



Impact of Two Scheduling Systems on Early Enrollment in a Group Prenatal Care Program

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Group care is an effective approach to prenatal care. Yet difficulties in recruiting, enrolling, and scheduling women into group care present obstacles to optimal program delivery. The purpose of this study was to determine whether the use of a scheduling system based on women's estimated date of delivery (EDD) decreased gestational age at entry to group care, increased attendance, and improved continuity of care. A total of 13 groups were held; seven groups used a scheduling system based on appointment availability and six groups used a scheduling system based on women's EDD. Compared with the availability-based scheduling system, the EDD-based system decreased mean gestational age (23.2 vs. 21.8 weeks; $P = .058$) and significantly decreased mean maximum gestational age (31.0 vs. 26.3 weeks; $P = .002$) at entry to group care. The EDD-based system increased the mean number of sessions offered per group (6.7 vs. 8.2 sessions; $P < .001$); however, attendance rates were similar across systems. The EDD-based system also increased the percentage of women who had the same initial visit and group provider (78.0% vs. 85.5%; $P = .303$). The use of this system by other health care facilities could ease the task of enrolling a sufficient number of participants into group care, minimize the need for women to change care providers if they desire group care, and allow more time for educational activities and the development of social networks for women by offering more sessions per group. *J Midwifery Womens Health* 2009;54:168–175 © 2009 by the American College of Nurse-Midwives.

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INTRODUCTION

Group care has been found to be an effective approach in the management of numerous health conditions, including obesity, smoking, diabetes, and pregnancy. Compared with traditional one-on-one visits with a health care provider, group care has the advantage of providing in-depth health education, skill development, and peer support. Yet one of the most formidable obstacles to successful implementation and adoption of group care programs is participant recruitment. Recruitment is time consuming and deflects energy away from the provision of care. Little has been published on how to recruit sufficient numbers of group participants and schedule group care in a systematic way that maximizes program delivery and minimizes the effort expended by providers and ancillary staff. This article describes the impact of two different scheduling systems used in an inner-city community health center on enrollment of women in a group prenatal care program.

BACKGROUND

In 2003, the South Bronx Health Center for Children and Families (SBHCCF) initiated the CenteringPregnancy

model of group prenatal care, developed by Sharon Schindler Rising, Founder and Executive Director of the Centering Healthcare Institute.¹ CenteringPregnancy empowers pregnant women to engage actively in their health and health care. Each CenteringPregnancy group is typically composed of 6 to 10 women of similar gestational age who enroll in the program after their initial prenatal visit. Because group visits are scheduled to replace the traditional one-on-one prenatal visit, no additional visits are needed. Each CenteringPregnancy visit lasts 1.5 to 2 hours and includes all of the usual components of a prenatal visit: blood pressure and weight measurement, evaluation of fetal growth, and individual risk assessment. In addition, the program incorporates self-assessment and self-monitoring, peer discussion and support, and in-depth health education on a range of topics relevant to women during pregnancy and the early postpartum period (e.g., nutrition, exercise, labor and birth, breastfeeding, contraception, and infant care).

Having a healthy pregnancy depends in part on a woman's ability to adopt health-promoting behaviors, such as smoking cessation and consuming a healthy diet. Because group care provides additional support to help women adopt healthy behaviors, early enrollment into group care and regular attendance are critical.

Enrolling women of similar gestational age is also important. Women have different needs at different stages of their pregnancies. Having women of similar gestational age in a group helps ensure that content at a particular

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session can be targeted to a specific stage in pregnancy and therefore be useful to all women in the group. For example, labor preparation is of greater interest to women in the latter stages of pregnancy than in earlier ones; conversely, education on smoking cessation has a greater impact on fetal health if done as early in pregnancy as possible.

Having women of similar gestational age in a group also helps ensure stable membership. If too many women give birth during the course of a group, later sessions may need to be canceled, because it is not practical to hold groups for only three or four women. In addition, women who attend only a few sessions will not get to know their fellow participants well. Stable group membership over time is needed to develop a social network of support.

