

Group Prenatal Care

Evidence Review Findings: Effective / Roadmap Strategy

Participation in group prenatal care increases the likelihood that mothers receive adequate prenatal care, may improve mothers' physical and emotional health, and may enhance optimal child health and development. Although rigorous evaluations demonstrate that the group prenatal care model is effective at improving outcomes, to date the model has not been rigorously studied as a statewide intervention. Therefore, the evidence does not provide clear guidance to states on the most effective way to implement this model of care at the state level.

Prenatal care generally refers to individual patient care received from one obstetric care provider during an individual's pregnancy. Group prenatal care (GPNC) is an alternative model of care facilitated by a trained health care provider and delivered in a group setting, integrating health assessments, education, skill building, and peer support. GPNC provides pregnant peopleⁱ (typically with low-risk pregnancies not requiring individual monitoring) with 15 to 20 hours of prenatal care over the course of their pregnancies, compared to approximately 2 to 4 hours in traditional individual care. Each GPNC visit is scheduled for 90 to 120 minutes, compared to 10 to 15 minutes for each individual prenatal care visit.^{C,1}

States vary in how they financially support group prenatal care and can offer an enhanced Medicaid reimbursement rate for GPNC, provide grant funding to communities or providers to offer the model, or implement Alternative Payment Models that incentivize enhanced maternity care, which can include GPNC. The current evidence base does not provide clear guidance for how states can best support and implement group prenatal care to maximize the use of the effective strategy among pregnant people who prefer the group approach.

Decades of research in the field of child development have made clear the conditions necessary for young children and their families to thrive.³ These conditions are represented by our eight policy goals, shown in Table 1. The goals positively impacted by group prenatal care are indicated with a filled circle, and the goals theoretically aligned (but without evidence of effectiveness from strong causal studies) are indicated with an unfilled circle.

ⁱ Pregnant people reflects the gender-inclusive term instead of the term pregnant women. Although this term is preferred to respect all individuals who are pregnant and may become pregnant, this evidence review follows the policy- and research-specific language when discussing individual studies, which most often use the language of women and mothers.

Table 1. Impacts of Group Prenatal Care on Policy Goals

Positive Impact	Policy Goal	Overall Findings
	Access to Needed Services	Positive impacts on adequate prenatal care
	Parents' Ability to Work	<i>(Policy goal outside the scope of this review)</i>
	Sufficient Household Resources	<i>(Policy goal outside the scope of this review)</i>
	Healthy and Equitable Births	Mostly null on preterm birth and birthweight, with limited evidence for reducing racial disparities
	Parental Health and Emotional Wellbeing	Mixed impacts, with beneficial impacts on reducing excessive weight gain and depressive symptoms
	Nurturing and Responsive Child-Parent Relationships	<i>(Policy goal outside the scope of this review)</i>
	Nurturing and Responsive Child Care in Safe Settings	<i>(Policy goal outside the scope of this review)</i>
	Optimal Child Health and Development	Mixed impacts on breastfeeding initiation

What Is Group Prenatal Care?

Prenatal care generally refers to individual patient care received from one obstetric care provider during an individual's pregnancy.⁴ Visits consist of a physical examination tailored to the stage of pregnancy, discussions about the health of the mother and fetus, and any questions about the pregnancy itself. Prenatal care not only helps prevent and address any complications that may arise during pregnancy, but it is also a source of critical information for parents.^{1,4}

Group prenatal care (GPNC) is an alternative model of prenatal care facilitated by a trained health care provider and delivered in a group setting, integrating health assessments, education, skill building, and peer social support.⁵ GPNC provides pregnant people (typically with low-risk pregnancies not requiring individual monitoring) with approximately 15 to 20 hours of prenatal care over the course of their pregnancies, compared to approximately 2 to 4 hours in traditional individual care.^{c,5}

CenteringPregnancy, created by the Centering Healthcare Institute, is the most prominent and widely studied model of group prenatal care. Most often, alternative models of group prenatal care are adapted from CenteringPregnancy. Each CenteringPregnancy group includes approximately 8 to 10 individuals at similar gestational ages⁶ who participate in their own health care by taking their

weight and blood pressure before their short visit with a credentialed medical provider. Afterward, the provider and group facilitators lead a discussion, along with educational activities, to address common health topics and concerns.⁶ Group prenatal care is designed to include opportunities for social support and to improve the quality of patient education, in addition to the usual physical examinations and risk assessments.^{6,C}

Who Can Participate in Group Prenatal Care?

Group prenatal care is an alternative form of prenatal care that has emerged in response to the increasing costs, limited health care provider availability, and dissatisfaction with wait times associated with individual prenatal care.⁵ Pregnant people can choose to participate in group prenatal care if the model is offered at their obstetric provider and is covered by their health insurance plan. High-risk pregnancies typically require additional monitoring throughout the prenatal period,^{1,9} and therefore the group prenatal care model is best suited for women with low-risk pregnancies who do not require specialist care.⁵

What Are the Funding Options for Group Prenatal Care?

Historically, providers who offer CenteringPregnancy have been paid through submitting traditional reimbursement claims to Medicaid or private health insurance for each patient, as if the patients were receiving individual prenatal care.⁸ Given the start-up costs (e.g., training and supplies) associated with group prenatal care, providers can receive grant funding to help offset the costs.⁷ Grants have been awarded to implementation sites from a range of stakeholders, including states, philanthropic foundations, and health insurance payors.^{7,10,11}

States can offer an enhanced Medicaid reimbursement rate for group prenatal care that reimburses providers at a rate that is higher than traditional prenatal care, to incentivize providers to offer this model of care. Enhanced reimbursements can occur through grants awarded to health care providers or via billing structures determined by statute or agency rules. Rates are set per patient, per visit, and therefore reimbursements are not always enhanced at an individual level, but sometimes at the group level (for example, a \$7 per patient, per visit reimbursement rate multiplied by the group size).¹²

States can also incentivize enhanced maternity care (which can include group prenatal care) through Alternative Payment Models (APMs). APMs reimburse providers outside of the traditional fee-for-service model, generally as a value-based payment that financially rewards better outcomes.⁸ For more detailed information on state variation in support of group prenatal care, see Table 3 at the end of this review.

Why Should Group Prenatal Care Be Expected to Impact the Prenatal-to-3 Period?

