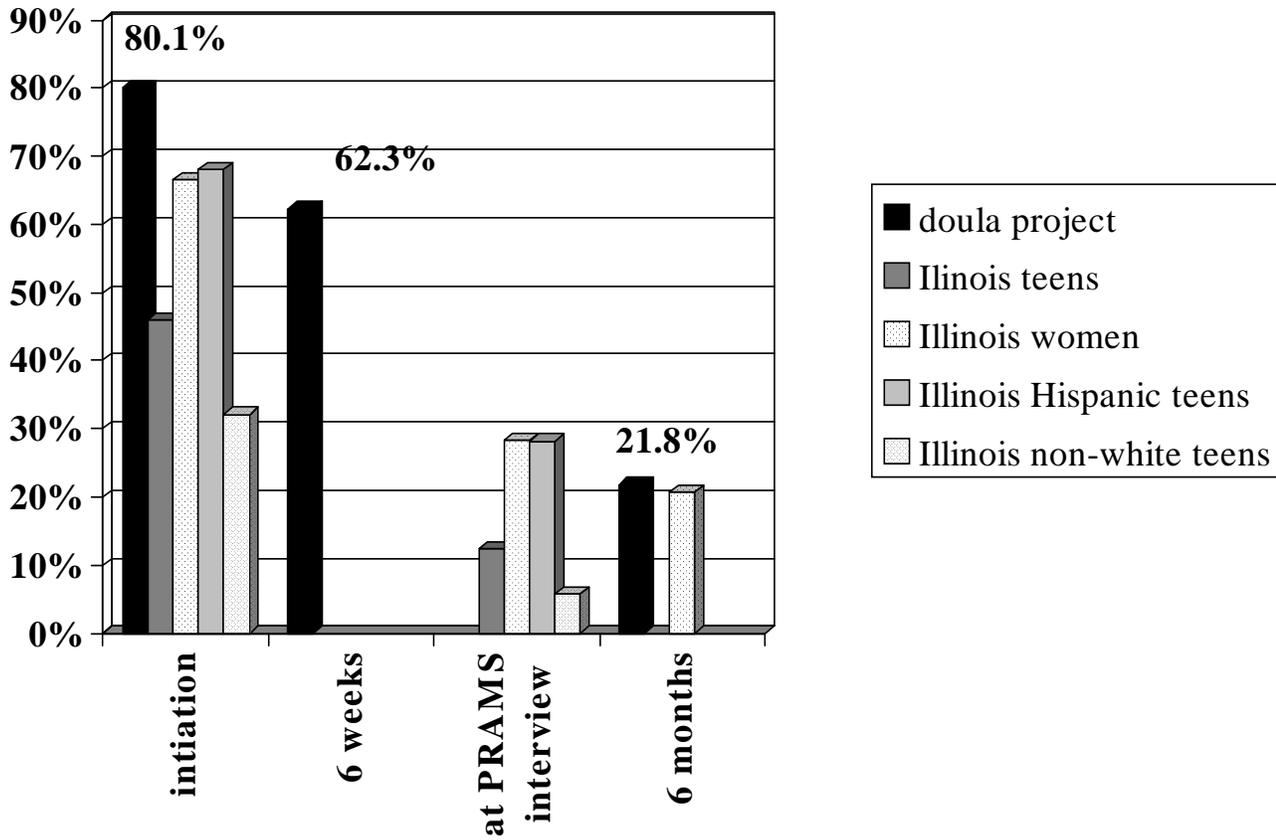
GRAPH I
CHICAGO DOULA PROJECT OUTCOMES

BREASTFEEDING COMPARISONS
WITH NATIONAL DATA
from Ross Products Mothers' Survey, 1998

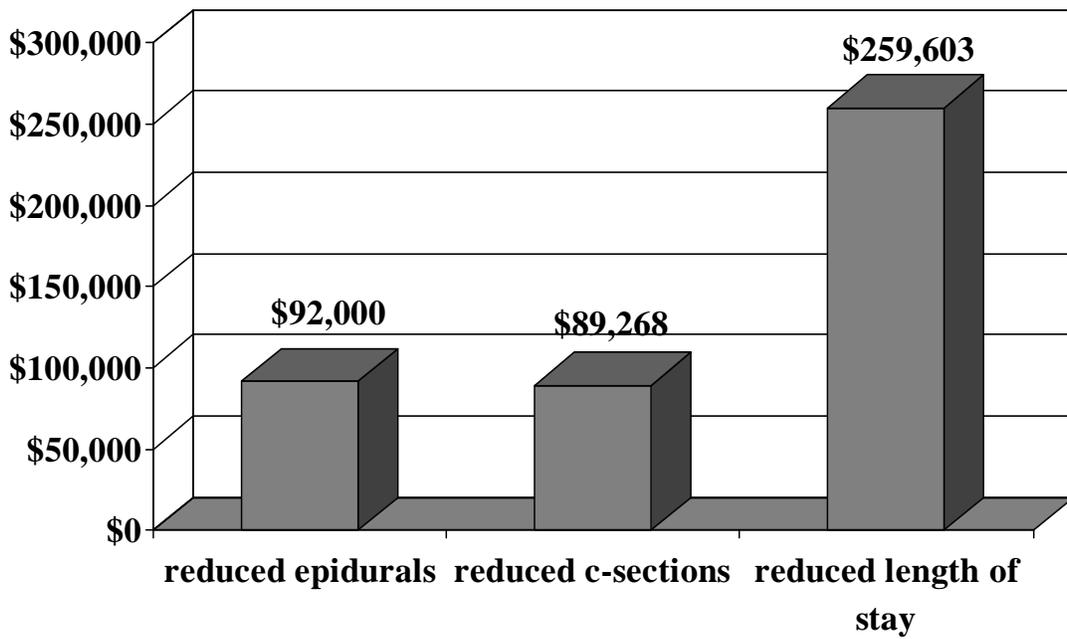


**GRAPH II
CHICAGO DOULA PROJECT OUTCOMES**

**BREASTFEEDING COMPARISONS
WITH ILLINOIS PRAMS DATA, 1998**



GRAPH III
CHICAGO DOULA PROJECT OUTCOMES
REDUCED CHARGES ASSOCIATED WITH DOULA INVOLVEMENT



**GRAPH IV
CHICAGO DOULA PROJECT OUTCOMES**

EPIDURAL RATE