Other issues can affect implementation. Some sites have been reluctant to offer group care because of concerns that women will seek both group care and individual care, adding demand for care on already overburdened providers and increasing the number of unnecessary patient visits. Another potential impediment to group care is the lack of continuity between the intake and group provider. By the conclusion of the initial visit, when an in-depth interview and physical are completed, both women and providers have begun to forge a relationship, making it difficult for providers to refer their patients away to group care and for patients to agree to go. In our experience, this was the major impediment to implementation of group care at our site. Within a year of implementation, providers referred fewer and fewer women to group care, forcing the SBHCCF to cancel groups and reevaluate our system. This issue may be even more problematic in health care systems that set productivity goals. Referring patients to another provider in order to receive group care could potentially reduce a provider's caseload. Productivity goals, particularly if they are linked to economic

incentives, may discourage providers from referring to group care.

Published studies of CenteringPregnancy care conducted in diverse populations have found a high level of participant satisfaction,²⁻⁴ increased pregnancy-related knowledge,⁵ a higher mean birth weight,⁶ a lower rate of preterm births,⁴ and a lower rate of emergency department visits during late pregnancy.² To date, only one study has been published that describes barriers to implementation of CenteringPregnancy care in busy clinical settings. Focus groups with providers found that difficulty in recruiting and scheduling were major impediments to implementation of CenteringPregnancy care.⁷

The purpose of this exploratory analysis was to evaluate whether a system of scheduling initial prenatal appointments based on women's estimated date of delivery (EDD) would result in earlier enrollment into group care, increased attendance rates, and improved continuity of care compared with an availability-based system. The specific hypotheses to be tested are that an EDD-based scheduling system will decrease the gestational age at entry to group care and the gestational age range within groups. It is also hypothesized that the EDD-based system will increase group attendance rates without requiring additional visits beyond the usual number expected in pregnancy. Finally, we hypothesize that the EDD-based system will provide greater continuity of care, defined as increasing the percentage of women whose intake provider is also their group provider.

METHODS

Study Site

Approval was obtained for this chart review study from the Institutional Review Boards of Montefiore Medical Center and the Yale University School of Nursing. The setting for group prenatal care is SBHCCF, a community health center providing comprehensive primary health care in one of the most disadvantaged communities in the nation. One-third of residents of the South Bronx, a federally designated Health Professional Shortage Area, do not have a primary care provider, and one-third of pregnant women receive late or no prenatal care.⁸ In addition, the teen pregnancy rate in the South Bronx is almost twice that of local and national averages.⁹ Residents of the community served by SBHCCF are predominantly Hispanic (73%) and black (24%), and nearly half live below the federal poverty level.⁸ Reflecting the local community, 69% of patients at SBHCCF are Hispanic and 31% are black; 54% have Medicaid health insurance coverage and 23% are uninsured.

Participants

All English-speaking women receiving prenatal care at SBHCCF were offered group care beginning in February

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2003. Women were eligible to be seen in group sessions regardless of risk status. Women with an EDD within a specified 2-month period were invited to attend. From 2003 to 2006, 13 CenteringPregnancy groups were conducted at SBHCCF. During that time, prenatal care was offered by only two providers, a certified nurse-midwife and an obstetrician-gynecologist, both of whom were trained in the CenteringPregnancy model of group care. A total of 114 women participated in the first 13 groups. Each group was facilitated by the same provider and nurse at each session.

Procedures

Women enrolled in group care after having their initial prenatal visit with an obstetric provider. CenteringPregnancy groups were scheduled to run for six to eight sessions. Sessions were scheduled to mirror the standard prenatal care schedule: monthly visits until 28 weeks of pregnancy, biweekly visits until 36 weeks of pregnancy, and weekly visits thereafter until giving birth. In the last month of pregnancy, group visits alternated with individual visits. In order to maximize program impact, it was considered optimal for women to enroll in group care at 18 weeks' gestation.

Of note, group care at SBHCCF started later and included fewer sessions than recommended by the CenteringPregnancy model. The CenteringPregnancy model recommends that group care start between 12 and 16 weeks of pregnancy and include a total of 10 group sessions. To achieve this, many centers target women within a 4-week range of EDDs for a specific group. Because SBHCCF is a small health center with only 5 to 12 women due each month, we expanded the eligible range of EDDs to 8 weeks and pushed back the start of group from 12 to 16 weeks of pregnancy to 18 to 20 weeks of pregnancy in order to achieve our target enrollment of six to eight women per group.