Early and regular prenatal care visits improve the likelihood of a healthy pregnancy and positive perinatal outcomes through education, risk screening, and physical assessment.¹⁴ Group prenatal care augments the individual prenatal care model in key ways that can positively impact pregnant people and their families by integrating family members and peer support into prenatal care and education.^C GPNC provides participants with significantly more prenatal care (15 to 20 hours) than individual care (2 to 4 hours) over the course of their pregnancies.^{C,5}

If the amount of time and quality of care increases, group prenatal care may lead to subsequent improvements in mothers' mental and physical health during the perinatal period. Most of the time spent in group prenatal care is allocated to pregnant people engaging with each other and their health care providers, covering topics such as childbirth preparation and parenting roles.^c Group prenatal care leverages social cognitive theory and the importance of group social processes to support pregnant people's emotional and mental health, in addition to promoting healthy pregnancies and perinatal outcomes.^d

What Impact Does Group Prenatal Care Have, and for Whom?

Group prenatal care, and most often the CenteringPregnancy model, has been evaluated in studies using experimental or quasi-experimental designs. The research discussed here meets our standards of evidence for being methodologically strong and allowing for causal inference, unless otherwise noted. Propensity score matching studies of GPNC did not meet our standards of evidence in this review because participants were not randomly assigned to receive either group or individual prenatal care, rather the pregnant women chose to participate in group prenatal care. The studies could not fully account for the factors that lead to women preferring group prenatal care over a traditional model of care, and thus, the studies cannot provide evidence of a causal link between GPNC and perinatal outcomes.

Each strong causal study reviewed has been assigned a letter, and a complete list of causal studies can be found at the end of this review, along with more details about our standards of evidence and review method. The findings from each strong causal study reviewed align with one of our eight policy goals from Table 1. The Evidence of Effectiveness table displays the findings associated with participation in group prenatal care (beneficial, null,ⁱⁱ or detrimental) for each of the strong studies (A through I) in the causal studies reference list. For each indicator, a study is categorized based on findings for the overall study population; subgroup findings are discussed in the narrative. The Evidence of Effectiveness table also includes our conclusions about the overall impact on each studied policy goal. The assessment of the overall impact for each studied policy goal weighs the timing of publication and relative strength of each study, as well as the size and direction of all measured indicators.

Of the ten strong causal studies included in this review, threeⁱⁱⁱ examined how outcomes differed by race or ethnicity (beyond simply presenting summary statistics or controlling for race/ethnicity). Where available, this review presents the analyses' causal findings for subgroups by race. A rigorous evaluation of a policy's effectiveness should consider whether the policy has equitable impacts and should assess the extent to which a policy reduces or exacerbates pre-existing disparities in economic and social wellbeing.

ⁱⁱ An impact is considered statistically significant if $p \leq 0.05$. Results with p -values above this threshold are considered null or nonsignificant.

ⁱⁱⁱ Studies C, D, and G include subgroup analyses based on race and/or ethnicity.

Table 2. Evidence of Effectiveness for Group Prenatal Care by Policy Goal

Policy Goal	Indicator	Beneficial Impacts	Null Impacts	Detrimental Impacts	Overall Impact on Goal
Access to Needed Services	Adequate Prenatal Care	C, F, H			Positive
Healthy and Equitable Births	Preterm Birth	C	E, F, H		Mostly Null
	Low Birthweight		B, C, E, F, H		
	NICU Admissions		C, E, F, H		
Parental Health and Emotional Wellbeing	Gestational Weight Gain	I	F		Mixed
	Rapid Repeat Pregnancy	G	E		
	Sexually Transmitted Infections (STI) Risk	G	E, G		
	Depressive Symptoms	A, D	F		
	Stress	D	F		
Optimal Child Health and Development	Breastfeeding Initiation	C	E, F		Mixed

Notes: If a study is placed in multiple impact categories (beneficial, null, detrimental) for an indicator, results were inconsistent within the study (e.g., various ways of measuring similar indicators).

Access to Needed Services

The findings from three randomized controlled trials (RCTs) show that participation in GPNC improves the likelihood that pregnant women receive adequate prenatal care.^{C,F,H} Adequacy of prenatal care is often determined using the Kotelchuck Index, which measures adequate prenatal care on two dimensions: the month of pregnancy during which care was initiated (earlier is better) and the percentage of recommended visits received (higher is better).¹²

Among a large sample of mostly Black women between ages 14 to 25 with low-risk pregnancies, women in GPNC were approximately 6.4 percentage points less likely to receive inadequate care (26.6%) compared to women in individual prenatal care (33.0%).^C A smaller RCT in two military settings found that women in GPNC were 6 times more likely to have adequate prenatal care, as compared to those in individual care.^F Similarly, among a sample of Black women with high-risk pregnancies, women who were randomly assigned to GPNC attended an average of approximately two additional prenatal visits, as compared to women in individual care.^H

Healthy and Equitable Births

The impact of participation in GPNC on birth outcomes has been widely studied,^{iv} but findings are mostly null. The authors in the included strong causal studies hypothesized both equivalent and better birth outcomes among women participating in group prenatal care compared to individual prenatal care. The overall findings suggest that group prenatal care may work as well as individual care, but may not yield more beneficial outcomes. This evidence review classifies outcomes as null if no statistically significant differences were found between the treatment group (GPNC) and control group.

Preterm Births

In a large two-site RCT of an enhanced CenteringPregnancy model with mostly Black young women (ages 14 to 25), 9.8 percent of mothers in group care delivered preterm, compared to 13.8 percent of mothers in individual care. This difference is equal to a beneficial risk reduction of 33 percent.^c In contrast, a large 14-site RCT of the same enhanced model of CenteringPregnancy with women ages 14 to 21 found no differences in the rates of preterm birth (10.1%) between mothers in GPNC and mothers in individual care.^v The GPNC sample was diverse and consisted of 56.0 percent Hispanic, 33.0 percent Black, and 10.6 percent White or other (non-Hispanic) women.^E

Two smaller RCTs also found null impacts on the rate of preterm birth between women participating in GPNC and the control group.^{F,H} The military study evaluated CenteringPregnancy,^F whereas the high-risk study evaluated an unspecified model of GPNC.^H Both studies conducted power analyses that indicated sufficient sample sizes to detect significant differences between groups; however, the low prevalence of preterm births in both studies, and particularly in the military study (only 10 preterm births in GPNC and only 7 in individual prenatal care),^F suggests that the studies may have been statistically underpowered to detect differences in preterm birth outcomes specifically.

Low Birthweight

RCTs with varied demographic characteristics and sizes found null effects of GPNC (CenteringPregnancy, enhanced CenteringPregnancy, and unspecified models of GPNC) on low birthweight (LBW) births.^{B,C,E,F,H} The smaller RCTs^{F,H} may have been statistically underpowered to detect significant differences in rates of low birthweight. For example, a small RCT of Black women found a rate of low birthweight among GPNC participants that was approximately half the rate of that among individual care participants. However, the null impact was likely because the sample size was too small to detect a statistically significant difference.^B

^{iv} Numerous studies did not meet our standards for causal evidence as a result of using nonrandomized designs. Therefore, they are not reflected in the results of causal studies reviewed. Some of the findings are outlined in the What Do We Know, What Do We Not Know? section.