Two different scheduling systems were used. For groups 1 to 7, the two providers agreed to facilitate alternate CenteringPregnancy groups. An availability-based system was used, whereby women were scheduled for their first prenatal visit with any obstetric provider based on the earliest available appointment. Women were offered group care at their prenatal visit by their intake provider, and if they agreed to attend were scheduled later in their pregnancy for a group appointment. Because group leadership rotated between the two providers, the leader of the group for which a woman would be eligible was not always the same as her intake provider. Consequently, some women needed to change providers in order to attend group care. Not all participants were enrolled at the time the first group session was held. After the start of the group, recruitment continued and enrollment remained open until the third group session.

The availability-based system was difficult to implement. Providers were reluctant to refer their patients to group care unless they were facilitating the group. Like-

wise, patients were reluctant to switch providers after their initial prenatal visit if their provider was not scheduled to facilitate the group they were eligible to attend. Because each provider was seeing women with a wide range of EDDs, it also required constant staff vigilance in order not to miss eligible women.

Space constraints also made it difficult to schedule group sessions. Room reservations were made 4 to 6 weeks before groups were scheduled to start. Even with this advance notice, space was not always available. Providers were not always able to start groups on time because patients with individual appointments were often already scheduled on the ideal day to start group. Subsequent to the first seven groups, fewer women were enrolled in group care and several groups were canceled because of insufficient numbers of participants. These problems prompted a reevaluation of our scheduling procedures and a complete change in our intake process.

The new system, which was used for groups 8 to 13, was designed to minimize the need for providers to refer women out of their care. Providers were assigned a 2-month block of EDDs and were responsible for providing all care, both individual and group, for these women. A woman's first visit was scheduled with a nurse who drew routine prenatal laboratory tests, determined the EDD, and scheduled the next appointment with the appropriate provider. For example, women with EDDs falling in January and February were scheduled for their first prenatal visit with provider A, those with EDDs in March and April were scheduled with provider B. The provider was responsible for facilitating the CenteringPregnancy group for their assigned EDD block. In the EDD-based system, women knew their group provider before group started because the intake visit was scheduled with the provider who was responsible for conducting the CenteringPregnancy group in which they were eligible to participate. Another significant difference between the two systems was that provider schedules were closed to individual appointments and space reserved far in advance of the start date of group sessions. [Table 1](#) describes the key similarities and differences between the two scheduling systems.

Although group prenatal care has continued at SBHCCF, this analysis evaluated group enrollment only for groups 1 to 13, because staffing was stable during this period. No staffing changes occurred in any category of personnel (providers, nurses, or administrative staff) that could affect recruitment, scheduling, or attendance.

Data Collection

For each participant, gestational age at entry to prenatal care and gestational age at entry to group care were determined by sonographic confirmation of her EDD. Group attendance was recorded for each participant at each CenteringPregnancy session. After the final session of

Table 1. Similarities and Differences Between Scheduling Systems for Group Care

| Characteristics | Scheduling Systems | |
|---|---|--|
| | Groups 1–7: Availability-Based | Groups 8–13: EDD-Based |
| First prenatal visit provider | Obstetric provider (certified nurse-midwife or obstetrician-gynecologist) | Nurse |
| Scheduling of first intake visit with provider | Based on appointment availability only, new intakes shared between two providers | Providers assigned to cover a 2-month block of EDDs; nurse schedules intake visit with the appropriate provider covering the woman's EDD |
| First group session | Start date determined by the availability of space and when provider was free to hold group | Start date predetermined for the entire year |
| Target range of gestational age at entry to group | 8 weeks | Same |
| Meeting space for group sessions | Each group reserved 1 month in advance of the start of group | All groups reserved 1 year in advance |
| Recruitment of women to group care | Provider and nurse referrals; women offered group care during the course of a prenatal visit | Same |
| Promotion of group care | None | Brochure given to women at their intake visit; EDD list reviewed and letter sent to all eligible participants 2 weeks before the start of group; charts of eligible women flagged to remind providers to recruit for group |
| Provider schedules | Session dates determined for a particular group 6 weeks before the scheduled start of group; provider sessions closed to individual appointments at that time | Group session dates predetermined and provider schedules blocked to individual appointments on group session dates 1 year in advance |
| Group leadership | Alternate group leadership between two providers | Group leadership determined by assignment to cover a 2-month block of EDDs |
| Enrollment in group care | Open until the third session | Same |

EDD = estimated date of delivery.

each group, the total number of CenteringPregnancy sessions offered in the group and the total number of sessions attended by each participant was recorded. Because enrollment remained open until the third session, some women were recruited after the start of a group. Other women could not attend all later sessions in a group because they gave birth early. Therefore, the total number of CenteringPregnancy sessions available to each woman was calculated as the number of sessions offered after her entry to group care until her birth. The expected number of visits for each woman was calculated using the standard prenatal visit schedule (i.e., monthly visits from entry to care until 28 weeks of gestation, biweekly visits until 36 weeks of gestation, and weekly visits until birth). Patient demographics, health status, intake provider, and visit history were abstracted from the medical record. The group attended and the group provider were abstracted from group attendance logs.

Study Variables

This analysis compared gestational age at enrollment to group care, attendance rates, and referral rates for groups 1 to 7 (availability-based system) versus groups 8 to 13 (EDD-based system). The individual and group were used as units of analysis. Mean gestational age at entry to prenatal care and at enrollment into group care was calculated for individual participants. Group variables included

mean minimum gestational age, mean maximum gestational age, and mean gestational age range at enrollment. The percentage of prenatal care given in group for an individual was determined by dividing the number of group sessions attended by the total number of prenatal visits. Group attendance variables included the mean total number of group sessions offered per group, and the mean number of sessions that participants attended in each group.

Individual attendance rates were calculated as the number of group sessions attended by each woman divided by the following: 1) the total number of sessions offered in each group (percentage of total sessions attended), and 2) the number of sessions available to each woman from entry to group care until delivery (percentage of available sessions attended). The percentage of available sessions attended was calculated because enrollment remained open for the first three group sessions; therefore, some women were recruited late and could not attend all sessions offered in that group. Other women gave birth early and also could not attend all sessions offered in a group.

The expected number of prenatal visits was calculated for each individual woman from the time of entry into prenatal care until delivery. For example, women with identical EDDs could have different expected numbers of prenatal visits. Women enrolling into care earlier or who delivered postdates would have more expected visits; conversely, those who enrolled later or who delivered early would have fewer expected visits.

Table 2. Characteristics of 114 Women Enrolled in Group Care

| | n | Overall (N = 114) | Groups 1–7 (n = 59) | Groups 8–13 (n = 55) |
|---|------------------|----------------------|------------------------|-------------------------|
| Age at entry to care (y), mean ± SD | 113 ^a | 23.7 ± 5.0 | 23.1 ± 4.9 | 24.2 ± 5.2 |
| Range | | 15–39 | 15–38 | 16–39 |
| Race, n (%) | 114 | | | |
| White | | 80 (70.2) | 42 (71.2) | 38 (69.1) |
| Black | | 28 (24.6) | 12 (20.3) | 16 (29.1) |
| Other | | 1 (0.9) | 0 | 1 (1.8) |
| Unknown | | 5 (4.4) | 5 (8.5) | 0 |
| Ethnicity, n (%) | 114 | | | |
| Hispanic | | 75 (65.8) | 40 (67.8) | 35 (63.6) |
| Non-Hispanic | | 34 (29.8) | 14 (23.7) | 20 (36.4) |
| Unknown | | 5 (4.4) | 5 (8.5) | 0 |
| Parity, n (%) | 112 ^b | | | |
| 0 | | 56 (50.0) | 29 (50.9) | 27 (49.1) |
| ≥1 | | 56 (50.0) | 28 (49.1) | 28 (50.9) |
| Gestational age at entry to prenatal care (wk), mean ± SD | 112 ^b | 11.2 ± 3.9 | 11.5 ± 4.3 | 10.8 ± 3.2 |
| Range | | 2–25 | 6–25 | 2–25 |
| Mean minimum (± SD) | | 6.8 ± 1.6 | 7.0 ± 0.8 | 6.5 ± 2.4 |
| Mean maximum (± SD) | | 17.3 ± 4.8 | 18.4 ± 4.5 | 16.0 ± 5.1 |
| Mean range (± SD) | | 10.5 ± 4.3 | 11.4 ± 4.4 | 9.5 ± 4.4 |

SD = standard deviation.