^v Results are from an intent-to-treat (ITT) analysis. ITT examines the results of a randomized experiment based on original assignment to treatment and control groups, regardless of who ended up receiving the intervention and who may have switched groups. This is considered the more conservative method of determining an intervention's effect.³⁸

Neonatal Intensive Care Unit Admissions

The studies that have examined the impact of GPNC on the likelihood that newborns were admitted to the neonatal intensive care unit (NICU) have found no differences in admission rates between the treatment and control groups.^{C,E,F,H} The RCTs ranged in sample size, and similar to the LBW outcome, the smaller RCTs may have been statistically underpowered to detect differences on this indicator given the low prevalence of NICU admissions.

Parental Health and Emotional Wellbeing

Several studies have examined the impact of GPNC on indicators of parental health and emotional wellbeing. RCTs of GPNC programs suggest mixed impacts overall, with positive impacts on gestational weight gain, reproductive health, and depression, discussed below.

Gestational Weight Gain

Mothers' physical health during pregnancy has important implications for pregnancy and perinatal outcomes; both excessive weight gain during pregnancy and obesity are risk factors for pregnancy complications.¹ The social support associated with the GPNC model, along with discussing health-related topics and conducting self-assessments of weight and blood pressure, have been theoretically linked to a reduced likelihood of excessive weight gain during pregnancy.^{F,1}

Secondary analysis of data from the 14-site RCT of an enhanced model of CenteringPregnancy showed that adolescent women in GPNC gained significantly less weight during pregnancy and retained less weight at 12 months postpartum compared to adolescents in the control group.¹ However, a small RCT conducted across two military settings found no difference in gestational weight gain between women in GPNC and individual care.^F

Reproductive Health

Two studies using an enhanced model of CenteringPregnancy examined the effects of group prenatal care on the prevention and incidence of sexually transmitted infections (STIs) during pregnancy and the postpartum period.^{E,G} The enhanced CenteringPregnancy model is bundled with HIV prevention components, such as communication skills about safe sexual behavior.^E Adolescents and young adults are at a higher risk of STIs compared to older adults.¹⁴ The heightened risk is because of biological and cultural factors, such as being more likely to have sex without contraception or barrier protection.^{14,25} The US Centers for Disease Control and Prevention recommend that all pregnant people are screened for STIs given the effects of untreated infections during the interconception period.^{14,25}

The two RCTs evaluating the enhanced model of CenteringPregnancy found mixed results on outcomes related to sexual risk. Neither RCT found statistically significant differences in the incidence of STIs in the intent-to-treat results.^{E,G} However, the two-site RCT of pregnant women ages 14 to 25 found that participation in the enhanced CenteringPregnancy model led to statistically significant reductions in unprotected sexual activity at 12 months postpartum.^G

The two RCTs of the enhanced model of CenteringPregnancy also found mixed results on outcomes related to rapid repeat pregnancy. The indicator is particularly relevant for adolescents included in

the study populations (ages 14 to 25 and ages 14 to 21). Adolescent repeat pregnancy within 12 months of the previous live birth has been associated with an increase in mental health complications among mothers, including anxiety and stress.^{16,17} Research has found that adolescent women are more likely to experience inadequate prenatal care, premature birth, and low birthweight in subsequent pregnancies that occur before the age of 20, compared to older women who have multiple births.^{18,19}

The two-site RCT of women ages 14 to 25 found that pregnant women who participated in the enhanced CenteringPregnancy model were 6.3 percentage points less likely to report a rapid repeat pregnancy at the 6-month follow up, compared to women in individual care. Rapid repeat pregnancy is defined as becoming pregnant within 12 months of the previous live birth. At the 12-month follow up, rapid repeat pregnancy was not statistically significant.^G The 14-site RCT of pregnant women ages 14 to 21 receiving the enhanced model of CenteringPregnancy did not find statistically significant findings in rapid repeat pregnancy using the intent-to-treat results.^E More causal evidence is needed on the potential for GPNC to reduce the occurrence of both STIs and rapid repeat pregnancies for all participants.

Maternal Depressive Symptoms and Stress

Perinatal depression is associated with negative birth, neonatal, and infant outcomes. Group prenatal care provides pregnant people with social support and facilitates discussions on topics including mental health, communication, and self-esteem.^A Theoretically, GPNC may improve mothers' emotional wellbeing, but findings from causal research are mixed.

Secondary analysis of data from the 14-site RCT of an enhanced model of CenteringPregnancy demonstrated a positive impact on perinatal depressive symptoms; the rate of probable depression decreased by 31 percent between the second trimester and the 12-month postpartum interview among women in GPNC, compared to a 15 percent reduction among women in individual care.^A

A subgroup analysis of high-stress^{vi} women participating in GPNC reported a decrease in stress from baseline to the third trimester compared to the control group. The differences between participants in group and individual prenatal care were no longer significant one year postpartum.^D High-stress women in GPNC also reported a decrease in depressive symptoms from study entry to 12 months postpartum.^{vii,D} Women who scored as low or moderately stressed at the beginning of their pregnancies did not have statistically significant differences in either stress or depressive symptoms 12 months postpartum, suggesting that GPNC was more beneficial to participants who had higher levels of stress.^D

In contrast, the two-site military study found no significant differences in either stress or depression between women participating in GPNC and individual prenatal care.^F The mixed findings

^{vi} The Perceived Stress Scale (PSS) was used to calculate stress levels and the degree to which respondents perceived situations in their lives to be unpredictable, uncontrollable and overloaded during the past month. Women were categorized as high-stress if their scores were on the top third of the PSS scale.^D

^{vii} The affect-only component of the Center for Epidemiologic Studies Depression Scale (CES-D) was used to assess depressive symptoms.^D

may be because of the samples examined; the two-site military study included mostly White women with an average age of 25,^F compared to mostly Black women ages 14 to 25.^{A,D}

Optimal Child Health and Development

The causal evidence base on the impact of group prenatal care on optimal child health and development is limited to research on the likelihood that mothers initiate breastfeeding, with mixed results. The two-site RCT of an enhanced model of CenteringPregnancy with a young, largely Black sample found that women in GPNC were almost 12 percentage points more likely to initiate breastfeeding than women who received individual care.^C In contrast to the positive findings, two studies found no significant differences in breastfeeding initiation, though rates of initiation were high among all women in both studies.^{E,F}

Is There Evidence That Group Prenatal Care Reduces Disparities?