^aMissing data for one participant in groups 1 through 7.^bMissing data for two participants in groups 1 through 7.

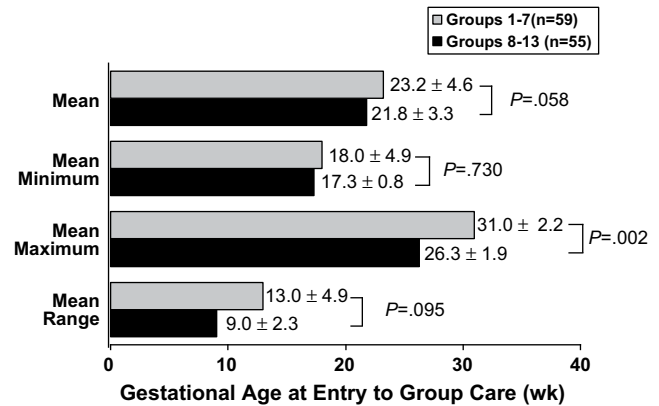
A woman was considered to have been referred if her intake provider did not facilitate the group she attended. Referral rates for each scheduling system were calculated as the percentage of women who had discordant intake and group providers under the availability system (groups 1 to 7) compared to the EDD system (groups 8 to 13).

Data Analysis

Data were recorded using Excel 2003 (Microsoft, Redmond, WA) and analyzed with SPSS for Windows (version 15.0; SPSS, Chicago, IL). Descriptive analyses were performed for categorical variables (frequencies) and continuous variables (mean, standard deviation, and mean minimum, maximum, and range). All statistical analyses compared variables for groups 1 to 7 (availability-based system) versus groups 8 to 13 (EDD-based system). Independent sample *t* tests were used for statistical comparisons of continuous variables; chi-square tests were used for categorical variables. All tests were two-sided. Type I error (α) was set at .05.

RESULTS

A total of 114 women participated in the 13 Centering-Pregnancy groups; 59 women in groups 1 to 7 and 55 in

**Figure 1.** Gestational age at entry to group care (N = 114).

groups 8 to 13. Participant characteristics are shown in Table 2. Overall, 70.2% of women self-identified as white and 24.6% as black; 65.8% identified as Hispanic and 29.8% as non-Hispanic. The mean maternal age at entry to prenatal care was 23.7 years (range, 15–39); the mean gestational age at entry to prenatal care was 11.2 weeks (range, 2–25). Half of women were nulliparous. No statistically significant differences were found in demographics, baseline health status (obesity, diabetes, hypertension, asthma, depression, or HIV status), or pregnancy complications (preeclampsia, worsening asthma, or gestational diabetes) between participants attending groups scheduled using the availability- or EDD-based system.

Gestational Age at Enrollment to Group Care

The mean gestational age at enrollment to group care was lower in the EDD-based groups compared with the availability-based groups (21.8 vs. 23.2 weeks, respectively), but this difference was not statistically significant ($P = .058$; Figure 1). Mean minimum gestational age at entry to group care was similar across scheduling systems and was considered optimal (17–18 weeks). While the mean minimum gestational age was not significantly different at entry to group care between the two groups ($P = .73$), the EDD-based system had significantly less variance compared to the availability-based system. That is, the minimum gestational age range at entry to group care was narrowed to 16 to 18 weeks in the EDD-system compared with 10 to 24 weeks in the availability-based system ($P = .022$; Levene test). Comparing the EDD-based system to the availability-based system, there was a significant decrease in mean maximum gestational age (26.3 vs. 31.0 weeks; $P = .002$) and a nonsignificant decrease in the mean gestational age range (9.0 vs. 13.0 weeks; $P = .095$) at enrollment to group care. Of note, there was no difference in any measure of gestational age at entry to prenatal care between the two cohorts.