Systemic racism, combined with discrimination within hospital and health care delivery systems, drives poorer quality prenatal care and adverse birth outcomes for women of color.²⁰ GPNC is a strategy with the potential to provide empowering and women-centered care, which may promote healthy and equitable births.²¹ GPNC may be particularly beneficial for Black women given they have the highest rates of inadequate prenatal care at 23.4 percent, compared to only 11.0 percent of White women and 18.7 percent of Hispanic women.²² Reducing inadequate prenatal care among Black women may help reduce the rate of preterm births among Black women; in 2019, the preterm birth rate was 14.4 percent of live births compared to approximately 10 percent of Hispanic and 9.3 percent of White infants.²³

Evidence from the two-site RCT of an enhanced model of CenteringPregnancy found that GPNC reduces disparities in the risk of preterm birth for Black women.^C Post hoc analyses were conducted to isolate the impact of the intervention for Black women, who comprised 80 percent of the overall sample. The authors found that GPNC reduced the risk for preterm birth for Black women by 41 percent, compared to a reduction of 33 percent among the entire sample.^C

However, two additional studies using the same mostly Black sample of women in GPNC did not find differential impacts of GPNC by race or ethnicity on other indicators of parental health and wellbeing. Results were null for depression and stress,^D as well as for differences in sexual risk behaviors and psychosocial communication among White, Black, or Hispanic women.^G

To further add to the lack of clarity, two RCTs—one with a sample of entirely Black women with high-risk pregnancies^H and another with a sample of 94 percent Black adolescents^B—found no significant impacts of GPNC on birth outcomes, suggesting GPNC may not benefit Black mothers most at risk for adverse birth outcomes.

Overall, the results of the strong causal studies do not allow for clear conclusions about reductions in disparities for adverse birth outcomes as a result of participation in GPNC, including low birthweight and NICU admissions. Some evidence points to the benefits of GPNC for Black mothers, but the evidence that participation in GPNC reduces or eliminates disparities is inconclusive.

Additional research including subgroup analyses comparing women of color to other women would allow for conclusions on how group prenatal care may reduce or close gaps in outcomes.

Has the Return on Investment for Group Prenatal Care Been Studied?

Implementing group prenatal care in a clinic can be costly because of traditional models of reimbursement, training providers to administer the program, accreditation fees, and ongoing overhead expenses. However, potential cost savings for the individual and/or the state are possible if birth outcomes are improved by GPNC participation.

Studies outside the scope of this review found that group prenatal care offered cost savings for individuals and states. An evaluation of the Strong Start for Mothers and Newborns initiative found that over the period of the study, prenatal expenditures among group prenatal care enrollees were 15 percent lower than among the comparison group. The reductions totaled an average of \$427 less per GPNC mother.²⁷ Researchers suggested this effect may have been partially the result of a reduction in maternal hospitalizations in the prenatal period. A study in South Carolina conducted a cost-benefit analysis and estimated health savings of \$22,667 for every prevented premature birth, totaling close to a \$2.3 million return on investment when the overall reduction in risk of preterm birth was considered.²⁸

The overall findings on healthy and equitable births were mostly null and there is insufficient causal evidence on the impact of group prenatal care on reducing NICU hospitalizations. More causal evidence is needed on the potential cost savings that can be achieved if GPNC does improve healthy and equitable birth outcomes for all pregnant people. A more comprehensive analysis of the return on investment is forthcoming.

What Do We Know, and What Do We Not Know?

The findings from the most rigorously designed studies indicate that participation in group prenatal care improves the likelihood that mothers receive adequate prenatal care. Some causal evidence shows that group prenatal care can improve mothers' physical and emotional health, and optimal child health and development, by increasing the likelihood of breastfeeding initiation. The evidence on healthy and equitable birth outcomes is less conclusive; beneficial impacts on rates of preterm birth emerge in one experimental study,^C but null impacts were found in three similarly designed studies.^{E,F,H} The existing evidence base does not provide guidance to states on the optimal policy lever or method for states to support group prenatal care.

This review focuses on the experimental evidence (using randomized controlled trials with sufficient sample sizes) to assess the impact of group prenatal care on prenatal-to-3 outcomes. Research that does not allow for causal inference (e.g., propensity score matching studies in which women could choose GPNC rather than be assigned to the intervention) also found inconclusive results on birth outcomes for women participating in GPNC. For instance, a study of 15,000 Medicaid-enrolled women, which included women with high-risk medical conditions, found approximately a 3 percentage point decrease in preterm birth rates, a 4 percentage point decrease in low birthweight rates, and a 4 percentage point decrease in NICU admissions among women in group prenatal care.²⁶ Another study of 6,000 Medicaid-enrolled women found that GPNC reduced

the risk of having a preterm birth by 36 percent, low birthweight by 44 percent, and NICU admissions by 28 percent.²⁸ However, three studies using retrospective matched studies of varying populations of pregnant people found no statistically significant differences in low birthweight rates.^{27,29,30} Two retrospective matched studies of CenteringPregnancy found null effects on preterm birth rates between group and individual prenatal care.^{27,30}

The causal research included in this review focuses on program evaluations serving specific populations that may not be generalizable to all pregnant people. For instance, three studies included mostly Black women ages 14 to 21 in New York City, NY from 2008 to 2012,^{A,E,I} and two studies included mostly Black women ages 14 to 25 in New Haven, CT and Atlanta, GA.^{C,D} One study was comprised of mostly Black women ages 13 to 21 in Detroit, MI,^B and one study included pregnant women in military settings in the Pacific Northwest.^F The evidence base would also benefit from more updated findings. The most recent published study was in 2016 with data collection occurring between 2008 and 2011,^C and the oldest was published in 2001, which recruited eligible participants between 1993 to 1994.^H

Future research should examine the impact of group prenatal care on partners'^{viii} involvement. Limited evidence suggests that father engagement during the prenatal period may improve maternal health by reducing stress, which may lead to better outcomes for infants.³¹ Research on father involvement in individual prenatal care suggests that women were more likely to receive timely prenatal care and to reduce adverse health behaviors, such as cigarette intake, compared to women who did not have partner involvement.³² Given that the theory of change for group prenatal care is to increase opportunities for social support among mothers,^{5,6} rigorous evaluations on birthing partners is needed to determine if group prenatal care improves engagement compared to individual prenatal care.

Theoretically, group prenatal care is more closely connected to the adequacy of prenatal care and maternal health (mixed impacts) than birth outcomes and child health (mostly null or mixed impacts), which may provide some insight into the disparate findings. GPNC emerged as an alternative form of care, in part as a response to challenges with accessing individual prenatal care.⁵ Expecting GPNC to promote better birth outcomes than individual prenatal care may not be well supported by the model's theory of change, although the majority of studies do predict better birth or psychosocial outcomes. Further, the CenteringPregnancy model typically targets low-risk pregnancies that do not require the individual monitoring necessary for higher-risk pregnancies; reducing negative birth outcomes among women with high-risk pregnancies may not be an appropriate outcome goal for group prenatal care.

More evidence is needed on who is more likely to choose and participate in group prenatal care compared to individual prenatal care and why this is their preferred choice. The GPNC model may not be preferred for all pregnant people and future research is needed to understand who is best served by group prenatal care rather than individual prenatal care. As states make public

^{viii} The term partners is preferred to respect all individuals; however, the evidence review follows the research-specific language, which uses the term fathers.

investments to support group prenatal care, future research should examine whether GPNC can improve the overall wellbeing of pregnant people and birth outcomes when the model is offered.

Group prenatal care pivoted as a result of the COVID-19 pandemic, offering a blend of virtual and hybrid models. Anecdotal evidence from CenteringPregnancy sites in New Jersey suggests some beneficial impacts; for example, some participants spoke more openly during virtual sessions and other participants were able to attend more visits because they did not have to worry about transportation or child care.³³ Notably, however, some pregnant people and providers reported they had difficulty accessing the telehealth technology, including barriers such as insufficient Wi-Fi or navigating the virtual platforms.³³ Rigorous evaluations of both hybrid and virtual models of group prenatal care should assess impacts on maternal and birth outcomes.

Is Group Prenatal Care an Effective Strategy for Improving Prenatal-to-3 Outcomes?

Group prenatal care is an effective strategy for improving the receipt of adequate prenatal care and has beneficial impacts on parental health and wellbeing (e.g., excessive weight gain) and optimal child health and development, although the breastfeeding initiation findings are mixed. Because group prenatal care has not been studied at a statewide level, current evidence does not point to the precise mechanism through which states can support group prenatal care.

How Does Group Prenatal Care Vary Across the States?^{ix}

CenteringPregnancy, the predominant model of group prenatal care and the model on which other forms of group care are often based,⁵ was implemented in 599 sites across 46 states as of 2019.^{x,2} In most states that have a CenteringPregnancy site, the percent of all births served by the model is relatively low, ranging from 0.4% in Arkansas and Tennessee to over 14% in the District of Columbia.³⁹ Other group prenatal care models include March of Dimes' Supportive Pregnancy Care,³⁴ Expect With Me,³⁵ Pregnancy & Parenting Partners,³⁶ and Honey Child.³⁷

Although the most effective way for states to support group prenatal care is unclear from the evidence base, there are a number of ways states can financially and non-financially support group prenatal care. States can use Medicaid to reimburse providers at a higher rate than traditional prenatal care. As of 2021, nine states provide enhanced fee-for-service reimbursements for group prenatal care through the state's Medicaid or contracted managed care organization(s) (MCOs).¹² Higher reimbursement rates can incentivize providers to offer GPNC. States vary in the value of their enhanced reimbursement rates. For example, New Jersey reimburses providers an additional \$7 per patient, per visit for group prenatal care. In comparison, Louisiana reimburses providers an additional \$50 per patient per visit.¹² Enhanced reimbursements can be higher at the group level instead of the individual level (e.g., a \$7 per patient, per visit reimbursement rate multiplied by the group size).¹²

States have MCOs that use alternative payment models (APMs) to support enhanced maternity care, which usually means that states reimburse for episodes of maternity care using a value-based

^{ix} For details on state progress implementing group prenatal care, see the group prenatal care section of the US Prenatal-to-3 State Policy Roadmap: <https://pn3policy.org/pn-3-state-policy-roadmap-2021/us/group-prenatal-care/>.

^x State counts include the District of Columbia.

payment (VBP) model. VBP models reward providers for better patient health outcomes,⁸ which may incentivize providers to provide group prenatal care services. Eleven states have at least one contracted MCO and/or a state billing model that uses APMs to incentivize enhanced maternity care^{xi} with value-based payment models.¹²

States can use state funds to provide grants or discretionary funding to pilot or scale up GPNC, which helps offset the implementation costs of group prenatal care.^{16,20} As of 2021, seven states provide or will provide grant or discretionary funding as a temporary funding mechanism to pilot or scale up group prenatal care. In addition to state funds, individual group prenatal care sites have received grants from philanthropic organizations and/or private health insurance payors to implement GPNC.^{10,11}

States have taken non-financial steps to encourage group prenatal care by recognizing it as a best practice to improve maternal and child health outcomes and/or by listing CenteringPregnancy as a resource on state websites. Table 3 illustrates the methods that states use to support group prenatal care.

Table 3. State Variation for Group Prenatal Care

State	Type of State Support for Group Prenatal Care	Number of CenteringPregnancy Program Sites	Estimated Percent of Births to Persons Participating in CenteringPregnancy
Alabama	Alternative Payment Model	5	1.4%
Alaska	No steps taken to support group prenatal care	4	6.6%
Arizona	No steps taken to support group prenatal care	4	0.8%
Arkansas	Alternative Payment Model	1	0.4%
California	Enhanced fee-for-service reimbursement	66	2.4%
Colorado	Alternative Payment Model	9	2.3%
Connecticut	No steps taken to support group prenatal care	0	0.0%
Delaware	Alternative Payment Model	0	0.0%
District of Columbia	Includes GPNC as a best practice	8	14.2%
Florida	No steps taken to support group prenatal care	12	0.9%

^{xi} Enhanced maternity care may include group prenatal care but the billing code or regulation does not always specifically cite group prenatal care.