Table 3. Attendance at Prenatal Care Visits by 114 Enrolled in Group Care

| | n | Overall (N = 114) | Groups 1–7 (n = 59) | Groups 8–13 (n = 55) | P |
|--|------------------|-------------------|---------------------|----------------------|-------|
| Centering Pregnancy sessions per group, mean ± SD | 114 | | | | |
| Total | | 7.4 ± 1.1 | 6.7 ± 0.9 | 8.2 ± 0.8 | <.001 |
| Attended | | 5.3 ± 1.7 | 5.1 ± 1.7 | 5.6 ± 1.7 | .093 |
| Centering Pregnancy attendance rate, % ± SD | 114 | | | | |
| Total sessions ^a | | 72.8 ± 0.2 | 76.0 ± 0.2 | 69.4 ± 0.2 | .111 |
| Available sessions ^a | | 87.6 ± 0.2 | 87.3 ± 0.2 | 87.8 ± 0.3 | .906 |
| Total prenatal visits, mean ± SD | 112 ^b | | | | |
| Actual | | 11.1 ± 2.6 | 11.05 ± 2.6 | 11.1 ± 2.5 | .907 |
| Expected | | 12.0 ± 1.9 | 11.8 ± 2.1 | 12.3 ± 1.6 | .119 |
| Percentage of prenatal visits that were group sessions, % ± SD | 112 ^b | 49.0 ± 0.1 | 47.0 ± 0.1 | 51.2 ± 0.1 | .107 |

SD = standard deviation.

^aTotal sessions = number of group sessions attended divided by the total number of sessions for each group. Available sessions = number of group sessions attended divided by the number of sessions available for each woman (from enrollment to birth).

^bMissing data for two participants in groups 1 through 7.

Attendance

The change in the scheduling system significantly increased the mean number of sessions offered per group from 6.7 with the availability-based system to 8.2 with the EDD-based system ($P < .001$; Table 3). The mean number of group sessions women actually attended increased slightly from 5.1 with the availability-based system to 5.6 with the EDD-based system, which was not statistically significant ($P = .093$). There was no difference in attendance rates between the two scheduling systems, calculated as the percentage of total sessions attended or the percentage of available sessions attended. There also was no difference in the actual or expected total number of prenatal visits; women in group care had approximately the expected number of prenatal visits, half of which were group sessions.

Continuity of Care

The EDD-based system aimed to improve continuity of care by linking the initial and group provider. The change in scheduling system resulted in an increase in the percentage of women who had the same initial and group provider (78.0% vs. 85.5%; $P = .303$). It also reduced the need for women to be referred to another provider in order to receive group care: 14.5% of group participants enrolled under the EDD-based system were referred into group care compared with 22.0% using the availability-based system. Although referrals decreased, the average number of attendees increased from an average of 8.4 participants per group in the availability-based system to 9.6 participants per group in the EDD-based system. Further, an analysis of attendance data from all the groups (groups 1–13) suggests that continuity of care may impact attendance. The

percentage of available sessions attended increased from 81.1% if the group and intake provider were different to 89.1% if the providers were the same ($P = .146$). The lack of statistical significance may be related to the small numbers of women who had different intake and group providers. In our sample, only 21 women (13 in groups 1–7 and 8 in groups 8–13) had discordant intake-group providers.

DISCUSSION

The EDD-based system achieved its major objectives of enrolling women earlier to group care and narrowing the range of EDDs of women participating in a specific group. The EDD-based system significantly decreased the mean maximum gestational age at enrollment to group care from 31 to 26 weeks and decreased the mean range of gestational age at enrollment from 13 to 9 weeks compared with the availability-based system. The EDD-based system approached the target of enrolling women within an EDD range of 8 weeks. Although the mean minimum gestational age at enrollment to group care was similar with both systems and met the target of 18 weeks, the EDD-based system narrowed the minimum gestational age range at enrollment (16–18 weeks) versus the availability-based system (10–24 weeks).