Table 4. State Variation for Group Prenatal Care (Continued)

State	Type of State Support for Group Prenatal Care	Number of CenteringPregnancy Program Sites	Estimated Percent of Births to Persons Participating in CenteringPregnancy
Georgia	No steps taken to support group prenatal care	11	1.4%
Hawaii	Includes GPNC as a best practice	9	8.6%
Idaho	Alternative Payment Model	1	0.7%
Illinois	Grant funding; Includes GPNC as a best practice	20	2.3%
Indiana	Includes GPNC as a best practice	16	3.2%
Iowa	No steps taken to support group prenatal care	6	2.6%
Kansas	No steps taken to support group prenatal care	2	0.9%
Kentucky	No steps taken to support group prenatal care	3	0.9%
Louisiana	Enhanced fee-for-service reimbursement (MCO)	4	1.1%
Maine	No steps taken to support group prenatal care	7	9.6%
Maryland	Grant funding	9	2.1%
Massachusetts	Alternative Payment Model; Includes GPNC as a best practice	14	3.3%
Michigan	Enhanced fee-for-service reimbursement (MCO); Includes GPNC as a best practice	16	2.4%
Minnesota	Grant funding	5	1.2%
Mississippi	Includes GPNC as a best practice	4	1.8%
Missouri	No steps taken to support group prenatal care	19	4.2%
Montana	Enhanced fee-for-service reimbursement	3	4.4%
Nebraska	Includes GPNC as a best practice	5	3.3%

Table 5. State Variation for Group Prenatal Care (Continued)

State	Type of State Support for Group Prenatal Care	Number of CenteringPregnancy Program Sites	Estimated Percent of Births to Persons Participating in CenteringPregnancy
Nevada	No steps taken to support group prenatal care	3	1.4%
New Hampshire	Includes GPNC as a best practice	4	5.4%
New Jersey	Enhanced fee-for-service reimbursement; Grant funding; Includes GPNC as a best practice	19	3.1%
New Mexico	No steps taken to support group prenatal care	3	2.1%
New York	Grant funding; Includes GPNC as a best practice	49	3.6%
North Carolina	Grant funding; Alternative Payment Model; Includes GPNC as a best practice	37	5.0%
North Dakota	No steps taken to support group prenatal care	1	1.5%
Ohio	Enhanced fee-for-service reimbursement; Grant funding	46	5.5%
Oklahoma	No steps taken to support group prenatal care	2	0.7%
Oregon	Alternative Payment Model; Includes GPNC as a best practice	13	5.0%
Pennsylvania	Includes GPNC as a best practice	29	3.5%
Rhode Island	Alternative Payment Model	0	0.0%
South Carolina	Enhanced fee-for-service reimbursement; Includes GPNC as a best practice	26	7.3%
South Dakota	No steps taken to support group prenatal care	3	4.2%
Tennessee	Alternative Payment Model; Includes GPNC as a best practice	2	0.4%

Table 6. State Variation for Group Prenatal Care (Continued)

State	Type of State Support for Group Prenatal Care	Number of CenteringPregnancy Program Sites	Estimated Percent of Births to Persons Participating in CenteringPregnancy
Texas	Enhanced fee-for-service reimbursement; Includes GPNC as a best practice	44	1.9%
Utah	Enhanced fee-for-service reimbursement	0	0.0%
Vermont	No steps taken to support group prenatal care	3	9.0%
Virginia	No steps taken to support group prenatal care	16	2.6%
Washington	Alternative Payment Model; Includes GPNC as a best practice	26	4.9%
West Virginia	Includes GPNC as a best practice	2	1.8%
Wisconsin	Includes GPNC as a best practice	8	2.0%
Wyoming	Includes GPNC as a best practice	0	0.0%
Best State	N/A	66	14.2%
Worst State	N/A	0	0.0%
Median State	N/A	5	2.3%

State support: As of August 1, 2021. State health and Medicaid department websites, insurance provider websites, personal communication, and proposed and passed state legislation.

Number of CenteringPregnancy sites: Data as of 2019. Centering Healthcare Institute Inc.

Percent of births: Estimated percent of births to persons participating in CenteringPregnancy: Data as of 2019. Centering Healthcare Institute Inc.

For additional source and calculation information, please refer to the [Methods and Sources](#) section of [pn3policy.org](#).

How Did We Reach Our Conclusions?

Method of Review

This evidence review began with a broad search of all literature related to the policy and its impacts on child and family wellbeing during the prenatal-to-3 period. First, we identified and collected relevant peer-reviewed academic studies as well as research briefs, government reports, and working papers, using predefined search parameters, keywords, and trusted search engines. From this large body of work, we then singled out for more careful review those studies that endeavored to identify causal links between the policy and our outcomes of interest, taking into consideration characteristics such as the research designs put in place, the analytic methods used, and the relevance of the populations and outcomes studied. We then subjected this literature to an in-

depth critique and chose only the most methodologically rigorous research to inform our conclusions about policy effectiveness. All studies considered to date for this review were released on or before March 31, 2021.

Standards of Strong Causal Evidence

When conducting a policy review, we consider only the strongest studies to be part of the evidence base for accurately assessing policy effectiveness. A strong study has a sufficiently large, representative sample, has been subjected to methodologically rigorous analyses, and has a well-executed research design allowing for causal inference—in other words, it demonstrates that changes in the outcome of interest were likely caused by the policy being studied.

The study design considered most reliable for establishing causality is a randomized controlled trial (RCT), an approach in which an intervention is applied to a randomly assigned subset of people. This approach is rare in policy evaluation because policies typically affect entire populations; application of a policy only to a subset of people is ethically and logistically prohibitive under most circumstances. However, when available, RCTs are an integral part of a policy's evidence base and an invaluable resource for understanding policy effectiveness. Because RCTs are often available in evaluating the program effectiveness of group prenatal care, the scope of this evidence review is limited to RCTs.

Although outside the scope of this evidence review, the strongest designs typically used for studying policy impacts are quasi-experimental designs (QEDs) and longitudinal studies with adequate controls for internal validity (for example, using statistical methods to ensure that the policy, rather than some other variable, is the most likely cause of any changes in the outcomes of interest). Our conclusions are informed largely by these types of studies, which employ sophisticated techniques to identify causal relationships between policies and outcomes. Rigorous meta-analyses with sufficient numbers of studies, when available, also inform our conclusions.

Studies That Meet Standards of Strong Causal Evidence

- A. Felder, J.N., Epel, E., Lewis, J.B., Cunningham, S.D., Tobin, J.N., Rising, S.S., Thomas, M., & Ickovics, J.R. (2017). Depressive symptoms and gestational length among pregnant adolescents: Cluster randomized control trial of Centering Pregnancy® plus group prenatal care. *Journal of Consulting and Clinical Psychology*, 85(6), 574-584 <https://doi.org/10.1037/ccp0000191>
- B. Ford, K., Weglicki, L., Kershaw, T., Schram, C., Hoyer, P.J., & Jacobson, M.L. (2002). Effects of a prenatal care intervention for adolescent mothers on birth weight, repeat pregnancy, and educational outcomes at one year postpartum. *The Journal of Perinatal Education*, 11(1), 35-38. <https://doi.org/10.1624/105812402X88588>
- C. Ickovics, J.R., Kershaw, T.S., Westdahl, C., Magriples, U., Massey, Z., Reynolds, H., & Rising, S.S. (2007). Group prenatal care and perinatal outcomes: A randomized controlled trial. *Obstetrics and Gynecology*, 110(2 Pt 1), 330-339. <https://doi.org/10.1097/01.AOG.0000275284.24298.23>
- D. Ickovics, J.R., Reed, E., Magriples, U., Westdahl, C., Rising, S.S., & Kershaw, T.S. et al. (2011). Effects of Group prenatal care on psychosocial risk in pregnancy: Results from a randomized controlled trial. *Psychology & Health*, 26(2), 235-250. <https://doi.org/10.1080/08870446.2011.531577>
- E. Ickovics, J.R., Earnshaw, V., Lewis, J.B., Kershaw, T.S., Magriples, U., Stasko, E., Rising, S.S., Cassells, A., Cunningham, S., Bernstein, P., & Tobin, J.N. (2016). Cluster randomized trial of group prenatal care: Perinatal outcomes among adolescents in New York City health centers. *American Journal of Public Health*, 106(2), 359-365 <https://doi.org/10.21054/AJPH.2015.302960>