Another advantage of the EDD-based system is that more sessions were offered per group, because fewer participants gave birth before the end of the scheduled group sessions. The EDD-based system significantly increased the mean number of sessions that were offered per group to 8.2 sessions from 6.7 sessions with the availability-based system. Developing a scheduling system that can expand the number of sessions available gives women

more opportunity to acquire the knowledge, skills, and social networks that help them have healthier pregnancies.

Women clearly enjoyed group care. Attendance rates were high regardless of the system used. Although it was hypothesized that the EDD-based system would lead to improved attendance, both systems performed equally well. Overall, women enrolled in group care using the availability- or EDD-based system attended 88% of sessions that were available to them from the time of enrollment in group care to their birth.

Importantly, participants in our study group did not receive visits beyond those expected in standard care. Women enrolled in group care had an average of 11 visits over the course of their pregnancy. Debate exists over what number of prenatal visits is optimal for women with low-risk pregnancies. The recommended number of visits needed in order for care to be deemed adequate ranges from 8 to 14 visits.^{10,11} A Cochrane review of more than 10 studies involving 60,000 women concluded that fewer prenatal visits are not associated with adverse maternal or neonatal outcomes for women with low-risk pregnancies.¹² Clearly, women enrolled in group care received an adequate number of prenatal visits and not more than would be expected had they received individual care.

Lastly, the EDD-based system was easier to implement because it recognized the powerful relationship that develops between providers and patients. The EDD-based system minimized the need for referrals by making the provider responsible for providing group and/or individual care for all pregnant women within a prespecified 2-month range of EDDs. The choice that a woman makes under the EDD-based system is only whether she wants group care, not whether she wants to change providers in order to receive group care.

Obstetric practices interested in adapting elements of the EDD-based system for use in their systems should be cautioned that the timely collection of EDD data is essential. We use an EDD list, which is updated monthly, to generate a list of women who were eligible for recruitment. Other researchers have found that using automated electronic data was twice as efficient as relying on clinicians to identify possible participants in educational sessions in pregnancy. However, electronic-generated referrals tended to identify women too late in pregnancy to be enrolled in the intervention.¹³

STRENGTH AND LIMITATIONS

This is the only study found by the authors that analyzes different group scheduling and recruitment systems in clinical care. The study occurred at a time of stability at SBHCCF, minimizing the chance that outside variables, such as personnel or policy changes, could have affected the results. In our system, women are scheduled with a provider without reference to risk status or socioeconomic variables. Women with risk factors or high-risk medical

conditions may have required additional visits for further evaluation and care, but they were still eligible to participate in group care. Because the rates of preexisting conditions and pregnancy complications were the same for women enrolled in group care under both the availability- and EDD-based systems, it is unlikely that the health or socioeconomic status of women influenced the findings in this study.

The major limitation is that our sample size is relatively small. However, the findings indicate that the EDD-based system was an improvement over the availability-based system. Given the success in our small center, we would anticipate that the EDD-based system would be even more effective in centers with larger caseloads which could achieve better economies of scale.

CONCLUSION

Successful group programs that have relied on extra administrative support have been abandoned once that support was withdrawn.¹⁴ Developing easy-to-use scheduling and recruitment systems that can be implemented with existing resources is critical to the long-term survival of group models of care. Advanced planning—including blocking schedules so that groups can start on time, reserving space so that conflicts can be avoided, and assigning providers to cover specific EDDs—were all critical to the success of this EDD-based system. Subsequent to this study, the SBHCCF has experienced major turnover in obstetric providers. The authors are convinced that the EDD-based system has allowed us to continue to offer CenteringPregnancy care despite the fact that we have had four different obstetrician-gynecologists providing care at the SBHCCF over the last 3 years.

More studies are needed to evaluate effective scheduling and recruitment strategies that could make implementation of group care more feasible. In particular, a better understanding of the relative contribution of the key components of the EDD system to the success of the EDD system is needed. It may be that some of the components of the EDD-system are more important than others. For example, it may be that the provider-patient relationship impacts women and providers' willingness to participate in group care. An alternative explanation is that a more organized system of group care improves enrollment. These relationships need to be explored in future studies.

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