- F. Kennedy, H.P., Farrell, T., Paden, R., Hill, S., Jolivet, R.R., Cooper, B.A., & Rising, S.S. (2011). A randomized clinical trial of group prenatal care in two military settings. *Military Medicine*, 176(10), 1169-1177 <https://doi.org/10.7205/MILMED-D-10-00394>
- G. Kershaw, T.S., Magriples, U., Westdahl, C., Rising, S.S., & Ickovics, J. (2009). Pregnancy as a window of opportunity for HIV prevention: Effects of an HIV intervention delivered within prenatal care. *American Journal of Public Health*, 99(11), 2079-2086. <https://doi.org/10.2105/AJPH.2008.154476>
- H. Klerman, L.V., Ramey, S.L., Goldenberg, R.L., Marbury, S., Hou, J., & Cliver, S.P. (2001). A randomized trial of augmented prenatal care for multiple-risk, Medicaid eligible African American women. *American Journal of Public Health*, 91(1), 105-111. <https://doi.org/10.2105/ajph.91.1.105>
- I. Magriples, U., Boynton, M.H., Kershaw, T.S., Lewis, J., Rising, S.S., Tobin, J.N., Epel, E., & Ickovics, J.R. (2015). The impact of group prenatal care on pregnancy and postpartum weight trajectories. *American Journal of Obstetrics and Gynecology*, 213(5), 688.e1-9. <https://doi.org/10.1016/j.ajog.2015.06.066>

Other References

1. Kilpatrick, S.J., & Papile, L.A.(Eds). (2017). Guidelines for perinatal care (8th Ed.). American Academy of Pediatrics and the American College of Obstetrics and Gynecologists. (2017). <https://www.acog.org/clinical-information/physician-faqs/-/media/3a22e153b67446a6b31fb051e469187c.ashx>
2. Centering Healthcare Institute. (n.d.). *Locate Centering Sites*. <https://centeringhealthcare.secure.force.com/WebPortal/LocateCenteringSitePage>
3. Shonkoff, J., & Phillips, D. (2000). *From neurons to neighborhoods: The science of early childhood development*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/9824>.
4. National Institutes of Health. (2017, January 31). *What is prenatal care and why is it important?* <https://www.nichd.nih.gov/health/topics/pregnancy/conditioninfo/prenatal-care>
5. American College of Obstetricians and Gynecologists. (2018). Group prenatal care. ACOG Committee Opinion No. 731 *Obstetrics & Gynecology*; 131: e104-8. <https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2018/03/group-prenatal-care>
6. Centering Healthcare Institute. (n.d.). *What we do*. <https://www.centeringhealthcare.org/what-we-do/centering-pregnancy>
7. Centering Healthcare Institute. (2020). *Expanding access to Centering: Public-private partnership in New Jersey* <https://www.centeringhealthcare.org/uploads/files/Centering-Expansion-Partnerships-in-NJ-January-2020.pdf>
8. Rodin, D., & Kirkegaard, M. (2019, April 9). *Aligning value-based payment with the CenteringPregnancy group prenatal care model: Strategies to sustain a successful model of prenatal care*. Centering Healthcare Institute. <https://www.centeringhealthcare.org/uploads/downloads/Aligning-Value-Based-Payment-with-CenteringPregnancy.pdf>
9. Mayo Clinic. (2020, February 8). *High-risk pregnancy: Know what to expect*. <https://www.mayoclinic.org/healthy-lifestyle/pregnancy-week-by-week/in-depth/high-risk-pregnancy/art-20047012>
10. Blue Cross and Blue Shield of Illinois. (2021, March 1). *Blue Cross and Blue Shield of Illinois invests in programs aiming to reduce disparities and expand care access for expectant mothers and babies*.
11. The Burke Foundation. (2021, April 20). *The Burke Foundation and Centering Healthcare Institute is expanding CenteringPregnancy and CenteringParenting to 50 sites over five years*. <https://burkefoundation.org/press-release/the-burke-foundation-and-centering-healthcare-institute-is-expanding-centeringpregnancy-and-centeringparenting-to-50-sites-over-five-years/>
12. Prenatal-to-3 Policy Impact Center analysis based on state health and Medicaid department websites, insurance provider websites, personal communication, and proposed and passed state legislation. As of August 1, 2021. For additional source and calculation information, please refer to the [Methods and Sources](#) section of pn3policy.org
13. Kotelchuck, M. (1994). The adequacy of prenatal care utilization index: Its US distribution and association with low birthweight. *American Journal of Public Health*, 84(9), 1486-1489.
14. US Centers for Disease Control and Prevention. (CDC). (n.d.). *STDs in adolescents and young adults*. <https://www.cdc.gov/std/stats18/adolescents.htm>
15. CDC. (2015, June 5). *Sexually transmitted diseases treatment guidelines, 2015*. *Morbidity and Mortality Weekly Report*, 64(3). <https://www.cdc.gov/std/tg2015/tg-2015-print.pdf>

16. Dillon, M.E. (2014). Adolescent pregnancy in mental health In: Dillon M.E, Cherry, A.L. (Eds). *International handbook of adolescent pregnancy: Medical, psychosocial and public health responses*. New York, NY. p. 79–102.
17. Conroy K.N., Engelhart, M.H.S., Martins, Y., Huntington, N.L., Snyder, A.F., Coletti, K.D., & Cox, J.E. (2016). The enigma of rapid repeat pregnancy: A qualitative study of teen mothers. *Journal of Pediatric Adolescent Gynecology*, 29(3), 312–317. <https://doi.org/10.1016/j.jpjag.2015.12.003>
18. Hoffman, S., & Hatch, M. C. (1996). Stress, social support and pregnancy outcome: A reassessment based on recent research. *Pediatric and Perinatal Epidemiology*, 10, 380–405. <https://doi-org.ezproxy.lib.utexas.edu/10.1111/j.1365-3016.1996.tb00063.x>
19. Akinbami, L.J., Schoendorf, K.C., & Kiely, J.L. (2000). Risk of preterm birth in multiparous teenagers. *Archives of Pediatrics & Adolescent Medicine*, 154, 1101–1107. doi:10.1001/archpedi.154.11.1101
20. Taylor, J., Novoa, C., Hamm, K., & Phadke, S. (2019, May 2). *Eliminating racial disparities in maternal and infant mortality. A comprehensive blueprint*. Center for American Progress. <https://www.americanprogress.org/issues/women/reports/2019/05/02/469186/eliminating-racial-disparities-maternal-infant-mortality/>
21. Health Management Associates (2019). *Issue brief: How CenteringPregnancy can support birth equity*. <https://www.centeringhealthcare.org/why-centering/research-and-resources>
22. Osterman, M.J.K. & Martin, J.A. (2018). Timing and adequacy of prenatal care in the United States, 2016. *National Vital Statistics Reports*, 67(3), 1–14. Hyattsville, MD: National Center for Health Statistics. https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67_03.pdf
23. Martin, J.A., Hamilton, B.E., Osterman, M.J.K., & Driscoll, A.K. (2021). Births: Final data from 2019. *National Vital Statistics Reports*, 70(2), 1–51. Hyattsville, MD: National Center for Health Statistics. <https://www.cdc.gov/nchs/data/nvsr/nvsr70/nvsr70-02-508.pdf>
24. Stanford Children’s Hospital (n.d.). *The neonatal intensive care unit*. <https://www.stanfordchildrens.org/en/topic/default?id=the-neonatal-intensive-care-unit-nicu-90-P02389>
25. Behrman, R.E., Butler, A.S. (Eds.). (2007). *Preterm birth: Causes, consequences, and prevention*. Institute of Medicine, Committee on Understanding Premature Birth and Assuring Healthy Outcomes. Washington, DC: National Academies Press. <https://www.ncbi.nlm.nih.gov/books/NBK11358/>
26. Crockett, A.H., Heberlein, E.C., Smith, J.C., Ozluk, P., Covington-Kolb, S., & Willis, C. (2019). Effects of a multi-site expansion of group prenatal care on birth outcomes. *Maternal and Child Health Journal*, 23(10), 1424–1433. [dx.doi.org/10.1007/s10995-019-02795-4](https://doi.org/10.1007/s10995-019-02795-4)
27. Hill, I., Dubay, L., Courtot, B., Benatar, S., Garrett, B., Blavin, F., Howell, E., Johnston, E., Allen, E., Thornburg, S., Markell, J., Morgan, J., Silow-Carroll, S., Bitterman, J., Rodin, D., Odendahl, R., Paez, K., Thompson, L., Lucado, J., ...Rouse, M. (2018). *Strong Start for mothers and newborns evaluation: Year 5 project synthesis*. Urban Institute. <https://innovation.cms.gov/files/cmimi/strongstart-prenatal-finalevalrpt-v1.pdf>
28. Gareau, S., López-De Fede, A., Loudermilk, B.L., Cummings, T.H., Hardin, J.W., Picklesimer, A.H., Crouch, E., & Covington-Kolb, S. (2016). Group prenatal care results in Medicaid savings with better outcomes: A propensity score analysis of CenteringPregnancy participation in South Carolina. *Maternal and Child Health Journal*, 20(7), 1384–1393. [dx.doi.org/10.1007/s10995-016-1935-y](https://doi.org/10.1007/s10995-016-1935-y)
29. Tanner-Smith, E.E., Steinka-Fry, K.T., & Gesell, S.B. (2014). Comparative effectiveness of group and individual prenatal care on gestational weight gain. *Maternal and Child Health Journal*, 18(7), 1711–1720. [dx.doi.org/10.1007/s10995-013-1413-8](https://doi.org/10.1007/s10995-013-1413-8)
30. Tanner-Smith, E.E., Steinka-Fry, K.T., & Lipsey M.W. (2013). The Effects of CenteringPregnancy group prenatal care on gestational age, birth weight, and fetal demise. *Maternal and Child Health Journal*, 18(4), 801–809. [dx.doi.org/10.1007/s10995-013-1304-z](https://doi.org/10.1007/s10995-013-1304-z)
31. Teitler, J. (2001). Father involvement, child health and maternal health behavior. *Children and Youth Services Review*, 23, 403–425.
32. Martin, L.T., McNamara, M.J., Milot, A.S., Halle, T., & Hair, E.C. (2007). The effects of father involvement during pregnancy on receipt of prenatal care and maternal smoking. *Maternal and Child Health Journal*, 11, 595–602. doi: 10.1007/s10995-007-0209-0
33. Lawson, A. & Ritter, A. (2021, April 29). Lessons from the field: Offering group prenatal care via telehealth during the COVID-19 pandemic. *Health Affairs Blog*, doi: 10.1377/hblog20210428.46837
34. March of Dimes. (n.d.). *Supportive pregnancy care*. <https://www.marchofdimes.org/supportive-pregnancy-care/about-march-of-dimes-supportive-pregnancy-care.aspx>

35. Cunningham, S.D., Lewis, J.B., Thomas, J.L. Grilo, S.A., & Ickovics, J.R. (2017). Expect With Me: development and evaluation design for an innovative model of group prenatal care to improve perinatal outcomes. *BMC Pregnancy Childbirth*, 17(147), 1-13. <https://doi.org/10.1186/s12884-017-1327-3>
36. Pregnancy & Parenting Partners (n.d.). *The P3 model of care*. <https://www.pregnancyandparentingpartners.org/about-p3>
37. Greater Mt. Tabor Christian Center. (n.d.). *Honey Child parental education program*. https://www.gmtcc.org/?display_content=honey_child&local=ministries
38. McCoy, C. E. (2017). Understanding the intention-to-treat principle in randomized controlled trials. *Western Journal of Emergency Medicine*, 18(6), 1075-1078. <https://dx.doi.org/10.5811/westjem.2017.8.35985>
39. Calculations were done by the Prenatal-to-3 Policy Impact Center. For additional information, please refer to the [Methods and Sources](#) section of pn3policy.org



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Evidence Review Citation:

Prenatal-to-3 Policy Impact Center. (2021). *Prenatal-to-3 policy clearinghouse evidence review: Group Prenatal Care* (ER OB.0921). Child and Family Research Partnership. Lyndon B. Johnson School of Public Affairs, University of Texas at Austin. <http://pn3policy.org/policy-clearinghouse/group-prenatal-care>